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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)8 of Title 85, U.S. Code P.O.

PATENT OFFICE NOTICES

Printing of Chemical Patents

In view of financial and scheduling considerations associated with the closing of Fiscal Year 1971, no chemical patents will appear in the patent issues of August 24 and 31, and September 7 and 14, 1971. Chemical patents will again be issued on September 21, 1971.

RICHARD A. WAHL,
Acting Commissioner of Patents.
July 6, 1971.

Establishment of Manual of Trademark Examining Procedure

Preliminary work has begun on the preparation of a Manual of Trademark Examining Procedure.

Directives on trademark examining procedure will be issued by the Patent Office from time to time and, when appropriate, will be included in the Manual at a later date. The directives will be numbered sequentially and those issued prior to publication of the Manual will be designated as Series 1. These directives will constitute the guidelines for the examination of trademark applications.

Trademark Examining Directives are available through the Superintendent of Documents, Washington, D.C., 20013 at an annual subscription of $1.50 plus 50¢ for foreign mailing.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.
July 27, 1971.

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral or ethical grounds should be furnished the Commissioner of Patents on or before September 27, 1971.

Burke, Sam D.,III, 44 Jackes Ave., #1604, Toronto 7, Ontario, Canada
Cabic, Edward Joseph, 2111 Jefferson Davis Hwy., #613N, Arlington, Va., 22202.
Carvis, Thaddius J., 1260 Hope St., Apt. D, Stamford, Conn., 06907

ROBERT GOTTSCHALK,
Chairman, Committee on Enrollment.
Aug. 9, 1971.

Recognition of Attorneys and Agents

In connection with the revised rules concerning recognition of attorneys and agents, published in the Federal Register July 2, 1971 (36 F.R. 12616), the Patent Office will operate under the following procedures.

The Patent Office will continue to give effect to powers of attorney and authorizations of agent naming firms filed, with respect to patent applications, before the effective date of the rules, July 2, 1971.

As stated in the revised rules, powers of attorney or authorizations of agent naming firms of attorneys or agents filed in patent applications after July 2, 1971 will not be recognized. However, the Patent Office will construe any such powers or authorizations filed prior to October 1, 1971, as a direction to consider the address of the firm as the correspondence address for the application.

The privilege afforded by revised Rule 34(a) of the Rules of Practice in Patent Cases as to recognition of registered attorneys and agents not of record will apply to all applications whether filed before or after the effective date. Attention is called to the requirement of Rule 34(a) that a paper filed by a registered patent attorney or agent in an application in which he is not of record should include both his signature and registration number.

Powers of attorney and authorizations of agent under Rule 34(b) naming one or more registered individuals may continue to be made.

As prior to the effective date of the revised rules, where a paper is hand delivered to the Office and that paper has been properly signed by a registered attorney or agent whether or not of record in the particular case involved, a duplicate copy may be appropriately marked by the Patent Office employee receiving the original and returned to the person delivering the paper. As an example, a duplicate copy of a request for an extension of time to make a response may be marked approved, initialed or signed, and returned to the delivering person.

WILLIAM E. SCHUYLER, Jr.,
Commissioner of Patents.
Aug. 5, 1971.

PATENTS AND TRADEMARKS

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection

with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statuory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, Jr.,
Commissioner of Patents.

Dated: July 14, 1971.
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71–10469; Filed 7–22–71; 8:52 am]

36 F.R. 13694; July 23, 1971

Licensing Department Inventions

DEPARTMENT OF AGRICULTURE

Pursuant to authority delegated by the Secretary in 7 CFR 19.3 (35 F.R. 7493), the Administrator of the Agriculture Research Service has determined that certain Department inventions shall be made available for exclusive licensing under the provisions of Government Patent Policy (28 F.R. 10943) and 7 CFR 19.5 (35 F.R. 7493) and has made an initial selection of exclusive licensees involving four inventions. In accordance with 7 CFR 19.5(d) (35 F.R. 7493), notice thereof is published as follows:

1. Identifications of Department inventions: (1) Process for Making Powdered Fruit Juices, U.S. Patent 2,816,039; (2) Process for Making Full-Flavored Powdered Fruit Juice, U.S. Patent 2,816,840; and (3) Process for Dehydrating Liquid Foodstuffs with Preservation of Volatile Flavors, U.S. Patent 2,906,630.

Identification of the contemplated licensee: Welch Foods, Inc., Westfield, New York.

Terms and conditions of contemplated license: (1) The license will be granted to make, use, and sell the inventions to an unlimited field of use throughout the United States of America, its territories and possessions; (2) The period of the license will be three years, three months for Patents 2,816,039 and 2,816,840; and five years for Patent 2,906,630; (3) The maximum price of sale for the products of the inventions will not be fixed by the Administrator; (4) The license will not require the payment of royalties; (5) The license will permit the licensee to grant sublicenses; and (6) All other terms and conditions shall be in accordance with requirements specified in 7 CFR 19.5(c) (35 F.R. 7493).

2. Identification of Department invention: Cycloheximide as an Abscission Aid in Harvesting Citrus Fruit, patent application S.N. 865,199, filed October 8, 1969.

Identification of contemplated licensee: The Upjohn Company, Kalamazoo, Michigan.

Terms and conditions of contemplated license: (1) The license will be granted to make, use, and sell the invention in an unlimited field of use for citrus throughout the United States of America, its territories and possessions; (2) The period of the license will be five years from the date of issuance; (3) A maximum price of sale for the products of the invention will not be fixed by the Administrator; (4) The license will not require the payment of royalties; (5) The license will permit the licensee to grant sublicenses; and (6) All other terms and conditions shall be in accordance with requirements specified in 7 CFR 19.5(c) (35 F.R. 7493).

The license(s) will be granted unless:

(1) A nonexclusive licensee of the invention(s) files a protest with the Administrator within 30 days after this publication, stating that he has already brought or is likely to bring the invention(s) to the point of practical application without an exclusive license, and submitting documentation in support thereof; or

(2) An application for nonexclusive license on the invention(s) is filed with the Administrator within 30 days after this publication, such application stating that the applicant is likely to bring the invention(s) to the point of practical application without an exclusive license, and containing documentation in support thereof; or

(3) A protest is filed by any person with the Administrator within 30 days after this publication, setting forth reasons why it would not be in the public interest to grant the proposed exclusive license(s).

The Administrator shall make a decision with respect to any application or protest under subparagraphs (1), (2), and (3) above, which decision shall be final and conclusive unless appeal is made therefrom as provided in 7 CFR 19.11.

This notice has been published in the Federal Register, Wednesday, Aug. 4, 1971 (36 F.R. 14840), and became effective on that date.

T. W. EDMINSTER,
Acting Administrator,
Agricultural Research Service.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Apr. 10, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c852, *George H. Butterfield, Sr.* v. *Tower Optical Co., Inc.* Voluntary dismissal, Aug. 26, 1970. **Same, filed** Mar. 20, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c675, *George H. Butterfield, Sr.* v. *Laverne R. Chavin, doing business as Hansen Optical Company.* Order action dismissed without prejudice, Sept. 18, 1970.

2,547,648, A. V. Loughren, AUTOMATIC CONTRAST CONTROL SYSTEM FOR TELEVISION APPARATUS, **filed** Nov. 20, 1959, D.C., N.D. Ill. (Chicago), Doc. 59c1847, *Hazeltine Research, Inc.* v. *Zenith Radio Corporation.* Final judgment, U.S.D.C. is affirmed, Apr. 30, 1971.

2,723,327, C. E. Gilbert, LINE CORD SWITCH, **filed** Sept. 8, 1969, D.C., E.D.N.Y. (Brooklyn), Doc. 69–C–1128. *Gilbert Manufacturing Co., Inc.* v. *Leviton Manufacturing Co., Inc.* Order of Dismissal without prejudice, Mar. 3, 1971.

2,765,202, Barr, Herrmann and Henwood, CAGE TYPE ROLLER BEARINGS AND METHOD OF ASSEMBLING ROLLERS THEREIN, **filed** Nov. 22, 1961, D.C., E.D. Pa. (Philadelphia), Doc. 30552, *Roller Bearing Company of America* v. *Bearings, Inc.* Judgment was entered for defendant Bearings Inc. and against Roller Bearing Company of America, Mar. 15, 1971.

2,994,881, R. T. Kaufman, JOGGING AND STAPLING MACHINE, **filed** Dec. 16, 1970, U.S. Ct. of Cl., Washington, D.C., Doc. 448-70, *Robert T. Kaufman* v. *The United States of America.*

3,100,909, A. Schapiro, AGGLOMERATED FOOD PRODUCT AND METHOD FOR MAKING THE SAME, **filed** Mar. 15, 1971, D.C., N.D. Calif. (San Francisco), Doc. C-71-486-LHB, *Abraham Schapiro* v. *Protein Instantizers, Inc.*

3,179,026, A. F. Crone, SEALING ELEMENT FOR PAVEMENT GROOVES, **filed** A[illegible] 29, 1966, D.C., N.D. Ohio (Toledo), Doc. C-66-89, *Acme Highway Products Corporation* v. *The D. S. Brown Company and Delmont D. Brown.* Case remanded to this court for further trial, Mar. 19, 1971, from the U.S. Court of Appeals, Sixth Circuit, Cincinnati.

3,401,944, J. S. De Metrick, TAPE CARTRIDGE INSERT, **filed** Apr. 2, 1971, D.C., S.D.N.Y., Doc. 71-C-1501, *Automatic Radio Mfg. Co. Inc.* v. *Orion Electric Corp. Ltd.*

3,404,334, C. L. Marshall, COLOR TELEVISION TEST APPARATUS, **filed** Mar. 15, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-282, *Cecil L. Marshall* v. *EBY Sales Co.*

3,408,306, F. J. Boylan, METHOD OF CONTROLLING FOAMING, **filed** Mar. 29, 1971, D.C. Minn. (Minneapolis), Doc. 4-71-C-132, *United States Movidyn Corp.* v. *Hercules, Inc.*

3,452,895, K. U. Kalkowski, UTENSIL FOR PREVENTING SPRAYING WITH FRYING PANS, COOKING POTS OR THE LIKE, **filed** Mar. 25, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c743, *Kurt Ulrich Kalkowski* v. *Ronco, Inc.*

3,459,614, U. D. Polly, METHOD FOR MAKING PLASTIC ARTICLES, **filed** Feb. 12, 1970, D.C., S.D. Fla. (Miami), Doc. 70-184-WM, *Consolidated Productions, Inc.* v. *GEPCO, Inc.* Judgment by consent, plaintiff owner of said patent, which is valid and infringed, Feb. 12, 1971.

3,464,150, N. Troy, ROTATABLY SUPPORTED DOLL'S HEAD, **filed** Mar. 16, 1971, D.C., S.D.N.Y., Doc. 71-C-1207, *Nasco Doll Inc.* v. *Jolly Toys Inc.*

3,464,335, G. Irwin, CAMERA WITH FLASHCUBE MECHANISM, **filed** Mar. 30, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-782-AAH, *Puretec, Inc.* v. *Imperial Camera Corporation.*

3,484,735, J. G. Fanelli, ELECTRIC TERMINAL ADAPTER, **filed** Apr. 2, 1970, D.C., N.D. Ind. (South Bend), Doc. 70S36, *Coleman Cable & Wire Company* v. *M.H.R.V. Distributors, Inc.* Defendants having taken a license under the patent in suit, complaint is dismissed upon stipulation without prejudice, Mar. 15, 1971.

3,489,154, Kaspar and Ambrose, COMPOSITE SHEET MATERIAL AND GARMENTS MADE THEREFROM, **filed** Jan. 13, 1970, D.C. Conn. (New Haven), Doc. 13642, *International Playtex Corporation* v. *Bontec Corp. and The Howland-Hughes Company.* Consent judgment, plaintiff owner of said patent and defendant is enjoined from infringement, Feb. 2, 1971.

3,506,294, G. Newman, BUMPER GUARD ASSEMBLY, **filed** Feb. 5, 1971, D.C., S.D. Fla. (Miami), Doc. 71-185-C-CA, *Biscayne Mfg. Corp., etc.* v. *John Ridings, doing business as John Ridings Garage.* **Same, filed** Feb. 5, 1971, D.C., S.D. Fla. (Miami), Doc. 71-186-C-TC, *Biscayne Mfg. Corp., etc.* v. *Jay Lew Mfg. Corp., etc.*

3,515,234, Danford, Abbott, and Mitchell, TOBACCO HARVESTER, **filed** Mar. 11, 1971, D.C., E.D. Va. (Richmond), Doc. 185-71-R, *Harrington Manufacturing Company, Inc.* v. *Tilley's Machine and Welding Shop Inc.*

3,517,414, W. S. Carson, Jr., APPARATUS FOR PROCESSING PLASTIC MATERIAL, **filed** Jan. 22, 1971, D.C., W.D.N.C. (Charlotte), Doc. 2823, *Scottdel, Inc.* v. *Reeves Brothers, Inc.*

3,518,800, H. G. Tank, FLOORING SYSTEM, **filed** Aug. 21, 1970, D.C. Mich. (Marquette), Doc. 1391, *Connor Forest Industries* v. *Ahonen Lumber Company and Roy A. Ahonen.* Final judgment, defendants permanently enjoined, Mar. 17, 1971.

3,535,763, R. L. Helton, COMPONENT HANDLING TOOL FOR INSERTING DUAL-IN-LINE COMPONENTS INTO PRINTED CIRCUIT BOARDS, **filed** Apr. 15, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-900-CC, *Solder Removal Co.* v. *George L. Patrick, doing business as G. D. Patrick Enterprises.*

3,543,760, L. R. Bolduc, DISPOSABLE GROUND PLATE ELECTRODE, **filed** Mar. 12, 1971, D.C., N.D. Calif. (San Francisco), Doc. C-71-482, *Medical Plastics, Inc.* v. *Eugene W. Olsen, doing business as Olsen Surgical Service.*

3,544,013, D. Dorfman, SOIL TREATING APPARATUS, **filed** Jan. 11, 1971, D.C.N.J. (Newark), Doc. 47-71, *Lawn-A-Mat Chemical & Equipment Corporation* v. *Lawn King, Inc.*

3,548,534, Beny, Meggs, and Ryan, MOVING APPARATUS FOR A VEHICLE TOY, **filed** Feb. 18, 1971, D.C., S.D.N.Y., Doc. 71-C-716, *Mattel, Inc.* v. *Topper Corporation.*

3,553,374, Wolf and Marino, ACOUSTIC COUPLER, **filed** Feb. 18, 1971, D.C.N.J. (Trenton), Doc. C-222-71, *Digitronics Corporation* v. *MSI Data Corporation.*

3,563,134, H. B. Rodstein, AIR-OPERATED TOOL, **filed** Mar. 8, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-531-DWW, *Mayview Corp.* v. *Harvey B. Rodstein, Rodac Pneumatic Tools, Inc. and Rodac International Corp.*

Re. 25,011, J. P. Barkdoll, TYPEWRITER HAVING POWER OPERATED INSTRUMENTALITIES, **filed** Feb. 2, 1971, D.C., S.D.N.Y., Doc. 71-C-445, *SCM Corporation* v. *Nippo Machine Co. Ltd.* Final judgment on consent, defendants have infringed, May 7, 1971.

Re. 26,787, J. R. Winegard, ULTRA-HIGH FREQUENCY FISHBONE TYPE TELEVISION ANTENNA, **filed** June 10, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1231, *Winegard Company* v. *The George Company et al.* Consent decree, dismissed with prejudice, Mar. 29, 1971.

Certificates of Correction for the Week of Sept. 7, 1971

3,330,686
3,336,244
3,408,916
3,483,225
3,487,096
3,514,440
3,515,583
3,530,113
3,531,738
3,534,477
3,538,205
3,542,887
3,544,982
3,544,991
3,545,297
3,547,629
3,548,965
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3,549,540
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3,554,141
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3,558,271
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3,559,447
3,559,999
3,560,390
3,560,620
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3,561,290
3,561,494
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3,562,369
3,563,212
3,563,419
3,563,893
3,564,016
3,564,063
3,564,170
3,564,425
3,565,090
3,565,558
3,565,567
3,566,111
3,566,155
3,566,361
3,567,057
3,567,612
3,567,749
3,567,831
3,568,160
3,568,239
3,568,299
3,568,830
3,569,676
3,569,736
3,569,765
3,569,878
3,569,942
3,570,096
3,570,301
3,570,421
3,570,573
3,571,604
3,571,841
3,571,943
3,571,958
3,572,032
3,572,151
3,572,571
3,572,762
3,572,836
3,572,880
3,573,230
3,573,276
3,573,671
3,573,700
3,574,121
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3,574,189
3,574,505
3,574,799
3,574,902
3,574,958
3,575,296
3,575,363
3,575,394
3,575,521
3,575,598
3,575,636
3,575,764
3,575,882
3,575,900
3,576,494
3,576,551
3,576,563
3,576,569
3,576,700
3,576,908
3,577,167
3,577,376
3,577,484
3,577,603
3,577,825
3,577,915
3,577,976
3,578,095
3,578,383
3,578,764
3,578,790
3,578,875
3,579,038
3,579,150
3,579,396
3,580,955
3,581,658
3,582,291
3,582,624

Disclaimers

3,492,744.—*Louis E. Bernier,* Rockland, and *James P. Giblin,* Milton, Mass. GOLF SHOE AND BOTTOM THEREFOR. Patent dated Feb. 3, 1970. Disclaimer filed Dec. 18, 1970, by the assignee, *E. T. Wright & Co., Inc.*

Hereby enters this disclaimer to claims 2, 3 and 6 of said patent.

3,498,468.—*Russell C. Raynor,* South Salem, N.Y. SEDIMENTATION TANK. Patent dated Mar. 3, 1970. Disclaimer filed Mar. 4, 1971, by the assignee, *Dorr-Oliver Incorporated.*

Hereby enters this disclaimer to claims 35, 36, 37 and 40 of said patent.

3,526,150.—*Noel S. Iverson,* New Ulm, Minn. VARIABLE PITCH PULLEY. Patent dated Sept. 1, 1970. Disclaimer filed May 17, 1971, by the assignee, *New Ulm Manufacturing Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 6 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 24, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
* Date of Oldest Application (New)	
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-04-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	*3-05-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-15-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-03-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-24-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	12-11-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	*3-23-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-14-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-18-70
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	8-06-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-06-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	*5-14-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-04-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	9-11-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	7-10-70

Expiration of patents: The patents within the range of numbers indicated below expire during August 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

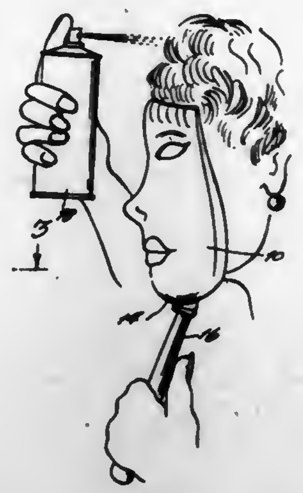
Patents	Numbers 2,685,085 to 2,688,132, inclusive
Plant Patents	Numbers 1,294 to 1,299, inclusive

PATENTS

GRANTED SEPTEMBER 7, 1971

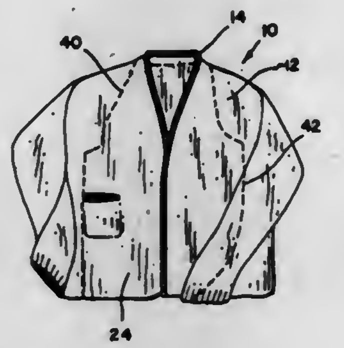
GENERAL AND MECHANICAL

3,602,913
FACIAL PROTECTION FOR HAIR SPRAY
Doris F. Neese, c/o Alma Neese, 2604 Burnett, Waco, Tex.
Filed July 22, 1969, Ser. No. 843,716
Int. Cl. A42b *1/00*
U.S. Cl. 2—9 **3 Claims**



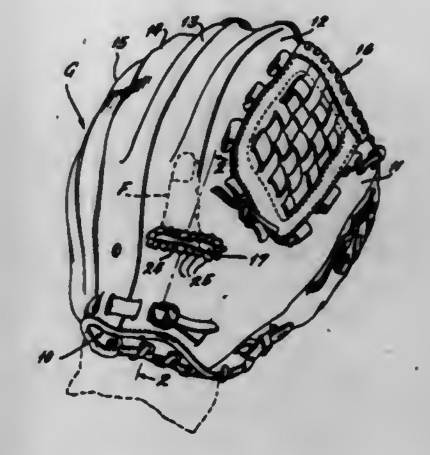
Apparatus for use by a person applying hair spray and the like to her own head to substantially prevent the spray from striking the face and injuring skin and the like.

3,602,914
METHOD OF SWEATER FABRICATION
Leo J. Castello, 3702 Burnett Lane, Huntingdon Valley, Pa.
Filed Dec. 15, 1969, Ser. No. 885,094
Int. Cl. A41d *1/04*
U.S. Cl. 2—90 **5 Claims**



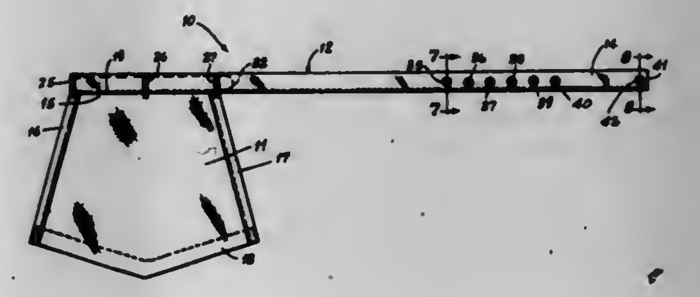
A method of fabricating a knitted panel or strip for use in manufacturing sweaters of the button or zipper-front type having a continuous knit on border with no seams on the neckline including the steps of knitting strips of cloth on a circular or flat bed machine having a continuous border at one edge thereof, folding the cloth double and placing a pattern thereon, cutting the doubled cloth to the pattern without interfering with the continuity of the border at the folded portion thereof, said border constituting said continuous knit on border in a sweater which is finished by utilizing the required cutting and sewing operations. The invention further includes the method of fabricating a knit pocket in the knit panel or strip including the steps of knitting an enclosed tubular stitch or pocket which is completely closed on all sides, utilizing any desired stitch to knit portions of said panel which extend from all sides surrounding said tubular stitch, severing the last course on top of said tubular pocket from the first needle or wale of said tubular course to the last needle or wale of said tubular course on one side only to provide a pocket opening, and applying any type of welt or edging to the marginal front edge of the pocket defined by the cut course.

3,602,915
BASEBALL MITT OR GLOVE
Paul F. Collins, Creve Coeur, Mo., assignor to A-T-O Inc., St. Louis, Mo.
Continuation-in-part of application Ser. No. 777,737, Nov. 21, 1968, now abandoned. This application Dec. 19, 1969, Ser. No. 882,775
Int. Cl. A41d *13/10*
U.S. Cl. 2—19 **6 Claims**



A baseball mitt or glove including a construction in which control over the position of the glove is enhanced by allowing a finger of the wearer of the glove to be exposed outside of the back of the glove body, without preventing the player from positioning the finger inside the glove when found desirable.

3,602,916
ADJUSTABLE APRON
Allyn J. Aach, Saint Louis, Mo., assignor to Angelica Corporation, St. Louis, Mo.
Filed Oct. 31, 1969, Ser. No. 872,831
Int. Cl. A41d *13/04*
U.S. Cl. 2—48 **8 Claims**

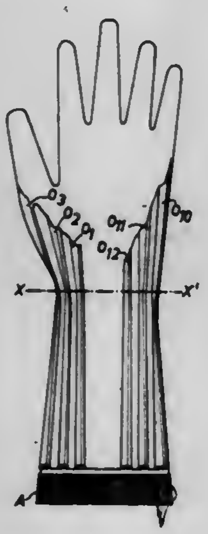


A size adjustment device comprising a single band adapted to be threaded through selected ones of a plurality of loops on a garment joined to the band to achieve coarse size adjustments. The band is then foldable back on itself and its free end is releasably engaged with one of a plurality of connectors for relatively fine size adjustments.

3,602,917
GLOVE IN PLASTIC OR ELASTIC MATERIAL WHICH MAY BE WORN ON EITHER HAND

Jean Jacques Seunevel, Neuilly Sur Seine, and Andre Veber, Drancy, both of, France, assignors to Propriete Industrielle et Developpment

Filed July 11, 1969, Ser. No. 845,666
Claims priority, application France, Nov. 23, 1966, 84,733
Int. Cl. A41d *19/00*
U.S. Cl. 2—167 **11 Claims**

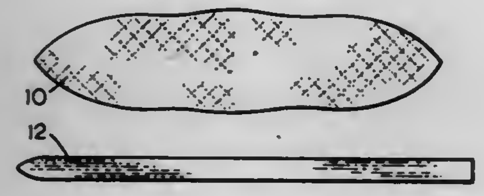


Glove of synthetic resin or elastic material such as rubber, which may be worn on either hand without discomfort, including, in the area of the thumb, with extensions on the palm side and on the back side, a series of wide longitudinal undulations forming gussets oriented substantially along a direction intermediate between the longitudinal direction of the thumb and the direction of the longitudinal axis of the glove. The glove is optionally provided with an additional series of undulations in the area of the little finger substantially symmetric to the series in the area of the thumb, with respect to the longitudinal axis.

3,602,918
CAP

Joseph Krystal, 12 Sundale Gardens, Downsview, Ontario, Canada

Filed May 8, 1969, Ser. No. 822,932
Int. Cl. A42b *1/02, 1/04*
U.S. Cl. 2—197 **1 Claim**



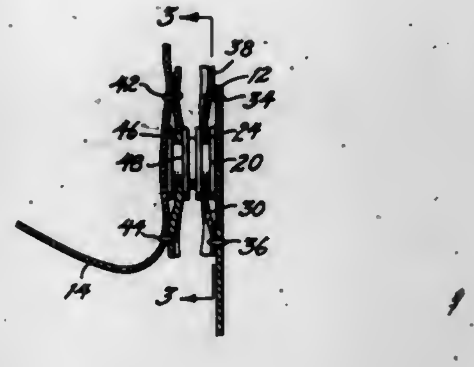
A toque-type cap that is made substantially from a nonstretch material as distinct from a stretch rib-knit material. The cap has main panels that are of a nonstretch material but strips of stretch material are interposed between them to give the cap the characteristic of fitting all size heads. The main panels and the stretch strips are separately formed, sewn together in a tubelike construction, turned inside out to locate the sewing seams on the inside and closed to form a hat. The hat has the advantage of snugly fitting all size heads as a result of the action of the stretch strips, but also the advantage of being waterproof as a result of the nonstretch characteristic of the main panels.

3,602,919
HEADPIECE AND SNAP-ON VEIL

Fred A. Piccione, Philadelphia, Pa., assignor to Alfred Angelo, Inc., Philadelphia, Pa.

Filed Sept. 16, 1969, Ser. No. 858,339
Int. Cl. A42b *5/00*
U.S. Cl. 2—207 **8 Claims**

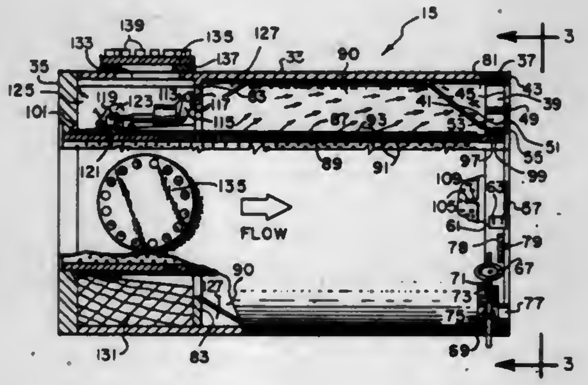
Wearing apparel wherein a veil is removably coupled to a crownlike headpiece, the headpiece being itself separately wearable. A ruffled strip, bearing a plurality of spaced snap fasteners, is affixed to the headpiece, and a veil, which includes complemental snap fasteners, may be secured to the fasteners associated with the headpiece. One edge of the strip projects upwardly beyond an upper edge of an opening in the headpiece, and hides the snap fasteners thereon from view when the veil is not used.



3,602,920
WIND TUNNEL TEST SECTION

John W. Davis, and Olen E. Hill, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1969, Ser. No. 889,557
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **5 Claims**



A test section for use in a short duration wind tunnel capable of simulating very high Reynolds numbers over the transonic speed range. An exterior circular tube contains a perforated concentrically disposed sleeve assembly forming an annular flow plenum between the exterior tube and the sleeve assembly. The main flow stream through the wind tunnel is through the sleeve assembly with "sucking off" from the main flow stream occurring through the holes in the walls of the sleeve assembly into the plenum. Flow into the plenum is adjustable to obtain the desired main stream flow velocity and the optimum cancellation of shock and expansion waves produced when the gas flow strikes the test model in the test section. The plenum flow is controlled by a rotatable ring at the downstream end of the test section.

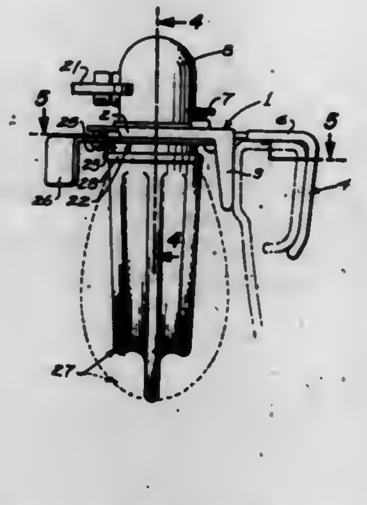
3,602,921
BIDET ATTACHMENT

Harry M. Umann, Los Angeles, and Joseph D. Robinson, Gardena, both of, Calif., assignors to World Industries, Inc., Gardena, Calif.

Filed May 6, 1970, Ser. No. 35,080
Int. Cl. A47k *3/22, 11/08*
U.S. Cl. 4—7 **6 Claims**

A bidet attachment for toilets which includes a hand-operated pump which is removably attached to the side of a toilet bowl and a bidet nozzle which is removably attached to the rear side of the toilet seat, the pump and nozzle being

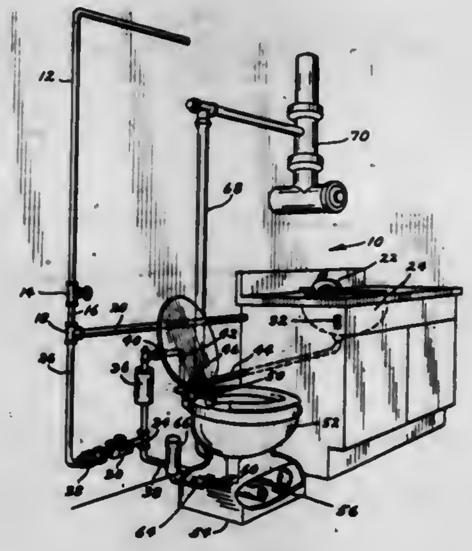
connected by a hose, and the pump being arranged to receive a removable, collapsible bag to provide a water supply. The hose is removable from the bidet nozzle for use with a douche tip.



3,602,922
AUTOMATIC LAVATORY SYSTEM FOR SEWAGE DISPOSAL PUMPING UNIT

Arthur E. Broughton, Glens Falls, N.Y., assignor to Broughton Corporation, Glens Falls, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,289
Int. Cl. E03d *13/00, 11/08*
U.S. Cl. 4—100 **4 Claims**



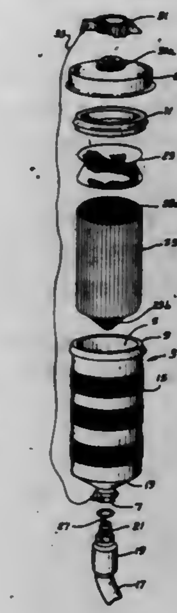
Automatically actuated system for disposing of lavatory waste into a toilet bowl located below grade and having a sewage pumping and disposal system, said automatic system including a control unit responsive for actuation to a predetermined fluid level in the toilet bowl.

3,602,923
OPEN-TYPE URINE RECEPTACLE

Anthony S. Girala, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 13, 1970, Ser. No. 63,384
Int. Cl. E03d *13/00*
U.S. Cl. 4—110 **7 Claims**

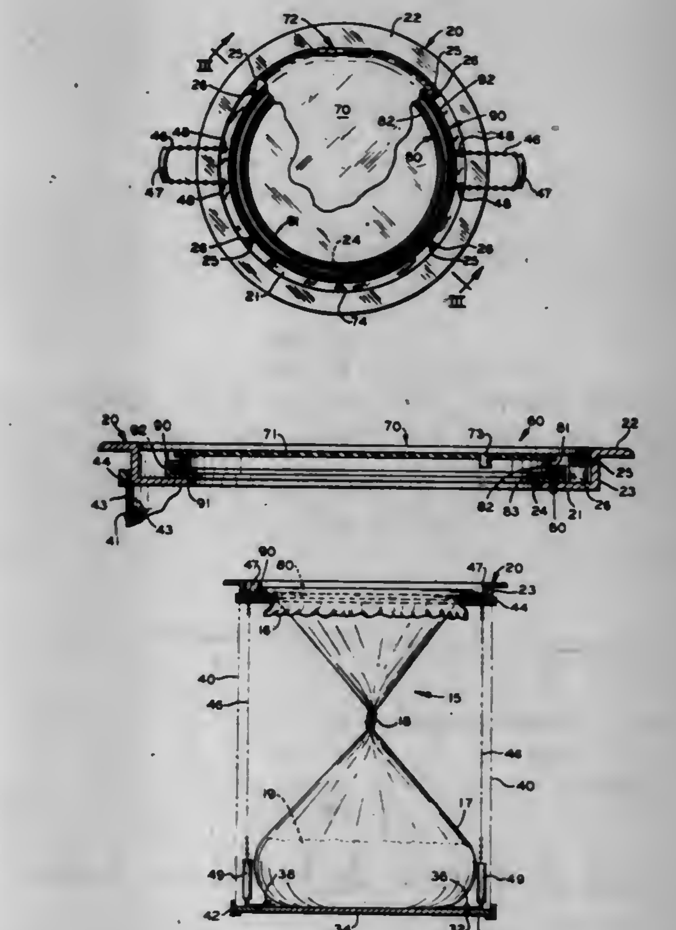
An open-type urine receptacle comprising a tubular housing having an inlet end and an outlet end. Disposed within the housing is a honeycomb insert for polarizing the urine stream in order to eliminate splashback. Supported on the honeycomb insert and at one end thereof is a fine mesh screen insert adapted to serve as a wicking means upon completion of micturition. A receptacle cover is also provided for covering the open end of the housing and a vacuum removal tube is connected to the other end and in fluid communication with the interior thereof.



3,602,924
COMMODE, STORAGE APPARATUS OR THE LIKE

Robert R. Kneisley, 2924 Cheltenham Road, Toledo, Ohio

Filed May 1, 1970, Ser. No. 33,839
Int. Cl. A47k *11/00, 13/24*
U.S. Cl. 4—142 **26 Claims**

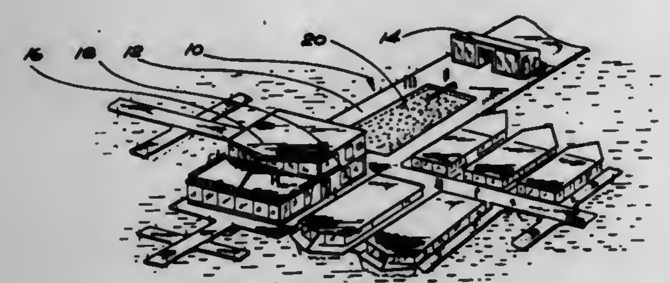


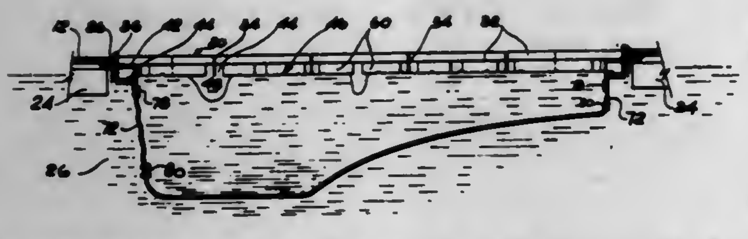
Apparatus suitable for use as a storage unit, commode, or the like which includes a support means having an inwardly extending flange defining an opening through the support, a retainer component having an opening formed therethrough and a width sufficient to permit the retainer component to rest on and be supported by the support flange with the respective openings thereof in registration, and a sacklike container disposed through the flange and retainer openings.

A top portion of the flexible container extends overly, outwardly, downwardly and under said retainer component between the retainer component and the flange thus removably securing the container to the support means. The weight of material in the container causes the container to pull down on the top of the retainer component thereby placing a greater securing force on the top portion of the container that is between the retainer component and the flange.

3,602,925
FLOATING SWIMMING POOL

Kenneth L. Thompson, Huntington Beach, Calif., assignor to Ye Dock Master, Inc.
Filed Aug. 25, 1969, Ser. No. 852,586
Int. Cl. A47k *3/00;* **E04h** *3/16, 3/18*
U.S. Cl. 4—171 **11 Claims**

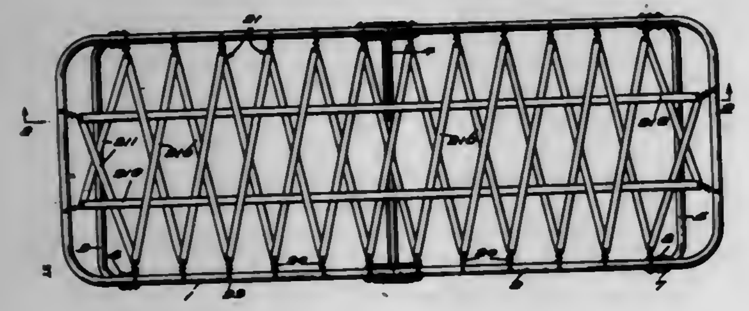




A floating swimming pool for use in a wharf structure. An expanse of decking is supported over a body of water and defines an enclosed opening through which the swimming pool depends into the body of water. The swimming pool includes a basin having a rigid bottom portion and a flexible wall portion between the bottom portion and the decking. A water channel extends along the perimeter of the swimming pool and opens into the pool to define the waterline thereof.

3,602,926
FOLDING BED OR COT

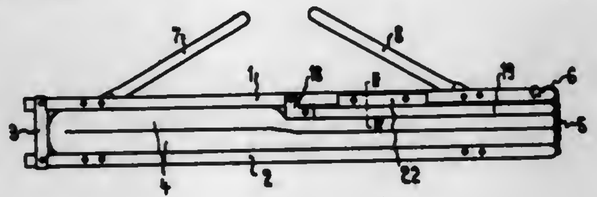
Thomas O. Marini, 1500 Prospect Blvd., Haddon Heights, N.J., and Louis G. Marini, 316 Springhouse Lane, Moorestown, N.J.
Filed Oct. 30, 1968, Ser. No. 771,890
Int. Cl. A47c *19/16*
U.S. Cl. 5—111 **4 Claims**



A foldable bed including at least two frame parts hingedly interconnected for folding movement toward and away from another between an extended in-use position and an upright storage position, there being a series of coil springs each connected at one end at similar intervals along the inner sides of the frame parts so as to be arranged in opposed pairs, a plurality of transverse resilient metal bands interwoven transversely of the major axis of the bed in extended position, at least two longitudinal resilient metal bands extending uninterruptedly from end to end of said frame parts, each band being connected to two coil springs and the longitudinal bands being interwoven with the transverse bands except those adjacent said hinge means so that when the frame parts are folded toward one another the longitudinal bands fold about such a radius of curvature as to prevent undue stressing or kinking.

3,602,927
FOLDABLE BED

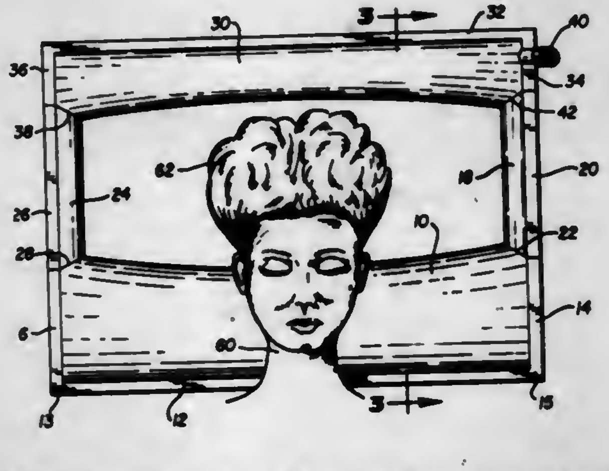
Andre Wyss, Gorgier, Switzerland, assignor to La Beroche SA, Neuchatel, Switzerland
Filed Nov. 18, 1968, Ser. No. 776,385
Claims priority, application Switzerland, Nov. 24, 1967, 16 577/67
Int. Cl. A61g *9/00;* **A47k** *11/02*
U.S. Cl. 5—112 **6 Claims**



A foldable bed, particularly camping bed, having a mattress attached to two foldable frame portions connected to each other by a link member having a length substantially equal to double the thickness of the mattress such that the folded mattress is supported and protected between the spaced frame portions in the folded state of the bed.

3,602,928
PILLOW CONSTRUCTION

Florence V. Helzer, Rt. 3, Box 142A, Eaton, Colo.
Filed Mar. 10, 1969, Ser. No. 805,551
Int. Cl. A47g *9/00*
U.S. Cl. 5—338 **1 Claim**



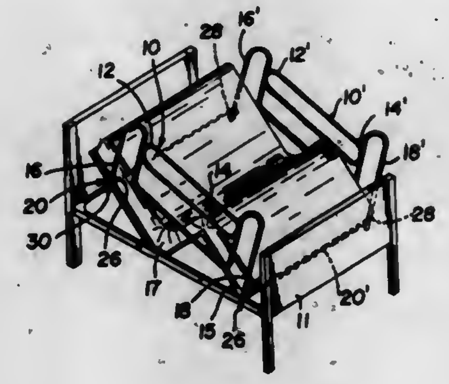
An inflatable pillow having a central aperture is arranged for positioning under the neck and lower head of the user, maintaining the hair of the user in an elevated position to prevent crushing of the hairdo, and a surge chamber extending beyond the head of the user permits a flow of air into and out of a main portion of the pillow.

3,602,929
ADJUSTABLE BED RAIL UNIT

Charles E. Murcott, Huntington, and Arthur Salerno, Bay Shore, both of, N.Y., assignors to Lumex, Inc., Bay Shore, N.Y.
Continuation-in-part of application Ser. No. 820,441, Apr. 4, 1969, now abandoned. This application Mar. 2, 1970, Ser. No. 15,586
Int. Cl. A47c *21/08*
U.S. Cl. 5—331 **10 Claims**

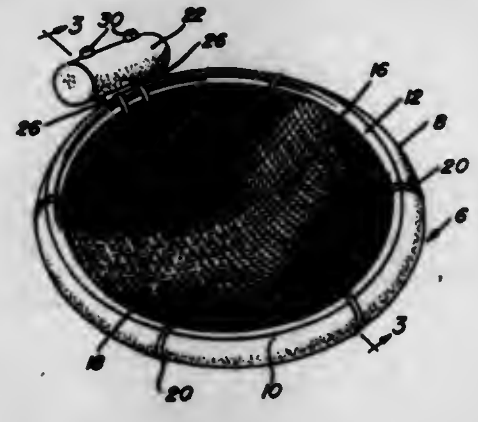
A guardrail unit for hospital beds or the like including an adjustable spring-loaded frame assembly for mounting on differently sized bed frames. The frame assembly includes a guide and clamping device for quick assembly and release

from the bed. The frame assembly has two telescoped axially movable tubular members arranged so that they must first be rotated angularly with respect to each other in order to slide them inwardly of each other.



3,602,930
FLOATING SAUCER CHAIR

Robert M. Channon, 524 Leeridge Terrace, Glendale, Calif.
Filed Aug. 19, 1969, Ser. No. 851,175
Int. Cl. B63c *9/30*
U.S. Cl. 9—347 **4 Claims**

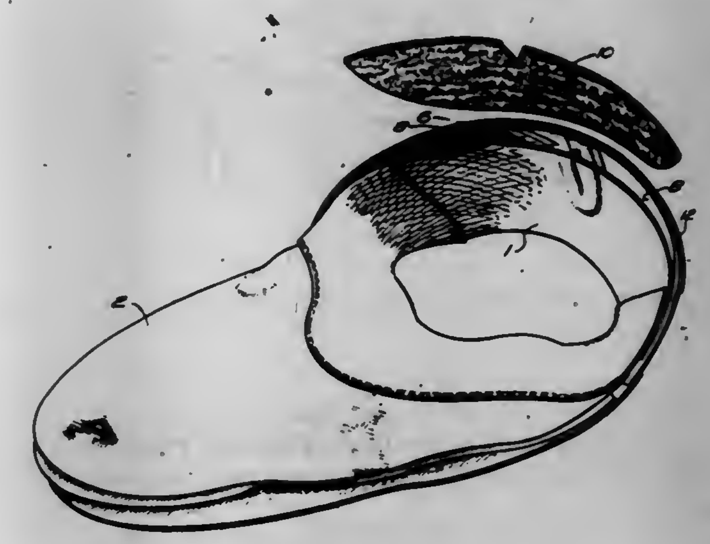


A relaxing, sunbathing and floating chair idealy suitable for use in a pool, lake or the like and characterized by a ringlike ethafoam float encompassing and supporting a polypropylene mesh basket constituting a seat. This seat permits the occupant to nestle therein and sit or lie back. It is form fitting and balanced with requisite nicety. A cushioned headrest is adjustably mounted by paired upstanding polyethylene tubes on a suitably selected segmental portion of the float.

3,602,931
FELTED, FIBROUS, THERMOPLASTIC SHEET FIBREBOARD FOR MOLDING RIGID SHOE COMPONENTS AND METHOD OF MAKING THE SAME AND MAKING SAID COMPONENTS THEREFROM

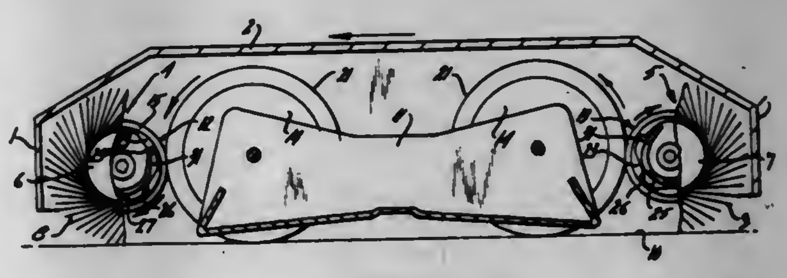
David James MacArthur, Akron, Ohio, and Lawrence S. Reed, Jr., Holliston, Mass., assignors to George O. Jenkins Company, Bridgewater, Mass.
Continuation-in-part of application Ser. No. 727,237, May 7, 1968. This application Mar. 5, 1969, Ser. No. 816,140
Int. Cl. A43d *00/00;* **A43b** *13/42*
U.S. Cl. 12—146 **37 Claims**

A new thermoplastic fiberboard for molding while hot on the last or on a metal form, rigid shoe components, such as counters, box toes and shanks, particularly counters, and consisting essentially of water-laid, felted paper fibers having dispersed therethrough fine particles of hard thermoplastic resin. The fiberboard and resin are moldable at a temperature between 130° F and 170° F but the resin is not sufficiently flowable at that temperature for the resin particles to flow together into a homogeneous mass. The maximum and minimum ratios of fiber to resin are 70/30 and 50/50, respectively, and the resin is a mixture of rosin and hard tall oil pitch resin in a ratio of between 70/30 and 40/60. The fiberboard of the invention has the favorable moldability characteristics of resin saturated fabrics now used to mold such shoe parts on the last or on a metal form, but, unlike such saturated fabrics, has the hardness, toughness, strength and resistance to crushing and breakdown characteristics of counterboard, which has been conventionally used to make such shoe parts, but the moldability characteristics of which are too poor to permit molding the shoe part on the last.



3,602,932
FLOOR SWEEPER WITH IMPROVED DRIVE COUPLING

William Morris, and Henry J. Rosendall, both of Grand Rapids, Mich., assignors to Bissel Inc., Grand Rapids, Mich.
Filed July 14, 1969, Ser. No. 841,370
Int. Cl. A47l *11/32*
U.S. Cl. 15—41 **6 Claims**

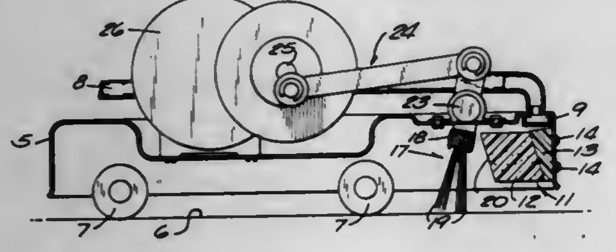


A floor sweeper having a pair of rotatable brushes, each of which is alternately driven or freely rotatable over the floor. The direction of rotation of each brush is the same at all times and is opposite to the direction of rotation of the other brush. A coupling device is connected between a sweeper wheel and the end of each brush, and includes a hollow coupling wheel having an open inner end and cam risers on its inner circumferential surface. A pawl is mounted to be engaged by the risers. Means are provided to seal the interior of the coupling from dust and debris.

3,602,933
SHAMPOOER WITH FOAM-GENERATING MEANS

Richard F. Druart, and Wallace D. Herrick, both of Grand Rapids, Mich., assignors to Bissell Inc., Grand Rapids, Mich.
Filed Aug. 8, 1969, Ser. No. 848,524
Int. Cl. A47l *11/03*
U.S. Cl. 15—50 R **9 Claims**

A shampooer for nap surfaces which supplies shampoo in liquid form to an elongated distributor. A rigid noncellular strip is mounted directly below the distributor, and a resilient sponge is secured to the strip. A brush is reciprocatingly driven into beating squeezing engagement with the sponge to turn the liquid into foam. The brush then carries the foam

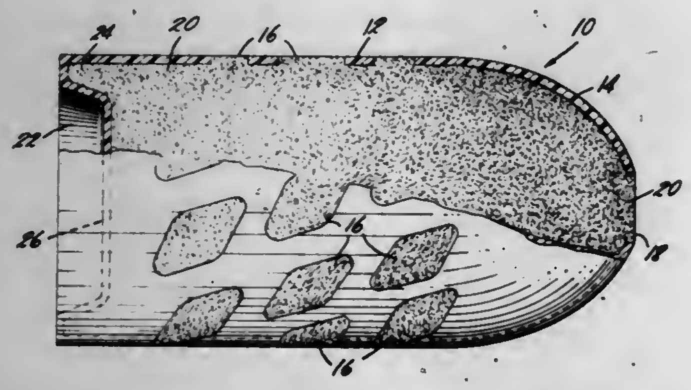


away from the sponge, deposits it on the carpet and works it in.

3,602,934
RESILIENT PLUG FOR CLEANING PIPELINES

Bryant B. Reed, Fort Worth, Tex., assignor to Acushnet Company

Filed July 31, 1969, Ser. No. 889,020
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 R **9 Claims**

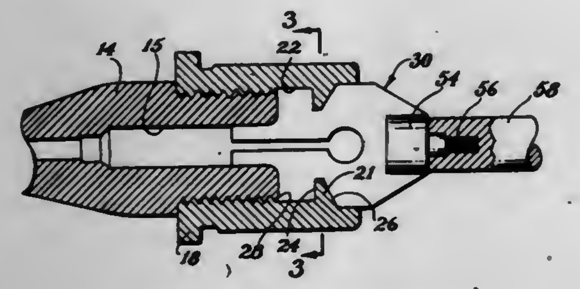


An improved pipe-cleaning resilient plug is provided which comprises an elastomeric shell with at least one opening therein and an elastomeric foam filler positioned within the shell.

3,602,935
FIREARMS-CLEANING TOOL

Arthur G. McDonnell, 157 Brook St., Garden City, N.Y., and Roger L. Munz, P.O. Box 229A, Jamesport, N.Y.

Filed Apr. 25, 1969, Ser. No. 819,212
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.09 **9 Claims**



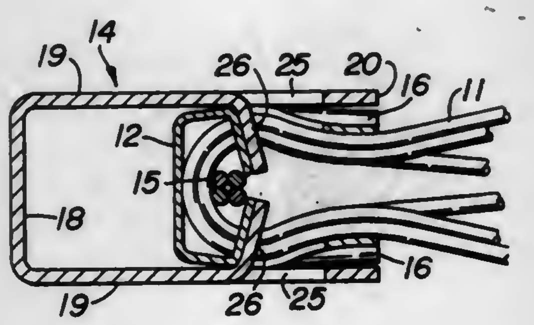
A rotatable scraping tool having a plurality of edge portions is provided for removing built-up carbon deposits from the interior of a firearm.

3,602,936
ROTARY BRUSH SECTION

Arthur E. Drumm, Rte. 1, Marysville, Ohio

Filed Sept. 30, 1969, Ser. No. 862,256
Int. Cl. A46b *13/02*
U.S. Cl. 15—181 **5 Claims**

A rotary brush section of the type mounted in suitable numbers on a central core to be driven thereby for heavy duty sweeping, such as street or industrial sweeping purposes. It comprises a split ring which receives and retains heavy radially extending bristles, and a connection for the split ring

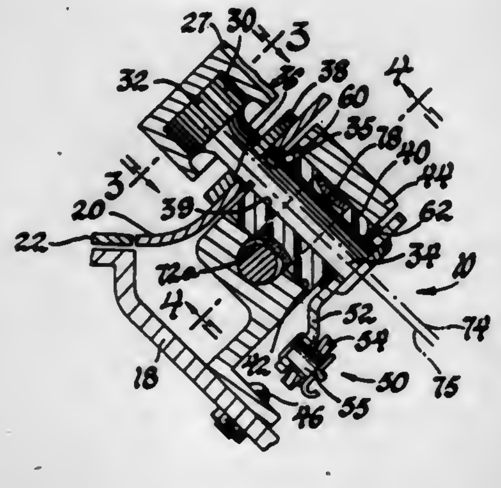


which not only serves as a connection but as a driving lug to be engaged by the core.

3,602,937
ADJUSTABLE DRIVE PIVOT MOUNTING FOR WINDSHIELD WIPER

Oliver K. Kelley, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1970, Ser. No. 27,596
Int. Cl. B60s *1/34;* **F16d** *1/06*
U.S. Cl. 15—250.13 **5 Claims**



In a preferred form, this disclosure relates to a windshield wiper mechanism for oscillating a windshield wiper across the outer surface of a windshield of a vehicle. The windshield wiper mechanism includes a support means which is adapted to be mounted on the vehicle, a bushing rotatably supported by the support means and having an axially extending eccentric opening therethrough, and a pivot shaft rotatably journaled in the eccentric opening and having one end connected to the wiper and its other end connected to a linkage for oscillating the pivot shaft. The windshield wiper mechanism further includes a means connected with the bushing for rotating the bushing relative to the support means to adjust the position of the pivot shaft relative to position of the operating linkage for the windshield wiper and thereby adjust the end position of the wiper relative to the side edge of the windshield pillar so that optimum visibility adjacent the windshield pillar can be provided.

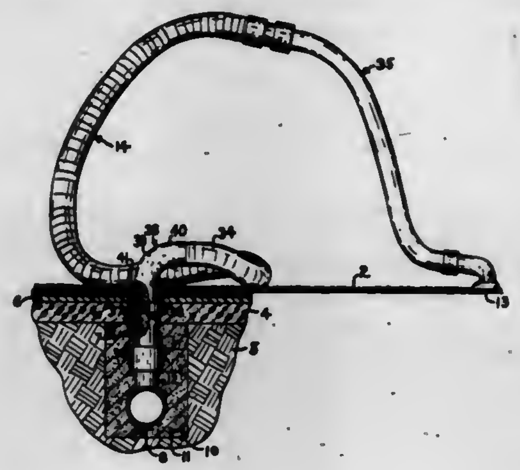
3,602,938
VACUUM SYSTEM FOR REMOVING WATER FROM SYNTHETIC TURF

Edward W. Lindsay, Ponca City, Okla., assignor to Vacu-Maid, Inc., Ponca City, Okla.

Filed Oct. 29, 1969, Ser. No. 870,578
Int. Cl. A47l *5/38*
U.S. Cl. 15—314 **11 Claims**

A vacuum system for removing water from large areas such as outdoor athletic fields, such as for football, baseball, soccer and the like having a covering of synthetic turf or the like. The system has a plurality of inlets arranged in spaced apart relation over the areas and below the level of the synthetic turf and supporting pad and connected to vacuum lines below the turf, pad and base for same for receiving

water through the inlets and conveying the water to a holding tank. Each inlet has a closure valve selectively opened for drawing water thereinto. Suction apparatus is connected to a tank for creating a vacuum in hose means connected to the

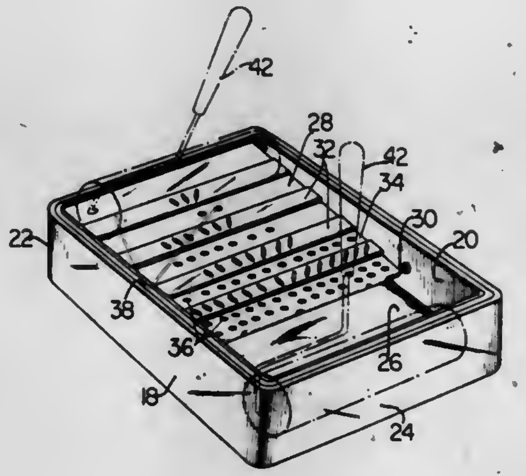


inlets for collecting water and moving same to the tank. A collection unit is positioned between the tank and the suction apparatus for receiving and holding material not deposited within the tank.

3,602,939
NOVEL PAINT CONTAINER

Daniel Schoenholz, Far Rockaway, N.Y., assignor to Foster D. Snell, Inc., Florham Park, N.J.

Filed Aug. 29, 1969, Ser. No. 854,131
Int. Cl. B44d *3/12*
U.S. Cl. 15—257.06 **5 Claims**



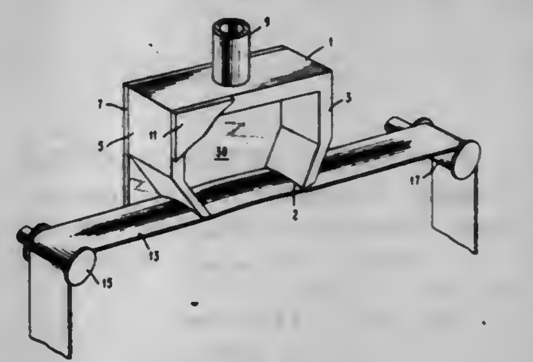
A paint container which not only acts as a storage means but can also be used to apply the paint therein to the desired surface with a roller or pad applicator without the inconvenience of the separate paint tray heretofore used with rollers while avoiding the transfer of small quantities of paint from the storage container to the paint tray.

3,602,940
MAGNETIC RECORDING TAPE CLEANER

Raymond A. Barbeau, and Edward J. Wroblewski, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1968, Ser. No. 783,926
Int. Cl. A47l *5/00;* **G11b** *3/58*
U.S. Cl. 15—308 **3 Claims**

A magnetic recording tape cleaner comprises an element with a tape wiping surface. Tapes are cleaned by passing them over the surface which scrapes unwanted recording material particles from the tape surface. As these particles accumulate primarily at the edges of the tape, the wiping sur-

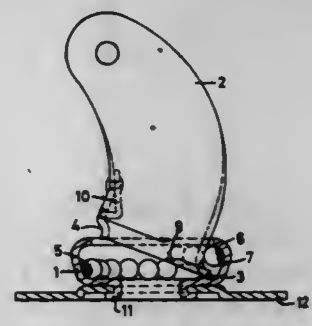


face is curved to apply more wiping pressure to the edges of the tape than the center thereof.

3,602,941
CASTER WHEEL ARRANGEMENT

Gunnar Erik Werner Lewin, Stockholm, Sweden

Filed Mar. 9, 1970, Ser. No. 17,716
Claims priority, application Sweden, Mar. 11, 1969, Dec. 31, 1969, 3315;18,158
Int. Cl. B60b *33/00*
U.S. Cl. 16—21 **10 Claims**

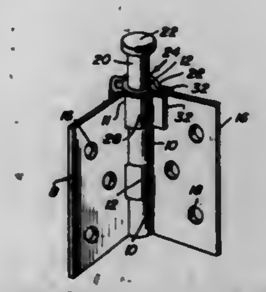


A caster wheel arrangement in which the caster wheel is rotatably supported by ball bearings mounted in a ball bearing race, at least one portion of which is located at a horizontal level vertically displaced from the horizontal level of the remaining portion or portions of the ball bearing race, all portions of the race being interconnected to form one continuous race.

3,602,942
DOOR HINGE STOP

Edsel B. Neff, Sr., 29 Del Norte, and Linton L. Miller, 505 Fulkerson Drive, both of Roswell, N. Mex.

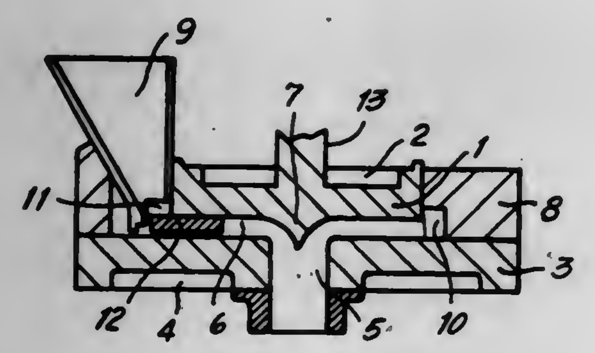
Filed Sept. 26, 1969, Ser. No. 861,439
Int. Cl. E05d *11/06*
U.S. Cl. 16—191 **5 Claims**



A readily applicable and removable self-contained butt hinge attachment which serves as a limit stop, that is, functions to check the angular spreading movement of the knuckle-equipped leaves. It comprises a C-shaped resilient clip conformingly slipped into place over either one (top or bottom) of the pintle-accommodating knuckles. The bight portion of the clip is formed with a projecting riblike stop shoulder. The spaced edges diametrically opposite the stop shoulder have flat liplike outstanding flanges which straddle and yieldingly contact the leaf which is sandwiched therebetween. An optional split spring-biased ring encircles the pintle and has stabilizing fingers embracing the respective flanges.

3,602,943
PLASTIC EXTRUSION MACHINE

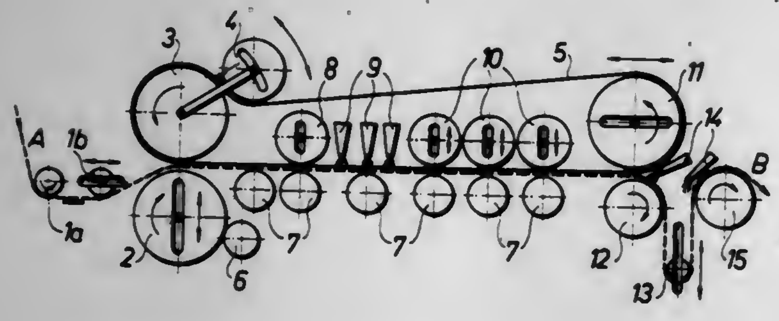
Bernard Neuville, Versailles; Claude Ledoux, Massy, and Raoul Hess, Chatillon-Sous-Bagneux, all of, France, assignors to Produits Chimiques Pechiney-Saint-Gobian, Neuilly-sur-Seine, France
Filed June 27, 1969, Ser. No. 837,117
Int. Cl. B29f *3/00*
U.S. Cl. 18—12 C **12 Claims**



Apparatus for extruding plastic materials which includes a housing having a stator, a rotor in the form of a plate arranged in face-to-face relation with the stator to define a gap between the rotor and the stator, an extrusion opening axially through the rotor, means to rotate the rotor relative to the stator, an annular channel defined by the housing and means to sweep the volume of the annular channel whereby plastic is displaced toward the extrusion opening.

3,602,944
APPARATUS FOR THE MANUFACTURE OF SYNTHETIC LEATHER

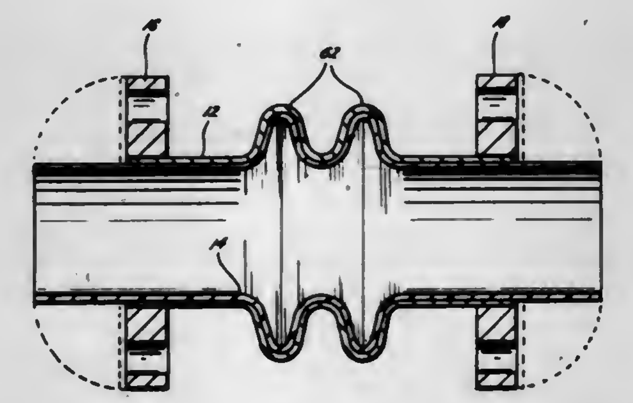
Gyorgy Szabo, and Sandor Toth, both of Gyor, Hungary, assignors to Licencia Talalmanyokat Ertekesito VAllalat, Budapest, Hungary
Filed Jan. 28, 1970, Ser. No. 6,422
Claims priority, application Hungary, Jan. 30, 1969, SA-1928
Int. Cl. B29c *15/00;* **B29d** *7/14;* **B29c** *17/00*
U.S. Cl. 18—13 R **1 Claim**



An apparatus for the manufacture of synthetic leather by forming a superficial film layer from the surface of a fiber layer comprising thermoplastic fibers or from a thermoplastic powder or granulate applied onto a carrier or fiber layer. The apparatus comprises a feed and tensioning unit, a support roller, a heating roller, an endless metal strip guided between the support roller and heating roller, a guiding roller for guiding and tensioning the metal strip, means for cooling the melt, means for cooling the metal strip and the product, and a discharge roller for removing the product.

3,602,945
APPARATUS FOR MAKING A PLASTIC EXPANSION JOINT

Gerald R. Pope; Frank G. Weeden; Willard L. Petrosky, and William H. Wehner, all of Houston, Tex., assignors to John L. Dore Co., Houston, Tex.
Filed July 16, 1969, Ser. No. 842,185
Int. Cl. B29c *17/04*
U.S. Cl. 18—19 TM **3 Claims**

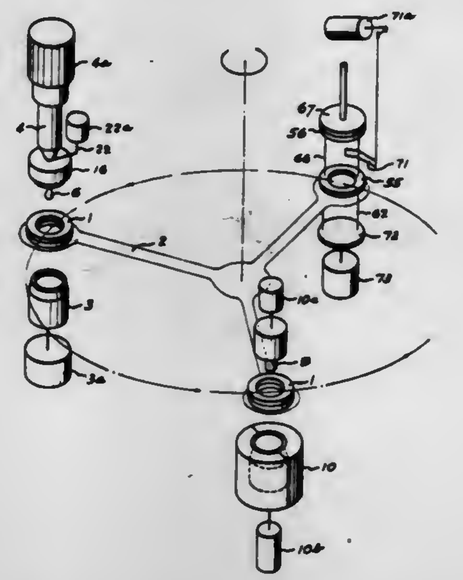


Making a plastic expansion joint having not more than two convolutions with a uniform wall thickness by inserting a hollow plastic liner into a molding member and applying heat sufficiently to cause the liner to become pliable and applying fluid pressure to the inside of the heated liner whereby the liner will assume the shape of the internal configuration of the member and simultaneously applying an axial force against both ends of the liner thereby pushing the liner into the member allowing the liner to maintain a uniform wall thickness as it assumes the internal shape of the molding member. An apparatus for making a plastic-lined expansion joint from a corrugated expansion joint having flanges at each end and a heated hollow plastic liner positioned therein with the liner ends extending out of the joint and including support means fixedly holding the ends of the expansion joint relative to each other with first and second end plugs engaging opposite ends of the plastic liner. One of the plugs including an air passageway for applying forming pressure inside of the liner. A flare sleeve encircling each end of the liner for supporting the liner with the sleeve being of a length to provide a length of tubing at each end for forming a liner-sealing flange, and a sealing clamp clamping the ends of the liner to the end plugs preventing loss of fluid pressure from the liner interior.

3,602,946
APPARATUS FOR HEAT-SHAPING THIN-WALLED CONTAINERS OF PLASTICS MATERIAL

Glauco E. Curetti, Zurich, and Ernest A. Ackermann, Chene-Bourg-Geneva, both of, Switzerland, assignors to Hoffco S.A., Geneva, Switzerland
Filed Mar. 3, 1969, Ser. No. 803,743
Claims priority, application Switzerland, Mar. 7, 1968, Dec. 20, 1968, Jan. 24, 1969, 3,527/68;19,069/68;1,067/69
Int. Cl. B29c *3/02*
U.S. Cl. 18—20 B **14 Claims**

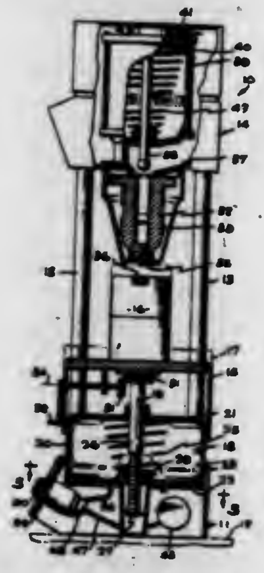
This invention relates to an apparatus for heat-shaping thin-walled containers of plastics material, which performs the injection of a plastics material volume in a preform having a greater capacity than this volume, the compression of said volume of plastics material to form a membrane fastened on a transfer ring through its periphery, the transfer of said ring provided with the membrane to a heat-forming station when the container is formed out of said membrane and



finally the transfer of the ring with the plastics material scrap to a scrap-removing station.

3,602,947
AUTOMATIC CONTROL SYSTEM

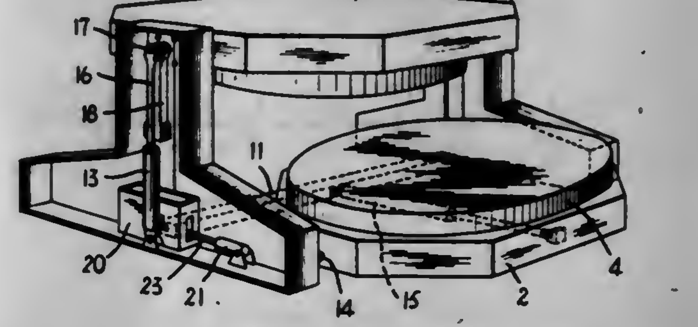
Philip R. Morgan, Monrovia, Calif., assignor to Morgan Industries, Inc., Los Angeles, Calif.
Filed Feb. 5, 1969, Ser. No. 796,834
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 CK **6 Claims**



An automatic control system for an injection-molding machine or the like, including a first control valve for admitting actuating fluid to a clamping mechanism, to cause the latter to grip and hold a die or other work unit, and a second valve which is automatically actuable by pressure fluid from the clamping mechanism, when that mechanism reaches its clamping condition, to actuate an injection ram to inject a molding substance into the die. A time-delay unit accumulates pressure fluid within a timing chamber during the injecting portion of the cycle, and automatically returns the first-mentioned valve to closed or off position after a predetermined delay interval sufficient to complete the injection operation.

3,602,948
VULCANIZATION PRESS

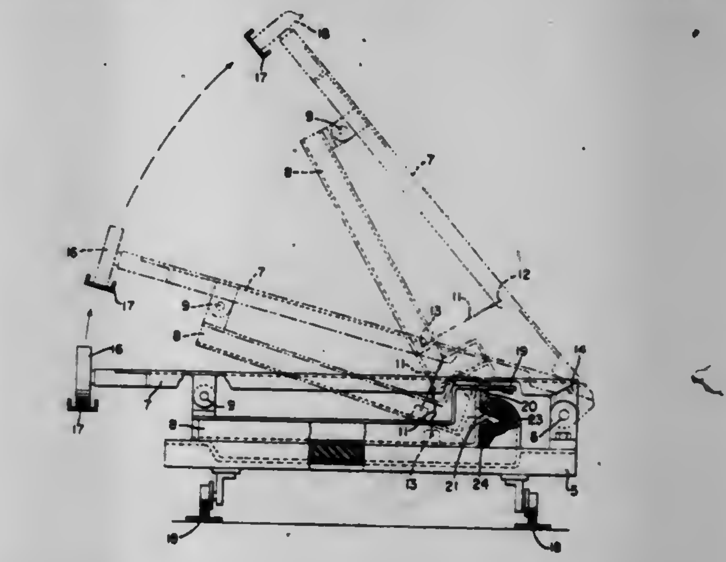
Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France
Filed Mar. 13, 1969, Ser. No. 807,033
Claims priority, application France, Mar. 18, 1968, 144,296
Int. Cl. B30b *1/34;* **B29b** *5/02*
U.S. Cl. 18—17 K **3 Claims**



A vulcanization press has a fixed frame, a lower, horizontally movable mold plate secured to the frame, and an upper, vertically movable mold plate that can be closed with respect to the lower mold plate. The plates are clamped together in the closed position by a wedge cooperating with inclined thrust blocks, at least one thrust block being connected to each plate.

3,602,949
MOLDING APPARATUS AND PROCESS

George A. Kaut, Arkon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 2, 1967, Ser. No. 672,206
Int. Cl. B29c *5/00*
U.S. Cl. 18—39 **3 Claims**

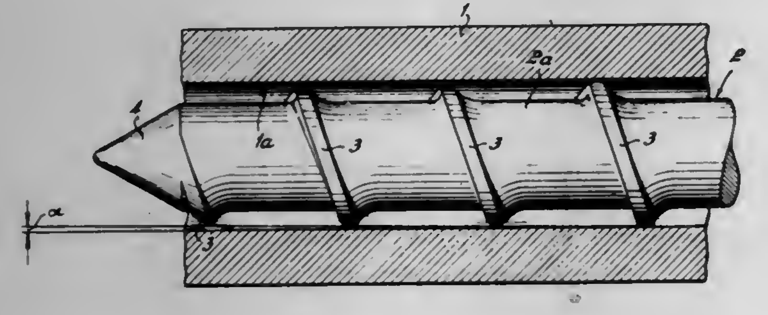


This invention relates to an apparatus for molding articles which tend to become die locked comprising a support for the mold and a lid support means which is pivotally mounted relative to said mold and support, said lid being pivotally mounted to the support to permit the lid to swing about an axis different from the pivot support whereby the lid may be mounted into closed and open positions relative to the mold.

3,602,950
INJECTION MOLDING MACHINE

Friedrich Bernd Bielfeldt, Pappenheim, Germany, assignor to Eckert & Ziegler GmbH, Weissenburg, Bayern, Germany
Filed Jan. 15, 1969, Ser. No. 791,331
Claims priority, application Germany, Jan. 19, 1968, P 17 29 152.0
Int. Cl. B29f *3/06, 3/08*
U.S. Cl. 18—12 SA **12 Claims**

An injection molding machine for thermosetting plastic material which comprises a heatable cylinder having a constant internal diameter, and a rotary and axially movable screw which transports plastic material toward the outlet of the cylinder. The diameter of the screw thread decreases gradually toward the tip of the screw along an intermediate portion whose axial length is between one and eight times the maximum diameter of the screw. The diameter of the core in the intermediate portion of the screw also decreases gradually but the pitch of threads on such intermediate portion increases toward the tip. This reduces wear on the internal surface of the cylinder and on the external surface of the screw.



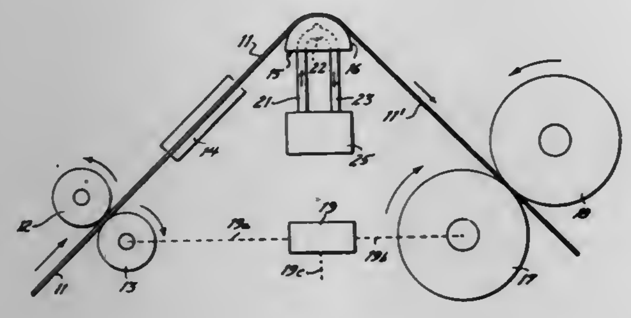
3,602,951
APPARATUS FOR DRAW-CRIMPING TEXTILE STRANDS

Robert K. Stanley, Media, Pa., assignor to Techniservice Corporation, Kennett Square, Pa.

Continuation-in-part of application Ser. No. 476,933, Aug. 3, 1965, now Patent No. 3,505,444. This application Nov. 14, 1969, Ser. No. 876,661

Int. Cl. D02q *1/00*

U.S. Cl. 28—1.2 **16 Claims**



Draw-crimping apparatus is provided for drawing textile strands to increased length and simultaneously imparting thereto a generally helical crimp or bulky configuration when under relatively low tension. Also so provided is apparatus for uniform heating pretreatment or aftertreatment or both.

3,602,952
INSTRUMENT FOR MEASURING THRESHOLD VOLTAGE OF A SEMICONDUCTOR EXPLOSIVE INITIATOR

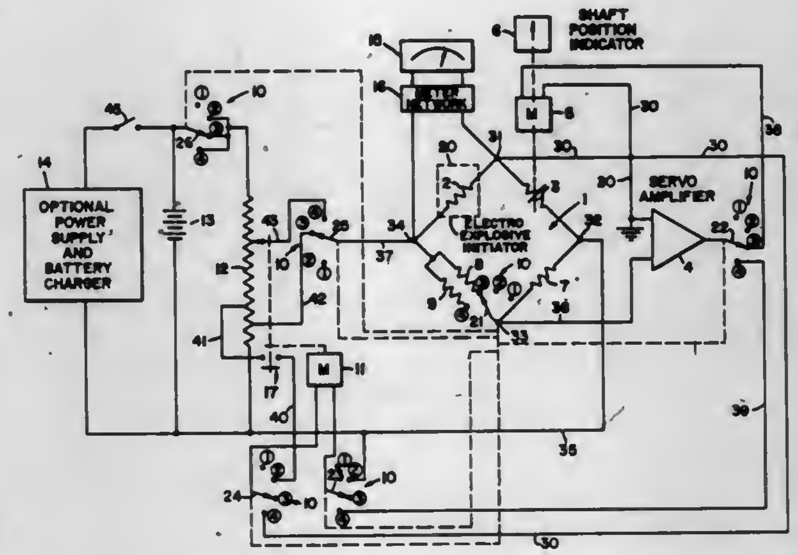
Stuart W. Grinnell, Menlo Park, and Robert F. Flagg, Castro Valley, both of, Calif., assignors to Kdi Halex Incorporated, Cincinnati, Ohio

Filed Aug. 18, 1969, Ser. No. 850,766

Int. Cl. G01r *27/02, 31/22*

U.S. Cl. 324—62 **3 Claims**

Nondestructively determining the turnover voltage of a semiconductor electroexplosive initiator. The initiator is inserted into a Wheatstone bridge as one arm thereof, and the bridge is balanced to the resistance of the initiator at room temperature. Then the bridge is unbalanced by multiplying the resistance of another bridge arm by a predetermined factor, and rebalanced by applying to the initiator an increasing voltage, held well below the threshold voltage, thereby heating the initiator to increase its resistance by the same predetermined factor. Then the value of the applied voltage is read and converted to the value of the threshold voltage inherent in that semiconductor.



3,602,953
WIRE HOSE CLIP

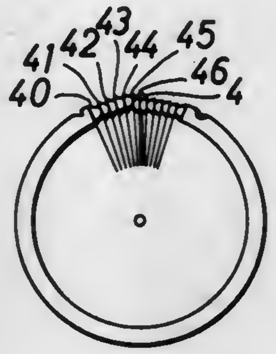
Carl Thomas, Hamburg, Germany, assignor to Jurid Werke GmbH, Glinde near Hamburg, Germany

Filed May 26, 1969, Ser. No. 827,722

Claims priority, application Germany, May 29, 1968, P 17 50 722.1

Int. Cl. B65d *63/10*

U.S. Cl. 24—20 TT **8 Claims**



A wire hose clip comprising an open-ended ring of wire the ends of the wire overlapping and being provided with mutually engageable teeth which are formed on facing planar surfaces which lie normal to the plane of the ring, or which are provided on the total surface of each end of the wire. A safety sleeve may be provided for resiliently gripping round the interengaged ends of the wire and points of engagement for a tool for tightening the clip are provided adjacent the teeth. The clip may comprise two parts hinged together at a point in the ring opposite the teeth or a single part with a loop formed in the wire at a point in the ring opposite the teeth.

3,602,954
ANNULAR HOSE CLIP

Heinz Gerlach, 12 Billeweg, 2057 Wentorf, Germany

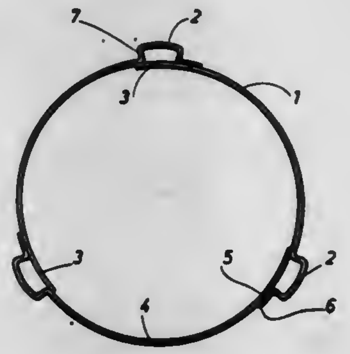
Filed Sept. 26, 1969, Ser. No. 861,324

Claims priority, application Germany, Oct. 31, 1968, P 18 06 247.0

Int. Cl. B65d *63/02*

U.S. Cl. 24—20 CW **1 Claim**

A simplified annular hose clip is constructed by two or more tab-shaped lug portions comprising separate, identical component parts, and one end of each of said component parts is formed as a lug portion while the other end of said component parts which serves as a clamping means is without any special design but has substantially the form of the main portion of said component parts. The component parts are connectable to one another to form the hose clip in which each of the ends, which serve as the clamping means, lies under the lug portion of the adjacent component part. Assembly of at least two of the component parts into the desired hose clip can be very easily achieved in such a way that the ends of the lug portion of any component part which overlie the other ends of the respective adjacent component parts, are securely fixed, e.g. by welding or otherwise connecting them to one another.



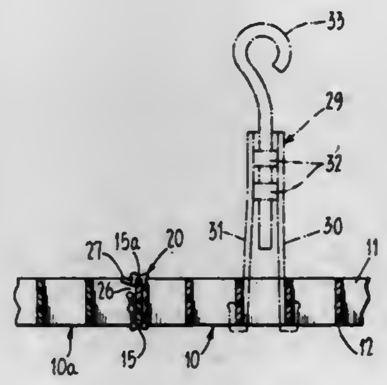
3,602,955
LIGHT LOUVER AND FASTENER THEREFOR

Robert A. D. Schwartz, 513 Independent Road, Oakland, Calif.

Division of Ser. No. 776,125, Nov. 15, 1968 Pat. No. 3,546,844. Filed Mar. 20, 1970, Ser. No. 24,962

Int. Cl. A44b *21/00;* **E04c** *1/30*

U.S. Cl. 24—81 B **5 Claims**



A louver structure comprised of a plurality of interconnected louver modules and providing an appearance of uninterrupted continuity throughout the entire extent thereof. Each louver module is rectangular and comprises a reticulated network of spaced transversely extending and longitudinally extending slats intersecting each other and defining spaces therebetween. The modules are identical and have perimetric edges adapted to overlie one another when a pair of modules are inverted relative to each other and are brought into contiguous juxtaposition along such edges. The corner portions of the modules are relieved to enable the various slats in any assembled plurality of modules to align with each other and thereby provide such appearance of uninterrupted continuity. Any pair of adjacent modules are interconnected along the contiguous overlying perimetric edges thereof by an integrally formed flexible fastener having an opening dimensioned to snugly receive such perimetric edges therein, and being provided with a discontinuity along one side enabling such perimetric edges to be inserted into the opening whereupon the fastener can be flexed to snap the same over such module edges to clamp the same together.

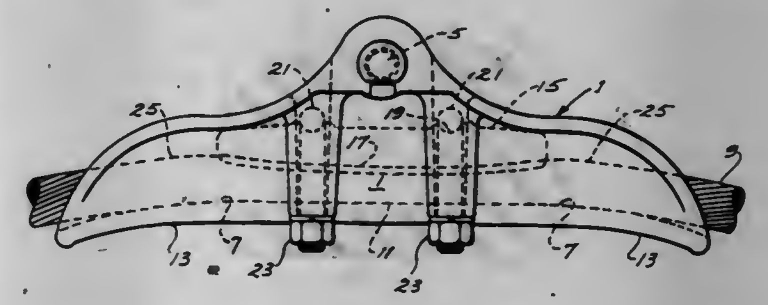
3,602,956
CABLE CLAMP

Fletcher C. Eddens, Mountainbrook, and Karl F. Reed, II, Homewood, both of, Ala., assignors to Anderson Electric Corporation, Leeds, Ala.

Filed Mar. 11, 1969, Ser. No. 806,216

Int. Cl. F16g *11/04, 11/06*

U.S. Cl. 24—125 M **8 Claims**



A cable clamp having an elongate body with a lengthwise groove for receiving the lower side of a cable tensioned under a force F_2, and an elongate keeper with an opposed lengthwise groove for application to the upper side of the cable. The lengthwise profile of at least one of these grooves is at least in part convex toward the other groove and when a cable is clamped between the body and the keeper the clamped portion of the cable is compressed and deformed with a total clamping force F_1. The curvature of the profile is such that under the forces F_1 and F_2 there are produced along the clamped length of the cable compressive and tensile stresses S_1 and S_2 which when combined according to the formula $(S_1+S_2\ /2)$ will produce throughout the clamped length of the cable a substantially constant value of shear stress S_3 which does not substantially exceed one-half the tensile stress in the cable outside the clamped length. A method for forming such a clamp is also described.

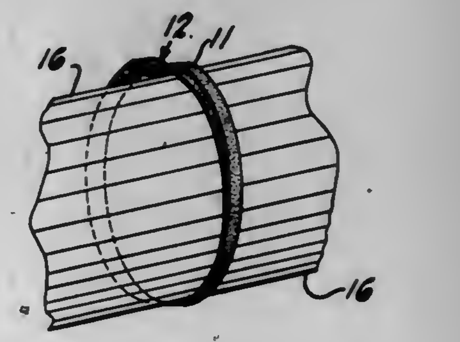
3,602,957
ELASTIC HOOK BAND

Robert S. Chang, 6600 Monte Verde Road, El Sobrante, Calif.

Filed Oct. 10, 1969, Ser. No. 865,409

Int. Cl. B65d *63/00*

U.S. Cl. 24—16 PB **5 Claims**



An elastic loop or band having a metal or plastic element in the form of or formable into a hook extending from an outer surface thereof whereby the loop is extensible about one or more members to be held together and is attachable to itself without requiring extension over the ends of such members.

3,602,958
LOCK SLIDER

Friedrich Glindmeyer, Stolberg/Rheinland, Germany, assignor to William Prym-Werke KG., Rheinland, Germany

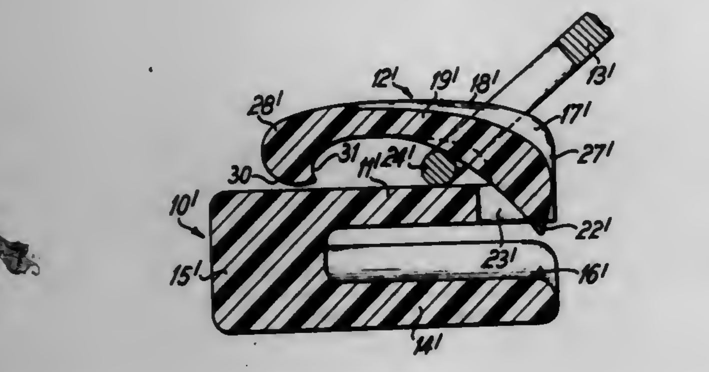
Filed Dec. 1, 1969, Ser. No. 881,060

Claims priority, application Germany, Nov. 29, 1968, P 18 11 663.7

Int. Cl. A44b *19/30*

U.S. Cl. 24—205.14 **7 Claims**

An automatic lock slider of plastic material provided with a bow-shaped combined holding and locking means compris-



ing an elongated lug integrally connected at least at one end thereof to the upper plate of the slider body for holding a pull tab, and resiliently bendable elongated detent means integrally connected at one thereof to the lug in the region of the other end of the latter and carrying on it its free end a locking tooth for locking engagement with the interlocking elements of a slide fastener.

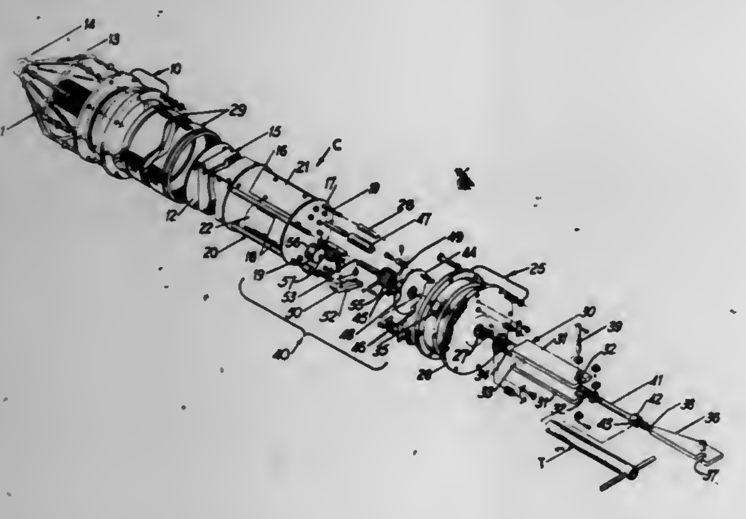
3,602,959
AUTOMATICALLY RELEASABLE CONNECTORS

George R. Perez, Alexandria, Va., assignor to AMF Incorporated

Filed Mar. 26, 1970, Ser. No. 22,759

Int. Cl. A44b *21/00*

U.S. Cl. 24—230 **8 Claims**



A connector device having a sealed pressure housing, a clevis and hook-type releasable coupling connected to one end of the housing, spring-biased rotatable control means in the housing and extending outwardly thereof to lock the hook against uncoupling when the control means is armed, electromagnetic locking means which when energized releases the control means for rotation by its bias to effect decoupling.

3,602,960
CLAMP FOR MOUNTING ELLIPTICAL WAVEGUIDES

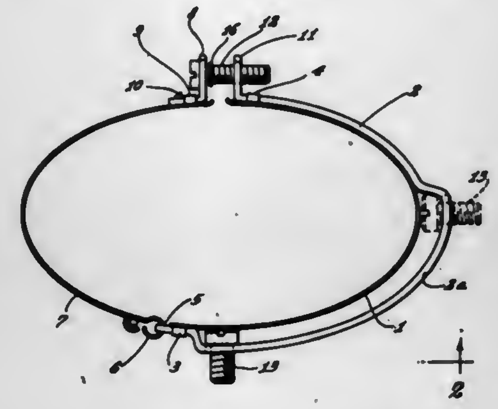
Walter Urbigkeit, Berlin; Karl P. G. Baumann, Resse, and Guenter Ahrens, Langenhogen, all of, Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed June 8, 1970, Ser. No. 44,163

Int. Cl. A44b *21/00;* **H01p** *1/04*

U.S. Cl. 24—249 LS **9 Claims**

A clamp for mounting elliptical waveguides and having two complementary parts defining a cylinder with elliptical cross section. Fastening means on the clamp have contour in accordance with a larger ellipse and an oblong slot for a bolt which may be aligned with the short axis as well as with the long axis of the ellipse of an inserted waveguide.



3,602,961
DEVICE FOR CLAMPING A BUNDLE OF PAPER

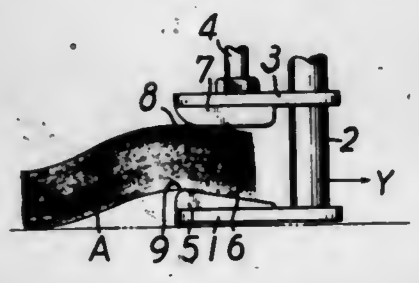
Seiya Shibata, Kitakawachi; Akitoshi Yamasaki, Toyonaka, and Isokazu Shimono, Osaka, all of, Japan, assignors to Tsubakimoto Chain Manufacturing Company, Limited, Osaka, Japan

Filed Dec. 11, 1969, Ser. No. 884,133

Claims priority, application Japan, Dec. 13, 1968, 43-109454

Int. Cl. A44b *21/00*

U.S. Cl. 24—262 R **1 Claim**



For the transfer of a bundle of paper, the end of the paper bundle is grasped and drawn by a clamp device. By utilizing the flexibility of the paper bundle, clamping pressure required is made as low as possible so as to protect the end portion of the bundle. A lower clamp seat for contact with the lowermost surface of the paper bundle is inclined downward toward the end of the paper bundle, while a pressing portion of an upper clamp seat for pressing the upper surface of the bundle is positioned closer to the end of the bundle than the highest portion of the lower clamp seat.

3,602,962
MACHINES FOR SIMULTANEOUS MOLDING OF A NUMBER OF CONCRETE PIPES

Magne Odegaard, and Sverre Narmo, both of Lena, Norway, assignors to Ringsted Jernstoberi & Maskinfabrik A/S, Ringsted, Denmark

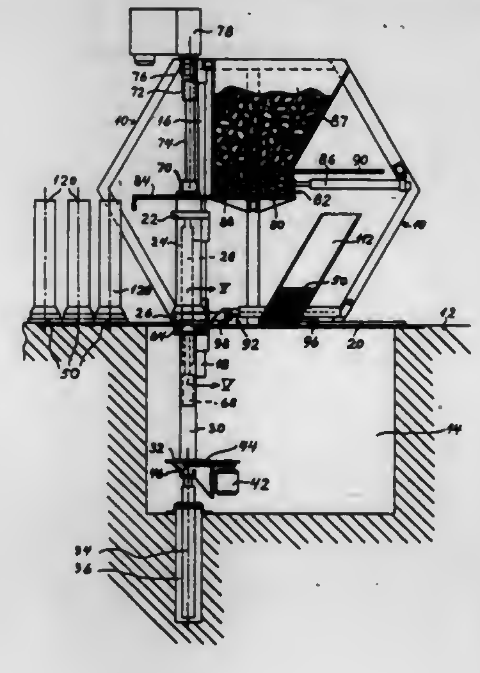
Filed Feb. 3, 1969, Ser. No. 795,942

Claims priority, application Norway, Feb. 3, 1968, 431/68

Int. Cl. B28b *21/16*

U.S. Cl. 25—30 R **8 Claims**

A machine for the simultaneous molding of a number of concrete pipes, comprising a stationarily arranged table, a number of outer molds arranged in a row above said table each axially displaceable between a lower molding position and an upper idle position, in which the latter it is positioned at a distance above the table greater than the length of the pipes to be molded, for each outer mold a core having inner vibrating means and being displacable from a lower position, in which its uppermost end is positioned below the upper surface of the table, upwards through an opening in the table into the outer mold, when the latter is in its lower molding position, during which movement of the cores concrete is filled into the outer molds to fill up the mold spaces between the same and the core. During the molding the lower end of each outer mold is closed by means of a supporting ring having a major outer diameter greater than the major diameter of the pipe to be molded and being arranged on the table prior to the downward displacement of the outer mold, so that, after the molding operation has been finished, and the outer molds have been displaced upwards again to their idle positions and the cores have been retracted downward from the molded pipe into their lower positions, each just molded pipe is supported only by the supporting ring. The machine is further provided with a slide reciprocably arranged on the table and displaceable transverse to the direction of the row of molds between a first position, in which its slide edge is positioned in front of the supporting rings, and a rear position at the other side of the row, so that during said displacement the slide engages the supporting rings and thereby slide the same and, consequently, the pipes supported by the rings, along the table rearwards in the machine, whereby the rings engage corresponding rings supporting previously molded pipes and are displacing these further supporting rings with the pipes supported thereby further ahead, whereby all previously molded pipes still positioned on the table or behind the same are brought to be collected in a close assembly, in which the supporting rings owing to their diameter being greater than the major diameters of the pipes, and in spite of engaging each other ensure sufficient space between the pipes to prevent the same in engaging each other and thereby being disturbed. Therefore pipes have to be removed from the machine only at great intervals in spite of a high capacity of the machine.



3,602,963
APPARATUS FOR PRODUCING BRICKS

Johann Lingl, Finninger Strasse 70, Neu-Ulm, Danube, Germany

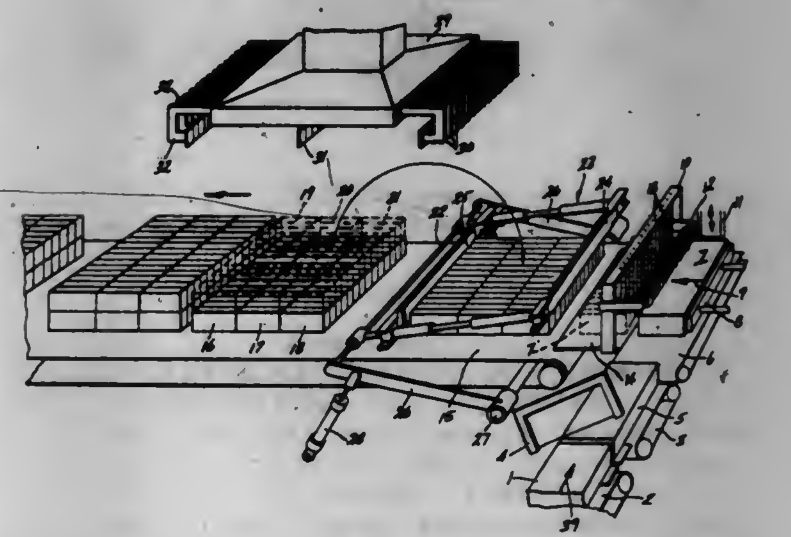
Division of Ser. No. 583,829, Oct. 3, 1966, Pat. No. 3,468,998.

Filed July 28, 1969, Ser. No. 870,901

Int. Cl. B28b *13/04*

U.S. Cl. 25—105 **7 Claims**

Apparatus for cutting a continuous length or strand of compressed raw material as it comes from an extrusion press and then stacking the blocks or bricks thus cut so that the facing sides of the individual bricks lie in full engagement with each other for protection from discoloration when they are fired. The apparatus includes a pair of belt conveyors disposed in tandem for carrying the strand of material as it comes from the extruder and a cutter intermediate these first two conveyors for cutting the strand into sections. A third conveyor, which moves in the same direction as the first two, carries each section against a stop from which it is pushed laterally through a cutter frame that divides it into the desired number of bricks to form a row of such bricks. A fourth conveyor that operates intermittently is disposed at right angles to the others downstream of the cutter frame to receive the rows of bricks as successive sections are pushed through the cutter frame one after another, so that the rows of bricks coming from the cutter are pushed transversely onto the fourth conveyor. Two groups of rows are formed on this last conveyor and are spaced from each other so that the second one to be formed can be inverted onto the other by a turnover device such that the faces of the bricks in one group are accurately aligned in registry with those of the other group. A gripper assembly then picks up the double-layer flat of bricks thus formed and places it on a kiln car. As successive double-layer flats are formed they are stacked one on top of the other until a stack of the desired height is built on the kiln car.



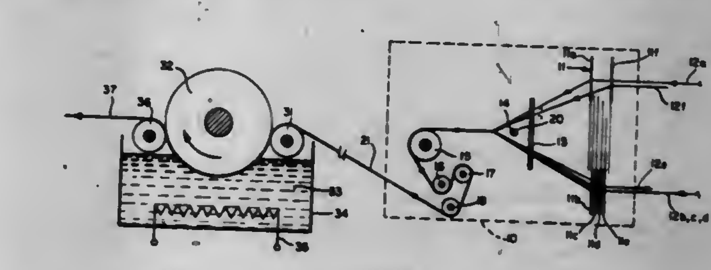
3,602,964
DUAL WALL FABRIC WITH EXPANDABLE HEIGHT BETWEEN LAYERS

Robert G. Currier, Roxboro; Carl R. Fonda, Durham, and John T. Hayes, Durham, all of, N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,076

Int. Cl. D02c *27/00;* **D06c** *1/00;* **D03d** *11/00*

U.S. Cl. 28—76 T **12 Claims**



A fabric is provided in the form of two simultaneously woven opposed fabric layers disposed in closely spaced relation with integrally woven connecting strands, with the fabric being adapted for expansion of the height between layers subsequent to the weaving operation.

3,602,965
APPARATUS FOR FORMING A NONWOVEN WEB OF CRISS-CROSS THREADS

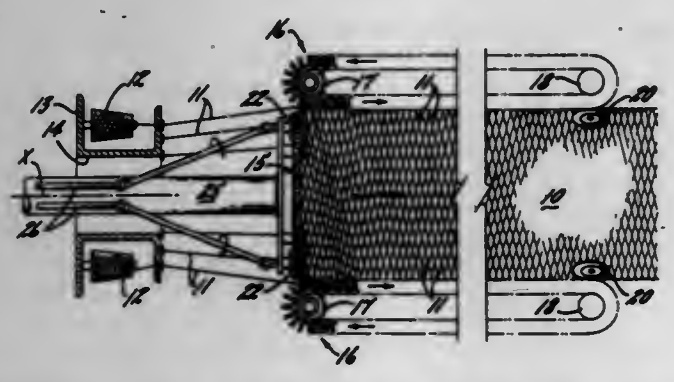
William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 17, 1969, Ser. No. 834,072

Int. Cl. D04h *3/05*

U.S. Cl. 28—1 **5 Claims**

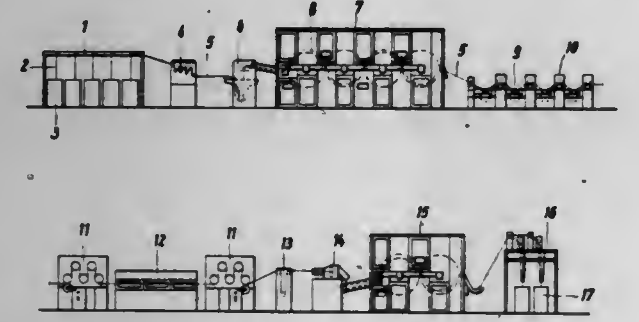
An apparatus for forming a nonwoven web is disclosed in which a web carrier is formed by a pair of endless chains in which each link carries a thread-engaging hook. Individual threads fed from respective supply cones on a rotating serving ring are guided and engaged with the carrier hooks by means of an endless guide chain disposed on sprockets spaced on opposite sides of the web to be formed, and having eyes through which the threads pass. The guide chain is supported and driven in unison with the serving ring by elements extending through an opening in the center of the rotating serving ring.



3,602,966

PROCESS AND APPARATUS FOR TREATING SYNTHETIC FILAMENT GROUPS

Heinz Fleissner, Egelsbach near Frankfurt, Germany, assignor to Fleissner GmbH, Germany
Filed May 14, 1969, Ser. No. 824,457
Claims priority, application Germany, May 18, 1968, P 17 60 452.3
Int. Cl. D02j *1/22;* **D06p** *3/00;* **D02q** *1/00*
U.S. Cl. 28—1.2 **23 Claims**

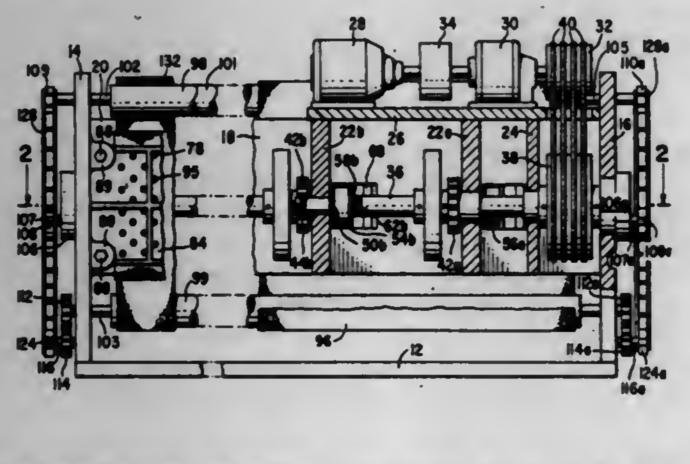


The present disclosure is directed to a process and apparatus for the continuous pad-dyeing or crimping of endless synthetic filament groups wherein the pad-dyeing process can be combined with fiber production and the drawing of the fiber filaments is effected after the application of the dyestuff to the synthetic filament groups.

3,602,967

TWIN-ACTION FELTING MACHINE

Josef Zocher, Haaren/Aachen, and Heinrich Zimmerman, Eilendorf, both of, Germany, assignors to The Singer Company, New York, N.Y.
Filed June 1, 1970, Ser. No. 42,103
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 R **7 Claims**

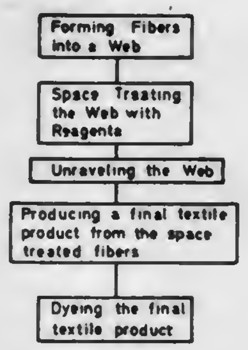


A needle-felting machine comprising two needle boards each having a multiplicity of barbed needles projecting from a surface thereof and disposed so that the needles in each board face away from the other board. The boards are arranged in linear opposition to each other and are reciprocably driven from a common drive shaft and gearing disposed intermediate the boards. A web of loosely matted fibers is fed past the needle surface of each board by a plurality of feed rolls driven from the common drive shaft and is simultaneously penetrated by the needles of both boards so as to obtain a balanced force system.

3,602,968

METHOD OF SPACE-TREATING FIBERS WITH REAGENTS TO CHANGE THE DYE AFFINITY OF THE FIBERS

Jurgen Martin Adolff, Backnang; Egbert Heintschel-Heinegg, Berlin, and Winfried Loskant, Backnang, all of, Germany, assignors to J. F. Adolff Aktiengesellschaft, Backnang, Wurttenberg, Germany
Filed Jan. 16, 1969, Ser. No. 791,609
Int. Cl. D04b *19/00;* **D06q** *1/02*
U.S. Cl. 28—74 R **10 Claims**

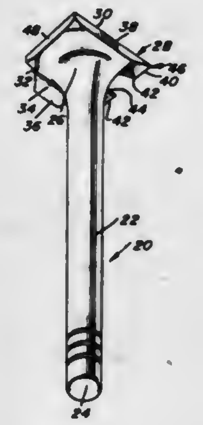

Forming Fibers into a Web
Space Treating the Web with Reagents
Unraveling the Web
Producing a final textile product from the space treated fibers
Dyeing the final textile product

A method of space-treating fibers with reagents to change the dye affinity of the fibers including forming the fibers in a flat web or webs, treating the web or webs with the reagents and unraveling the flat web or webs to separate the treated fibers such that the treated fibers may be formed into web goods and dyed to have various colors and patterns.

3,602,969

HINGE PINTLE REMOVING TOOL

Norwood E. Provost, 5710 Karen Drive, West Palm Beach, Fla.
Filed Sept. 29, 1969, Ser. No. 861,616
Int. Cl. B25b *27/14*
U.S. Cl. 29—275 **2 Claims**

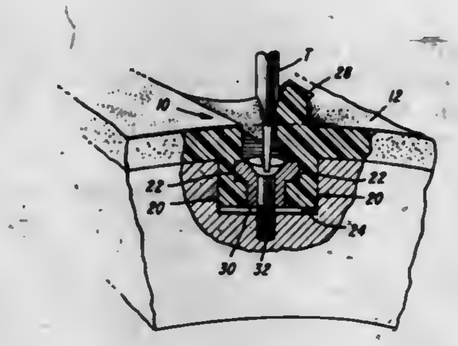


A handtool adapted to loosen and remove a headed pintle from a door hinge and primarily designed for carpenters. It comprises a one-piece tool embodying a shank having one end to receive intermittent blows from a hammer. The other end has a multipurpose head which embodies first usable means for prying and loosening the headed end of the pintle and second usable end thrust means releasably cooperable with the pintle in a manner to enable the user to drive and completely remove the pintle.

3,602,970

LATCH BAR ASSEMBLY FOR REPLACEABLE COVER

Charles E. Smith, Lutherville, Md., assignor to The Ward-Turner Machinery Company, Baltimore, Md.
Filed Apr. 14, 1969, Ser. No. 815,639
Int. Cl. B60b *7/00*
U.S. Cl. 29—118 **8 Claims**

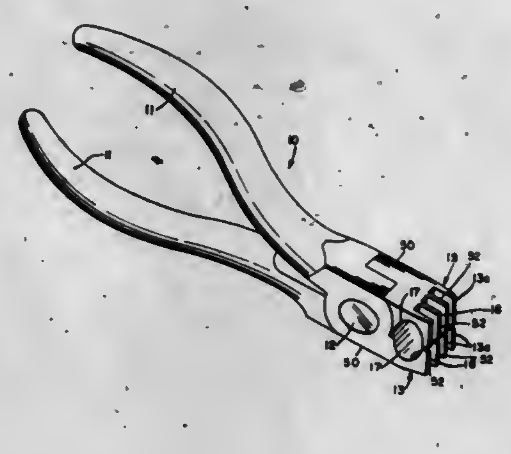


The proximate ends of a plastic roll sheathing are formed with offset shouldered flanges in opposition. These flanges extend into a rectangular groove in the surface of the roll body and together provide a mortise cavity into which a T-shaped tenon is fitted and secured to the body with fasteners. At least one of the ends of the sheathing is further extended so as to overlay the clamp joint so formed and abut the other end.

3,602,971

TOOL FOR REMOVING AND REPLACING INTEGRATED CIRCUIT FLAT PACK MODULES

William M. Halstead, P.O. Box 195, Linthicum Heights, Md.
Filed Nov. 25, 1968, Ser. No. 778,440
Int. Cl. H01r *43/00;* **B25b** *7/00, 7/02*
U.S. Cl. 29—203 H **3 Claims**



A plierlike device having opposing jaws formed with complemental recesses to receive and clampingly hold the body of a module. The jaws are also formed with aligned slots which separate them into aligned jaw members, the jaw members being spaced so as to fit in spaces between connector prongs of the module body while the prongs project outwardly from the jaws through the slots,

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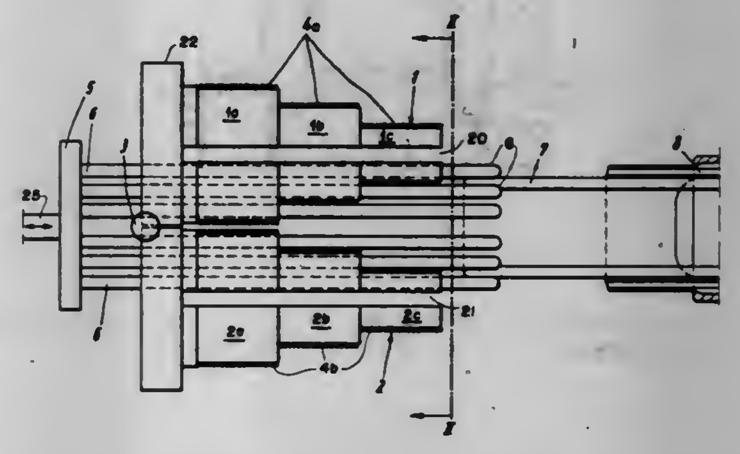
3,602,972

APPARATUS FOR FORMING AND TRANSFERRING COILS FOR STATORS

Hans Droll, Nording 75, Bergen-Enkheim, Germany
Filed Oct. 22, 1969, Ser. No. 868,371
Claims priority, application Germany, Apr. 17, 1969, P 19 19 433.3
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 R **11 Claims**

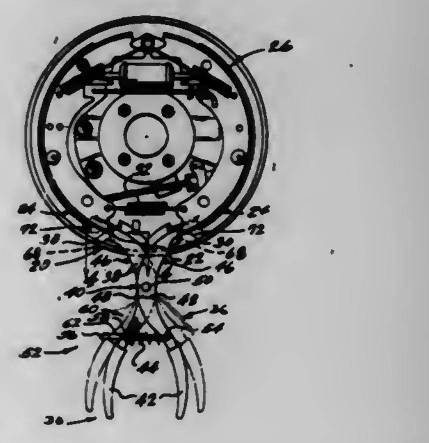
Apparatus including circularly arranged transfer bars movable to protrude axially from the front end of a former to automatically transfer wound coils from the former to mounting fingers of a device which inserts the wound coils in the stator grooves. A control device regulates feeding of wire to the former to form the coils in a manner which facilitates subsequent transfer of the coils from the former.



3,602,973

BRAKE SHOE SPREADING HAND TOOL

Samuel G. Mata, 519 Neptune, #2, Wilmington, Calif.
Filed Apr. 10, 1968, Ser. No. 720,185
Int. Cl. B23p *19/04*
U.S. Cl. 29—227 **4 Claims**



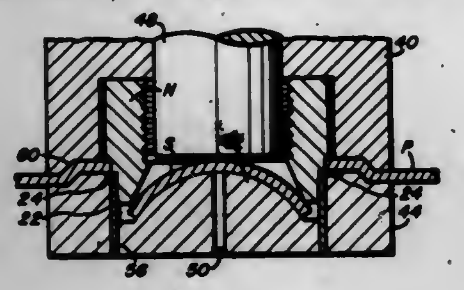
The specification discloses a novel hand tool which can be grasped and caused to engage the movable ends of a pair of brakeshoe portions of a motor vehicle brake assembly (usually when already removed therefrom, although not necessarily so limited) and can then be operated so as to spread apart said brakeshoe end portions for the purpose of facilitating the assembly and remounting thereof with respect to a motor vehicle brake assembly and the assembling and remounting with respect thereto of a conventional brakeshoe adjusting assembly (or for use in facilitating the reverse operation, although such is not the primary purpose of the tool). The tool, in one preferred form, is also provided with locking means for holding it in operated form with the brakeshoe portions held in spread-apart relationship for as long as is needed to facilitate the assembly and remounting operation (or disassembling and removing operation) referred to above.

3,602,974

PIERCE NUT FASTENING MEANS AND METHOD

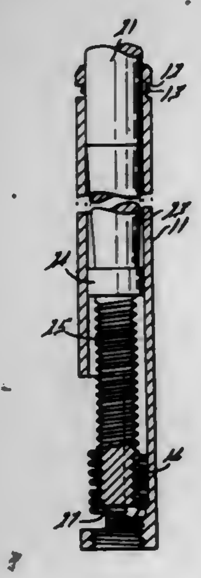
Albert C. Koett, 2112 Glenside Ave., Cincinnati, Ohio
Filed Nov. 5, 1968, Ser. No. 773,577
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.5 **19 Claims**

A pierce nut having a noncylindrical shank is driven through a sheet metal mounting plate into a die so as to excise a slug; further advancement of the nut into the die forces the shank of the nut through a sleeve of the die, to displace metal from the corners of the nut and compact the displaced metal against the mounting plate for securing the nut thereon. Removal of the slug is facilitated by reducing its breadth dimensions within the die cavity, and expelling it with compressed air or by other suitable means.



3,602,975
HELICAL COIL INSERT TOOL

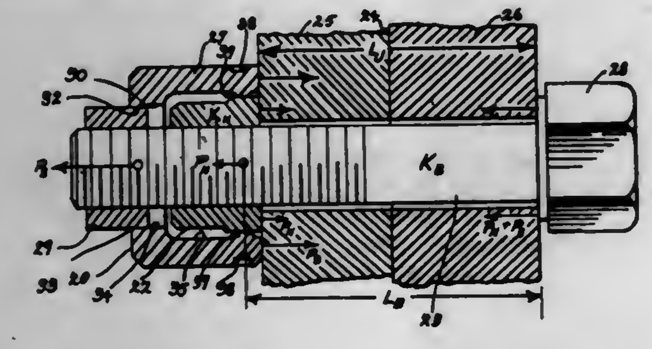
Raymond L. Thurston, 1649 Tina Lane, Flossmoor, Ill., and Ronald E. Lang, 5472 Holly Road, Holly, Mich.
Continuation of application Ser. No. 370,935, Aug. 8, 1966, now abandoned. This application Nov. 14, 1968, Ser. No. 778,000
Int. Cl. B23p *19/04*
U.S. Cl. 29—240.5 **2 Claims**



The installation tool applies a helical coiled wire insert in the threaded aperture of an element by first applying it to a section of a thread in a sleeve to reduce its diameter before screwing it into the full thread of the sleeve and element.

3,602,976
METHOD FOR CONTROLLING CLAMPING LOAD OF A THREADED FASTENER

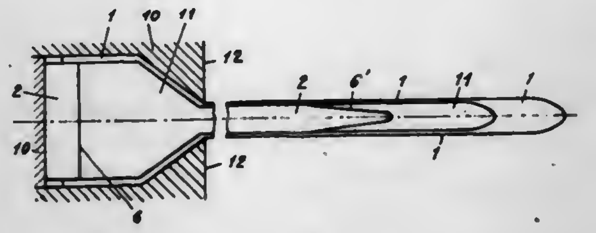
William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.
Filed Sept. 15, 1969, Ser. No. 857,787
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 **13 Claims**



A method of controlling or establishing, within close limits, the clamping load exerted on a workpiece or the bolt tension developed in a threaded fastener utilized for the securement of the workpiece, and wherein the construction and arrangement of the fastener parts sense variable fastener and workpiece characteristics in a manner such that compensation for such variable elastic characteristics can be made within close and consistent limits by a relatively fixed and readily repeatable final movement of one of the holding parts of the fastener.

3,602,977
METHOD OF PRODUCTION OF AN ALLOY

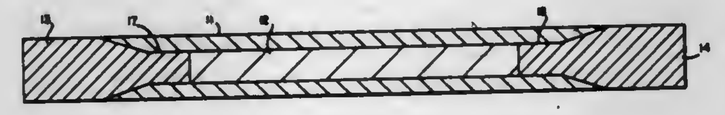
Jean-Jacques Henri Oscar Huet, Jamioulx, and Henry Berthe Marie Joseph Massaux, Stavelot, both of, Belgium, assignors to Centre D'Etude De L'Energie Nucleaire, C.E.N., Brussels, Belgium
Filed Dec. 12, 1968, Ser. No. 783,208
Claims priority, application Belgium, Jan. 24, 1968, 709,814
Int. Cl. B22f
U.S. Cl. 29—420 **2 Claims**



A method of production of an alloy wherein powders containing the constituents thereof are intimately mixed, the mixture thus obtained being charged inside a casing, closed with a cover recessed on the face facing the interior of the casing fitted with a bore, the assembly thus obtained being subjected to one compression operation, the bore in the cover being plugged, after which the compressed assembly is subjected to an extrusion operation, the outer layer being subsequently removed by a machining operation. The cover is produced from a metal which at extrusion temperature suffers less deformation than the mixture inside the casing.

3,602,978
METHOD OF FORMING BIMETALLIC TRANSITION JOINTS

William D. Oaks, Midland, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Apr. 14, 1969, Ser. No. 815,727
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 **7 Claims**

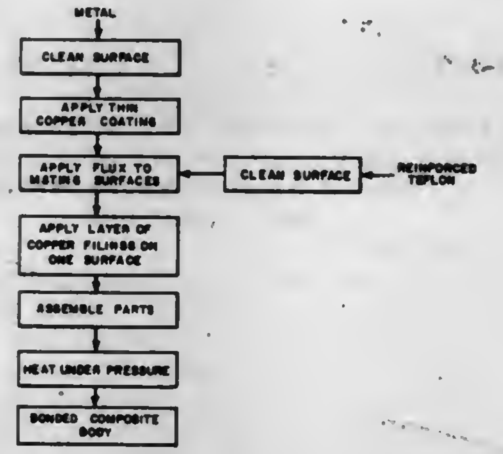


Transition joints formed of dissimilar metals, such as stainless steel and aluminum, are produced by assembling an aluminum rod and two stainless steel plugs coaxially within a stainless cylinder with the plugs positioned at each end of the rod. Both plugs are welded to the cylinder and the assembly is then heated and subjected to reduction by rotary swagging thus forming a metallurgical bond of the two metals. The assembly may be machined into tubular joints by standard techniques.

3,602,979
BONDING OF REINFORCED TEFLON TO METALS

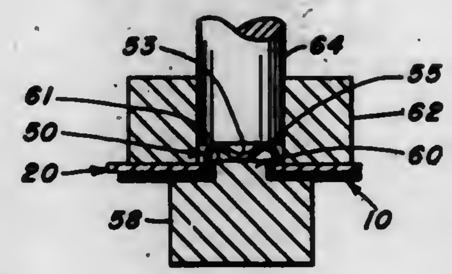
Felix P. La Iacona, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Jan. 28, 1970, Ser. No. 6,610
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **12 Claims**

Reinforced FEP Teflon composite material is bonded to a metal substrate by applying a thin layer of copper on the metal surface, disposing irregularly shaped copper particles on the coated surface, assembling the reinforced Teflon in contact with the particles and heating the assembly under pressure at an elevated temperature below the melting point of the Teflon. A diffusion bond stronger than the reinforced Teflon component is produced, thus enabling the fabrication of self-lubricating bodies having relatively high strength.



3,602,980
METHOD FOR FORMING A SHEET METAL JOINT

Robert E. Heffner, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Dec. 23, 1968, Ser. No. 786,084
Int. Cl. B21d *39/00*; **B23p** *11/00*
U.S. Cl. 29—509 **3 Claims**

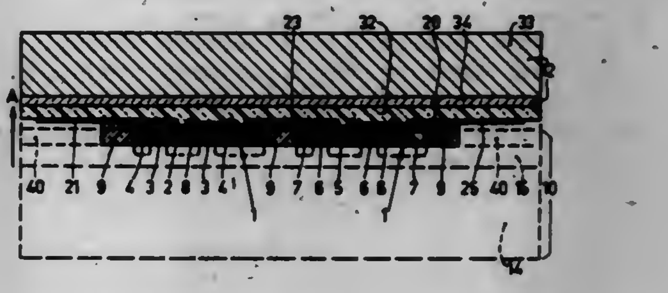


This disclosure describes a method for forming a sheet metal joint for attachment of a pull tab to a tear strip in a container end closure in which a bubble is first formed in the closure end panel, the bubble is reformed into a hollow rivet having a substantially cylindrical sidewall and an arcuate transverse end wall, and the rivet is staked or upset to compressively fold the transverse end wall thereof to form a head on the rivet which is at least as thick as the transverse end wall of the unstaked rivet.

3,602,981
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE OBTAINED BY CARRYING OUT SAID METHOD

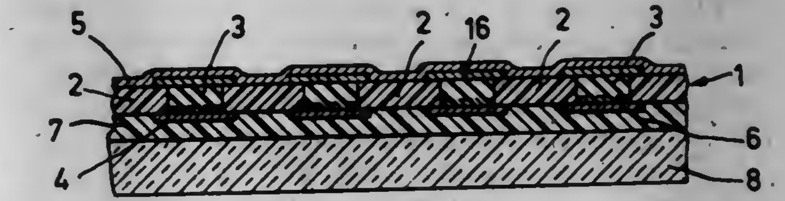
Else Kool, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 17, 1968, Ser. No. 722,071
Claims priority, application Netherlands, May 13, 1967, 6706734
Int. Cl. B01j *17/00*; **H01g** *13/00*
U.S. Cl. 29—571 **4 Claims**

A method of making a monolithic semiconductor integrated circuit is described. On a thick silicon wafer is provided an oxidation mask in a desired pattern, and then the surface is thermally oxidized to sink into the silicon surface a sunken oxide pattern. Then impurities are introduced into the silicon surface regions to form PN junctions extending transversely to the surface. Next an insulating support is mounted on the wafer surface, and the backside is lapped or etched off until the sunken oxide pattern is reached forming silicon islands containing transverse PN junctions isolated by the silicon oxide.



3,602,982
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND DEVICE MANUFACTURED BY SAID METHOD

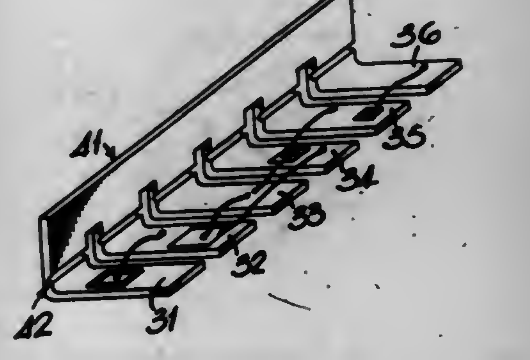
Else Kool, Emmasingel, Eindhoven, Netherlands, assignor to U.S., Philips, Corporation, New York, N.Y.
Filed Apr. 17, 1968, Ser. No. 721,953
Claims priority, application Netherlands, May 13, 1967, 6706735
Int. Cl. B01j *17/00*; **H01l** *1/16*
U.S. Cl. 29—577 **9 Claims**



A method for making an integrated circuit with circuit elements dielectrically isolated is described. The method involves growing an epitaxial layer on a substrate, masking where desired the epitaxial layer surface against oxidation, and sinking a thermal oxide into the epitaxial layer. A support is then mounted on the epitaxial layer top and the substrate removed, for example, by electrolytic etching. Circuit elements are built into the dielectrically isolated semiconductor regions. The technique allows the provision of connections on both sides of the regions containing circuit elements.

3,602,983
A METHOD OF MANUFACTURING SEMICONDUCTOR CIRCUITS

Michael Murray Bertioli, Lichfield, and David Everitt Millington, Solihull, both of, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Jan. 4, 1968, Ser. No. 695,794
Claims priority, application Great Britain, Jan. 19, 1967, 2893/67
Int. Cl. B01j *17/00*; **H01l** *1/16, 1/24, 7/68*
U.S. Cl. 29—577 **1 Claim**

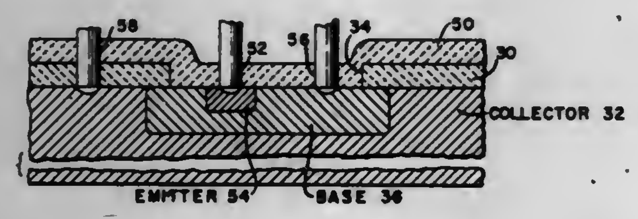


A semiconductor circuit, for example a semiconductor voltage regulator, is manufactured by mounting the active components of the circuit on separate platforms on a conductive strip. The strip is secured to a printed circuit board designed with conductive areas which receive the platforms of the strip to make electrical connections to the platforms, the board itself incorporating passive components of the circuit and the connecting leads between various components in the circuit. After the strip is placed on the board, portions of the strip between the platforms are removed so as to isolate the platforms, and then any connections remaining are made to complete the circuit.

3,602,984
METHOD OF MANUFACTURING SEMI-CONDUCTOR DEVICES USING REFRACTORY DIELECTRICS

Robert L. Trent, Marblehead, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 2, 1967, Ser. No. 672,388
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—578 **9 Claims**

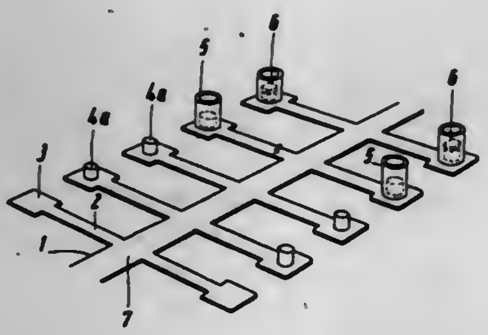


This disclosure is to a process for making semiconductor devices having refractory dielectrics as diffusant masks and interconnection insulations and the resulting structures. The refractory dielectric is deposited onto a semiconductor wafer and an aperture is created that extends through the dielectric to the wafer. An impurity is then diffused into the wafer at the aperture's location and a semiconductor junction is created. In this manner one embodiment of the disclosed structure is formed. If desired, further junctions can be created by applying a second deposition of the refractory dielectric and then performing further aperture creating and impurity diffusing operations. Alternatively, a thermally-grown dielectric can be grown in the first aperture and a second aperture can be created through the thermally-grown dielectric. A further impurity is then diffused into the wafer at the second aperture's location.

3,602,985
METHOD OF PRODUCING SEMICONDUCTOR DEVICES

Edwin Nosch, Heilbronn, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm, Danube, Germany

Filed Oct. 1, 1969, Ser. No. 862,775
Claims priority, application Germany, Oct. 1, 1968, P 18 00 192.8
Int. Cl. B01j *17/00;* **H01l** *1/10*
U.S. Cl. 29—588 **12 Claims**



A method of producing semiconductor devices comprising securing contacts onto tongues or rungs of contact-making strips, inverting housing members onto the contacts, placing a semiconductor body on each of the contacts and introducing second contacts on tongues or rungs of a contact-making strip into the housing members to connect them to the semiconductor bodies. The device is completed by heat treatment of the housing to attach it to the contacts and parting the tongues or rungs from their contact-making strip.

3,602,986
METHOD OF FABRICATING RADIALLY ORIENTED MAGNETS

Joel A. Conwicke, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

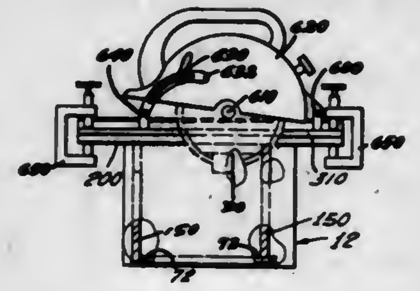
Filed Oct. 31, 1969, Ser. No. 873,062
Int. Cl. H01f *3/08*
U.S. Cl. 29—608 **8 Claims**

A method of fabricating radially oriented particle disc or arc magnets comprising forming a flexible sheet containing magnetic particles with their easy magnetic axes perpendicular to the sheet surface, winding the sheet, cutting to the desired configuration, laminating each cut portion, and sintering each laminated portion to form the finished permanent magnet. The fabricated anisotropic magnets produced by the process of this invention can be used in eddy current devices and permanent magnet DC motors.

3,602,987
SAWING JIG FOR OPENING PUBLIC TELEPHONE BOXES

Walter L. Miller, c/o Wally's Key & Lock Shop, 1814 Clark St., Manitowac, Wis.

Filed May 2, 1969, Ser. No. 821,390
Int. Cl. B26b *25/00;* **B27b** *5/02*
U.S. Cl. 30—273 **4 Claims**

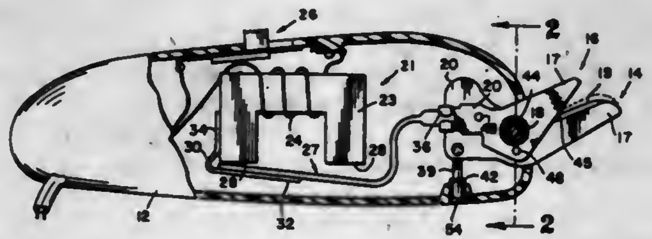


A saw-supporting jig for supporting a circular power saw in a position for cutting through the latch of the door of the coin compartment of a telephone box comprising means for connecting the jig by bolts extended into the bolt holes of the bolts that hold the upper part of the telephone box in place, the jig having a platform thereon for supporting the saw.

3,602,988
ELECTRIC SCISSORS BLADES

Robert E. Little, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Nov. 19, 1969, Ser. No. 878,099
Int. Cl. B26b *15/00*
U.S. Cl. 30—228 **6 Claims**

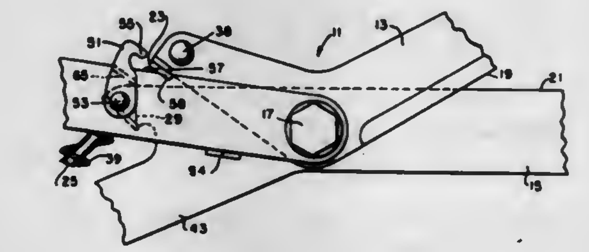


Electric scissors having blades spring biased toward one another with antifriction buttons therebetween and pivotally connected by a pin. A threaded fastener is received by and extends into the housing and a collar and engages a tapped member which is pivotably attached to a fixed blade whereby rotation of the fastener moves the fixed blade with respect to the movable blade to alter the location of the cutting area along the cutting edges of the blades.

3,602,989
STORED ENERGY SHEAR DEVICE

Marnie C. Averitt, 107 Westdale Court, Timonium, Md.

Filed Oct. 1, 1969, Ser. No. 862,802
Int. Cl. B26b *13/16*
U.S. Cl. 30—261 **12 Claims**

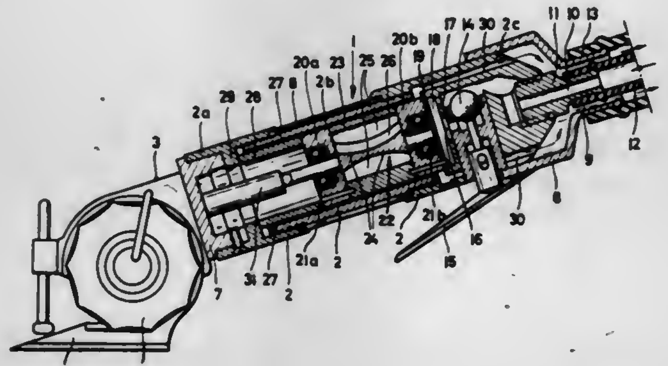


A portable shear device comprising pivotally mounted blades normally biased toward a closed or cutting position. Handle means is provided to move the blades relative to one another toward an open position and is releasable whereupon the blades close and perform a cut.

3,602,990
FABRIC-CUTTING MACHINE

Gunter Stumpf, 7421 Mehrstetten Kreis Munsingen, Germany

Filed Nov. 8, 1968, Ser. No. 774,433
Claims priority, application Germany, Nov. 24, 1967, P 16 60 122.2
Int. Cl. B26b *15/00*
U.S. Cl. 30—276 **2 Claims**



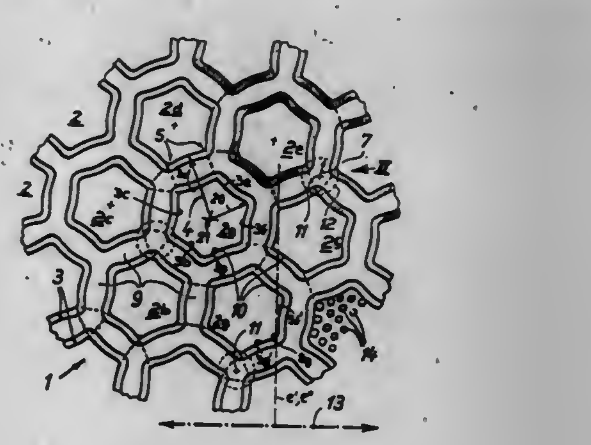
A pneumatically operated cutter in which the spent air is recovered and vented remotely of the machine.

3,602,991
SHEARING FOIL FOR A DRY-SHAVING RAZOR

Hans Joachim Heinrich, deceased late of Braunschweig, Germany, and Edith Heinrich and Eckart Heinrich, legal heirs, assignors to Balco Filtertechnik GmbH, Braunschweig, Germany

Filed Nov. 18, 1968, Ser. No. 784,985
Claims priority, application Germany, Nov. 18, 1968, P 15 53 666.0
Int. Cl. B26b *19/04*
U.S. Cl. 30—346.51 **4 Claims**
This application filed under Rule 47

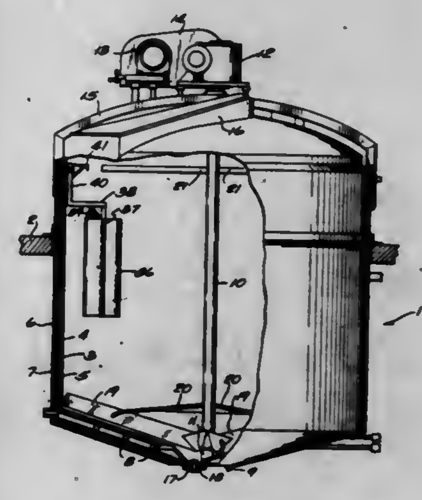
A shearing foil for a dry-shaving razor adapted to cooperate with a movable blade and provided with a multiplicity of hair-inlet openings. The openings are of generally polygonal configuration with inwardly convex arc-segmental edges adjoining one another at the vertices of the polygon. The radii of curvature of the arc segment edges exceed the radius of the opening while the centers of curvature are located externally of the opening and preferably at the centers of the nearest-neighbor openings.



3,602,992
METHOD AND APPARATUS FOR MAKING CHEESE

Norman J. Peters, Fond Du Lac, Wis., assignor to DEC International Inc.

Filed Apr. 25, 1969, Ser. No. 819,148
Int. Cl. A01j *25/00*
U.S. Cl. 31—46 **8 Claims**



A cheese-making vat comprising a closed vessel having a central vertical shaft and agitator paddles are attached to the lower end of the shaft. During the cheese-making process, a portion of the whey is withdrawn from the upper end of the vat while the agitators are operating. To withdraw the whey, a tube is inserted into the upper end of the vat and the lower end of the tube carries a perforated cylindrical strainer which may be covered by a fabric filter bag. Whey is drawn through the strainer and into the tube.

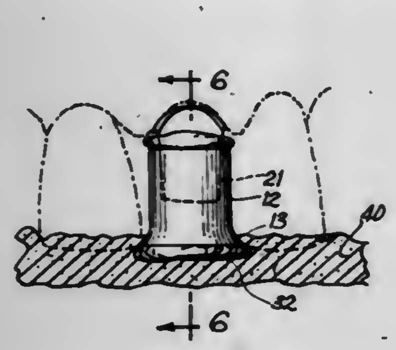
A generally S-shaped baffle is located ahead of the cylinder in the direction of agitator rotation and serves to protect the strainer from direct impingement by the circulating whey.

3,602,993
DENTAL DEVICE AND PROCESS USING IT TO MAKE JACKETS AND FIXED BRIDGEWORK

Bernard D. Kenney, Midwest Office Bldg. 6415 Stumph Road, Parma, Ohio

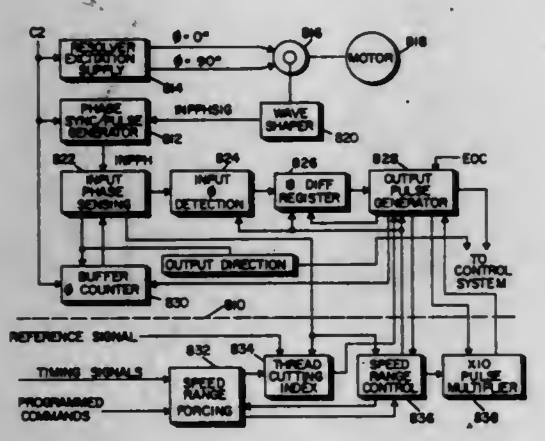
Filed Nov. 9, 1967, Ser. No. 681,860
Int. Cl. A61c *9/00*
U.S. Cl. 32—17 **5 Claims**

A hollow dental device that is cylindrical or of other straight wall configuration, except adjacent at one end, is used with modeling compound to make a coping in the process of making jackets and fixed bridgework. The device is contoured at that end to insure retention within the plaster impression made during the process. This dental device is relatively rigid and very resilient as compared with conventional copper bands.



3,602,994
PULSE GENERATOR SYSTEM RESPONSIVE TO SPINDLE MOTOR ROTATIONAL PHASE SIGNAL FOR PROVIDING DIGITAL PULSES AT RATE DEPENDENT UPON MOTOR SPEED

John D. Layman, Waynesboro, Va., assignor to General Electric Company
Filed Mar. 12, 1970, Ser. No. 18,871
Int. Cl. H03b *3/04;* **H03d** *3/02;* **H03k** *9/06*
U.S. Cl. 328—134 **17 Claims**

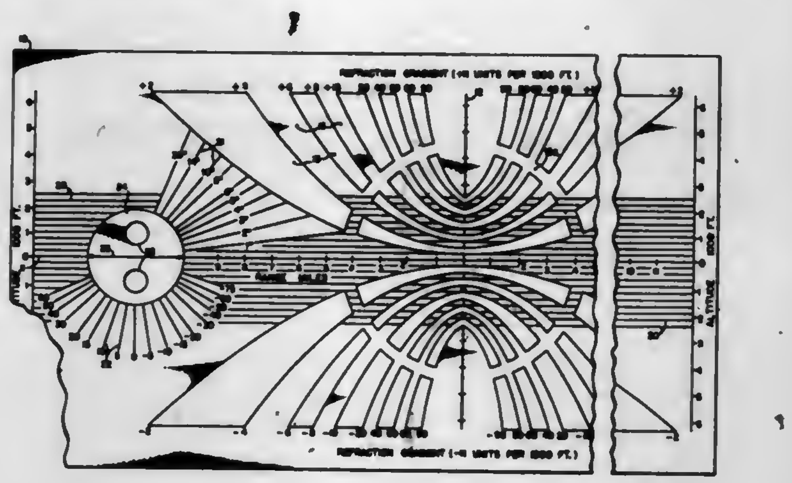


Apparatus responsive to a spindle motor develops velocity pulses for application to a numerical control system. The velocity pulses are generated at a rate proportional to the rotational rate of the spindle motor. The motor rotational position is converted to an asynchronous waveform which is synchronized and phase compared to a reference waveform. The phase difference is stored in complement form by an up counter. A number of pulses dependent upon the up counter contents is metered out at a maximum rate controlled by a signal from the numerical control system. Scaling means controls the relation between phase difference and number of pulses generated.

3,602,995
RADAR PROPAGATION RAY PLOTTER

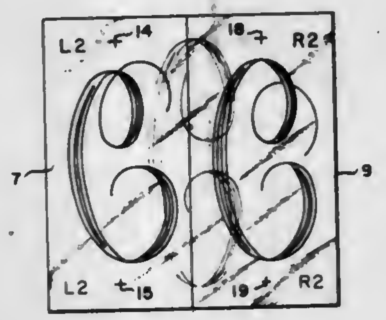
Daniel Barron, 9326 Edmonston Road, Greenbelt, Md.
Filed Sept. 22, 1969, Ser. No. 859,656
Int. Cl. B43l *5/00*
U.S. Cl. 33—1 C **1 Claim**

This invention is directed to the structure and use of a template for plotting a family of radar rays in the atmosphere in order to determine the zones of high probability of detection of airborne targets such as missiles, satellites and other aircraft. The template has curved slots therein representative of the path of a radar ray in the atmosphere for the specific conditions encountered by the radar rays.



3,602,996
MASTER COPY OR PATTERNS FOR MACHINE FORMING OF MONOGRAMS AND METHOD OF USING SAME

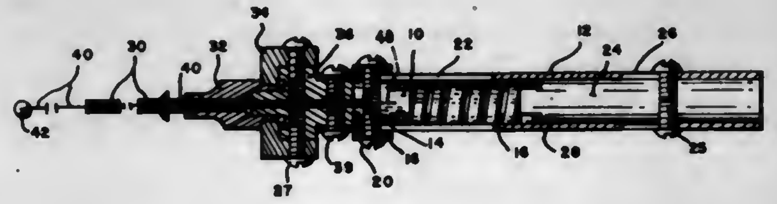
Gerald L. Hill, 1047 West Onion St., Fullerton, Pa.
Filed May 29, 1969, Ser. No. 828,868
Int. Cl. B43l *13/10*
U.S. Cl. 33—23 K **4 Claims**



A set of patterns for producing artistic and legible plural letter monograms in which portions of the individual letters comprising the monograms overlap, and the method of using such patterns.

3,602,997
ABLATOR DENSIOMETER AND VOID DETECTOR

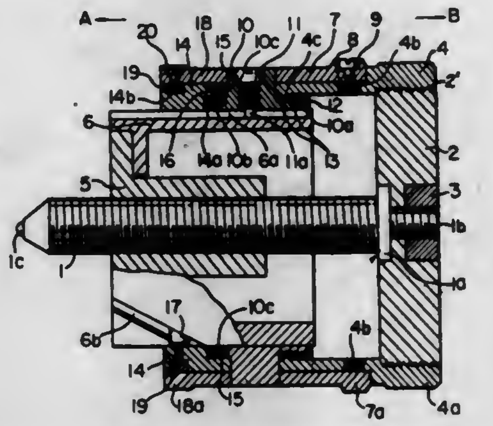
Albert G. Henderson, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Mar. 10, 1969, Ser. No. 805,552
Int. Cl. G01b *5/18*
U.S. Cl. 33—169 B **1 Claim**



A spring-tensioned plunger movable across a surface such as a cellular "honeycomb" panel, for detecting voids, weak areas, porous areas; and means for measuring the depth of the weakened area in terms of plunger penetration.

3,602,998
MICROMETER HEAD

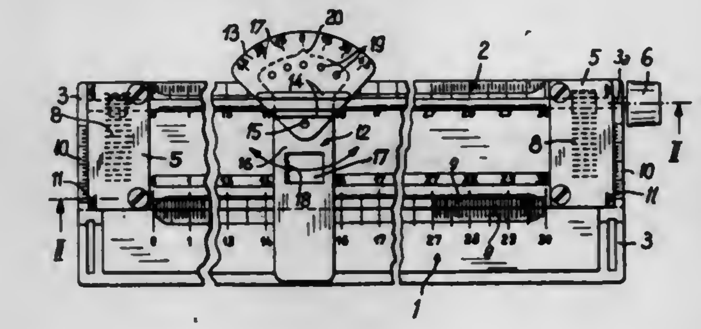
Keikichi Imai, and Sakuzo Matsumoto, both of Tokyo, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan
Filed Dec. 3, 1968, Ser. No. 780,688
Int. Cl. G01b *3/18*
U.S. Cl. 33—170 **4 Claims**



A micrometer head capable of adjusting the starting zero point of the graduations for a measurement. A graduated ring is manually rotatable relative to a thimble for the zero adjustment of the graduations at any axial position of the spindle. An indicating ring is rotatably mounted in the micrometer head and bears thereon graduations. The indicating ring is so coupled operatively with the spindle by guide means that the indicating ring is rotatably moved by one pitch of the graduations thereon as the spindle is rotated by one revolution. The indicating ring is further manually rotatable relative to the micrometer head regardless of the axial position of the spindle so that the zero adjustment of the graduations on the indicating ring is effected at any axial position of the spindle while the indicating ring is rotatably moved in conjunction with the rotation of the spindle during the normal measuring operation of the micrometer head.

3,602,999
WRITING AID

Rudolf Villiger, Mulinenstrasse 30, Bern, Switzerland
Filed May 9, 1969, Ser. No. 823,356
Claims priority, application Switzerland, May 15, 1968, 7500/68
Int. Cl. B43l *13/02*
U.S. Cl. 33—174 B **3 Claims**

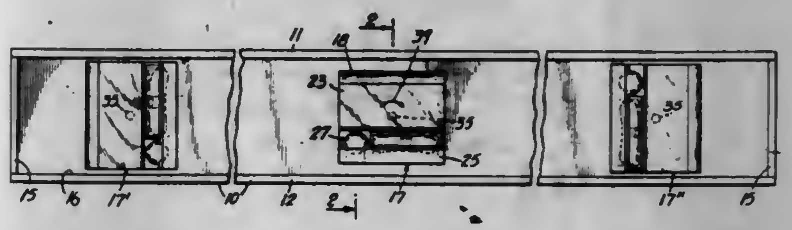


There is disclosed an improved writing aid which embodies two substantially parallel rulers selectively adjustably fixed at a spacing from one another and which delimit therebetween a writing field for drawing with a uniform height characters, such as letters and numbers.

3,603,000
SPIRIT LEVEL FRAME FOR MOUNTING SPIRIT VIAL UNITS

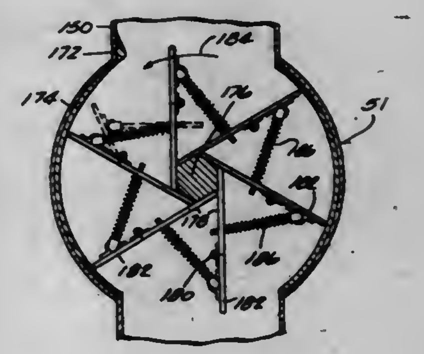
Seymour A. Ostrager, Bronx, N.Y., assignor to Miracle Instrument Co., New York, N.Y.
Continuation of application Ser. No. 670,944, Sept. 27, 1967.
This application Dec. 10, 1969, Ser. No. 883,893
Int. Cl. G01c *9/24*
U.S. Cl. 33—211 **12 Claims**

A spirit level frame having means for mounting therein a plurality of spirit vial units is provided in the form of an elongated frame of channelled construction having parallel sidewalls, a perpendicularly disposed connecting web between the parallel sidewalls so that the sidewalls project a substantial distance from one surface of the connecting web, and a thin walled projecting member extending from the outer surface of the connecting web to provide at least one right angle corner between said thin walled projecting member and said surface of the web. The projecting member, the outer surface of the connecting web and the parallel sidewalls provide versatile bearing surfaces for selectively engaging horizontal and vertical bodies in gauging the level and/or plumb thereof. The channelled construction of the spirit level frame permits spirit vial units to be adjustably and protectively arranged therein at longitudinally spaced intervals, including spirit vial units which permit simultaneous reading in two directions.



3,603,001
AGRICULTURAL DEHYDRATING AND COOLING SYSTEM

Gerald D. Arnold, Ettrick, Wis., and John B. Arnold, Memphis, Tenn.
Filed Mar. 17, 1969, Ser. No. 807,802
Int. Cl. F26b *17/00*
U.S. Cl. 34—136 **1 Claim**

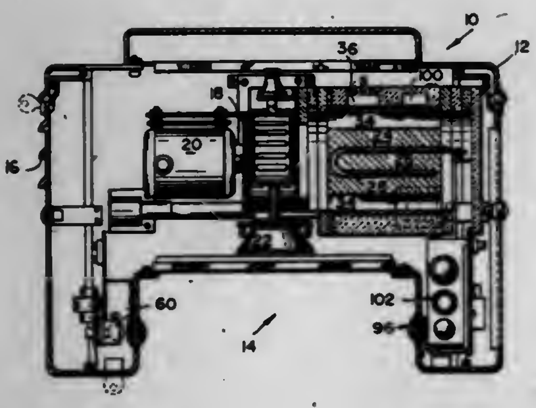


A furnace for providing dehydrating gases has its flue connected in series with a multiple-pass dehydrating drum compartment by longitudinal radial partitions to promote efficient intimate exposure of material to dehydrated gas by subdividing both the gas and the material into narrow streams while still providing the tumbling which results from drum rotation. The light output of the drum is delivered through a settling chamber into a cyclone separator which has its gas discharge port connected to a blower that subjects the chamber and drum and furnace to vacuum. The light solids are then recombined with heavy solids before discharge. Discharge of solids without access of air is controlled by a rotary valve which has generally radial vanes protected from breakage by provision of angularly yieldable end portions.

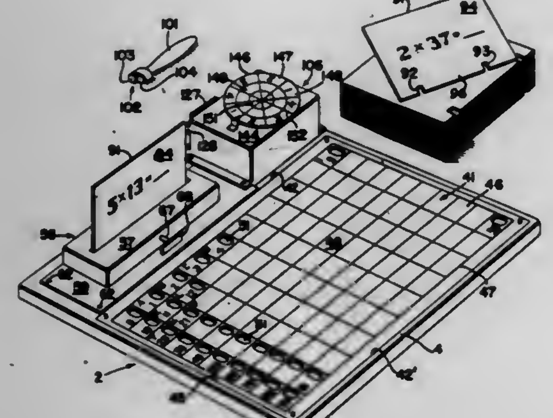
3,603,002
DRYING APPARATUS

Theodore L. Spierer, Brooklyn, N.Y., assignor to Spier Electronics Inc., Brooklyn, N.Y.
Filed July 8, 1969, Ser. No. 839,860
Int. Cl. F24h *3/04;* **F26b** *19/00*
U.S. Cl. 34—243 R **3 Claims**

The invention relates to a thermal-responsive device for a forced air hand dryer which permits the control of the hot air emanating from the drying apparatus and the velocity of the forced air impinging upon the object to be dried.



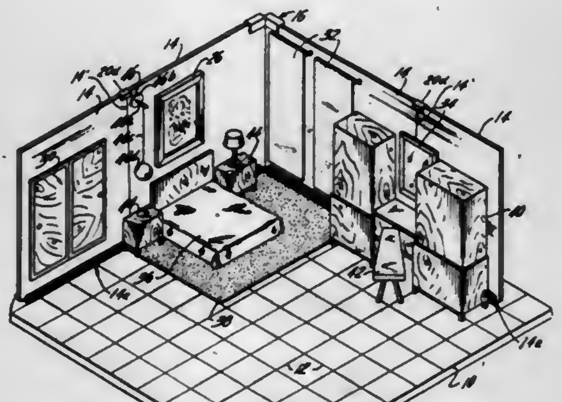
3,603,003
EDUCATIONAL GAME BOARD ASSEMBLY
Frank L. Ziegler, P.O. Box 235, Eureka, Calif.
Filed Mar. 30, 1970, Ser. No. 23,857
Int. Cl. G09b *7/02*
U.S. Cl. 35—9 R **17 Claims**



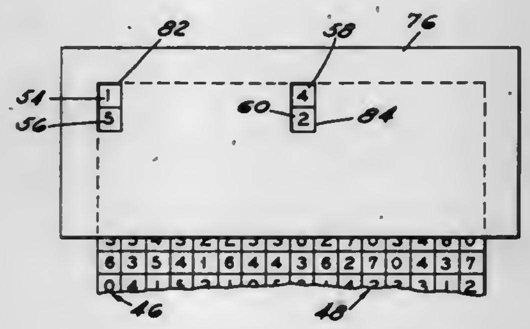
Presented is a game board assembly for teaching or amusement purposes, including electrical contact means conditioned by the insertion of a coded card bearing a question, the card being coded in correlation to the correct answer to the question, and a multiplicity of cross points one of which is correlated to the correct answer to the question and is adapted to be selected by the contestant or student so as to signify selection of the correct answer to the question.

3,603,004
ARCHITECTURAL INTERIOR-SIMULATING ARRANGEMENT
Sidney Fink, 2711 E. 28th Street, Brooklyn, N.Y.
Filed Nov. 29, 1968, Ser. No. 779,789
Int. Cl. G09b *25/04*
U.S. Cl. 35—16 **8 Claims**

An arrangement for simulating the layout of architectural interiors to a predetermined scale. Wall panels may be arranged in any desired configuration upon a floor base having scales marked upon its surface from which the dimension and area of a room or similar space may be readily obtained. Doors, windows and wall decorations may be freely located on the wall panels through magnetic attraction effects. Interior furnishings are designed to scale, and have an appearance simulating the actual furniture to be placed within the full scale interiors.



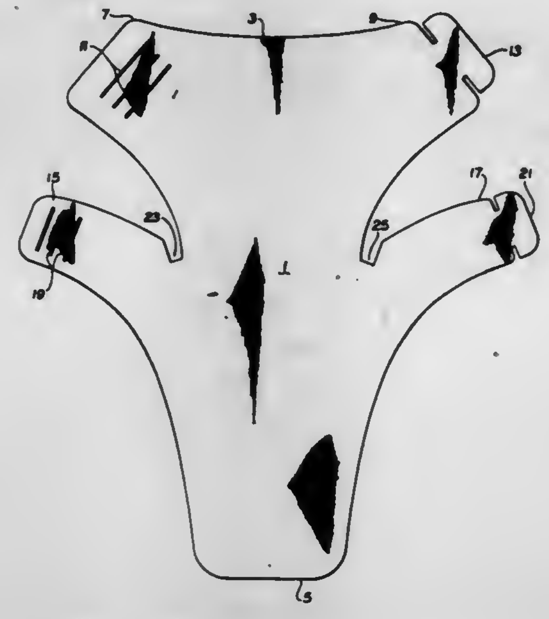
3,603,005
MATHEMATICAL TEACHING AID
Willis N. Dysart, 4532 Whittier Blvd., Los Angeles, Calif.
Filed Sept. 3, 1969, Ser. No. 854,818
Int. Cl. G09b *19/02;* **G06c** *3/00*
U.S. Cl. 35—30 **13 Claims**



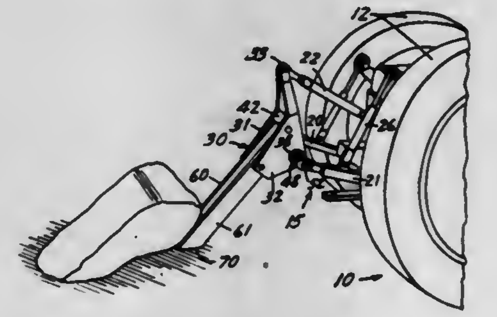
A mathematical teaching aid which presents a student with a variety of algebraic summation problems by positioning a space selector mask member over a base member having a grid with a plurality of rows and columns of spaces each containing a numerical value. The mask member segregates a portion of the spaces of the grid into two groups with the algebraic sum of the numerals of the spaces in one group being equal to the algebraic sum of the numerals of the spaces in the other group.

3,603,006
FOOTWEAR ARTICLE
Dallas N. Davenport; Seabrook, N. H. and Sidney Z. Smith, all of Worcester, Mass., assignors to The General Tire & Rubber Company
Filed July 10, 1970, Ser. No. 53,759
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **7 Claims**

The conventional step-in or slide-on slipper tends to loosen and slide off the front of the foot during normal walking motion. Binding or otherwise tightly clasping the slipper to the foot defeats the general purpose of the slipper as an easily attired article of footwear. This invention is an article adapted to be rapidly assembled into a slipper of the step-in or slide-on type that remains comfortably loose during wearing and is adapted to remain secured to the foot during walking or other foot movement.



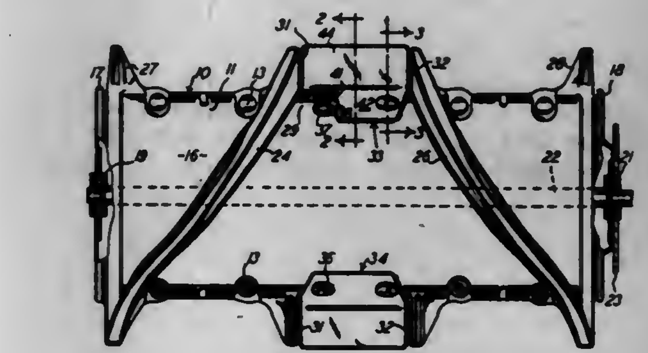
3,603,007
ROCK LIFTER
Edwin Naber, and Paul Naber, both of Rte. 1, Lake Lillian, Minn.
Filed June 16, 1969, Ser. No. 833,520
Int. Cl. A01b *43/00;* **A01d** *33/04*
U.S. Cl. 37—2 **6 Claims**



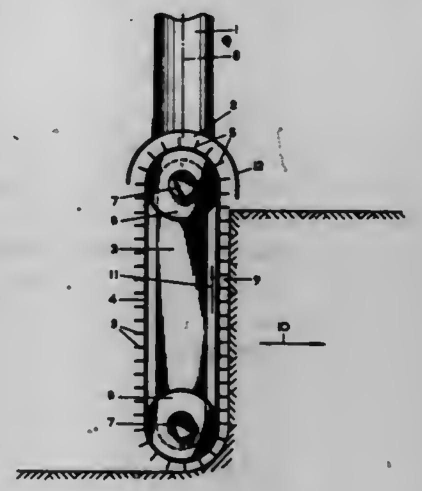
A rock-lifting apparatus and method of using the same which incorporates the use of a conventional tractor and a conventional three point hitch mounted thereon. The rock-lifting apparatus includes a pair of spaced parallel elongated removable tines which are mounted on a yoke or frame structure with the same being journaled on two of the arms of the conventional three-point hitch which are adapted to be articulated. The yoke structure is further connected to the third arm of the hitch for positioning the tines and the yoke on its mounting relative to the ground. The rock-lifting apparatus and method includes the use of tractor movement to position the tines under the embedded stone to be lifted and operation of the articulated arms of the hitch to perform the lifting function.

3,603,008
SNOW THROWER AUGER WITH REPLACEABLE PADDLE
Sherman C. Heth, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.
Filed Sept. 10, 1969, Ser. No. 856,693
Int. Cl. E01h *5/00*
U.S. Cl. 37—43 E **11 Claims**

A snow thrower auger having a cylindrical base portion and having auger flights extending radially outwardly from the base portion. A paddle is replaceably secured to the auger, and it functions with the flights to throw the snow away from the auger. The paddle is a piece separate from the remainder of the auger and can be replaced if the paddle is damaged.



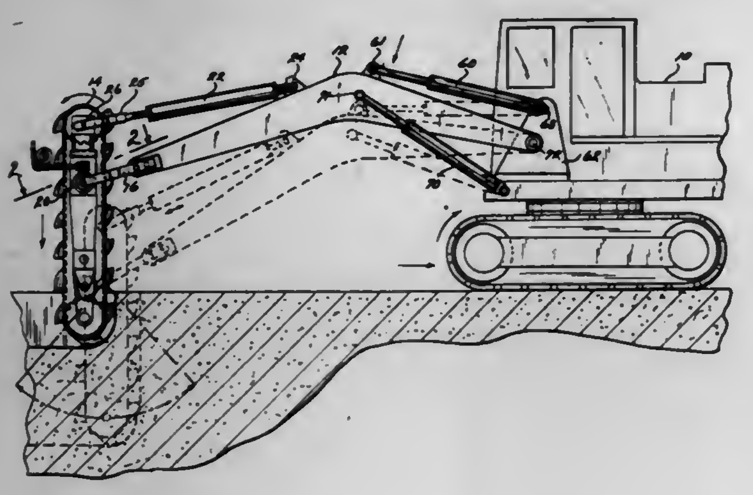
3,603,009
SUCTION DREDGE HAVING ENDLESS DIGGER ALIGNED WITH SUCTION PIPE
Pieter Theodor Velzeboer, Monster, Netherlands, assignor to N. V. Industrieele Handelscombinatie, Holland, Rotterdam, Netherlands
Filed Mar. 13, 1969, Ser. No. 806,987
Int. Cl. E02f *3/92, 3/14*
U.S. Cl. 37—60 **7 Claims**



A digging suction dredge has a suction tube and an endless conveyor-type digging device whose frame is rigid with the intake end of the suction tube along a line which is parallel to the centerline of the intake end of the suction tube. The endless member has digging paddles thereon that fan out about end rollers to discharge material to the suction tube.

3,603,010
BACKHOE EXCAVATOR WITH ENDLESS BUCKET ATTACHMENT
Charles J. Polinek, 5605 Chilton Lane, Erie, Pa.
Filed May 15, 1969, Ser. No. 824,843
Int. Cl. E02f *5/06*
U.S. Cl. 37—83 **14 Claims**

A backhoe machine including a track laying or rubber tire tractor having a vertically adjustable boom (with the usual stick and bucket being removed) and having an endless bucket apparatus detachably secured intermediate its ends to the outer end of the boom. Longitudinal pitch is provided for the endless bucket apparatus by a piston-cylinder mechanism secured at one end to the top of the boom intermediate its ends and at its other end to a point near the top of the apparatus. Lateral pitch is provided by a reversible hydraulic rotator or hydraulic motor disposed between and connecting the end of the boom and the apparatus. The frame of the endless bucket apparatus may be formed of detachable sections to permit forming the apparatus into preselected lengths. An endless bucket gear chain or continuous linkage system on the apparatus may be driven by a reversible hydraulic gear chain motor through a set of meshed gears all preferably positioned at the bottom of the apparatus to provide more positive drive to the digging buckets. The endless gear chain or continuous linkage system may be reversed to release buckets stuck in dirt or material being excavated. Dirt or material may be carried away from the excavator by an auger and coacting tray disposed at the top of the apparatus or by an endless conveyor belt disposed at the top of the apparatus and movable laterally so that dirt may be dumped a substantial lateral distance from the apparatus.



The auger or endless conveyor is provided on the apparatus for dumping material to the right or left side of the apparatus. The endless bucket apparatus may be circular, triangular, trapezoidal, or rectangular in longitudinal section for digging ditches of such respective shapes. A positive downward depressive force (crowd) may be applied to the endless bucket apparatus by a piston-cylinder mechanism rotatably secured to the top of the boom intermediate its ends, and its other end to the tractor at a point above where the boom is attached to the tractor.

3,603,011

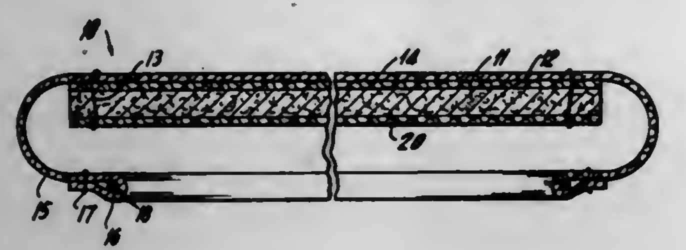
PRESS PADS

Jerome Herbert Cohen, Bayside, N.Y., assignor to Burtest Products Corporation, New York, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,260

Int. Cl. D06f *71/36*

U.S. Cl. 38—66 **15 Claims**



The press pad comprises a layer of felted high heat resistant fibrous material impregnated with high heat resistant resilient material. Stitched to one side of said layer is a sheet of loosely woven high heat resistant cloth impregnated with high heat resistant material. A cover cloth of closely woven high heat resistant material impregnated with high heat resistant material may be stitched to said woven sheet in covering relation thereto. The press pad may be attached to the buck or head of a pressing machine or to the underside of a hand pressing iron or to a laundry machine.

3,603,012

FLAT IRONS

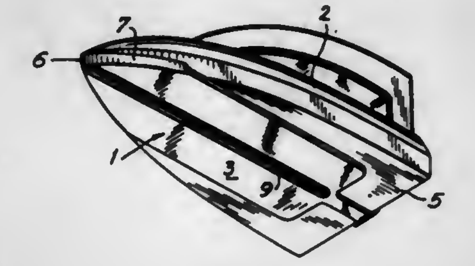
Belinda Haynes, 967 Culross Road, Bryanston, Johannesburg, Republic of South Africa

Filed Sept. 25, 1969, Ser. No. 861,084

Claims priority, application South Africa, Sept. 25, 1968, 68/6212

Int. Cl. D06f *75/38*

U.S. Cl. 38—97 **6 Claims**



Flat irons adapted for pressing seams and seam-pressing attachments for conventional flat irons in which there is embodied in the underside of the flat iron or attachment a longitudinally extending guide rib arranged to part the free edges of material on each side of a seam and press the material in the immediate vicinity of the seam.

3,603,013

ELECTRIC ILLUMINATION DEVICES

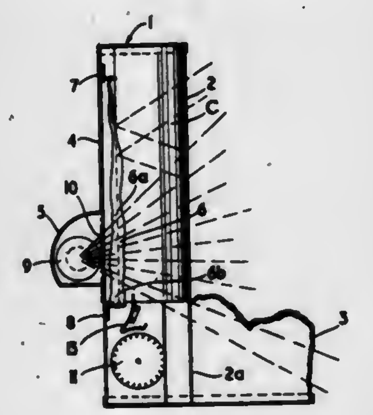
Frederick Brydone Reed, and Ernest Eugene Gardiner, both of Walsall, England, assignors to Radiation Sunhouse Limited, Walsall, England

Filed Jan. 31, 1969, Ser. No. 795,565

Claims priority, application Great Britain, Feb. 6, 1968, Feb. 13, 1968, Feb. 20, 1968, Mar. 1, 1968, 5775/68;7001/68;171/9981/68

Int. Cl. G09f *13/34*

U.S. Cl. 40—106.54 **9 Claims**



An electric illumination device which includes a translucent viewing screen, imitation fuel means, suspended flexible material disposed inwards of the viewing screen, a light source disposed inwards of the flexible material, and means for causing airflow for moving the flexible material to vary the lighting effect imparted by the device, said flexible material having upper portions which when the device is in operation are caused by the airflow to move in relation to light from the light source to cause a random flickering effect visible as a flame effect through the viewing screen, and said flexible material having lower portions which when the device is in operation are caused by the airflow to move in relation to light from the light source to cause a random flickering effect illuminating from within the device the imitation fuel means.

3,603,014

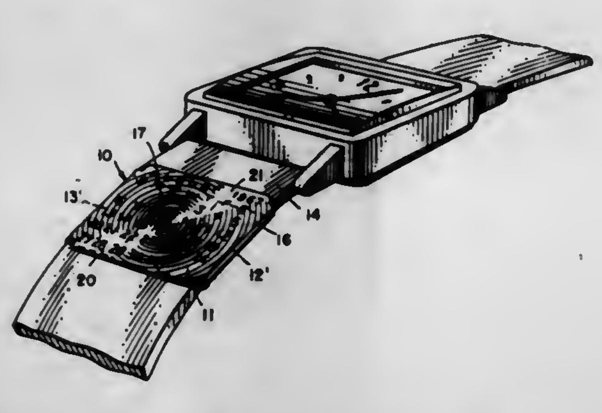
PROCESS OF HIGHLIGHTING THE INDICIA ON A WATCHBAND CALENDAR

Walter A. Schomburg, Park Ridge, Ill., assignor to Chicago Etching Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 659,782, July 31, 1967. This application Jan. 12, 1970, Ser. No. 2,453

Int. Cl. G09d *3/00*

U.S. Cl. 40—107 **2 Claims**



A watchband calendar has the indicia thereof highlighted by spin-finishing the viewing surface to create sector patterns of reflected light by orienting the viewing surface to reflect light.

3,603,015

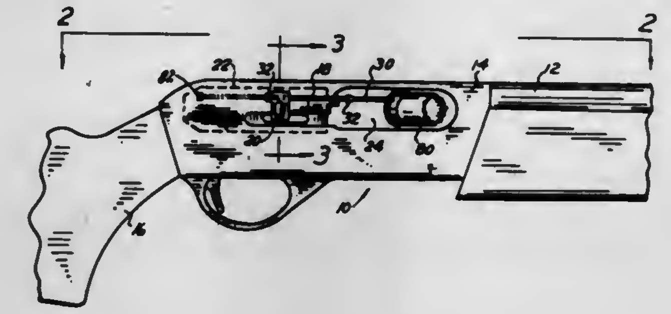
EJECTED SHELL RETAINER

Kenneth W. Jensen, 9309 Louis, Detroit, Mich.

Filed Apr. 4, 1969, Ser. No. 813,585

Int. Cl. F41c *27/00*

U.S. Cl. 42—1 R **10 Claims**



An ejected shell retainer for a multiple shot semiautomatic gun which consists of a keeper rod slidably supported on the gun substantially parallel to the barrel, and disposed adjacent the discharge port. In an operative position, the keeper rod holds the empty shell in the gun receiver where it can be manually removed after a single firing. In a nonoperative position, the keeper rod allows the ejected shells to leave the discharge port so that the magazine can be fully loaded to permit multiple firing of the gun.

3,603,016

NET DRUM SYSTEM

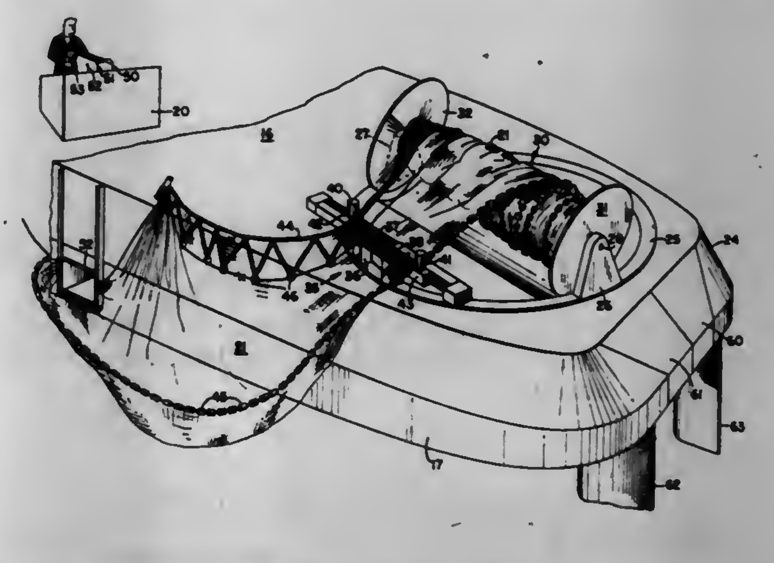
Hubert J. Ursich, 2820 Ivy St., San Diego, Calif., and David J. Seymour, San Francisco, Calif.

Filed Oct. 17, 1969, Ser. No. 867,190

Int. Cl. A01k *73/12*

U.S. Cl. 43—8 **2 Claims**

A net-laying and stowing system for oceangoing vessels having a hull with a deck and a stern having a smooth surface over which the net may enter into the water. A turntable on the deck near the stern enables motion of 180° from the stern toward the portside toward the bow and back again, and it carries a stowing and laying drum around which the net is wound, between a pair of end flanges. On the turntable is a pair of guides for individually engaging each edge of the net; the guides are movable across approximately half the net from each of the two edges, for spooling the net onto the drum, so that the weights, floats, and so on, are able to be located in such a way that the net is spooled around the drum in a cylinder rather than bulging at each end.



3,603,017

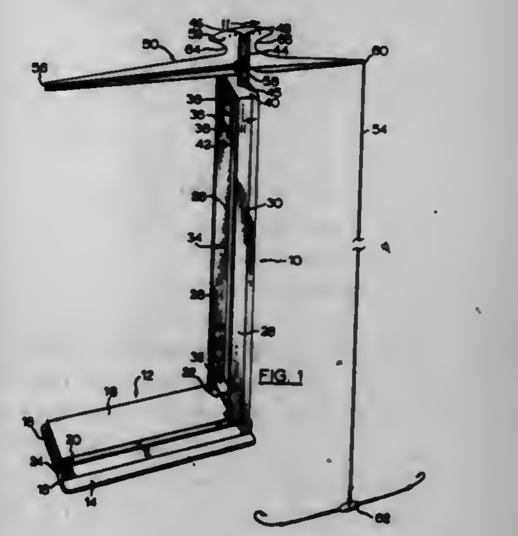
ICE FISHING APPARATUS

Karl G. T. Happe, 38 Tara Avenue, Scarborough, Ontario, Canada

Filed Oct. 13, 1969, Ser. No. 865,663

Int. Cl. A01k *97/12*

U.S. Cl. 43—17 **11 Claims**



An ice fishing apparatus including means to move a pivot support relative to a base. The apparatus includes first and second line supports each consisting of spaced-apart holders to hold a plurality of elongated loops of fishing line, the linear distance between the two holders of one support being greater than the linear distance between the two holders of the other support. An assemblable and disassemblable ice fishing apparatus also is described consisting of a plurality of cooperating members.

3,603,018

FISHING ROD ACCESSORY

Elmer W. Mercer, 1212 San Luis Drive, Orlando, Fla.

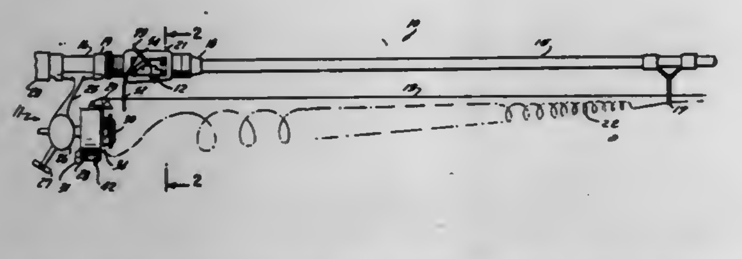
Filed Oct. 20, 1969, Ser. No. 867,518

Int. Cl. A01k *87/00*

U.S. Cl. 43—19.2 **8 Claims**

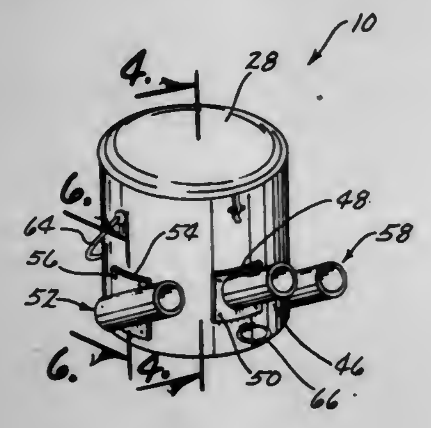
A spring-loaded device used in imparting simulated live bait movement to a fishing lure has a finger mounted for movement between an inoperative and an operative position. At the operative position, a hook end portion of the finger is located in the path of the fishline movement between the reel end eyelet of the fishing rod and the face of an attached open face spinning reel to momentarily catch and release the line during each revolution of the reel flier as the line is reeled in.

A clamp used in detachably mounting the device on the fishing rod in one embodiment is adjustable to vary the location of the hook in the path of line movement and thus to vary the action imparted to the fishing line and attached lure during use of the accessory.



3,603,019
COMBINATION FISHING BUCKET

John F. Smeltzer, Meriden, Iowa
Filed Dec. 31, 1969, Ser. No. 889,484
Int. Cl. A01k *97/10*
U.S. Cl. 43—21.2 **9 Claims**

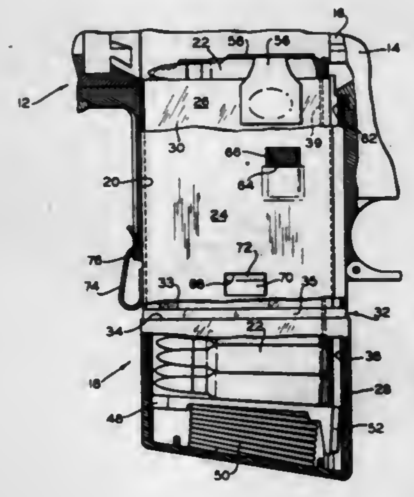


A combination fishing bucket comprising a bucket portion having a storage compartment formed therein with a cover closing the upper end thereof. The cover is padded with a sponge rubber material to provide a comfortable seat for the fisherman. First, second and third hollow pipe sections are secured to the exterior of the bucket portion approximately 90° apart and are adapted to receive and support either a flashlight or a fishing rod therein. The pipe sections extend upwardly and outwardly from the bucket portion and are designed to permit the fisherman to fish at night with a flashlight being placed in one of the pipe sections so as to direct light on the upper end of the fishing rod in the pipe section adjacent thereto. The first and third pipe sections are spaced approximately 180° apart with respect to the bucket portion to permit the fisherman to selectively use either of the same depending upon the direction of stream flow.

3,603,020
MAGAZINE ASSEMBLY WITH EXPENDABLE CARTRIDGE CONTAINER UNIT

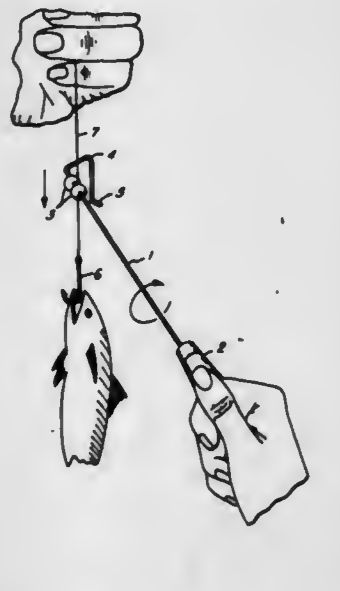
Harold H. Wiese, Davenport, Iowa, assignor to the United States of America as represented by the Secretary of the Army
Filed Mar. 27, 1970, Ser. No. 23,142
Int. Cl. F41c *25/02;* **F42b** *39/00*
U.S. Cl. 42—50 **7 Claims**

A replacement cartridge magazine for a firearm comprises an adapter unit having a configuration similar to that of the upper portion of the standard magazine therefor, and a cartridge container with a spring-biased follower, which holds the cartridge requirements of the magazine assembly. The adapter preferably fabricated from metal, is releasably latched to the firearm so as to be normally a part thereof and the container, inexpensively manufactured from plastic so as to be expendable, is releasably latched to the adapter. A tape extends over the top of the container to secure the cartridges therein when loaded and so as to be sheared by the firearm bolt during passage over the magazine assembly. A protective cover is also provided for installation over the top, open portion of the container and is sealed by adhesive tape thereto.



3,603,021
FISH HOOK DISENGAGING TOOL

John F. Nunley, 5425 S. Rice Ave., Houston, Tex.
Filed May 21, 1969, Ser. No. 826,595
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 **2 Claims**

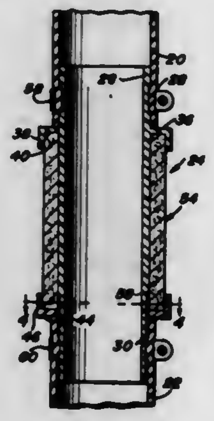


A disengaging tool having means for guiding the tool into position on a fish hook shank, and having means for rotating action against the hooked fish to disengage the fish hook from the flesh of the fish upon rotation of the tool, without contacting the fish with the hands of the user.

3,603,022
INSECT AND RODENT BAND

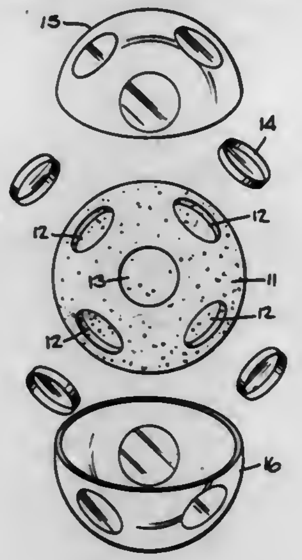
Robert G. Asher, and Frances E. Asher, both of 429 Elwood St., P.O. Box 168, Sterling, Colo.
Filed July 14, 1969, Ser. No. 841,481
Int. Cl. A01m *1/20*
U.S. Cl. 43—131 **10 Claims**

A band of absorbent material for holding insecticide and/or rodent repellent is disposed about a tubular section interposed in an associated sewer line and the tubular section includes structure on its opposite ends defining outstanding circumferential channels opening toward each other within which the axial ends of the band are seated. One of the structures defining a circumferential channel is axially removable from the associated end of the tubular member whereby the band may also be axially removed from the tubular member and replaced or again soaked in insecticide and/or rodent repellent.



3,603,023
TOY BALL

Timothy J. McHugh, 4 Hilltop Road, Bronxville, N.Y.
Filed Feb. 25, 1970, Ser. No. 13,972
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **8 Claims**

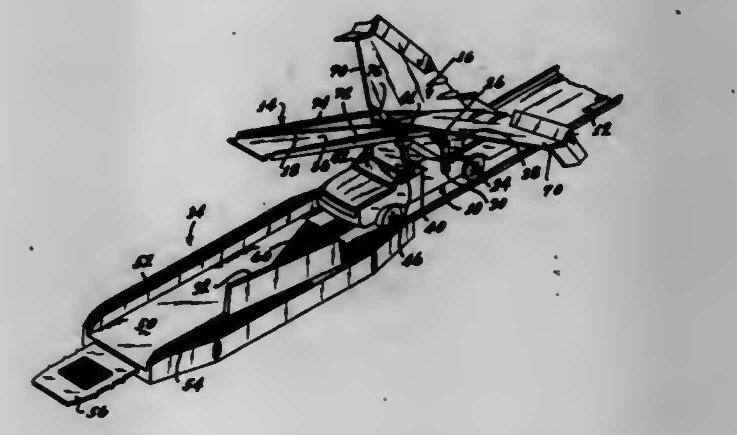


A toy ball having a hollow spherical member which is enclosed by two attached hemispherical members. A plurality of pockets are located on the surface of the spherical member and cups are press-fitted into each of these pockets. A movable attention getting object is placed in each cup and the two hemispheres are sealed together over the spherical member to seal the object in each cup. When the toy ball is rolled along a surface or otherwise rotated the objects in each cut move providing an item of interest and attractiveness to children of tender ages.

3,603,024
LAUNCHER FOR TOY AIRCRAFT

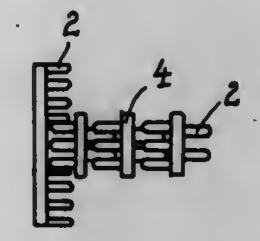
Homer S. Davis, Los Angeles, and Derek J. Gay, Redondo Beach, both of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 26, 1969, Ser. No. 880,314
Int. Cl. A63h *27/14*
U.S. Cl. 46—01 R **11 Claims**

Apparatus for launching a toy aircraft comprising a launching ramp mounted on a toy automobile vehicle, the ramp having a rubberband for projecting the aircraft in a forward direction. A toy airplane is installed by hooking a projection of the plane onto the rubberband, pulling the plane to the rear of the ramp, and inserting the projection into a hole in the ramp. A releasing lever pivotally mounted on the ramp can push the bracket out of the hole to launch the plane. A lever-engaging member located along the vehicle track, pivots the lever as the vehicle moves by, so that the aircraft is released from a moving vehicle to obtain added speed.



3,603,025
ELEMENTS WITH PLURAL SURFACES HAVING UNIFORMLY SPACED INTERFITTABLE PROJECTIONS

Walter Heubl, Muncher Str. 41, 8852 Rain am Lech, Germany
Filed Sept. 30, 1968, Ser. No. 764,376
Claims priority, application Germany, Dec. 1, 1967, P 16 25 370.6
Int. Cl. A63h *33/06*
U.S. Cl. 46—25 **7 Claims**



Structural elements for construction toys, particularly made of synthetic resin material, these structural elements consisting of a core or body with mutually orthogonal rows of connecting projections located on at least one outer side thereof, the projections being capable of engaging with those of other structural elements so as to form an interlocking, frictional connection.

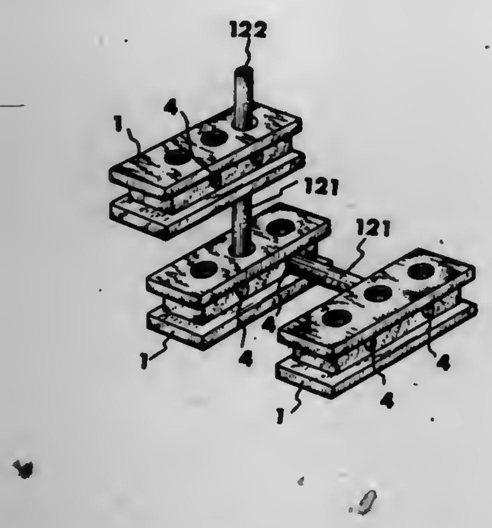
Many types of such of structural are known. These structural elements usually have a basic shape which enables them to be assembled together to form larger structures; for example the basic shape of these structural elements may be that of a cube, a square, a segment or a circle or the like, some of the outer surfaces of the structural elements having suitable connecting means enabling a number of structural elements to be combined together, usually by snap engagement.

In one of these prior art elements humplike protuberances and recesses located therebetween are so provided that they cooperate with portions of complementary shape of the other structural element so as to allow two structural elements to be connected together by snap engagement.

3,603,026
FABRICATING TOYS

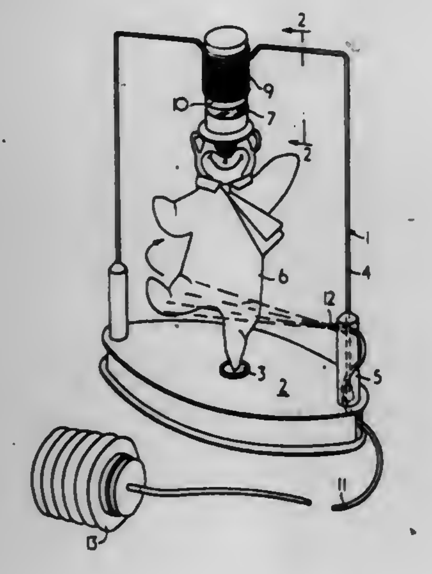
Takaya Kishigami, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan
Filed Mar. 18, 1970, Ser. No. 20,526
Int. Cl. A63h *33/10*
U.S. Cl. 46—26 **10 Claims**

A fabricating component has several first holes, and a second hole orthogonal to and between the first holes. One end of the first hole has an enlarged indentation, and the other end of the hole has a projection shaped like the indentation so that the projections of one component can be interlocked with the indentations of another component. Several fabricating components can be connected by components which have the shape of a rod, a tube, a U-shaped member, or an elongated grooved member having a series of projections.



3,603,027
TOY

Kenneth Hing Cheung Fung, Hong Kong, assignor to A. Dransfield & Co., Ltd., Hong Kong
Filed May 8, 1969, Ser. No. 822,914
Claims priority, application Great Britain, Jan. 21, 1969, 3376/68
Int. Cl. A63h *29/16*
U.S. Cl. 46—44 **4 Claims**

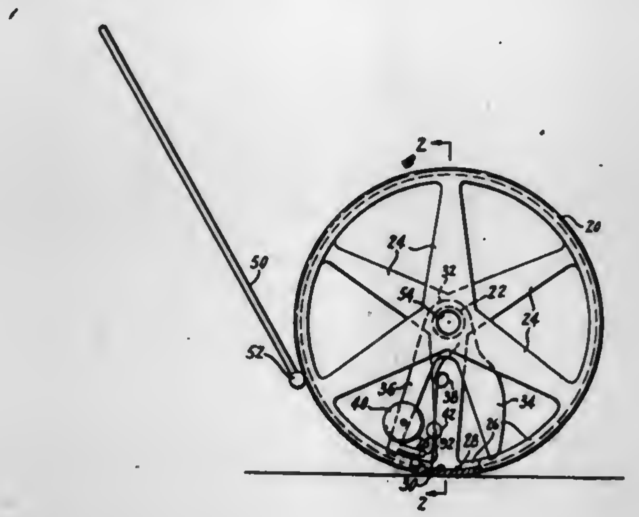


A toy having a base, a support extending from the base and a body member rotatably mounted on the base. There are magnetic mean on the support and body member which cooperate to maintain the body member vertical. Furthermore, there are means on the support for blowing a jet of air at the body member to rotate same.

3,603,028
TOY NOISE MAKER

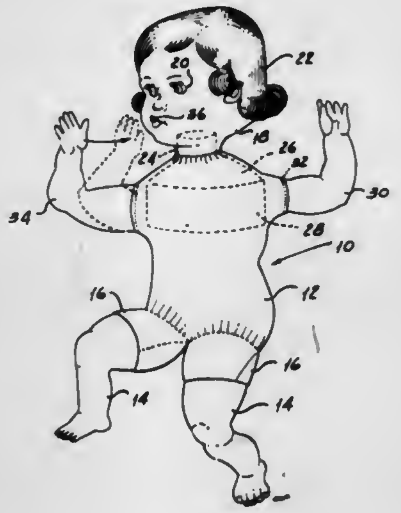
Alvin Roger Thorstad, Rte. #3, Granite Falls, Minn.
Filed May 5, 1970, Ser. No. 34,740
Int. Cl. A63h *5/00*
U.S. Cl. 46—114 **8 Claims**

A spoked wheel having cogs extending from the inside of the rim and having a pendulum pivotally mounted upon the hub of the wheel with a thin rod or spring connected thereto and extending toward the rim for striking the cogs as the wheel rolls, a bell on one of the sides of the pendulum against which the spring strikes after making contact with one of the cogs, and a handle for rolling the wheel.



3,603,029
KISS-THROWING DOLL

William B. Nutting, New York, N.Y., assignor to Horsman Dolls Inc., Columbia, S.C.
Filed June 13, 1969, Ser. No. 832,986
Int. Cl. A63h *5/00*
U.S. Cl. 46—117 **12 Claims**

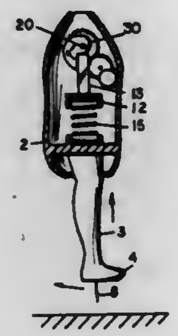


A doll is provided with a bent arm pivotally mounted so as to bring the bent arm in the vicinity of a doll's mouth upon rotation of the arm in response to the pulling of a drawstring. When the doll's hand is in the vicinity of the doll's mouth, a spring, which is cocked during the pivoting movement of the arm, is released substantially simultaneously with the actuation of a sounding device which produces a simulated kissing sound. The mechanism is such that the movement of the arm under the influence of the spring will be comparatively rapid with respect to the movement of the arm to the proximity of the doll's mouth. The rapid movement of the arm accompanied by the simulated kissing sound simulates the throwing of a kiss by the doll.

3,603,030
JUMPING TOY

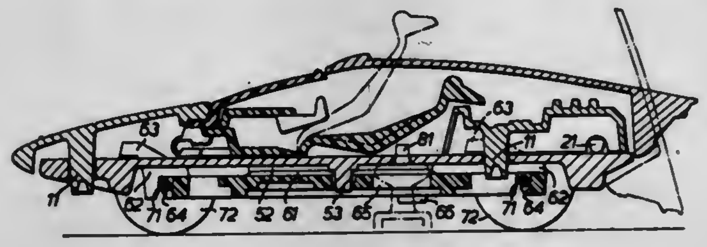
Philip D. Bart, Monsey, and Peter J. Waznys, Richmond Hill, both of, N.Y., assignors to Remco Industries, Inc., Harrison, N.J.
Filed Aug. 29, 1969, Ser. No. 854,185
Int. Cl. A63h *11/00*
U.S. Cl. 46—120 **12 Claims**

An animated doll is provided which is capable of jumping rope. This is accomplished by having a doll's body slide up and down on the upper projections of its legs and, when the body is at the uppermost position, having the legs snap upwardly quickly. The arms carrying the rope swing around a 360° arc which is synchronized with the movement of the legs so that the rope passes beneath the feet just as the legs snap upwardly and before the doll drops down again upon its feet. Improved action is obtained if the rope is stretchable and is hooked under the doll's toes and stretched before the doll jumps.



3,603,031
TOY OR MODEL VEHICLES

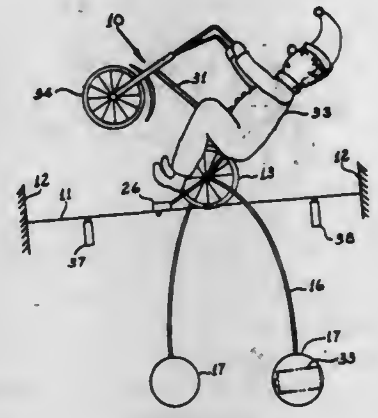
Howard W. Fairbairn, Dallington, England, assignor to The Mettoy Company Limited
Filed Jan. 19, 1970, Ser. No. 4,150
Claims priority, application Great Britain, Jan. 21, 1969, 3396/69
Int. Cl. A63h *17/26*
U.S. Cl. 46—223 **2 Claims**



The running gear of a toy vehicle is carried by a frame, or subbase, of resiliently flexible material. The frame makes snap-fitting engagement with the underside of the vehicle, and is detachable with the assistance of a special purpose key, to facilitate removal of the running gear for repairs or replacement.

3,603,032
AERIAL BALANCING TOY

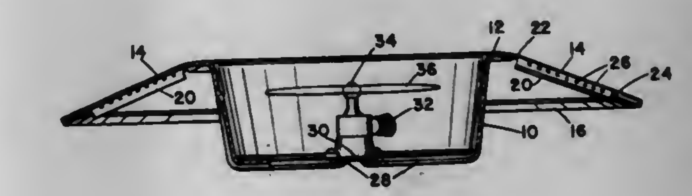
Harold Gladstone Heron, 4330 Sherbrooke Street West, Apt. 10, Montreal, Quebec, Canada
Filed May 25, 1970, Ser. No. 40,005
Int. Cl. A63h *17/20*
U.S. Cl. 46—244 R **7 Claims**



A toy body having a driving wheel and an idler wheel in tandem travels reversibly on an aerial cable. A weighted balancing yoke is suspended from the driving wheel axle and a reversible electric motor on the body is connected to the driving wheel. The body is rockable within limits on the driving wheel axle by reactive torque so that both wheels engage the cable when the toy travels in one direction, but the toy body is raised and the idler wheel lifted off the cable when the toy travels in the opposite direction. The motor is in circuit with a reversing switch which is engageable with travel limiting detents on the cable.

3,603,033
FLYING ROTORCRAFT TOY

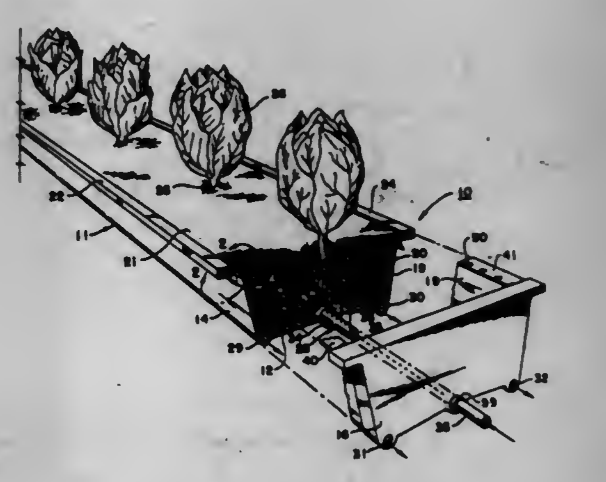
Leonard E. Mueller, 4557 Mt. Hubbard Ave., San Diego, Calif.
Filed Oct. 6, 1969, Ser. No. 863,953
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 D **3 Claims**



A flying toy having a driven propeller mounted in a duct, with lifting rotor blades extending from the top of the duct, the outer ends of the blades being interconnected by a protective annular ring. The duct and blade assembly rotates in the opposite direction to the propeller, due to torque, the lift of the blades adding to that of the propeller for vertical propulsion. When power is shut off, the toy descends gently in autorotation. The airframe structure is a simple unitary molding and the rotor blades are partially adjustable in pitch to vary the effective lift and thus control the flight.

3,603,034
PLANT-GROWTH STRUCTURE

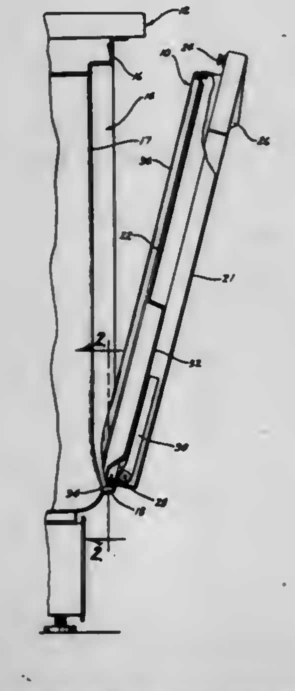
John P. Maxwell-Stewart, Battle, England, assignor to Jegco Inc., Oakland, Calif.
Filed June 16, 1969, Ser. No. 833,577
Int. Cl. A01g *9/02*
U.S. Cl. 47—38 **5 Claims**



A plant-growth structure equipped with a growth media in which seeds can be planted and nurtured thereby into mature plant growth suitable for harvesting, in the case of agricultural plants. The structure includes an elongated container providing a chamber therealong in which such growth media resides, and the container has sidewalls provided at their upper ends with outwardly extending flanges to which a top cover overlying such chamber and the growth media therein is releasably attached by means of clamp-type fasteners. An irrigation system runs through the chamber to enable the growth media and plant life therein to be irrigated, and a drainage system associated with the container permits any excess liquids resulting from irrigation to drain from the growth media and chamber.

3,603,035
DISHWASHER DOOR SEAL

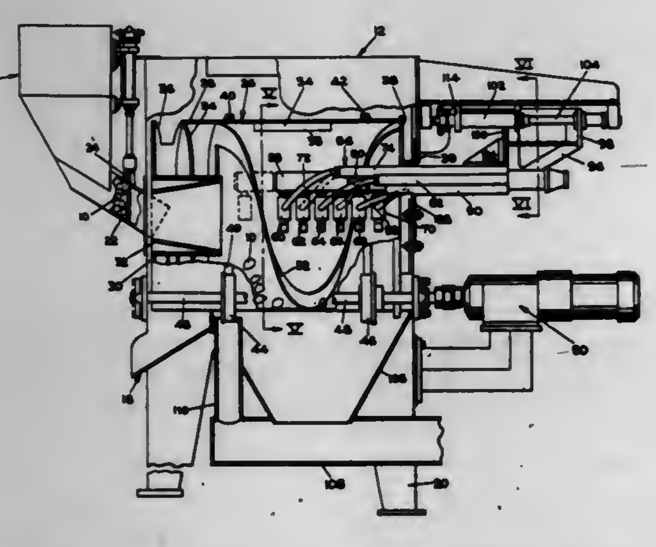
Henry J. Kaldenberg, Des Moines, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed May 1, 1969, Ser. No. 820,830
Int. Cl. E06b *7/22*
U.S. Cl. 49—485 **12 Claims**



An improved seal structure is provided for automatic dishwashers having an access opening in the front for the insertion or removal of dishes. The dishwasher has a generally forwardly facing vertical seal abutment adjacent to the top and sides of the opening and a generally upwardly facing horizontal seal abutment adjacent to the bottom of the opening. The door is hinged at the bottom, and has an inner panel, which carries an elastomeric sealing strip. The sealing strip runs along the face of the inner panel juxtaposed to the perimeter of the inner panel at the top and sides and then along the bottom flange of the inner panel to form a seal with corresponding seal abutments when the door is closed. The elastomeric strip is continuous at the bottom corners of the inner panel and is twisted about 90° at these corners to form a smooth sealing transition between the face and bottom of the inner panel.

3,603,036
ROTARY ABRASIVE BLASTING MACHINE

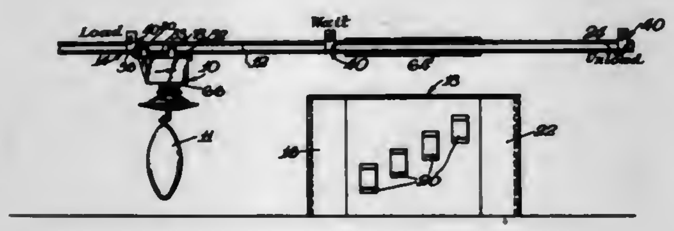
Wallace L. Reed; James L. Reed; Charles T. Redden, and Carl H. Castle, all of Grand Rapids, Mich., assignors to W. L. Reed Company, Grand Rapids, Mich.
Filed June 2, 1969, Ser. No. 829,192
Int. Cl. B24c *3/04*
U.S. Cl. 51—13 **6 Claims**



This disclosure relates to abrading small articles to remove molding or casting flash and to improve the surface for painting, plating and the like. The abrading machine has a drum formed of open mesh material and mounted for rotation about its longitudinal axis. Means are disclosed for feeding the small articles to an abrading area within the drum and for removing the abraded articles from the abrading area. An abrasive medium supply means is provided within the drum and mounted for reciprocatory motion within the abrading area to evenly abrade the articles continuously moved throughout the abrading area by the rotary motion of the drum. The abrasive medium supply means is also mounted for rotational movement about an axis parallel with the rotational axis of the drum. A helical rib is formed in the drum for feeding the articles to the abrading area during the abrading process. The helical rib is also employed to feed the articles to a discharge opening at one end of the abrading drum after the abrading process.

3,603,037
WORKPIECE-TREATING SYSTEM

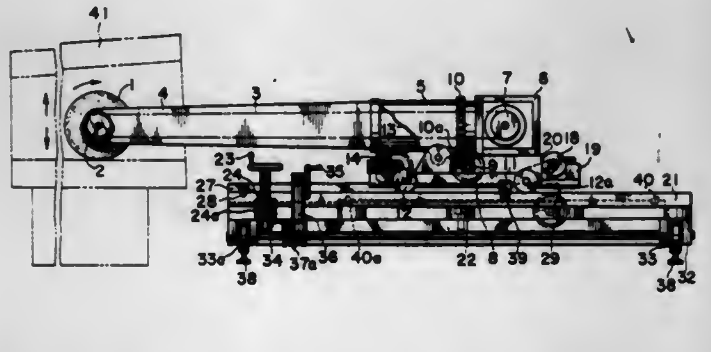
Freeman M. Mann, Jr., and James H. Carpenter, Jr., both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.
Division of Ser. No. 543,616, Apr. 19, 1966, Patent No. 3,495,720. Filed Apr. 1, 1969, Ser. No. 833,832
Int. Cl. B24c *3/08*
U.S. Cl. 51—14 **36 Claims**



A movably supported trolley includes workpiece-engaging means for holding an article to be treated as by abrasive blast cleaning and also includes a drive for moving the trolley independently of any other trolley in and around the treating area for the workpiece.

3,603,038
INTERNAL GRINDER FOR STEEL INGOT MOULD

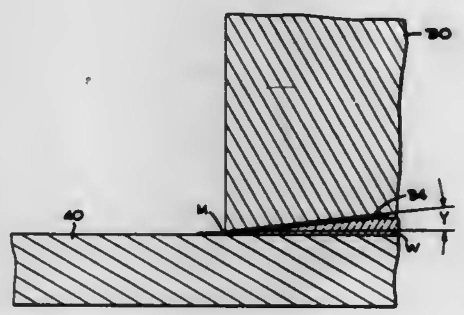
Yoshikane Manabe, Fukuoka-ken, Japan, assignor to Fujiki Kousan Kabushiki Kaisha, Kita-Kyushyu-shi, Fukuoka-ken, Japan
Filed Jan. 19, 1970, Ser. No. 3,649
Int. Cl. B24b *7/02*
U.S. Cl. 51—35 **5 Claims**



An elongated arm having a grinding wheel turnably mounted at its front end is supported by a cylindrical bearing to rotate about an axis of the arm. The bearing is pivotally received upon a work head which is reciprocal for a predetermined length on a carriage. At the lower fore portion of the bearing, there is provided adjusting means to adjust the angle of elevation of the arm. The adjusting means runs along the upper surface of a copying surface plate, the surface plate also being adjustable in its angle of elevation.

3,603,039
METHOD OF AND APPARATUS FOR MACHINING ARTICLES

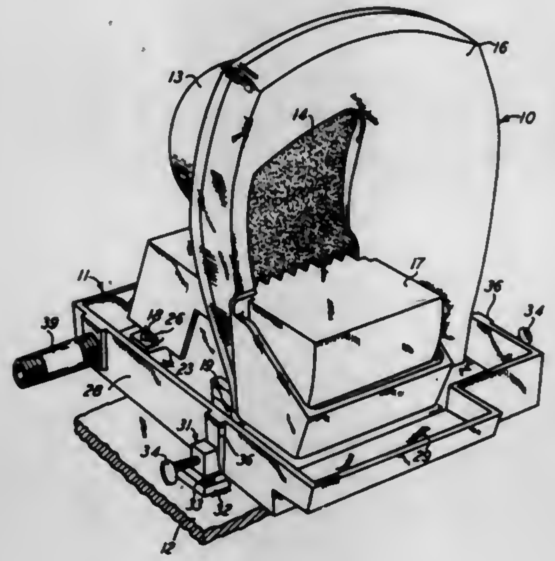
Donald F. Stahr, Johnstown, and Rudolph M. Yandrick, Indiana, both of, Pa., assignors to FMC Corporation, San Jose, Calif.
Filed June 3, 1969, Ser. No. 829,961
Int. Cl. B24b *9/06*
U.S. Cl. 51—125 **10 Claims**



A beveled edge is formed on a very thin, cylindrical silicon wafer by depositing a quantity of diamond lapping material on the upper peripheral edge portion of the wafer and bringing a rotating, hard steel tool down into engagement with the edge portion of the wafer, the tool having a water-engaging face which is beveled at the desired angle.

3,603,040
DENTAL MODEL TRIMMER WITH A COMBINED MOUNTING SUPPORT AND SEDIMENT TRAY

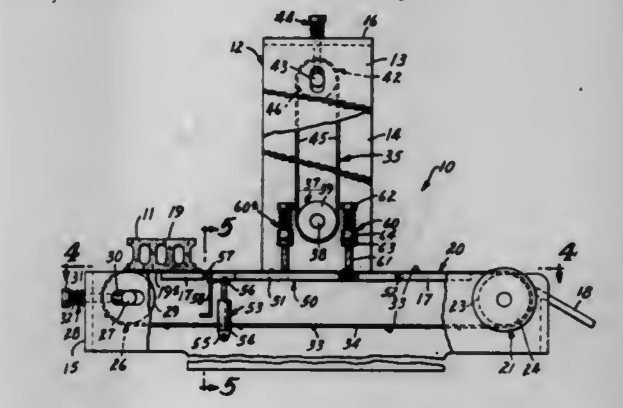
Werner A. Paterson, 3222 North Main, Racine, Wis.
Filed Sept. 18, 1969, Ser. No. 859,001
Int. Cl. B24b *55/02*
U.S. Cl. 51—125 **5 Claims**



A dental model trimmer with a combined mounting support and sediment tray. A hollow trimmer housing encloses a grinding wheel, and water is directed into the housing and a drain extends from the housing to have the water flow into the tray below the housing. A drain hole is spaced above the level of the tray floor, and the water can drain out the hole while the sediment remains on the tray floor, and the drain hole will therefore not be clogged. Mounting means and fasteners are provided for securing the trimmer to the combined mounting support and sediment tray, such that the trimmer is removable from the combined mounting support and sediment tray, and the tray is releasably attachable to the bench or the like.

3,603,041
BLOCK-GRINDING APPARATUS

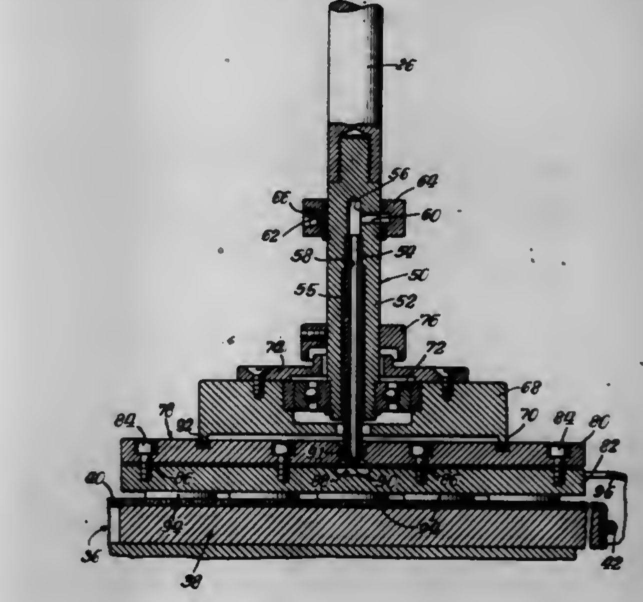
William J. McDonald, Stillwater Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Apr. 23, 1969, Ser. No. 818,657
Int. Cl. B24b *21/12*
U.S. Cl. 51—138 **7 Claims**



A grinding apparatus wherein a block to be abraded is transferred to and held on a constant load bed which, through pivotable connections and constant force fluid cylinders, maintain said block in engagement with an abrasive material and pivotably accommodates varying geometric shapes of blocks in order to control the grinding depth over the facial surface and thus minimize the removal of material required to permit all portions of a facial surface, although possibly irregular, to be abraded to at least a predetermined grinding depth.

3,603,042
POLISHING MACHINE

Stephen A. Boettcher, Deerfield, Ill., assignor to Speedfam Corporation, Skokie, Ill.
Filed Sept. 20, 1967, Ser. No. 669,177
Int. Cl. B24b *5/00, 55/02*
U.S. Cl. 51—131 **9 Claims**



A polishing machine load plate unit to which workpieces are affixed for polishing, and through which fluid is directed for effecting cooling of the unit.

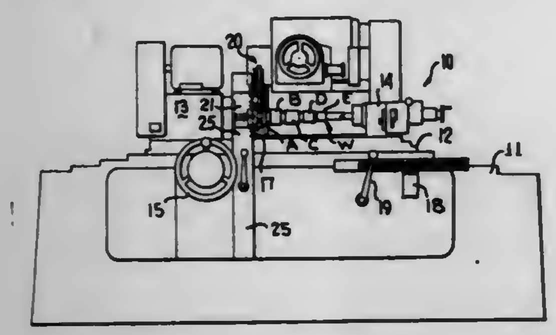
3,603,043
COHERED YARN FABRICS AND METHOD FOR FORMING SAID YARN

Paul Paliyenko, Charlotte, and Stanley Rollinson, Salisbury, both of, N.C., assignors to Fiber Industries, Inc.
Continuation-in-part of application Ser. No. 708,621, Feb. 27, 1968, now abandoned. This application Dec. 5, 1968, Ser. No. 786,811
Int. Cl. D02g *1/16;* **D03d** *13/00;* **D04b** *1/14*
U.S. Cl. 57—140 **8 Claims**

A knitted or woven fabric and the process for preparing such fabrics from continuous filament yarns cohered by means of double opposed pneumatic false-twisting jets whereby the yarns have a spreadability factor not greater than about 11.

3,603,044
GAUGE MECHANISM FOR GRINDING MACHINES

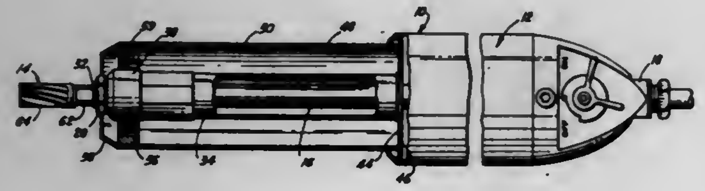
Ralph E. Price, Waynesboro, Pa., assignor to Litton Industries, Inc., Beverly Hills, Calif.
Filed June 10, 1969, Ser. No. 831,937
Int. Cl. B24b *49/04*
U.S. Cl. 51—165.91 **19 Claims**



This disclosure relates to automatic machines for grinding workpieces having axially spaced portions of different diameters, and particularly relates to a gauge mechanism which is used to determine the unground diameter of each workpiece portion to assure that the workpiece is within certain tolerances so that the grinding wheel may be advanced rapidly to a point just out of contact with the workpiece before reducing the rate of approach for the grinding feed. The gauge mechanism includes a workpiece-engaging element or caliper of a chordal type having upper and lower shoe portions and a centrally located gauging probe member which is movable to cover a wide range of workpiece diameters. The work-engaging element is suspended by pivoted links of different lengths to permit the centerline of the probe to pass through or near the center of the workpiece, regardless of the workpiece diameter, so that each shoe portion will contact the work simultaneously.

3,603,045
MACHINE TOOL

Perceptimus J. Mighton, Tulsa, Okla., assignor to Mary C. Harter, Tulsa, Okla.
Filed Apr. 1, 1968, Ser. No. 722,814
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 R **2 Claims**

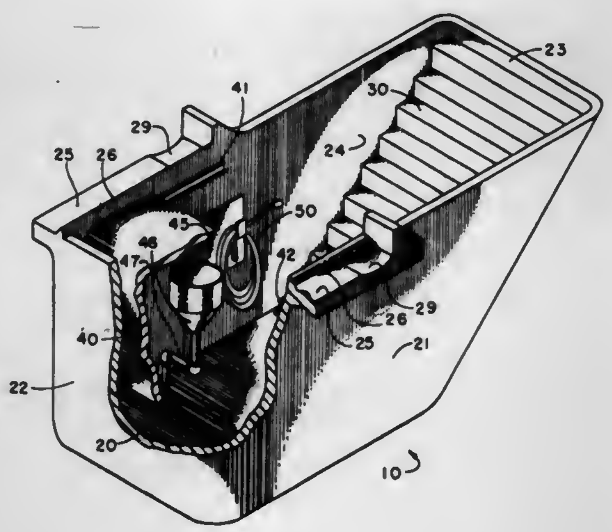


A cutting or machining tool threadedly secured directly to the output shaft of an air motor, or the like, and having means for directing the air which operates the motor onto the cutting tool to keep the tool cool during a machining operation, thus precluding undue heating of the tool and the workpiece.

3,603,046
AUTOMOBILE SERVICING UNIT

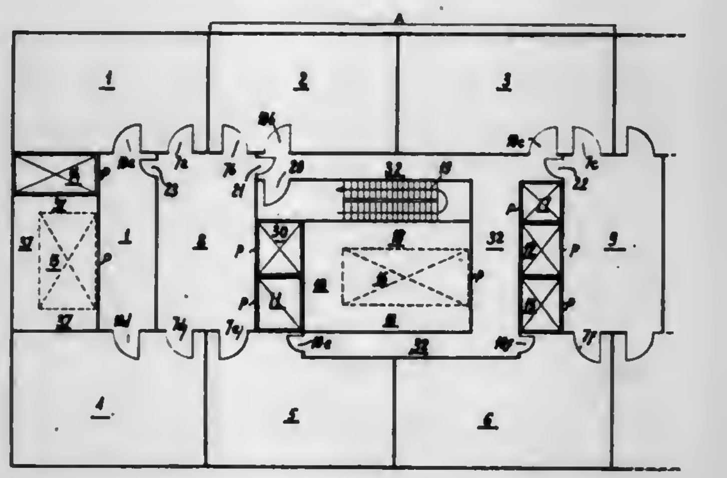
Stanley Humphrey, Jr., 2924 Indiana N.E., Albuquerque, N. Mex.
Filed May 8, 1970, Ser. No. 35,752
Int. Cl. E04h *14/00*
U.S. Cl. 52—173 **13 Claims**

A unit to accommodate a person and over which an automobile may be positioned to allow the person access to the underside of the automobile, including an open enclosure having a stairway providing ingress and egress thereto, a doorway closable over the opening to prevent unauthorized access to the enclosure, and means for positioning the car at a location allowing access to the desired portions of the underside of the automobile.



3,603,047
BUILDING AND INTERIOR ARRANGEMENTS THEREOF

Max Tournier, 54 rue Bonaparte, Paris 6 eme, France
Filed Sept. 8, 1967, Ser. No. 666,328
Claims priority, application France, July 6, 1967, 113294
Int. Cl. E04h *3/02*
U.S. Cl. 52—30 **3 Claims**

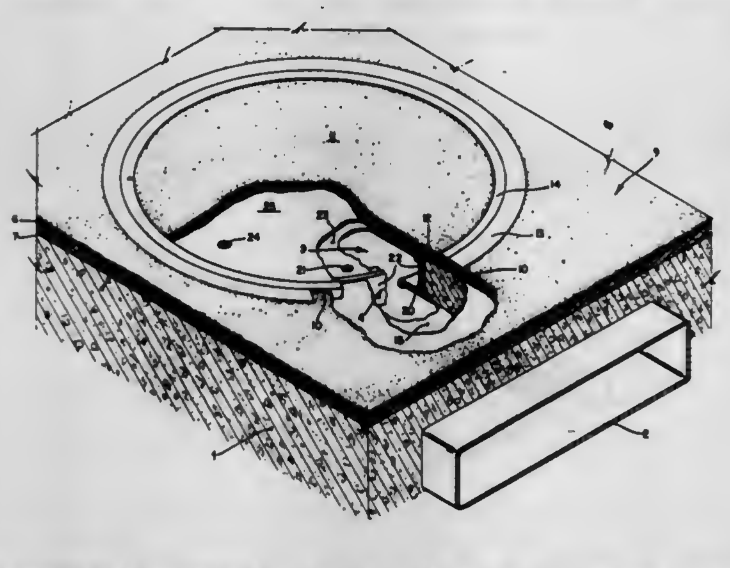


Building of the type in which a plurality of utilization areas defined by walls and adapted to be occupied by a first category of users, are provided with at least one entry giving access to a reception zone for said users of the first category and at least one service area adapted to be utilized by a second category of users for the reception and/or the handling of objects. Means are present for enabling the objects and the users of the two above-mentioned categories to circulate between the utilization areas, the service area, and the reception zone.

3,603,048
CARPET-UNDERFLOOR ADAPTER

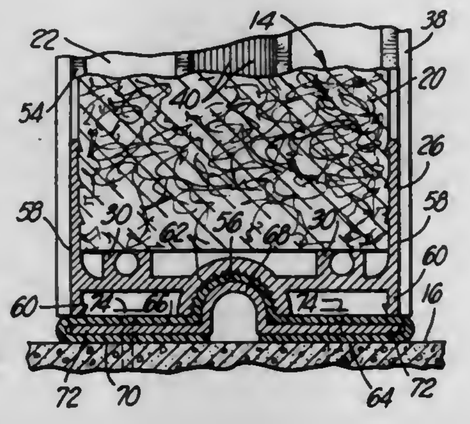
Robert W. Hadfield, Belpre, Ohio, and William H. Harding, Parkersburg, W. Va., assignors to Textron Inc., Providence, R.I.
Filed Apr. 2, 1970, Ser. No. 25,050
Int. Cl. E04f *19/08*
U.S. Cl. 52—221 **3 Claims**

A unitary piece for mounting on the cover of an electrical underfloor access unit or the cover of a junction box unit. While the adapter permits floor carpet to be installed directly over the unit and thereby preserve carpet continuity, it nevertheless provides ready access to the cover for maintenance and/or conductor installation purposes.



3,603,049
WALL PANEL CONSTRUCTION AND ASSEMBLY INCLUDING IMPROVED EDGE AND BOTTOM SEALING

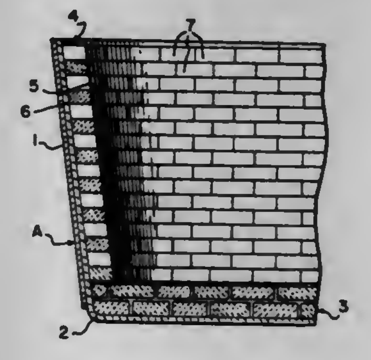
William C. Pierce, Glendora, Calif., assignor to Joseph A. Garcia, Encino, Calif. and Roy C. Garcia, Panama City, Panama, part interest to each
Continuation-in-part of application Ser. No. 661,854, Aug. 21, 1967, now abandoned. This application Aug. 18, 1969, Ser. No. 850,742
Int. Cl. E04c *1/10*
U.S. Cl. 52—241 **3 Claims**



Upright wall panels have vertical side edges thereof aligned and continuously vertically extending side edge opening recesses, semicircular in horizontal cross section, aligned to form an assembled substantially circular recess between assembled side edges, each recess preferably having continuously vertically extending serrations formed therein and spaced horizontally therearound. The panel side edges horizontally telescope a circular cross section, vertical tie bar received within the assembled recesses, the tie bar having a resilient material sleeve the entire vertical extent of said panel side edges horizontally compressed over and inwardly between the recess serrations. At the same time, opposite face surface flanges at one of the panel side edges telescope and horizontally abut similar face surface flanges of the other panel side edge. Bottom edges of the assembled panels rest downwardly on a baseplate having an upwardly extending, semicircular projection received upwardly into downwardly opening, similar serration formed recesses at the panel bottom edges and a resilient material strip covering the baseplate is compressed over the baseplate projection over and between the serrations of the panel bottom edge recesses. Also, parts of the panel bottom edges at opposite face surfaces thereof downwardly compress the resilient material strip against the baseplate and the resilient material strip extends and is compressed beneath the under surface of the baseplate and a horizontal supporting surface.

3,603,050
LADLE LINING

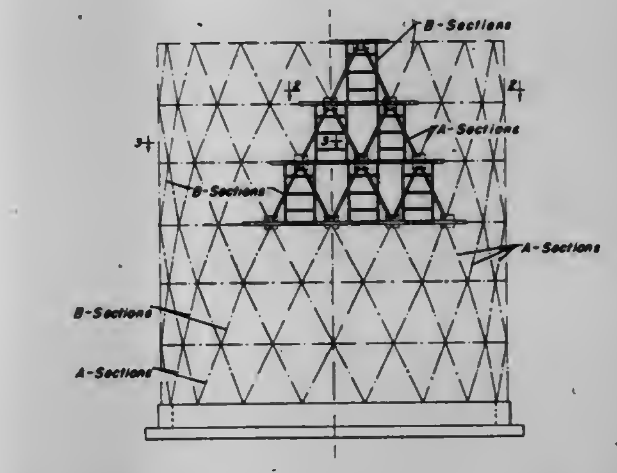
Myron Coleman, R.D. #1, Irondale, Ohio
Filed Aug. 22, 1969, Ser. No. 852,346
Int. Cl. C21b *7/06*
U.S. Cl. 52—249 **5 Claims**



A ladle having a curved conical sidewall provided with a lining comprising stacked courses of refractory blocks disposed with horizontal top and bottom faces and provided with parallel front and back faces inclined at substantially the same angle as the ladle sidewall to provide a lining face which is smooth and continuous.

3,603,051
LARGE-DIAMETER FRAMED STRUCTURE

Frederic G. Lussky, Northfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Feb. 5, 1970, Ser. No. 8,786
Int. Cl. E04g *11/06*
U.S. Cl. 52—245 **5 Claims**

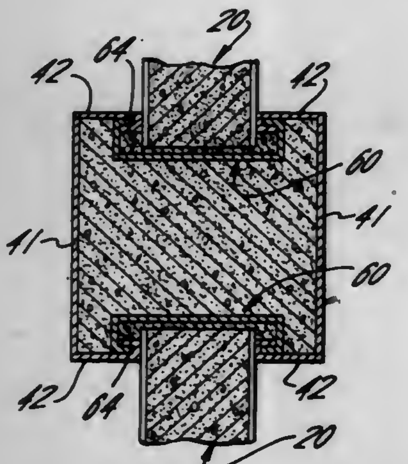


A large-diameter structure of structural framing and side paneling is provided from the use of alternating tiers of two different types of framing sections. Each type section is of an A-frame form with a horizontal girder section adapted to have its ends linked to adjacent sections so as to form circular tiers; however, one type of section has a straight horizontal girder with mitered ends so as to form a resulting ring, while the second type of section has its horizontal girder section fabricated with a central bend at the zone of the apex of the A-frame member. Vertically, the A-frame sections in one tier are staggered with respect to those in a next adjacent tier.

3,603,052
BUILDING CONSTRUCTION SYSTEM

Jose M. Novoa, 390 Sarg Luis Medina St., Hato Ray, P.R.
Filed Dec. 26, 1968, Ser. No. 787,062
Int. Cl. E04b *1/16*, E04c *2/50*
U.S. Cl. 52—257 **6 Claims**

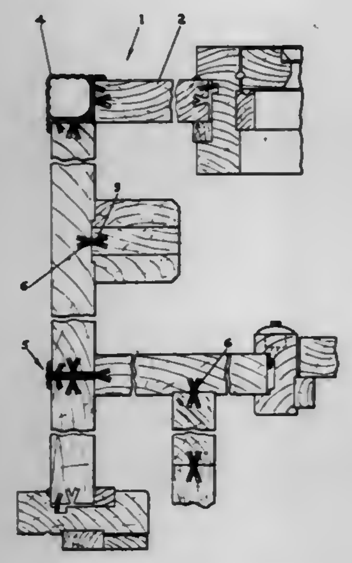
Molds are provided in the improved construction arrangement which can be put together in various ways for various shapes of columns, walls and the like construction elements, to prefabricate such elements on the construction site itself.



The molds become permanent parts of the prefabricated parts and remain in the final construction assembly of the building.

3,603,053
WALL CONSTRUCTION

Johannes Van Loghem, 83 Sophia Street, and Johannes La Grouw, Le Wairon Road, both of Rotorua, New Zealand
Continuation-in-part of application Ser. No. 559,566, June 22, 1966, now Patent No. 3,416,275. This application Dec. 16, 1968, Ser. No. 783,890
Int. Cl. E04b *1/40*
U.S. Cl. 52—285 **1 Claim**

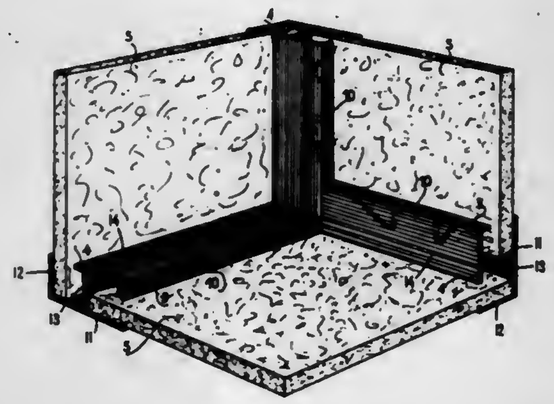


A wall construction of timber planks connected by connecting members with dovetailed slots provided in the planks arranged to be engaged by dovetailed projections on the connecting member. The slots are greater in depth than the dovetailed projections and a clearance area is provided adjacent to the center of the connecting member so that the dovetailed projection may move into the dovetailed slot and then move along the dovetailed slot with a minimum of frictional engagement until the timber planks being joined come together whereupon the dovetailed projections are tightened in the respective dovetailed slots.

3,603,054
RECTANGULAR CROSS SECTION MEMBER HAVING TWO PERPENDICULAR ENTRY CHANNELS

Yves Didry, 44 Avenue Paul Vallant, Montreuil Sous Bois, France
Filed Oct. 24, 1968, Ser. No. 770,204
Claims priority, application France, Oct. 26, 1967, 126,020
Int. Cl. E04b *2/58, 2/82*
U.S. Cl. 52—282 **3 Claims**

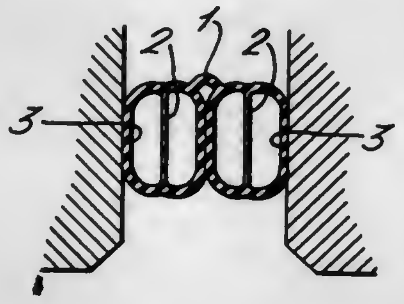
A plurality of panels may be assembled in a mutually perpendicular relationship so as to have their adjacent cooperating outer peripheral portions flush to one another by means of assembling the panels within channeled joining members. The joining members include integral angled portions defining two channels having their entrances arranged substantially perpendicular to one another. The angled portions form



an angled outer wall and an inner flange where the flange includes overhanging lip portions which partially obstruct the entrances to the channels. The channel entrance obstructions are arranged only on the internal flange so as to allow the panels to be arranged flush with one another when they are assembled in mutually perpendicular planes.

3,603,055
JOINT-SEALING HOSE

Oivind Dale, Ostre Kamford, Sandefjord, Norway, assignor to Olav Dale
Filed Dec. 2, 1968, Ser. No. 780,526
Claims priority, application Norway, Dec. 4, 1967, July 31, 1968, 170,814;3003/68
Int. Cl. E04b *1/36*
U.S. Cl. 52—403 **8 Claims**

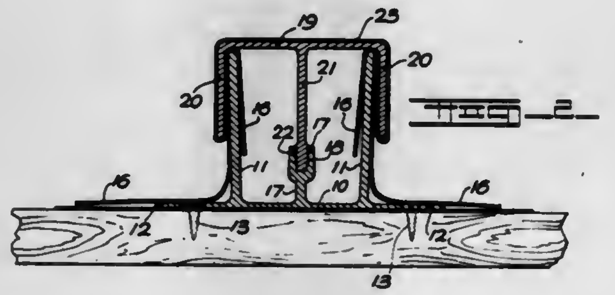


An elastomeric joint-sealing hose adapted to be inserted in the joint between a pair of members, wherein the hose is constructed of a pair of elongate tubes interconnected along one portion of their length, each tube having an integral, longitudinally extending, thin partition wall which is placed in tension upon insertion of the hose into the joint whereby the resistance to compression of each tube in the joint will be increased to thereby improve the seal of the joint.

3,603,056
BATTEN SEAM JOINT

Abraham H. Roth, 2526 Fifth Avenue, and Dave Roth, 2490 Barth Drive, both of Youngstown, Ohio
Filed Oct. 30, 1969, Ser. No. 872,697
Int. Cl. E04d *1/36*
U.S. Cl. 52—46 D **3 Claims**

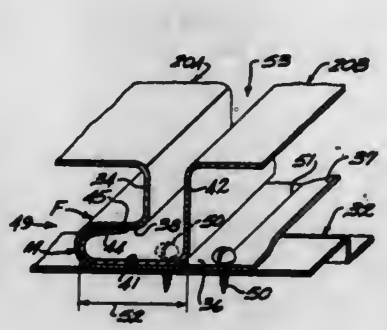
A batten seam joint providing a leakproof joint between adjacent roofing or sheathing member includes a longitudinally extending extrusion having spaced upstanding flanges inwardly from the edges thereof and a centrally disposed bifurcated fastener section. The adjacent longitudinal edges of the roofing or sheathing to be joined are positioned over the upstanding flanges and bent downwardly therebetween and a cap strip of the roofing or sheathing material is formed with longitudinally extending down turned flanges which are doubled and of a size to fit over the spaced upstanding flanges of the extrusion. A plurality of cut sections of a different extrusion are positioned at intervals in the cap strip and these cut sections include centrally disposed depending



fastener members for engaging the bifurcated fastener so as to hold the cap strip securely in position and complete the batten seam joint.

3,603,057
BUILDING WALL PANEL AND SIDE JOINTS THEREFOR

Bernard E. Curran, Sewickley, Pa., assignor to H.H. Robertson Company, Pittsburgh, Pa.
Filed Mar. 25, 1969, Ser. No. 810,147
Int. Cl. E04c *2/08, 2/46;* **E04d** *3/362*
U.S. Cl. 52—478 **6 Claims**

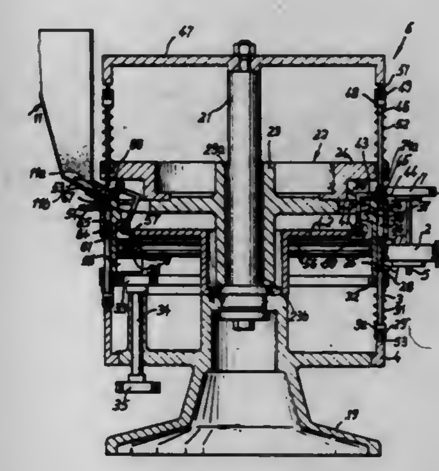


A building wall panel having improved marginal connecting means on opposite panel sides, providing an improved side joint between adjacent ones of the building wall panel. One marginal connecting means comprises a channellike female lip presenting opposed inner surfaces. The other marginal connecting means comprises a male lip including a reverse turned flange presenting a free edge. When the male and female lips are interengaged, the free edge of the reverse turned flange is resiliently urged into line contact along substantially its entire length with one of the opposed inner surfaces thereby to provide a gasket-free, essentially weathertight joint.

3,603,058
METHOD AND APPARATUS FOR THE PRODUCTION OF COMPOSITE FILTER TIPS

Bernhard Schubert, Neubornsen, near Hamburg, Germany, assignor to Hauni-Werke Korber & Co. K.G., Hamburg-Bergedorf, Germany
Filed Aug. 29, 1968, Ser. No. 756,221
Claims priority, application Great Britain, Sept. 5, 1967, Sept. 11, 1967, 40466/67;51345/67
Int. Cl. B31b *43/00;* **B65b** *1/22, 5/10*
U.S. Cl. 53—126 **39 Claims**

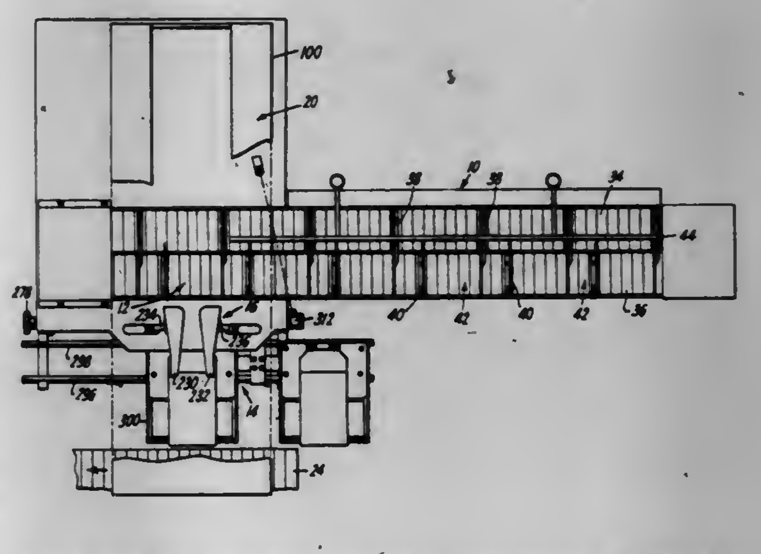
A filter tip which contains at least one charge of granular filter material is produced by moving a prefabricated upright tube sideways and introducing seriatim into the tube a first section of a filter plug, a charge of granular filter material, and a second section of the filter plug. The charge is formed immediately prior to introduction into the tube in a metering chamber which is adjacent to the upper end of the tube, and the first section is severed from the filter plug immediately



prior to introduction through the upper end of the tube. The charge can be introduced in a current of air and/or by gravity.

3,603,059
UNIVERSAL BAGGER

Roy W. Carnes, Henrico County; Fred D. Marasso, Richmond, and Robert E. Rademacher, Henrico County, all of, Va., assignors to AMF Incorporated, N.J.
Filed Sept. 27, 1968, Ser. No. 763,100
Claims priority, application Great Britain, Sept. 29, 1967, 44465/67
Int. Cl. B65b *5/06, 39/02*
U.S. Cl. 53—258 **4 Claims**

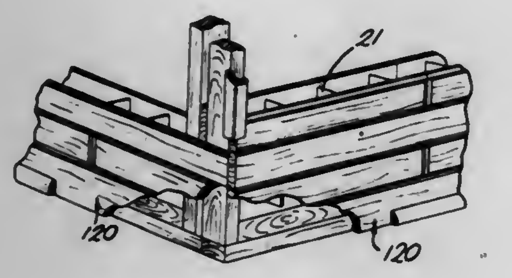


Apparatus for packaging articles, comprising a flighted infeed conveyor for transporting articles to a predetermined position, means for providing an inflated bag at a position spaced from the predetermined position, means for engaging an article at said predetermined position and inserting it into said inflated bag and means extending exterior of the infeed conveyor for changing the size of the flights thereof.

3,603,060
STRUCTURAL BUILDING SYSTEM

Charles Kay, Wyoming, Mich., assignor to J. Raymond Christy Enterprises, Inc., Grand Rapids, Mich.
Filed May 20, 1969, Ser. No. 826,207
Int. Cl. E04b *2/16;* **E04c** *1/10*
U.S. Cl. 52—281 **4 Claims**

A low-cost, high quality structural building system of interlocking hollow components which fulfill the structural and decorative requirements of both the interior and exterior surfaces of walls, or both surfaces of interior partitions, floors, ceilings, and rooves if desired, with windows and doors being interlockable therein, the components collectively enclosing the skeletal structural supports which complement these components, and to which these components are anchored.



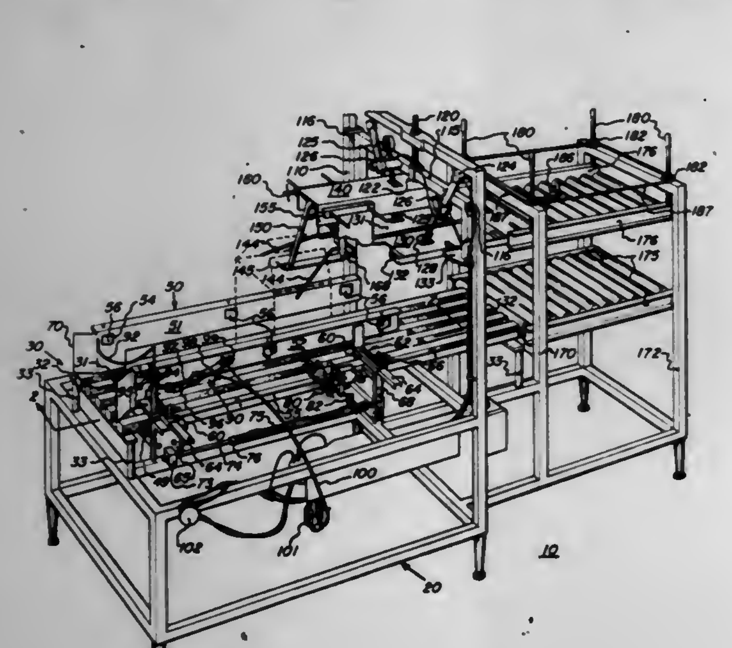
3,603,061
BOX-SEALING MACHINE

Oren B. Harmes, Algona, Iowa, assignor to Metronics Incorporated, Algona, Iowa

Filed Feb. 3, 1970, Ser. No. 8,281

Int. Cl. B65b *7/20*

U.S. Cl. 53—374 **18 Claims**



A machine in which an object is conveyed thereon over a predetermined path and varying work functions are performed on the object incident to the movement of a conveyor on the machine and in accord with the operation of a cam follower on a cam surface in which the cam surface is adjustable to vary the frequency in timing of the work function.

3,603,062
GAS-LIQUID SEPARATOR

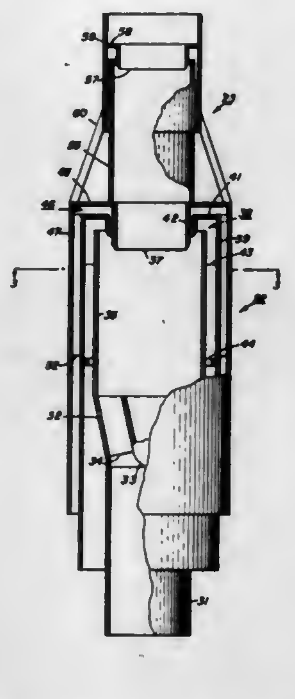
Charles H. Robbins, Saratoga; George W. Fitzsimmons, San Jose; Robert L. Hughes, Saratoga, and Robert L. Moen, San Jose, all of, Calif., assignors to General Electric Company

Filed Nov. 21, 1968, Ser. No. 777,611

Int. Cl. B01d *45/12*

U.S. Cl. 55—348 **10 Claims**

A gas-liquid separating arrangement of high-capacity per unit size including a centrifugal separator for creating a gas vortex surrounded by a liquid vortex having a first discharge passage for receiving separated liquid and a second discharge passage for receiving and separating the gas and liquid of the boundary layer between the gas and liquid vortices and including a centrifugal preliminary dryer for receiving the gas vortex from the separator and for removing additional liquid.



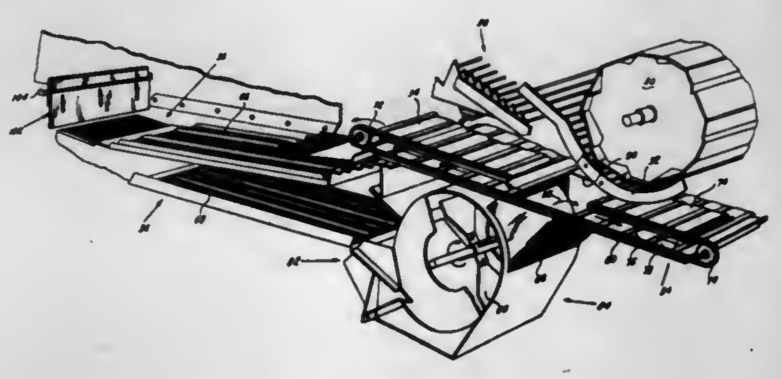
3,603,063
COMBINE

Clark E. Stroburg, and Eldon L. Stroburg, both of, Blockton, Iowa

Continuation-in-part of application Ser. No. 796,749, Feb. 5, 1969. This application Dec. 10, 1969, Ser. No. 883,941

Int. Cl. A01d *41/12*

U.S. Cl. 56—14.6 **14 Claims**



An airflow system for a combine harvester to more effectively float and carry away the straw and chaff and thus increase the efficiency of the separating and cleaning mechanism which includes conveying apparatus, straw walkers, a cleaning shoe mechanism comprising an adjustable chaffer and an adjustable sieve and a fan means for delivering an airflow up through the cleaning shoe mechanism all as is well known. This invention may be used with combines employing either a concave or a concave grate in relation to the threshing cylinder and includes means for utilizing the fan normally providing an undershot airflow to the cleaning shoe mechanism to also provide an overshot flow of air directed to pass intermediate the conveyor apparatus and the threshing cylinder in a rearward direction upwardly through and over the straw walkers and to float the chaff and straw out of the rear of the machine without preventing the heavier grain on the conveyor apparatus from reaching the cleaning shoe mechanism or the grain on the walker from falling either through the openings therein into the trough below or back onto the conveyor apparatus where it can move to the cleaning shoe mechanism. This invention also includes the mounting of a vertically adjustable air flow barrier between the underside of the straw walkers and the rearward end of the cleaning shoe mechanism so that a portion of the airflow will be deflected upwardly and somewhat forwardly relative to the cleaning shoe mechanism and then upwardly through the straw walkers and out of the rear of the machine.

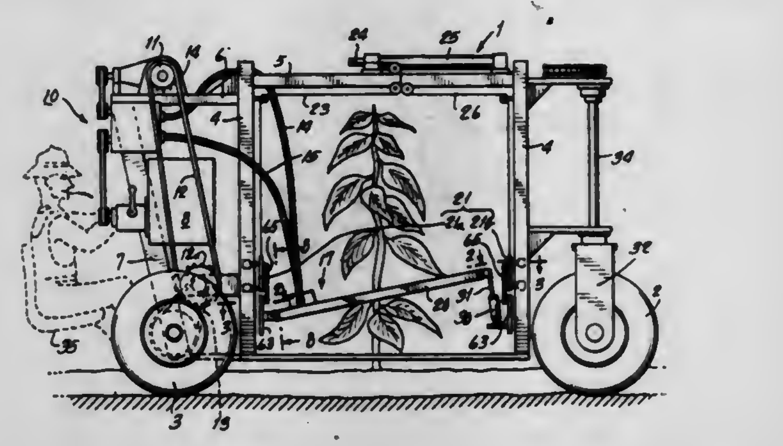
3,603,064
METHOD AND APPARATUS FOR HARVESTING TOBACCO

Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed May 19, 1969, Ser. No. 825,625

Int. Cl. A01d *45/16*

U.S. Cl. 56—27.5 **28 Claims**



Method and apparatus for defoliating selected sections of tobacco plants comprising forming a frame at least partially surrounding the stalk of the plant at a predetermined upper level and moving the frame downwardly of the stalk to a predetermined lower level, thereby engaging and removing leaves projecting from the stalk between those two levels. The frame is formed by two opposed endless bands running over guide wheels rotating about substantially vertical axes and carried along the row of tobacco plants by a vehicle arranged to straddle a row of such plants. The backward speed of the endless belts with respect to the vehicle on the reach adjacent the stalks of the plants is made substantially equal to the forward speed of the vehicle. Each endless belt carries a series of spaced fingers projecting toward the other band. The projecting fingers on the opposed bands cooperate with the other parts of the bands to define the frames for stripping the leaves from the tobacco stalk.

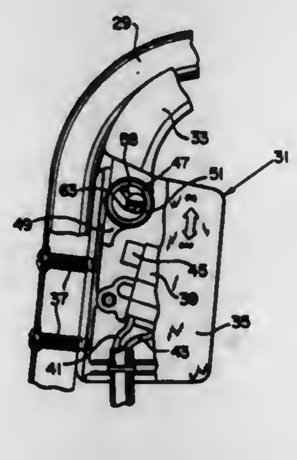
3,603,065
CAM SAFE SWITCH ACTUATOR

Edwin J. Weber, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 26, 1969, Ser. No. 861,319

Int. Cl. A01d *35/24*

U.S. Cl. 56—16.7 **18 Claims**



A lawnmower having a housing supported for movement along the ground by a plurality of wheels. A motor-powered reel is supported for rotation upon the housing and cooperates with a bedknife to cut grass. A bale handle extends upwardly from the housing and has a lever-operated switch disposed thereon for actuation of the motor. Novel safety means is provided to selectively prevent actuation of the switch by the lever.

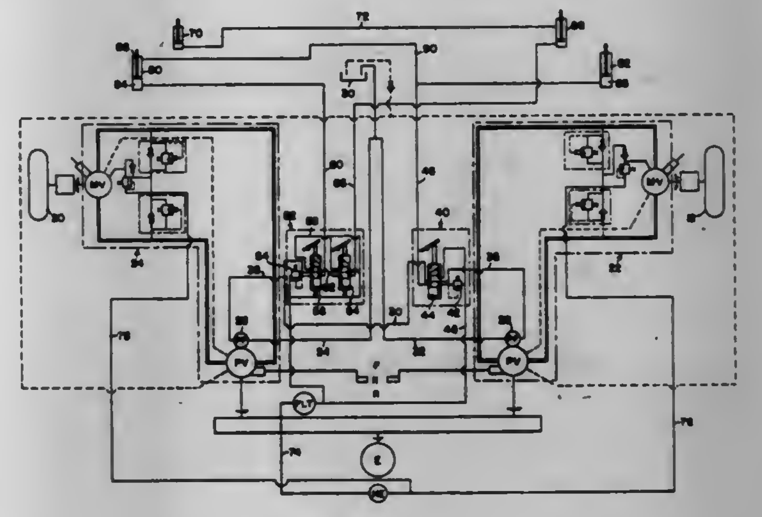
3,603,066
HEADER CONTROL FOR A HARVESTER

Donald E. Burrough, and Joe Paul Leinhauser, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 9, 1970, Ser. No. 9,851

Int. Cl. A01d *67/00*

U.S. Cl. 56—208 **5 Claims**



A self-propelled windrower has a forwardly disposed transversely elongated header mounted on the main frame of the windrower for independent vertical adjustment of the opposite ends of the header. The position of the opposite ends of the header are respectively controlled by a pair of hydraulic cylinders operative between the main frame and the header at transversely spaced points, one of said cylinders being a master cylinder and the other being a slave cylinder. Both cylinders are simultaneously actuated through a first control valve, which controls the fluid pressure supplied to the master cylinder, so that the opposite ends of the header move in unison, while the header is tilted by actuating a second control valve, which adds or subtracts fluid from the slave cylinder only to raise or lower one side of the header relative to the other.

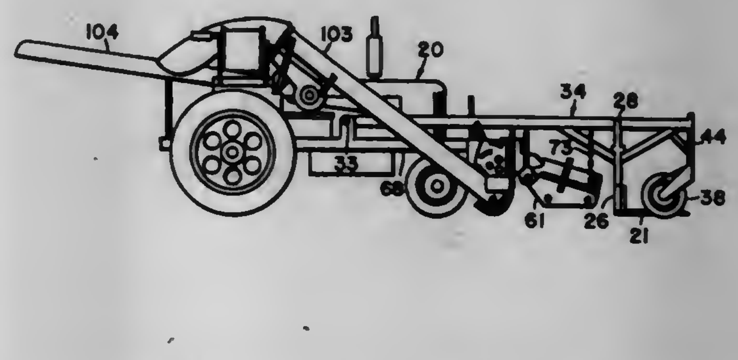
3,603,067
CUCUMBER-HARVESTING MACHINE

Lewis L. Wilde, Bailey, Mich., assignor to Wilde Manufacturing, Inc., Bailey, Mich.

Filed June 10, 1968, Ser. No. 735,807

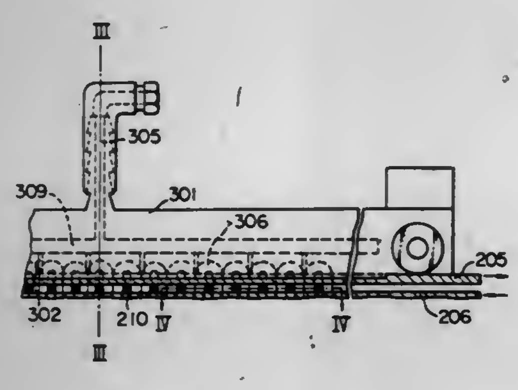
Int. Cl. A01d *45/00*

U.S. Cl. 56—327 R **5 Claims**



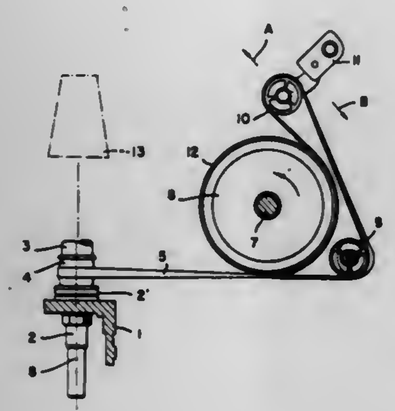
A cucumber-harvesting machine adapted to sever vines from the roots with a knife having variable angle of attack, elevate the vines from the ground with a conveyor, strip cucumbers from the vines with rollers variably spaced horizontally from the discharge end of the elevating conveyor, and transfer the cucumbers to an accumulating station with a conveyor having a transverse section for discharging trash with an upward and lateral movement opposite to the movement of the cucumbers into the station.

3,603,068
APPARATUS FOR FALSE TWISTING
Hirohiko Iida; Kazuyoshi Kida, and Koen Taira, all of Komatsu-shi, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Mar. 25, 1969, Ser. No. 810,099
Claims priority, application Japan, Mar. 27, 1968, May 22, 1968, 43/19915;43/34637
Int. Cl. D01h *1/24*
U.S. Cl. 57—104 **4 Claims**



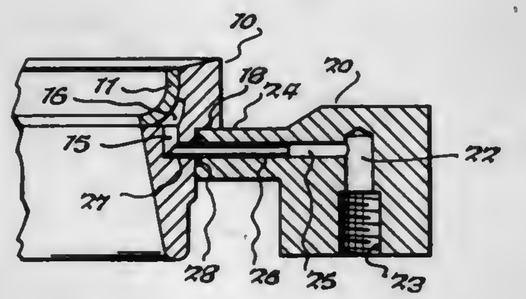
The present invention is intended to false twist a number of continuous filaments or yarns in the sheet form with a compact and inexpensive system comprising much fewer heating and cooling members than conventional false twisters and belt-driven spinners, said sheet form being utilized for treating filaments or yarns by waxing, sizing, etc. and said belt being controlled in driving by pneumatic mechanism so as to enable each spinner to be urged against the belt and to rotate for inserting twist consistent from spinner to spinner to passing continuous filaments or yarns.

3,603,069
BELT-TYPE DRIVE ARRANGEMENT FOR SPINNING MACHINES AND THE LIKE
Aloys Greive, Munster, Westphalia, Germany, assignor to Hamel G.m.b.H. Zwirnerei-und Spinnereimaschinen, Munster, Westphalia, Germany
Filed Apr. 7, 1969, Ser. No. 814,065
Claims priority, application Germany, Apr. 11, 1968, P 17 60 172.8
Int. Cl. D01h *3/16;* **F16h** *7/00, 7/08*
U.S. Cl. 57—105 **9 Claims**



In order to be able to stop a spool on a thread-spinning machine without stopping the drive motor, the drive pulley, which is connected via a belt to the driven pulley of the spool, is coated with a synthetic-resin layer affording a relatively high coefficient of friction while the coefficient of friction of the driven pulley is relatively low. A tensioning pulley enables slackening of the belt so that it will continue to move with the drive pulley but will slip on the driven pulley.

3,603,070
LEAKAGE-PREVENTING CONSTRUCTION FOR SPINNING RINGS
Hyatt B. Atwood, Buffalo, and James N. McLean, Tonawanda, both of, N.Y., assignors to Herr Manufacturing Company, Inc.
Filed Sept. 23, 1969, Ser. No. 860,289
Int. Cl. D01h *7/62*
U.S. Cl. 57—120 **4 Claims**

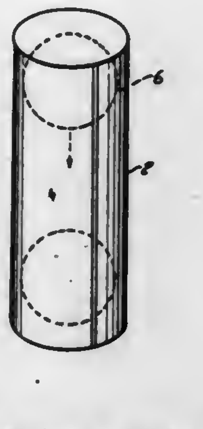


A lubricant-conducting passage from a ring-supporting member to a spinning ring is provided. A depression is formed between abutting surfaces of passages and provides a leakproof construction for lubricant passing from the member to the ring. The structure has particular application to various types spinning machines.

3,603,071
CORDS FOR ANNULAR REINFORCING TIRE BELTS
Kevin B. O'Neil, Akron; Cameron R. Fraser, Cuyahoga Falls, Ohio, and Paul E. Helms, Jr., Fort Knox, Ky., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 22, 1970, Ser. No. 30,973
Int. Cl. B60c *9/02;* **D02g** *3/04, 3/48*
U.S. Cl. 57—140 BY **10 Claims**

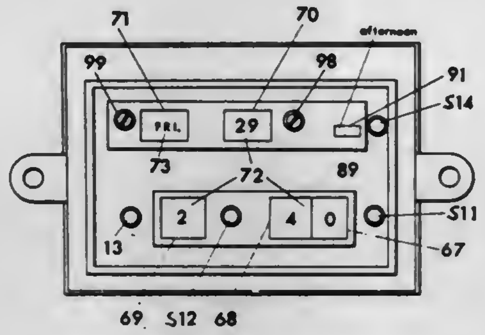
A cord composed of merged or cabled yarns of fiberglass and polyester for reinforcing tire belts.

3,603,072
LIQUID ANNULAR ORIFICE DASHPOT TIMER WITH MODIFIED LIQUID
David S. Breed, Box 270, R.D. #2, Boonton, N.J.
Continuation-in-part of application Ser. No. 816,132, Dec. 9, 1968, now Patent No. 3,563,025, which is a continuation-in-part of application Ser. No. 770,215, Oct. 24, 1968, now abandoned. This application Jan. 8, 1970, Ser. No. 1,340
Int. Cl. G04f *1/00*
U.S. Cl. 58—1 **28 Claims**



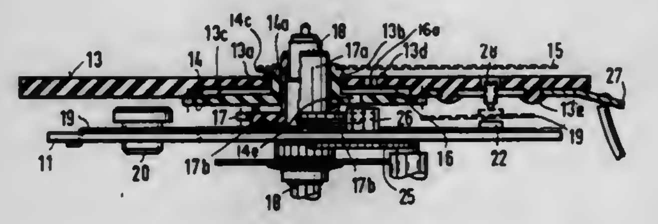
The dashpot of this invention includes a substantially cylindrical glass tube in which travels a piston having a diameter slightly less than that of the interior of the tube. A modified liquid or gum defines the medium in the cylinder in which the piston is adapted to travel. The flow ingenerated in the cylinder is predominantly a pressure flow with the shear flow being relatively insignificant. The device of the present invention operates in the lubrication region whereby relatively small timers are capable of providing delays up to several months or more.

3,603,073
ELECTRIC TIMEPIECE
Kinji Terada, Toyota, Aichi; Tokuzo Inariba, Nishikasugai-gun, Aichi; Atsumu Hiraiwa, Nagoya, Aichi, and Takeshi Taniguchi, Fuwa-gun, Gifu, all of, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Prefecture, Japan
Filed Mar. 26, 1969, Ser. No. 810,560
Claims priority, application Japan, Mar. 29, 1968, June 4, 1968, June 13, 1968, June 13, 1968, July 8, 1968, July 10, 1968, July 10, 1968, 43/20101;43/37763;43/40227;43/40226;43/57396;43/58076;43/58075
Int. Cl. G04b *19/24*
U.S. Cl. 58—6 **18 Claims**



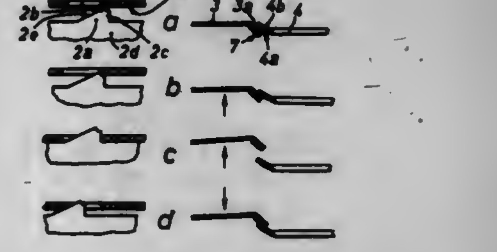
An electric timepiece indicates time by numerals which appear in openings provided on a casing surface of the timepiece. A time indicator mechanism includes time indication elements operable every unit of time such as a minute, a 10 minute interval, an hour and so forth. The driving force of a motor operates according to pulse signals applied at given intervals of time is transmitted selectively to the time indicator mechanism through a driving force transmission mechanism. The transmission mechanism selectively actuates the time indicator mechanism to advance the minute time indication element at each operation of the motor. An advance mechanism responds to movement of each time indication element to its highest numeral, and constrains the transmission mechanism to selectively actuate the time indicator mechanism so as to advance the next higher order time indication element one step.

3,603,074
CLOCKWORK-TIME SWITCH
Wolfgang Ganter, Schramberg-Sulgen, and Heinz Otto, Rotenberg, both of, Germany, assignors to Messrs. Gebruder Junghans GmbH, Schramberg, Germany
Filed Nov. 26, 1969, Ser. No. 880,171
Claims priority, application Germany, Nov. 29, 1968, G 68 09 258
Int. Cl. G04b *29/04*
U.S. Cl. 58—16 **10 Claims**



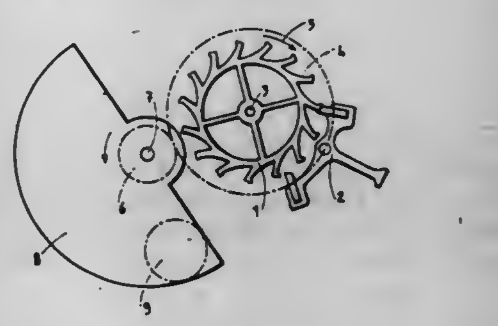
A clockwork mechanism is provided having a return locking spring disposed between a baseplate and an adjustment wheel of the device. The adjustment wheel is formed with a hub having a longitudinal slot so that the hub may be compressed and fit within a hole formed in the baseplate. The indicating hand of the clock may be formed with projections which fit into the slot to prevent the hub from being compressed and removed from the hole. An alarm release spring is mounted within the mechanism and operates in a cantilever manner to actuate and shut off the alarm.

3,603,075
DEVICE FOR LIMITING THE ALARM TIME IN ELECTRIC ALARM CLOCKS
Robert Wolber, Lauterbach, Wurttemberg, and Friedrich Assmus, Schramberg, Wurttemberg, both of, Germany, assignors to Gebruder Junghans G.m.b.H., Schramberg, Wurttemberg, Germany
Filed May 20, 1970, Ser. No. 39,117
Int. Cl. G04c *21/22*
U.S. Cl. 58—20 **14 Claims**



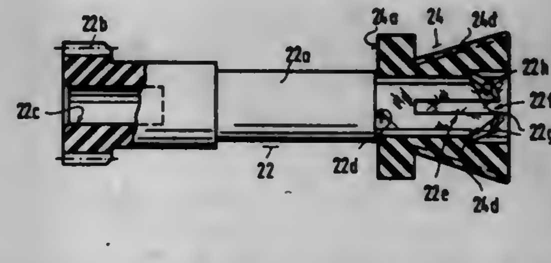
An alarm device for an electrical clock including a two-stage actuating member which serves to sequentially actuate and disengage an alarm switch. One element of the alarm switch is movable into an inoperative position.

3,603,076
TIMEPIECE COMPRISING AN OPTICAL MEANS FOR INDICATING THE BEAT OF THE SECONDS
Xavier Theurillat, La Chaux de Fonds, Switzerland, assignor to Mondia S.A., La Chaux de Fonds, Canton of Neuchatel, Switzerland
Filed May 27, 1970, Ser. No. 41,003
Int. Cl. G04b *19/06*
U.S. Cl. 58—127 R **5 Claims**



An optical means for indicating the beat of the seconds of a timepiece includes an obturator mounted under the window in the dial of the timepiece. The obturator is mounted on a shaft having a pinion gear engaging a gear wheel on the escapewheel of the timepiece.

3,603,077
CLOCKWORK MECHANISM, ESPECIALLY ALARM CLOCK MECHANISM
Wolfgang Ganter, Schramberg-Sulgen, Germany, assignor to Messrs. Gebrueder Junghans GmbH, Schramberg, Germany
Filed Nov. 17, 1969, Ser. No. 877,149
Claims priority, application Germany, Nov. 18, 1968, G 68 07 494
Int. Cl. G04b *27/00*
U.S. Cl. 58—22.5 **6 Claims**



A clockwork mechanism is provided having an axially shiftable and rotatable adjustment shaft. The shaft is provided at one end with two resilient axially extending projections which have wedge-shaped elements formed on the terminal ends thereof. A knob is provided and is formed with an axial bore having an internal shoulder disposed therein. When the shaft is inserted within the axial bore of the knob, the projections are wedged together until the wedge-shaped elements expand and engage within the wider portion of the bore defined by the internal shoulder thereof. To release the knob from the shaft, a pincer tool is inserted into the bore and the ends of the projections are forced together to disengage them from the internal shoulder. The other axial end of the shaft may be formed with an axial bore which slides and rotatingly about a pivot pin extending normally from a baseplate of the mechanism.

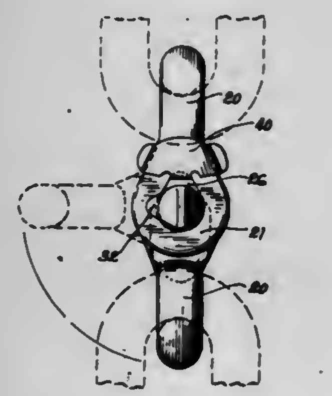
3,603,078

COUPLING LINK ASSEMBLY

Phillip D. Schwiebert, Glencoe, and Ivar H. Norinder, Mundelein, both of, Ill., assignors to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Filed May 12, 1969, Ser. No. 823,710
Int. Cl. F16g *13/06*

U.S. Cl. 59—85 **4 Claims**



A two-part coupling link constituting a pair of identical members, desirably forged, each of U-shape having a flattened portion on the end of one arm which forms a collar with an opening elongated longitudinally of the arm, and on the remaining arm of which member is a stud which projects outwardly in a direction away from said opening and in concentric relationship thereto. An integral flange on the outer end of the stud has a shape and size for passage through said opening when properly oriented and which is elongated along an axis angularly related to that of the opening. The members are brought together to be joined while in angularly related and opposed dispositions for the insertion of the flange and stud of one member in the opening of the other, and after which the members are extended from one another at dispositions which displace the flange elongations from those of the openings to prevent separation of the members in use and effectively stiffen the members against distortion under extreme loads. An auxiliary clip which grasps sides of one member and has a finger extending into the elongated opening may be used to prevent inadvertent disengagement of the members when not in use.

3,603,079

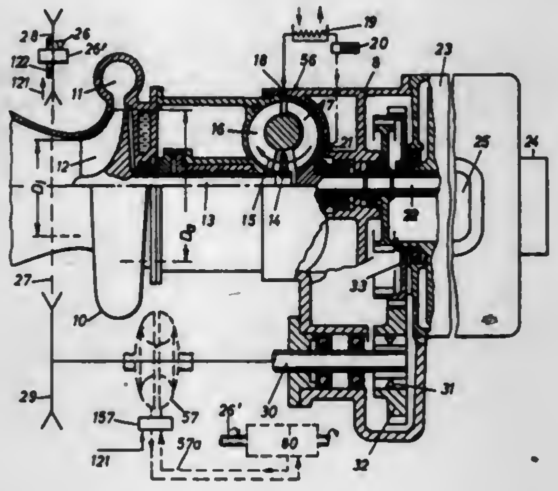
SUPERCHARGED INTERNAL COMBUSTION ENGINE, PARTICULARLY SUPERCHARGED DIESEL ENGINE FOR VEHICULAR DRIVES

Ernst Kickbusch, Eschenhofstrasse 46, 89 Augsburg, Germany

Filed Aug. 21, 1969, Ser. No. 851,855
Claims priority, application Germany, Aug. 22, 1968, Oct. 31, 1968, July 11, 1969, P 17 51 941.4;P 18 06 235.6;P 19 35 230.8
Int. Cl. F02b *37/08*

U.S. Cl. 60—13 **17 Claims**

A turbine, driven from the exhaust gases of the internal combustion engine, and having a speed-flow volume and pressure differential characteristic which is only little speed-dependent drives a Foettinger hydrodynamic torque converter which has a pump element which is highly speed-dependent, a radial flow turbine which is only little speed-dependent, and a guide vane element, the radial flow turbine of the fluid coupling driving a displacement-type rotary compressor so that, even at low engine speeds of the internal combustion engine, substantial supercharging effect can be obtained, whereas, as the engine speed increases, less supercharging effect will be obtained so that the average cylinder pressure at low speeds will be increased of cylinder pressure and engine torque will increase with decreasing speed, keeping the output power constant over a wide range of engine-operating speeds.



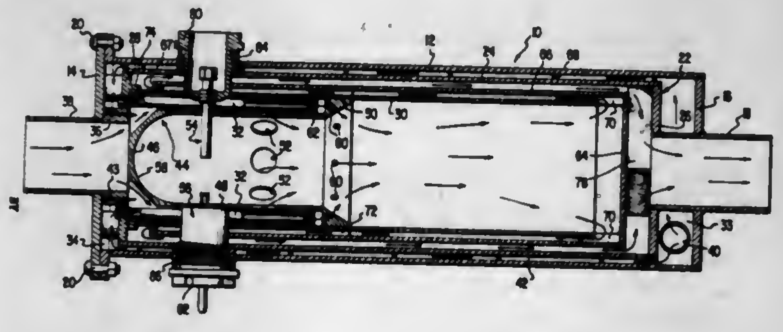
3,603,080

EMMISSION CONTROL ASSEMBLY

James W. McCrocklin, Alexandria, Va., assignor to A. S. Callaway

Filed June 25, 1969, Ser. No. 836,428
Int. Cl. F01n *3/14*

U.S. Cl. 60—30 **8 Claims**



Inner and outer housings of a combined muffler and emission control device define a passageway for incoming air. Exhaust gas is introduced into the inner housing and is mixed with a portion of the incoming air whereafter it is ignited and then mixed with further incoming air. The burning gas is used to preheat the incoming air by heat exchange through a wall of the inner housing and flow reversal within the inner housing is employed to produce an acoustical muffling effect.

3,603,081

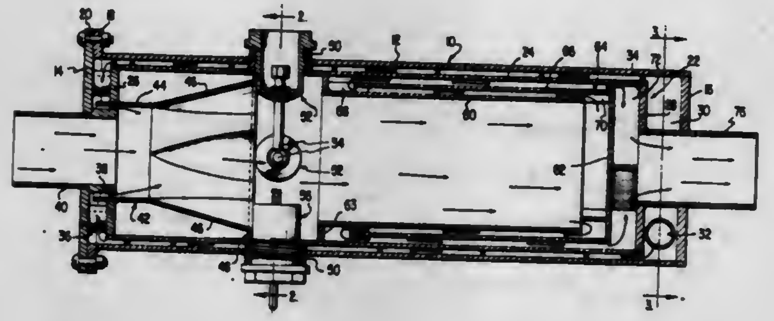
EMISSION CONTROL MEANS

James W. McCrocklin, Alexandria, Va., assignor to A. S. Callaway

Filed June 25, 1969, Ser. No. 836,471
Int. Cl. F01n *3/14*

U.S. Cl. 60—30 **2 Claims**

The mixing chamber of a combined acoustical muffler and afterburner receives exhaust gas and air at one end and beyond this region the chamber is provided with divergent cusps to form an expansion chamber wherein the exhaust gas and air are mixed and their velocity decreased for discharge through an ignition and burning zone. The ignition and burning zone is formed by a plurality of radially inwardly directed flame holding rods for sustaining the flame and a similarly located ignition device for initiating the flame. Downstream of this zone the burning gas may be caused to follow a tortuous path which effects acoustical muffling and preheating of the incoming air.



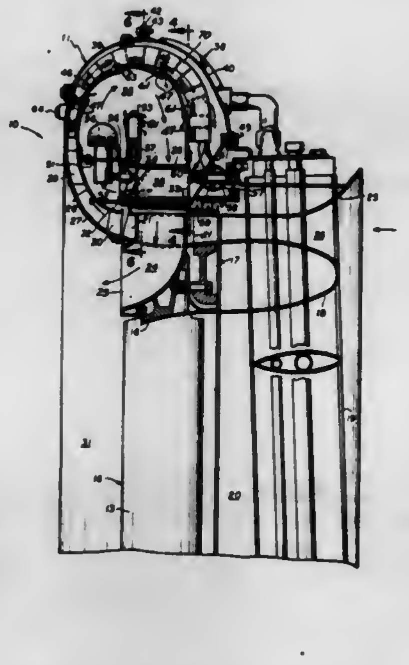
3,603,082

COMBUSTOR FOR GAS TURBINE HAVING A COMPRESSOR AND TURBINE PASSAGES IN A SINGLE ROTOR ELEMENT

Ralph J. Sneeden, Boxford, Mass.; Neil R. Brookes, Topsfield, Mass., and Hargus Watts, Hawthorne, N.J., assignors to Curtiss-Wright Corporation

Filed Feb. 18, 1970, Ser. No. 12,228
Int. Cl. F02c *3/06;* **F02k** *3/06*

U.S. Cl. 60—39.36 **18 Claims**



In a gas turbine engine having a compressor and turbine passages in a single rotor element, a combustor of annual, toroidal configuration comprises a segmentally constructed liner defining a combustion chamber providing a flow path of at least about 180° and spaced from a housing or shroud to define a diffusing combustion air supply passageway communicating with the annular outlet means of the compressor. The combustion chamber is provided with inlet means to receive air from the diffusing passageway and an outlet in communication with the turbine nozzles formed between next adjacent stator blades. Each of the stator blades has passage means therethrough to communicate the diffusing passageway with the combustion chamber inlet means to pass combustion air from the diffusing passageway to the latter and effect cooling of the stator vanes and heating of the combustion air. The liner has slip joints so constructed and arranged that unrestrained expansion and construction can occur while maintaining a constant diffusing passageway dimensional characteristics.

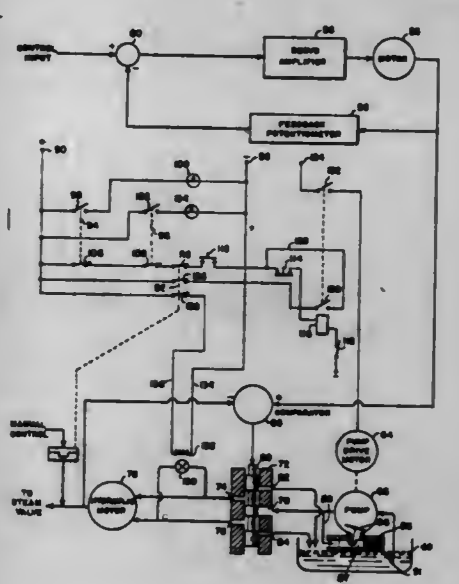
3,603,083

HYDRAULIC ACTUATOR

Richard Carl Coursen, Yardley, Pa., assignor to De Laval Turbine Inc., Trenton, N.J.

Filed Feb. 16, 1970, Ser. No. 11,670
Int. Cl. F15b *15/18*

U.S. Cl. 60—52 CD **7 Claims**



A servomechanism for use in controlling steam valves of turbines comprises a remote electrical servo arranged to drive a local hydraulic servo, which actuates the valves. Provision is made for manual actuation of the valves, with an interlock which prevents the hydraulic servo from being reactuated when the error signal is off zero by a predetermined amount. The interlock automatically bypasses driving oil at the ports of the hydraulic servomotor when manual control is effected.

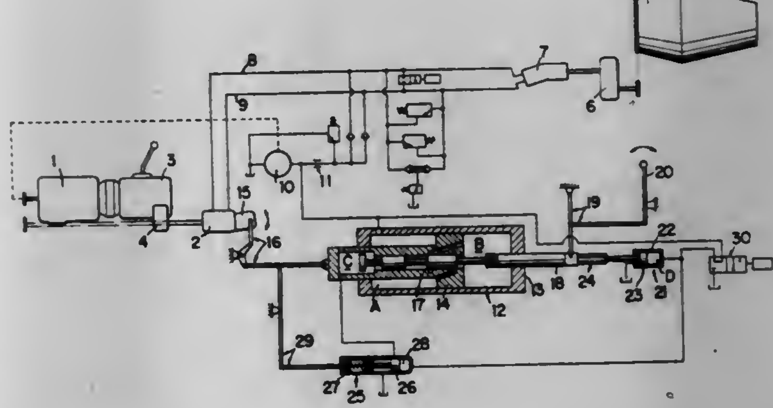
3,603,084

APPARATUS FOR DRIVING A DEVICE MOUNTED ON SPECIAL-PURPOSE VEHICLES

Takashi Okazaki, Hyogo-ken, Japan, assignor to Shinmeiwa Kogyo Kabushiki Kaisha, Nishinomiya-shi, Hyogo-ken, Japan

Filed July 31, 1969, Ser. No. 846,436
Int. Cl. F15b *15/18*

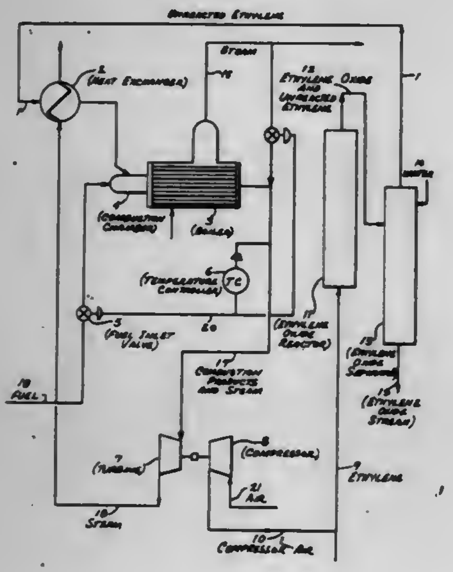
U.S. Cl. 60—52 VS **7 Claims**



An apparatus for driving a device mounted on special-purpose vehicles and the like having an engine, including a hydraulic pump driven by the engine and a hydraulic motor driven by the pump for driving said device. The pump is typically of a swashplate type with the tilting angle thereof being adjustable through a hydraulic piston and cylinder device incorporating a changeover valve by means of a manual operation lever. Another changeover valve is provided for switching the apparatus to an automatic operation in which the rotational speed of the hydraulic motor is kept constant irrespective of the rotational speed of the engine.

3,603,085
PROCESS FOR THE PRODUCTION OF ETHYLENE OXIDE

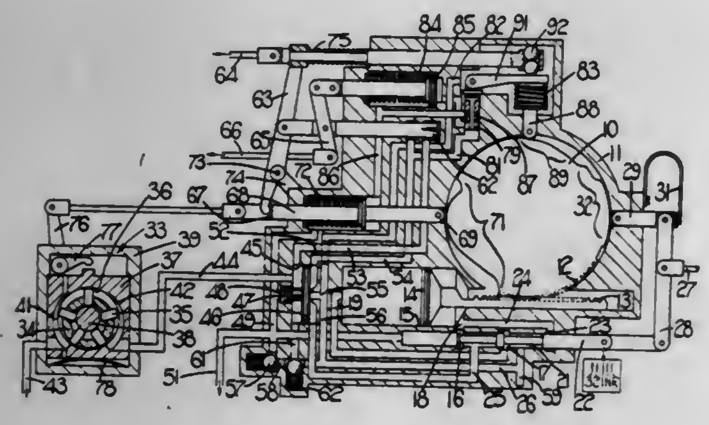
Mario Parmegiani, San Donato, Milanese, and Anacleto Clementi, Saronno, both of, Italy, assignors to Snam Progetti, S.p.A., Milan, Italy
Filed Feb. 16, 1968, Ser. No. 706,139
Claims priority, application Italy, Feb. 17, 1967, 12759 A/67
Int. Cl. F02c *3/00;* C07d *1/14*
U.S. Cl. 60—39.02 5 Claims



A process for producing ethylene oxide wherein a portion of the gases produced in the process are combusted with supplementary fuel to produce products of combustion that drive a gas turbine-air compressor. The compressed air from the air compressor is returned to the ethylene oxide reactor to be used in the production of ethylene oxide.

3,603,086
FLUID CONTROL APPARATUS

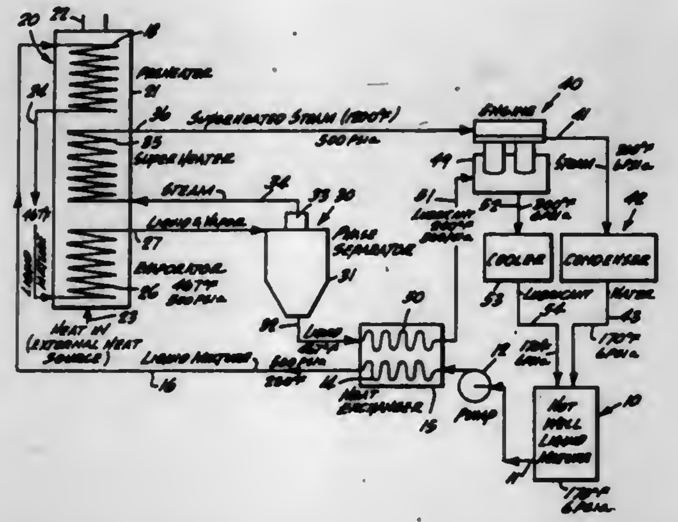
Richard Joseph Ifield, Beecroft, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Oct. 29, 1969, Ser. No. 872,315
Int. Cl. F16d *31/02*
U.S. Cl. 60—53 R 5 Claims



apparatus for controlling the pressure of the fluid delivered by a pump to a pressure responsive means and having a chamber 45 containing a movable member, flow of fluid from one side of the member to the other being through passage means and the outlet pressure being determined by the position of the member in the chamber to control the escape of fluid through an outlet and the pressure drop created by the restrictor being determined by changes in a parameter such as the position of a valve connected to a throttle lever for an associated prime mover for a transmission system in which the apparatus is used.

3,603,087
DUAL FLUID RANKINE CYCLE POWERPLANT

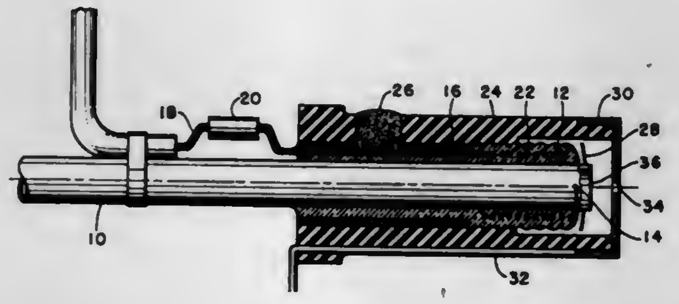
Curtis V. Burkland, Calabasas, Calif., assignor to CCI Aerospace Corporation, Van Nuys, Calif.
Filed June 27, 1969, Ser. No. 837,156
Int. Cl. F01k *7/00*
U.S. Cl. 60—64 11 Claims



A dual fluid Rankine cycle powerplant utilizes one fluid, such as water, as the working medium and another fluid, such as a glycol, ether, polyglycol ether (both alkyl and aryl) or polyphenyl as the lubricant. The lubricant is fully soluble in the working medium and has a substantially higher boiling point than the working medium. The two fluids are separated from one another prior to entering the engine by heating the mixture of the two liquids to the evaporation temperature of the working medium and then separating the vapor from the liquid lubricant. Thereafter, the vapor can be superheated to increase the thermal efficiency.

3,603,088
ION THRUSTER CATHODE

Shigeo Nakanishi, Berea, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Adminsistration
Filed May 18, 1970, Ser. No. 38,262
Int. Cl. F03h *1/00*
U.S. Cl. 60—202 10 Claims

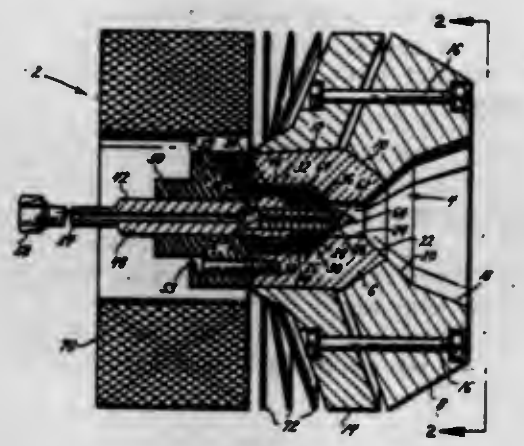


An encapsulated heater forms a hollow body for a cathode used in an ion thruster. A radiation shield surrounds the heater and supports an end cap.

3,603,089
PLASMA ARC THRUSTOR

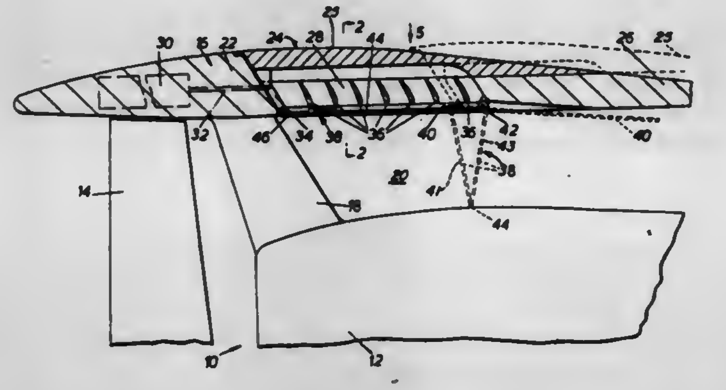
Donald W. Esker, St. Louis County, and Joseph C. Kroutil, Bridgeton, both of, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed June 11, 1968, Ser. No. 736,069
Int. Cl. F02k *7/08*
U.S. Cl. 60—203 11 Claims

A plasma arc thrustor including a hollow core formed from an electrically conductive substance capable of withstanding extremely high temperatures, and radiation flanges engaging the core and formed from a different but lighter material which is capable of conducting heat away from the core. An arc is maintained between an electrode in the hollow portion of the core and a composite electrode consisting of the core and one of the radiation flanges. A coil is located in offset relation to the arc, and radiation shields are interposed between the coil and the radiation flanges.



3,603,090
THRUST REVERSER FOR FAN TYPE JET PROPULSION ENGINES

Brian Arthur Billinger, Worsthrorne, near Burnley; Francis Peter MacNamara, Nelson, and George Samuel Cooper, Rawtenstall, all of, England, assignors to Rolls-Royce Limited, Derby, England
Filed Aug. 5, 1969, Ser. No. 847,556
Claims priority, application Great Britain, Aug. 8, 1968, 37,881/68
Int. Cl. F02k *1/20, 3/06;* B64c *15/06*
U.S. Cl. 60—226 2 Claims

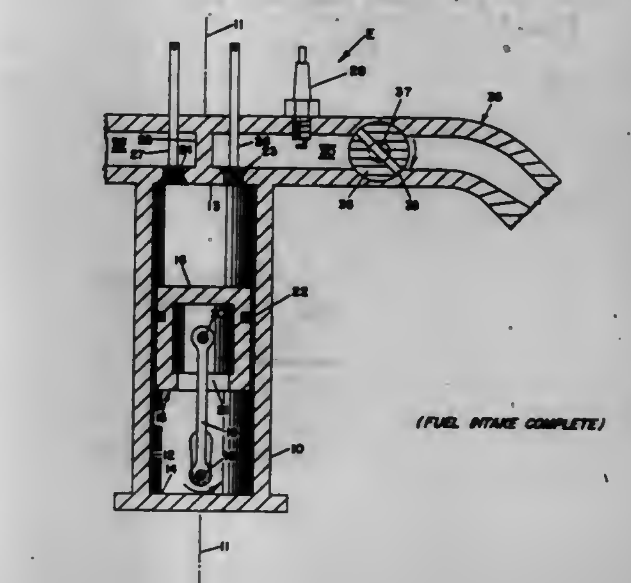


In a gas turbine jet propulsion fan engine, the fan duct outer wall is provided with primary and secondary fan air blocker flaps. In the nonoperative position, both sets of flaps cooperate to provide a continuous duct outer wall and in the operative position, the primary flaps fold upon themselves across the duct so as to block it and the secondary flaps translate rearwards, the effect being to provide a radial outlet for the fan air, which outlet is substantially clear of structure.

3,603,091
INTERNAL COMBUSTION ENGINE

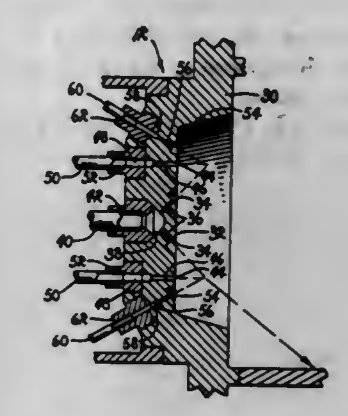
Bernhardt Stahmer, 1509 Chicago Street, Omaha, Nebr.
Filed June 26, 1969, Ser. No. 836,904
Int. Cl. F02k *7/06;* B63h *11/14*
U.S. Cl. 60—247 2 Claims

An internal combustion engine wherein successive finite gravimetric quantities of a gaseous thermally explodable medium are at periods of a given time interval compressed by a compression means through the closeable entrance port of a fixed partition wall into a constant volume explosion chamber where each successive gravimetric quantity is exploded in complete isolation from the compression means, substantially all the resultant gaseous combustion product being exhausted intermittently pulsewise from the explosion chamber through an exhaust channel leading away from the compression means and the fixed partition wall. The exhaust channel, downstream from the explosion chamber, has means to convert the intermittent pulse wise exhaust into useful work, including novel motive power for marine craft.



3,603,092
INJECTION HEAD FOR DELIVERING LIQUID FUEL AND OXIDIZERS

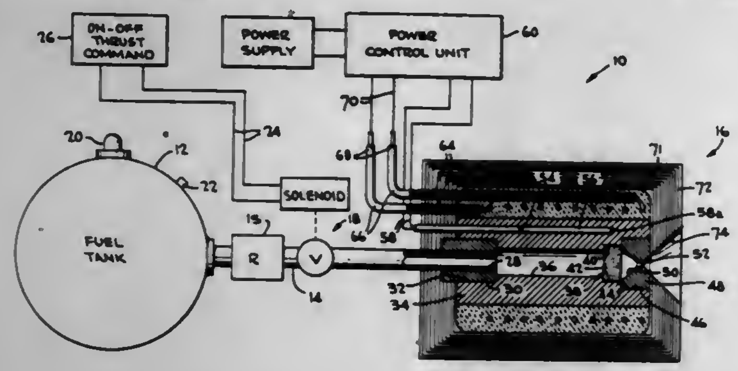
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, Martin G. Drexhage
Filed Sept. 24, 1969, Ser. No. 860,635
Int. Cl. F02k *9/02*
U.S. Cl. 60—258 4 Claims



An injection head for delivering liquid fuel and oxidizers to the thrust chamber of a reaction engine, characterized by a plurality of circumferentially arranged sets of radially aligned inner and outer fuel injection orifices, each set having an oxidizer injection orifice radially aligned therebetween, with each orifice of each set of orifices being adapted to deliver a stream intersecting the streams delivered by the other orifices of the set in a manner such that the velocity of the streams of fuel delivered from the inner and outer fuel injection orifices is sufficient to cause a portion of the stream delivered from the oxidizer injection orifice to be mixed with the stream delivered from the outer orifice and to be deflected along the wall of the thrust chamber so as there to establish a fuel-rich, cooler-burning region, while elsewhere achieving optimized mixing, whereby the temperature within the regions adjacent to the wall of the thrust chamber is maintained at an operative level substantially below that experienced elsewhere in the thrust chamber.

3,603,093
HEATED POROUS PLUG MICROTHRUSTOR

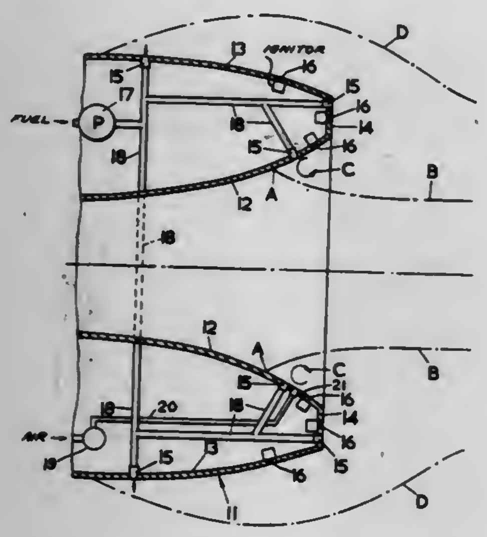
William C. Isley, Hyattsville, and William C. Lund, New Carrollton, both of, Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Mar. 6, 1970, Ser. No. 17,101
Int. Cl. F02k *9/02*
U.S. Cl. 60—260 **5 Claims**



The invention relates to porous plug application in spacecraft reaction jet controlled systems. Typical uses include pressure regulation and flow control, enhancement of propellant disassociation and augmentation of heat transfer rays of propellants. For heated applications, operating temperature of the porous plug can be achieved using a resistance element, or, alternatively, a radio isotope source in the form of a porous plug, for purposes of controlling mass flow rate of propellant and improving specific impulse. Also, the porous plug, in the heated embodiment may incorporate a high-heat capacity media for improving thermal storage properties. For unheated applications, the porous plug is utilized to provide both a stable passive liquid-vapor interface and a means for effecting contaminated insensitive pressure reduction device. Typical applications of the porous plug system are in station keeping and attitude control reaction jet systems for earth satellites.

3,603,094
AIRCRAFT FLUID JET REACTION ENGINES

Lionel Henry Townend, Farnborough, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed July 11, 1969, Ser. No. 841,068
Claims priority, application Great Britain, July 15, 1968, 33,543/68
Int. Cl. F02k *1/00, 3/10*
U.S. Cl. 60—261 **8 Claims**



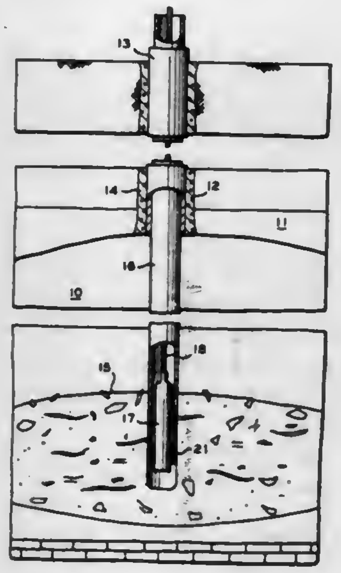
An aircraft fluid jet reaction engine having an exhaust nozzle which has means for supplying fuel to form a combustible mixture with the local atmosphere which is ignited by contact with the hot gas efflux from the exhaust nozzle and is burnt externally of said gas efflux. The burning mixture raises the static pressure at the region downstream and adjacent the exhaust nozzle thus reducing base drag and also acts to suppress noise from the gas efflux.

Igniter means are provided for initiating and maintaining combustion.

Fuel to form the combustible mixture is fed through fuel nozzles, in the engine structure at its downstream end, and upstream thereof both externally and internally of the exhaust nozzle.

3,603,095
METHOD OF RECOVERING STORAGE VOLUME IN AN UNDERGROUND CAVERN

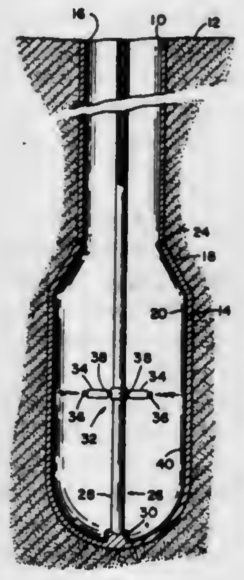
Hurshel V. Hendrix, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed July 7, 1969, Ser. No. 839,468
Int. Cl. B25g *5/00;* **E21f** *17/16*
U.S. Cl. 61—.5 **6 Claims**



Storage volume lost in an underground storage cavern as a result of debris collecting at the bottom thereof is recovered by lowering a casing string to a position adjacent the top of the debris, drilling into the debris through the casing string, advancing the casing string into the drilled hole, and thereafter recovering material from the cavern.

3,603,096
APPARATUS FOR INSTALLING A REINFORCED VESSEL IN AN UNDERGROUND CAVITY

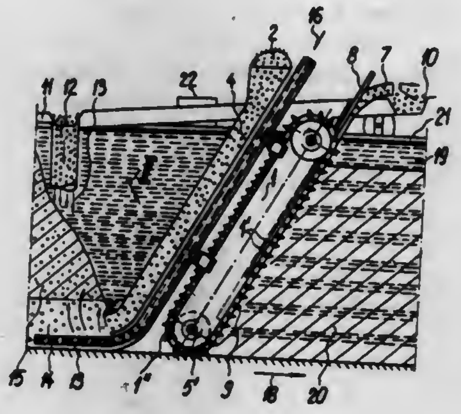
William M. Wells, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 10, 1969, Ser. No. 883,703
Int. Cl. B65g *5/00;* **B05b** *13/06*
U.S. Cl. 61—.5 **1 Claim**



A distensible vessel, reduced in diameter by means of folds in its sidewall, is passed through a bore into a cavity and is expanded to size by internal pressure. The interior of the vessel is then reinforced by building up a suitably thick deposit of material applied to the walls in an adherent spray by means of an arc-spray gun arranged to traverse the interior of the vessel.

3,603,097
PROCESS OF MAKING UNDERGROUND STRUCTURES FOR UNDERDRAINING AND SHIELDING PURPOSES

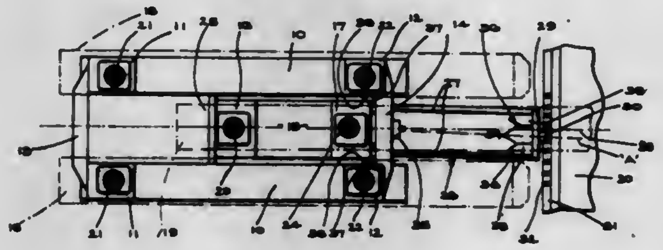
Bohdan Zakiewicz, Cracow, Poland, assignor to Przedsiebiorstwo Specjalistyczne Gornictwa Surowcow Chemicznych, Krakow, Poland
Filed Jan. 15, 1969, Ser. No. 791,358
Claims priority, application Poland, Jan. 22, 1968, P 124819
Int. Cl. E02b *11/00;* **F16l** *1/00*
U.S. Cl. 61—11 **3 Claims**



A trench dam is made by an apparatus which digs a trench in a water-permeable ground layer, then lays a perforated drainage conduit in this trench, partially fills the trench over the conduit with gravel to form a porous gravel bed, and then fills the trench over the bed with a mixture of the excavated earth and a binder to form a waterproof wall. This operation is carried out under a silt-water suspension to prevent collapse of the trench walls which are undercut by milling wheels on the lower end of the cutter. Clear water is pumped into the conduit during these operations to drive off this silt-water suspension.

3,603,098
ROOF SUPPORTS FOR MINE WORKINGS

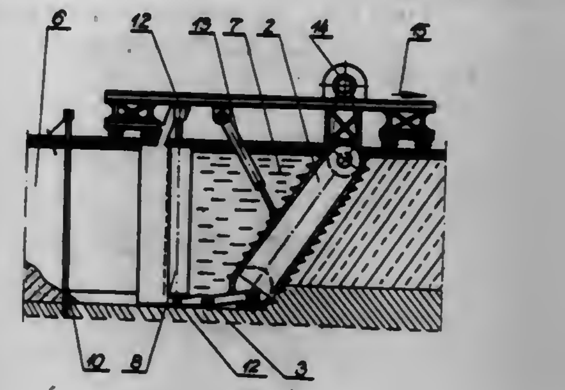
Karl Maria Groetschel, Stolzestrasse 44, 463, Bochum, Germany
Filed Oct. 17, 1969, Ser. No. 867,329
Claims priority, application Great Britain, Oct. 17, 1968, 49359/68
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 **6 Claims**



The invention provides a mine roof support in which centering of the outer part of a two-part base element with respect to a longitudinally extending medial reference axis is effected by contact faces which are mutually convergent, as viewed in plan, in a direction towards the forward end of the support, and are formed on two centering elements carried by a longitudinally movable guide element provided on the base of the support, and including a bracket for connection to a conveyor or other transversely extending anchor member at its forward end, these contact faces being presented inwardly and situated close to the reference axis to minimize the transmission of torque about the reference axis to the longitudinally movable guide element due to random vertical friction forces established between the contact faces and the part of the base element engaged thereby during the centering operation.

3,603,099
PROCESS OF MAKING INTRAGROUND WATERPROOF BAFFLES AND A DEVICE THEREFOR

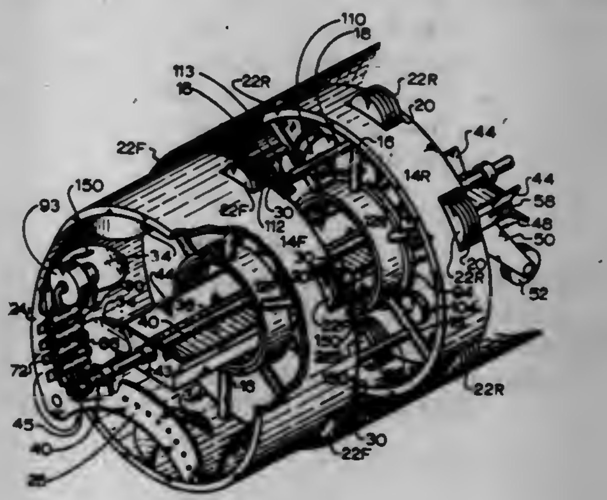
Bohdan Zakiewicz, Krakow, Poland, assignor to Przedsiebiorstwo Specjalistyczne Gornictwa Surowcow Chemicznych, Krakow, Poland
Filed Jan. 15, 1969, Ser. No. 791,472
Claims priority, application Poland, Jan. 22, 1968, 124819
Int. Cl. E02f *5/522*
U.S. Cl. 61—72.1 **2 Claims**



Method of and apparatus for the formation of fluid-impermeable underground walls wherein a trench excavator carrying a roll of flexible waterproof foil is displaced along an excavation line so that, as the trench is cut, the foil is laid in a vertical plane behind the excavator, and the space between the foil and the flanks of the cut is filled.

3,603,100
TUNNELLING MEANS AND METHOD

John James Cowley, Toronto, Ontario, Canada, assignor to Cervotec Developments Limited, Toronto, Ontario, Canada
Filed May 5, 1969, Ser. No. 821,898
Int. Cl. E01g *3/03, 5/06*
U.S. Cl. 61—84 **30 Claims**



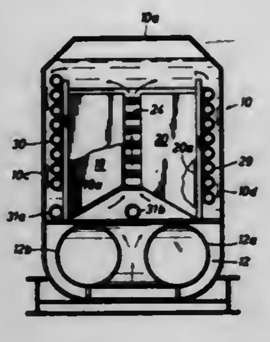
A tunnelling machine performs in such a manner that, in a cylindrical tunnel, a radial step from center to periphery advances helically about the axis of the tunnel as material is detached, to advance the locus of the step. A plurality of implements mounted on an arm have a locus corresponding approximately to the desired step direction advance the step by penetrating the material a short distance in advance of the step location and prying it toward the face of the step. Actuation of one or a small proportion of the implements at a time provides large thrust in a concentrated location. Choice of sequence of implement actuation allows compensation for the fact that radially outward parts of the arm advance farther than radially inward parts. Arm advances are alternated with cycles of implement operation. A frame, roller mounted on the walls of the tunnel has the rollers 'skew' to advance the frame helically as it rotates in the tunnel. The frame supports the implement arm and mounts a supply of permanently deformable strip material which is applied under one of the leading frame support members and corrugated thereby to overlap with preceding and succeeding layers to form temporary reinforcement for the tunnel walls. The rear of the frame may be displaced relative to the tunnel walls and the front of the frame with the implements to change the direction of the tunnel. As an incident of the implement actuation, rocks or rocklike material, too hard for the implements, may be sensed for special treatment.

3,603,101
INDIRECT HEATER

Lawrence J. Sullivan, Odessa, Tex., assignor to Sivalls Tanks, Inc., Odessa, Tex.

Filed June 24, 1969, Ser. No. 836,001
Int. Cl. F17c *9/02*

U.S. Cl. 62—52 **3 Claims**



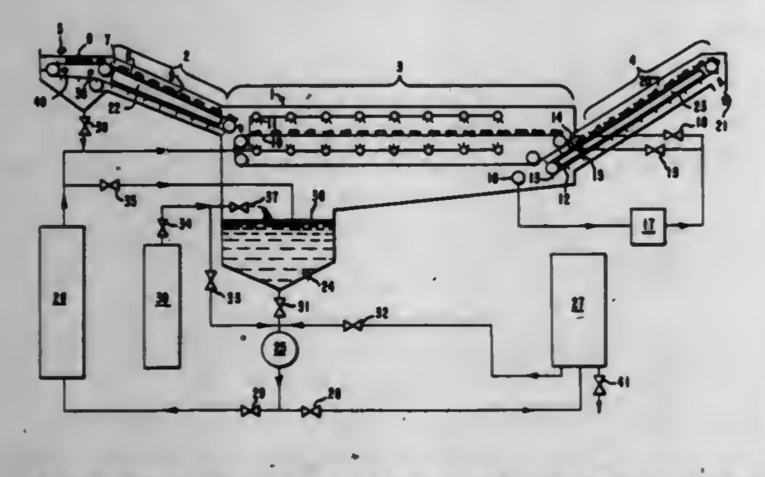
The heater includes a vessel containing a heat transfer fluid and a fire tube located adjacent the bottom to heat the heat transfer fluid. The fluid to be heated flows through a coil located in the vessel above the fire tube but submerged in the heat transfer fluid. The coil encircles two void boxes that occupy a substantial portion of the space in the vessel and reduce the volume of heat transfer fluid required to fill the vessel to a level above the boxes and the coil. The void boxes are spaced apart and positioned relative to the fire tube to cause the heat transfer fluid to flow upwardly between the boxes and downwardly past the coil between the boxes and the walls of the vessel due to the heat convection currents produced by the thermosyphonic effect. When the fluid being heated is a gas and the pressure of the gas is to be reduced, a choke is located in the coil adjacent its outlet to reduce the pressure after the gas has been heated. This reduces the condensation of liquids and the possibility of their freezing due to the reduction in temperature resulting from the pressure drop across the choke.

3,603,102
METHOD AND APPARATUS FOR EXTRACTING HEAT FROM ARTICLES WITH A LIQUID FREEZANT

Edmund O. Banas, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1969, Ser. No. 878,639
Int. Cl. F25d *17/00*

U.S. Cl. 62—64 **18 Claims**



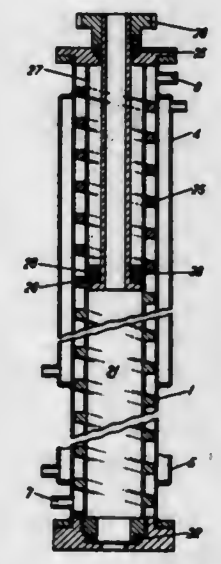
In a method, and apparatus, for extracting heat from articles, as in the freezing of food, by directly contacting the articles with a liquid freezant in an open vessel without significant loss of freezant to the atmosphere, the improvement which comprises: contacting the articles from which heat is to be removed with a liquid, fluorinated, C_1 to C_4 saturated halohydrocarbon, for example, dichlorodifluoromethane, which is at a temperature substantially below, for example, at least 5° C. below, its normal atmospheric boiling point and below the temperature of the articles, for a time sufficient to remove the desired amount of heat and to vaporize at least a portion, but not all, of the liquid; contacting and condensing the vapor with liquid halohydrocarbon as defined above; and collecting, cooling and recycling the liquid halohydrocarbon.

3,603,103
CONTINUOUS CRYSTALLISATION PLANT

Stuart Richmond, Sheffield, and David W. Exley, Barnsley, both of, England, assignors to Newton, Chambers & Company Limited, Sheffield, England

Filed Feb. 5, 1969, Ser. No. 796,678
Claims priority, application Great Britain, Feb. 7, 1968, Apr. 23, 1968, 6129;19184/68
Int. Cl. B01d *9/04*

U.S. Cl. 62—124 **10 Claims**



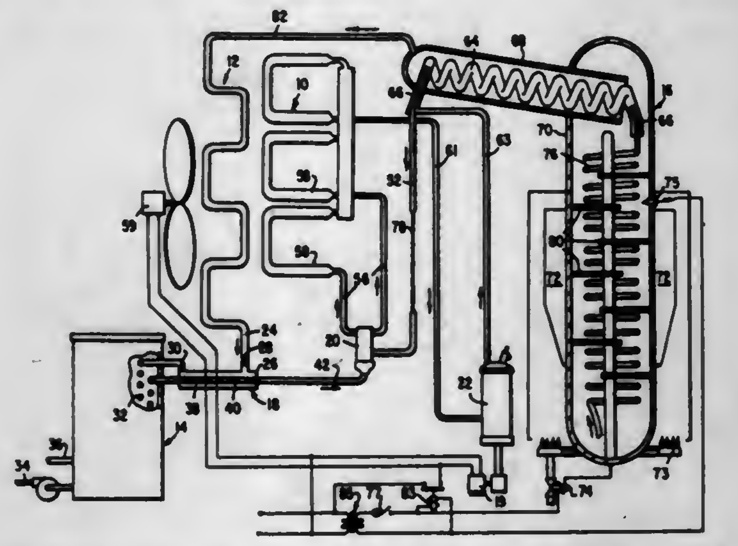
The conventional Schildeknecht crystallizer has certain disadvantages which may be reduced or overcome if the standard helical conveyor is replaced wholly or in part by a screw conveyor. Furthermore it has been found essential that the finish on the conveyor of a Schildeknecht crystallizer, whether helix or screw or a combination of the two, should be CLA 63 or better for efficient crystal transport.

3,603,104
LIQUID-LEVEL SENSOR

Gerald K. Gable, North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 2, 1969, Ser. No. 829,621
Int. Cl. F25b *15/04*

U.S. Cl. 62—148 **2 Claims**



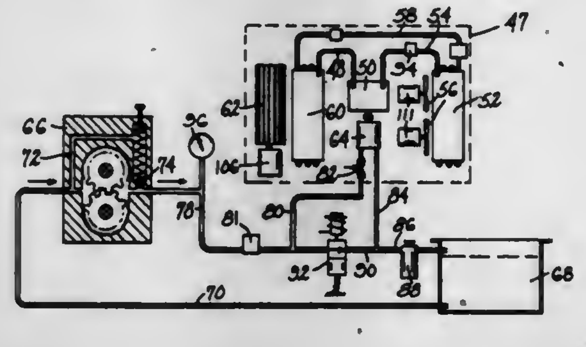
An absorption refrigeration system including generator-solution-level sensing means to prevent heat input to the generator unless a predetermined minimum amount of solution is present therein.

3,603,105
REFRIGERATION APPARATUS FOR AUTOMOTIVE VEHICLES

Rubin Figa, Mamaroneck, N.Y., assignor to Adelphi Mobile Air Conditioners, Inc., Brooklyn, N.Y.

Filed Sept. 17, 1969, Ser. No. 858,754
Int. Cl. F25b *1/00*

U.S. Cl. 62—230 **9 Claims**



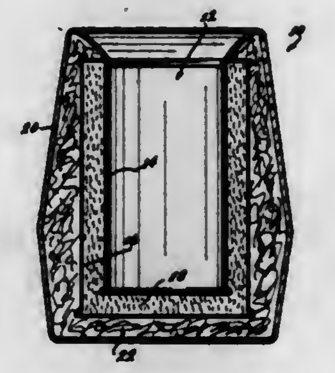
A refrigeration apparatus for motor vehicles which is powered by the motive power of said vehicle including a compressor, condenser and evaporator connected by appropriate conduit means. The compressor is driven by a constant displacement hydraulic motor which is activated by fluid supplied to it by a variable speed hydraulic pump. The fluid flow rate output of the hydraulic pump is maintained at a substantially constant level by positioning a valve and bypass means between the input and output sides of the hydraulic pump such that when the fluid pressure at the outlet side of the pump exceeds a certain predetermined value, the valve and bypass means opens progressively to allow excess fluid to pass back to the inlet side of the pump.

3,603,106
THERMODYNAMIC CONTAINER

John W. Ryan, 688 Nimes Road, Bel Air, and Wallace H. Shapero, 23139 Anza Avenue, Torrance, both of, Calif.

Filed Mar. 27, 1969, Ser. No. 810,957
Int. Cl. F25d *3/08*

U.S. Cl. 62—457 **9 Claims**



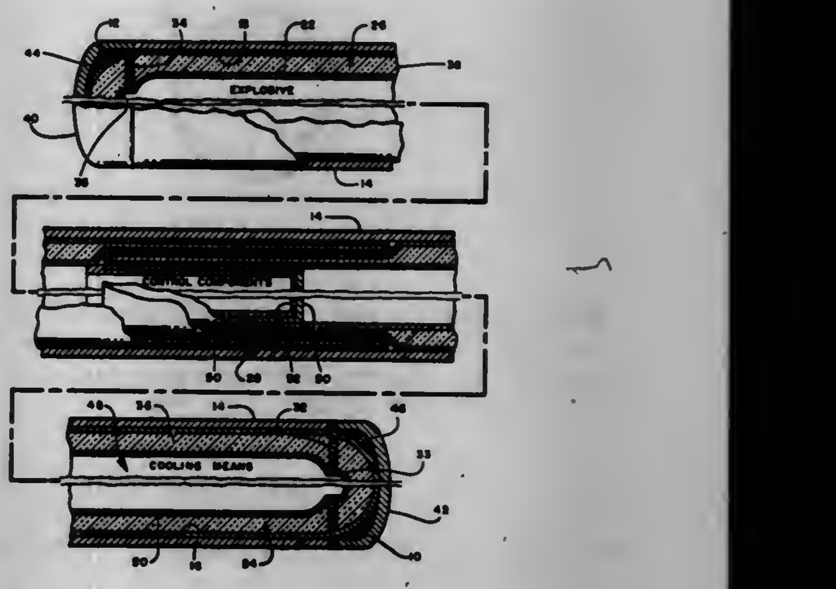
This invention relates to food and beverage containers and more particularly to containers of the thermodynamic type capable of regulating the temperature of the food and beverage therein. The thermodynamic container disclosed herein comprises an outer wall of low thermal conductivity separated by an insulating material from an inner metal capsule of very high thermal conductivity having a heat-storage material disposed therein. Beverages too hot to drink melt the heat-storage material which in turn cools the beverage to a drinkable temperature within two minutes. Heat lost during the beverage's cooling is then returned to the beverage to maintain it at a drinkable temperature as the heat-storage material resolidifies.

3,603,107
TEMPERATURE-CONTROL SYSTEM

Adelbert J. Elliott, Livermore, and Milton O. Jones, Pleasanton, both of, Calif.

Filed Apr. 28, 1970, Ser. No. 32,670
Int. Cl. F25d *3/02*

U.S. Cl. 62—459 **9 Claims**



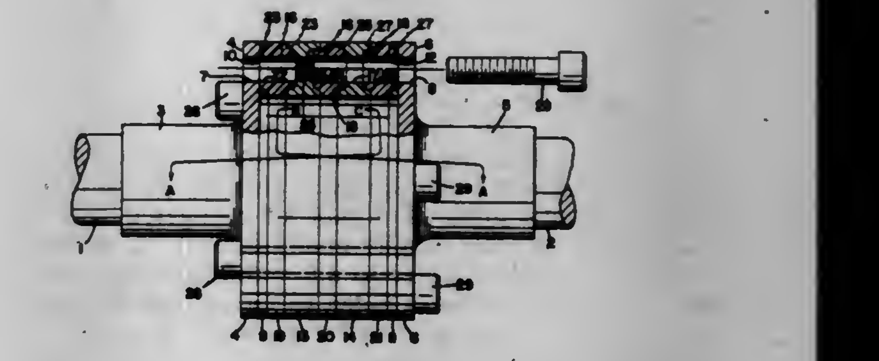
Explosive device temperature controlling wherein high temperature effect of an environment is minimized by isolating explosive and a low temperature medium from the environment by enclosing within apparatus comprising a container including a removable end closure, first and second open-ended double-walled housings each having an outer wall supported by the container and an inner wall spaced from the outer wall with heat-insulating barrier therebetween, the container maintaining the double-walled housings in axial alignment with the open ends thereof in substantially abutting relationship with each other.

3,603,108
RESILIENT COUPLING

William B. Herbert, 111 Yantacaw Brook Rd., Montclair, N.J.

Filed Apr. 20, 1970, Ser. No. 29,905
Int. Cl. F16d *3/78*

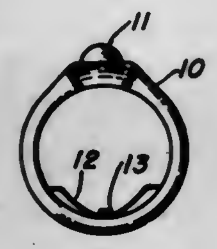
U.S. Cl. 64—13 **12 Claims**



Couplings are provided which are designed primarily to be used between the propeller shaft and the engine shaft of a boat. The coupling embodies rings of rigid and resilient material alternately arranged, with the rings of resilient material maintained under compression by means of screw bolts or cap screws. The coupling insulates the shafts from each other electrically, to eliminate electrolytic action, and, at the same time, absorbs a certain amount of vibration and misalignment. The design, moreover, is such that at no time is the resilient material under tension or stretch, but, rather, any deflection of the coupling about its axis tends to compress the resilient material.

3,603,109
RING WITH RESILIENT RING GUARD AND SECURING SCREW

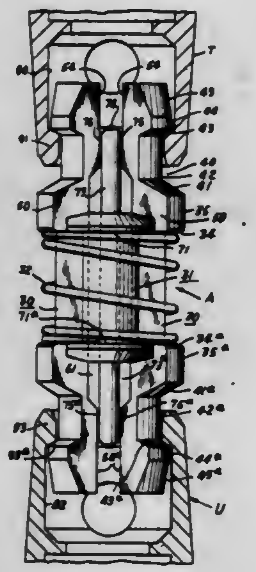
Valdemar Virtanen, 830 42nd Street, Brooklyn, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,759
Int. Cl. A44c *9/02*
U.S. Cl. 63—15.6 **4 Claims**



A ring guard for reducing the effective size of a ring, said guard being a strip of plastic having a central portion thereof secured to the ring and offset end portions in sliding engagement with the inner surface of the ring.

3,603,110
WELL TOOLS

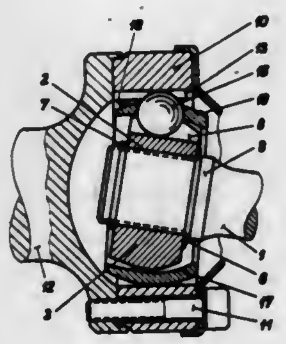
John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corp., Dallas, Tex.
Filed Sept. 4, 1969, Ser. No. 855,309
Int. Cl. F16d *3/44*
U.S. Cl. 64—16 **17 Claims**



A coupler for interconnecting spaced bodies in an articulated manner. One form of the coupler includes elongate locking fingers having external locking bosses along opposite ends and supported by a spring in parallel spaced relationship along opposite sides of a pair of elongated spacers. The spacers are movable longitudinally against the spring toward either end of the coupler to allow the locking fingers along the other end of the coupler to be squeezed together for coupling into or uncoupling from a locking recess of one of the spaced bodies. Upon release the spring returns the spacers to neutral aligned positions holding the locking finger in parallel noncompressible coupling relationship. Another form of the coupler includes rotatable spaced latch rings around the locking fingers at opposite ends of the spring. The latch rings have internal release recesses and locking flanges and are each rotatable between a first position at which the spacers are released to move longitudinally relative to the ring and locking fingers and a second position at which the spacers are held against longitudinal movement at neutral positions between the locking fingers holding the locking fingers against compression in coupling positions. Both forms of the coupler are useful for interconnecting a plurality of well tools to form an articulated train of tools for movement through a tubing string.

3,603,111
CONSTANT VELOCITY JOINT

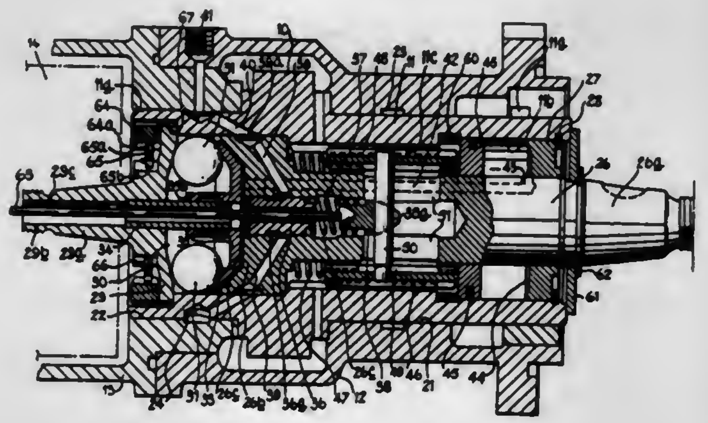
Erich Aucktor, and Walter Willimek, both of Offenback am Main, Germany, assignors to Lohr & Bromkamp GmbH, Offenbach/Main, Germany
Filed Mar. 18, 1970, Ser. No. 20,698
Claims priority, application Germany, Mar. 20, 1969, P 19 14 275.7
Int. Cl. F16d *3/30*
U.S. Cl. 64—21 **10 Claims**



Constant velocity joint includes an inner joint member axially displaceable with respect to a surrounding outer joint member, the outer joint member having an inner surface formed with grooves and the inner joint member having an outer surface formed with grooves, a plurality of balls respectively disposed within corresponding grooves of the inner and outer joint members for transmitting torque therebetween, cage means located between the inner and outer joint members and adapted to retain the plurality of balls in a common plane, the outer surface of the inner joint member at one axial end thereof having a spherical surface portion and at the other axial end thereof having a frustoconical surface portion.

3,603,112
INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Giuseppe Sola, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy
Filed Sept. 4, 1969, Ser. No. 855,286
Claims priority, application Italy, Sept. 28, 1968, Aug. 6, 1969, 53303;52906
Int. Cl. F16d *5/00;* **F02m** *39/00*
U.S. Cl. 64—25 **8 Claims**



An injection pump for an internal combustion engine, has a casing in which a hollow cam shaft carrying at least one pump-operating cam is rotatably supported. A driving shaft extends within the hollow camshaft, and an axially displaceable coupling sleeve is interposed between the driving shaft and the camshaft. A fluid pressure servocontrol such as an hydraulic annular piston, are housed within said hollow camshaft for controlling axial displacement of the coupling sleeve, the latter having, for example, helicoidal splines, so that displacement of said sleeve axially varies the relative angular position of the camshaft and the driving shaft and thereby the relative timing of the operation of a pumping member operated by the rotation of the camshaft. To assist reliable operation at low pressures the outer diameter of the annular actuator piston should exceed its inner diameter by at least 65 percent.

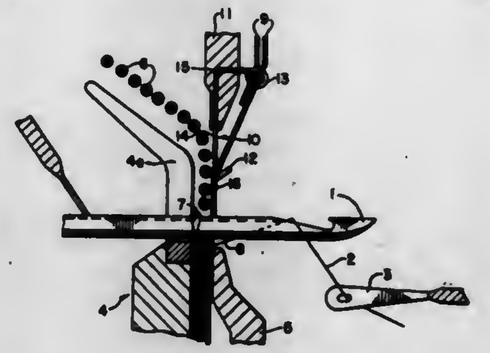
3,603,113
METHOD OF KNITTING

Lee D. Gilchrist, P.O. Box 1, Becket, Mass.
Filed Apr. 14, 1969, Ser. No. 816,051
Int. Cl. D04b *1/24*
U.S. Cl. 66—172 **13 Claims**

Method of making a tubular knitted article by hand knitting using two straight single-pointed needles is carried out by (1) casting-on the stitches in a circle, (2) knitting the subsequent circular rows of the tubular article by alternately working and slipping stitches, and (3) binding-off the last row in a circle.

3,603,114
WARP-KNITTING MACHINE

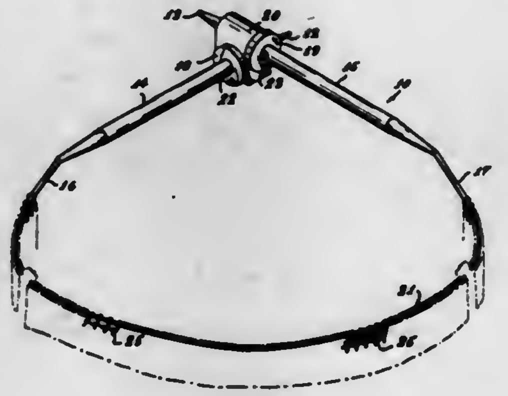
Manfred Erich Jaskulski, Kandler; Gerd Heinz Ruger, Karl-Marx-Stadt, and Wolfgang Kurt Wunsch, Karl-Marx-Stadt, all of, Germany, assignors to Veb Nahwirkmaschinenbau Malimo Karl-Marx-Stadt, Karl-Marx-Stadt, Germany
Continuation of application Ser. No. 781,668, Oct. 9, 1968, now abandoned , Continuation of application Ser. No. 534,868, Mar. 16, 1966, now abandoned. This application May 22, 1969, Ser. No. 828,439
Int. Cl. D04b *23/06*
U.S. Cl. 66—85 **12 Claims**



A warp-knitting machine for furnishing a base material with a knitted fabric on both sides thereof in which the base material is supported at one side thereof, a plurality of needles adapted to penetrate reciprocably between selected threads in the base material, the base material on at least one side thereof is supported by additional threads disposed in close proximity to an upper portion of the base material above the penetration of the needles, the additional threads provide a support for the base material by remaining in close proximity thereto under a predetermined tension.

3,603,115
CONNECTOR FOR FLEXIBLE KNITTING NEEDLE

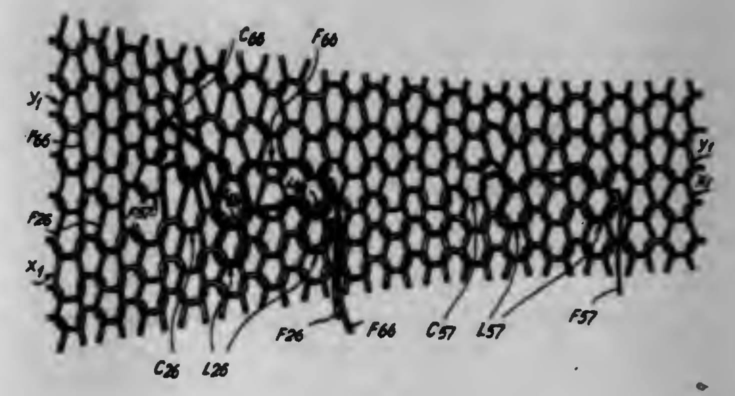
Patricia I. Elzey, 7403 East 3rd, Downey, Calif., and John J. Weldknecht, 8032 Dabury Ln., La Palma, Calif.
Filed Oct. 22, 1969, Ser. No. 868,308
Int. Cl. D04b *35/02*
U.S. Cl. 66—117 **2 Claims**



A single connector provided with a pair of transverse openings in which the respective rigid end portions of a flexible knitting needle can be inserted and secured together such that the stitches of an article being knitted and held on a flexible intermediate portion cannot slip off the end portions of the needle. One of the openings in the connector is formed to gage the size of the needle when the end portion is inserted therein and to secure the end portion upon its further insertion therein.

3,603,116
SEAMLESS STOCKING AND METHOD OF KNITTING POCKETS THEREIN

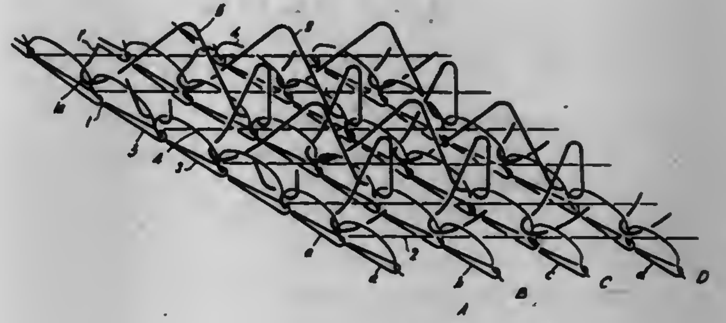
Francesco Turini, Stabbia, Italy, assignor to Lamberto Benvenuti and Enrico Morelli Industria Calza Toscana Benvenuti & Morelli SNC, Stabbia (Firenze), Italy
Continuation-in-part of application Ser. No. 364,178, May 1, 1964, now abandoned , Continuation of application Ser. No. 726,374, May 3, 1968, now abandoned. This application May 11, 1970, Ser. No. 37,390
Int. Cl. D04b *9/56*
U.S. Cl. 66—187 **6 Claims**



A method of knitting tubular fabric with integral pockets is described. The pockets are formed by partial courses of different length. All complete circular and partial courses are knitted in the same direction. Parts of a circular knitting machine involved in performing the method are described. The method is described in connection with forming heel and/or toe portions of a stocking.

3,603,117
WARP-KNITTED PILE FABRIC

Vladimir Svoboda, and Andrej Vajda, both of Brno, Czechoslovakia, assignors to Elitex, Zavody Textilniko Strojirenstoi, Generalni Reditelsto, Liberec, Czechoslovakia
Filed Apr. 21, 1969, Ser. No. 818,205
Claims priority, application Czechoslovakia, Apr. 22, 1968, PV 2951-68
Int. Cl. D04b *23/08*
U.S. Cl. 66—193 **7 Claims**

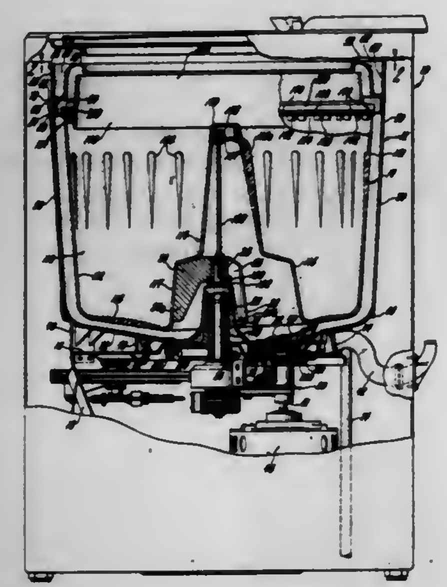


A warp-knitted fabric is made of wales of chain stitches, transverse weft threads, and pile warp threads anchored in successive courses and adjacent wales in the chain stitches to form pile loops between the anchored portions thereof.

3,603,118

PLASTIC TUB ASSEMBLY FOR USE WITH CLOTHES WASHER

Byron L. Brucken, and Ronal H. Whyte, both of Dayton, Ohio, assignors to General Motors Corp., Detroit, Mich.
Filed Apr. 30, 1970, Ser. No. 33,237
Int. Cl. D06f *23/04, 37/14, 37/38*
U.S. Cl. 68—23 **8 Claims**

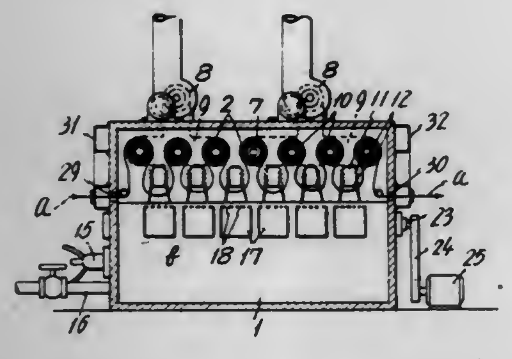


A plastic tub assembly for a clothes washer includes a rotatable plastic inner tub nested inside a nonrotatable plastic outer tub. The inner tub has an integral central agitator and outer scrubbing ribs and is adapted for a driving connection with an oscillation or spinning mechanism. Strengthening the inner tub is provided by a reinforced bottom wall and a metal circumscribing ring, the ring also preventing spin welding of the plastic tubs. The outer tub has an overflow channel at the top and an integral pump housing and antidrip flange at the bottom.

3,603,119

APPARATUS FOR HEAT TREATMENT OF FABRIC

Yikiyoshi Kawaguchi, Kyoto, Japan, assignor to Rabushiki Kaisha Ichikin Rogyosha, Kusatsu-shi, Shiga-ken, Japan
Filed Mar. 10, 1970, Ser. No. 18,192
Claims priority, application Japan, Mar. 13, 1969, 44-18531
Int. Cl. F26b *13/08, 13/20*
U.S. Cl. 68—5 D **10 Claims**

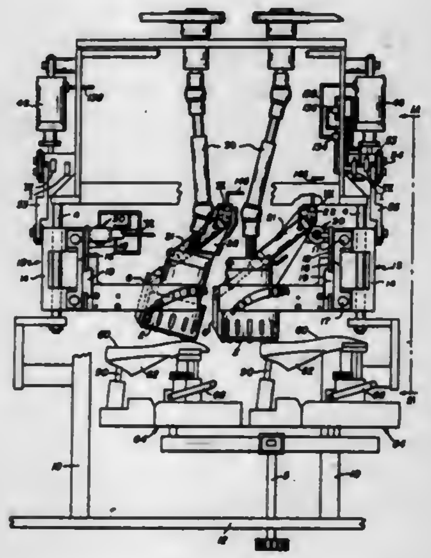


A fabric heat treatment apparatus comprises a heat treatment chamber containing a plurality of suction feed rolls arranged horizontally to support and advance the fabric through the chamber while the fabric hangs in loops between adjacent rolls. Steam drums are positioned both within the loops and therebelow and the drums have outlets facing the loops to project steam thereagainst to lift and heat the fabric as it passes through the heat treatment chamber whereby to relieve the fabric of tension.

3,603,120

APPARATUS FOR ROUGHING THE OVERLASTED PORTIONS OF THE BOTTOMS OF SHOE UPPERS

Waldemar Schilke, Trenton, Ontario, Canada, assignor to Bata Shoe Company of Canada Limited, Batawa, Ontario, Canada
Filed June 2, 1969, Ser. No. 829,345
Claims priority, application Canada, June 3, 1968, 21,617
Int. Cl. C14b *1/44*
U.S. Cl. 69—6.5 **7 Claims**

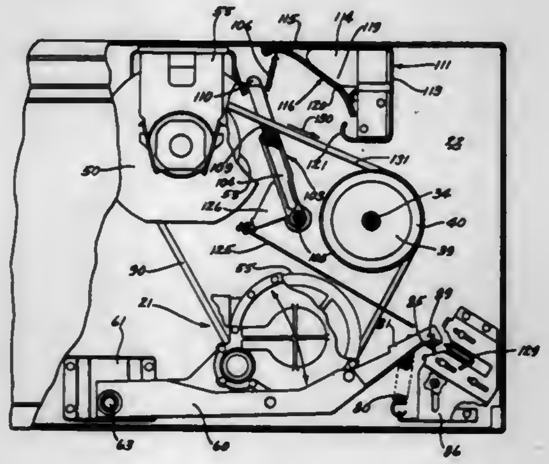


The invention is concerned with the manufacture of articles of footwear of the type in which a sole is bonded to the margin of the upper. The invention contemplates the provision of an apparatus for roughing the margin of the upper of a partially fabricated article by one or more roughing tools. The position of each roughing tool being automatically varied during the roughing cycle to maintain the roughing tool in a substantially constant angular position relative to the bottom of the article in which the angular transverse position of each roughing tool relative to the bottom may be varied during the roughing cycle, and in which the pressure applied to each roughing tool is automatically adjusted during the roughing cycle in accordance with variations in the profile of the bottom. The invention also provides an automatically adjustable last which is always maintained at the right height for proper roughing of the overlasted margin of the bottom.

3,603,121

APPLIANCE DRIVE SYSTEM

Charles W. Burkland, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Dec. 18, 1969, Ser. No. 886,183
Int. Cl. D06f *29/02*
U.S. Cl. 68—23.4 **14 Claims**

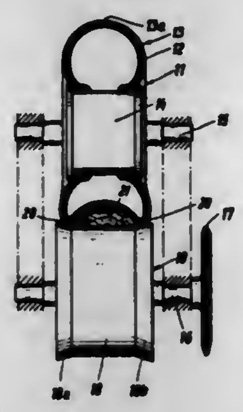


A drive system for a fluid extraction portion of a laundry appliance includes a motor and a spinner each having a substantially fixed axis of rotation and a pump having an axis of rotation that is pivotable about a fixed axis spaced from the axis of rotation. A belt drivingly connects the motor to the spinner and the pump. The pivoted pump is biased about the pivot axis and effectively operates as an idler in the drive system engageable with the tight side of the belt for substantially no-slip drive of the pump while controlling tension of the belt driving the spinner.

3,603,122

ROLLER DRAINAGE PRESS FOR LAUNDRY

Erich Sulzmann, C.H.6911, Campione T1, Switzerland
Filed Sept. 19, 1969, Ser. No. 859,380
Claims priority, application Germany, Sept. 20, 1968, P 17 85 420.5
Int. Cl. D06f *45/22*
U.S. Cl. 68—264 **2 Claims**

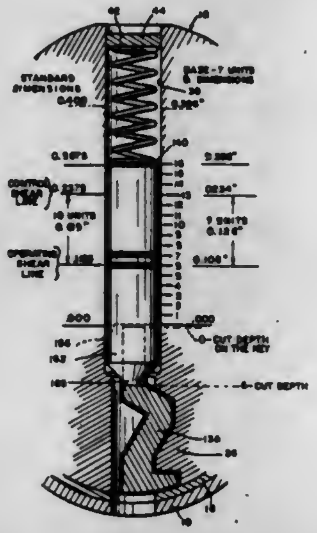


A roller drainage press for wet laundry including a steel drum having conically flared outer edges driving a doughnut-shaped inflated rubber tire. A continuous band of wet laundry is fed through a conically reduced feeder channel to the drum and tire interface. The laundry band distorts the tire to a concave cross section which wrings out absorbed liquid.

3,603,123

PIN TUMBLER LOCK

Walter E. Best, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.
Filed Nov. 19, 1968, Ser. No. 776,992
Int. Cl. E05b *27/02*
U.S. Cl. 70—364 **2 Claims**



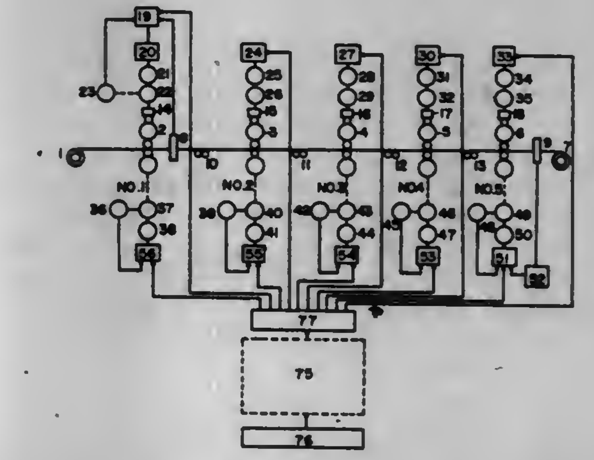
A key-removable, pin tumbler lock core comprises a core body having a bore with a sleeve and a key plug rotatable therein and defining a first or operating shear line at the plug-sleeve interface, and a second or control shear line at the sleeve-housing interface. Pin bores in the body, sleeve, and plug receive columns of pin segments which cross both shear lines and have key-absent positions which block rotation at both shear lines. When the pin columns are raised by a suitable key, shear faces therein come into alignment with a shear line and thereby permit rotation of the key plug or sleeve.

Standard construction of such lock cores uses pin segment lengths and key-cut positions founded on base-10 increments, i.e. a division by 10, of the distance between the two shear lines, and uses standard dimensions and tolerances corresponding thereto. Such base-10 increment pin division and key cuts limit the number of useable lock combinations. The present invention retains the standard dimensions and tolerances of the lock core structure, but enlarges manyfold the number of available lock combinations by using base-7 increments, i.e. a division by 7, of the shear line separation distance for segmenting the pins and locating the key cuts. The base-7 increment pin segments and keys are fully compatible with existing standard dimensions and manufacturing tolerances and provide full interchangeability between old and new lock cores.

3,603,124

COMPUTER CONTROL SYSTEM FOR ROLLING METAL STRIPS USING FEED-FORWARD AND PREDICTION

Tohru Arimura, Kawasaki-shi; Masamoto Kamata, Kawasaki-shi; Morio Saito, Kawasaki-shi, and Terumi Okamoto, Fukuyama-shi, all of, Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed May 7, 1969, Ser. No. 822,433
Claims priority, application Japan, May 9, 1968, 43/30562
Int. Cl. B21b *37/12*
U.S. Cl. 72—8 **7 Claims**



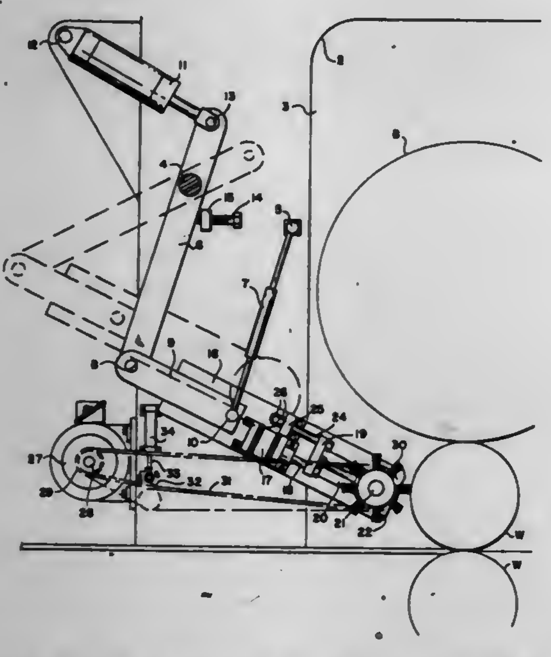
A rolling method wherein the material size may be altered during a normal rolling operation by prediction and feed-forward control comprising predetermining a basic pattern for altering roll peripheral speed corresponding to a fixed pattern of roll opening (or strip gauge), computing the actual amount of alteration of the above speed-based on at least a command for gauge alteration and feeding forward the computed value corresponding to roll peripheral speed alteration to each stand.

3,603,125

AUTOMATIC CONTROL SYSTEM FOR MEANS FOR REMOVING ROLL COATING FROM A ROLLING MILL WORK ROLL WITHOUT REMOVING THE ROLL FROM THE MILL

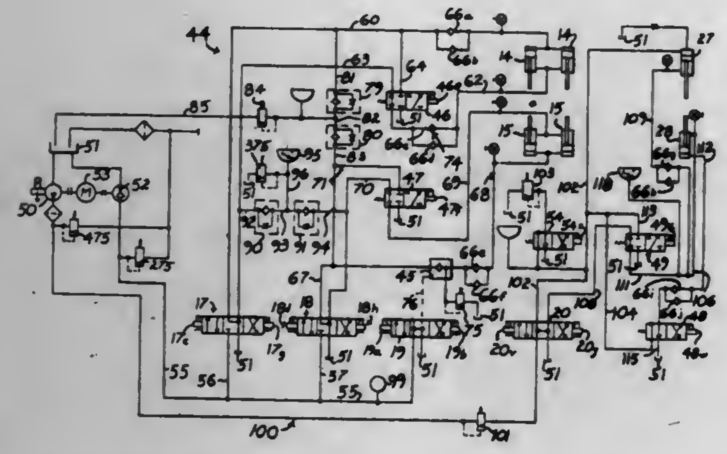
Joseph N. Edwards, Brookfield, Ill., assignor to Reynolds Metals Company, Richmond, Va.
Filed May 20, 1969, Ser. No. 826,240
Int. Cl. B21b *37/08, 27/04*
U.S. Cl. 72—21 **10 Claims**

In a rolling mill having rolls for acting on work passing between the rolls and means for removing coating which tends to accumulate on the rolls, means mounting the coating removing means for shifting movement between operative position in contact with a roll and inoperative withdrawn position and means, which may include control means actuated by entry of the leading end of the work between rolls of the mill, responsive to the position of the leading end of the work for shifting the coating removing means to operative position. The structure may include operating means actuated in response to the position of the trailing end of the work for shifting the coating removing means to inoperative position, desirably before the work leaves the roll. The invention may be employed in a rolling mill having in tandem a plurality of stands of rolls for acting on work passing between the rolls of the successive stands, means for removing mounting coating which tends to accumulate on the rolls and means mounting the coating removing means for shifting movement between operative position in contact with a roll of one of the stands of rolls and inoperative withdrawn position, and may include means responsive to the position of the leading end of the work for shifting the coating removing means to operative position, which may include control means actuated by entry of the leading end of the work between rolls of the first mentioned stand, and operating means actuated by passage of the trailing end of the work from between rolls of a stand of rolls traversed by the work before the work traverses the first mentioned stand of rolls for shifting the coating removing means to inoperative position. The control means and/or the operating means may include load cell, pressductor or current relay means.



3,603,126
METHOD AND APPARATUS FOR RIVETING WITH TITANIUM ALLOYS

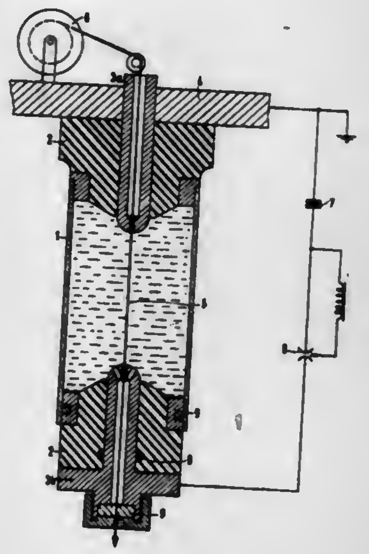
Charles W. Newman, 11653 Southeast 49th, Bellevue, Wash., and H. James Clement, 1042 S. 173rd, Seattle, Wash.
Filed Apr. 24, 1959, Ser. No. 819,033
Int. Cl. B21j *15/02*
U.S. Cl. 72—28 **20 Claims**



A device for cold forming a titanium alloy rivet according to a precise force vs. time relationship selected to avoid work hardening of the rivet. An electrical control circuit produces a squeeze signal waveform corresponding to the desired force rate variations to be exerted on the rivet. The squeeze signal operates a fluid pressure regulator on a hydraulic pump to control the force exerted on the rivet by opposed hydraulic squeeze cylinders. The electrical control circuit also produces switching signals for operating directional flow control valves in a hydraulic control circuit for moving the squeeze cylinders into and out of engagement with the rivet. Hydraulic clamp cylinders are used to hold the articles being riveted and the electrical control circuit produces signals for controlling the force exerted by the clamp cylinders and for moving the clamp cylinders into and out of engagement with the articles. The hydraulic control circuit associated with the clamp cylinders also includes means for floating the cylinders.

3,603,127
DEVICE FOR FORMING WORKPIECES HYDROELECTRICALLY

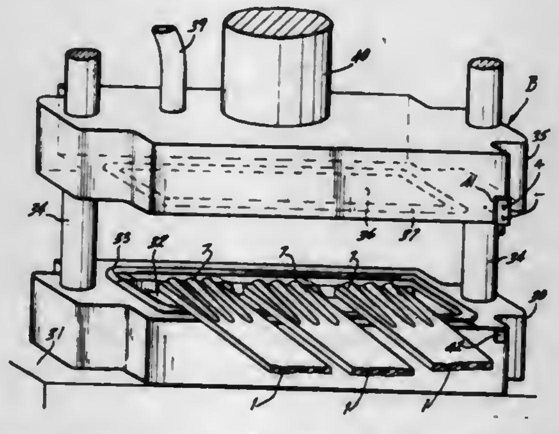
Helmut Seiffert, Nurnberg, and Jochen Haeusler, Furth, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany
Filed June 19, 1969, Ser. No. 834,690
Claims priority, application Switzerland, June 24, 1968, 9446/68
Int. Cl. B21d *26/12*
U.S. Cl. 72—56 **7 Claims**



A device for forming workpieces by pressure waves generated in a liquid by an undersurface spark discharge has two electrodes immersed in the liquid. The electrodes are mutually separated so as to define a spark gap. A capacitor battery is connected across the electrodes and an ignitor is suspended between the electrodes. The ignitor is made up of a carrier threaded of nonconductive material surrounded by a sheath of conductive material.

3,603,128
INFLATION APPARATUS FOR METAL STRIP OR PANELS HAVING INFLATABLE FLUID PASSAGEWAYS

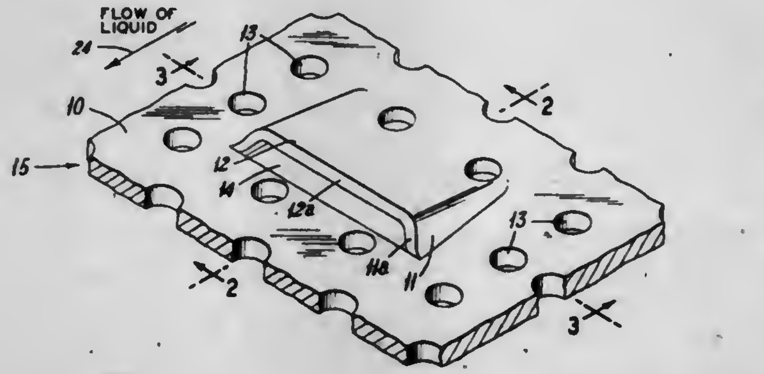
Verne L. Middleton, East Alton, Ill., assignor to Olin Corporation
Filed Nov. 12, 1969, Ser. No. 875,636
Int. Cl. B21d *39/08*
U.S. Cl. 72—58 **8 Claims**



An inflation apparatus for inflating metal strips or panels containing inflatable passageways connected to a preformed opening. The apparatus comprises two opposing plates which have resilient sealing means mounted on each of the opposing faces of the plates. At least one of the plates has a pressure cavity for supplying fluid under pressure to the preformed opening of the metal strip or panel for inflating the passageways therein. The apparatus also includes means for clamping plates about the preformed opening so that the resilient sealing means sealingly engage the metal strip or panel. This engagement results in crimping the preformed opening but does not close it completely. In operation, the plates are clamped about opposing surfaces of the panel or strip at the preformed opening and a suitable fluid under pressure is forced into the pressure cavity and through the preformed opening so as to inflate the passageways.

3,603,129
APPARATUS FOR LIQUID-GAS CONTACTING TRAY

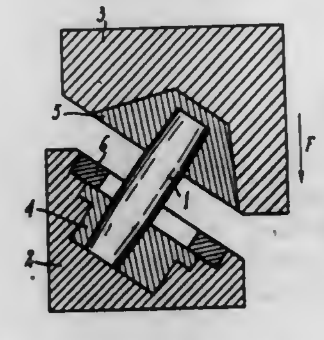
Benjamin Williams, Grand Island, and Edward F. Yendall, Kenmore, both of, N.Y., assignors to Union Carbide Corporation
Continuation of application Ser. No. 784,519, Nov. 25, 1968, now abandoned , which is a division of application Ser. No. 547,118, Apr. 1, 1966, now Patent No. 3,417,975, which is a continuation of application Ser. No. 417,264, Dec. 1, 1964, now abandoned , which is a continuation of application Ser. No. 84,807, Jan. 25, 1961, now abandoned. This application Mar. 2, 1970, Ser. No. 18,811
Int. Cl. B21d *28/24, 28/26, 31/02*
U.S. Cl. 72—324 **2 Claims**



A distillation tray formed from a perforated sheet with raised slot openings through which a minor part of the vapor flows with a horizontal thrust component to induce liquid flow and reduce the hydrostatic gradient.

3,603,130
METHOD OF FORGING BLANKS, NOTABLY CRANKSHAFTS

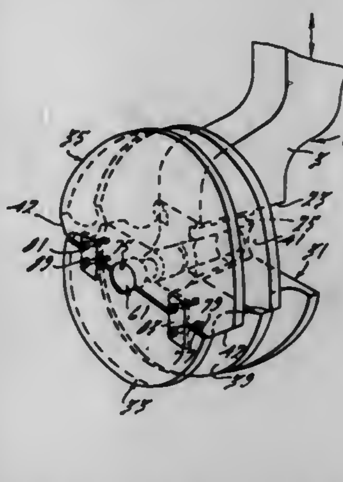
Gabriel Ruget, St. Etienne, France, assignor to Compagnie des Ateliers et Forges de la Loire (St. Chamond, Firminy, St. Etienne, Jacob Holtzer), Paris, France
Filed June 19, 1968, Ser. No. 738,177
Claims priority, application France, June 21, 1967, 111,282
Int. Cl. B21d *11/04*
U.S. Cl. 72—322 **3 Claims**



According to this method, a predetermined angular relationship is maintained between the axis of the piece of metal to be forged and the direction of the effort applied thereto, by exerting against one end of the billet maintained in a movable die a force which is neither parallel nor perpendicular to its axis, said end being guided for translation or rotation or according to any other desired path while the other end is held in a fixed die, whereby two movements, namely an axial movement and a traverse movement, are obtained concurrently for producing the desired plastic deformation.

3,603,131
THREE-PUNCH BENDING PRESS

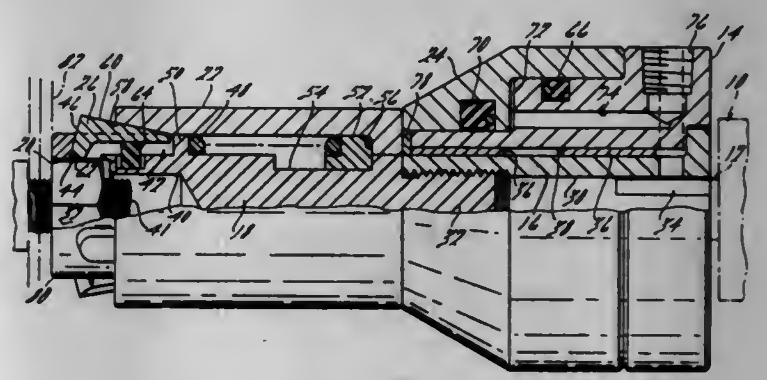
Paul V. Gregg, Racine, Wis., assignor to Tenneco Inc., Houston, Tex.
Filed Apr. 9, 1969, Ser. No. 814,773
Int. Cl. B21d *9/07*
U.S. Cl. 72—389 **5 Claims**



A special punchholder and punch arrangement enables three different bending punches to be attached to a vertical press-type tube bender.

3,603,132
TOOL FOR MAKING LOCKNUT ASSEMBLIES

Horace D. Holmes, Birmingham, Mich., assignor to Masco Corporation, Taylor, Mich.
Filed Oct. 13, 1969, Ser. No. 865,693
Int. Cl. B21d *41/04*
U.S. Cl. 72—402 **11 Claims**



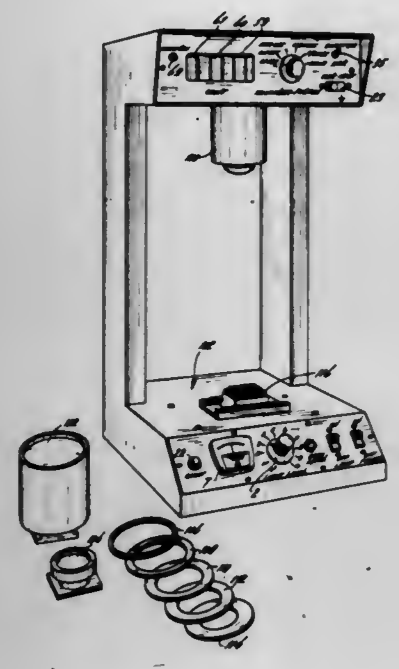
A tool for use with a torque wrench for tightening a nut on a bolt and then crimping the sides of the nut to provide substantially complete engagement of the threads of the nut and bolt to form a locknut assembly.

3,603,133
METHOD FOR CAMERA SHUTTER TIMING

Lawrence A. Westhaver, 13001 Old Stagecoach Road, Laurel, Md.
Filed Oct. 10, 1969, Ser. No. 865,391
Int. Cl. G03b *43/02;* **G04f** *11/08*
U.S. Cl. 73—5 **9 Claims**

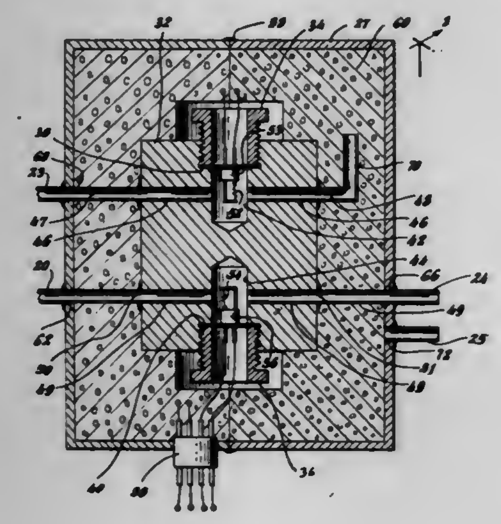
A system for timing photographic shutters, functions related thereto (i.e. sync advance or delay), or any occurrence that can be translated into a pulse of light within the timing range of the system.

The system includes activating the camera shutter so that a pulse of light passes therethrough, sensing the duration of the light as it passes between the half-open and half-closed positions of the shutter; generating a plurality of electrical clock pulses during the time between half-open and half-closed positions of the shutter; counting said electrical clock pulses generated; and displaying shutter speed as a function of counted pulses.



3,603,134
DETECTOR ARRANGEMENTS FOR ANALYTICAL APPARATUS

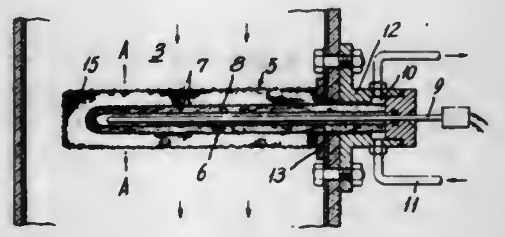
Stanley D. Norem, Bayside, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Continuation of application Ser. No. 645,263, June 12, 1967, now abandoned. This application Mar. 2, 1970, Ser. No. 14,786
Int. Cl. G01n *27/18*
U.S. Cl. 73—27 **9 Claims**



A detector arrangement for use with an analytical instrument includes a cell having a plurality of members which form a detector chamber and a gas-conductive passageway for conveying a sample-carrying gas through the chamber. Sensing means are positioned in a gas flow path in the chamber for sensing the presence of sample constituents in the gas stream. Sealing means are provided for conducting an inert gaseous medium between the chamber and a surrounding atmosphere for reducing gas leakage therebetween.

3,603,135
APPARATUS FOR CONTINUOUS MEASURING OF THE MOISTURE CONTENT IN A HIGH TEMPERATURE CHAMBER AT ATMOSPHERIC PRESSURE

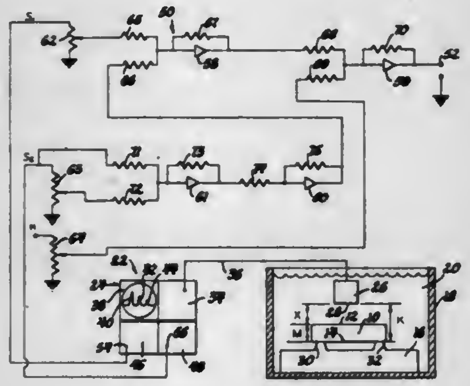
Yukiyoski Kawaguchi, Kyoto, Japan, assignor to Kabushiki Kaisha Ichikin Kogyosha, Kusatsu-shi, Shiga-ken, Japan
Filed Oct. 16, 1969, Ser. No. 866,989
Claims priority, application Japan, Nov. 14, 1968, 43/82845
Int. Cl. G01n *25/62, 25/56*
U.S. Cl. 73—29 **9 Claims**



The wet bulb thermometer of a psychrometer comprises a measuring portion mounted within a permeable sleeve which is high temperature resistant and which has a base portion extending outside the chamber containing the gaseous substance whose relative humidity is to be measured, the base portion being continuously traversed by flowing water so that the sleeve is always wetted.

3,603,136
ULTRASONIC MEASUREMENT OF MATERIAL NODULARITY

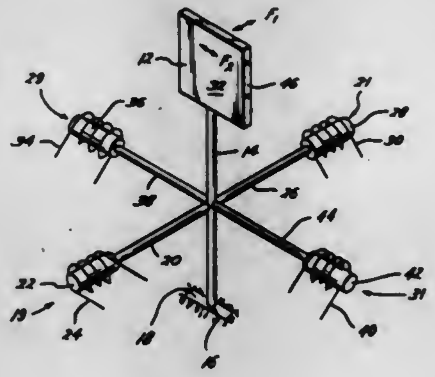
Milton J. Diamond, Saginaw, and Robert H. Lutch, Birch Run, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 25, 1969, Ser. No. 879,746
Int. Cl. G01n *29/00;* **G01h** *5/00*
U.S. Cl. 73—67.8 **4 Claims**



A method and apparatus for determining the percent nodularity of a workpiece as a function of the speed of ultrasonic sound through the workpiece. According to a first embodiment this is achieved by positioning the workpiece at a predetermined distance from an electroacoustic transducer and in a second embodiment by positioning the casting between two electroacoustic transducers which are spaced at a predetermined distance. DC voltage signals relating the time between the generation of the ultrasonic impulses and the detection of back reflection impulses by the electroacoustic transducers are combined by a signal-generating circuit in accordance with an empirical relationship so as to generate a DC voltage output signal proportional to the percent nodularity of the workpiece.

3,603,137
VIBRATING METHOD AND APPARATUS FOR DETERMINING THE PHYSICAL PROPERTIES OF MATERIAL

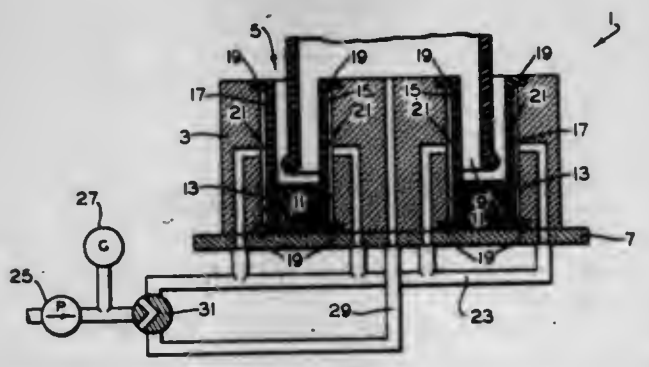
William B. Banks, Houston, Tex., assignor to Automation Products Inc., Houston, Tex.
Filed Nov. 5, 1968, Ser. No. 773,403
Int. Cl. G01n *9/03, 11/00*
U.S. Cl. 73—32 **18 Claims**



A method and apparatus for determining the physical properties of a material by a vibratory material sensing device in which the area of the sensing device is different in a first direction than in a second direction and in which the material sensing device is vibrated in the first direction and the vibration measured and is vibrated in the second direction and the vibration measured, and a comparison of the vibration in both directions is the measure of the physical property of the material being measured in which the effect of environmental conditions which would affect the readout are reduced. A material sensing paddle connected to a vibratory rod in which the cross section perpendicular to the axis of the rod is rectangular, having electromagnetic means for transversely vibrating the flexible rod and paddle in a first direction perpendicular to one of the sides of the paddle and at its natural resonant frequency of the element and having electromagnetic means for measuring the natural resonant frequency of the flexible rod and paddle in the first direction, and electromagnetic means for transversely vibrating the rod and the paddle in a direction perpendicular to the first direction and at the natural resonant frequency of the rod and paddle in the second direction, and electromagnetic means for measuring the natural resonant frequency of the rod in the second direction whereby a comparison of the measured natural resonant frequencies in the first and second directions eliminate environmental conditions affecting the natural resonant frequency of the rod.

3,603,138
PNEUMATIC TESTER FOR LINEMAN'S GLOVES

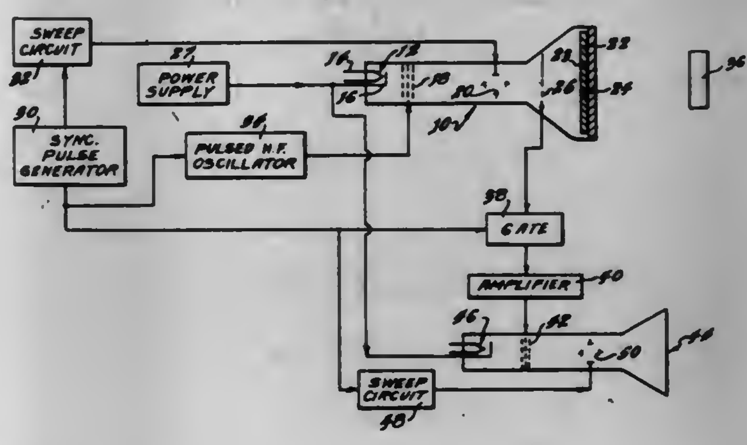
Erwin P. Peterson, Box 236, Blue Grass, Iowa
Filed Nov. 21, 1969, Ser. No. 879,003
Int. Cl. G01m *3/26, 3/02*
U.S. Cl. 73—37 **6 Claims**



A testing apparatus is provided for lineman's elastic gloves which comprises a closed, U-shaped channel having at least one pneumatic sidewall for engaging the cuff of the glove with the opposite sidewall when it is inflated. The glove can then be inflated, as by air pressure, for inspection as to its porosity.

3,603,139
PULSED ACOUSTIC IMAGE CONVERTER

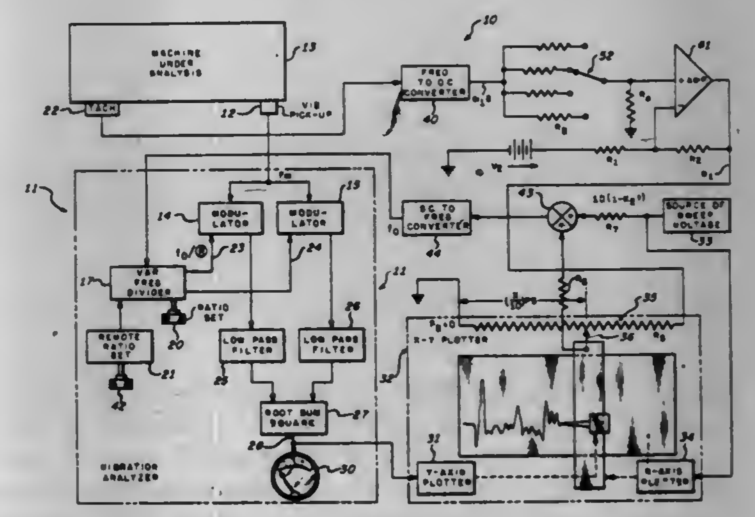
Shuh-Pan Ying, Ann Arbor, Mich., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed May 13, 1968, Ser. No. 728,686
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.9 **12 Claims**



An acoustic image converter comprises an acoustic image tube including a piezoelectric member and an electron gun structure capable of directing an electron beam over a surface of the piezoelectric member. Means provide a pulsed electric field across the piezoelectric member to transmit pulsed ultrasound therefrom to the object, the object reflecting a portion of the transmitted pulsed ultrasound back to the piezoelectric member to create a charge distribution thereon. The electron beam impinging upon the piezoelectric member releases therefrom secondary electrons having energies responsive to the charge distribution on the piezoelectric member. A collector electrode detects the secondary electrons and modulates the intensity of the display of a cathode-ray tube whose sweep is synchronized with the electron beam scan of the acoustic image tube.

3,603,140
GRAPHIC VIBRATION RESOLVER

Richard B. Spencer, Phoenix, Ariz., assignor to Sperry Rand Corporation
Filed Jan. 15, 1969, Ser. No. 791,283
Int. Cl. G01m *7/00;* **G01r** *23/00*
U.S. Cl. 73—71.4 **6 Claims**



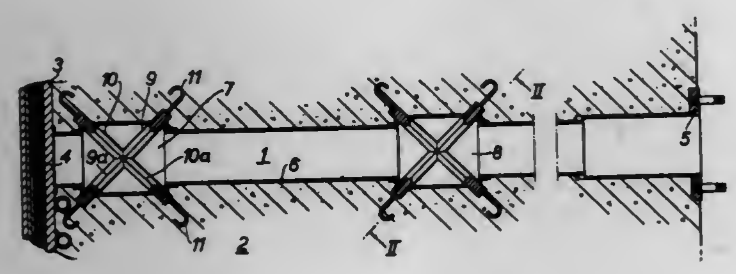
A graphic vibration resolver for rotating machinery including a programmable wave analyzer, a graphic X–Y plotter, and control electronics that provides an X–Y plot of vibration amplitude versus the gear ratio between a component of interest and a reference machine speed as measured by, for example, a tachometer (Tach Ratio). The present invention provides that a peak for a particular component of interest always occurs at the same X-axis location on the resulting plot regardless of speed changes of the machine being analyzed.

3,603,141
DEVICES FOR ESTIMATING THE STRESS IN CONCRETE STRUCTURES

Alfred Norman Kinkead, Winfrith, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 29, 1969, Ser. No. 888,306
Claims priority, application Great Britain, Jan. 10, 1969, 1731/69
Int. Cl. G01b *5/30*

U.S. Cl. 73—88 E **1 Claim**



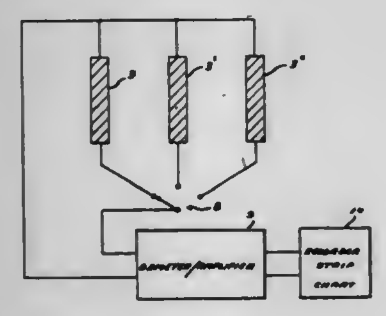
A reinforced-concrete structure is provided with a bore extending into the concrete mass from one face and an annular member, whose deflection in terms of applied stress is known, set in the wall of the bore, the member having a linear dimension measurable from within the bore which is indicative of the deflection.

3,603,142
METHOD OF DETECTING CRACKS AND MEASURING STRAIN IN POLYMERIC STRUCTURES

Donald Saylak, and Arch D. Johnston, both of Lancaster, Calif.

Filed May 7, 1970, Ser. No. 35,412
Int. Cl. G01b *7/18;* **G01l** *1/22*

U.S. Cl. 73—88.5 R **5 Claims**



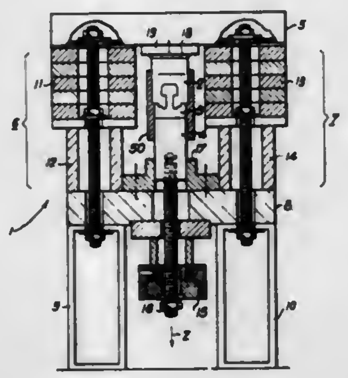
Strips of conductor-filled polymer are applied to the surface of polymeric structures in which it is desired to detect cracks and the conductivity of the applied strips is monitored. If a crack develops in the underlying polymeric structure and propagates itself through an applied strip, the strip will lose its ability to conduct electricity and the crack will be detected. By measuring the resistance of the strips, strain in the polymeric structure can also be determined. The invention is particularly useful in detecting cracks and strain in solid rocket propellant grains.

3,603,143
APPARATUS FOR TESTING THE VANE ANCHORAGE OF TURBINE VANES

Klaus Detert; Hans-Jochen Lipp, and Erich Winschuh, all of Neu-Isenburg, Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

Filed June 26, 1969, Ser. No. 827,537
Claims priority, application Germany, May 25, 1968, P 17 73 500.1
Int. Cl. G01n *3/08, 3/28, 3/24*

U.S. Cl. 73—95 **6 Claims**



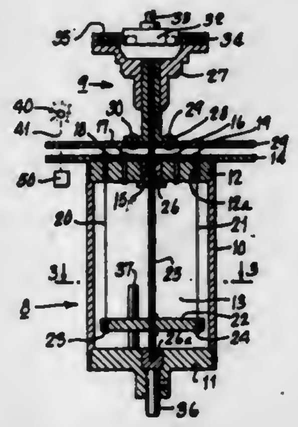
Testing apparatus for determining tightness, deformations and weak points of the vane anchorage of a turbine vane. The apparatus operates by applying forces to a vane, which includes a vane base, attached in the normal fashion to a simulated portion of a turbine rotor. A force in a direction corresponding to the radial direction in a turbine rotor and hence to the direction of centrifugal force in a rotating rotor is applied by attaching the vane and rotor portion to respective first and second yokes separated by resilient elements and drawing the vane and rotor portions apart. A force in a direction corresponding to the axial and/or tangential directions of a turbine rotor and hence the direction of the forces of the driving fluid which act on the vanes during operation of a turbine is applied by an additional device while the vane and rotor portions are held in the yokes.

3,603,144
TORQUE METER

Edward C. Smith, Madison, Conn., assignor to Neptune Meter Company, New York, N.Y.

Filed Sept. 22, 1969, Ser. No. 860,002
Int. Cl. G01l *3/02*

U.S. Cl. 73—136 R **3 Claims**



A device for measuring low torques, e.g., of the order of a gram-centimeter, and particularly for indicating if a torque is below, within, or above a preselected acceptance range. The device may be used to measure the torque required to turn a meter register.

The device includes two structures, one of which is supported from the other by two or more flexible elements, e.g., strings. The supporting structure is positively rotated and the supported structure turns with the supporting structure only by torque transmitted through the strings. The supported structure is operatively coupled to a rotatable element, such as the shaft of a meter register, which element is subjected to frictional forces. The lag between the supported and the supporting structures is indicative of the frictional force acting on the element.

The lag is measured by means of two Polaroid discs, one affixed to the supporting structure, the other one affixed to the supported structure. A light beam is sent through the two Polaroid discs. A photocell circuit detects the intensity of light passing through for the purpose of giving an indication of the angular displacement between the Polaroid discs. A discriminating circuit determines if the angular displacement, and hence the torque, is below, within, or above a preselected acceptance range, and accordingly actuates suitable indicator lights and/or suitable recorders.

ERRATUM

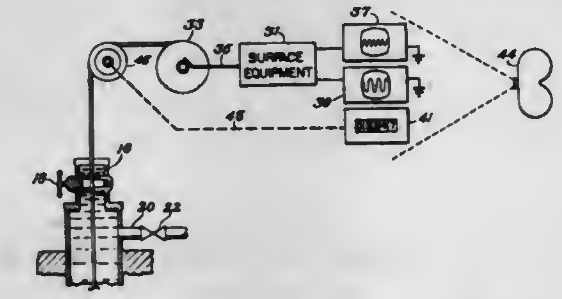
For Class 73—147 see:
Patent No. 3,602,920

3,603,145
MONITORING FLUIDS IN A BOREHOLE

Billy P. Morris, Midland, Tex., assignor to The Western Company of North America, Inc., Fort Worth, Tex.

Filed June 23, 1969, Ser. No. 835,463
Int. Cl. E21b *47/10*

U.S. Cl. 73—155 **16 Claims**



This specification discloses method and apparatus for monitoring flow and character of fluids in a borehole penetrating subterranean formations, characterized by transmitting acoustic energy through the fluids between transducers in a down-hole tool and discriminating intelligence bits from the acoustic energy arriving at the transducer serving as receiver. A portion of the acoustic energy is transmitted upstream and a portion of the acoustic energy is transmitted downstream. In one embodiment, intermittent acoustic energy is employed and the intelligence bits are, respectively, the travel time downstream and the travel time upstream; affording information as to the difference in the respective travel times which is related to velocity of flow of the fluids and the average travel time which is related to the density of the fluids. In another embodiment, intermittent or continuous acoustic energy is employed and the intelligence bits are, respectively, apparent frequency affording information as to frequency shift which is related to velocity of fluid flow and amplitude which is related to fluid density. Also disclosed are specific details of generating functions related to the received acoustic energy; and to the logging of the intelligence information with respect to depth.

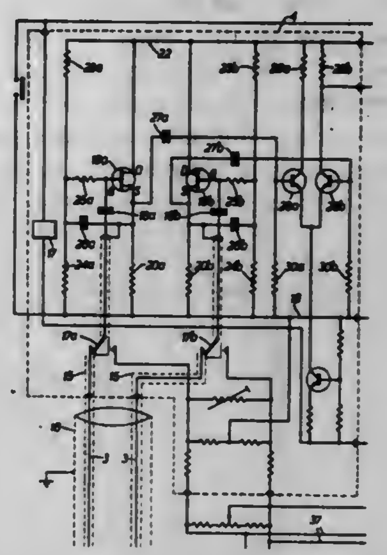
3,603,146
ELECTROMAGNETIC FLOWMETERS

Leonard Myer Bennett, Rodborough, Stroud, and John Edwin Cripps, Horsley, Stroud, both of, England, assignors to Schutte and Koerting Company, Cornwells Heights, Pa.

Filed June 18, 1969, Ser. No. 834,270
Int. Cl. G01f *1/00*

U.S. Cl. 73—194 EM **2 Claims**

An electromagnetic flowmeter comprising a detector head, an amplifier and a calibration circuit unit the characteristics of which are related to the sensitivity of the head in such manner that when the unit is connected to the amplifier in the appropriate way it operates to match the amplifier gain to the head sensitivity.

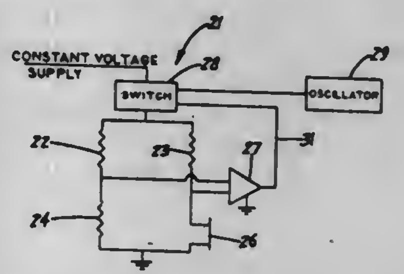


3,603,147
PULSED ANEMOMETER CIRCUIT

Frank D. Dorman, St. Paul, Minn., assignor to Thermo-Systems, Inc., St. Paul, Minn.

Filed Nov. 5, 1969, Ser. No. 874,288
Int. Cl. G01p *5/10*

U.S. Cl. 73—204 **18 Claims**



An electronic circuit for operating resistance sensors at a constant temperature to obtain measurements of velocity and direction in fluids. The circuit has a balancing bridge including a sensor and amplifier producing a pulsed output voltage directly proportional to the electrical power input to the sensor and proportional to the heat transfer rate between the sensor and fluid. The output voltage of the amplifier triggers an electronic switch operable to control the voltage supplied to the bridge. One form of the circuit has a dummy load coupled to the switch to take the power supplied to the switch when the bridge is cut off from the voltage supply. The circuit can have a plurality of bridges and sensors coupled to a single amplifier.

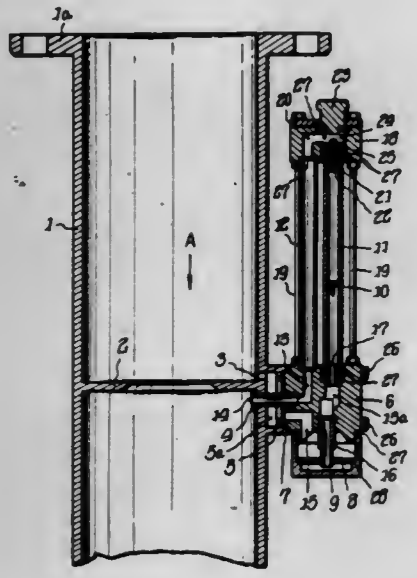
3,603,148
FLOW METER OF THE AREA TYPE

Sotakazu Rikuta, 148 Koun-cho, Gunma-ken, Maebashi-shi, Japan

Filed Sept. 23, 1969, Ser. No. 860,232
Claims priority, application Japan, Oct. 18, 1968, 43/90903
Int. Cl. G01p *5/14, 5/02*

U.S. Cl. 73—209 **5 Claims**

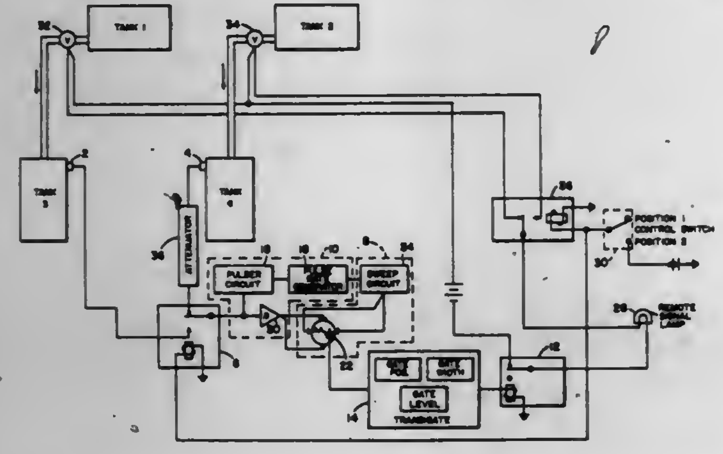
A flowmeter of the area-type having a connecting pipe member for connecting the meter to a main line through which a fluid to be measured flows. The connecting pipe member is formed with an orifice disc or plate so that a bypassing flow of the fluid is produced by a pressure differential in the fluid flow between the upstream side and the downstream side of the orifice, which flow takes place by way of bypassing inlet and outlet ports provided respectively on the upstream and downstream sides of said orifice and within a meter-mounting collar formed on the connecting pipe. The inlet and outlet ports are operatively connected with a flowmeter having a mounting base cooperable with sad mounting collar, and provided with separate feed and return passageways in the base, and with a feed-receiving float line and a return line adjacent thereto, so that a common communication pipe line thereof has one end which is connected with either the inlet or outlet passageway, and the separate passageways in said mounting base are so disposed so that irrespective of whether the other end of the communication-connecting pipe is connectably inserted within either of said inlet or outlet port of said connecting pipe member then the bypassing flow of the fluid is introduced into a tapered line having a built-in float which is adapted to be moved by the bypassing flow of fluid into a position indicating the rate of flow of the fluid through the main line, whereupon said bypassing fluid is then passed through the return line of the meter to reenter the main line.



3,603,149
ULTRASONIC LIQUID LEVEL INDICATOR

Ross D. McKown, Woodland Hills, Calif., assignor to the United States of America as represented by the Secretary of the Army.

Filed Sept. 3, 1969, Ser. No. 854,843
Int. Cl. G01f *23/28*
U.S. Cl. 73—290 V 2 Claims

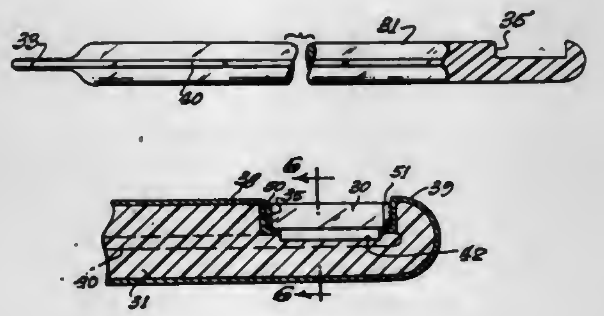


A transducer is placed on the outside of a container and used to transmit an ultrasonic pulse through the wall of the container and to detect the reflected ultrasonic pulse. The amplitude reflected pulse is dependent upon the specific acoustic impedance of the container. The specific acoustic impedance of the container is related to the substance in contact with the wall of the container beneath the transducer. By detecting a change in specific acoustic impedance it is possible to determine when the container has been filled to a predetermined level. A cathode-ray tube provides a visual indication of the specific acoustic impedance. A gated output is provided to automatically control the filling process of the container.

3,603,150
DISPOSABLE BODY TEMPERATURE SENSOR

Stephen L. Kurtin, 536 S. Euclid Ave., Pasadena, Calif., and Carver A. Mead, 2036 Pasadena Glen Road, Pasadena, Calif.

Filed Nov. 19, 1969, Ser. No. 878,001
Int. Cl. G01k *7/22*
U.S. Cl. 73—362 SC 7 Claims

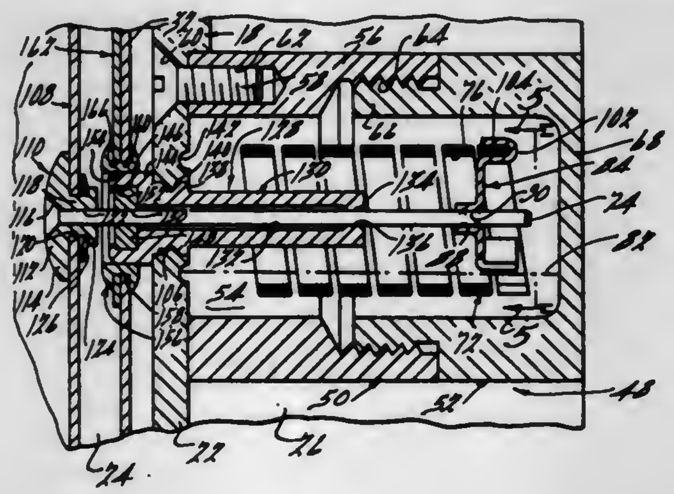


A medically accurate disposable body temperature sensor employing a bar of high-purity crystalline germanium. The germanium bar is disposed within a plastic rod and ambipolar electrical contacts are made to opposed ends of the bar. Ambipolar contacts in conjunction with high-purity germanium assure accurate, reproducible thermometry. A digital readout into which the thermometer is to be selectively connected including a circuit for insuring a linearized reading over the temperature range of interest is also provided.

3,603,151
GAS ADSORPTION THERMOMETER

Herbert J. Zurstadt, Grosse Pointe Park, Mich., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 16, 1969, Ser. No. 833,306
Int. Cl. G01k *5/36*
U.S. Cl. 73—368.6 12 Claims

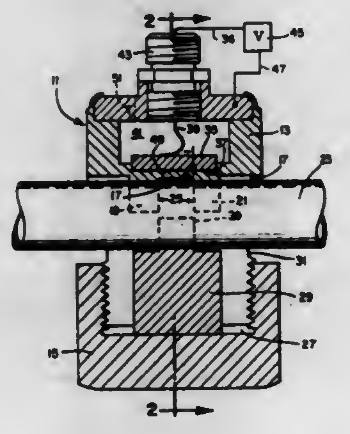


A gas adsorbent thermometer comprising an external housing; a temperature indicating member; means defining a chamber interiorly of the housing; a shaft member having one end thereof supporting the indicator member for rotational movement relative to the housing and the opposite end thereof disposed within the chamber; a multiconvolution helical Bourdon tube disposed within the chamber and arranged coaXially of the shaft; the chamber being provided with a quantity of fluid for dampening movement of the Bourdon tube relative to the housing; bearing means for rotatably supporting the shaft and constructed such that the fluid within the chamber will not leak therefrom regardless of the relative orientation of the housing; a takeoff member extending between the Bourdon tube and the shaft and adapted to impart rotary movement to the shaft in response to winding and unwinding movement of the Bourdon tube; a temperature sensing bulb containing a mass of gas adsorbent material, and a capillary tube communicating the bulb with the Bourdon tube.

3,603,152
TRANSDUCER FOR DETECTING PRESSURE CHANGES IN FLUID FLOW

Vernon F. Allbert, Chester Heights, and Thomas H. Carey, Chester, both of, Pa., assignors to Columbia Research Laboratories, Inc., Woodlyn, Pa.

Filed Feb. 5, 1970, Ser. No. 8,821
Int. Cl. G01l *9/08*
U.S. Cl. 73—398 R 7 Claims

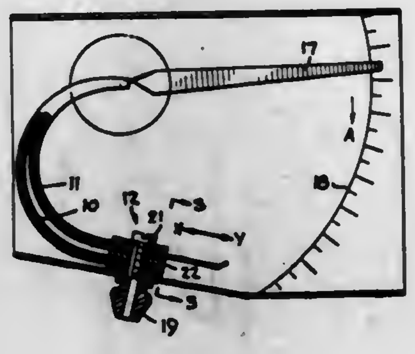


The present device provides a housing to hold a strain responsive element such as a piezoelectric waferlike crystal. The housing can be fabricated to various sizes depending upon the fluid conduit with which it is to be used. The housing is formed to provide a very firm contact with the fluid conduit and hence any applied force or strain which the conduit experiences serves to stress the piezoelectric crystal. Accordingly, the piezoelectric crystal is very sensitive to any changes of pressure of the fluid within said conduit.

3,603,153
DIRECT-ACTING PRESSURE AND VACUUM SENSOR

Siegfried H. A. Schmaus, 806 Powder Mill Lane, Penfield Downs, Philadelphia, Pa.

Filed Jan. 2, 1970, Ser. No. 317
Int. Cl. G01l *7/04*
U.S. Cl. 73—418 5 Claims

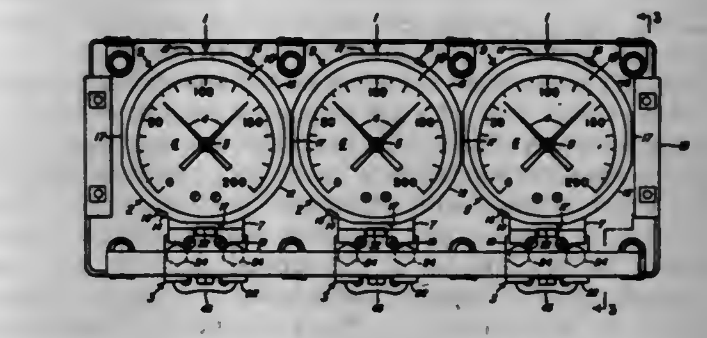


A direct-acting pressure and vacuum sensor operable in the low-pressure range and constituted by two cantilever springs having different lengths and spring rates. The two springs have a similar C-formation and are maintained one within the other, in spaced relation, both springs have being attached at one end to a socket. The free ends of the springs terminate in a cap from which a pointer is extended. The springs are sealed within a flexible envelope to define an internal chamber communicating with the socket, whereby pressure applied thereto causes the springs to deflect, thereby moving the pointer to indicate pressure.

3,603,154
PRESSURE GAUGE ASSEMBLY

Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales Corporation, Salem, Va.

Filed Oct. 21, 1969, Ser. No. 868,131
Int. Cl. G01l *7/00*
U.S. Cl. 73—420 10 Claims

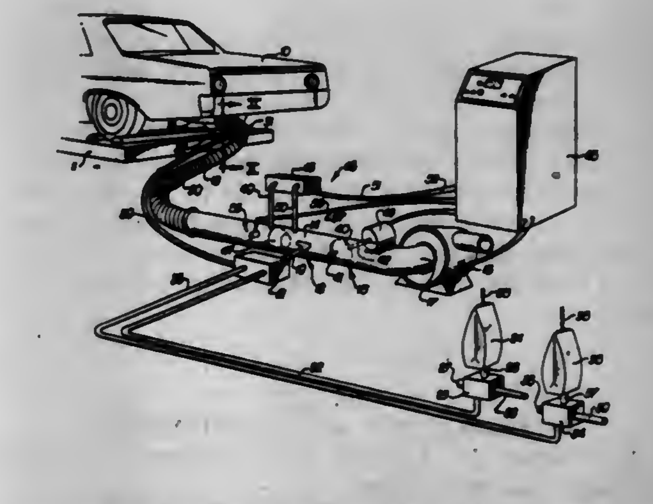


A pressure gauge assembly combining a pressure gauge for gauging one or more pressure lines and a mounting bracket to which the gauge is releasably clamped under spring pressure and locked against release except when relieved of line pressure. The gauge is both connectable to any pressure lines and testable through the bracket and fluid-connected thereto without pipe fittings, and the gauge case has a removable magnifying face plate formed of a glass lens molded in a plastic rim.

3,603,155
METHOD AND APPARATUS FOR MASS EMISSION SAMPLING OF MOTOR VEHICLE EXHAUST GASES

Charles William Morris, Los Angeles, and John Raymond Ulyate, Torrance, both of, Calif., assignors to Chromalloy American Corporation, West Wyack, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,734
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 R 22 Claims



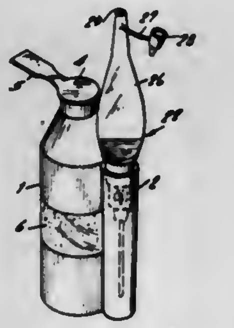
An air blower draws a mixture of exhaust gases emitted from an internal combustion engine and ambient air through a through-flow duct having a valve means therein at a minimum volumetric flow rate for the mixture in excess of the maximum volumetric flow rate the engine is capable of emitting while a proportional sample of said total mixture is withdrawn into a sample container at a uniform volumetric rate during a test period, the sample thereafter being analyzed to determine the concentration of pollutants of gas constituents therein and compared with the concentration of such pollutants or gas constituents in the ambient air which is sampled concurrently at the same flow rate from an area adjacent that where the ambient air is drawn into the through-flow conduit, total mass or weight of such pollutants or constituents being calculable from the concentration thereof in said sample and the known total mass or weight of air and gas mixture drawn through the duct.

Temperature sensing and transducer means produce a first or error signal which is a function of the temperature of gases flowing through said duct, volumetric flow rate sensing means and associated transducer means produce a second signal which is a function of volumetric gas flow through the duct and electrical circuit means are provided in association therewith to cause said second signal to modify said first signal to produce a control signal which causes operation of a servomotor to adjust the valve means until an actual required volumetric flow rate through the duct is attained for any given temperature thereof to maintain a constant mass or weight flow, said actual volumetric flow rate for said gases increasing with increasing gas temperatures above a standard initial flow rate for a standard temperature condition.

Circuitry is provided for a system for maintaining constant the rate of mass flow of a gas through a conduit despite temperature changes. The system generates an error signal linear with the absolute temperature of the gas, generates a second signal which is linear with differential pressure across a fixed orifice in the conduit, and thus with velocity of flow therein, modifies the error signal by the second signal to produce a command signal of appropriate polarity to adjust the velocity of gas flow in an inverse feedback manner by controlling a throttling valve in the conduit.

3,603,156
DISPOSABLE DILUTION SYSTEM

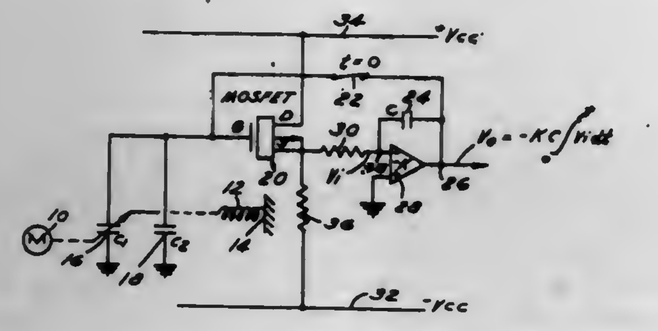
Timothy Konkol, Westchester, N.Y., assignor to Gradko Glass Laboratories, Inc., Yonkers, N.Y.
Filed Feb. 4, 1970, Ser. No. 8,604
Int. Cl. G01n *1/10*
U.S. Cl. 73—425.4 15 Claims



A disposable dilution system that includes a container having a predetermined volume of diluent and a capillary tube in a holder. At its outer end, the capillary tube takes up a specific volume of sample that is related to the volume of diluent. The tube holder has a window or inspection port through which the inner end of the tube may be viewed. The entire tube in its holder is then placed in the container at its outer end. A bore in the holder, at its outer end, is sealed and the container shaken. The diluted solution may then be squeezed from the inverted container through the bore in the holder.

3,603,157
INTEGRATING ACCELEROMETER

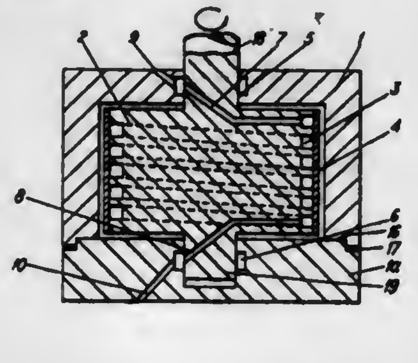
Allen D. Krugler, Jr., Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 13, 1970, Ser. No. 2,602
Int. Cl. G01p *15/08*
U.S. Cl. 73—503 4 Claims



An electronic circuit for developing a voltage signal that is proportional in magnitude to the acceleration of a moving body including an integrator circuit having an input signal equal to the sink voltage of a field-effect transistor with an insulated gate, the gate voltage for the transistor being supplied by a variable capacitance circuit, and a mass-spring system for varying the capacitance thereby causing a gate voltage on said transistor that is related in magnitude to the inertia forces acting on the mass of the mass-spring system.

3,603,158
ANGULAR ACCELERATION SENSOR

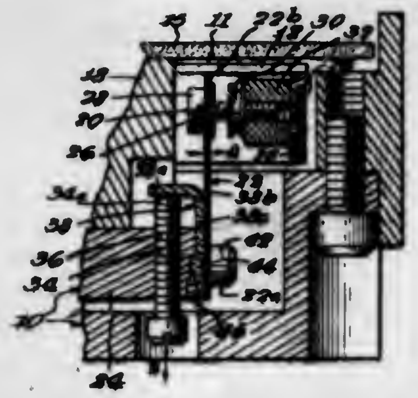
Erwin Schiltz, Heusenstamm, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Apr. 16, 1969, Ser. No. 816,740
Claims priority, application Germany, Apr. 22, 1968, P 17 55 285.1
Int. Cl. G01p *15/02*
U.S. Cl. 73—515 1 Claim



An angular acceleration sensor of the fluid inertia type is shown. A rotor enclosed in a housing has a fluid filled circumferential spiral groove or canal of one or more turns, in which the fluid is constrained except at the ends of the canal where it may be applied to a differential pressure detector to obtain an analog of angular acceleration applied to the rotor shaft. Two ways are shown, for connecting the canal ends (which rotate themselves) to fixed outside connections through the housing by utilizing the rotor shaft collector ring grooves and ducts or divided clearance spaces between rotor and housing cavity.

3,603,159
PRELOAD ADJUSTMENT MEANS FOR A TRANSDUCER

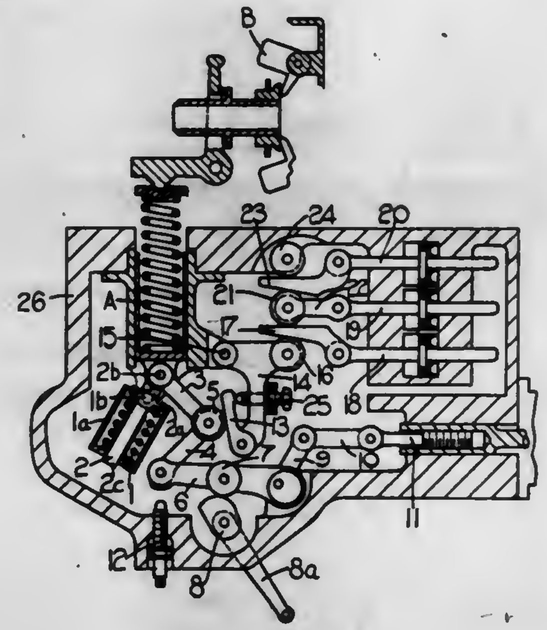
Jack A. Morrow, Bellevue, Wash., assignor to United Control Corporation
Filed Sept. 8, 1969, Ser. No. 855,839
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 12 Claims



A preload adjustment means for the seismic element of a pendulous accelerometer in which the seismic element is rotatably mounted on the free end of a cantilevered leaf spring. An adjustment screw is mounted through a bore in the support structure for movement in a direction parallel to the leaf spring. An L-shaped spring link between the screw and the leaf spring transmits movement of the screw to the spring link and the leaf spring to adjust the pressure exerted on the seismic element. The coefficients of expansion of the springs and the screw are matched to temperature compensate the preload adjustment means.

3,603,160
SPEED CONTROL FOR GAS TURBINE ENGINES

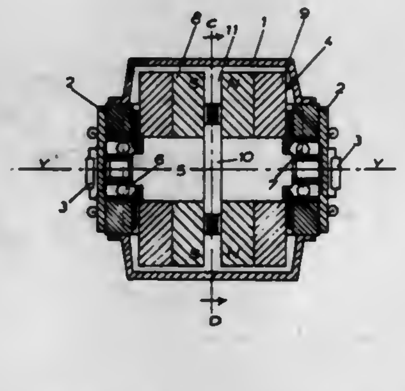
Joseph Lewis Bloom, Baie D'Urfe, Quebec, Canada, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Nov. 27, 1968, Ser. No. 779,346
Int. Cl. G01p *3/16*
U.S. Cl. 73—541 4 Claims



A governor mechanism for controlling the speed of a gas turbine engine comprising a spring means arranged to control the resistance to movement of governor elements, a plurality of pistons independently actuable to control the spring force through lever mechanisms, the pistons being connected by cams and followers, whereby they can be operated independently or in combination.

3,603,161
GYROSCOPE WITH COLLECTORLESS DC MOTOR

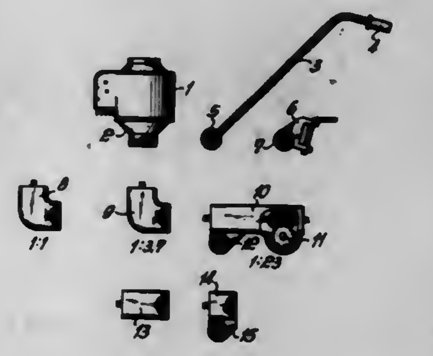
Karlhans Schwarz, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen, Bodensee, Germany
Filed Sept. 4, 1969, Ser. No. 855,145
Int. Cl. G01c *19/28*
U.S. Cl. 74—5.6 9 Claims



The direct current gyromotor comprises a frame, a rotor rotatably mounted on the frame and a pair of relatively flat stator windings without cores. The rotor has a pair of spaced permanent magnets in cylindrical form and magnetized so that they each have pairs of north and south magnetic poles about their periphery. The two magnets are spaced from each other and positioned so that a north pole of one magnet is opposite a south pole of the other magnet. The stator coils are in the annular space between the magnets. The position of rotation of the rotor is detected by a phototransistor which reads a sequential series of light and dark areas on the rotor. The phototransistor is a part of a flip-flop which controls the conduction of four transistors in a bridge. The stator windings are connected across one diagonal of the bridge with the DC supply being connected across the other diagonal.

3,603,162
MOTOR-DRIVEN SINGLE AXLE AGRICULTURAL MACHINE

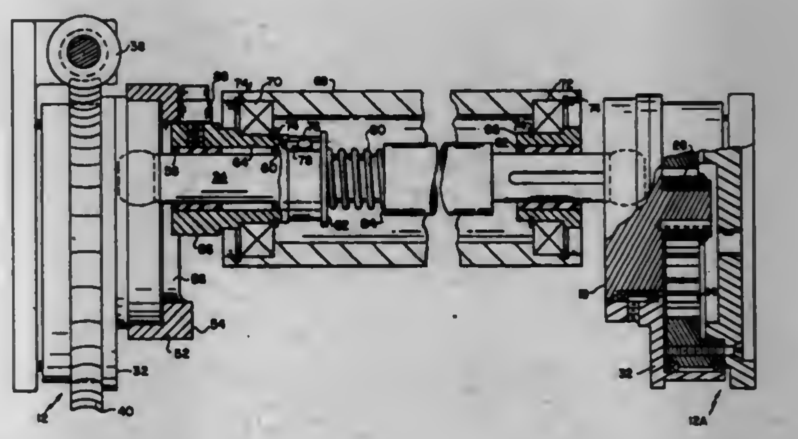
Otto Gohler, Mockmuhl, Wurttemberg, Germany, assignor to Agria-Werke, GmbH, Mockmuhl, Germany
Filed Sept. 2, 1969, Ser. No. 854,490
Claims priority, application Germany, Sept. 5, 1968, G 67 50 591
Int. Cl. F16h *57/02*
U.S. Cl. 74—16 9 Claims



A motor-driven single axle machine for use in agriculture, horticulture, forrestry and for like purposes, the frame of which comprises a worm gear casing having identical gear coupling and casing connection means at each end and being guided and/or pushed by a user and capable of composing the machine frame for different uses from a kit of coordinated gear casings of different shapes and gear equipment. The user is thus able to combine from these gear casings more than one particular machine and thus to undertake a number of different tasks by assembling different machines, adapted to those tasks, from the kit of gear casings.

3,603,163
TRANSVERSE AND AXIAL POSITIONING APPARATUS

Robert R. Henry, Andover, Mass., assignor to Yorkshire Industries, Inc., Andover, Mass.
Filed Apr. 28, 1970, Ser. No. 32,571
Int. Cl. F16h *37/16*
U.S. Cl. 74—22 11 Claims

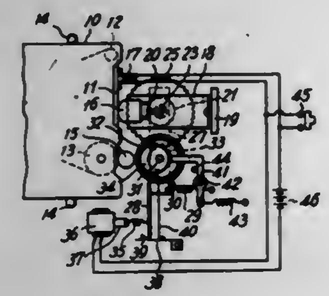


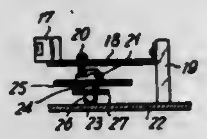
Apparatus comprising a carrier coaxially and rotatably mounted on a stationary internal gear, a mounting member eccentrically and rotatably mounted in said carrier, a pinion nonrotatably and coaxially connected to said mounting member in driving engagement with said internal gear, a shaft nonrotatably connecting to said mounting member, an annular cam face on said carrier coaxially of said mounting member and facing said shaft, a slideable member axially movably and nonrotatably connected to said shaft, a cam follower fixedly connected to said slideable member and extending into engagement with said cam face, and a biasing member biasing said slideable member and said cam follower toward said cam face.

3,603,164
APPARATUS FOR SHIFTING MAGNETIC HEAD IN MULTITRACK TAPE PLAYER

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed Feb. 3, 1970, Ser. No. 8,168
Int. Cl. F16h *25/08, 25/12;* **G11b** *5/00*
U.S. Cl. 74—54 **8 Claims**



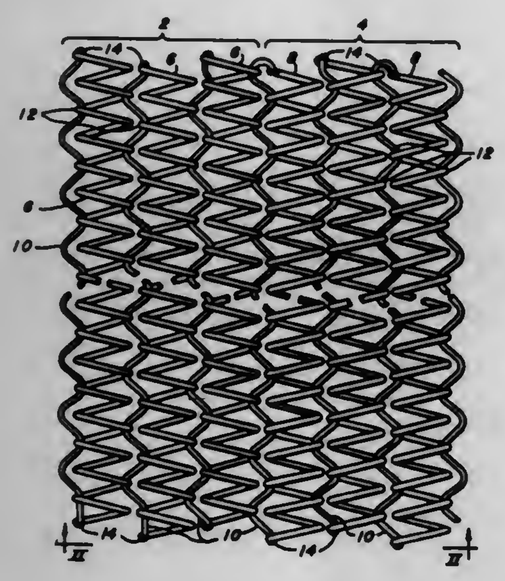


An apparatus for shifting magnetic head in multitrack tape player includes cam means for shifting a magnetic head across the width of the tape to positions corresponding to record-tracks on the tape, and driving means for rotatably driving said cam means at a predetermined angle. Said driving means comprises a frictional wheel rotatably driven by a capstan for drivingly feeding the tape, and means for decelerating rotation of the frictional wheel and imparting the same to said cam means. The frictional wheel is adapted to be prevented from its rotating due to less power transmission from the capstan when the frictional wheel rotate round its axis.

3,603,165
BELT FABRIC FOR PLASTIC-PAD-MOLDING CONVEYOR

Joseph J. Feld, Northridge, Calif., assignor to United States Steel Corporation

Filed July 7, 1969, Ser. No. 839,586
Int. Cl. F16g *1/18*
U.S. Cl. 74—239 **1 Claim**

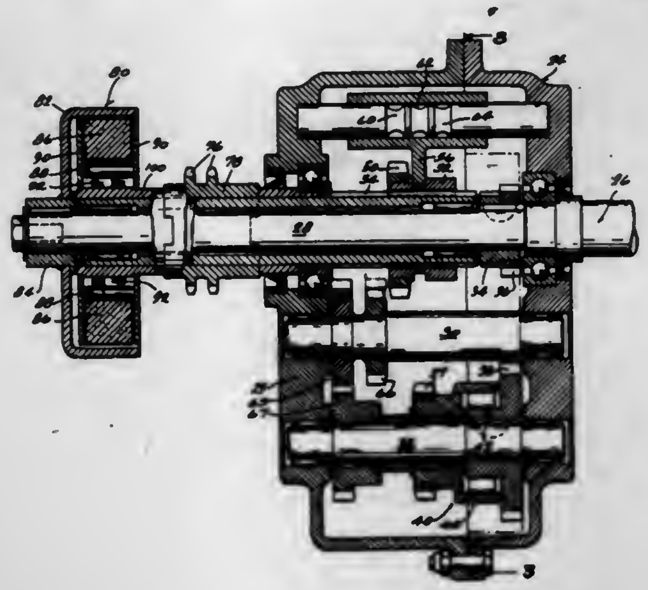


Belt fabric is made up of alternate groups of spiral elements having equispaced vertices. The spiral elements of each group are wound in a direction opposite to the winding of the spiral elements in the groups adjacent thereto. Each pair of adjacent spiral elements are joined together by a crimped connecting wire extending therethrough and engaging nonconsecutive vertices of the pair of adjacent spiral elements. The ends of each connecting wire are rigidly connected with opposite ends of one of the pair of adjacent spiral elements it joins together.

3,603,166
SEMIAUTOMATIC TRANSMISSION

Maurice O. Holtan, 2012 Menomonee Pkwy, Wauwatosa, Wis.

Filed May 15, 1969, Ser. No. 825,009
Int. Cl. F16h *3/08*
U.S. Cl. 74—331 **8 Claims**

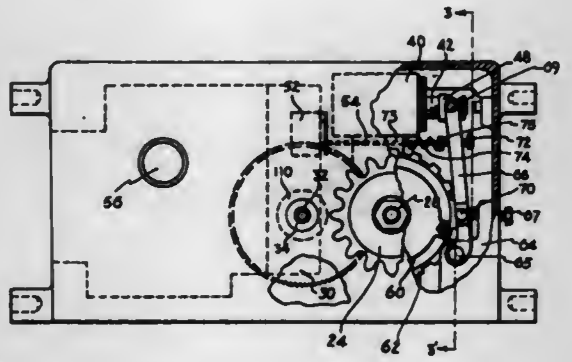


A compact spur gear rate changer having some gears shiftable manually and having a centrifugal clutch for effecting rate changes otherwise, is preferably used to supplement rate changes effected by torque and speed changes to which a belt drive rate changer of the split pulley type is subject. Particularly when the power source is a two cycle engine, a relatively high-speed engine operation is required to develop maximum power. By using the semiautomatic gear transmission to supplement rate changes developed by the split pulley and belt, the engine is enabled to develop full power almost immediately and greatly improved acceleration is noted.

3,603,167
CONTROL DEVICE

Henry L. Arce, Huntington Park, Calif., assignor to Ametek, Inc., New York, N.Y. Continuation of Ser. No. 808,529, Mar. 24, 1969, abandoned

Filed June 11, 1970, Ser. No. 48,847
Int. Cl. F16h *35/00;* **B63h** *25/14*
U.S. Cl. 74—388 **9 Claims**

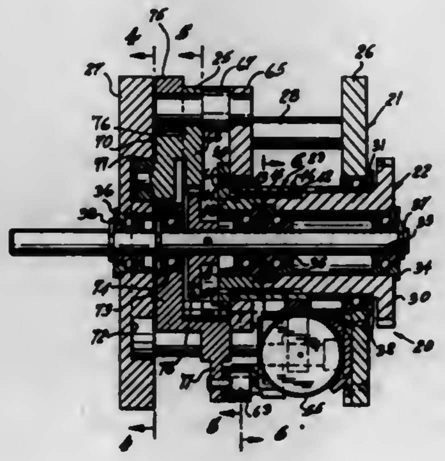


A gear train mechanism with a motor input, a planetary clutch and an output shaft with load responsive clutch disengagement means is provided by a toothed outer casing on the planetary clutch with a detent to engage the teeth mounted on a pivotable arm. The arm is retained in the clutch engaging position by a solenoid. The solenoid core is mechanically linked to the arm through a resilient linkage. The solenoid is connected to a suitable e.m.f. with a normally open microswitch which is held in the closed position by a second detent on the arm. Excessive loading overcomes the resilient linkage between the core and the arm, permitting the arm and its clutch detent to rock from engagement with the toothed clutch casing. This displacement opens the microswitch, deactivating the solenoid and releasing the planetary clutch. The mechanism is particularly useful for any automatic control function where it is desired to have manual override provision which will disengage the automatic control. It is particularly useful in the linkage between the rudder and the power unit of an automatic pilot. Another application would be in the mechanical linkage between a valve actuation motor and a valve for remotely controlled valves such as underwater valves.

3,603,168
INTERMITTENT MOVEMENT MECHANISM

Joseph Kaplan, 39 Fair Lane, Jericho, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,766
Int. Cl. F16h *35/02;* **F16d** *27/00;* **F16h** *19/00*
U.S. Cl. 74—394 **9 Claims**

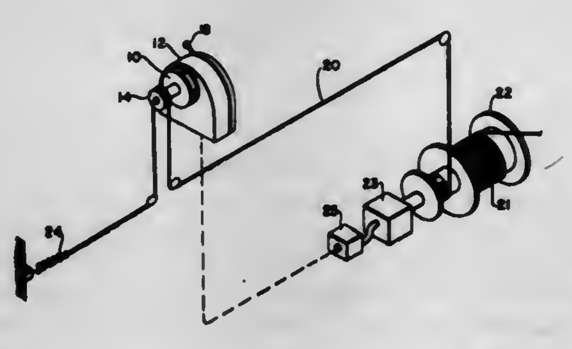


A rotary input having a fixed displacement and an output train of planetary gearing including a rotary carrier driven by the input, planetary gearing and an output gear meshing with the planetary gearing, and cam means controlling rotation of the planetary gearing relative to its carrier.

3,603,169
POSITION CONTROL DEVICE

Matthew R. Fandetti, Brunswick, Maine, assignor to Pine Tree Engineering, Brunswick, Maine and Cardwell Manufacturing Company, Inc., Wichita, Kans.

Filed Mar. 6, 1970, Ser. No. 17,133
Int. Cl. B66d *1/56, 1/50;* **H01h** *3/16*
U.S. Cl. 74—501.5 **6 Claims**

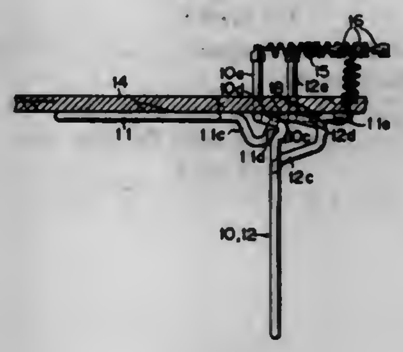


An automatic linear or angular position control device for regulating the position of a given point in one plane, through a selected range, by the means of pulleys, springs, cams and switches. This type of device is used to activate various types of force developing equipments to move the given point as commanded by the position control.

3,603,170
KNEE-LEVER DEVICE OR ARRANGEMENT FOR ELECTRONIC MUSICAL INSTRUMENTS

Takao Yamauchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Feb. 13, 1970, Ser. No. 11,149
Claims priority, application Japan, Feb. 18, 1969, 44/13428
Int. Cl. G05g *1/20*
U.S. Cl. 74—515 **7 Claims**

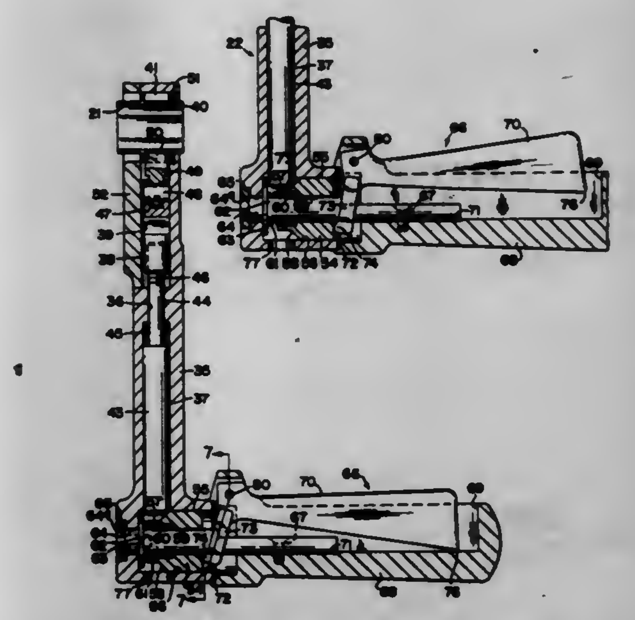


A knee-lever arrangement for an electronic musical instrument comprises a plurality of knee-operated levers which, in a nonoperable position, rest on the instrument so as not to be obstructive to the player, and which can be simultaneously operated to control various sound effects, in an operable position in which they may be selectively set ready to operate.

3,603,171
CRANK

Harry G. Dodge, Painesville, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed Nov. 12, 1968, Ser. No. 775,021
Int. Cl. G05g *1/00*
U.S. Cl. 74—548 **15 Claims**

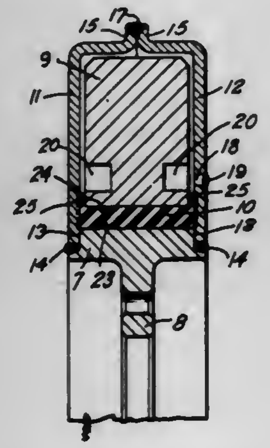


Disclosed is a driving device for imparting rotary motion to a driven member, said driving device comprising a body supporting a rotatable cylinder at one end thereof. The other end of the body includes a rotatable handle extending from the body along an axis parallel to the axis of the rotatable cylinder. An internal passageway is provided in the body in which a reciprocable pin member is disposed. The end of the pin member adjacent the rotatable cylinder is provided with teeth adapted to enter recesses defined in the external surface of the cylinder so as to lock the cylinder against rotation relative to the body when the pin is in a first position. A camming piston is reciprocably supported in the body adjacent the handle. The axis of the camming piston is parallel to the axis of the handle. A pivotal lever is carried by the handle and is provided with a cam ring adapted to abut the camming piston. Pivotal movement of the lever produces reciprocable movement of the camming piston which abuts the reciprocable pin to produce movement of the pin thereby locking the cylinder against rotation relative to the body. Spring means are provided in the linkage normally to bias the teeth out of engagement with the recesses so that the cylinder is normally rotatable in the absence of actuation of the handle lever.

3,603,172

DAMPER

Jeffrey Hall, Huddersfield, England, assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Dec. 3, 1968, Ser. No. 780,779
Claims priority, application Great Britain, Dec. 12, 1967, 56365/67
Int. Cl. F16f *15/12, 7/10*
U.S. Cl. 74—574 **16 Claims**

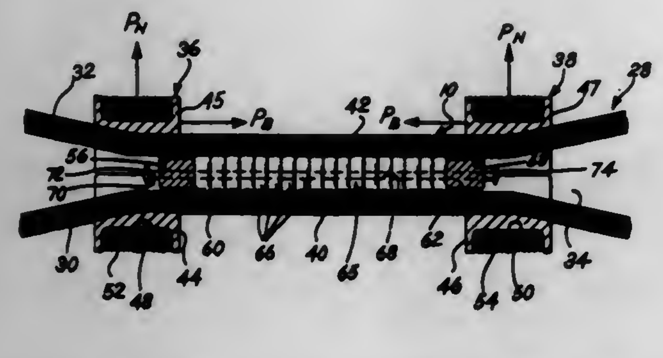


A torsional vibration damper has several important features, including an elastic spacer element which may provide tuning for the damper, which may serve as sealing means for the damper and which may provide spacing means between the inertia member and the housing. The damper housing may comprise members having radially extending portions seated in rabbets in the hub.

3,603,173

CENTER CORE FOR A LAMINATED COUPLING

Peter Brooks, South Bend, Ind., assignor to The Bendix Corporation
Filed Nov. 25, 1969, Ser. No. 879,674
Int. Cl. G05g *5/00*
U.S. Cl. 74—581 **8 Claims**

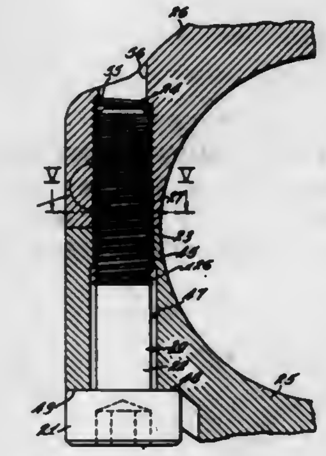


A laminated coupling used to connect a helicopter rotor arm to a rotor blade includes a pair of spaced end bushings interconnected by an endless belt. A pair of annular clips encircle the belt adjacent the bushings to define a center section of the coupling having generally parallel sides defining an opening between them. A core piece composed of a plurality of relatively rotatable laminations is disposed in the opening between the clips to maintain separation of the clips and to permit twisting of the coupling about an axis extending through the bushings.

3,603,174

CAP SCREW WITH PILOTING SURFACE

Paul J. Patchen, Chicago, and Frank C. Kula, Markham, both of, Ill., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Jan. 12, 1970, Ser. No. 2,057
Int. Cl. G05g *1/12*
U.S. Cl. 74—594 **10 Claims**

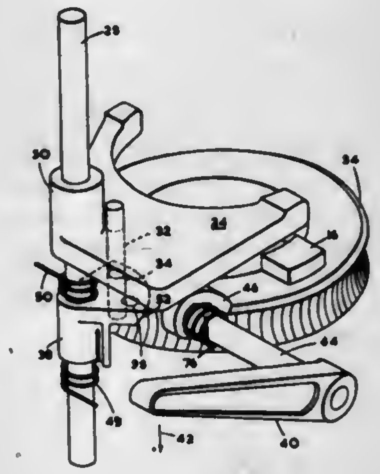


A screw-threaded member for piloting and fastening two parts in fixed relation to each other.

3,603,175

PLURAL DRIVE CLUTCHES WITH AUTOMATIC LOCK

Peter Horton, Luton, England, assignor to The English Electric Company Limited, London, England
Filed Sept. 22, 1969, Ser. No. 859,863
Claims priority, application Great Britain, Sept. 20, 1968, 44725/68
Int. Cl. F16d *21/04*
U.S. Cl. 74—625 **5 Claims**

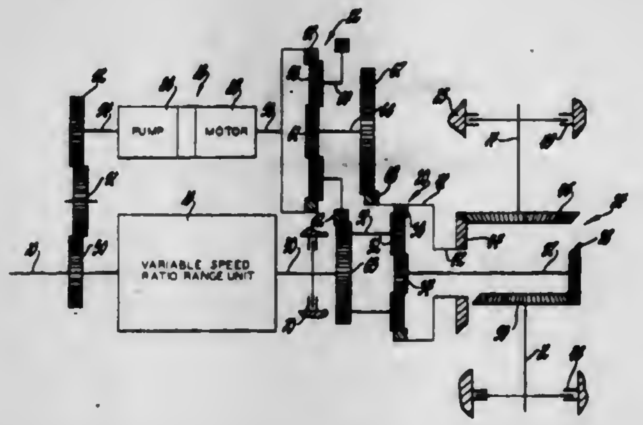


This invention relates to an actuator having a clutch control mechanism arranged to set the actuator in a position in which it is driven by a motor via a worm wheel or in a manually driven position. The clutch control mechanism includes a yoke which is manually moved by a lever to urge the clutch member into the manual drive position. The yoke is locked in this position by a latch which bears against a rod attached to the yoke. In this position the latch also bears against the worm wheel and is rotated when the latter is motor-driven. Rotation of the latch allows the rod to drop into a hole in the latch and the clutch member moves into engagement with the worm wheel. Rotation of the worm wheel therefore automatically changes the actuator from manual drive to motor drive.

3,603,176

TRANSMISSION

Roderick G. Tipping, and William V. Phillips, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 10, 1969, Ser. No. 865,240
Int. Cl. F16h *47/04, 37/06*
U.S. Cl. 74—687 **4 Claims**

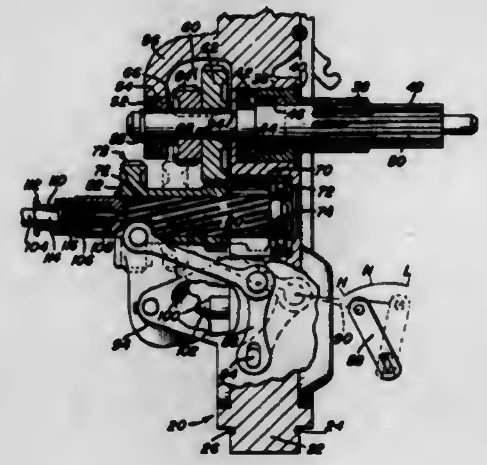


A transmission having speed differential gearing driven by an input powered variable speed ratio range unit to effect driving of two outputs at the same speed for straight vehicle drive and additional speed differential gearing driven by an input-powered variable speed ratio hydrostatic drive unit to effect a speed differential bias on the first-mentioned speed differential gearing to effect a speed differential between the two outputs for vehicle steering.

3,603,177

VARIABLE DRIVE RATIO ENGINE TO TRANSMISSION ADAPTER

Robert C. Burrows, P.O. Box 783, Truckee, Calif.
Filed Sept. 23, 1969, Ser. No. 860,310
Int. Cl. F16h *5/06, 3/22*
U.S. Cl. 74—745 **17 Claims**

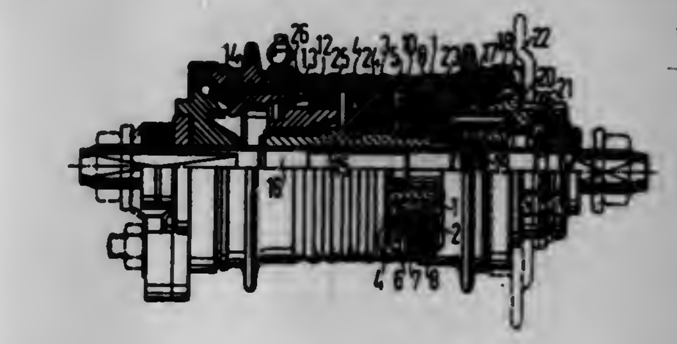


An engine to transmission adapter plate with integral two speed transmission gearing for disposition between an engine block and an associated transmission housing. The adapter plate not only includes two speed transmission gearing, but also serves to couple an engine output shaft to an associated transmission input or clutch shaft with the engine output shaft upwardly displaced relative to the transmission shaft center axis with which it is customarily coaxial, thereby increasing engine-to-ground clearance of the associated vehicle.

3,603,178

MULTIPLE-SPEED BICYCLE HUB WITH CENTRIFUGAL GOVERNOR

Manfred Lutz, and Horst Schulz, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed Nov. 12, 1969, Ser. No. 875,834
Claims priority, application Germany, Nov. 15, 1968, P 18 09 140.2
Int. Cl. F16h *5/46;* **F16d** *43/04*
U.S. Cl. 74—752 E **11 Claims**

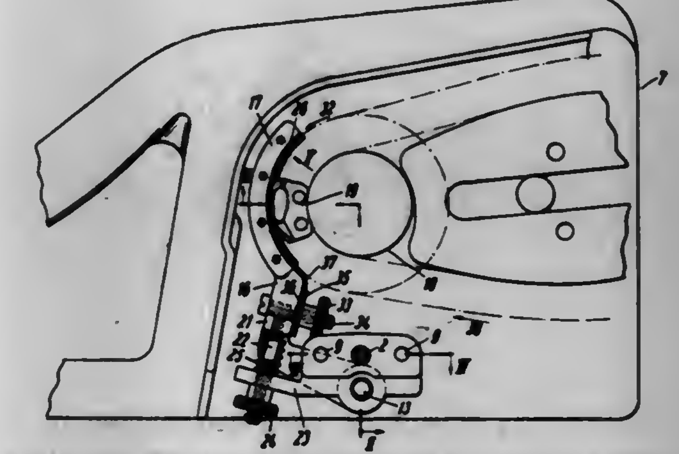


A dual-speed hub for a bicycle is equipped with planetary gearing and with first and second pawl-and-ratchet clutches respectively connecting the hub shell with the driver of the hub, which also serves as planet carrier, and with the faster turning ring gear. The second clutch is normally disengaged by a centrifugal governor whose spring-loaded flyweights are mounted on the pawl carrier of the clutch by means of pivot pins symmetrical relative to the axis of carrier rotation and swing in a common clockwise direction about their pivot axes under the influence of the centrifugal forces sufficient to overcome the flyweight springs. A thin annular disc axially arranged between the flyweights and the carrier couples the flyweights to each other so that they must pivot jointly.

3,603,179

APPARATUS FOR SHARPENING SAW CHAINS OF MOTOR CHAIN SAWS

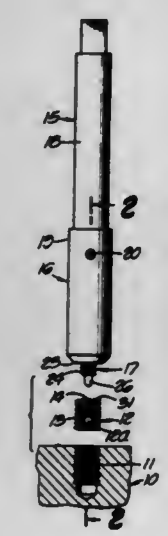
Hans-Peter Stihl, Hochberg, near Ludwigsburg; Hans Dolata, Neustadt, near Waiblingen; Rolf Sauermilch, Waiblingen, and Herman Lude, Stetten, near Waiblingen, all of, Germany, assignors to Andreas Stihl Maschinenfabrik, Neustadt-Waiblingen, Germany
Filed Jan. 21, 1969, Ser. No. 792,341
Claims priority, application Germany, Jan. 20, 1968, P 16 52 787.0
Int. Cl. B23d *63/00*
U.S. Cl. 76—25 A **31 Claims**



For use in connection with a motor chain saw having a driving sprocket wheel and a saw chain adapted to pass over and be driven by said sprocket wheel, an apparatus for sharpening said saw chain, which comprises: holding means including means for connection to a motor chain saw, the saw chain of which is to be sharpened, said holding means having a concave surface portion for receiving abrasive means, and biasing means associated with said holding means for biasing said concave surface portion in the direction toward the center of curvature of said concave surface portion.

3,603,180
INSTALLATION TOOL FOR THREADED INSERT

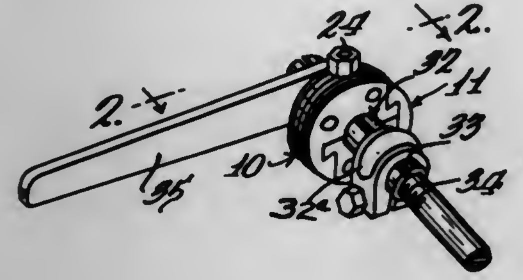
Bruce L. Alexander, San Marino, Calif., assignor to Threadline Fastener Corporation, Covina, Calif.
Filed July 31, 1969, Ser. No. 846,483
Int. Cl. B25b *13/50*
U.S. Cl. 81—53.2 **1 Claim**



A tool for installing a threaded insert into a workpiece is provided with a screw member threadedly, mounted in a shank member. A portion of the screw member projects through an end surface of the shank member for engagement with internal threads in the insert. Cooperating lugs on the members provide an angular lost-motion connection between them.

3,603,181
WRENCH

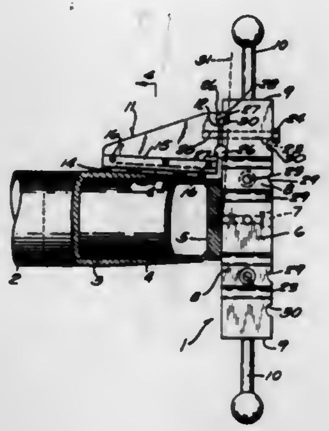
William E. Shultz, 239 N. Main St., Lombard, Ill.
Filed Aug. 28, 1969, Ser. No. 853,742
Int. Cl. B25b *13/00, 13/02, 13/56*
U.S. Cl. 81—90 **6 Claims**



A wrench having its work-engaging area enclosed by a collar having a pair of sections operatively assembled along interengaging tenon and recess means through displacement in a plane extending axially of the turning axis of an article of work in said work-engaging area, and a wedge blade is adjustably supported on one of said sections for movement toward and away from a selected position within said work-receiving area.

3,603,182
SPIGOT-FORMING TOOL

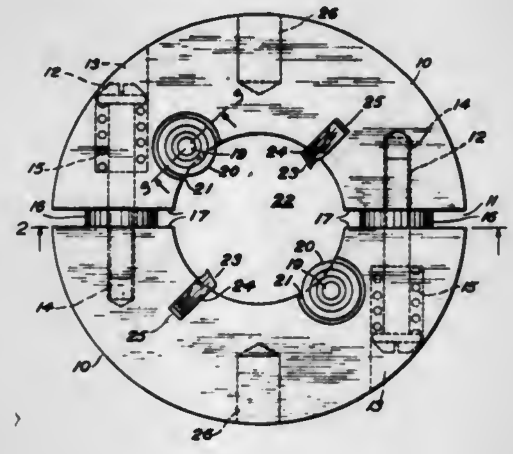
Robert M. Jackman, and William N. McDonald, both of Little Rock, Ark., assignors to A. O. Smith-Inland Inc., Milwaukee, Wis.
Filed May 12, 1969, Ser. No. 823,627
Int. Cl. B23b *5/16*
U.S. Cl. 82—4 C **9 Claims**



A spigot-forming tool designed to taper spigot ends of fiber-reinforced plastic hollow articles for fitting into a bell end of another plastic article has a cylinder which fits into the spigot end and serves as a supporting surface for the article wall. A cutting blade is disposed adjacent the outside surface of the spigot end in alignment with the longitudinal axis of the cylinder and is supported by a carriage and head bar attached to the cylinder. The carriage is removably attached to the head bar at a predetermined number of positions in accordance with the varying sizes of articles, and the attachment construction automatically disposes the carriage and blade at the desired spigot-taper angle for the particular size plastic article.

3,603,183
SHAFT-TRUING DEVICES

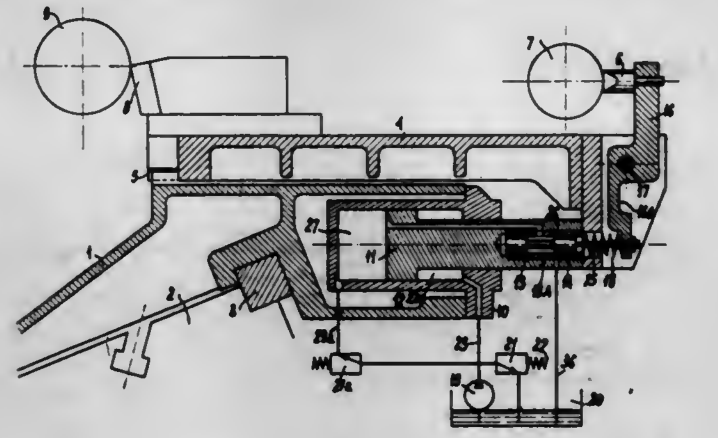
Denver L. Walker, 754 Glenside Drive, Lafayette, Calif.
Filed Oct. 2, 1969, Ser. No. 863,250
Int. Cl. B23b *5/18*
U.S. Cl. 82—4 B **7 Claims**



A manually operated, crankpin truing device, adapted to be mounted on a crankpin without removal of the crankshaft from the engine. Machining of the high surfaces on the crankpin is effected by cutters which are urged, by spring action, to contact such surfaces, but are prevented from making contact with the low surfaces by the cam action between the elliptical pin and the shaft-contacting rollers provided for that purpose.

3,603,184
CORRECTION DEVICE FOR MACHINE-TOOLS

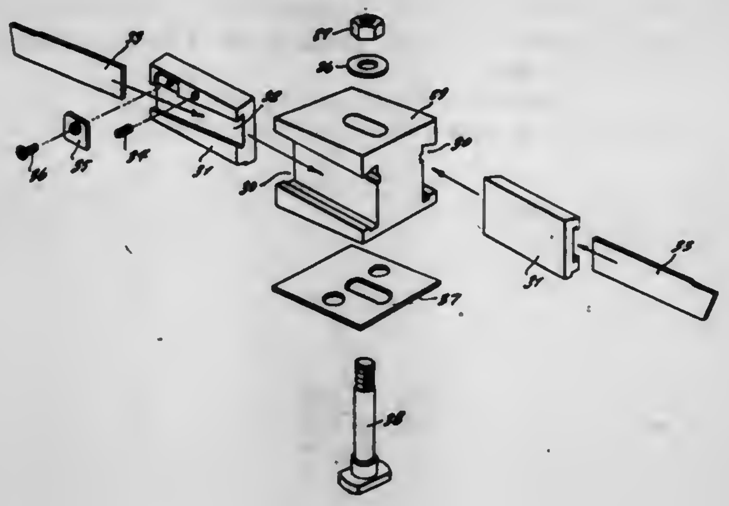
Marcel Berly, Garches, France, assignor to H. Ernault-Souma, Paris, France
Filed Feb. 13, 1969, Ser. No. 798,870
Claims priority, application France, Feb. 13, 1968, 139,596
Int. Cl. B23b *3/28*
U.S. Cl. 82—14 A **8 Claims**



Apparatus and a process for correcting the position of a movable machine element which is positionally controlled by a permanent-circulation hydraulic servomotor copying-control system. Means are provided for measuring the positional error of the element and varying the rate of the liquid supplied to the hydraulic servomotor as a function of the positional error.

3,603,185
METHOD AND TOOL FOR MOUNTING LATHE METAL CUTTING-TOOL BITS FOR USE ON METAL-TURNING LATHES FOR MACHINING OPERATIONS

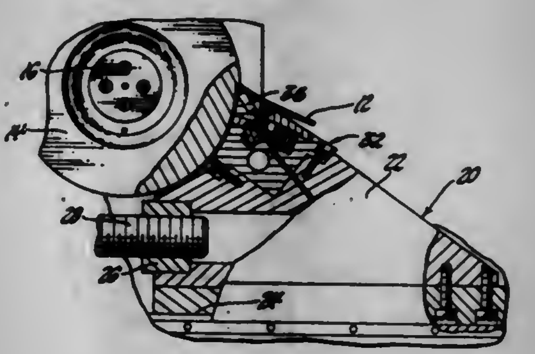
John B. Curry, 3849 York Blvd., Los Angeles, Calif.
Filed June 9, 1969, Ser. No. 831,403
Int. Cl. B23b *29/24*
U.S. Cl. 82—36 R **1 Claim**



A tool for use on metal-turning lathes so to allow the lathe to do work generally assigned for heavier lathes, the tool comprising a block tool which carries a pair of tool cradles which are slideably fitted to the block tool, and each of the tool cradles comprising a means for supporting a tool bit or cutoff tool bit, while the block tool is secured to the lathe by the anchor bolt.

3,603,186
PEELING MACHINE TOOL CLAMP

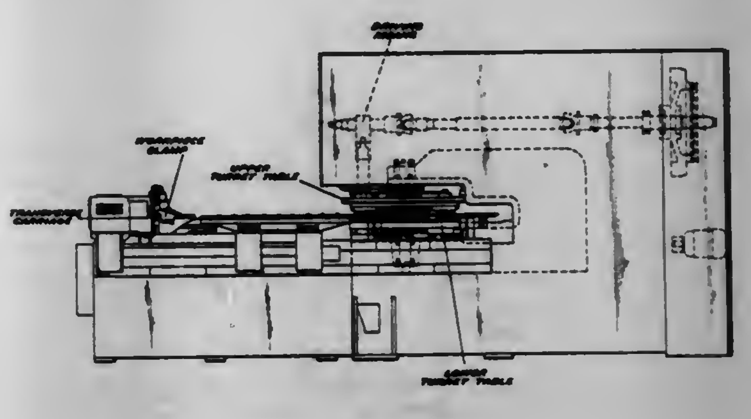
Charles W. Vigor, Rochester, and Joseph A. Musial, Dearborn, both of, Mich., assignors to General Motors Corp., Detroit, Mich.
Filed Nov. 28, 1969, Ser. No. 880,869
Int. Cl. B23b *5/14;* **B26d** *1/00;* **B27l** *5/00*
U.S. Cl. 82—46 **4 Claims**



In preferred form, a hydraulic toolholder for retaining an elongated cutting tool in fixed relationship to the peripheral edge of a rotatable cylindrical metal billet for peeling a thin metal strip. The cutting tool is retained in recess in the body portion of the toolholder by a pivotal clamp member which is tightly drawn against the cutting tool by a cam-carrying wedge engaging a shaft interconnected with the clamp member. Hydraulic pressure alternately acting against opposite sides of a piston moves the interconnected wedge into and out of engagement with the shaft to clamp or unclamp the cutting tool.

3,603,187
WORKPIECE CLAMPS FOR COORDINATE TABLES OF TURRET PUNCH

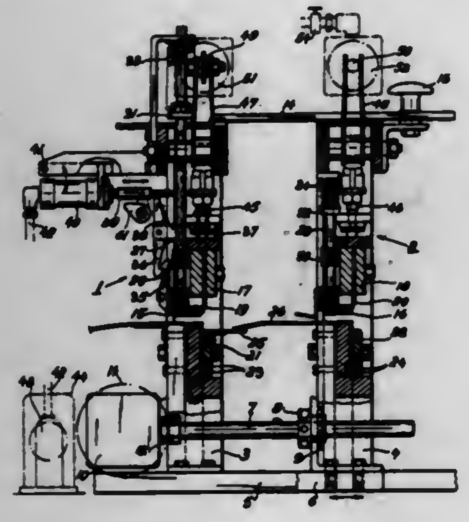
Walter Bredow, Ziegelmasch, Germany, assignor to C. Behrens Aktiengesellschaft, Postfach, Germany
Filed June 11, 1969, Ser. No. 832,373
Claims priority, application Germany, June 12, 1968, P 17 52 546.1
Int. Cl. B26d *7/06, 7/24*
U.S. Cl. 83—62 **8 Claims**



A clamp holder for attachment to a transverse carriage of a coordinate table of a turret punch, and a clamp fixed to said holder for holding a workpiece and an electrical switch with contact means for a drive mechanism of the punch, said clamp being displaceable in relation to said holder and said switch being positioned in relation to said clamp so as to be disconnected if the clamp meets with unintentional resistance to its motion.

3,603,188
CUTTING DEVICES

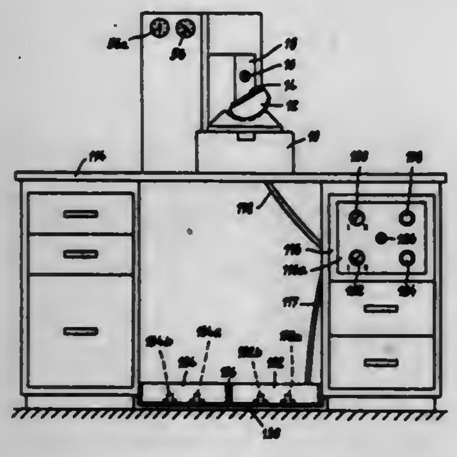
Richard Rabl, Vienna, Austria, assignor to Firma Akkumulatorenfabrik Dr. Leopold Jungfer
Filed Aug. 15, 1969, Ser. No. 850,471
Claims priority, application Austria, Nov. 11, 1968, A 10969/68
Int. Cl. B26d *5/26, 7/02*
U.S. Cl. 83—262 **7 Claims**



A cutting device for accurate continuous cutting of inherently stiff but flexible strip materials, particularly a sintered plastics powder strip. The device employs two intermittently actuated clamp knife systems adjustable in relation to one another in the travel direction of the strip. A spring-loaded movable clamp in the first system is provided with a one-way coupling member which is locked at the starting position of the systems. Upon triggering of the locked one-way coupling member, the two knives are simultaneously activated. A spring-loaded movable clamp in the second system is directly coupled to the second knife for both directions of its travel. An adjustable feeding device controls the feed of the strip material and the trigger member of the device.

3,603,189
MICROTOME WITH ELECTRICAL DRIVE

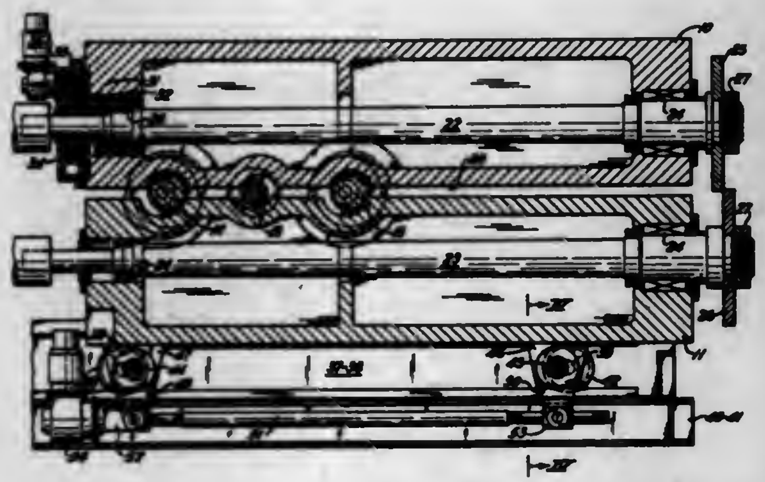
Martin Stachl, Munich, Germany, assignor to Carl Zeiss-Stiftung, Brenz, Wuerttemberg, Germany
Filed May 14, 1969, Ser. No. 824,564
Claims priority, application Germany, May 17, 1968, P 17 72 455.9
Int. Cl. G01n *1/06*
U.S. Cl. 83—412 **4 Claims**



A microtome arrangement comprising a microtome knife, a preparation holder, and an electric motor for producing relative movement of the holder with respect to the knife to effect cutting of a preparation held in the holder includes a foot-operated switch which controls energization and deenergization of the motor so as to free the hands of the operator. A safety switch provides for deenergization of the motor when a motor-driven drive lever for the preparation holder becomes disengaged from the preparation holder and thus prevents damage to the microtome upon jamming or the like. An electromagnetically controlled brake is automatically operated upon deenergization of the motor.

3,603,190
ROTARY PLATE-SLITTING SHEAR

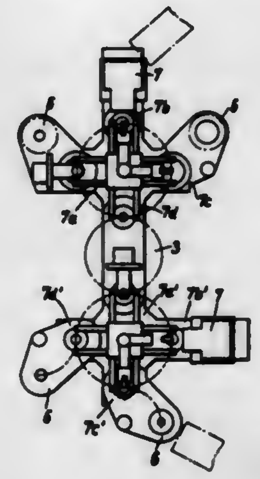
George P. Kollen, Pittsburgh, Pa., assignor to United Engineering and Foundry Co., Pittsburgh, Pa.
Filed Aug. 21, 1969, Ser. No. 851,788
Claims priority, application Great Britain, Sept. 26, 1968, 45810/68
Int. Cl. B26d *1/24*
U.S. Cl. 83—499 **8 Claims**



The present disclosure relates to a rotary blade slitting shear of the type used in the steel industry to divide strip, sheets, and plate into narrower workpieces. The shear comprises two elongated heads adapted to rotatably carry driving shafts to the ends of which are connected cooperating slitting knives. The heads actually are pivotally supported in which the points of pivots serve also as eccentrics which are driven so that the upper knife can be adjusted relative to the lower knife in a vertical plane. The upper knife is also adjustable axially of its drive shaft, for which reason there is provided a driven sleeve and a motor for moving the sleeve axially. The entire shear is adapted to be raised and lowered to properly position the knives relative to the workpiece to be slit.

3,603,191
ARRANGEMENT OF TWO OR MORE AUTOMATICALLY OPERATING PUNCHING MACHINES IN FORM OF A COOPERATING MACHINE SET

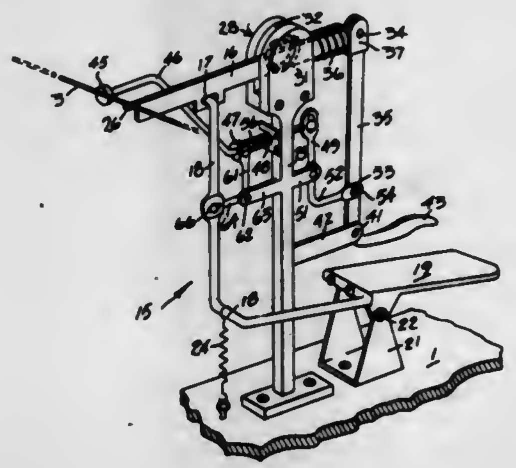
Roger Muller, Neuilly, France, and Theodor Fenner, Braunschweig, Germany, assignors to Etablissements D.F., Gentilly, France
Filed May 20, 1968, Ser. No. 730,277
Claims priority, application Germany, May 20, 1967, M 74 51
Int. Cl. B26d *7/06*
U.S. Cl. 83—405 **4 Claims**



An arrangement of at least two automatically operated stamping machines in the style of a cooperating machine set, which comprises a plurality of stamping machines disposed in one line and spaced apart equally from each other. A plurality of sheet supporting tables is disposed at a unitary level, and a rotatable transfer table is releasably inserted between each pair of adjacent stamping machines. The transfer tables connect a workpiece depositing station of each of the machines with a feeding station of the next following of the machines.

3,603,192
FOOT-OPERATED BASS-STRINGED MUSICAL INSTRUMENT

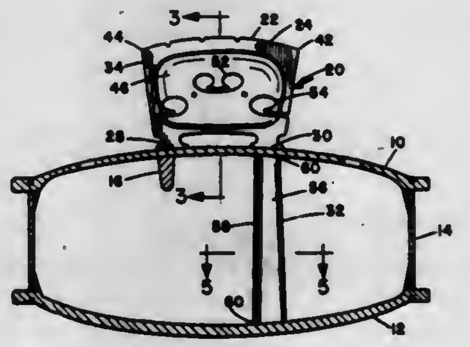
James L. Kaar, 519 Ellis St., San Francisco, Calif.
Filed Nov. 10, 1969, Ser. No. 875,342
Int. Cl. G10d *1/00, 1/08, 3/16*
U.S. Cl. 84—173 **12 Claims**



In a foot-operated bass-stringed instrument, in which four tense, electric bass strings are mounted on a vertical backboard; a plurality of chord forming pedals actuated by the left foot, a pedal actuated plucking mechanism; the improvement of an individual plucking pick for each string pivotally supported to pluck the adjacent string, a separate pedal to actuate each pick, and a pivoted heel support for the right foot of the musician to facilitate the turning of the foot over the selected pedals for the respective plucking mechanisms. The plucking mechanism is selective to pluck on the upstroke and downstroke of the pick, or pluck only on the upstroke but to miss the string on the downstroke. A vibration stopping pad is normally pressed against each string and is moved from the string simultaneously with the respective plucking.

3,603,193
SCULPTURED BRIDGE AND SOUND POST FOR STRINGED INSTRUMENTS

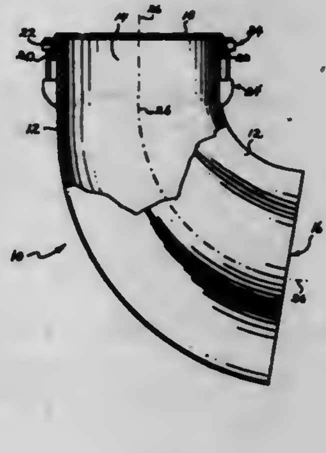
Kenneth W. Archibald, 6219 Broadway, San Diego, Calif.
Filed Mar. 2, 1970, Ser. No. 15,496
Int. Cl. G10d *1/02, 3/04*
U.S. Cl. 84—309 **5 Claims**



A sculptured bridge and sound-post structure which will reinforce the sound output characteristics, enhance the tone quality and increase the ready response of a stringed instrument, particularly in the violin family. The bridge has concave front and rear faces, reducing the thickness of the central web portion and making the bridge a more functional vibrating part of the sound-reproducing structure. The sculptured sound post further improves the conduction of sound vibrations between the front and back plates of the instrument sound box and the improved elements are readily adaptable to existing instruments without modification.

3,603,194
DRUM

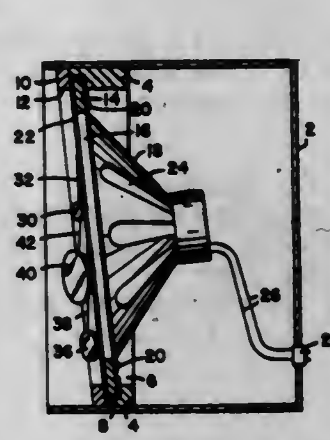
Roger W. North, 21 Beech Glen, Roxbury, Mass.
Filed Mar. 19, 1970, Ser. No. 20,886
Int. Cl. G10d *13/02*
U.S. Cl. 84—411 **4 Claims**



A musical drum having a hollow, elongated body which is open at both ends. The centerline of the drum body bends through an arc for at least a portion of its length. A drum head membrane is stretched across one open end of the drum body. Fasteners are provided to maintain the membrane in tension across the end of the drum body. In the preferred embodiment the cross section of the drum body, taken perpendicular to the centerline, is a circle having an increasing diameter starting at the narrow drum head end and widening out to the open sound emitting end of the drum.

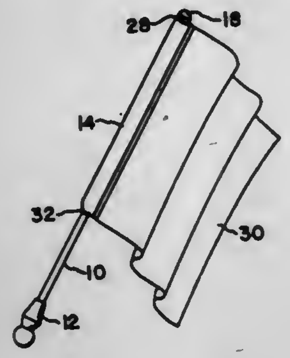
3,603,195
MUSIC-RESPONSIVE LIGHT DISPLAY

Charles S. Williams, Barrington, N.J., assignor to Edmund Scientific Co., Barrington, N.J.
Filed June 21, 1968, Ser. No. 739,086
Int. Cl. A63j *17/00*
U.S. Cl. 84—464 **6 Claims**



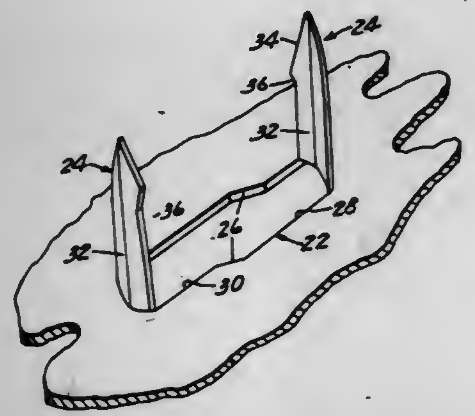
Mirrors are cemented to or suspended by threads from a rubber diaphragm stretched across the face of a loudspeaker in such a way as to trap a volume of air between the diaphragm and the speaker cone. When suspended mirrors are used, the diaphragm slopes slightly forward. A beam of light is directed through a color wheel, and is reflected from the mirrors onto a projection screen or other surface.

3,603,196
BATON STRUCTURE
Eugene W. Dolfi, 312 Frazier Drive, Pittsburgh, Pa.
Filed Oct. 9, 1969, Ser. No. 865,077
Int. Cl. G10g *7/00*
U.S. Cl. 84—477 **8 Claims**



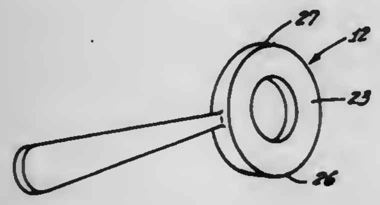
Described are novel baton structures, of the type used by competitive twirlers, and particularly flag baton structures formed entirely or principally from plastic elements and incorporating adjustable weight means for varying the center of gravity of the baton.

3,603,197
TRUSS CONNECTOR PLATE
Gordon G. Wood, 1664 Clifford St., Glendale Heights, Ill.
Filed Sept. 29, 1969, Ser. No. 861,825
Int. Cl. E04c *3/292;* **F16b** *5/00*
U.S. Cl. 85—13 **10 Claims**



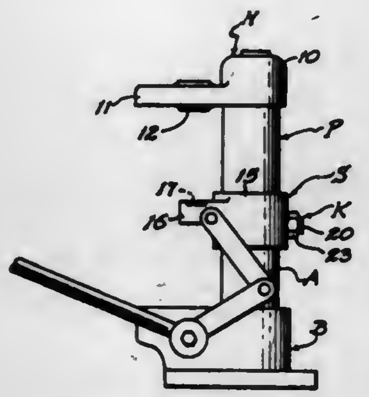
A truss plate is provided comprising a metal sheet having at least one pair of prongs integrally projecting from the undersurface thereof and forming a single elongated slot in said sheet having a central portion wider than the adjacent portions thereof, the prongs of said pair being disposed at the opposite ends of said slot, each prong comprising an elongated narrow shank and a barbed tip, said barbed tip being wider than said shank at its juncture thereto.

3,603,198
FILLER MEMBER FOR JOGGLE JOINT
LeRoy P. Seefeld, Downey, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.
Filed Apr. 29, 1969, Ser. No. 820,050
Int. Cl. F16b *43/00*
U.S. Cl. 85—50 **2 Claims**



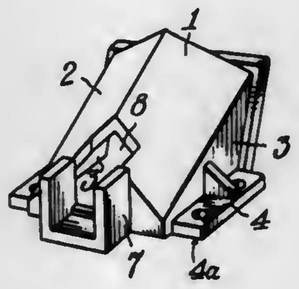
A washerlike filler member including body and tang portions, the latter portion being integrally constructed with the body portion. The body portion serving to occupy the space inherently present in "joggled" joints and the tang portion functioning as an aid in positioning the body portion. The tang portion is broken away or separated from the body portion after the latter has been properly positioned and secured in position.

3,603,199
AMMUNITION-RELOADING PRESS WITH ANGULARLY ADJUSTABLE SLIDE
Lyle S. Corcoran, 730 N. Mariposa Ave., Los Angeles, Calif.
Filed Dec. 8, 1969, Ser. No. 888,213
Int. Cl. F42b *33/02, 33/10*
U.S. Cl. 86—24 **4 Claims**



A casing-holder slide is slidably mounted on a cylindrical pedestal below a tool-holder head, with its angular position adjustably aligned with the tool axis by means of an eccentric key on the tip of an adjustment shank rotatably mounted in the slide and projecting into a vertical keyway in the pedestal.

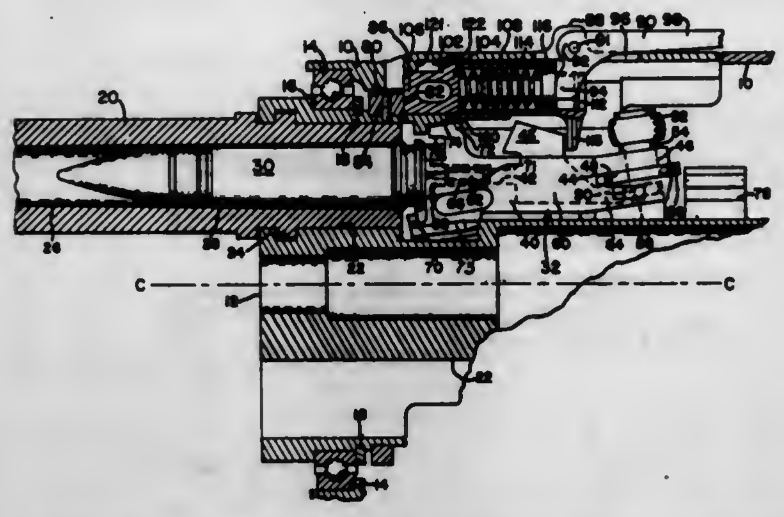
3,603,200
ROOF-TYPE REFLECTING MIRROR FOR VIEWFINDER OF SINGLE LENS REFLEX CAMERA
Kenji Hiruma, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Toyko, Japan
Continuation of application Ser. No. 633,518, Apr. 25, 1967. This application Apr. 17, 1970, Ser. No. 28,245
Int. Cl. G03b *13/02*
U.S. Cl. 88—1.5 R **1 Claim**



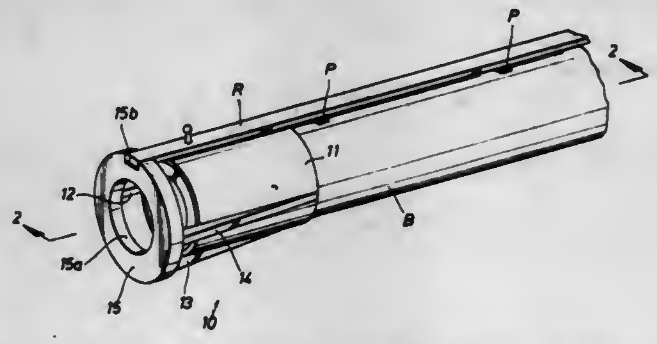
A reflecting mirror for the viewfinder system of a single lens reflex camera has roof walls with interior reflecting surfaces meeting to form a roof-shaped reflecting member. The roof walls are spanned by a triangular front wall and located in place by a vertical lateral wall. The lateral walls are united by an eyepiece holding frame. The whole structure is adapted for molding as a single unitary plastic piece.

3,603,201
FIRING MECHANISM FOR HIGH RATE OF FIRE REVOLVING BATTERY GUN
Anthony J. Aloi, Burlington, Vt., assignor to General Electric Company
Filed Nov. 24, 1969, Ser. No. 879,277
Int. Cl. F41d *7/04*
U.S. Cl. 89—12 **7 Claims**

A Gatling gun has a stationary housing with a single-mainspring cocking and firing assembly, and a rotor assembly having a plurality of gun barrels, respective bolts with firing pins and a rotating cocking and firing control cam. The rotating cam compresses and releases the mainspring to activate the firing pin independently of the translation of the bolt, which bolt is activated by the conventional stationary housing cam.

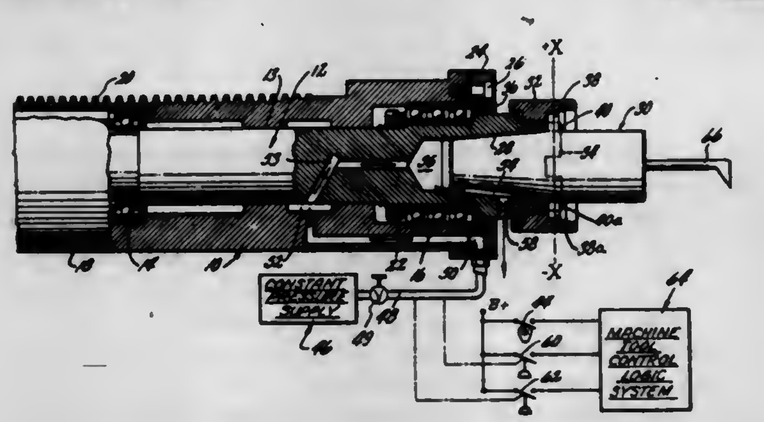


3,603,202
MUZZLE BRAKE
Edward L. Moragne, 4723 Nenana, Houston, Tex.
Filed June 16, 1969, Ser. No. 833,343
Int. Cl. F41c *21/18*
U.S. Cl. 89—14 C **6 Claims**



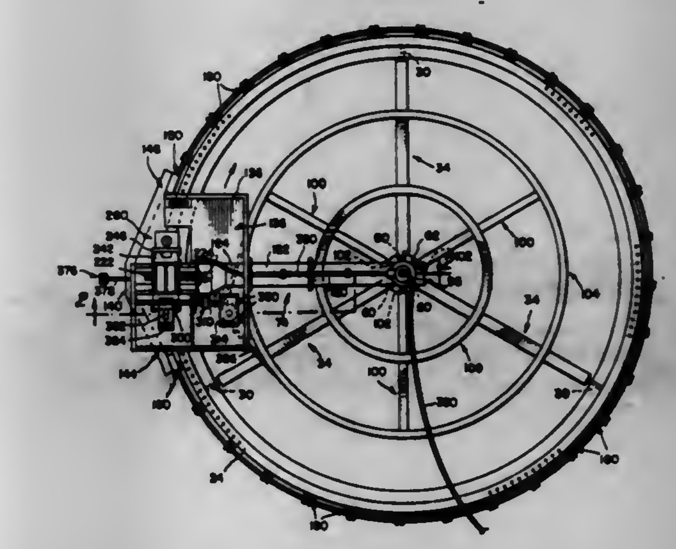
An internally threaded sleeve having three circumferentially spaced supports extending axially beyond one of its ends. A centrally bored, circular plate having its plane transversely disposed to the central axis of the sleeve and secured to the supports at a spaced distance from the end of the sleeve. A depression formed on the circumference of the plate for receiving the rib of a shotgun. The sleeve is threadable on external threads formed on the end of a gun barrel and held against rotational movement by the presence of the gun rib in the plate depression.

3,603,203
PNEUMATIC TOOL-SENSING SYSTEM FOR MACHINE TOOL
Richard P. Rhodes, Vernon, Conn., assignor to Pratt & Whitney Inc., West Hartford, Conn.
Filed Jan. 12, 1970, Ser. No. 2,130
Int. Cl. B23q *17/18*
U.S. Cl. 90—11 A **14 Claims**



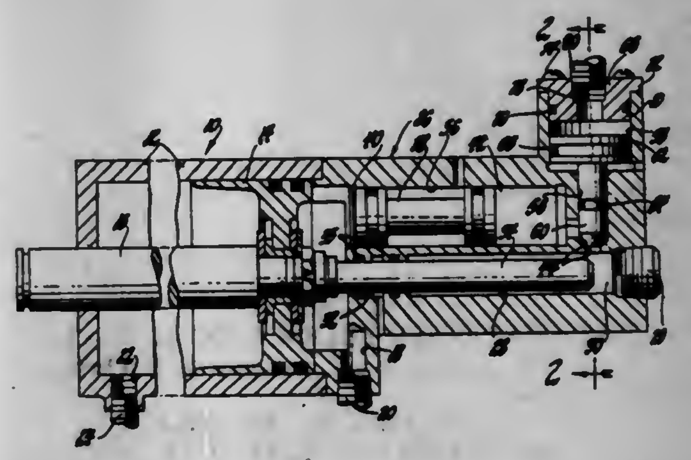
A toolholder has a predetermined radially aligned position in a head spindle for orienting a tool of the single-point type. An airflow path is provided between a bore in the spindle and a groove in the toolholder and thence to an exit port in the spindle. A pressure-sensitive sensing system provides a signal output which indicates whether or not the toolholder is properly loaded and radially aligned in the spindle.

3,603,204
WORK-MOUNTED MACHINING AND FINISHING DEVICE
Lloyd E. Anderson, Sr., Des Moines, Iowa; George C. Harper, Coraopolis, Pa.; William Leber, Pittsburgh, Pa., and Charles G. Miller, Monterrey N. L., Mexico, assignors to Pittsburgh-DesMoines Steel Company, Pittsburg, Pa.
Filed Feb. 20, 1969, Ser. No. 801,030
Int. Cl. B23c *1/20, 3/00*
U.S. Cl. 90—12 **26 Claims**



A pivot support means is adapted to be connected with a workpiece such as a tank or the like, and a pivot arm means is pivotally supported by the support means. A machining means for milling or drilling the workpiece is carried adjacent the outer end of the pivot arm means, this machining means being both radially and vertically adjustable with respect to the pivot arm means. Positive drive means is interconnected between the support means and the pivot arm means for moving the pivot arm means about a pivot axis. Guide means is supported by the outer surface of the associated workpiece and is interengageable with antifriction wheel means on the outer end of the pivot arm means to guide movement of the pivot arm means with respect to the workpiece.

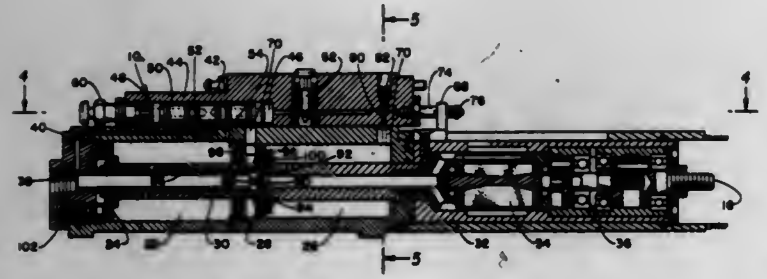
3,603,205
HYDRAULIC LOCK FOR A LINEAR ACTUATOR
Thomas W. Shearer, Jr., Auburn Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 1, 1969, Ser. No. 881,236
Int. Cl. B23d *1/08*
U.S. Cl. 91—45 **2 Claims**



The piston of a pneumatic actuator is releasably locked in extended position by a hydraulic device responsive to the air pressure in the actuator cylinder. A hydraulic supply reservoir feeds hydraulic fluid through a check valve to a chamber containing a displacement piston attached to the actuator piston so that the pistons are permitted to move to extended position but prevented from returning. A controllable release valve bypassing the check valve is provided to allow return of the hydraulic fluid from the chamber to the reservoir to permit retraction of the actuator piston.

3,603,206
AIR-HYDRAULIC LINEAR FEED DEVICE

Robert C. Quackenbush, Glendale, Calif., assignor to Arthur B. Quackenbush, Glendale, Calif., a part interest
Filed Mar. 16, 1970, Ser. No. 19,663
Int. Cl. F01b *7/16*
U.S. Cl. 91—61 **15 Claims**

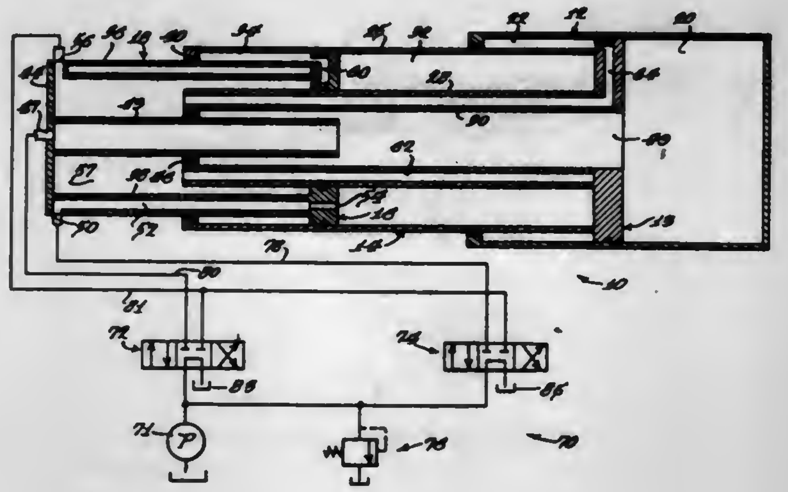


A main frame mounts an air cylinder acting through an hydraulic cylinder with the pistons of the two cylinders forwardly connected linearly moving a fluid motor, gear train and spindle forwardly in a feed stroke and rearwardly in a retraction stroke. The hydraulic cylinder controls the speed of the air cylinder during a fast portion of the feed stroke by the flow of hydraulic fluid through a major hydraulic fluid passageway from the forward to the rearward end of hydraulic cylinder, and during a slow portion of the feed stroke, a valve in the major hydraulic fluid passageway shunts the hydraulic fluid through an adjustable needle-valve-controlled, restricted hydraulic fluid passageway. A constant supply of hydraulic fluid is always maintained in the major and restricted hydraulic fluid passageways by a resiliently urged plunger in a supply chamber connected to the major hydraulic fluid passageway. Return of hydraulic fluid to the forward end of the hydraulic cylinder during a fast retraction stroke is permitted directly forwardly through the hydraulic cylinder piston by a series of check valves. Fluid for rotatably driving the fluid motor is directed through a stationary fluid supply tube extending coaxial of the air and hydraulic cylinder pistons and a common piston rod of said pistons rearwardly telescopes the stationary fluid supply tube and forms a movable fluid supply tube communicating with the fluid motor. A valve seat is formed between a radially relieved forward end of the stationary fluid supply tube and an internal annular shoulder of the movable fluid supply tube closing off the fluid supply to the fluid motor when the pistons are in fully retracted position and permitting fluid flow when the pistons are moved forwardly commencing the feed stroke.

3,603,207
MULTIPLE-CYLINDER TELESCOPIC ACTUATOR

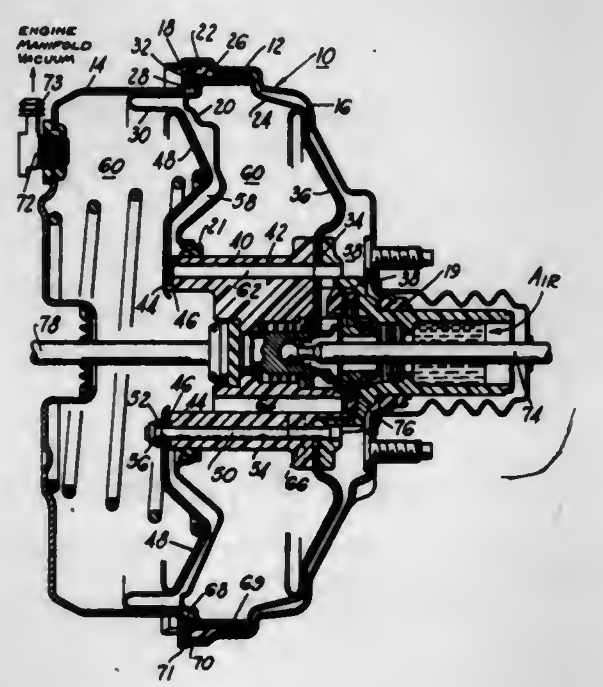
John T. Parrett, St. Joseph, Mich., assignor to Koehring Company, Incorporated
Filed May 26, 1969, Ser. No. 848,128
Int. Cl. F01b *7/20;* **F15b** *11/18*
U.S. Cl. 91—167 **7 Claims**

A hydraulic actuator of the type having multiple pistons and cylinders with porting and passages being provided so that each telescopic section may be selectively extended with respect to the others and also including porting and passages for selectively retracting each section with respect to the others.



3,603,208
SERVOMOTOR HAVING A ONE-PIECE CENTER PLATE

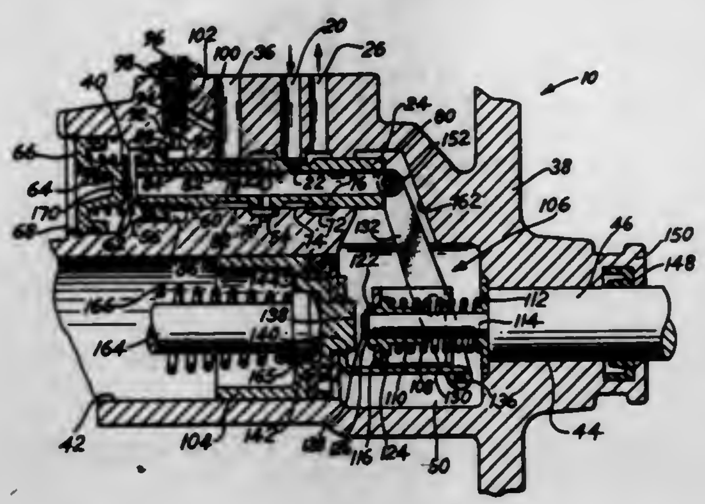
Oswald O. Kytta, South Bend, Ind., assignor to The Bendix Corporation
Filed June 30, 1969, Ser. No. 837,511
Int. Cl. F15b *9/10;* **F01b** *19/00*
U.S. Cl. 91—376 **7 Claims**



A partition member for dividing a servomotor into a pair of opposing fluid pressure chambers. A first movable wall having a thickened end adjacent a front shell is fixed to the front end of a hub. A second movable wall having a thickened end which abuts the front shell is fixed to the rear of the hub. The partition member surrounds the hub and compresses the thickened ends of said first and second movable walls into sealing engagement with the front and a rear shell, respectively. A valve member responsive to an operator closes a passage within the hub to create a pressure differential across the first and second movable wall to provide a force to operate a power braking system.

3,603,209
HYDRAULIC BRAKE BOOSTER

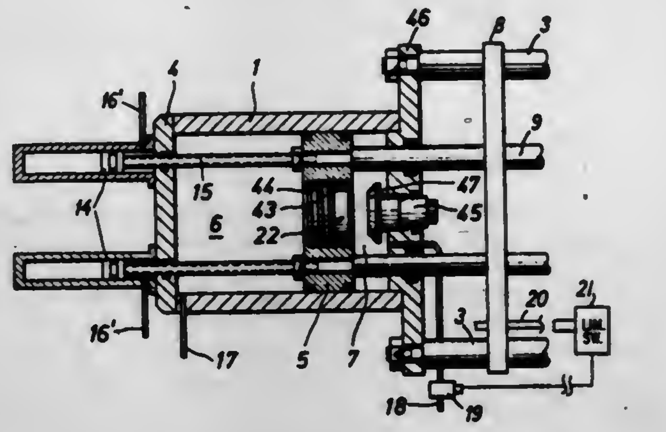
Stanley I. MacDuff, Dayton Beach, Fla., and Richard L. Lewis, South Bend, Ind., assignors to The Bendix Corporation
Filed Jan. 16, 1969, Ser. No. 793,923
Int. Cl. F15b *13/10, 13/14*
U.S. Cl. 91—391 **14 Claims**



A means to control the use of hydraulic pressure on a piston having a valve element with an adjustable pilot-type relief valve to permit limiting of maximum boost pressure and which is actuatable by a means linked also to the piston so that reduced travel is permitted for power operation and a predetermined mechanical advantage is available for manual actuation of said piston by simple follow through motion.

3,603,210
HYDRAULIC APPARATUS, PREFERABLY CLOSING APPARATUS FOR INJECTION MOLDING MACHINES

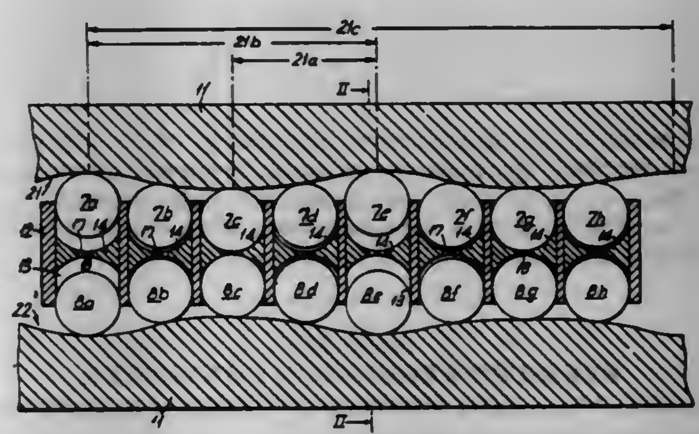
Peter Florjancic, St. Martin-Strasse 12, Garmisch-Partenkirchen, Germany
Filed Sept. 23, 1968, Ser. No. 761,768
Claims priority, application Germany, Sept. 25, 1967, P 15 83 629.0
Int. Cl. F15b *15/17, 13/04*
U.S. Cl. 91—404 **7 Claims**



A hydraulic apparatus is provided for moving a member under the action of a small force and for subsequently urging the member against a stop under the action of a large force. The operations are carried out with the aid of pumps and hydraulic pistons which are mechanically connected to the member. The apparatus may be used, e.g., in injection molding machines or blowing machines. A double-acting, working and compensating piston is connected to the member to be moved, e.g., to the movable mold-mounting plate. The pressure chambers disposed in the cylinder at both ends of the piston are hydraulically connected to each other by an opening in the piston. The compensating pressure chamber communicates through an outlet with a chamber which is under a pressure that is lower than the working pressure. The outlet is preferably adapted to be closed. A valve member is provided for the opening in the piston. The piston is provided with sealing means in its opening sleeve, which under the hydraulic working pressure cooperates with the valve member to provide a seal between the working and compensating chambers as soon as the compensating chamber is pressure relieved through the outlet. The valve member is adjustable in the stroke direction..

3,603,211
LINEAR OR ARCUATE HYDRAULIC PUMP OR MOTOR

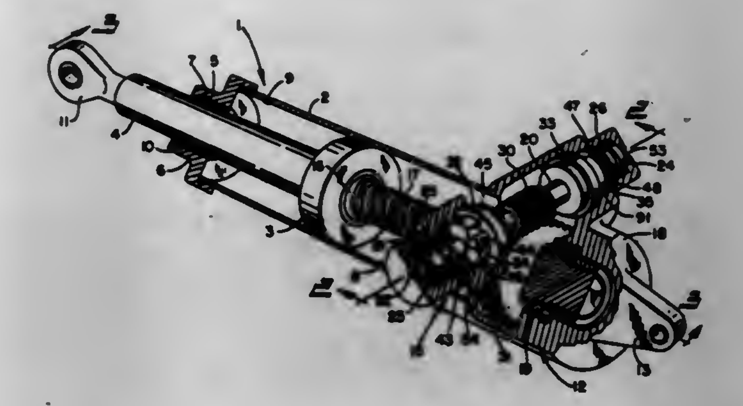
Donald Firth, and Sinclair Upton Cunningham, both of East Kilbride, Glasgow, Scotland, assignors to National Research Development Corporation, London, England
Continuation of application Ser. No. 644,989, June 9, 1967, now abandoned. This application Aug. 13, 1969, Ser. No. 850,342
Int. Cl. F01l *33/02;* **F04b** *1/02*
U.S. Cl. 91—501 **10 Claims**



A hydraulic pump or motor having ball pistons, working in cylinders side-by-side in a linear or arcuate array, and engaging an extended linear or arcuate cam track.

3,603,212
SERVO ACTUATOR AND LOCKING MECHANISM THEREFOR

Howard M. Geyer, Dayton, Ohio, assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed July 9, 1969, Ser. No. 840,232
Int. Cl. F15b *15/26*
U.S. Cl. 92—17 **11 Claims**

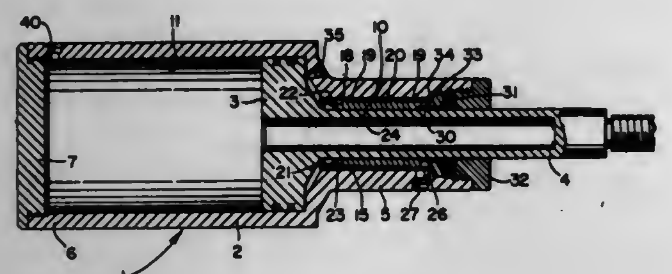


Locking mechanism includes a pair of one-way clutch elements having reverse locking capabilities for locking of an actuator against axial movement in opposite directions upon selective engagement of a pair of braking surfaces with their associated clutch elements by application of an external load to the actuator. A pair of brake release pistons may be selectively actuated to disengage one of such braking surfaces from its associated clutch element to permit movement of the actuator in a desired direction, while at the same time establish firm engagement between the other braking surface and associated clutch element to prevent an external load acting on the actuator from reversing the direction of actuator movement.

3,603,213
BUSHING-RESTRICTOR

James N. Tootle, Kalamazoo, Mich., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Mar. 12, 1969, Ser. No. 806,531
Int. Cl. F16c *37/00, 29/00*
U.S. Cl. 92—153 **11 Claims**

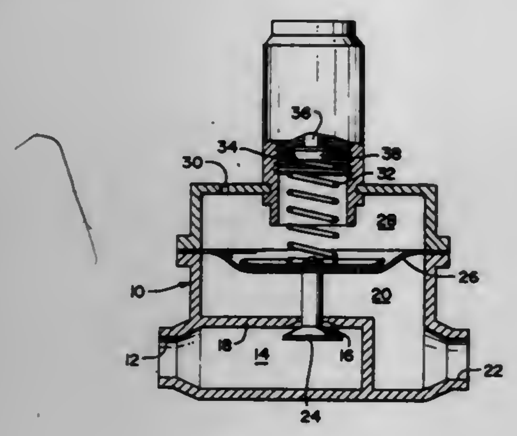


A bushing-restrictor having a plurality of axially spaced circumferential grooves in its outer periphery, connected together by axial slots extending through alternate lands between the grooves on opposite sides of the bushing-restrictor diametrically across from each other.

3,603,214
PRESSURE REGULATOR CONVERTER

Donald K. Murrell, La Mirada, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 18, 1969, Ser. No. 858,952
Int. Cl. F01b *31/00*
U.S. Cl. 92—133 **13 Claims**



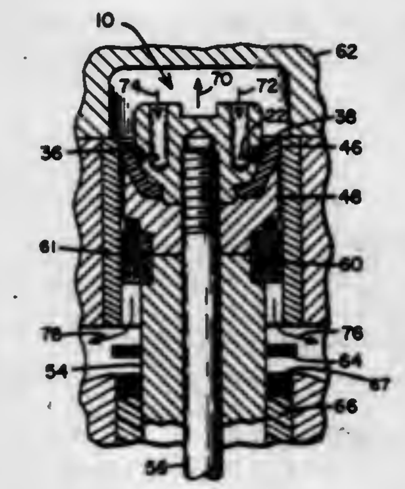
A pressure regulator changeover device having a two-position adjustment and including a selector biased by the regulator-biasing means and movable between separately adjustable spaced abutments having cam surfaces to preclude any intermediate selector positioning so that the biasing means may only be set to either of two predetermined regulator pressure settings.

3,603,215
EXPANDED PISTON CUP AND IMPROVED SPREADER

John Leschisin, Minneapolis, Minn., assignor to Hypro, Inc., St. Paul, Minn.

Filed Mar. 28, 1969, Ser. No. 811,300
Int. Cl. F16j *9/08, 15/40*
U.S. Cl. 92—182 **1 Claim**

An improved spreader for use in an expanded piston cup assembly is shown. A cup spreader having fluid pressure ports in fluid communication with a pressure groove for urging the pressure ring against an inner bearing surface of an expanded piston cup is described. A liquid leakage deflector cooperating with the piston rod is also shown.

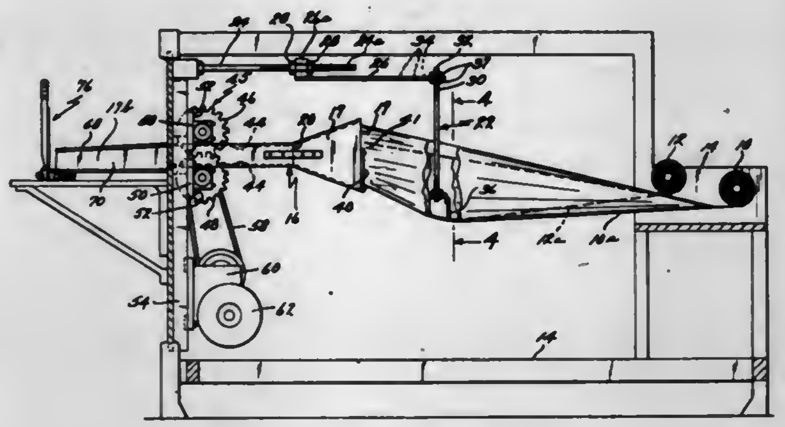


3,603,216
METHOD FOR PRODUCING CUSHIONING DUNNAGE

George R. Johnson, Chagrin Falls, Ohio, assignor to The Arpax Company, Chagrin Falls, Ohio

Division of Ser. No. 703,588, Feb. 7, 1968, Pat. No. 3,509,798.

Filed Feb. 9, 1970, Ser. No. 9,627
Int. Cl. B31f *1/10;* **B31d** *5/02;* **B31c** *13/00*
U.S. Cl. 93—1 WZ **4 Claims**



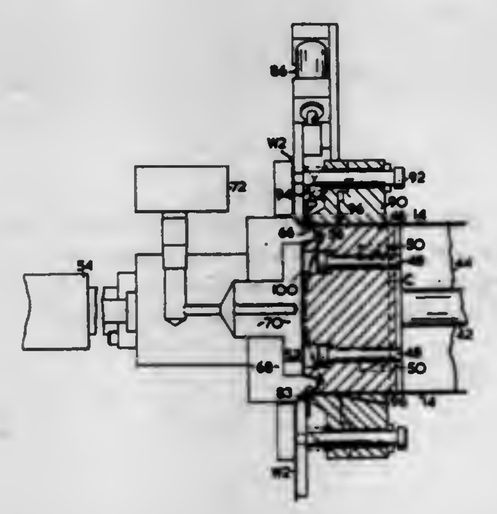
A method of producing resilient cushioning dunnage comprising taking at least one web of sheetlike material, such as paper, of predetermined width, rolling the lateral edges of the web generally inwardly, generally loosely crumpling the web with the rolled edges radially inwardly into a padlike configuration and then connecting together the confronting rolled lateral edge portions to maintain the dunnage article in its formed configuration.

3,603,217
METHOD OF FORMING A BAG

Charles E. Wright, and John Gunyou, both of Toronto, Ontario, Canada, assignors to E.S. & A. Robinson (Canada) Limited, Toronto, Ontario, Canada

Filed Jan. 16, 1969, Ser. No. 791,572
Int. Cl. B31b *49/04, 29/02, 41/60*
U.S. Cl. 93—35 SB **5 Claims**

A method for making a thermoplastic bag having limp sidewalls and a semirigid base which will have freestanding properties both when full or empty from flat webs of different thermoplastic materials whereby the heavy gauge, semirigid base is formed in situ, a tube of the lighter wall material is brought into contact with the formed base, heat sealed to the base which is simultaneously severed from the heavy sheet and severed from the tube material to form the finished bag.

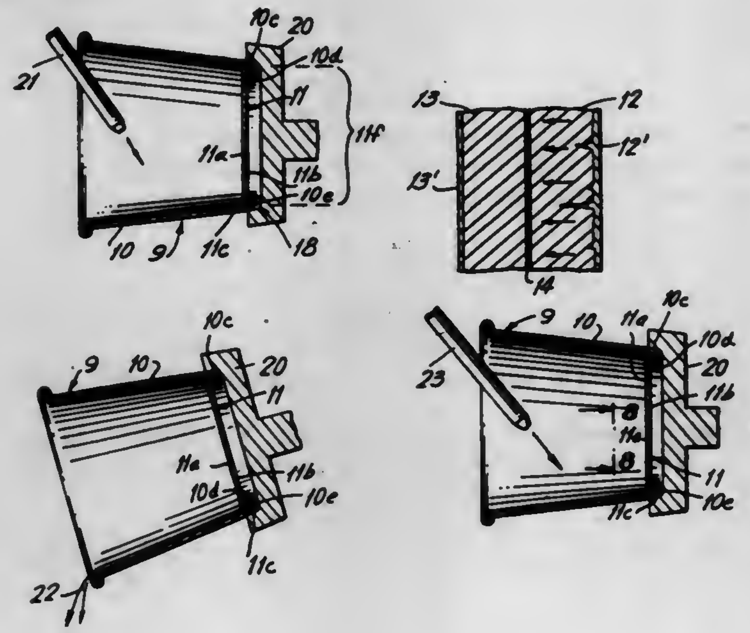


3,603,218
METHOD OF MAKING PAPER CONTAINER HAVING A HIGH GLOSS EXTERIOR FINISH AND WAX COATED INTERIOR AND BOTTOM SURFACES

Rodney E. Ludder, Glen Head, N.Y., assignor to Queens Illinois, Inc., Toldeo, Ohio

Original application Oct. 25, 1967, Ser. No. 677,906, now Division of Ser. No. 677,906, Oct. 25, 1967, Pat. No. 3,450,327, Division of Ser. No. 605,338, Dec. 28, 1966, abandoned.

Filed Jan. 17, 1969, Ser. No. 791,914
B31b *1/62, 1/64, 1/88*
U.S. Cl. 93—36 PC **5 Claims**

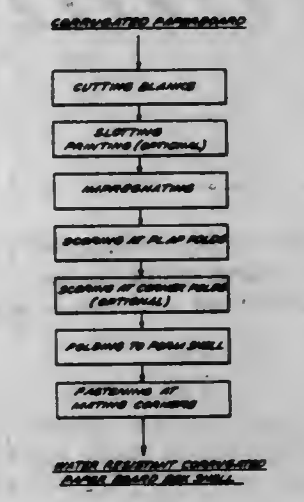


Method of making a container by first printing and applying an overlying high gloss coating on a container blank adapted to form a container sidewall member having inner and outer plies with blocking adhesive therebetween; then forming said blank into a tubular sidewall member and attaching a preformed bottom member thereto; then holding the formed container such that its sidewall is inclined downwardly towards the open end of the container; applying a first coating of melted wax of particular composition and at a high temperature as set forth in specification, draining the excess wax from the container, and applying a second similar coating of the melted wax but at a lower temperature as described; and applying a melted wax coating to the exterior of the bottom of the container using nozzle guards, all in manner avoiding deposit of wax on high gloss exterior of sidewall member.

3,603,219
METHOD FOR IMPROVING THE BENDING QUALITY OF WATER RESISTANT CORRUGATED PAPERBOARD

Thomas Hallis, Jr., Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 4, 1966, Ser. No. 539,647
Int. Cl. B31b *49/02, 1/22, 45/00*
U.S. Cl. 193—49 M **8 Claims**

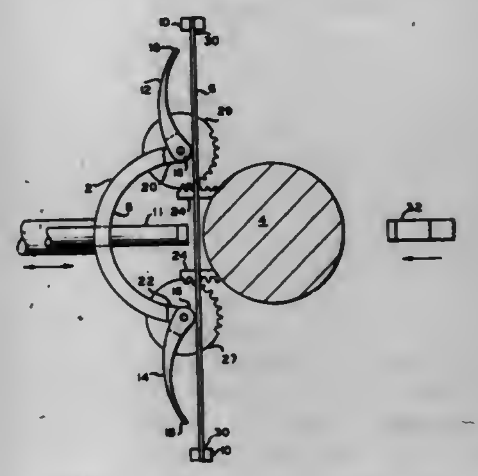

CORRUGATED PAPERBOARD
CUTTING BLANKS
SLOTTING PRINTING (OPTIONAL)
IMPREGNATING
SCORING AT FLAP FOLDS
SCORING AT CORNER FOLDS (OPTIONAL)
FOLDING TO FORM SHELL
FASTENING AT MATING CORNERS
WATER RESISTANT CORRUGATED PAPER BOARD BOX SHELL

A method for improving the bending quality of corrugated paperboard impregnated with wax or a wax-polymer composition that imparts increased rigidity to the paperboard in which the corrugated paperboard is first impregnated with the wax or wax-polymer composition and then scored at the desired folds.

3,603,220
WRAPPING APPARATUS

Michael R. Myers, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 2, 1970, Ser. No. 7,751
Int. Cl. B31c *1/00;* **B31b** *1/52, 1/02*
U.S. Cl. 93—77 R **9 Claims**



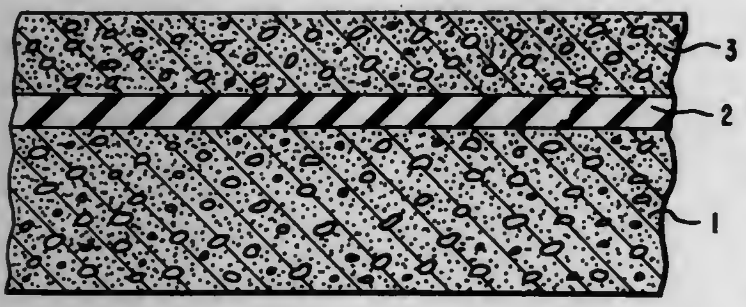
A pair of wrapping wings pivotally connected to a base for wrapping a blank about a mandrel, said wings being pivoted at a rate relative to the rate of movement of the base.

3,603,221
MULTILAYERED STRUCTURE

Robert Hall Barton, Ridgewood, N.J.; Martin Luther Brown, Elkton, Md., and Andrew Mitchell, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1968, Ser. No. 771,993
Int. Cl. E01c *7/18*
U.S. Cl. 94—9 **10 Claims**

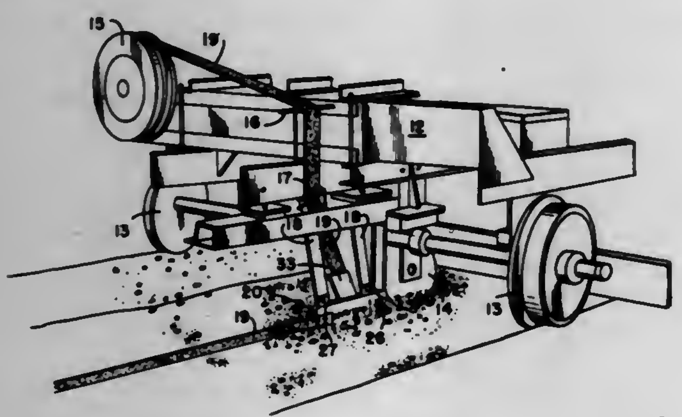
A multilayered structure comprising a base support, an unvulcanized elastomeric membrane at least 0.05 inch thick overcoated with an exposed cover layer. This structure is useful in roadway construction with particular application to bridge decks where vibration tends to accelerate crack formation allowing water to penetrate the roadbed where it freezes and thaws resulting in structural damage to conventional roadways. The membrane prevents water from penetrating the roadbed. As a bridge deck the base support is normally Portland cement concrete, the intermediate layer is the elastomeric membrane and the exposed cover layer is asphaltic concrete.



3,603,222

CONCRETE ROAD JOINT STRIP INSTALLER

Robert E. Heltzel, 6922 Mines Road, Warren, Ohio
Filed Mar. 13, 1969, Ser. No. 807,774
Int. Cl. E01c *23/02*
U.S. Cl. 94—39 **7 Claims**

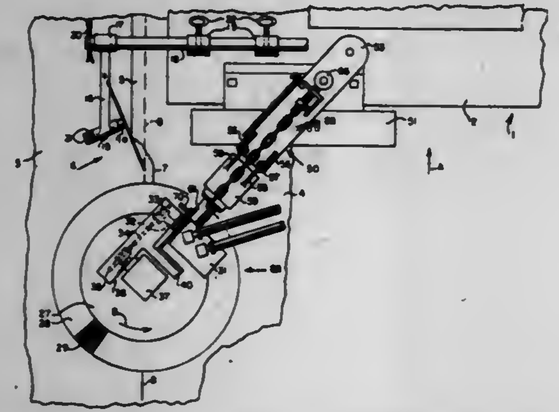


As disclosed a concrete cleavage implement is carried on a road building machine substantially centrally of the road being formed to travel down the centerline of the road at a suitable depth below concrete form level, such implement having guide means therein adapted to receive a joint strip from a continuous source of supply on the machine at an elevation above the implement and redirect the strip vertically flatwise out of the rear end of the implement and into the centerline groove in the concrete formed at least partially by the cleavage implement. The invention is also applicable to the installing of transverse joint.

3,603,223

APPARATUS AND METHODS FOR FORMING A JOINT BETWEEN ADJACENT PAVING MATS

Paul T. Ingleright, Saginaw, Mich., assignor to Frank Strausberg & Son Co., Saginaw, Mich.
Filed Mar. 11, 1969, Ser. No. 806,097
Int. Cl. E01c *19/00*
U.S. Cl. 94—39 **14 Claims**

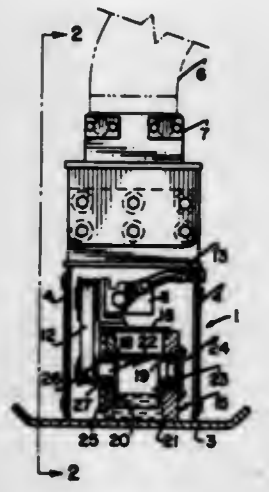


Apparatus and methods for forming a flush joint between two adjacent and sequentially deposited layers of pavement having an overlap therebetween, comprising a scraper blade engageable with the material constituting the overlap to deposit such material in a windrow at the joint and a rotatable brush assembly movable longitudinally of the windrow for abrading the windrow and sweeping the abraded material laterally across the surface of the second deposited laye: of pavement.

3,603,224

PLATE-TYPE VIBRATOR COMPACTOR

Seymour Dresher, Morristown, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Feb. 18, 1969, Ser. No. 800,119
Int. Cl. E01c *19/30*
U.S. Cl. 94—48 **10 Claims**

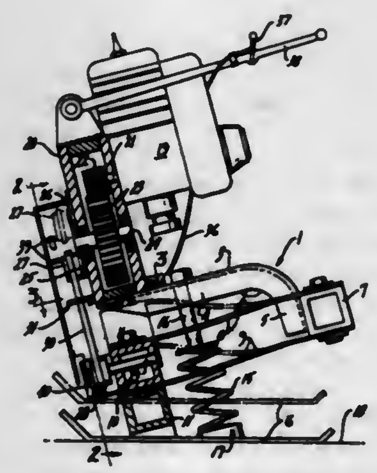


A plate-type vibratory compactor which includes an oil-sealed vibrator unit mounted on the sole plate of the compactor. The vibrator unit includes an open-ended housing with bearings and a rotatable eccentric weight removably mounted in the housing. The bearings and eccentric weight may be removed from the housing if replacement is necessary. Oil is contained in the housing for continuously lubricating the bearings. The vibration-generating unit may be applied to either a self-propelled vibratory compactor or a compactor used in connection with a vehicle such as a backhoe. Two vibration-generating units and a transmission may be used with a self-propelled compactor to provide a direction-reversing feature.

3,603,225

PORTABLE TAMPING MACHINE

Herman R. Buck, Hartford, Wis., assignor to M-B-W, Inc., Slinger, Wis.
Continuation-in-part of application Ser. No. 759,885, Sept. 16, 1968, now abandoned. This application Jan. 26, 1970, Ser. No. 5,524
Int. Cl. E01c *19/30*
U.S. Cl. 94—49 **4 Claims**

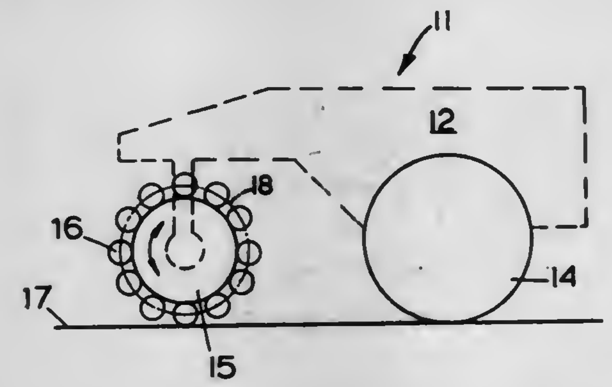


A device for reciprocatingly driving a tamping tool or the like. The tool is hingedly suspended from a bracket by support springs and is biased downwardly by a compression spring. An endless drive belt connects between a lower sheave on the spring support assembly and an upper sheave which is eccentrically driven by a motor. The belt lifts the tool up, and then relaxes, permitting the tool to be forced downwardly by the compression spring and assisted by the support springs. A shiftable guide permits disengagement of the belt from the upper sheave.

3,603,226

APPARATUS FOR COMPACTING A MASS OF GRANULAR MATERIAL

Jacob Marcovitch, Johannesburg, Republic of South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein
Division of Ser. No. 615,613, Feb. 13, 1967, Pat. No. 3,533,259.
Filed June 26, 1969, Ser. No. 836,707
Int. Cl. E01c *19/26*
U.S. Cl. 94—50 **1 Claim**



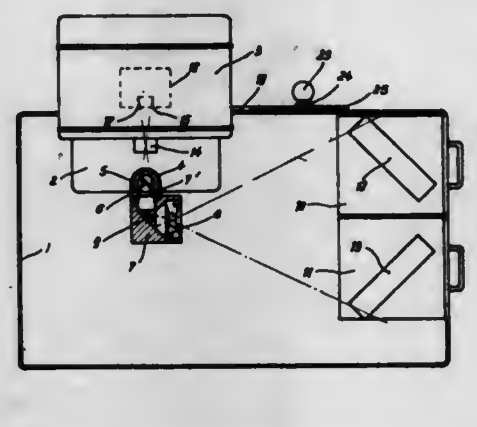
This invention relates to methods of and apparatus for compacting ground, roads and the like.

The preferred apparatus comprises a road roller having small diameter ground engaging rolls rolling around a cylindrical backup roll located at the front of the road roller.

3,603,227

PHOTOGRAPHIC-MONITORING DEVICE

Herbert Maronde, Duesseldorf, and Karl Heinz Garitz, Neub, both of, Germany, assignors to Robot Foto und Electronic GmbH & Co. KG, Dusseldorf-Benrath, Germany
Filed July 10, 1968, Ser. No. 743,799
Claims priority, application Germany, July 15, 1967, P 15 97 379.2
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **5 Claims**

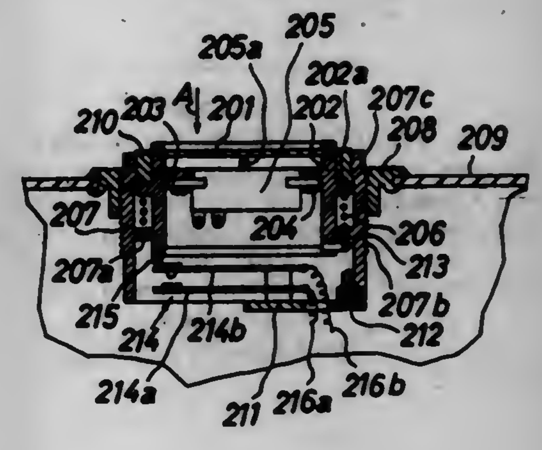


A traffic-monitoring camera is removably mounted on a housing with its primary lens extending horizontally above the housing. Within the housing are instruments, e.g., clock, to be simultaneously photographed. The housing has a fixed holder to which a lens mount is adjustably affixed and positioned in the housing. An auxiliary wide-angle lens is secured in the mount and positioned with its optical axis horizontally and symmetrically between the instruments. Mirrors and a tube provide a path for the light rays from the auxiliary lens to the camera field.

3,603,228

CAMERA RELEASE MEANS

Rudolf Kremp, Gruenwald; Ernst Friedlaender, Leverkusen-Bayerwerk, and Alfred Winkler, Munich, all of, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 17, 1970, Ser. No. 20,274
Claims priority, application Germany, Mar. 19, 1969, P 19 13 865.9
Int. Cl. G03b *17/00*
U.S. Cl. 95—11 R **14 Claims**

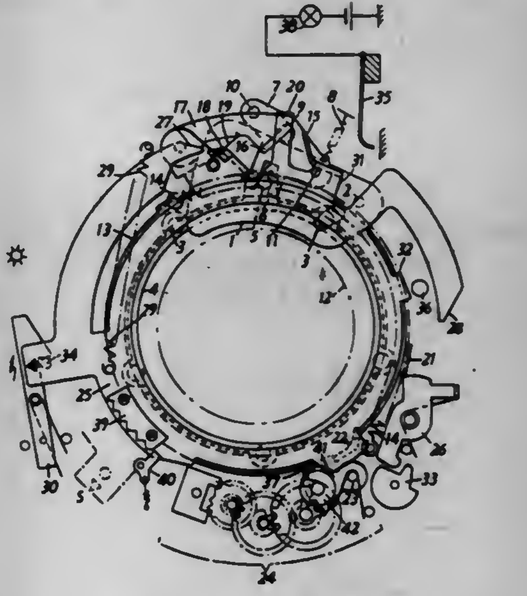


A camera wherein the shutter is opened in response to closing of a first electric switch on deformation of a diaphragm which also effects movement of a holder for the switch with reference to the camera housing to thereby actuate a second switch or a mechanical device which triggers the operation of the exposure control or of an indicator for scene brightness. The holder is movable against the opposition of a spring or a rubber ring which yields to permit closing of the second switch or the operation of the mechanical device before the diaphragm closes the first switch.

3,603,229

FLASHLIGHT IGNITION DEVICE FOR PHOTOGRAPHIC CAMERAS

Rolf Noack, and Johannes Weise, both of Dresden, Germany, assignors to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany
Filed Sept. 19, 1968, Ser. No. 753,489
Int. Cl. G03b *9/70, 9/14*
U.S. Cl. 95—11.5 R **7 Claims**



A photographic camera having a housing, a shutter mechanism and an aperture passage is provided with an additional shutter mechanism for flashlight operation purposes. The additional shutter mechanism includes a drive ring mounted within the housing arranged to be driven by a spring, a plurality of shutter blades pivotably mounted on the housing to form an additional shutter adapted to be driven by the drive ring between a closed position and a fully open position via a pivoted drive lever, a setting ring mounted on the housing settable into "flash" or "daylight" exposure positions, release means mounted on the housing for locking the drive ring in a cocked position, an actuating member provided on the drive ring for actuating a flash ignition circuit when the drive ring is running-off out of the cocked position in use during a flash exposure, a stop member provided on the setting ring for stopping the drive ring running-off out of the cocked position, a first projection on the setting ring arranged to release the release means when the setting ring is set in the "daylight" position, and a second projection on the setting ring arranged to move the drive lever to open the additional shutter when the setting ring is in the "daylight" position.

3,603,230
PHOTOGRAPHIC FILM UNIT

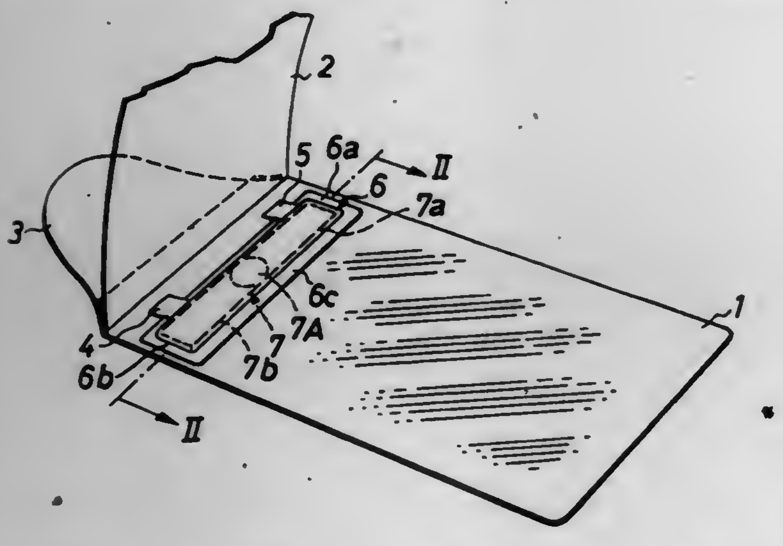
Karl Wagner, Ottobrunn near Munich, and Hans-Peter Huber, Munich, both of, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 9, 1969, Ser. No. 840,177

Claims priority, application Germany, July 11, 1968, P 17 72 844.8

Int. Cl. G03b *17/50*

U.S. Cl. 95—13 **11 Claims**



A photographic film unit for use in a camera which develops the film comprises an elongated rupturable container for processing fluid extending transversely between the photosensitive and print receiving sheets. The container is provided with a substantially centrally located gas-filled insert or with a substantially centrally located fluid-free portion which reduces the quantity of fluid in the corresponding part of the container to thus insure more satisfactory distribution of processing fluid upon rupture of the container when the film is caused to pass between two pressure-applying rolls.

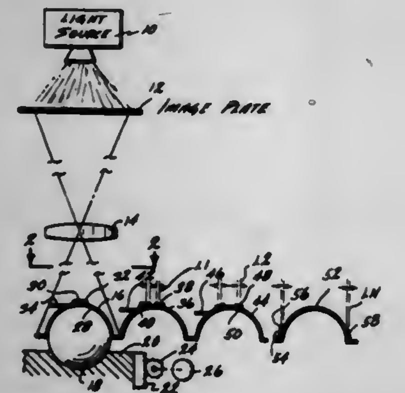
3,603,231
OPTICAL EXPOSURE SYSTEM

Jess Oppenheimer, 549 Mareno, Los Angeles, Calif.

Filed Feb. 2, 1967, Ser. No. 613,674

Int. Cl. G03b *37/00*

U.S. Cl. 95—15 **10 Claims**



The illustrative embodiments disclose a system for exposing a surface to an optical image, which surface extends in part axially to the optical image. As illustrative of a variety of surfaces, spherical surfaces are disclosed to be exposed by both mechanical apparatus and electrooptical apparatus by synchronously displacing the surface relatively along the optical axis as the image is scanned onto the surface. In one embodiment progressive masks are employed as the focal plane is altered. Another embodiment discloses a flying spot scanner synchronously operated with displacement of the target image along the optical axis.

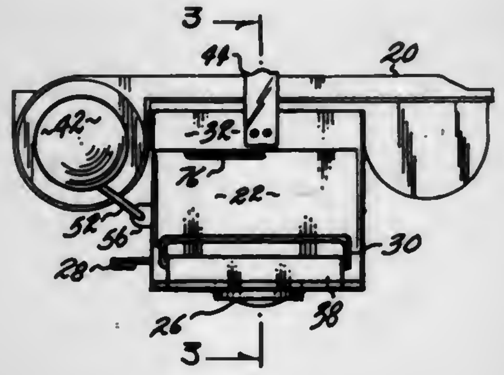
3,603,232
CASSETTE CAMERA

Richard B. Jones, Highland, Calif., assignor to Perfect Film & Chemical Corporation, New York, N.Y.

Filed Aug. 26, 1968, Ser. No. 755,325

Int. Cl. G03b *17/04, 19/04*

U.S. Cl. 95—31 R **4 Claims**



A small pocket size camera snapped on or off a conventional roll-type film cartridge or cassette having a winding knob attached thereto but movable to operative position and a finger actuated positioning pin temporarily releaseable from conventional film metering apertures to permit film advancement until next automatic engagement in a following aperture. The camera of conventional box-type, lens and shutter is modified outwardly to conceal the winding knob, permit collapse of the positioning pin, align camera and retractible viewfinder for conforming packaging shape. The winding knob camera attachment may form a clutch means.

3,603,233
FILM METERING MECHANISM

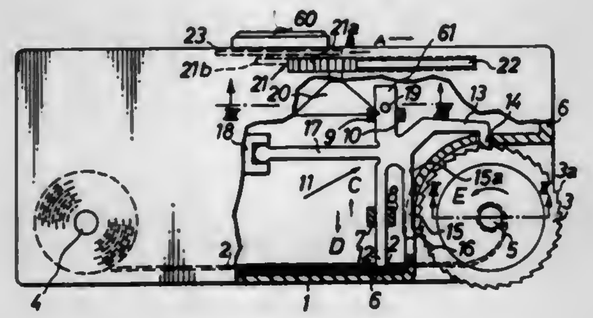
Rudolf Kremp, Grunwald near Munich, and Alfred Winkler, Munich, both of, Germany, assignors to AGFA Geracat Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 14, 1969, Ser. No. 807,333

Claims priority, application Germany, Mar. 19, 1968, P 16 22 888.9

Int. Cl. G03b *1/16, 1/62, 17/42*

U.S. Cl. 95—31 FM **19 Claims**



A still camera wherein a slide of synthetic plastic material is movable with the first of its several arms against a line of perforations on roll film between the supply and takeup reels in response to rotation of the film transporting wheel. The wheel moves the slide by way of a second arm until a third arm of the slide engages the wheel and holds it against rotation when the first arm enters a perforation. The slide can be retracted to respectively disengage its first and third arms from the film and from the wheel in response to actuation of the shutter release. This release is moveable back and forth and actuates a rockable disk-shaped shutter by way of a snap-over spring.

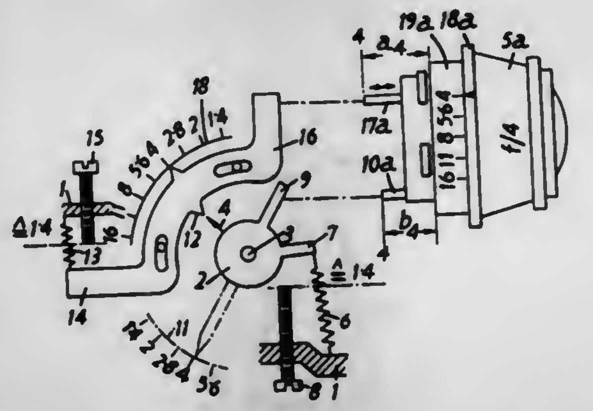
3,603,234
SINGLE-LENS REFLEX CAMERA WITH EXPOSURE METER

Horst Strehle; Walter Hennig; Manfred Wiessner, and Heinz Schulze, all of Dresden, Germany, assignors to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Feb. 13, 1969, Ser. No. 799,060

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **5 Claims**



A camera is provided with a photoelectric exposure meter influenced by light passing through a detachable objective lens having a diaphragm presetting control. A first indicating means is influenced by a photoelectric device of the exposure meter and a second indicating means is movable by a first setting element provided on the lens adjustable by the diaphragm presetting control. A second setting element on the lens is positioned according to the maximum aperture of the lens and operates one of the first and second indicating means. Alignment of the first and second indicating means by adjustment of the diaphragm presetting control sets the value required for accurate exposure. A lens without diaphragm presetting control and without setting elements can be used when the first and second indicating means attain a predetermined relative position and alignment of the two indicating means by adjustment of the lens diaphragm indicates that the aperture is set to a value required for accurate exposure.

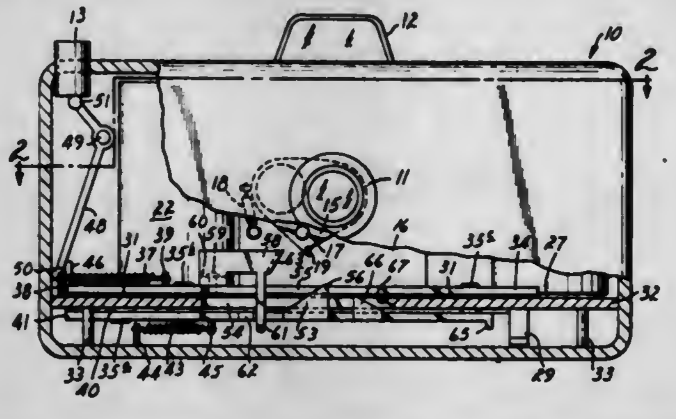
3,603,235
SHUTTER-OPERATING AND FILM-ADVANCING MECHANISM

Norman E. Nelson, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 7, 1969, Ser. No. 797,407

Int. Cl. G03b *17/42, 19/04*

U.S. Cl. 95—31 AC **5 Claims**



Shutter-operating and film-advancing mechanism designed to assure exposure of each frame of film in a camera but to prevent double-exposure of any one frame of film. The mechanism includes shutter-actuating and film-advance-actuating members movable to energized positions; drive means for advancing the film-advance-actuating member to an energized position; connection means connecting the shutter-actuating member to the film-advance-actuating member so that the former is moved to an energized position as the latter is moved to its energized position; and trigger means operable when the two members are in their energized positions for disconnecting them, whereupon (a) the shutter-actuating member quickly moves to its rest position and operates the shutter and (b) the film-advance-actuating member, upon release of the drive means, later moves to its rest position and advances film. Generally, the shutter-actuating member strikes and opens an impact shutter, and the film-advance-actuating member engages a lever movable to advance film one frame-length.

3,603,236
FILM METERING AND SHUTTER COCKING DEVICE

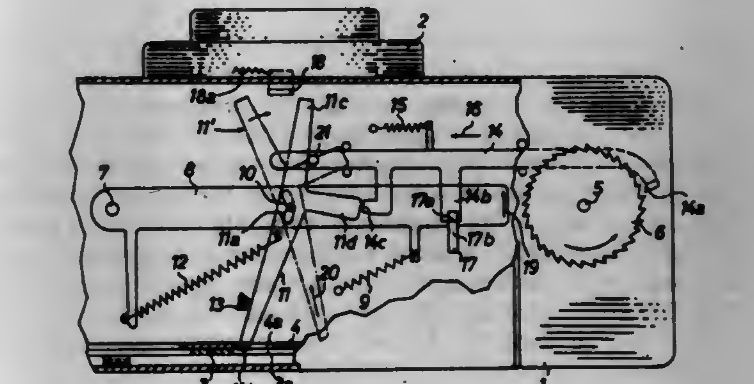
Dieter Engelsmann, Unterhaching near Munich, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 31, 1969, Ser. No. 846,544

Claims priority, application Germany, Aug. 28, 1968, P 17 97 196.9

Int. Cl. G03b *1/62, 9/68, 17/42*

U.S. Cl. 95—31 FM **10 Claims**



A still camera wherein a pivotable detector scans the moving film and enters a perforation to stress a spring during further transport of the film. The thus cocked detector releases a blocking slide which then prevents further transport of the film and permits actuation of a camera release which in turn permits the detector to leave its cocked position and to thereby open the shutter. The detector is mounted on a control lever which is pivotable by the camera release to thereby disengage the detector from the film. The blocking slide is reset by the detector during opening of the shutter.

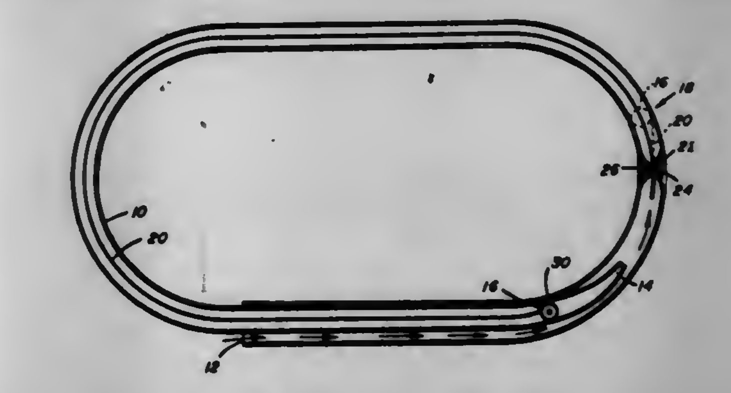
3,603,237
DISPOSABLE FILM DEVELOPING SLEEVE

George P. Kelley, 1102 E. 6th, Okmulgee, Okla.

Filed June 24, 1968, Ser. No. 748,119

Int. Cl. G03d *1/02*

U.S. Cl. 95—90 **9 Claims**



A daylight loading film developing sleeve is composed of a flexible, opaque, plastic tubing which is inserted within itself and includes means for retaining the film, inserting and dumping developing fluid chemicals and providing proper agitation and contact between the chemicals and film.

3,603,238

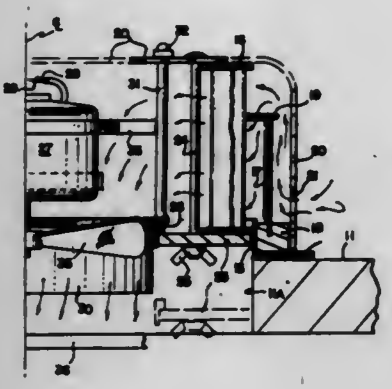
PRESSURIZING DEVICE FOR MOBILE UNITS

Arthur H. Anderson, 195 W. 39th. Ave., Eugene, Oreg., and Roger A. Fox, 2405 N. 35th., Springfield, Oreg.

Filed May 28, 1970, Ser. No. 41,207

Int. Cl. F23l *17/02*

U.S. Cl. 98—64 **8 Claims**



A fan and air filter for disposition on the wall of a camper or vacation trailer and directing a flow of filtered air into said unit thereby pressurizing the unit to preclude the entry of road dust. A circular disposable filter of the dry type is mounted in a removable manner about a fan and motor combination with both the filter and motor being concealed by a housing having air inlet openings along its rearwardly extending surface. A baffle wall of a nonconstant height is of circular shape with an upright outer surface against which water droplets are deposited during an abrupt change of direction in the intake airflow. Means are provided permitting the removal of the water so collected.

3,603,239

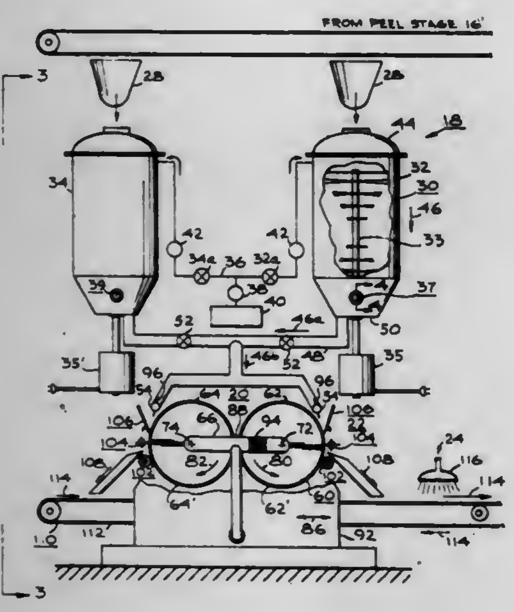
COOKED FOOD PRODUCT ARRANGEMENT

Teodoro A. Coutino, Blvd. Liberacion 5-55 Zone 9, Guatemala City, Guatemala

Filed Feb. 20, 1970, Ser. No. 12,931

Int. Cl. A23b *7/00*

U.S. Cl. 99—239 **18 Claims**



An arrangement for providing a thin chiplike food product from various types of fruits is described. The fruits are stored and exposed to any necessary preconditioning prior to pulping. Pulping takes place in one or more pulping tanks wherein the fruit is reduced to a fluidlike consistency and is transported by, for example, a gas pressure feed from the pulping tanks to a plurality of nozzle means. The nozzle means is positioned adjacent the external surfaces of heated, rotating drums and the fluidlike pulp is discharged from the nozzle means onto the external surfaces of the drums where it is cooked during the dwell time on the drums. Knives are provided adjacent the external surface of the drums for cutting the cooked pulp into desired sizes and shapes and for removing the dried and cut chips on the drum. A transportation means is provided to then transport the thin chiplike flakes to remote regions for appropriate packaging.

3,603,240

MEAT TREATING APPARATUS

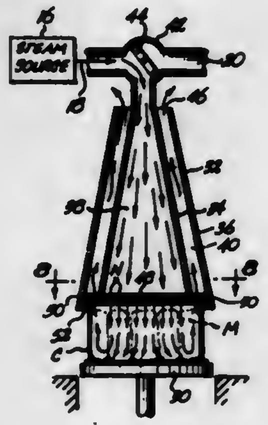
Robert McCarthy, Seattle, Wash., assignor to EEFP Corporation, Seattle, Wash.

Division of Ser. No. 500,522, Oct. 22, 1965, Pat. No. 3,476,569.

Filed Oct. 31, 1969, Ser. No. 873,035

Int. Cl. A23l *3/00*

U.S. Cl. 99—251 **7 Claims**



Pieces of raw meat are placed into containers, are subjected to subcook heating and/or pressure, and are then promptly subjected to vacuum extraction, causing removal of melted fats and various enzymic liquescent constituents from the uncooked meat. Next the meat is seasoned and/or preserved in such containers. Steam injection is used to provide both heat and pressure. The steam is both introduced into and exhausted out from a container through a head assembly which covers the open top of the container.

3,603,241

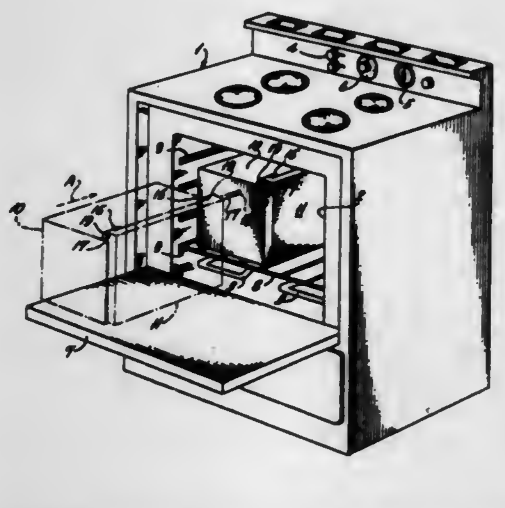
AUTOMATIC FOOD HANDLING APPARATUS

Doris Drucker, 138 N. Mountain Ave., Montclair, N.J.

Filed Feb. 13, 1970, Ser. No. 11,058

Int. Cl. A47j *41/00*

U.S. Cl. 99—335 **10 Claims**



A heat insulating container for the cold storage of food in the interior of the oven of a cooking stove including a clock controlled automatic starter. Upon actuation of the heating elements of the oven the cover of the container is removed, and the food is transferred therefrom into the oven without participation of a human operator.

3,603,242

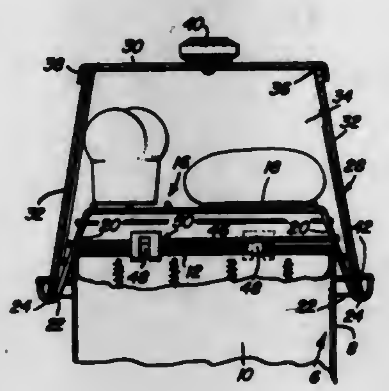
TOASTER ATTACHED BUN WARMER

James R. Murphy, Sr., 739 Palmer Ave., Maywood, N.J.

Filed Dec. 10, 1968, Ser. No. 782,606

Int. Cl. A47j *36/24, 37/08*

U.S. Cl. 99—339 **8 Claims**



A food warmer, primarily for buns, biscuits and the like, expressly designed and adapted for use atop the slotted top wall of the case of a bread slice toaster. It is characterized by (1) an openwork grid providing a bun seating and warming rack and (2) a complemental imperforate grid supported rack encompassing hood which can be united with or made separate from the grid. The hood can be made of one piece or provided with an applicable and removable lid.

3,603,243

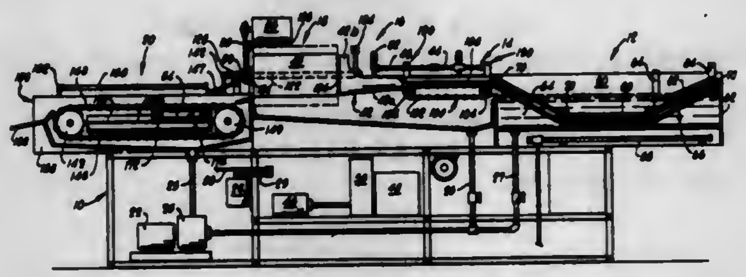
MACHINE FOR PREPARING SHELL-LESS HARD COOKED EGGS

Robert D. Foster, 202 Womble, Camden, Ark.

Filed June 4, 1970, Ser. No. 43,366

Int. Cl. A47j *29/00*

U.S. Cl. 99—355 **33 Claims**



A machine for preparing shell-less hard cooked eggs which includes conveyor means for moving a plurality of eggs along a predetermined path, the path extending through a heated fluid for cooking the eggs, and through a freezing zone for freezing a portion of the eggs just inside the shell. After traversing the freezing zone, the eggs move down a chute which is configured to seriate the eggs. A revolving egg cracking device which carries a pickup element picks up each egg in succession and cracks the shell in a number of places by rolling the eggs across a number of serated bars. A conveyor is positioned adjacent the cracking device for receiving cracked eggs therefrom and moving them to a discharge point. This conveyor includes a plurality of rollers which support the eggs discharged from the cracking device, and mechanism is provided for alternately driving these rollers, first in one direction of rotation, then in the other direction of rotation, as the eggs are moved in translational movement by the conveyor. Liquid spraying apparatus is provided over the conveyor carrying the rollers for impinging a liquid upon the cracked eggs to remove the shells therefrom.

3,603,244

FABRICATING APPARATUS FOR WOODEN TRUSSES, PANELS, AND THE LIKE

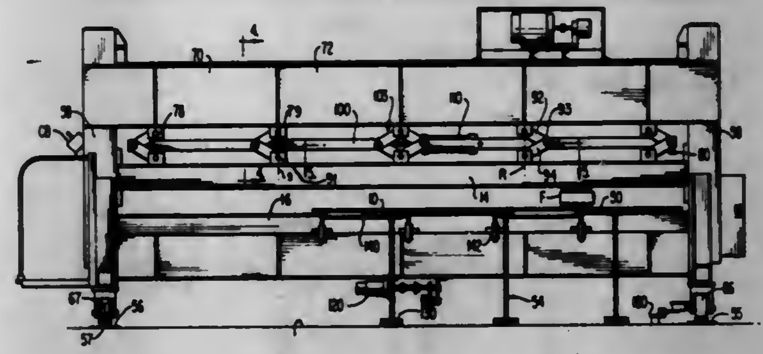
John Calvin Jureit, Coral Cables, and Oscar Csakvary, Miami, both of, Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Oct. 20, 1969, Ser. No. 867,730

Claims priority, application Great Britain, Apr. 16, 1969, 19428/69

Int. Cl. B30b *15/18*

U.S. Cl. 100—48 **27 Claims**



The fabricating apparatus comprises a jig table carrying wooden framing members positioned to form a truss. Nailplates are located on opposite sides of the butt joints of the wooden members for embedment into the joints by a press movable lengthwise along the jib table. The jib table is supported by a plurality of longitudinally spaced pivoted wands comprised of substantially U-shaped members. One leg of each of the pivoted wands engages the undersurface of the jib table to support the latter while its opposite leg lies below the lower press platen and bears against a support preventing pivotal movement of the wand from its table supporting position. As the press traverses the table, the lower press platen successively pivots the wands to locate the other legs of the wands in supporting engagement with the jig table while the previously supporting legs of the wands are pivoted below the lower press platen. The pressis controlled via a circuit responsive to switch actuating pins disposed at selected positions along a track for automatically and sequentially stopping the press when the press overlies successive butt joints, actuating the press to embed the nailplates, and restarting the press for movement along the jig table.

3,603,245

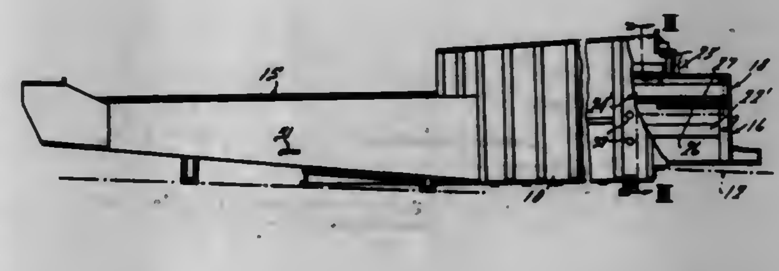
COMPACTION LOADING APPARATUS

Robert J. Pioch, Jackson, Mich., assignor to Kysor Industrial Corporation

Filed Nov. 12, 1969, Ser. No. 875,859

Int. Cl. B30b *15/22*

U.S. Cl. 100—50 **15 Claims**



A stationary loading and compacting mechanism particularly for injecting waste material into and pressurizing it within a large reinforced container comprises a ramming chamber to which the container to be loaded is detachably coupled, the chamber having a top charging opening into which waste material is dumped and a front outlet or ramming port alignable with a receiving port in the container. A multisectioned rectangular ram assembly consisting of lower and upper ram sections is movable through the ramming chamber and ports and part way into the container to force the material into and compress it within the container, the two sections of the ram being movable both as a unit and to a limited extent independently of each other.

3,603,246
APPARATUS FOR PRESSURE BONDING TWO OR MORE FRAME MEMBERS IN THE FORMING OF FRAME CORNERS

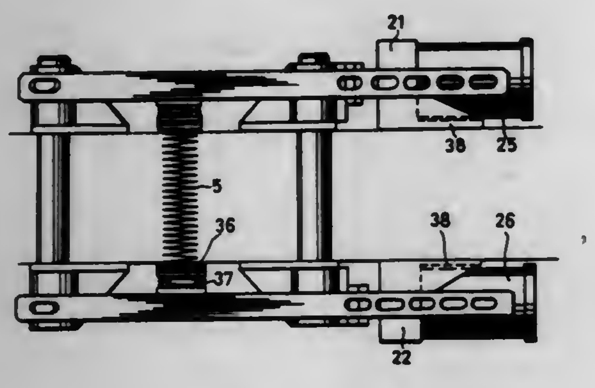
Erwin Dimter, 7918 Rudolf-Diesel-Strasse 12, Illertissen, Germany

Filed Jan. 14, 1970, Ser. No. 2,748

Claims priority, application Germany, Jan. 28, 1969, P 19 03 945.3

Int. Cl. B02c *11/08;* **B30b** *15/34*

U.S. Cl. 100—93 **7 Claims**



For pressure bonding the joint between two angularly related frame members, a pair of clamps, disposed, one against each side of said frame members and spanning the joint involved, said clamps being interconnected by bolts through the frame members to either side of the joint whereby pressure may be applied at the joint following the application of glue to the joint ends of said frame members. A wedge frame member may be included between the first mentioned frame members and the two joints thus formed may likewise be pressure bonded.

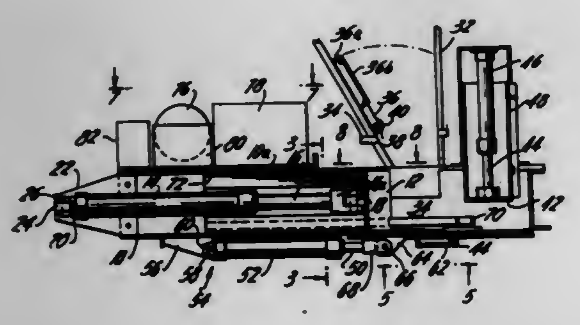
3,603,247
REFUSE COMPACTOR

Howard Price, Kings Point, N.Y., and Seymour Wallick, Clifton, N.J., assignors to International Patents & Development Corp., Kings Point, N.Y.

Filed June 2, 1969, Ser. No. 829,306

Int. Cl. B30b *7/00*

U.S. Cl. 100—139 **4 Claims**



A refuse compactor in which a hydraulic cylinder, pivot mounted at the rear, compacts refuse fed to a compacting space in front of the cylinder, from a chute. A flap mounted within the chute serves to force the refuse into the compacting space from the chute. A fully encased ejection piston operated by a hydraulic cylinder ejects the compacted mass from the compacting space. Guide tracks prevent wobbling of the compacting piston when encountering large-sized obstructions within the refuse.

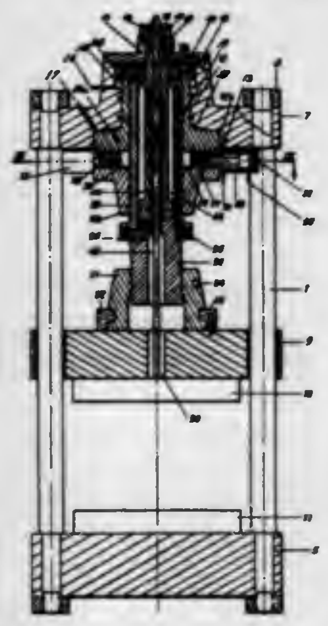
3,603,248
DEVICE FOR DRIVING THE PLATEN OF A PRESS

Robert Ange Marie Nouel, Paris, France, assignor to Inventions Finance Corporation, Washington, D.C.

Filed July 1, 1969, Ser. No. 838,101

Int. Cl. B30b *15/32*

U.S. Cl. 100—218 **11 Claims**



A device for driving the platen of a press, a piston mounted to slide in a cylinder unit, said piston being hydraulically driven, and another piston mounted to slide in a bore of the first piston, said second piston being securely fixed to said platen, and said first piston having means for locking said second piston in its bore, so that said platen can be subjected to a rapid positioning movement by the displacement of said second piston and to a slower movement by the displacement of said first piston when the latter is subjected to high pressure, the movement of said first piston being transmitted to said platen by said locking means.

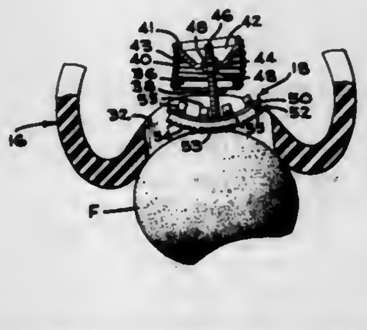
3,603,249
FRUIT MARKING MACHINE

Harold J. Mumma, and Curtis L. Parry, both of Riverside, Calif., assignors to SFMC Corporation, San Jose, Calif.

Filed Dec. 4, 1967, Ser. No. 687,871

Int. Cl. B41f *17/34*

U.S. Cl. 101—35 **20 Claims**



A rotary marking device containing a plurality of angularly spaced markers is mounted for rotation above a continuously moving fruit carrying conveyor and is driven so that each marker will be brought into pressure contact with a fruit on the conveyor to imprint an ink mark thereon. Each marker includes a resilient die holder to grip the fruit and a die having a fruit-contacting face with raised indicia thereon, which die is mounted by means of a coil spring to the peripheral face of the die holder. An inking ribbon is rotated adjaCent the marking device for tangential contact with the fruit-contacting faces of the dies to apply ink thereto.

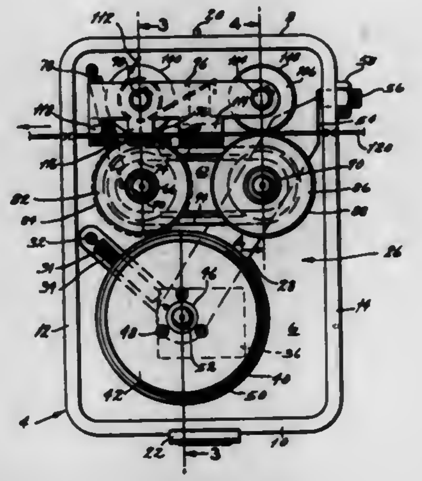
3,603,250
MARKING DEVICE

David S. Knudsen, St. Louis, Mo., assignor to McKenna Equipment Company Inc., St. Louis, Mo.

Filed Nov. 27, 1968, Ser. No. 779,473

Int. Cl. B41f *17/10*

U.S. Cl. 101—36 **6 Claims**



A device for imprinting characters on extended lengths of tape and including a drive roll driven by the tape and a marking roll rotated by the drive roll such that the linear velocity at the periphery of the marking roll is the same as the linear velocity at the periphery at the drive roll. The tape is compressed against raised characters on the periphery of the marking roll by a backup roll and is similarly compressed against the drive roll by a pressure roll. Since the peripheries of the drive roll and marking roll have the same linear velocity, the characters are left as a clear printed impression on the tape, notwithstanding incremental advancement of the tape.

3,603,251
APPARATUS FOR USE IN SEQUENTIALLY NUMBERING DOCUMENTS

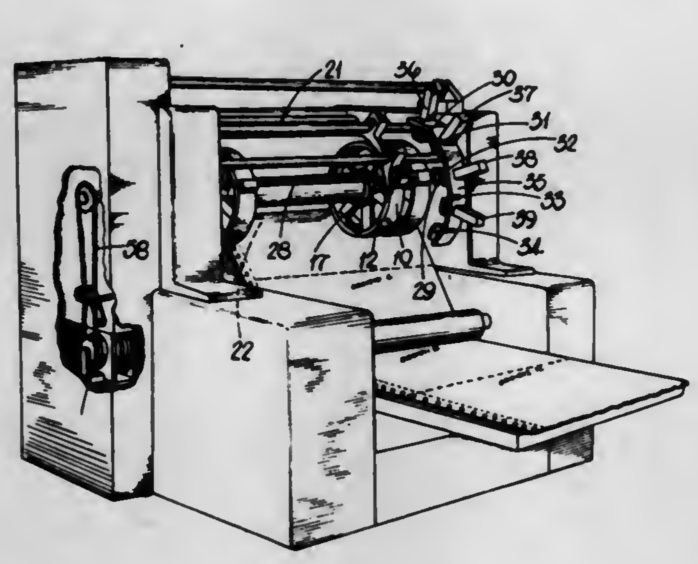
John F. Elsworth, West Bromwich; Barry Atkins, Wolverhampton, and Bernard P. Sever, Birmingham, all of, England, assignors to Kenrick & Jefferson Limited, Bromwich, Staffordshire, England

Filed Aug. 15, 1968, Ser. No. 752,877

Claims priority, application Great Britain, Aug. 16, 1967, June 24, 1968, 37692;29914

Int. Cl. B41j *7/36*

U.S. Cl. 101—76 **7 Claims**



Apparatus for sequentially numbering documents with check digits or in high prime skip modes in which one of the numbering wheels of a numbering box has to be indexed irregularly while another is indexed regularly in which a carrier cyclically movable relative to a support carries the numbering box indexing means for indexing the regularly indexed numbering wheel. A series of independently advanceable cam elements coact with a reciprocable indexing element associated with the irregularly indexed numbering wheel and a control device driven in synchronism with the carrier for determining the combination of cams to be advanced after each numbering operation.

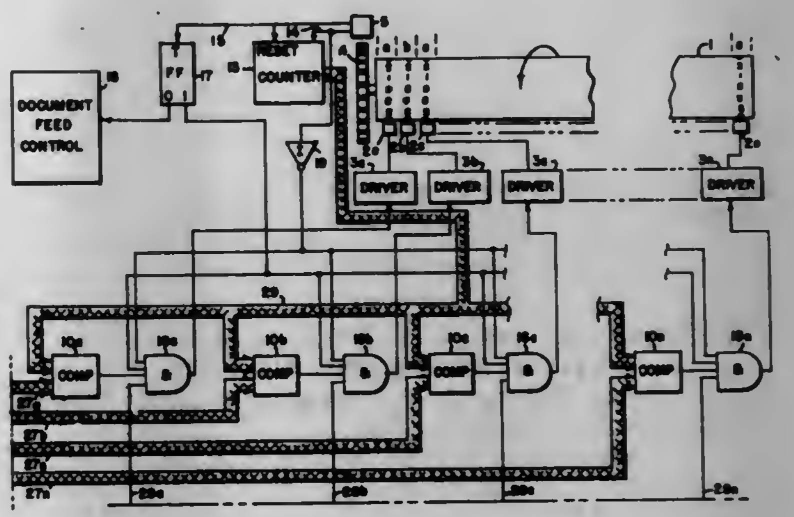
3,603,252
ZERO SUPPRESSION CIRCUITS IN HIGH SPEED NUMERIC PRINTING

Louis G. Orsatti, Philadelphia, Pa., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Dec., 1969, Ser. No. 884,854

Int. Cl. B41j *9/10*

U.S. Cl. 101—93 C **4 Claims**



A circuit for selectively suppressing the printing of nonsignificant zeros by a high speed printer which prints numeric characters in successive columns of decreasing significance by individually operating selected print hammers. The circuit includes a plurality of print suppressing circuits, each of which is associated with one of the columns and adapted to inhibit operation of the hammer in its associated column when a nonsignificant zero is to be printed there. When actuated, each print suppressing circuit also feeds a signal to the print suppressing circuit associated with the next least significant column to condition it to inhibit printing of any zeros in the next least significant column since any such zeros will be nonsignificant. A switch is associated with each column to inhibit its associated print suppressing circuit and, thereby, inhibit zero suppression in the column. However, each switch, when closed, also passes a signal to the print suppressing circuit associated with the next least significant column, conditioning it to inhibit printing of any zeros in its associated column. This starts a new zero suppression field in the next least significant column. Of course, the suppression of nonsignificant zeros in this column may also be inhibited by closing the switch associated with the column.

3,603,253
DUPLICATOR PROGRAM CONTROL ASSEMBLY

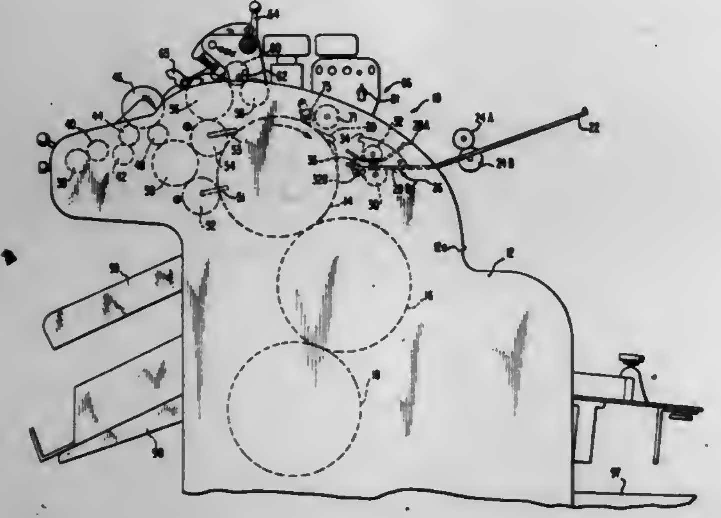
Kenneth J. Tonkin, Glenview, and John P. Gallagher, Park Ridge, both of, Ill., assignors to A. B. Dick Company, Niles, Ill.

Continuation of application Ser. No. 633,866, Apr. 26, 1967, now abandoned. This application Apr. 17, 1970, Ser. No. 29,690

Int. Cl. B41f *7/02*

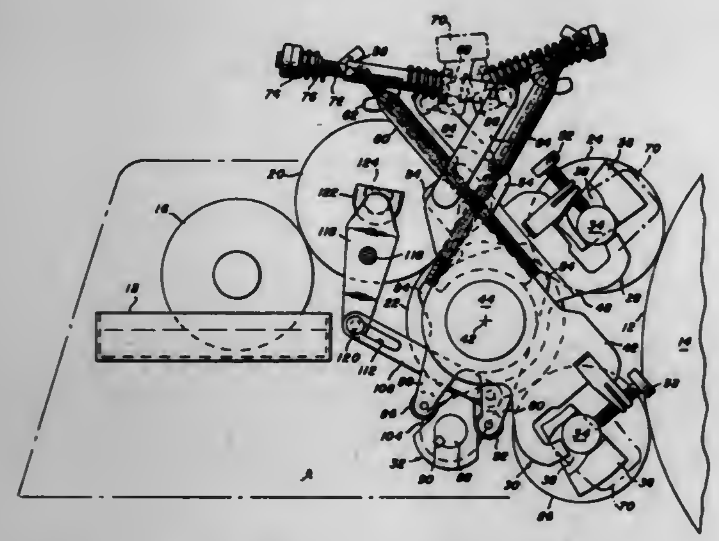
U.S. Cl. 101—142 **9 Claims**

The duplicator program control assembly includes a preparation counter responsive to cycles of machine rotation to program the machine through a preduplicating phase of operation and then trigger a postpreparation counter which responds to a sheet count during a duplicating phase of operation and a cycle count during a post duplicating phase to program the machine through these subsequent phases. The program control assembly also includes a master forwarding unit and a sensing unit operable at the termination of each operational cycle of the machine to sense the presence or absence of a new master sheet in the forwarding unit; the program control assembly operating to automatically initiate a new operating cycle if a master is sensed.



3,603,254
METHOD AND APPARATUS FOR SEQUENTIALLY MOVING DAMPENING ROLLERS

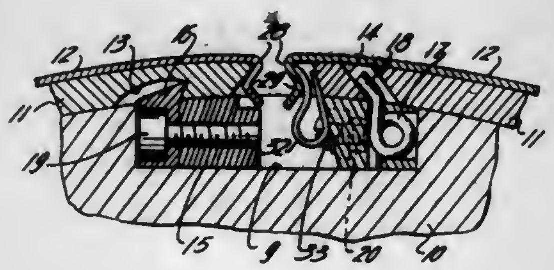
Carl O. Siebke, Pittsburgh, Pa., assignor to Miller Printing Machinery Co., Pittsburgh, Pa.
Filed June 19, 1968, Ser. No. 738,268
Int. Cl. B41l *25/16*
U.S. Cl. 101—148 **9 Claims**



A dampener unit that transfers dampening fluid from a fountain to the surface of a plate cylinder. The dampener unit includes a fountain roller, a metering roller, an intermediate roller and one or more form rollers. The rollers are in series contact and the form rollers transfer the dampening fluid to the surface of the plate cylinder. Cam actuated form roller positioning devices are arranged to sequentially move the form roller away from the surface of the plate cylinder and thereafter move the form rollers away from and out of surface contact with the intermediate roller. A crank arm connected to the same actuator as the cam is connected to a lever mechanism that moves the metering roller away from the fountain roller. The rollers are repositioned in operative dampening fluid transfer position by first moving the metering roller into surface contact with the fountain roller. After the intermediate roller is into surface contact with the intermediate roller. After the form rollers are wetted with dampening fluid, the form rollers are moved into surface contact with the plate cylinder and dampening fluid is transferred from the fountain to the surface of the plate cylinder without ink pickup by the rollers of the dampening unit from the plate cylinder. Suitable drive gearing is associated with the cylinders of the dampening unit to rotate the cylinders at preselected speeds relative to each other.

3,603,255
SADDLE CLAMPING DEVICE

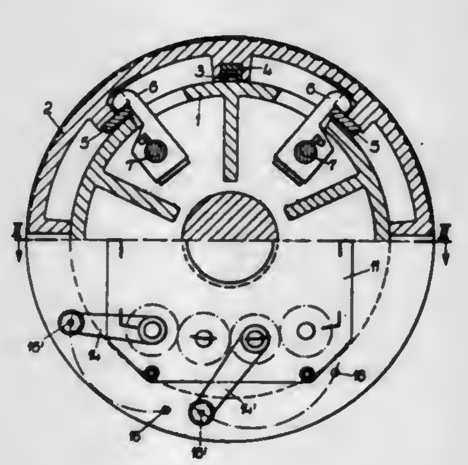
Ellwood J. Horner, Armonk, N.Y., assignor to Wood Industries, Inc., Plainfield, N.J.
Filed June 24, 1968, Ser. No. 739,450
Int. Cl. B41f *27/06*
U.S. Cl. 101—378 **7 Claims**



A device for clamping a semicylindrical saddle which supports flexible wraparound plates onto a printing cylinder of a printing press having hook means for engaging an undercut groove at one end of the saddle and biasing means to engage the saddle at the other end so as to tension it about the cylinder. The device is adapted for use in a printing cylinder originally having means for clamping stereotype or electrotype plates and is interchangeable with the stereotype or electrotype clamping means so that the cylinder can be used for printing with either the stereotype means or electrotype. plates or the flexible wraparound plates.

3,603,256
DEVICE FOR FIXING FORM SADDLES ON THE ROTARY PRESS FORM CYLINDER

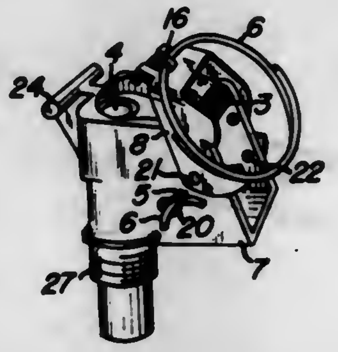
Franz Moos, and Gerhard Loffler, both of Frankenthal, Pfalz, Germany, assignors to Schnellpressenfabrik Frankenthal Albert & Cie, Aktiengesellschaft, Frankenthal, Pfalz, Germany
Filed July 8, 1968, Ser. No. 743,149
Int. Cl. B41f *27/06*
U.S. Cl. 101—378 **14 Claims**



This provides a device for fixing saddles used for mounting printing, embossing, punching or similar forms on a rotary press form cylinder. The device includes tension hooks mounted on eccentric tension spindles and contacting a hook engaging member included on the form saddle. The saddles include a centering means for appropriate location on the cylinder body. The form saddles are fixedly attached to the cylinder body through the use of lever members located outside of the said cylinder body.

3,603,257
FUZE SAFETY MECHANISM

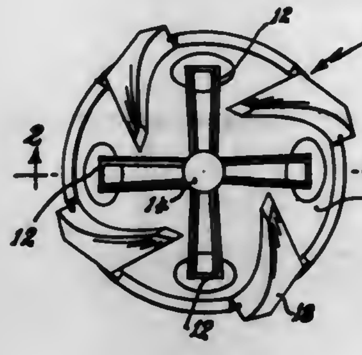
Stanley M. White, North East, and Charles W. Beeker, Parkville, both of, Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 27, 1968, Ser. No. 779,336
Int. Cl. F42b *27/02*
U.S. Cl. 102—64 **12 Claims**



An improved munition fuze having a fuze body, primer means within the fuze body, stroker plate means rotatably mounted on the fuze body and adapted to detonate the primer means, and safety release clip means adapted to engage the stroker plate means to arm the fuze and permit the munition to be shipped, stored, and carried with the fuze in the unarmed state.

3,603,258
MECHANICAL FUZING SYSTEM

Norman F. Green, Minneapolis, Minn., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Oct. 25, 1968, Ser. No. 773,363
Int. Cl. F42c *15/14*
U.S. Cl. 102—79 **6 Claims**

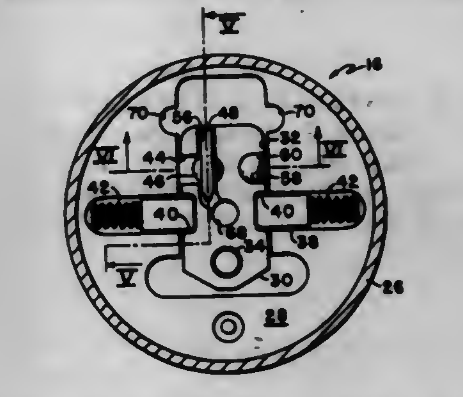


An all mechanical fuzing system having an arming system, a stabilization timer, an antidisturbance device, a self-destruct timer, and a trip-line release mechanism. The above elements being interconnected so as to be able to (1) arm a mine, (2) actuate the traps associated with the mine, and (3) destruct the mine a predetermined interval of time after arming.

3,603,259
FUZE SETBACK AND ANGULAR ACCELERATION DETENT

George Webb, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed June 26, 1968, Ser. No. 740,304
Int. Cl. F42c *15/26*
U.S. Cl. 102—80 **1 Claim**

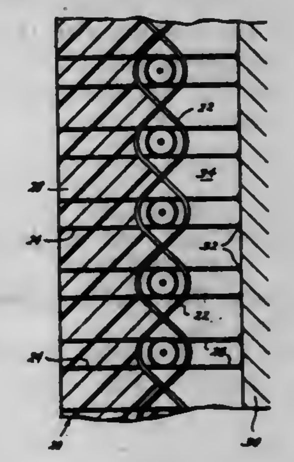
A safety fuse is shown incorporated in rocket propelled round of ammunition. Two complementary mechanisms act upon a slider to maintain it in a position wherein a primer charge therein is out of register with a firing pin. When the round of ammunition is discharged from a gun, linear and angular acceleration are effective on a locking ball to overcome the action of a spring and disengage the ball to overcome the action of a spring and disengage the ball from a notch in the slider's guideway. Angular acceleration of the round causes the ball to roll into a laterally extending position in the slider.



After discharge from the gun, centrifugal force disengages two plungers from the slider permitting it to travel laterally bringing the primer charge into register with the firing pin.

3,603,260
STAND-OFF TYPE ABLATIVE HEAT SHIELD

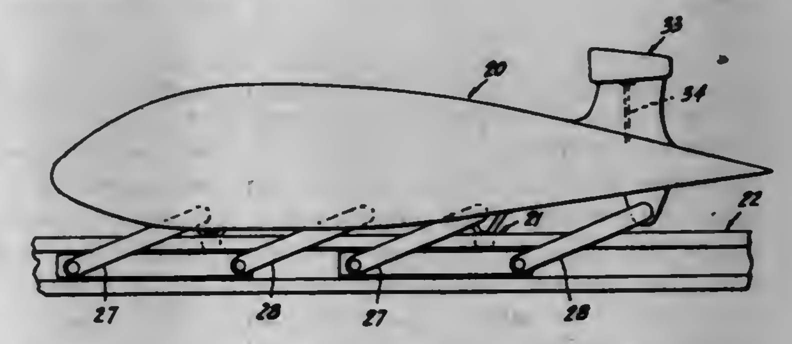
Caldwell C. Johnson, Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Jan. 15, 1969, Ser. No. 791,268
Int. Cl. F42b *13/00*
U.S. Cl. 102—105 **7 Claims**



An ablative heat shield for protection against aerodynamic heating of reentry spacecraft comprising a carpet having pile extending from either side of a fabric base. One side of the carpet is impregnated with the standard ablative material, constituting the heat rejection element; and the ends of the pile of the opposite side are adhesively bonded to the substructure of the spacecraft, so that the fabric base "stands off" the substructure by the length of the pile.

3,603,261
HIGH SPEED GROUND TRANSPORTATION VEHICLE

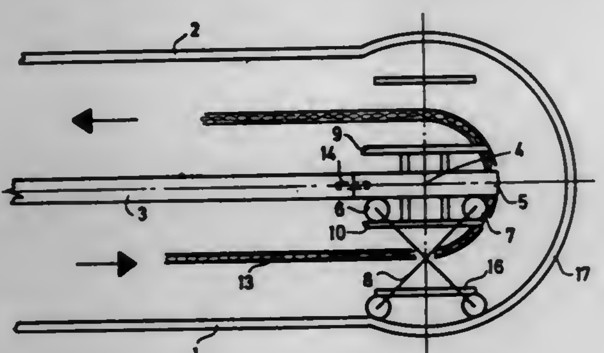
Wayne Melvin Mann, 7111 Glass Slipper Way, Citrus Heights, Calif.
Continuation-in-part of application Ser. No. 632,884, Apr. 18, 1967, now abandoned. This application Feb. 26, 1969, Ser. No. 805,990
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **6 Claims**



A vehicle adapted for high speed ground transportation in the 200 to 600 miles per hour range. The vehicle is connected to a track by arms adapted to permit the vehicle to move away from the track and become airborne. The connection to the track is by means of air pressure pads.

3,603,262
TRACK SYSTEM FOR WHEELED CARRIAGES

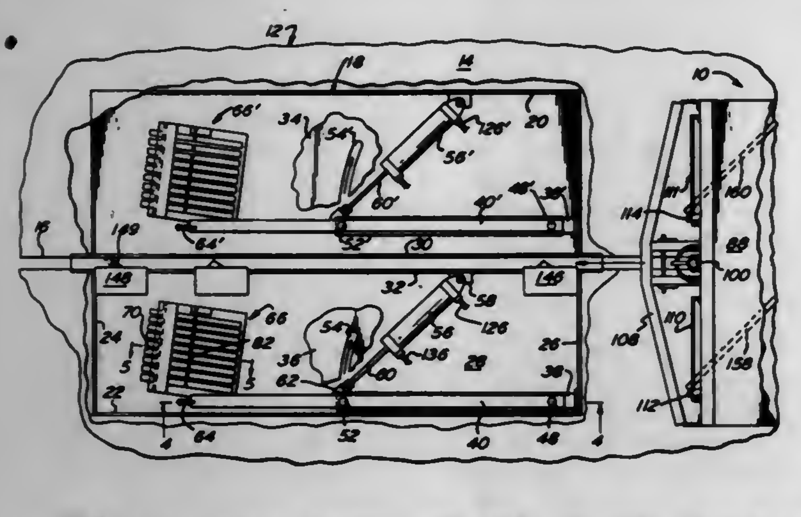
Bjorn Sture Wiklund, Floravagen 19, Norrkoping, Sweden
Filed Apr. 13, 1970, Ser. No. 27,517
Claims priority, application Sweden, June 6, 1969, 8106/69
Int. Cl. B61b *13/00;* **B61f** *13/00;* **E01b** *26/00*
U.S. Cl. 104—35 8 Claims



A track system for wheeled carriages comprising a pair of track sections connected by an arcuate track portion and having a center track extending between the track sections and against which the wheels of a carriage ride. The center track is provided at an end with a pivotal portion so arranged as to swing pivotally on contact with the wheels of the carriage whereby the carriage will be caused to follow the arcuate track portion and will become transferred from one of the track sections to the other.

3,603,263
TOW VEHICLE AND SIGNAL ADJUSTING SYSTEM THEREFOR

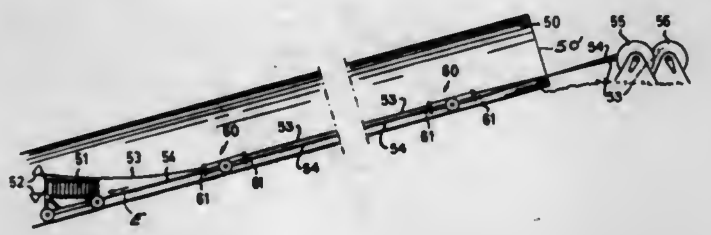
Egidio Lucas DeOliveira, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.
Filed July 28, 1969, Ser. No. 847,524
Int. Cl. B61b *9/00*
U.S. Cl. 104—88 13 Claims



The tow vehicle system disclosed includes pivotably mounted cams above floor level and responsive to discrete power cylinders below floor level. The cams move selector pins on a tow vehicle in a transverse direction to a guide slot along which the vehicle is propelled. The extent of movement of the cams is controlled by discrete selectively operable limit stops in the path of movement of the cams. The location of the limit stops corresponds to the predetermined transverse positions of the selector pins. Movement of the cams into the path of the selector pins is initiated by a switch means responsive to the presence of the vehicle at that location. The cams are reset by another switch means responsive to passage of the vehicle past the location thereof. The selector pins on the front of the vehicle are mounted for pivotable movement about a vertical axis adjacent the rear of the vehicle.

3,603,264
TUBE INSPECTING VEHICLE

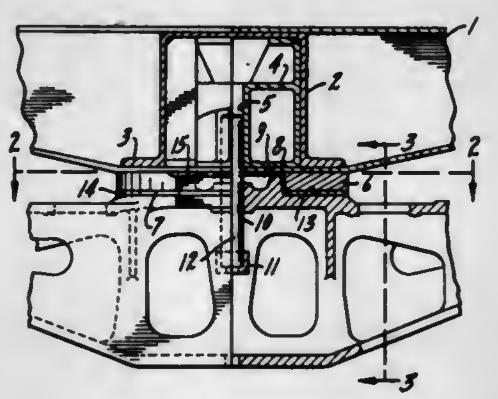
Paul Von Arx, Gelterkinderstrasse 31,, CH 4450 Sissach, Switzerland
Filed May 12, 1969, Ser. No. 823,766
Claims priority, application Switzerland, May 14, 1968, 7431/68
Int. Cl. B61b *11/00, 13/00;* **B66f** *9/00*
U.S. Cl. 104—138 G 7 Claims



An inspection vehicle and device for displacing elongated members, e.g. electrical cables, wires and the like, through tubular bodies such as pipes, conduits, shafts, tunnels and ducts, in which a double-wheel carriage, having the configuration of a gun carriage or bogie, is used. The double-wheel carriages each having an axis extending transversely of the cable and connected thereto, e.g. via clamps or latches, and are spaced apart along a control member running parallel to the cable and provided with abutments which entrain the carriages therewith. The carriages are so connected to the control cable as to allow twisting thereof without effect on the carriages.

3,603,265
RAILWAY CAR CENTER BEARING

Franklin D. Barber, Flossmoor, Ill., assignor to Standard Car Truck Company, Chicago, Ill.
Filed Aug. 8, 1968, Ser. No. 751,196
Int. Cl. B61f *5/16, 5/18;* **F16c** *17/04*
U.S. Cl. 105—199 C 1 Claim

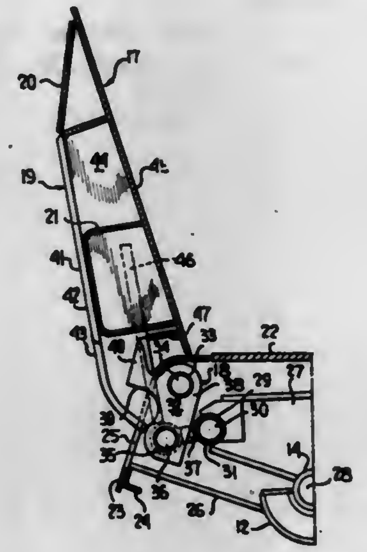


An antirocking centerplate for railroad cars wherein the load on the car is supported on opposed, large diameter, annular bearing surfaces with a friction ring exposed to one of the friction surfaces, centrally disposed means independent of the friction surfaces themselves, for guiding the car body when being assembled into position upon the truck.

3,603,266
TILTING DUMP CAR DOOR HINGE

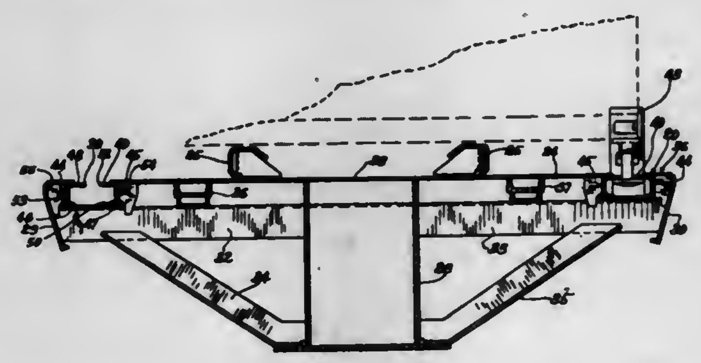
Henry Fort Flowers, Findlay, Ohio
Filed Mar. 25, 1969, Ser. No. 810,192
Int. Cl. B60p *1/26;* **B11d** *9/02;* **F16c** *35/10*
U.S. Cl. 105—276 6 Claims

This disclosure relates to an improvement in a tilting railway dump vehicle, and in particular for a down-turning side door thereof. The side door is hinged at points reinforced by a hollow boxlike structure. The reinforcing box is defined by a portion of the side door, a pair of sidewalls and an outer wall rigidly secured to each other. A reinforcing web is disposed inside of the box and extends between and is rigidly secured to each of the sidewalls thereof. The side door is pivotally connected to the body of the dump vehicle by hinge boss means comprising a pair of hinge bosses associated with each reinforcing box whereby each boss is rigidly attached to both the web and one of the sidewalls thereof.



3,603,267
CONTAINER SUPPORT AND SECUREMENT STRUCTURE HAVING COLLAPSIBLE PEDESTALS

Phillip D. Schwiebert, Glencoe, Ill., assignor to MacLean-Fogg Lock Nut Co., Mudelein, Ill.
Filed June 12, 1969, Ser. No. 832,676
Int. Cl. B65j *1/22;* **B60p** *7/08*
U.S. Cl. 105—366 D 15 Claims

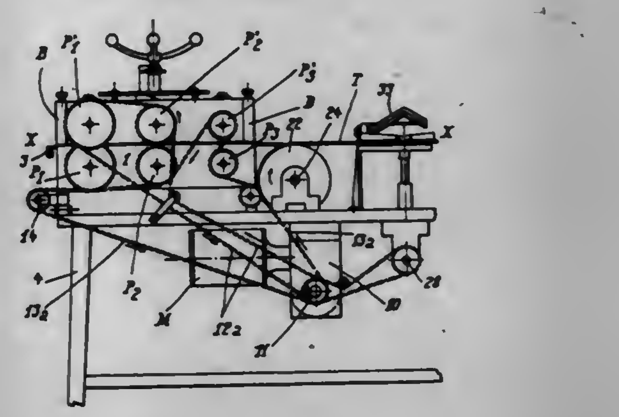


Supporting and securement structure adapted to use on carrier vehicles, including railway flatcars, for the transportation of varied sizes and numbers of box-type containers in which merchandise is shipped; said structure having guide tracks secured to the carrier vehicle structure and one-piece pedestal type supports with integral support portions retained within the guide tracks for movement therealong to predetermined positions of securement and swingable around said support portions between upright and collapsed positions, the support pedestals being constructed and propelled for relative stability in their upright positions and collapsible into relatively small openings in the guide tracks themselves to close said openings when not in use.

3,603,268
PASTRY MAKING MACHINE FOR PRODUCING CRESCENT ROLLS

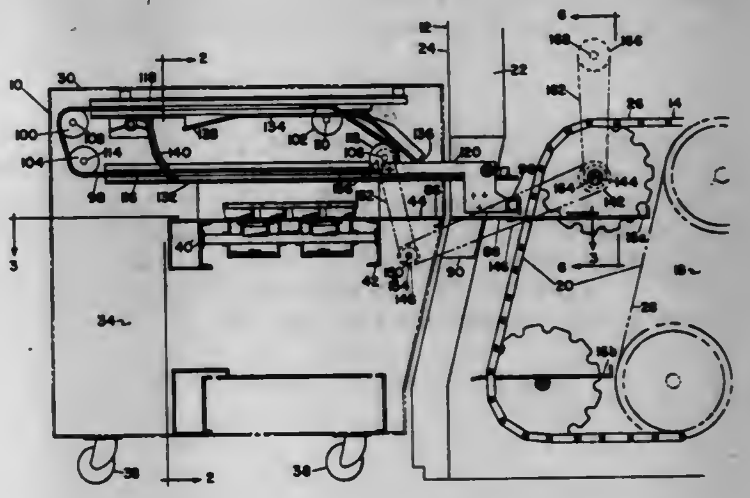
Antoine Henri Wietzel, and Rene Robert Roche, both of 4, bd. Carnot, 06-, Nice, France
Filed June 18, 1969, Ser. No. 834,298
Claims priority, application France, June 18, 1968, 9219AM
Int. Cl. A21c *5/00*
U.S. Cl. 107—4 10 Claims

A pastry machine for making crescent rolls comprising a rolling mill for urging dough through cylinders into sheet formation, means conveying the sheet forwardly from the rolling mill or other supplying means, a V-shaped cutter pivoting around an axis parallel to the path of the dough so as to form adjacent triangular dough elements in the sheet which elements face alternately the opposite edges of the dough sheet, and finally frictional means engaging the base of each successive triangular element to wind the latter around its base into roll shape, after which the roll may be bent into crescent shape.



3,603,269
OVEN LOADING MEANS

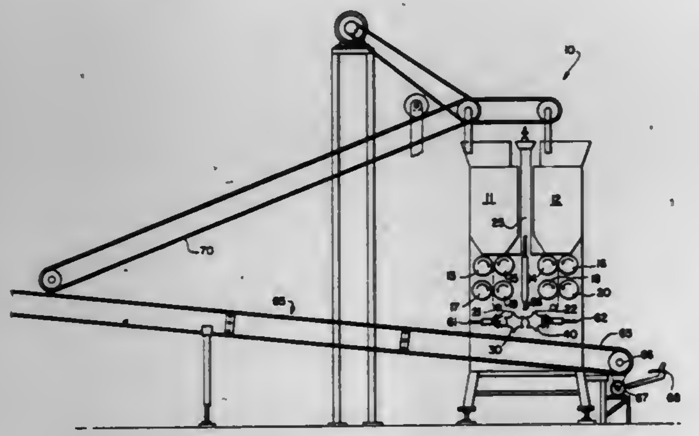
Wayne H. Royer, York, Pa., assignor to Teledyne, Inc., York, Pa.
Filed Feb. 16, 1970, Ser. No. 11,580
Int. Cl. A21b *3/07*
U.S. Cl. 107—57 A 5 Claims



An apparatus for transversely conveying at timed intervals successive rows of pans of dough to a position in front of the loading opening of a commercial type oven and for pushing such successive rows of pans into the oven onto successive trays of a continuously operating endless oven tray conveyor. The pans to be conveyed are made of a magnetic material and the pan conveyor conveying surface is made of a nonmagnetic material. Beneath the pan conveyor conveying surface are a series of electromagnetic coils arranged to be energized at such times only when the conveying surface is operating to exert a pulling force on the pans substantially increasing the pressure of the pans against the conveying surface and minimizing movement of the pans relative to the conveying surface during starting, stopping and running time of the pan conveyor. The pan conveyor is arranged to be intermittently operated through a predetermined measured linear travel to present successive rows of pans to the oven loading opening in position to be pushed therethrough onto successive oven trays. At such times that the pan conveyor is not operating, the electromagnetic coils are arranged to be deenergized, allowing a continuously operating pusher timed with the oven tray conveyor, to traverse the pan conveyor conveying surface and push successive rows of pans therefrom onto successive trays of the oven tray conveyor.

3,603,270
MACHINE FOR MAKING FILLED DOUGH PRODUCTS

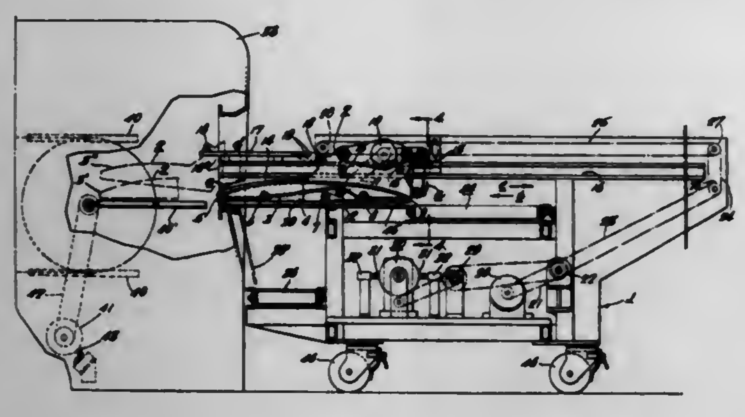
Frank P. Tangel, Oakland, N.J., assignor to Buitoni Foods Corporation
Filed June 9, 1969, Ser. No. 831,573
Int. Cl. A23g *3/00*
U.S. Cl. 107—1 R 20 Claims



A machine for making filled dough products having two dough hoppers for delivering two dough sheets, between which is a filling hopper. The dough sheets pass to cutter-crimper rollers having pockets which receive the dough sheets and filling, crimp the dough sheets together around the filling, and sever the product from the remaining dough sheet, which is then scrap. The cutter-crimper rollers have a slower peripheral velocity than the final dough rollers. Oil spray nozzles provide lubrication for the cutter-crimper rollers. A receiving belt receives the composite sheet of products and the scrap dough sheet from the cutter-crimper rollers. A series of conveyors separates the scrap dough sheet from the products and delivers it to the dough hoppers.

3,603,271
EQUIPMENT FOR TRANSFERRING PIECES OF DOUGH

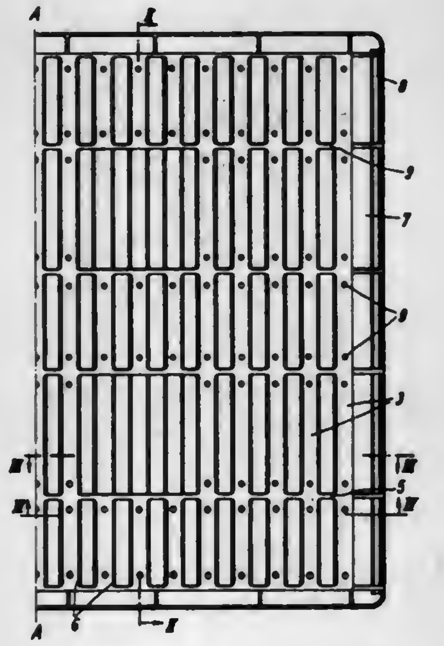
Franz Remensperger, Saint Georgen, and Walter Schnee, Villigen, both of, Germany, assignors to Fr. Windler KG, Spezialfabrik Fur Backereimaschinen Und Backofen, Villigen, Black Forest, Germany
Filed Jan. 29, 1969, Ser. No. 795,091
Claims priority, application Germany, Feb. 9, 1968, P 16 32 356.1
Int. Cl. A21c *9/08;* B65g *47/52*
U.S. Cl. 107—57 A 19 Claims



Equipment for transferring pieces of dough brought up on cooking, baking or the like underlays, to a doughpieces carrier by means of a circulating transferring conveyor belt, which projects at both sides in the form of belt tongues and which is disposed in a stationary frame, characterized in that the transferring conveyor belt is disposed on a slide which is able to move to or fro in the direction or counter to the direction of circulation of the conveyor belt, and characterized in that the direction in which the conveyor belt, and characterized in that the direction in which the conveyor belt circulates and direction in which the slide moves are reversible in such a way that the same mechanism can be used both for loading and also for unloading baked goods carriers.

3,603,272
PLASTIC PALLET AND DIE FOR PRODUCING THE SAME

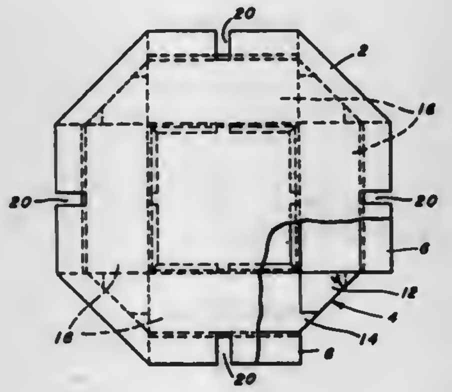
Ernst Ditges, Herzebrock, Westphalia, Germany, assignor to Press-Und Stanswerk Paul Craemer KG, Herzlbrock (Westphalia), Germany
Filed Dec. 20, 1968, Ser. No. 785,812
Claims priority, application Germany, Dec. 20, 1967, P 15 56 151.0
Int. Cl. B65d *19/04*
U.S. Cl. 108—51 12 Claims



An integrally formed plastic pallet from an injection molding die. The top portion of the pallet for carrying the load is separated from the bottom portion through which the pallet is supported, by spacing portions. The top and bottom portion have rib portions arranged with recesses between them. The top and bottom ribs are displaced from each other in conjunction with their recesses, so that the top ribs lie above the bottom recesses, whereas the bottom ribs lie beneath the top recesses. The recesses are at least as wide as their respective ribs.

3,603,273
PALLET

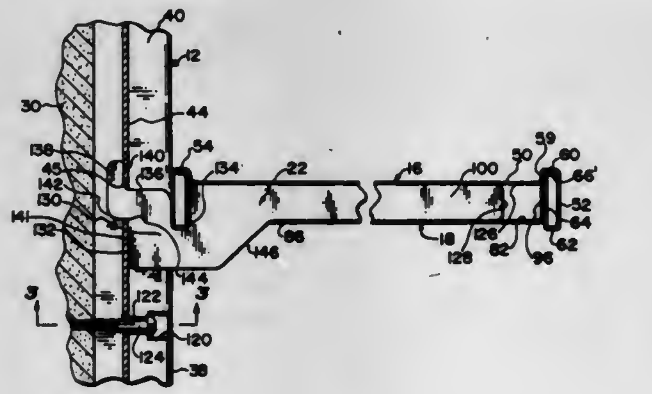
William J. Riffe, Scott Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed June 8, 1970, Ser. No. 44,392
Int. Cl. B65d *19/18*
U.S. Cl. 108—58 5 Claims



Pallet comprises a load-supporting deck which is attached to and supported by a frame made up of channel sections arranged so that access is provided for receiving the fork of a lift truck from four directions. The supporting deck is welded to the supporting frame and the channel sections of the frame are welded together.

3,603,274
MODULAR ADJUSTABLE WALL SHELVING

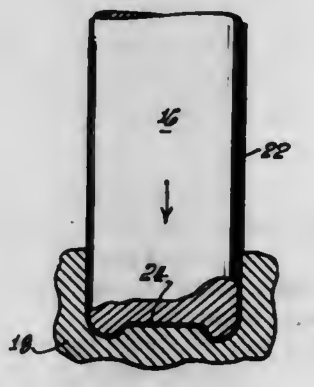
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, both of, Ill., assignors to Hirsh Company, Skokie, Ill.
Filed July 28, 1969, Ser. No. 845,173
Int. Cl. A47b *57/06*
U.S. Cl. 108—108 9 Claims



Modular knockdown shelving is disclosed having vertical spaced supports with a plurality of recessed slots for the engagement of adjustable hidden brackets that support the ends of shelf members whereby the brackets lock to the shelves and the supports by the load thereon. A plurality of shelves can be variously positioned in vertically spaced relationship between and upon a pair of upright supports and can be readily adjusted, one to the other, to provide the desired spacing between the shelves. The shelves have a plane top surface with a rolled flange edge and are provided with a bottom panel, also having a flanged edge which interlocks with the rolled flange and also locks to the brackets. In one embodiment, the brackets fit within the rolled flanges of the shelf ends and serve both to interlock the top and bottom panels and rigidly support the shelf in load-supporting relationship.

3,603,275
METHOD OF FORMING CAN BODIES

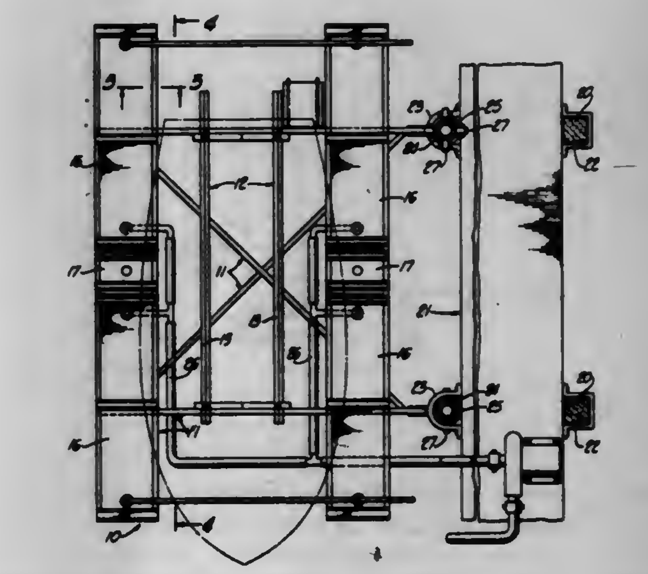
Franklin C. Eickenhorst, Mason, and Ermal C. Fraze, Dayton, both of, Ohio, assignors to Dayton Reliable Tool & Mfg. Company, Dayton, Ohio
Filed Nov. 6, 1969, Ser. No. 874,620
Int. Cl. B21d *51/00*
U.S. Cl. 113—120 H 5 Claims



To produce a can body a sheet metal blank is formed into a short cup-shaped workpiece. The cylindrical wall of the workpiece is then thinned and axially elongated by an ironing operation and finally the bottom wall is squeezed to reduce its thickness and to extrude the material thereof in a manner to extend the length of the cylindrical wall.

3,603,276
FLOTATION DOCKING FACILITY FOR SMALL CRAFT

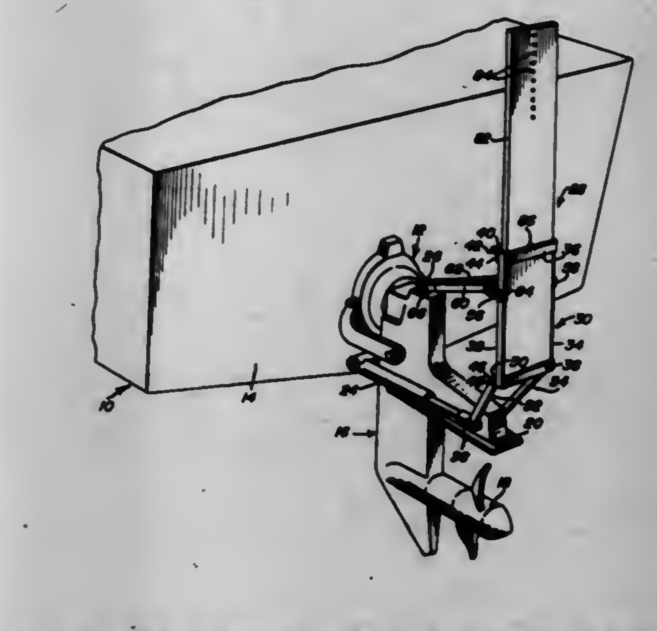
Gaston A. De Lisle, Encino, Calif., assignor to Gaston A. De Lisle, as trustee under a Declaration of Trust dated March 5, 1970
Filed July 18, 1969, Ser. No. 843,078
Int. Cl. B63c *1/02;* B63b *35/00*
U.S. Cl. 114—45 15 Claims



A flotation docking facility for marinecraft slidable vertically of suitable bracket means with rise and fall of the tide and including pontoon-supported cradle means for lifting small craft clear of the water when the craft is not in use. The facility includes adjustable buoyancy means compensating for the weight of the docking facility and effective to support the latter submerged at a level intermediate the seabed and the underside of the hull.

3,603,277
SPEED CONTROL FOR BOATS

Leslie R. Manary, 6424 North Burr St., Portland, Oreg., and Alexander E. Frederick, Rte. 1 Box 36, Portland, Oreg.
Filed June 11, 1969, Ser. No. 832,345
Int. Cl. B63h *25/44*
U.S. Cl. 114—145 A 9 Claims



A trolling plate or speed retarder for use on the outdrive unit of an inboard-outboard drive assembly. The speed retarder includes a guide for attachment to the outdrive unit and also an upstanding panel assembly supported from the guide unit for vertical shifting between an upper inoperative position with the lower end portion of the panel assembly disposed above a horizontal plane containing the cavitation plate of the outdrive unit and a lower operative position with the lower end portion of the panel assembly terminating downwardly adjacent a horizontal plane containing the lower most extremity of the outdrive unit and disposed rearwardly of the propeller of the unit.

3,603,278

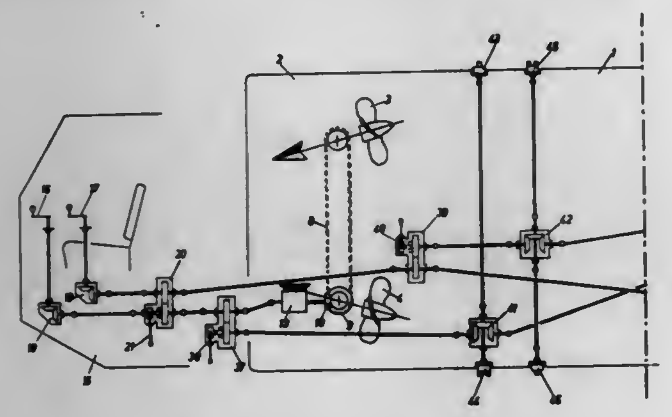
WATER PROPELLER DRIVE FOR AMPHIBIOUS VEHICLES

Hermann Walter Gehlen, Pirmasenser Strasse 60, Kaiserslautern, Pfalz, Germany

Filed July 3, 1969, Ser. No. 838,871

Int. Cl. B63h *25/42*

U.S. Cl. 115—35 **4 Claims**



Water propeller drive for amphibious vehicles with pairs of bow and stern propellers each associated with a corner of the vehicle body and arranged in bights of the body that are adapted to the current conditions, with steering means for adjusting the directional effect of the four propellers that permit steering of all propellers or a selected number of them optionally by means of one or two operating devices for which purpose suitable coupling and uncoupling means are provided in the steering transmission components.

3,603,279

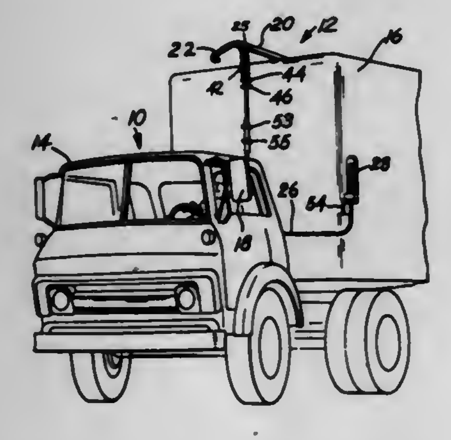
TRAILER TROLLEY INDICATOR

John P. Hooks, 13701 South Kildare Ave., Crestwood, Ill.

Filed June 1, 1970, Ser. No. 41,823

Int. Cl. B60q

U.S. Cl. 116—28 **6 Claims**



A clearance indicator for a vehicle constructed and arranged so as to indicate the clearance between the top of the vehicle and an obstruction. The clearance indicator includes a trolley rod pivoted on the vehicle and having a cam portion extending above the vehicle and positioned so as to engage the obstruction, a pushrod and flexible cable assembly operatively connected to the trolley rod and to an indicator for moving the indicator longitudinally so as to indicate the amount of clearance between the vehicle and the obstruction in response to movement of the trolley rod.

3,603,280

TEMPERATURE SENSITIVE FITTING

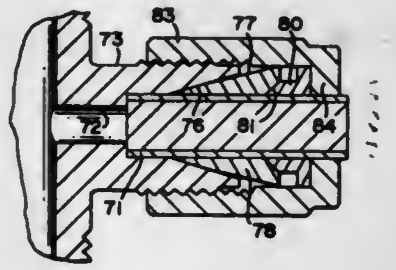
Emery J. Zahuranec, Solon, Ohio, assignor to Crawford Fitting Company

Filed Nov. 3, 1969, Ser. No. 873,173

Int. Cl. G01k *1/02*

U.S. Cl. 116—114.5 **7 Claims**

A temperature sensitive fitting which is thermally connected to a component, has a fitting body with a bore therein opening at one end to a static pressure line. An alarm is operatively connected to the static pressure line and senses a drop in pressure therein. A second opening in the fitting body connects the bore with the atmosphere and contains a temperature sensitive fusible plug which is readily replaceable without disconnecting the fitting and the component to which it is attached. Overheating of the component causes the plug in the fitting to melt, and the resultant drop in the pressure line to actuate the alarm.



3,603,281

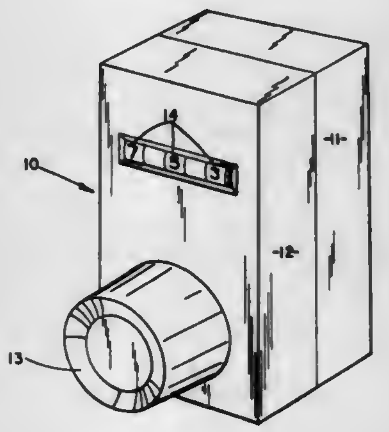
DIAL MECHANISM FOR ELECTRONIC COMPONENTS

David B. Froelich, La Mirada, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.

Filed Dec. 15, 1969, Ser. No. 884,932

Int. Cl. G01p *13/00*

U.S. Cl. 116—115 **3 Claims**



A dial mechanism for an electronic component having a spindle connected to an indicator dial for indicating the rotational position of the shaft of the component removably secured therewith by a setscrew. The shaft of the electronic component is accessible for manipulation through a central aperture in the spindle member to enable the shaft to be accurately phased with indicator dial. A knob member is snapped into a suitable detent and covers the setscrew and the aperture in the spindle member after the desired phase relation is achieved between the spindle member and the shaft.

3,603,282

POINTER-DIAL ARRANGEMENT FOR DUAL PRESSURE GAUGE

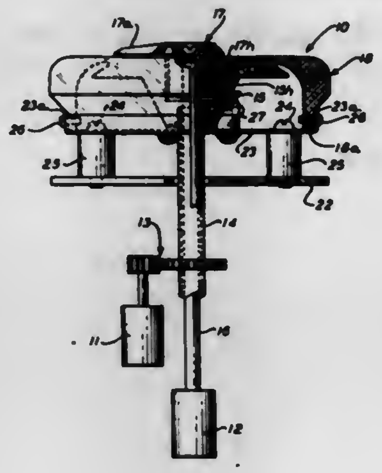
Andre T. Abromaitis, Morristown, N.J., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 26, 1970, Ser. No. 5,834

Int. Cl. G09f *9/00*

U.S. Cl. 116—129 **5 Claims**

A dual pressure gauge has an arcuate dial in a plane at right angles to the pointer axis, and has also a disk-shaped dial within the outer arcuate dial and flush therewith. The center dial has a pointer mark registering with the outer dial to measure one pressure. A dual pointer at the center of the two dials has one pointer hand registering with the outer dial to measure a second pressure and has a second pointer hand displaced from the first by 120° and registering with graduations on the center dial to measure the difference between the two pressures. The dials and dual pointer are made of transparent material and are coated with an opaque material except for the indicia, and a backlighting system is provided to illuminate the indicia.



3,603,283

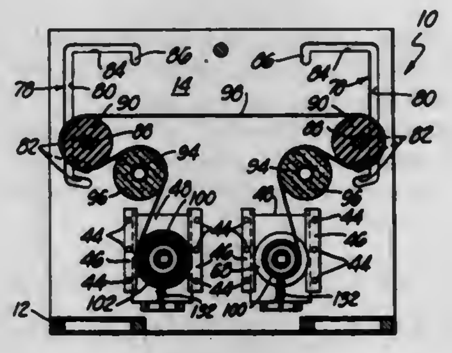
RIBBON-INKING MACHINE

Frank R. Anderson, Montebello, and Albert J. Castro, Cudahy, both of, Calif., assignors to Westates Space Era Products, Inc., Los Angeles, Calif.

Filed Oct. 27, 1969, Ser. No. 869,672

Int. Cl. B05c *11/12, 1/10*

U.S. Cl. 118—6 **6 Claims**



A ribbon-inking machine is disclosed for use in re-inking ribbons employed in various types of computers, accounting machines, printing machines and the like. The machine includes two winding rollers, each of which is also capable of serving as a supply roller, at least one inking roller, and control means for controlling the operation of the winding rollers. In use a roll of ribbon is located on one of the winding rollers and attached to the other of the winding rollers so as to extend past the inking roller or rollers used. As the machine operates the ribbon is wound from one of the winding rollers to the other and then back again, a number of times dependent upon the setting of the control means.

3,603,284

VAPOR DEPOSITION APPARATUS

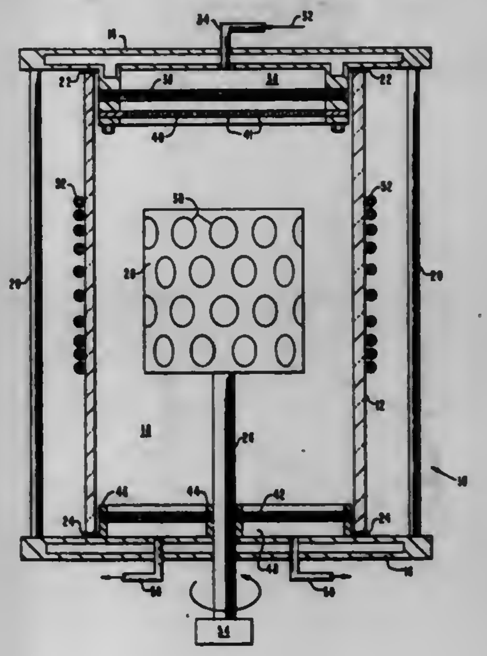
Richard R. Garnache, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1970, Ser. No. 344

Int. Cl. C23c *11/00*

U.S. Cl. 118—48 **10 Claims**

A vapor deposition reactor having a gaseous phase inlet and exit system including inlet means, located at one end of a reaction chamber, including a porous gas distribution baffle which forms a plenum and which uniformly delivers gaseous materials to substantially all of the horizontal cross-sectional area of the reaction chamber and further including an exit means, located at the other end of the chamber, comprising a porous pressure baffle for uniformly allowing the removal of gaseous materials from the chamber to prevent recirculation of reaction byproducts.



3,603,285

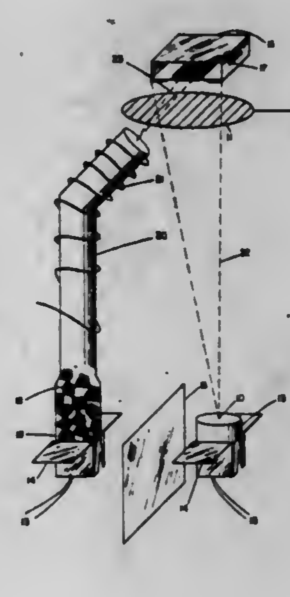
VAPOR DEPOSITION APPARATUS

William S. Nicol, Highcliffe, England, assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 5, 1968, Ser. No. 773,530

Int. Cl. C23c *11/00*

U.S. Cl. 118—48 **3 Claims**



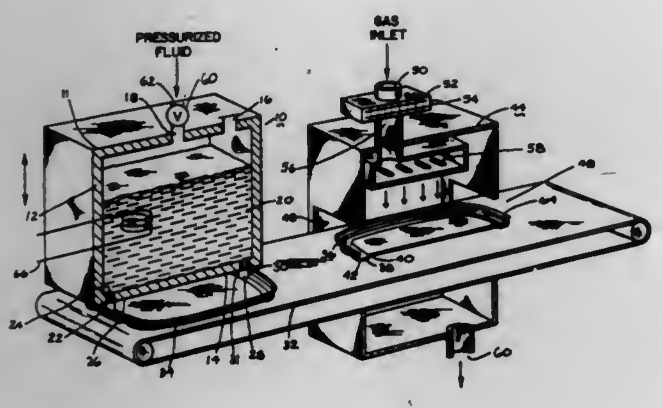
Vapor deposition means include at least two crucibles adapted to contain evaporant materials of different volatilities and which are disposed to each form a vapor stream of uniform density and incident upon a common substrate. A chimney member having an exit disposed in the immediate vicinity of the substrate but outside of the vapor stream of the less volatile material is attached to the crucible containing the material of greater volatility.

3,603,286

COATING APPARATUS

Howard A. Scopp, Windsor, and Thomas F. Sincock, Simburg, both of, Conn., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 660,482, Aug. 14, 1967. Filed July 30, 1969, Ser. No. 861,528
Int. Cl. B05c *11/10*
U.S. Cl. 118—64 **3 Claims**



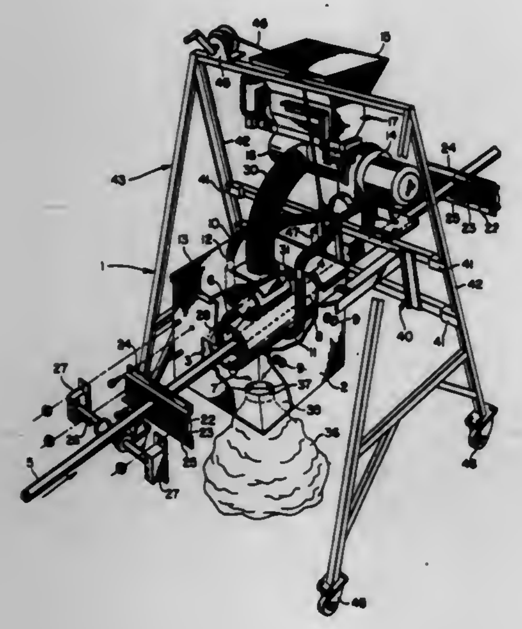
An apparatus for applying a liquid sealant coating to the surface of a package by forcing it from a reservoir through a porous distributing applicator onto the surface.

3,603,287

APPARATUS FOR COATING ELONGATED ARTICLES

Daniel LaMar Christy, Fremont, and Lawrence E. Parker, Clyde, both of, Ohio, assignors to Daniel LaMar Christy, Fremont, Ohio

Filed Oct. 16, 1968, Ser. No. 768,122
Int. Cl. B05b *7/00*
U.S. Cl. 118—309 **19 Claims**



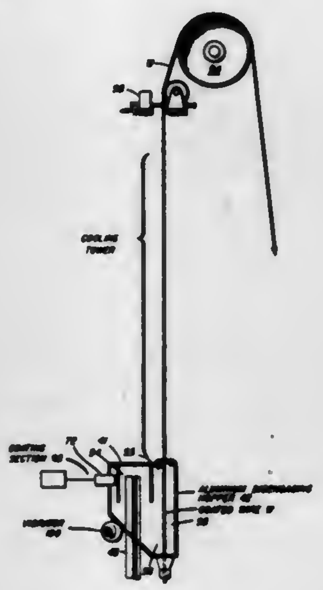
A coating device having a dusting tube into which the coating dust is blown from opposite sides to provide a dust suspension for applying a uniform coating to a workpiece passing therethrough, and a larger chamber surrounding the dusting tube for confining the excess suspension exiting from the open ends of the dusting tube from which a portion of the dust suspension is recirculated back into the dusting tube.

3,603,288

APPARATUS FOR CONTINUOUS COATING OF METALLIC PRODUCTS WITH FUSIBLE PULVERULENT MATERIALS

John S. Case, Towson, Md., and William B. Johnson, Marion, Mass., assignors to Anchor Post Products, Inc., Baltimore, Md.

Division of Ser. No. 598,842, Dec. 2, 1966, abandoned, Filed Nov. 29, 1968, Ser. No. 779,862
No. 779,862
Int. Cl. B05c *3/05, 3/12*
U.S. Cl. 118—620 **1 Claim**



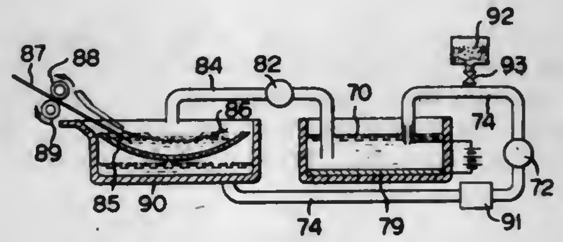
A method and apparatus if described for the coating of running strands or webs with a thermoplastic protective layer. The successive steps comprise the application of a primer and the hot air current drying and curing of same supplemented by inductive heating. The temperature is next raised in two successive stages by inductive type heaters, the latter stage while the strand or web is vertically traversing the length of a continuously-replenished dense cylindrical bed of powdered vinyl polymer of the like. The replenishment as well as cooling of the powder is accomplished through a recirculatory arrangement powered by air nozzles. Alternate coating materials are proposed including polyolefins containing compounds of metal.

3,603,289

ELECTROSTATIC LATENT IMAGE DEVELOPING APPARATUS

Shozo Kasuya, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 3, 1968, Ser. No. 780,672
Claims priority, application Japan, Dec. 5, 1967, 42/78108
Int. Cl. B05b *5/02*
U.S. Cl. 118—637 **3 Claims**



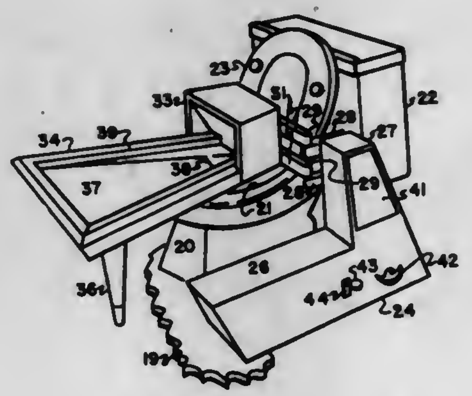
Apparatus for developing an electrostatic latent image wherein a developing tray is located in a developing chamber, said tray adapted to receive sensitized paper for developing. A supply pipe having a pump therein discharges developing solution onto said tray, said supply pipe receiving the solution from a supply chamber which includes carrier liquid at the other end to the developing chamber. A particle container is connected with said return pipe and contains image-producing particles that are charged by an electrode in the nozzle as they pass into the carrier liquid. A concentrate indicator in the return pipe regulates a valve arrangement to allow the particles to pass into the return pipe and be added to the carrier liquid.

3,603,290

PET-OPERATED ANIMAL TOILET

David B. O'Rork, 919 Isleta, Santa Barbara, Calif.

Filed Mar. 20, 1970, Ser. No. 21,249
Int. Cl. A01k *15/00, 05/02*
U.S. Cl. 119—1 **12 Claims**



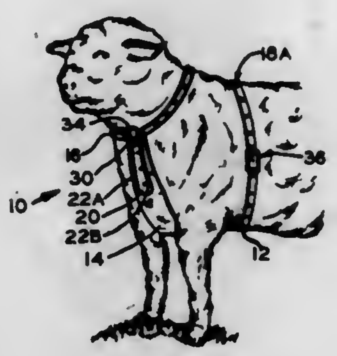
A pet is trained to excrete upon a tray and to reinforce the training, the pet is given a reward for excreting, such as food from a dispenser operated by the pet. To prevent the pet from cheating, a urine sensor and a feces sensor are located on the tray and an interlock circuit connects them to the dispenser, preventing operation of the dispenser unless at least one of the sensors detects the presence of excrement. To reduce odors, a flushing flow of water may be provided and the human toilet bowl is utilized to receive the animal excrement and the flushing flow. Since water flow is available to the tray, the sensors may be water powered, and the interlock circuit may be water powered.

3,603,291

ANIMAL MARKING DEVICE

Edwin E. Baker, Rt. 1, Richwood, Ohio

Filed Oct. 1, 1969, Ser. No. 862,773
Int. Cl. A01k *11/00*
U.S. Cl. 119—1 **2 Claims**



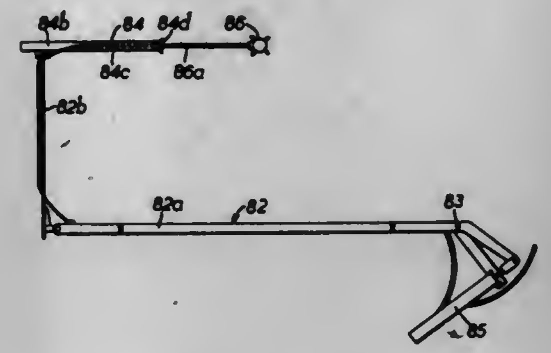
An animal marking device to be worn by a male animal during the breeding season so constructed that when the animal has coition with a female, the female will be marked in such a manner that the stock breeder will be able to determine the time at which the period of gestation should end, should the animal have been rendered pregnant.

3,603,292

AUTOMATED STALL AND MILKING EQUIPMENT

Nigel Finch, Chedworth, Cheltenham, England, assignor to Alfa-Laval Aktiebolag, Tumba, Sweden

Filed July 17, 1969, Ser. No. 842,589
Int. Cl. A01j *07/00*
U.S. Cl. 119—14.1 **8 Claims**



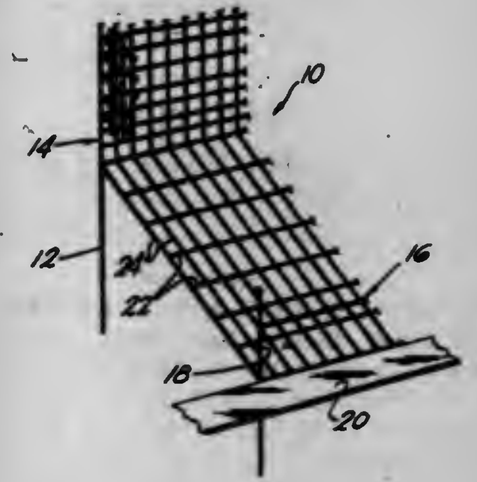
A milking parlor has a forked entry passage feeding two rows of stalls. The passage has an entry separated from each of two outlet legs, respectively leading to the two rows of stalls, by a vertically slidable guillotine-type gate. The exit from each of the outlet legs is controlled by a gate which is also of vertically slidable guillotine type. Each stall includes milk controlled teat cup and claw moving equipment having an articulated linkage arm which moves the claw relative to a support. Automation power means are provided for moving the arm between operative and inoperative milking positions.

3,603,293

EGG-ROLLING CAGE BOTTOM WIRE MESH

Willis R. Voran, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.

Filed May 15, 1969, Ser. No. 824,767
Int. Cl. A01k *31/16*
U.S. Cl. 119—48 **3 Claims**



An egg-rolling cage bottom mesh wherein the openings are approximately three-fourths inch × two inches, the wires forming the three-fourth-inch dimension sloping downwardly from the rear of the cage to the front of the cage to form the sloping bottom, and the wires forming the 2-inch dimension being welded to the underside of the aforesaid wires.

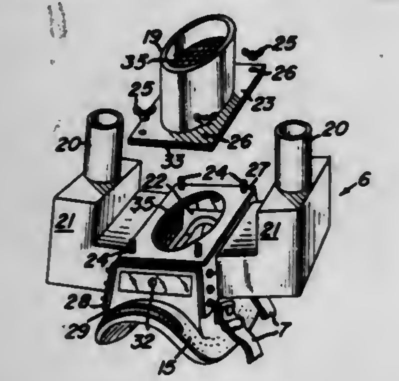
3,603,294

RABBIT ENVIRONMENTAL HOOD AND RESTRAINER

William D. Winston, Jr., Baton Rouge, La., and John F. Callahan, Baldwin, Md., assignors to The United States of America as represented by the Secretary of the Army

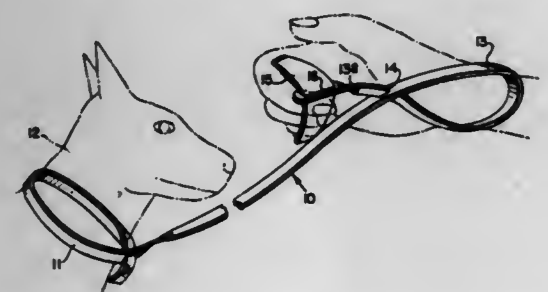
Filed Mar. 3, 1970, Ser. No. 16,104
Int. Cl. A61d *03/00*
U.S. Cl. 119—103 **10 Claims**

A portable apparatus and method for exposing a portion of an animal's anatomy to environmental test conditions while the remainder of the anatomy is subjected to normal ambient conditions; the apparatus consisting of an animal restrainer means and a hood means having duct means to permit air circulation.



3,603,295
ANIMAL LEASHES

Norman Shuman, 1 Tennis Court, Brooklyn, N.Y.
Filed Mar. 10, 1970, Ser. No. 18,120
Int. Cl. A01k *27/00, 01/06*
U.S. Cl. 119—109 **10 Claims**



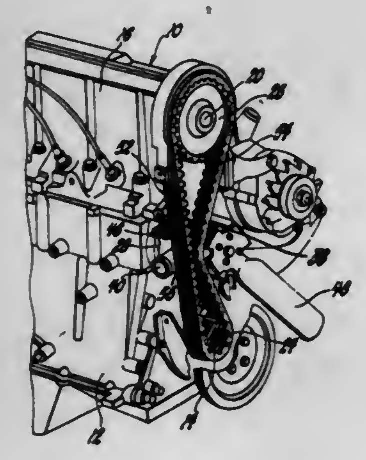
A relatively large dog or other animal on a leash of the type commonly available on the market may on occasion pull hard enough to slip the leash from the hand holding it. The instant leash prevents this by including a noose loop encircling the hand or wrist and, attached to the free extremity of the loop, a hand grip adapted to be grasped by the user's fingers.

ERRATUM

For Class 123—8.410 see:
Patent No. 3,603,326

3,603,296
ENGINE CAMSHAFT AND ACCESSORY DRIVE

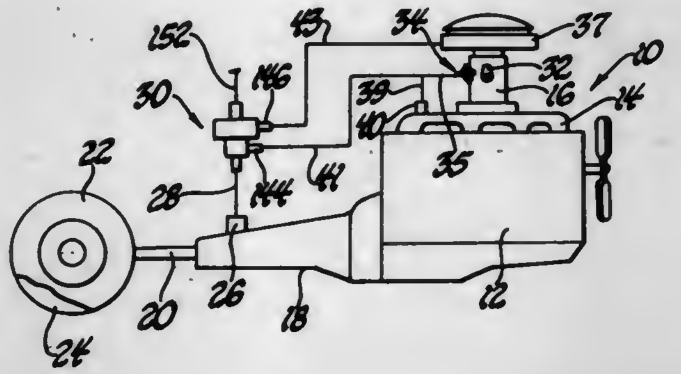
Boris J. Mitchell, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 2, 1970, Ser. No. 25,229
Int. Cl. F01p *5/12;* **F16h** *7/16;* **F01l** *1/04*
U.S. Cl. 123—41.46 **2 Claims**



An overhead camshaft engine has a toothed belt drive wherein the back side of the belt is grooved to mate with multiple vee grooves and ridges of the water pump and fan drive pulley. The water pump is laterally movable on the engine block to provide a belt tension adjustment. The arrangement provides positive drive of the camshaft with nonpositive drive of the water pump and fan to permit slippage of the latter during excessive torque loadings.

3,603,297
THROTTLE CONTROL

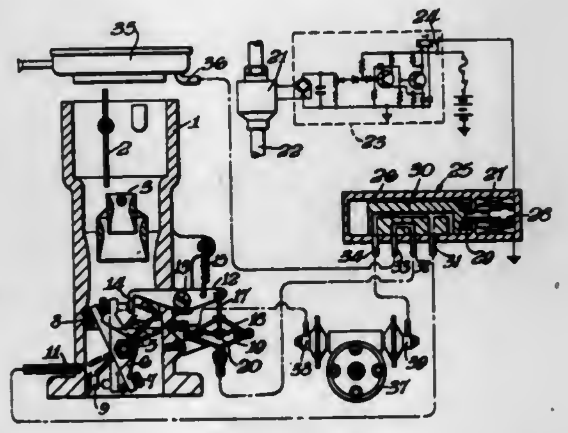
Harry A. Sherwin, 11724 Amel Drive, Warren, Mich., and Ronald E. Herman, 5342 Streekerk Road, Warren, Mich.
Filed Oct. 1, 1969, Ser. No. 862,720
Int. Cl. F02d *9/00;* **F01b** *15/02, 19/00*
U.S. Cl. 123—97 B **3 Claims**



A carburetor having an induction passage with a rotatable throttle valve therein is provided with a vacuum responsive throttle stop assembly which is effective for engaging the throttle lever in order to at times maintain the throttle valve partly opened during deceleration; a vehicle speed responsive valve member serves to dissipate available vacuum below a predetermined vehicle road speed in order to permit the stop assembly to hold the throttle valve partly opened only during deceleration occurring at or above a predetermined vehicle road speed.

3,603,298
ARRANGEMENT FOR CONTROLLING DISCHARGE OF UNBURNT HYDROCARBONS FROM DECELERATING AUTOMOBILE ENGINE

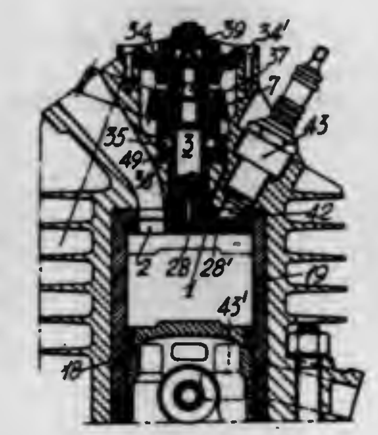
Tadahide Toda; Norihiko Nakamura, and Kiyohiko Oishi, all of Sunto-Gun, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota City, Japan
Filed Aug. 28, 1969, Ser. No. 853,669
Claims priority, application Japan, Sept. 3, 1968, 43-62901
Int. Cl. F02p *5/04;* **F02d** *3/00, 11/10*
U.S. Cl. 123—117 A **2 Claims**



An arrangement for controlling discharge of unburnt hydrocarbons from decelerating automobile engine by holding throttle valve of engine carburetor open at position slightly more open that position of valve under idling conditions of engine comprises lever connected to throttle valve for movement therewith. Blocking structure moves into and out of engagement with lever for preventing throttle valve from reaching idling position when blocking structure engages lever. Motivating system operates to move blocking structure into engagement with lever when automobile engine decelerates from above predetermined speed so that throttle valve is held open. Motivating system includes driving device connected to operate blocking structure, speed detector for sensing speed of automobile engine, and speed setter associated with speed detector and driving device for causing driving devices to move blocking structure into engagement with lever when automobile engine decelerates from above predetermined speed.

3,603,299
ROTATING DISTRIBUTOR DEVICE SEATED WITHIN THE CYLINDER HEAD FOR ENDOTHERMIC TWO- OR FOUR-STROKE-CYCLE OR DIESEL ENGINES

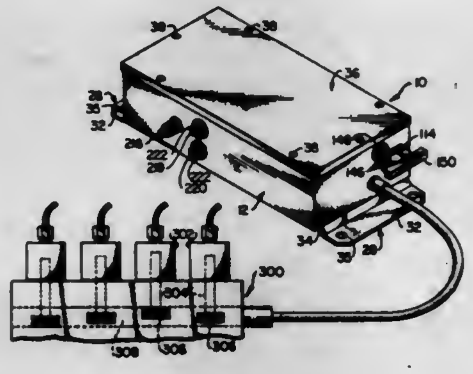
Enrico Lamperti, Via Ercole Ferrario, 4, Gallarate Varese, Italy
Filed Mar. 7, 1969, Ser. No. 805,126
Claims priority, application Italy, Mar. 9, 1968, 13,754
Int. Cl. F01l *7/00*
U.S. Cl. 123—190 D **7 Claims**



A rotary disc valve for reciprocating internal combustion engines constitutes a disc mounted adjacent the end wall of a cylinder for rotation concentric with the cylinder axis. The disc has annular seals provided in the peripheral surface of the disc and the surface facing the end wall, there being a gap between the disc and the end wall to contain lubricating fluid and means to feed lubricant to the gap and to maintain the spacing of the gap constant.

3,603,300
SAFETY SHUTDOWN DEVICE FOR STATIONARY DIESEL ENGINES

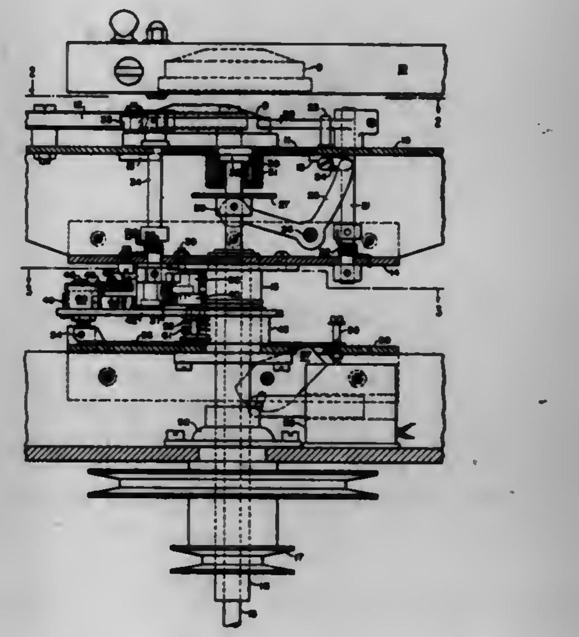
Oren D. Moffett, Tulsa, Okla., assignor to Frank W. Manufacturer Inc., Tulsa, Okla.
Filed Dec. 19, 1969, Ser. No. 886,703
Int. Cl. F02b *77/08;* **F01m** *1/24*
U.S. Cl. 123—198 DB **8 Claims**



A spring loaded bar normally held in a latched position against the spring bias, the bar being connected to one end of a flexible cable having its other end connected to a conventional internal combustion engine gear rack which is to be actuated upon engine malfunction, a normally open electrical circuit including electromagnetic means operable upon the energization of said circuit to release the latch to permit the bar to move rapidly in the direction of the spring bias, thereby rapidly pulling said cable and its connected rack to effect the engine shut down and to substantially simultaneously open the circuit to the electromagnetic means.

3,603,301
TARGET TRAP

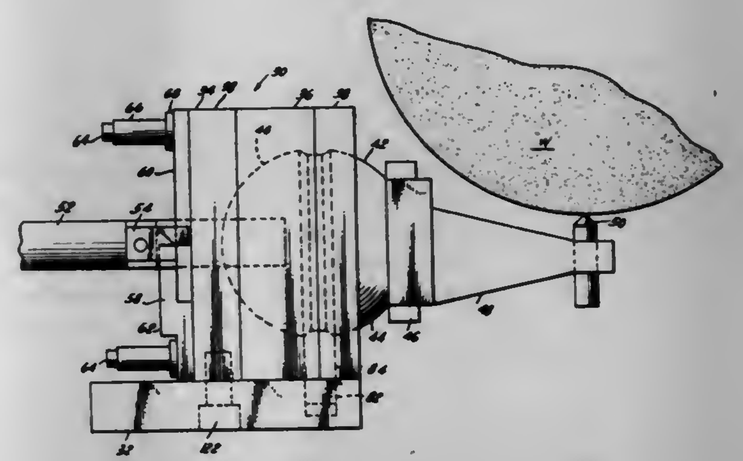
George H. Darrell, 25 Chestnut Street, Dedham, Mass.
Filed Apr. 1, 1969, Ser. No. 812,096
Int. Cl. F41b *15/00*
U.S. Cl. 124—32 **4 Claims**



In the target throwing machine disclosed herein, the gate which controls the release of a target from a rotary throwing arm is normally biased towards a target releasing position and is selectively held in target retaining position by a latch. After releasing a target, the gate is positively returned to its target retaining position by a cam in response to further rotation of the throwing arm.

3,603,302
RADIUS AND ANGLE DRESSER DEVICE

Jean Francis Payea, 114 F. W. Moore Rd., St. Clair, Mich.
Filed Oct. 11, 1968, Ser. No. 766,837
Int. Cl. B24b *53/08*
U.S. Cl. 125—11 TP **10 Claims**



A device for dressing the peripheral surface of grinding wheels having a dresser mounted on a spherical element for universal movement with a handle projecting through an adjustable pattern opening to determine the shape on the grinding surface by guiding the movement of the dresser.

3,603,303

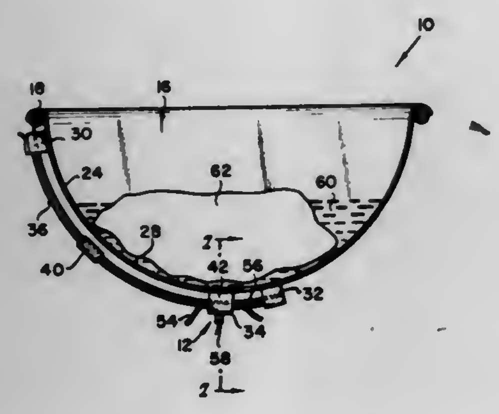
SONIC INSPECTION METHOD AND APPARATUS

James R. Stouffer, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 8, 1968, Ser. No. 765,918

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 R **15 Claims**



The sonic inspection method and apparatus includes the use of a thin walled receptacle having a low resistance to the transmission of sonic waves to contain the body to be inspected and a fluid having acoustical properties corresponding to those of the body. A sonic transducer is acoustically coupled to the exterior of the receptacle to transmit sonic waves to the body and receive the reflected waves therefrom.

3,603,304

INFLATABLE BANDAGE FOR BLOOD-PRESSURE GAUGE

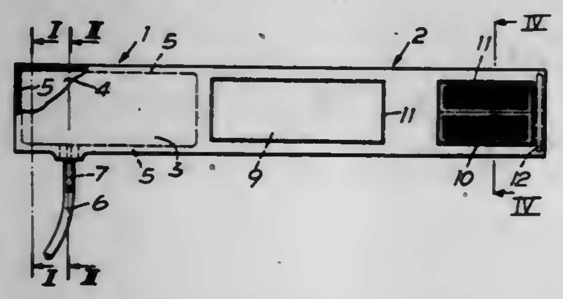
Werner Maier, Leinenweberstrasse 54, 7000 Stuttgart-Mohringen, Germany

Filed Aug. 18, 1967, Ser. No. 661,703

Claims priority, application Germany, Aug. 31, 1966, M 70 762 IXd/30a

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 C **2 Claims**



The improvement in an airtight bandage which comprises an inflatable bag and is adapted to be wrapped around a limb of a person or animal for damming up the blood therein to permit blood pressure and other measurements to be made, wherein for attaining more accurate measurement the bandage consists of two strip-shaped layers of fabric which are coated with an air-impermeable layer at least on the inner sides facing each other which are completely bonded together with the exception of an area where merely the edges of the two layers are bonded together like a frame s6 as to form the inflatable bag.

3,603,305

SENSORY DEVELOPMENT APPARATUS

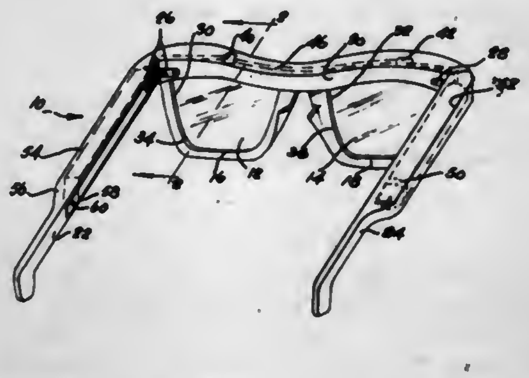
Jess Oppenheimer, 549 Moreno, Los Angeles, Calif.

Filed Apr. 24, 1969, Ser. No. 819,001

Int. Cl. A61h *5/00*

U.S. Cl. 128—76.5 **8 Claims**

Sensory development apparatus in the form of an optical frame carrying eyepieces in which perception therethrough is recurrently and selectively diminished. In one embodiment, light is flashed recurrently against the inner surfaces of alternate eyepieces to diminish perception therethrough. In another embodiment liquid crystal is contained by the eyepieces between selectively controlled electrodes on opposite edges thereof.



3,603,306

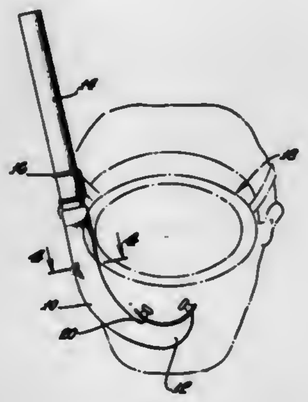
SNORKEL

Richard J. Bonin, Jr., Los Alamitos, Calif., assignor to Under Sea Industries, Inc.

Continuation of application Ser. No. 679,846, Nov. 1, 1967, now abandoned. This application Apr. 9, 1970, Ser. No. 31,809

Int. Cl. A63b *7/00*

U.S. Cl. 128—145 A **8 Claims**



The improved snorkel (FIGS. 1–4) in contrast to the prior art snorkel (FIG. 5) is shaped and designed to fit closely to the face of the wearer whereby viscous drag is minimized. Unnecessary curves in the snorkel tube are eliminated whereby minimum resistance is encountered to water being purged from the snorkel by exhalation. The feathered edge (FIG. 3) also assists in this function.

3,603,307

INSTRUMENT FOR PRODUCING BREATHING ACTION ON THE LUNGS

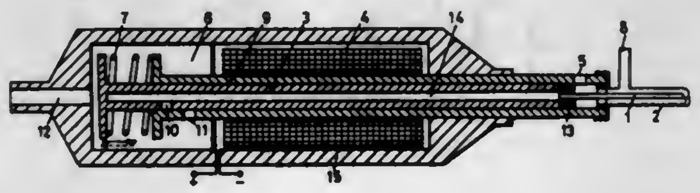
Paul Bischler, Schuberstrasse 6, 775 Konstanz, Germany

Filed Mar. 25, 1969, Ser. No. 810,126

Claims priority, application Germany, Mar. 26, 1968, P 17 66 038.7

Int. Cl. A62b *7/02*

U.S. Cl. 128—145.6 **2 Claims**



An externally controlled electromagnetic device for operating a valve mechanism to admit fresh air from an external source under pressure so as to control a supply of fresh air to an inspiration tube insertable into the trachea as far as the zone of the lung. An expiration tube is combined with the said tube to permit escape of used air and also reaches to the lung zone. The instrument, essentially by the control of frequency of valve movement, allows a rate and amount of fresh gas flow suitable for the animal species under observation.

3,603,308

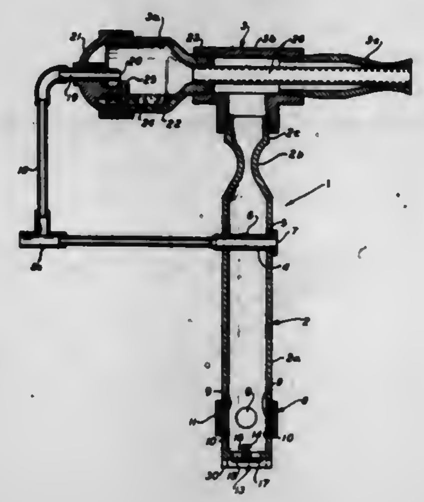
INTERMITTENT POSITIVE PRESSURE BREATHING DEVICE

Joseph W. Spradling, and John P. Kayser, both of Madison, Wis., assignors to Air Reduction Company, Incorporated, Murray Hill, N.J.

Filed July 15, 1968, Ser. No. 744,813

Int. Cl. A61m *7/02*

U.S. Cl. 128—145.8 **4 Claims**



A hand-held respirator comprising a gas pressure source, exhaust port means and a plurality of tubular elements in a substantially tee shape with the leg of the tee having a pressure relief valve for patient exhalation to atmosphere, an air intake valve for controlling ambient air inflow, and inhalation and exhalation passages; with the head of the tee having a nebulizer at one end receiving gas from said pressure source therethrough for flow directly to the patient and a mouthpiece at the other end for passing gas from said source with air to the patient, the gas flow through the nebulizer and mouthpiece when the exhaust port means is closed being maintained distinct until reaching the patient.

3,603,309

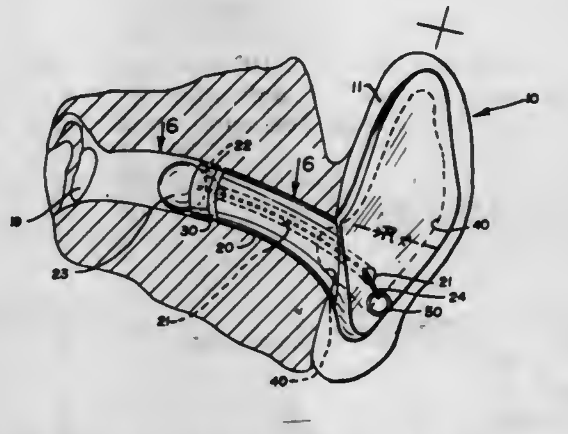
EAR MOLD PROTECTOR

Fred Wesemann, 239 Villa Vista, Sterling, Colo.

Filed Oct. 14, 1969, Ser. No. 866,797

Int. Cl. A61f *11/02*

U.S. Cl. 128—152 **4 Claims**



This invention relates to a new method of ear protection embodying a combined ear plug and protector, having a medicated salve sealant cavity, and made of resilient material and embodying a manually operable ball valve of the same material at the innermost end in the auditory canal extension thereof.

3,603,310

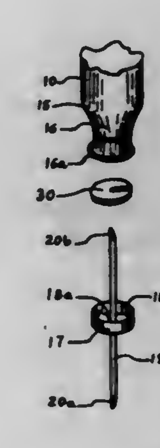
DISPOSABLE SYRINGE

Ralph E. Mottin, Grosse Pointe Park, and Carl C. Garland, Detroit, both of, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed June 30, 1969, Ser. No. 837,408

Int. Cl. A61m *05/22, 05/32*

U.S. Cl. 128—218 R **4 Claims**



A dispensing syringe is provided having a liquid-fill compartment between an inner piston and an outer piston. In storage the inner piston is partly pierced by the inner end of a two-way syringe cannula and serves to divide the syringe barrel in two parts: one, a head space and the other the mentioned compartment separate from the syringe cannula. To avoid changes of pressure in the head space the hub has a bypass structure for venting. The syringe is operable by reciprocation to bring the liquid-fill in direct communication with the syringe cannula for mixing purposes, aspiration and injection by conventional techniques. The syringe components are standardized for use with conventional dispensing components such as vials, needle covers, etc. The head space has a closure hub on the free end thereof, the hub having a gasket in the form of a disc having a radial channel therein so that the head space may be vented to atmosphere in storage or when the inner piston is moved toward the hub for bringing the liquid-fill into communication with the cannula as noted.

3,603,311

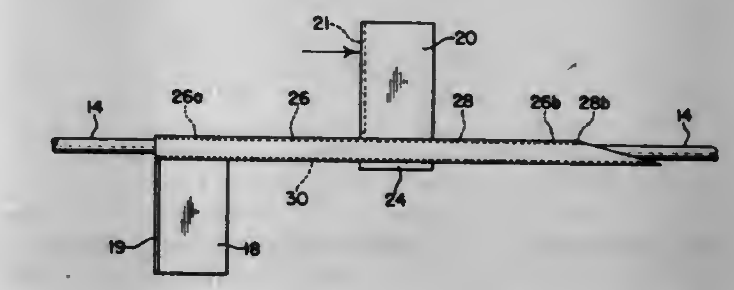
SLIDING WEDGE-TYPE REMOVABLE GUIDE NEEDLE

James A. Huggins, Racine, Wis., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 19, 1970, Ser. No. 12,647

Int. Cl. A61m *5/00, 5/14*

U.S. Cl. 128—214.4 **6 Claims**

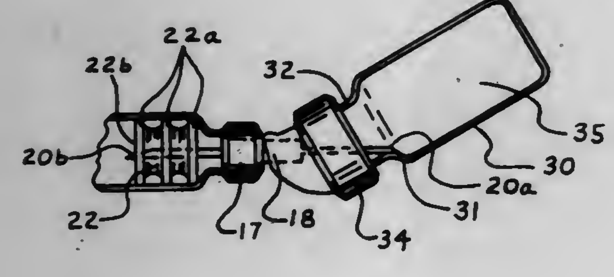


A hollow guide needle for piercing a body portion to position therein a flexible catheter for withdrawing or introducing fluids relative to the body portion, and which includes a hollow tube longitudinally slotted to provide frangible connecting webs between slots, and a wedge member slidably mounted on the tube and guided in the slots for forced longitudinal movement along the tube for severing the frangible webs to separate the tube into discrete sections which may then be completely removed from the body-inserted catheter.

3,603,312

DISPOSABLE DISPENSING SYRINGE VIAL

Paul A. Lucas, Webster, N.Y., and Ralph E. Mottin, Grosse Pointe Park, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
Filed June 30, 1969, Ser. No. 837,693
Int. Cl. A61j *1/00*
U.S. Cl. 128—272 **4 Claims**

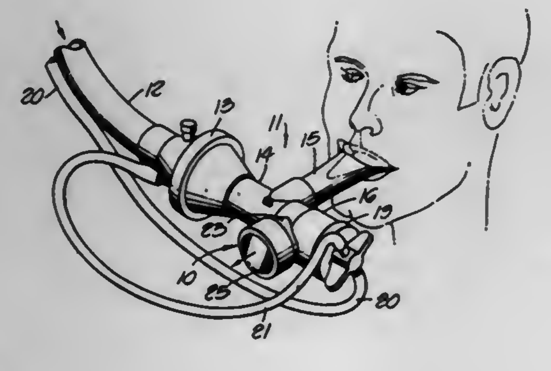


A disposable syringe vial is provided having closure means adapted to receive a syringe cannula in fluidtight engagement and to flex while in such engagement to selected positions for complete aspiration of liquid contents from the vial without operational loss of liquid.

3,603,313

THROWAWAY CONDENSATE COLLECTOR

Dennis Arblaster, 34081 La Serena, Dana Point, Calif.
Filed Aug. 11, 1969, Ser. No. 849,072
Int. Cl. A61f *5/44*
U.S. Cl. 128—275 **9 Claims**



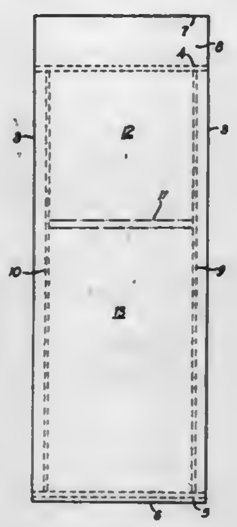
A throwaway sanitary collector of condensate carried in exhalant of a patient using an intermittent positive pressure breathing apparatus. The collector safeguards against contamination of clothing and bedding utilizing a plaque of gossamer intimately associated with a mass of absorbent material having substantial capacity for absorbing moisture collected from exhalant as it passes through the gossamer. The collector may be retained in place by friction and is readily replaceable by a fresh one.

3,603,314

DIAPER

Sven Ulrik Torbjorn Aberg, Molnlycke, Sweden, assignor to Molnlycke Aktiebolag, Gothenburg, Sweden
Filed Sept. 11, 1964, Ser. No. 395,765
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **3 Claims**

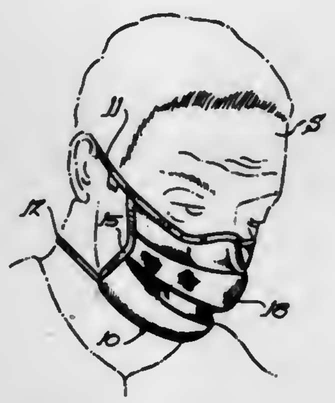
The diaper consists of two outer supporting layers and an intermediate layer of absorbent material which is thick at the front portion and relatively thin at the rear portion and there is a transverse barrier to the flow of liquid between said front and rear portions.



3,603,315

SURGICAL FACE MASK

Fred R. Becker, III, Millington, N.J., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 17, 1969, Ser. No. 867,296
Int. Cl. A61f *9/04*
U.S. Cl. 128—146.2 **7 Claims**

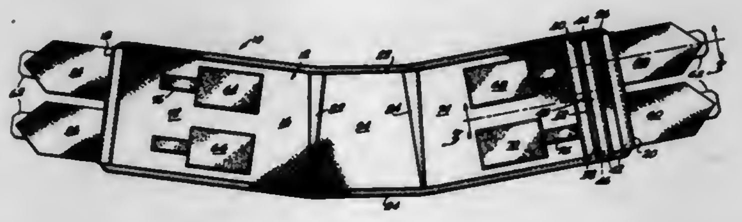


A surgical face mask is provided with an inner layer of soft polymeric foam material which is worn against the face. The mask includes an intermediate layer of filter material and an outer layer of nonwoven material which is relatively impervious to airborne bacteria. The soft foam layer increases the comfort of the mask and allows the mask to conform to the face of the wearer. Further, the foam layer readily absorbs perspiration and saliva and passes these fluids to the middle filter layer, thereby maintaining the layer adjacent the face soft and dry.

3,603,316

ABDOMINAL BELT

Ira S. Lehman, 1830 N.E. 197th Terrace, Miami, Fla.
Continuation-in-part of application Ser. No. 873,200, Nov. 3, 1969, now abandoned. This application May 8, 1970, Ser. No. 35,770
Int. Cl. A41c *1/00*
U.S. Cl. 128—546 **15 Claims**

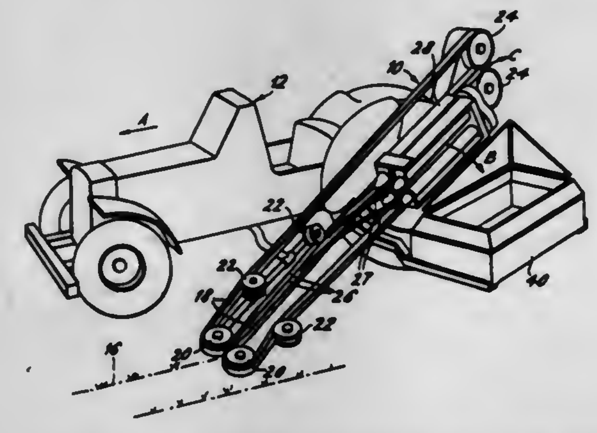


An abdominal belt of elastic material, to girdle a substantial portion of the midsection of a wearer to provide a limited degree of primary pressure force to the entire area of contact with the body and secondary pressure forces to the abdominal region through elastic draw strips at both ends of the belt and a slot adjacent one of the belt ends whereby one of the draw strips is adapted to be pulled through the slot and across the abdominal region while the other strip is pulled in the opposite direction into an overlapping relationship of the outside surface of the abdominal belt.

3,603,317

POD REMOVAL APPARATUS

John Raymond Sharp, 15 High Street, Beadfordshire, Clophill, England
Filed Jan. 27, 1969, Ser. No. 793,988
Claims priority, application Great Britain, Jan. 29, 1968, 4543/68
Int. Cl. A01d
U.S. Cl. 130—30 **7 Claims**

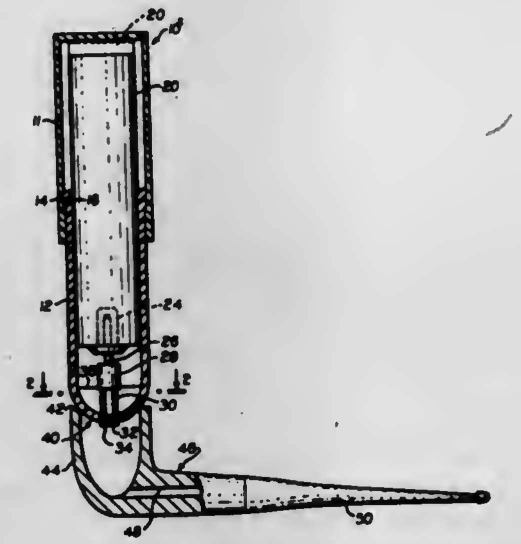


The invention includes an apparatus for removing pods from a plant e.g. a pea plant. In a preferred embodiment of the invention the apparatus comprises a gripping means which may be in the form of a pair of rollers or belts, control means for restricting the freedom of angular movement of pod bearing portions of the plant, and pod plucking means located adjacent the control means. The pod plucking means may be in the form of a pair of cooperating rollers, one longitudinally ribbed and the other with a plane cylindrical surface, whilst the control means may be provided by the gripping rollers or where gripping belts are used instead, by an additional control roller located between the belts and the plucking means. Driving means are also provided for driving the gripping means and the control means.

3,603,318

APPARATUS FOR CLEANING SMOKERS' PIPES

Alfred Yurdin, 10 Fenton Drive, Millburn, N.J.
Filed Jan. 17, 1969, Ser. No. 791,908
Int. Cl. A24f *09/04*
U.S. Cl. 131—244 **10 Claims**



Apparatus for cleaning a smoker's pipe by cleaning fluid sprayed from a nozzle under pressure as an aerosol spray. The open top of the bowl is covered and sealed by a head portion surrounding the nozzle and this causes the blast of cleaning fluid and its propellant, which is directed into the bowl of the pipe, to blow out through the stem of the pipe. The apparatus includes a pressurized can of cleaning fluid and propellant and a head portion with a soft sealing surface that is pressed against the rim of the pipe bowl. This pressure is used to actuate an automatic valve that controls the flow of fluid from the can.

3,603,319

FLAVOR-RELEASING SMOKING ARTICLE AND METHOD OF MAKING THE SAME

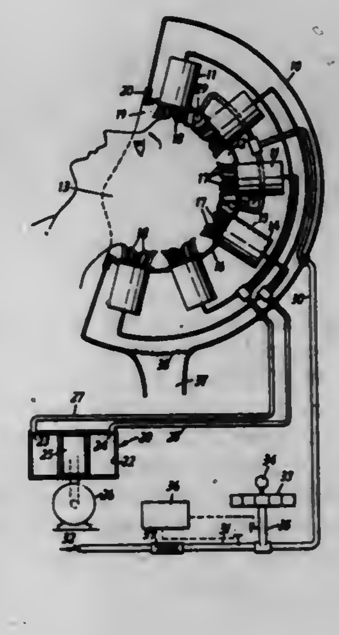
Charles E. Badgett, and Jerome S. Osmalov, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 13, 1968, Ser. No. 783,743
Int. Cl. A24b *15/02;* **A24d** *01/06;* **A24f** *25/00*
U.S. Cl. 131—10.9 **7 Claims**

This disclosure relates to a flavor-releasing smoking article and to methods of making the same. More particularly, the disclosure relates to a smoking article embodying a filter for tobacco smoke, which filter contains, as an essential filtering element, a solid polymer having controlled pore size and containing therein a flavor for incorporation in tobacco smoke, said polymer being capable of removing undesirable elements from tobacco smoke while imparting desirable flavor thereto.

3,603,320

HAIR WASHING MACHINE

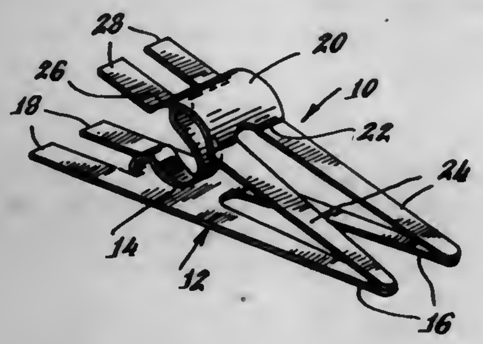
Guisseppe Guerino Vittorio Scipione, 14a. St. George's Drive S.W.1, London, England
Filed Feb. 27, 1969, Ser. No. 802,872
Claims priority, application Great Britain, Mar. 1, 1968, 10149/68
Int. Cl. A45d *7/00*
U.S. Cl. 132—7 **24 Claims**



A hair washing machine is disclosed comprising a casing provided with a lining which defines a zone in which a person's head is intended to be received. The lining is rigid and supports a plurality of hair treatment units each including a hair treatment element reciprocable by means of a piston and cylinder assembly into and out of the head-receiving zone. The treatment elements take the form of groups of resiliently flexible fingers which spread outwardly on engagement with a person's head and thus perform a massaging action. The treatment units are operated by an air pump driven by a motor which also drives a camshaft having cams designed and arranged to cause water, shampoo and the like to be supplied to sprays contained within the lining. The camshaft also carries cams operable to cause the operations performed by the machine to be performed in a predetermined sequence.

3,603,321
ONE-PIECE CLIP

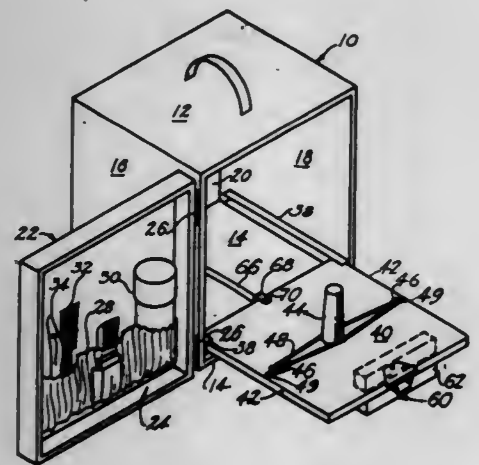
Douglas V. Viltrakis, 50 Watertown Road, Thomaston, Conn.
Filed June 24, 1969, Ser. No. 836,109
Int. Cl. A45d *18/24*
U.S. Cl. 132—48 **4 Claims**



There is disclosed a one-piece hair clip formed from a blank bent at its midportion into a double ogee spring. The ends of the blank extend from the spring in one direction and form cooperating jaws. Spaced extensions of the jaws extend from the spring in the opposite direction and form actuating handles.

3,603,322
WIG CASE

Nancy C. Wilson, 2591 Ridgewood Rd. N.W., Atlanta, Ga.
Filed Nov. 13, 1968, Ser. No. 775,262
Int. Cl. A45d *40/00*
U.S. Cl. 132—79 F **6 Claims**

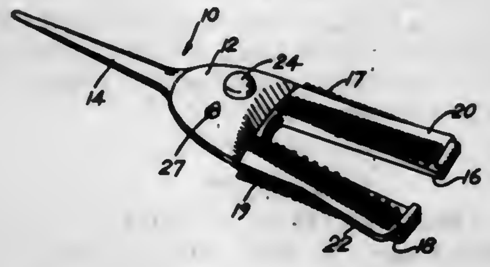


A portable wig case for storing, protecting and transporting wigs, wiglets or other hairpieces which also serves as a support for the wig during certain hairdressing operations such as combing and spraying. The case is a normally closed compartment with openable closure, such as a small door thereon, which may have an elastic pocket therein. A sliding shelf mounted within the case may be pulled by hand to an extended position outside the case and the shelf has a small protruding pin thereon which is removably inserted in the bottom of styrofoam plastic head form on which the wig is supported in fashion much like that when it is worn on the head. Elastic holddowns keep the plastic form in place on the pin when traveling and may be stretched out of the way so that the form may be removed. A modification for a smaller hairpiece such as a wiglet includes a different sort of base removably mounted on the pin on the shelf and a smaller form which is held in place by an elastic stretch band encircling the top.

3,603,323
HAIR TREATING DEVICE

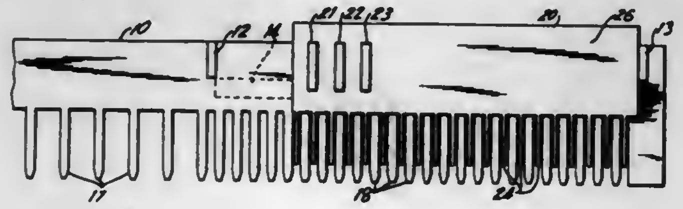
Guy Avella, 7975 Nordica, Niles, Ill.
Filed Aug. 27, 1969, Ser. No. 853,369
Int. Cl. A45d *24/04*
U.S. Cl. 132—131 **7 Claims**

A hair treating device for roughing or teasing hair to give it fullness which includes a body having movable inwardly facing comb members thereon which comb members are actuated toward one another by cam means readily manipulatable by the user. The comb members are biased apart from one another to permit release of the hair.



3,603,324
AUTOMATIC TEASING COMB

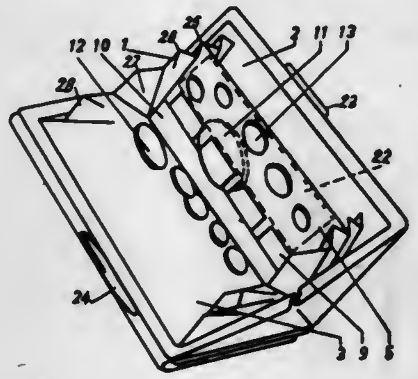
Nicholas Cutrone, 2054 E. 56th St., Brooklyn, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,737
Int. Cl. A45d *24/04*
U.S. Cl. 132—136 **4 Claims**



A first short comb having a channel-shaped body and a second longer comb removably assembled in the channel so that the teeth of the two combs are adjacent and so that the first comb may have lateral movement with respect to the second comb. Lateral movement provides for the opening and closing of the spaces between the adjacent teeth of the two combs so that hair strands may be gripped between the teeth for teasing the hair.

3,603,325
PURSE COMPRISING A SORTING MEMBER

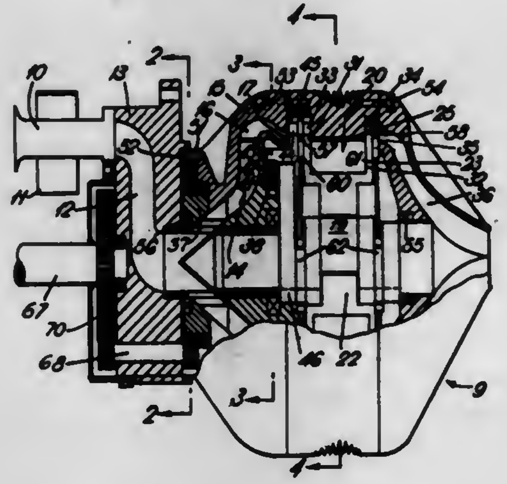
Marinus Beerens, Kloosterweg 38, Waalwijk, Netherlands
Filed May 13, 1969, Ser. No. 824,072
Claims priority, application Netherlands, May 15, 1968, Nov. 29, 1968, 6,806,829;6,817,084
Int. Cl. G07d *3/00*
U.S. Cl. 133—3 **22 Claims**



A coin-sorting purse or moneybag comprising at least one dividing partition separating the purse interior into a plurality of compartments and having at least one opening for passing smaller coins originally placed in a first compartment to succeeding compartments, while retaining the larger coins in the first compartment. A plate of magnetic material supported by the dividing partition above the openings in a later compartment exerts its magnetic force substantially exclusively in that compartment.

3,603,326
ROTARY INTERNAL COMBUSTION ENGINES

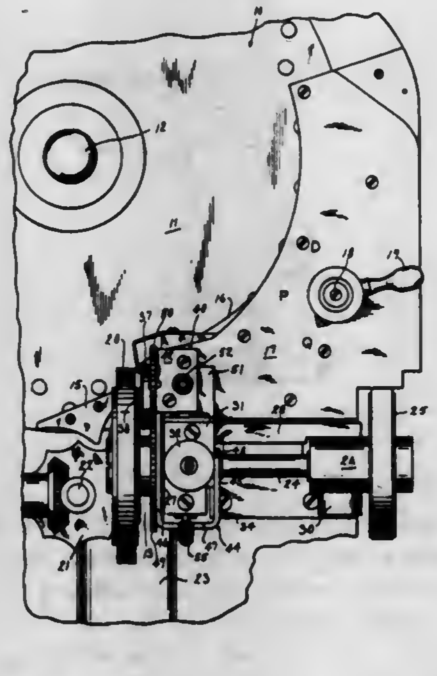
David Sadler Pearson, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Filed Oct. 20, 1969, Ser. No. 867,743
Claims priority, application Great Britain, Oct. 29, 1968, 51,284/68
Int. Cl. F02b *53/08;* **F01c** *13/04*
U.S. Cl. 123—8.41 **12 Claims**



A rotary internal combustion engine comprises a housing within which there is a rotor mounted for eccentric rotation with respect to the housing. The rotor has vanes the tips of which form a seal with the internal surface of the housing during its rotation. Adjacent vanes define spaces therebetween so that a combustible mixture injected into the spaces if first compressed, ignited, and then exhausted during rotation of the rotor. The housing is also rotated in the same sense at the rotor and this reduces the relative velocity between the tips of the vanes and the internal surface of the housing.

3,603,327
JAM ELIMINATOR APPARATUS FOR COIN COUNTING MACHINES

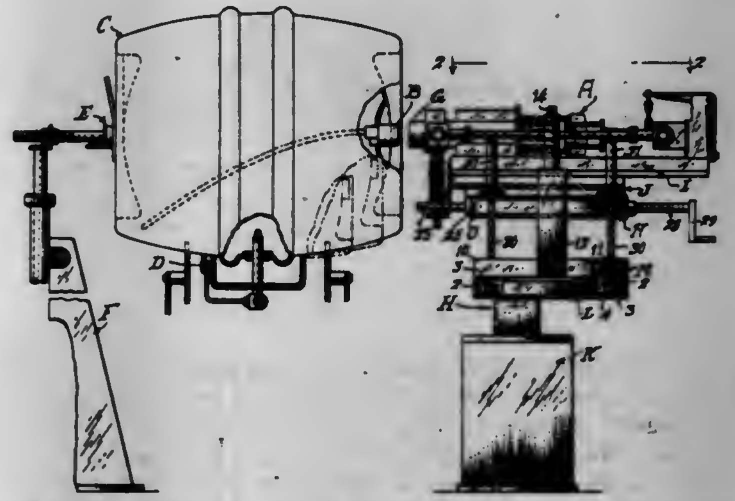
Arnold R. Buchholz, and Charles T. Bergman, both of Watertown, Wis., assignors to Brandt Automatic Cashier Co., Watertown, Wis.
Filed Jan. 29, 1970, Ser. No. 6,896
Int. Cl. G07d *9/00*
U.S. Cl. 133—8 R **9 Claims**



A helper wheel is disposed at the entrance to the exit passage of a coin counting machine in which a rotating disk forms coins into a single file and normally moves the file into the exit passage. The coins in the exit passage are engaged seriatim by a rotating ejector wheel which forces the coins past a star wheel connected to a counter and out a discharge chute. The ejector wheel is mounted on a driven shaft which is journaled in a tiltable support so that the ejector wheel may be moved away from the exit passage to halt the counting of coins. The helper wheel is supported on a bracket assembly which is mounted on the driven shaft and is also geared to the driven shaft. The helper wheel is tilted with the ejector wheel to be rendered operable to engage coins at the entrance and feed them to the ejector wheel, thereby preventing the jamming of coins at the entrance.

3,603,328
ADJUSTABLE SUPPORT FOR APPARATUS FOR CLEANING KEG FITTINGS OF TAPPING SYSTEMS

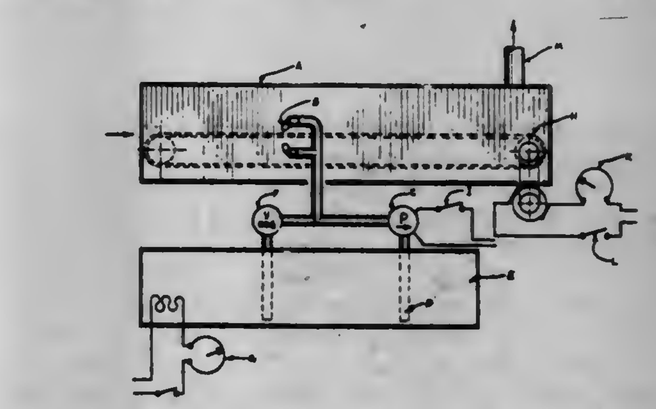
George C. Fenn, 87 Lake Trial East, Wayne, N.J.
Filed Feb. 9, 1970, Ser. No. 9,570
Int. Cl. B08b *3/04, 9/02*
U.S. Cl. 134—43 **10 Claims**



Cleaning apparatus for a tapping system fitting secured in a keg that is held in predetermined position includes a nozzle that is mounted on a base to move longitudinally and horizontally into and out of liquid transmitting engagement with said fitting, and said base is mounted on a support on which is means to move said base vertically and means to move the base horizontally in angularly related directions, one parallel to and the other transversely of, said direction of longitudinal movement of the nozzle, to accommodate kegs of different diameters and kegs of different lengths and kegs having the tapping fittings located either concentrically or eccentrically of the end walls of the keg.

3,603,329
APPARATUS FOR MANUFACTURING PRINTED CIRCUITS

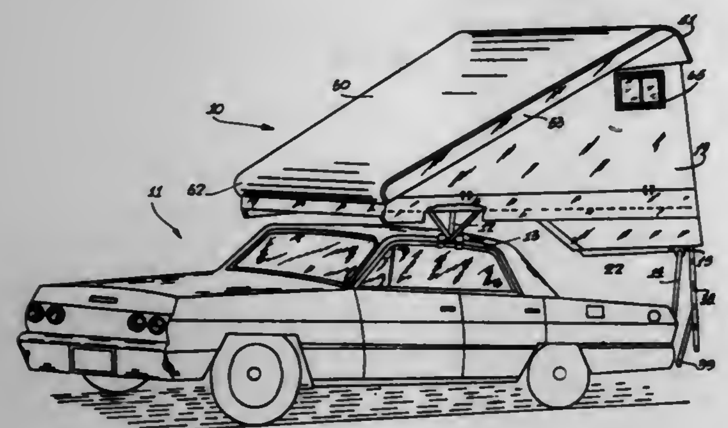
Robert B. White, and Charles L. Cooke, both of Huntsville, Ala., assignors to Brown Engineering Company, Inc.
Continuation of application Ser. No. 468,435, June 30, 1965, now abandoned. This application Nov. 6, 1968, Ser. No. 781,686
Int. Cl. B08b *3/02*
U.S. Cl. 134—107 **4 Claims**



Apparatus for obtaining a thin, smooth and evenly distributed layer of solder covering the entire conductive area of a printed circuit board by passing a circuit board, in which the conductive area is coated with a layer of solder, through a spray of liquid heated to above the melting point of the solder.

3,603,330
COLLAPSIBLE TENT

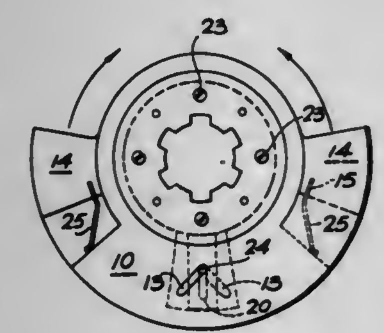
Halldor K. Halldorson, 35 Somerville Rd., and Irving O. Nelson, 2055 Argyle St., both of Regina, Saskatchewan, Canada
Filed Jan. 27, 1969, Ser. No. 794,190
Claims priority, application Canada, Dec. 3, 1968, 36,741
Int. Cl. A45f *1/00*
U.S. Cl. 135—1 **4 Claims**



A collapsible tent or camper for carriage on a vehicle and having a rigid floor and with a rear wall and sidewalls which are hingedly attached along the sides and rear of the floor so that the walls can be folded down in overlapping relationship; the sidewalls of a somewhat triangular shape and a roof hingedly connected at its forward end to the front of the floor, the roof covering the sides in the collapsed condition and resting on the top edges of the walls in the erected position.

3,603,331
ROTARY VALVE

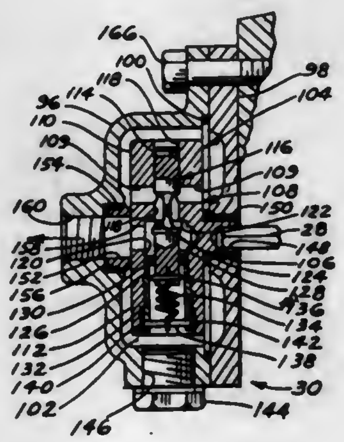
David E. Tanner, 1551 Price Rd., Youngstown, Ohio
Filed Feb. 10, 1970, Ser. No. 10,155
Int. Cl. G05d *13/14;* **F16k** *3/03*
U.S. Cl. 137—56 **5 Claims**



A rotary valve for a two-cycle internal combustion engine comprises a pair of valve plates rotatably mounted on a hub structure which in turn is splined to a crankshaft of the engine so as to be revolved thereby. A ball movably caged in a radially positioned slot in an extension of the hub structure simultaneously engages oppositely disposed angularly disposed slots in the valve plates so that centrifugal force imparted the ball by spinning motion of the crankshaft will move the valve plates by reason of the engagement of the angular slots therein with the ball. Spring means are provided to bias the valve plates to one position and centrifugal force and the ball move the valve plates to a second position responsive to said spinning motion of the crankshaft.

3,603,332
HYDRAULIC RESISTOR

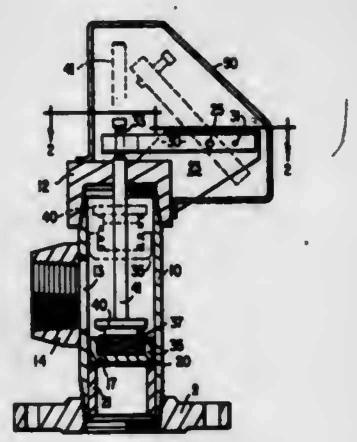
Raymond P. Canale, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Filed Dec. 11, 1968, Ser. No. 783,054
Int. Cl. G05d *13/10*
U.S. Cl. 137—56 **8 Claims**



A primary embodiment of the invention has a housing forming an interior chamber with an inlet and outlet formed therein; a rotatable resistor body situated within the chamber and rotatably driven by a shaft journaled in the housing has conduit means formed therein for completing communication between the interior chamber and outlet; a resiliently biased spoollike valve carried by the resistor body is centrifugally positioned so as to at a predetermined rotational speed of the resistor body terminate communication between the interior chamber and the outlet.

3,603,333
PRESSURE RELIEF VALVE

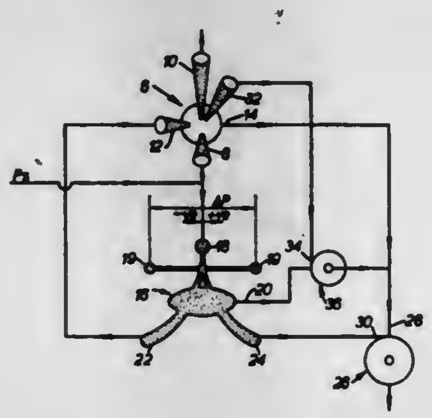
Carl M. Anderson, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 29, 1969, Ser. No. 854,082
Int. Cl. F16k *17/14*
U.S. Cl. 137—70 **4 Claims**



The complete blowdown-type relief valve disclosed is intended especially for use in low-pressure systems. The valve employs a shearpin mechanism for holding the valve closed. A spring is interposed between the valve and the shearpin mechanism and serves, prior to the shearing of the pin, to yieldingly force the valve into sealing engagement with the valve seat. This arrangement prevents fluttering movement or chattering of the valve and variable forces on the shearpin, due to fluctuations in the pressure against the valve.

3,603,334
FLUIDIC SYSTEMS

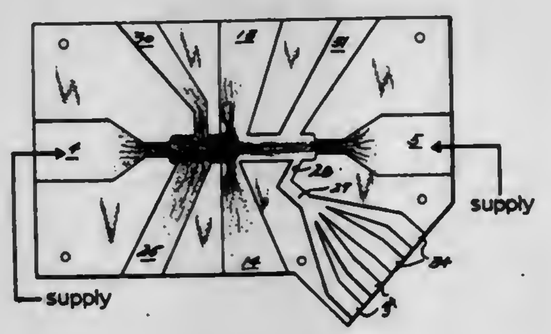
Guy E. Davies, Fareham, and Christopher G. S. Wilson, Cowplain, both of, England, assignors to The Plessey Company, Limited, Ilford, Essex, England
Filed Mar. 25, 1970, Ser. No. 22,454
Claims priority, application Great Britain, Mar. 25, 1969, 15476/69
Int. Cl. F15c *1/12, 1/16*
U.S. Cl. 137—81.5 **7 Claims**



The invention relates to fluidic amplifiers and in particular to a system which improves the efficiency of the amplifier when operating at high pressures. The system includes a proportional amplifier which provides from one of its output legs, fluid to the supply control jet of a planar jet amplifier. The other output leg of the proportional amplifier feeds a vortex amplifier which in turn can vary the vent pressure of the planar jet amplifier. Therefore the pressure at the vent output is varied automatically as a function of the pressure at the control jet input and the supply jet input of the jet collector amplifier in a sense such as to extend the effective range of operation of the amplifier.

3,603,335
FLUIDIC LOGIC DEVICE WITH MONOSTABLE IMPACTING STREAM RESPONSE

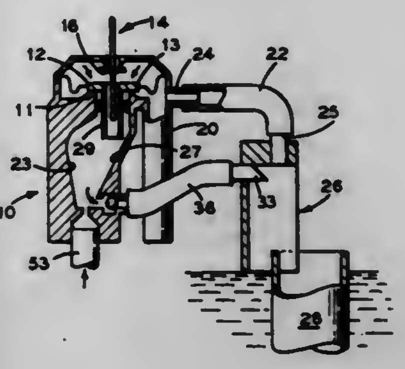
Warren A. Lederman, and Charles N. Petrie, both of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Mar. 31, 1970, Ser. No. 24,306
Int. Cl. F15c *1/20*
U.S. Cl. 137—81.5 **7 Claims**



A pair of opposing airstreams impact within a two-dimensional rectangular chamber and establish oppositely flowing impacting streams into a pair of center bleed passageways. A control signal passageway is connected to the chamber to one side of one bleed passageway and an output passageway is connected to the chamber to the same side of the main streams and to the opposite side of the same bleed passageway. Main stream reference passageways are connected to the opposite sides of the second bleed passageway to the second or opposite of the main streams. The walls of the center bleed passageways adjacent the output passageway are planar lock-on walls to which the impacting streams attach and results in flow and pressure in the corresponding output passageway. The center bleed passageways are similarly formed except that the passageway between the output and control passageways has an aperture of a smaller area than the other bleed passageway. A control stream applied to the control passageway reduces the stream strength to shift the impact flow from the lock-on wall and remove the output.

3,603,336
FLUIDICALLY CONTROLLED REFILL MECHANISM WITH BACKFLOW PREVENTER

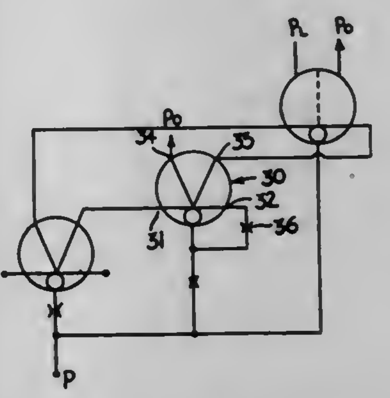
Barry S. Fichter, Dunellen, and Edward H. Bell, Clinton, both of, N.J., assignors to American Standard Inc., New York, N.Y.
Filed May 5, 1970, Ser. No. 34,679
Int. Cl. F15c *3/04*
U.S. Cl. 137—81.5 **9 Claims**



A refill mechanism, for example, a water closet tank refill apparatus is provided with a fluidically controlled valve which maintains itself in the "on" position once the fluid flow starts and switches to the "off" position in response to the attainment of a predetermined liquid level. The flowing fluid in the control chamber of the mechanism, acts as a wall or air barrier. When the fluid flow stops, the barrier is eliminated leaving a substantial distance between the maximum water height and the lowest "siphon" inlet to the valve, thereby preventing accidental backflow of water from the tank into the main waterline.

3,603,337
FLUIDIC SWITCHING CIRCUIT

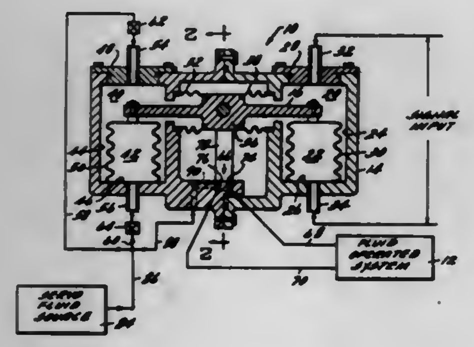
Ronald Alfred Heath, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Sept. 17, 1969, Ser. No. 858,771
Claims priority, application Great Britain, Sept. 30, 1968, 46265
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 **6 Claims**



The invention relates to a fluidic pressure-ratio switching circuit, which gives an output signal only when one of a pair of input signals is higher than another. A fluidic bistable device performs the switching function and a fluidic proportional amplifier provides the output signal, the outputs of the bistable device being used to provide control signals for the proportional amplifier. The output of the bistable device which causes the proportional amplifier to give the circuit output signal is connected to the appropriate control port of the amplifier via a further fluidic device which is monostable. The further device may either be inherently monostable or be a biased bistable device. It will in either case provide the appropriate control signal to the amplifier only when the corresponding output signal from the first bistable is present. The power inputs to all the devices are provided from a common source, those of the first bistable and the further device via flow restrictors.

3,603,338
GAIN-COMPENSATING CONTROL COMPONENT

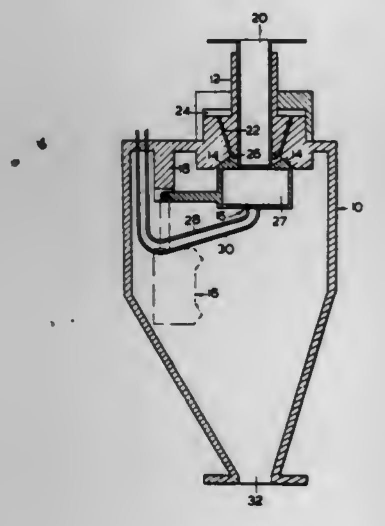
Howard B. Kast, Fairfield, Ohio, and Bruce S. Buckley, Berkeley, Calif., assignors to General Electric Company
Filed Mar. 6, 1970, Ser. No. 17,187
Int. Cl. F15b *9/06;* **G05d** *16/00, 13/00*
U.S. Cl. 137—83 **7 Claims**



A fluid control component is disclosed which has gain inversely proportional to pressure level P_1. The resulting function yields the desired gain compensation for control systems involving pressure and pressure ratio sensing. The gain compensator comprises a force balance servo in which a damping device comprising a pair of opposed compartments are each supplied with pressure P_1 through a tight restrictor.

3,603,339
ONE-WAY VALVE WITH BUOYANCY ADJUSTMENT

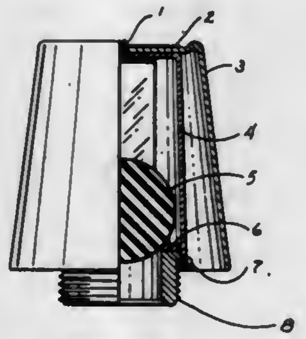
Hugh David Swain, Kalulushi, Zambia, assignor to RST International Metals Limited
Filed Dec. 15, 1969, Ser. No. 885,111
Int. Cl. F16k *31/22, 51/00*
U.S. Cl. 137—240 **6 Claims**



A one-way valve for controlling the flow of abrasive liquids is provided which consists of a pivoted closure member and a valve seat against which the closure member may seal. The closure member is formed by an enclosed chamber and means are provided for alternately filling the enclosed chamber with air to cause the closure member to become buoyant and with water to cause the closure member to sink in the abrasive liquid being handled.

3,603,340
DRAIN RELIEF VALVE

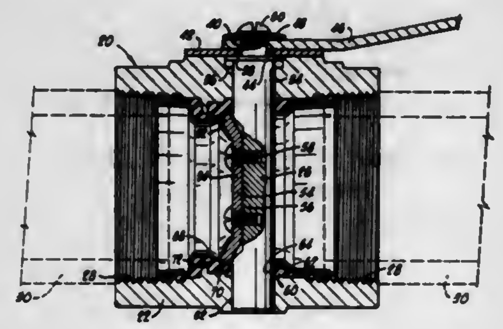
Leroy H. Rousselet, 2745 N. Central Expressway, Dallas, Tex.
Filed June 24, 1969, Ser. No. 836,180
Int. Cl. F16l *5/02;* **F16k** *15/04*
U.S. Cl. 137—357 **6 Claims**



A drain relief valve to prevent water or sewage from backing up into a house or other building and overflowing plumbing fixtures resulting from a clogged drain comprising, a one-way valve attached to the drain exteriorly of the building having a ball therein which is moved off the seat by increased fluid pressure in the drain pipe resulting from a clogged drain to allow excess fluid to flow through the one-way valve exteriorly of the house or building.

3,603,341
LINED DISC VALVE AND MOLD FOR FORMING THE LINING

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Filed Feb. 24, 1970, Ser. No. 13,701
Int. Cl. F16k *1/22, 27/12*
U.S. Cl. 137—375 **12 Claims**

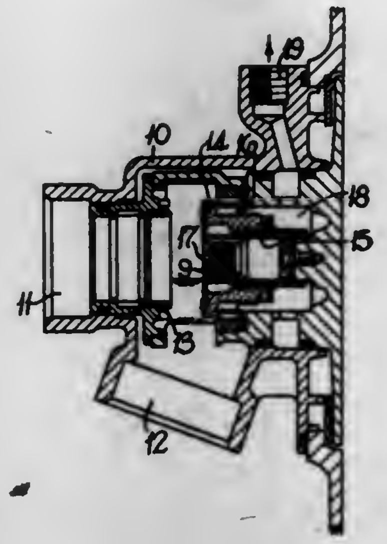


A disc valve having an elastomer lining, preferably molded in place in the valve body, fully protecting the valve body, including threads in the opposite ends of the body, from the fluid being controlled and forming a seat for the valve disc when the disc is in a closed position. Various seat configurations and stem seal configurations are disclosed. A multiple-piece mold for forming the lining is also disclosed.

3,603,342
LEVEL CONTROL ARRANGEMENTS FOR FUEL TANKS

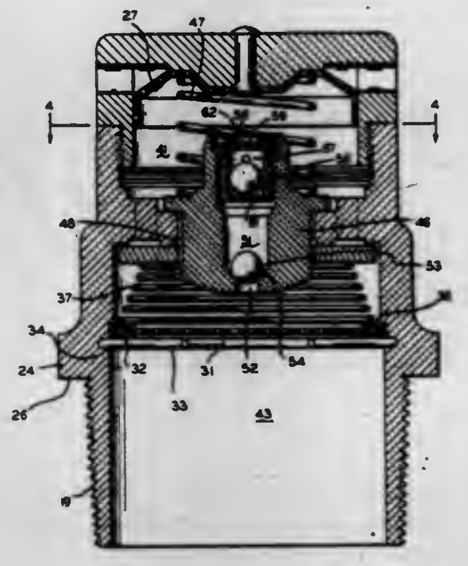
Harry Simister Bottoms, Olton, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 5, 1969, Ser. No. 830,798
Int. Cl. F16k *31/34*
U.S. Cl. 137—414 **2 Claims**

An arrangement for controlling the level of fluid in a tank has a main valve whose closure member is displaced towards its seat by the combined effect of a fluid pressure and a spring. This fluid pressure is vented by means of a pilot valve to open the main valve. The pilot valve is itself operated by a float in the tank. The closure member of the pilot valve is spring loaded towards the pilot valve seat, and the arrangement is such that pressure tending to shut the main valve also tends to displace the pilot valve closure member from its associated seat. The rate of closure of the main valve is thus reduced, with a consequent reduction in the hydraulic hammer effects experienced in known valves.



3,603,343
DRUM VENT VALVE

Nicholas W. Keller, Chicago, Ill., assignor to Justrite Mfg. Co., Chicago, Ill.
Filed Aug. 25, 1969, Ser. No. 852,744
Int. Cl. F16k *17/26*
U.S. Cl. 137—493.6 **8 Claims**

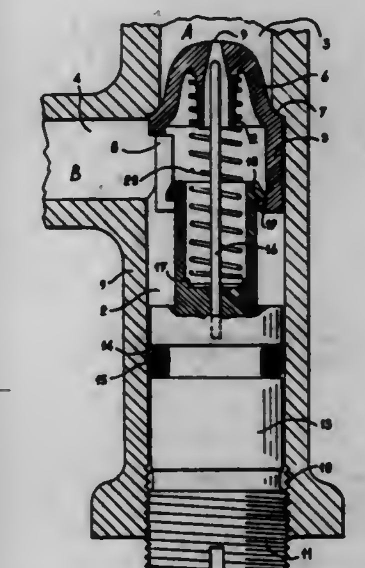


A drum vent valve for both venting and sealing fluid-filled drums. The valve shell consists of only two parts, and the valve itself comprises an internal pressure relief valve portion for preventing explosions and for enabling bleeding of excess pressure caused by minor temperature differentials. At the same time, an oppositely acting external pressure relief valve acts to vent the drum when removing fluids therefrom.

3,603,344
IMPROVEMENTS IN AND RELATING TO AN APPARATUS FOR ADJUSTING A FLUID THROUGHPUT

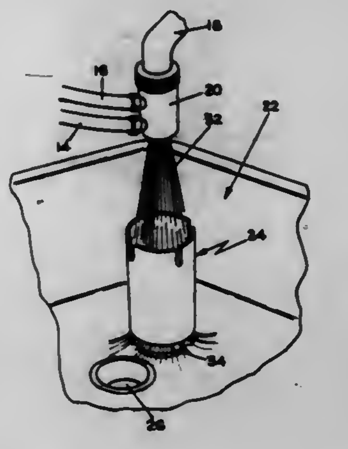
Harald Stampfli, Geneva, Switzerland, assignor to Lucifer S. A., Carouge-Geneva, Switzerland
Filed Oct. 7, 1969, Ser. No. 864,468
Claims priority, application Switzerland, Oct. 31, 1969, 16272/68
Int. Cl. F16k *15/00*
U.S. Cl. 137—513.3 **3 Claims**

The valve provides an unrestricted flow through a chamber from a first opening to a second opening while the reverse flow is first adjusted to a fine extent so as to allow a gradual increase in flow until full throughput is reached. To this end a large primary closing member engages the first opening so as to be urged off its seat under the action of the fluid entering said opening whereas the opposite flow seats said primary closing member. For this opposite flow, a control member causes a secondary closing member constituted by a rod coaxial with the primary control member to recede out of a port formed in the primary member. When said rod has receded sufficiently and allowed a sufficient throughput, it draws along with it the primary closing member which leads to the desired full throughput in said opposite direction.



3,603,345
ANTISPLASH DEVICE

Joseph J. Verwys, 941 Ellsmere, N. E., Grand Rapids, Mich.
Filed Jan. 21, 1969, Ser. No. 792,671
Int. Cl. E03c *1/18*
U.S. Cl. 137—582 **5 Claims**

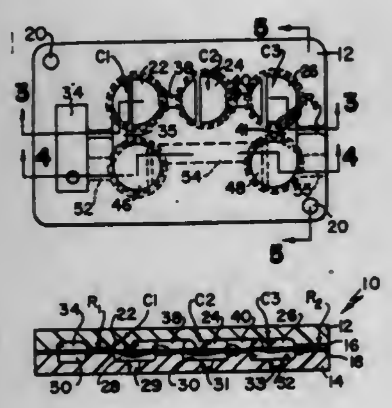


This disclosure relates to an antisplash device for use with a portable dishwasher. The device has a cylindrical member to receive a direct spray from a dishwasher discharge in a sink and a dispersion means to flow water along the sink bottom in an even flowing stream so as to prevent splashing of water during discharge thereof under high velocity from the dishwasher.

3,603,346
PNEUMATIC LOGIC ELEMENT

Alfred Hirt, East Greenwich, R.I., assignor to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.
Filed Sept. 5, 1969, Ser. No. 855,536
Int. Cl. F16k *31/145;* **F16j** *3/00*
U.S. Cl. 137—608 **6 Claims**

The disclosure of the invention is a diaphragm-type pneumatic logic element having two formed plates mounted in facing relation with complementary pairs of chamber recesses and interconnecting channel recesses formed in the facing surfaces of said plates, and a flexible diaphragm bonded to the facing surface of each plate excepting only a narrow area surrounding each chamber recess which is left unbonded. The improvement consists of a diaphragm support interposed between the diaphragms. The diaphragm support is a thin but relatively stiff sheet of material, preferably beryllium copper in the order of 0.002 inches thick, which is formed with apertures which register with and are of slightly larger diameter than the chamber recesses, but of less diameter than the usual unbonded area between the diaphragm and plate surrounding each chamber recess.



3,603,347

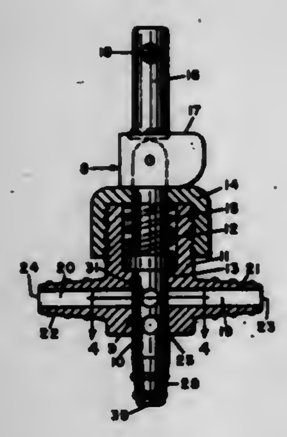
FULL FLOW WITH SHUTOFF AND SELECTIVE DRAINAGE CONTROL VALVE

Joseph J. Paolini, 103 Adams St., Newton, Mass.

Filed Aug. 5, 1969, Ser. No. 847,596

Int. Cl. F16k ***11/00***

U.S. Cl. 137—625.17 **6 Claims**



A multiorifice valve that provides different patterns of fluid flow is disclosed. Selective movement of a valve stem in both axial and rotational senses produces various combinations of alignment between transverse bores in the valve stem and multiple orifices in a valve body.

3,603,348

VALVE IMPROVEMENTS

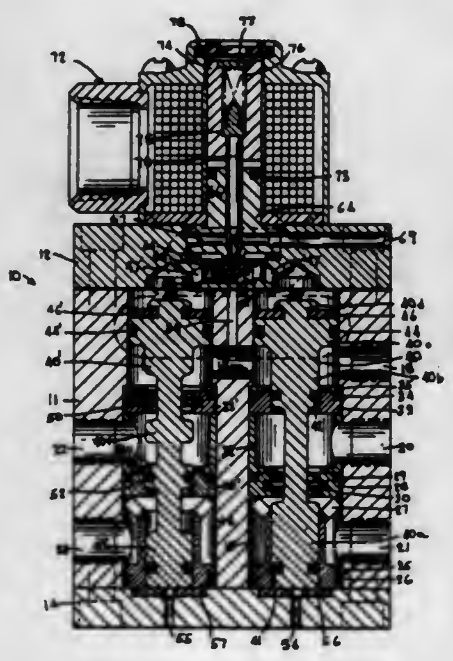
Lee A. Wright, Kettering, Ohio, assignor to Mosier Industries, Inc.

Filed July 31, 1969, Ser. No. 846,479

Int. Cl. F16k ***11/10***

U.S. Cl. 137—625.64 **9 Claims**

The valve housing includes a bore in which a valve spool is reciprocally mounted. A pilot and vent port communicates with such bore at one of its ends; an inlet port communicates with such bore intermediate its ends. The valve spool includes a head which reciprocates between the aforesaid ports. Such head includes an annular groove in which a ring of low-friction material is mounted, this ring forming a partial seal with the aforesaid bore thereby to control the pressure differential or drop across the piston head of the valve spool. The valve includes one or more O-rings which seat against an annular formation including a tapered wall designed to minimize frictional engagement between such wall and the O-ring.



3,603,349

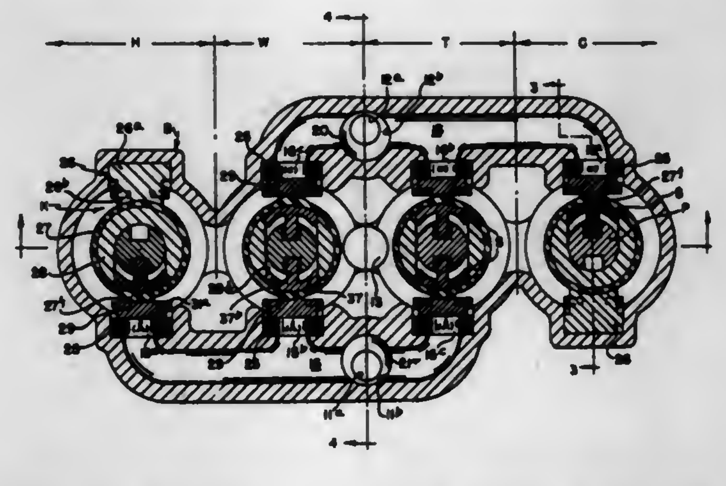
PUSHBUTTON-OPERATED VALVE

Irlin H. Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio

Filed Aug. 14, 1969, Ser. No. 850,017

Int. Cl. F16k ***19/00***

U.S. Cl. 137—636.1 **16 Claims**



For an elongated open-topped hollow body with a discharge outlet and hot and cold water supply connections each branching to respective lateral triplet sets of inlet ports opening into the body as a mixing chamber through hard smooth-faced port rings, in diametric hot and cold pairs at the intermediate locations and single hot and cold ports respectively near the body ends, a molded plastic support element integrally provides a body cover plate and four inwardly extending guiding cylinders for actuating pistons camming slide members in radial slideways of the support element toward respective inlet ports. Through a molded elastomeric diaphragm member enveloping the inwardly projecting portion of the support element and having a peripheral flange clamped between and gwsketing the body and cover, the slide members resiliently engage hard lapped port-controlling ceramic disks, supported in caging rings as valving members cooperatively opposite respective inlet port rings. Above the cover plate is supported an array of four pushbutton rocker arms pin-and-slot engaged with the pistons. Plug valves respectively throttling hot supply to one and cold supply to the other intermediate port pairs preset two mixed flow temperatures, with four water temperatures thus available upon respective button selection in the flow determined by extent of pushbutton depression.

3,603,350

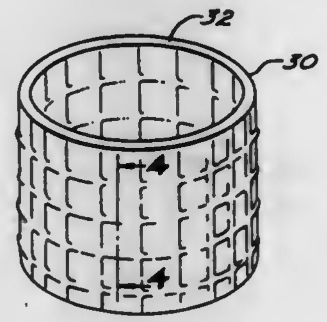
REINFORCED ELASTIC MATERIAL AND METHODS OF MANUFACTURE

Edwin P. Monroe, 255 Barrett Rd., Berea, Ohio

Filed Nov. 21, 1968, Ser. No. 777,857

Int. Cl. F16l ***11/08***

U.S. Cl. 138—126 **3 Claims**



There is disclosed herein an inflatable elastic boot having an open mesh net reinforcement limiting and controlling the expansion of the boot under pressure; and methods of manufacture comprising rotating a drum in baths of uncured elastic material, wrapping the drum with the net between baths, and curing the elastic material.

3,603,351

DOBBY FOR LOOMS

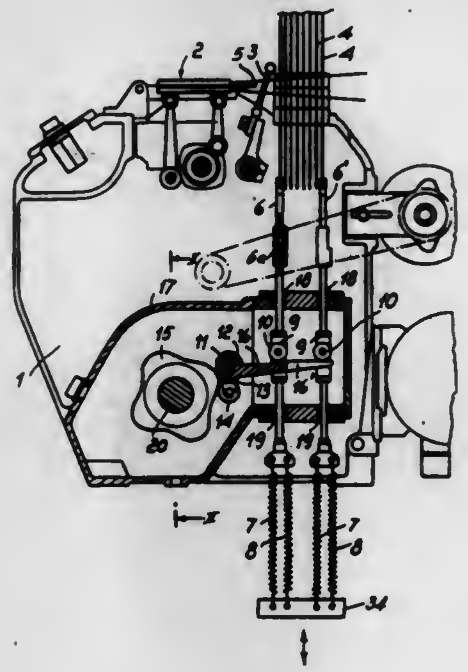
Giovanni Piazzolla, Via Salieri 6, Milan, and Carlo Villa, Via Mazzini, 43, Melzo, both of, Italy

Filed Mar. 5, 1969, Ser. No. 804,454

Claims priority, application Italy, Mar. 6, 1968, 13593 A/68

Int. Cl. D03c ***5/00, 13/00***

U.S. Cl. 139—79 **7 Claims**



A high-speed dobby with heddles which are moved in one direction by means of a springs and in the opposite direction by means of a cam and lever assembly.

3,603,352

CARRIAGE FOR INSERTING AND TIGHTENING WEFT YARNS

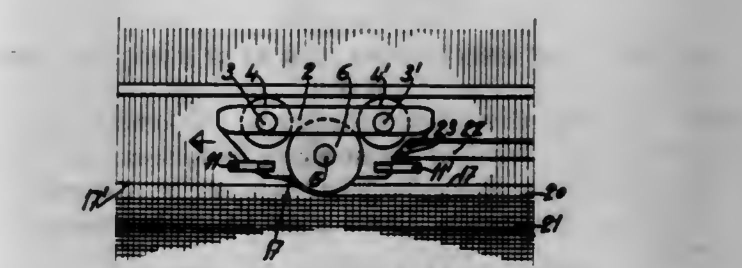
Ramon Balaquer Golobart, Calle Valls y Taberner, 11, Barcelona, Spain

Filed Dec. 8, 1969, Ser. No. 882,858

Int. Cl. D03d ***47/14, 47/16***

U.S. Cl. 139—122 R **6 Claims**

A device for inserting weft yarns into the shed of a loom comprises a flat base having a rotatable grooved wheel for guiding the yarn through the shed while pushing the previously laid yarn into locking position in the warp yarns by means of a pair of rollers mounted on the opposite side of the base which rollingly contact a fixed comb on the loom.



3,603,353

METHOD OF AND APPARATUS FOR WEAVING WITHOUT KNOTS

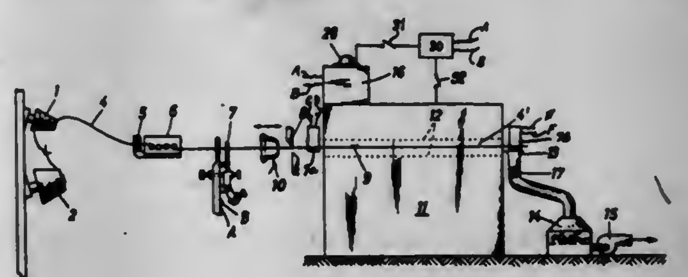
Eduard Glass, Solingen-Landwehr, Germany, assignor to Etag Textilwerke GmbH

Filed Feb. 26, 1969, Ser. No. 802,432

Claims priority, application Switzerland, Feb. 28, 1968, 2878/68

Int. Cl. D03d ***51/34***

U.S. Cl. 139—370 **15 Claims**



A weaving machine employs apparatus for detecting knots or abnormal thicknesses of weft yarn during the weaving process and apparatus for severing faulty lengths of weft yarn after insertion of the faulty yarn into a shed formed by the warp yarn and apparatus for shutting down operation of the weaving machine and removing the faulty length of weft yarn from the shed prior to setting the machine to repeat the weave and restarting the machine.

3,603,354

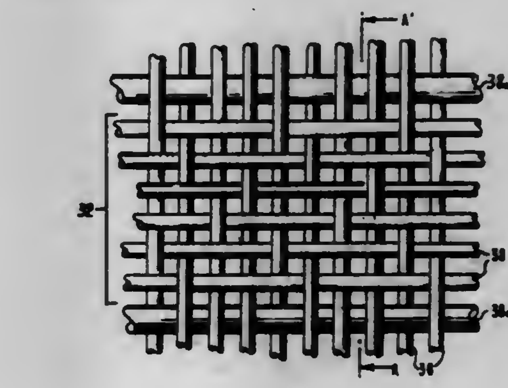
APPARATUS FOR USE ON PAPERMAKING MACHINES

Charles Allen Lee, Knoxville, Tenn., and Joseph Robert Wagner, Leeds, England, assignors to Huyck Corporation, Stamford, Conn.

Filed Apr. 10, 1968, Ser. No. 727,125

Int. Cl. D03d ***1/00***

U.S. Cl. 139—383 **7 Claims**

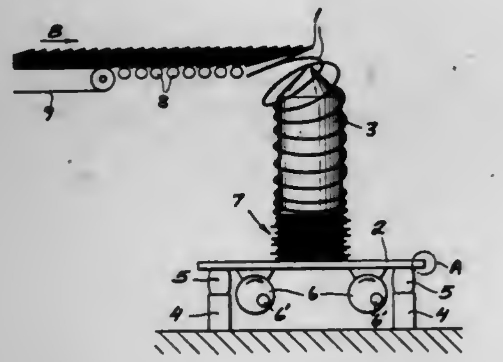


This invention relates to an improved papermakers' fabric for use in the press section of a papermaking machine and more specifically to a papermakers' fabric having a plurality of spaced, parallel, substantially incompressible grooves in at least one surface thereof, which provide void volume for water expressed from a paper web as it passes through the pressure nip of the press rolls in the machine.

3,603,355
METHOD OF AND MEANS FOR STACKING LOOPED WIRE

Hans Geipel, Oberhausen-Sterkrade; Eckehard Forster, Oberhausen; Wilfried Heinemann, Dinslaken, and Nikhil Roychoudhury, Essen-Bergeborbeck, all of, Germany, assignors to Huttenwerk Oberhausen AG., Oberhausen, Germany

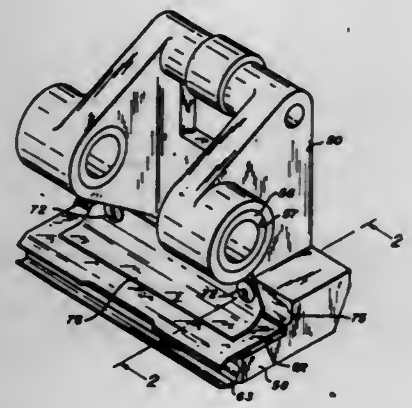
Filed Oct. 13, 1969, Ser. No. 866,796
Claims priority, application Germany, Oct. 17, 1968, P 18 03 697.0
Int. Cl. B21f *3/04*
U.S. Cl. 140—2 8 Claims



Steel wire, arriving in the form of spreadout loops on a conveyor from a treatment zone, is stacked with loose fit around an upstanding mandrel or within an upwardly open receptacle mounted on a vibratile platform to form a compact coil with mutually staggered turns, the oscillations of the platform having a frequency on the order of 10 cycles per second (substantially corresponding to the rate of deposition of wire loops) and of an amplitude with a horizontal component about equal to or greater than the wire thickness.

3,603,356
GRIP TRANSFER ARM

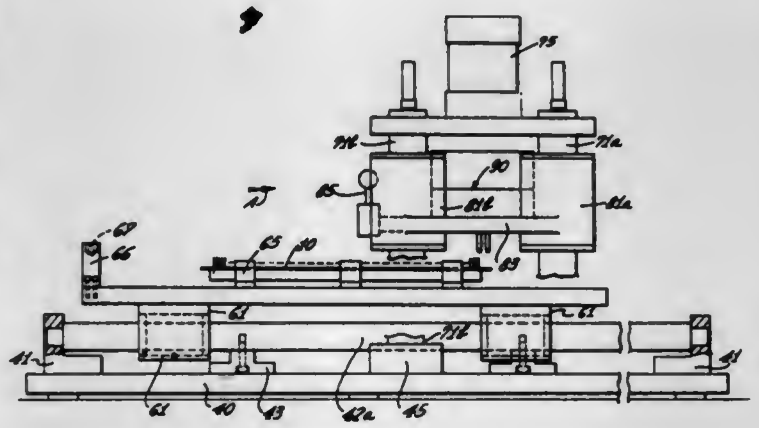
Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes, N.J.
Filed Oct. 22, 1969, Ser. No. 868,416
Int. Cl. B21f *45/00*
U.S. Cl. 140—75 7 Claims



A grip transfer arm as used in apparatus for applying plastic grips to wire bail handles is provided with improved tubing grip-plates. This improved grip transfer arm provides grip-plate retaining means adapted to permit a damaged grip-plate to be replaced without disassembly of the apparatus.

3,603,357
BACKWIRING

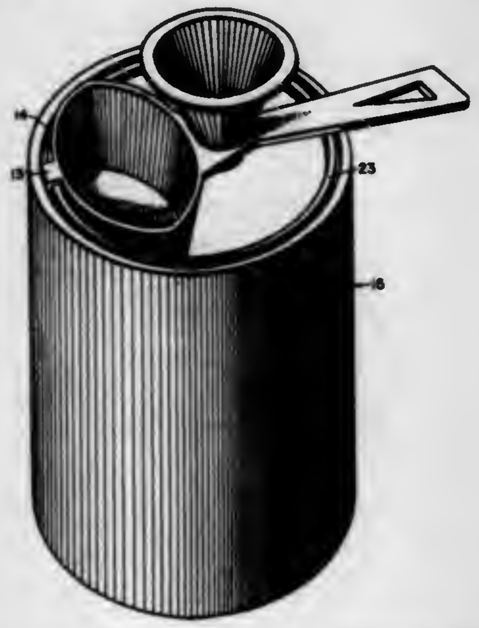
Peter R. Drummond, 4257 Neosho Ave., Culver City, Calif.
Filed July 10, 1968, Ser. No. 743,904
Int. Cl. B21f *1/02*
U.S. Cl. 140—147 20 Claims



A method for straightening connector pins is disclosed as a preparatory measure for the stringing of wires between the pins. The pins are first anchored in a mounting board which is run subsequently through a pin straightening machine. The pins, when bent, are individually deflected to assume the desired position, and they are twisted around the respective axis defining that desired position, beyond the elastic limit for torsional deformation.

3,603,358
EQUIPMENT FOR DISPENSING LIQUIDS FROM A CONTAINER

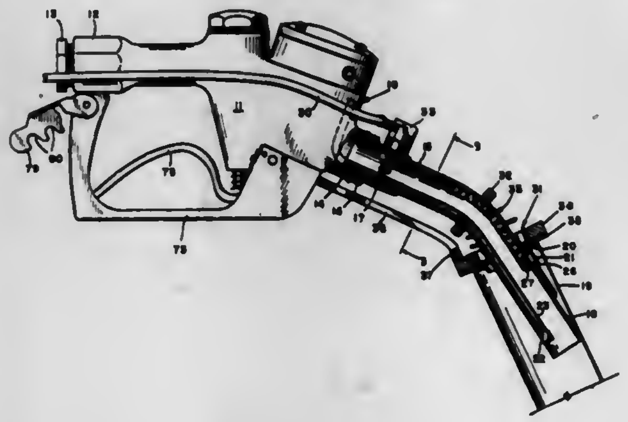
James L. Mallindine, 923 Orange St., Greenville, Mich.
Filed Oct. 22, 1969, Ser. No. 868,409
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—98 3 Claims



A scoop and a funnel for use in conjunction with a container, with the scoop adapted to rest across the container opening while supporting the funnel in position for drainage back into the container.

3,603,359
AUTOMATIC TRIP SAFETY FILL NOZZLE

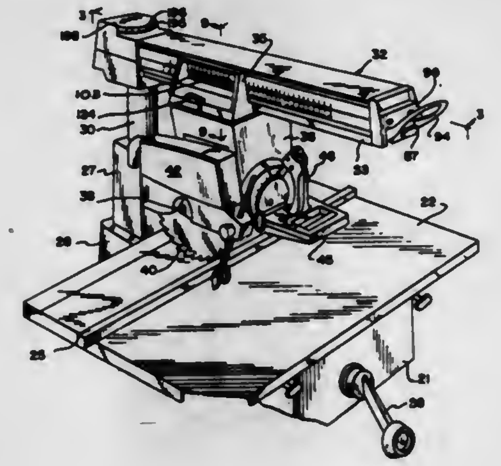
Fred M. Belue, Kernersville, N.C., assignor to Gilbert & Barker Manufacturing Company, New York, N.Y.
Filed Oct. 17, 1968, Ser. No. 768,392
Int. Cl. B65b *1/30*
U.S. Cl. 141—208 7 Claims



A safety automatic trip fluid dispensing nozzle for cooperatively sealing a tank fill pipe to prevent fluid slashage and vapor emission in which a valve mechanism with an operating linkage is preconditioned for valve mechanism operation upon fill pipe sealing and for valve mechanism deactuation upon unseating intentionally or inadvertently or upon increased fill pipe pressure transmitted to the dispensing nozzle beyond a predetermined pressure level.

3,603,360
RADIAL ARM SAW

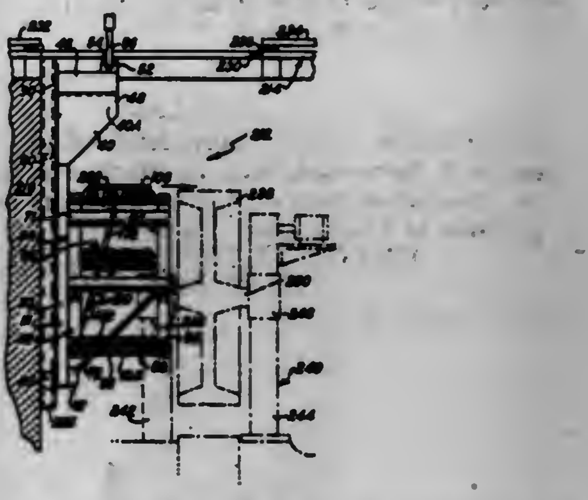
Harold R. Botefuhr, Bensenville, Ill., assignor to G. W. Murphy Industries, Inc.
Division of Ser. No. 594,084, Nov. 14, 1966, Patent No. 3,482,610. Filed Aug. 13, 1969, Ser. No. 849,731
Int. Cl. B27b *5/20*
U.S. Cl. 143—6 A 4 Claims



A radial arm saw is provided with a column having a radial arm for supporting a motor driven saw over a work surface. A housing for the motor-driven saw is provided with a brake and actuator means for adjusting the housing, and accordingly the saw, about a horizontal axis whereby very accurate angled cuts can be provided. Adjustment means are also provided for the housing about the vertical axis for additional saw orientation adjustments.

3,603,361
BANDSAW CATCHER DEVICE

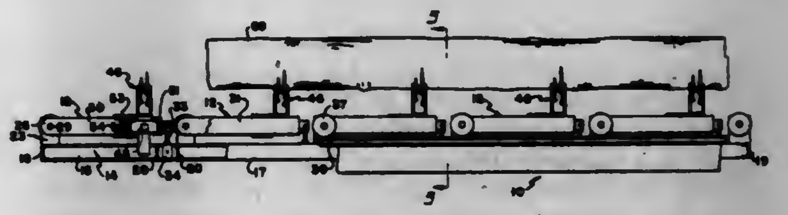
Howard N. Douglas, 550 Vandenberg Circle, Roseville, Calif.
Filed Feb. 2, 1970, Ser. No. 7,775
Int. Cl. B27b *13/00*
U.S. Cl. 143—28 9 Claims



Roller means mounted on a bandsaw catcher and operable to lift a bandsaw positioned thereon above the periphery of the adjacent upper mill wheel to facilitate the transfer of the bandsaw to the mill wheel.

3,603,362
LOG CARRIAGE APPARATUS

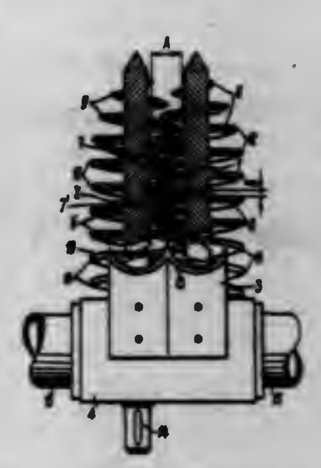
Peter J. Neild, North Vancouver, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Filed May 6, 1968, Ser. No. 726,996
Int. Cl. B27b *29/08*
U.S. Cl. 143—105 12 Claims



Apparatus for gripping and transporting logs past cutting elements for accurate cutting thereof. The apparatus grips and holds each log in a substantially horizontal plane, the gripping taking place along the lower portion of the log so that cutting elements, such as saws and/or chipper heads, can cut the log from above on both sides.

3,603,363
ROOT CROP HAULM CUTTER

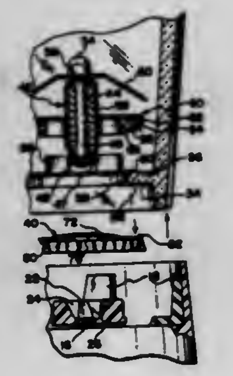
Boris Moiseevich Frankshtein, ulitsa Yablochkova, 31, kv. 44, Moscow, U.S.S.R.
Filed Apr. 14, 1969, Ser. No. 815,667
Int. Cl. A23n *15/04*
U.S. Cl. 146—85 4 Claims



A root crop haulm cutter comprises a body carrying a pair of augers for rotation in opposite directions with the blades of the augers overlapped and interpenetrated with one another with clearance. A knife is fixed on the body and extends into adjacent relation with the augers at the outer periphery of the blades and the knife has a cutting edge confronting the augers and curved to conform to the outer periphery of the blades so as to extend in adjoining circumferential relation therewith.

3,603,364
LIQUIDIZER JAR WITH REMOVABLE CUTTER UNIT

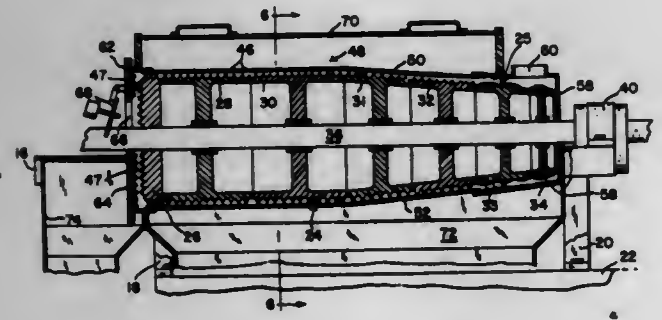
Maurice P. Samuelian, West Hartford, and George E. Sachse, Jr., Northfield, both of, Conn., assignors to Dynamics Corporation of America, New York, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,032
Int. Cl. B02c *18/12*
U.S. Cl. 146—68 A **14 Claims**



Liquidizer with unitary cutter assembly for sealing a large opening in the bottom of a jar. The cutter assembly is readily removable through the top of the jar for cleaning and includes two telescoping members forming a housing, one of which is a stainless-steel-bearing retainer enclosing and supporting the bearing and cutters and one of the clutch members of a resilient disengageable drive member. A disc nut receivable over the driven clutch member in working position releasably engages the hub of the housing to draw the stainless steel bearing retainer downwardly resiliently to seal the large opening with a self-centering gasket molded marginally to the retainer engaging a narrow flange bordering the opening.

3,603,365
DEGERMINATOR

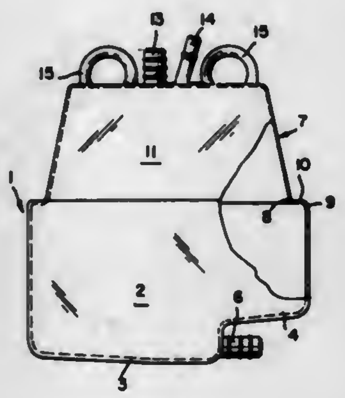
Roscoe M. Bess, Paris, Ill., assignor to Illinois Cereal Mills, Inc., Paris, Ill.
Filed Feb. 6, 1970, Ser. No. 9,330
Int. Cl. B02b *3/06*
U.S. Cl. 146—279 **10 Claims**



A degerminating machine having a screen casing within which a degerminating roll is rotatably mounted. The roll has a plurality of teats on its outer periphery with the teats aligned in helical rows extending along the length of the degerminating portion of the roll. Corn kernels fed into the machine at one end are cracked by the teats and the germs and fines are passed through the screen while the coarse starch material is discharged from the other end thereof.

3,603,366
COLLAPSIBLE DRAINAGE BOTTLE

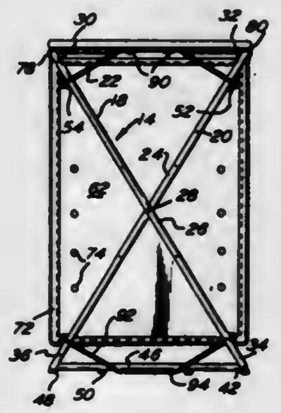
Peter J. Albizati, Myersville; Samson Asin, Westfield; Alfred B. Beers, New Providence; Thomas A. Child, Basking Ridge, and Mario L. Giangrande, Madison, all of, N.J., assignors to C. R. Bard Inc., Murray Hill, N.J.
Filed June 17, 1969, Ser. No. 833,927
Int. Cl. B65d *1/02;* **A61j** *1/00*
U.S. Cl. 150—0.5 **4 Claims**



A bedside drainage bottle so constructed that the upper half, including an inlet connection, can be telescoped or collapsed into the lower half to constitute a tray in which tubing or other articles may be placed or stored, the upper half rising readily to expanded position to accommodate liquid drained into the bottle. An air vent may be provided in the top and a closable outlet may be provided in the bottom.

3,603,367
COLLAPSIBLE HAMPER

David Lehrman, Cheltenham, Pa., assignor to The Ironees Company, Philadelphia, Pa.
Filed July 23, 1969, Ser. No. 844,013
Int. Cl. B65d *33/00*
U.S. Cl. 150—49 **11 Claims**

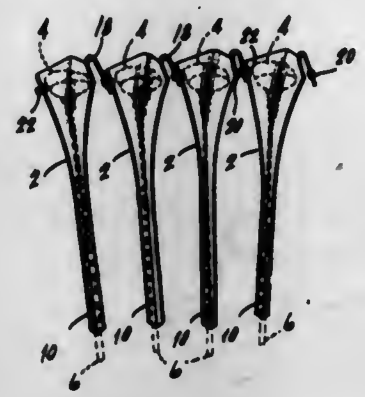


A collapsible hamper is disclosed wherein a collapsible and foldable frame supports a receptacle of flexible sheet material. The frame, in one presently preferred form, includes a pair of central leg portions pivotably interconnected at medial points thereon, and removable upper and lower leg portions. The upper leg portions engage the receptacle and support a cover for the receptacle. The lower leg portions are adapted to engage a support surface to support the entire hamper in an upright position.

3,603,368
GOLF CLUB PROTECTOR

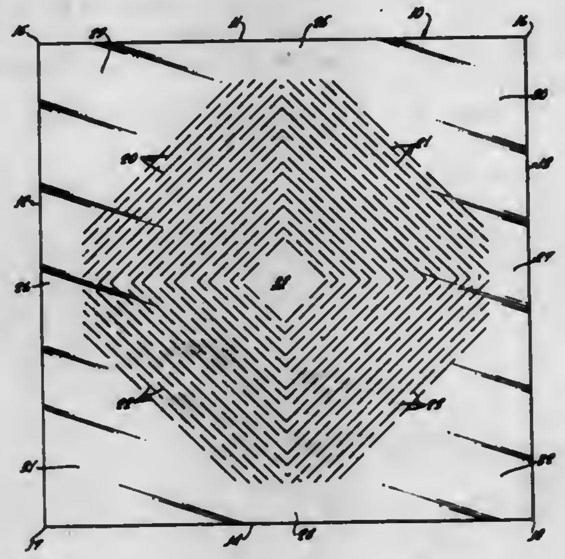
William C. Brenner, 42 Westcott Ave., Trenton, N.J.
Filed Nov. 4, 1969, Ser. No. 873,882
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 G **5 Claims**

Individual covers for golf clubs are simply, securely and effectively connected to a golf bag and have enlarged open ended portions for receiving the head of the clubs and tubular extensions through which the shafts of the clubs are inserted. The enlarged portions of the covers are provided with closure means or flaps which extend over the heads of the clubs and are held closed by fastening means when the clubs are not in use whereas when opened the fastening means on the closures permit the individual covers to be connected together into a unitary assembly and serve to hold the covers open to permit ready removal and insertion of the clubs.



3,603,369
PRODUCE WRAPPER

William A. Scholz, Ontario, Canada, assignor to Standun, Inc., Compton, Calif.
Filed July 2, 1969, Ser. No. 844,725
Int. Cl. B65d *65/10*
U.S. Cl. 150—52 R **6 Claims**

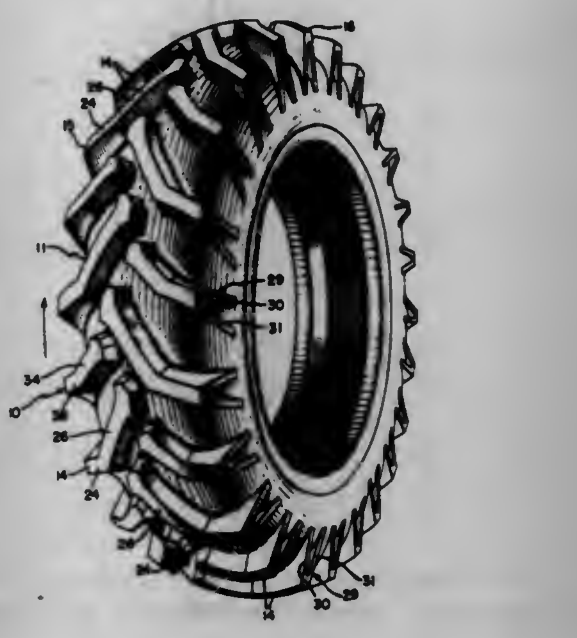


This invention provides a produce-wrapping device formed by a square sheet of pliable, transparent plastic having sets of rows of slits inwardly of the marginal edges, two of the sets of slits being in opposite quarters of the sheet and parallel to one diagonal, while the other two sets of slits are in the other opposite quarters of the sheet and parallel to the other diagonal, whereby, when the corners of the sheet are brought around a quantity of produce and tied, the produce is retained and the slits in the sheet are caused to open up and provide ventilation.

3,603,370
PNEUMATIC TIRE

Edgar W. Hylbert, Akron, Ohio; Bernd F. O. Tomaszewski, Kuenzell, Germany; Jacob Kleywegt, Arlon, Belgium, and Hans Dietl, Colmar Berg, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 28, 1969, Ser. No. 880,555
Int. Cl. B60c *11/08*
U.S. Cl. 152—209 **7 Claims**

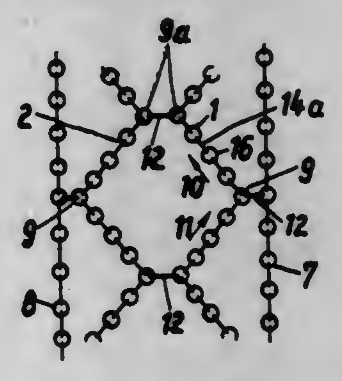
A rear tractor tire having a tread with alternating long and short lugs on each side, each long lug having an inner portion extending at a low angle with respect to the midcircumferential centerline of the tread and an outer portion extending at a high angle with respect to said circumferential centerline, and each short lug being disposed at a high angle with respect to said midcircumferential centerline.



The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,603,371
ANTISKID AND TIRE PROTECTIVE CHAINS

Anton Muller, Unterkochen, Wurttemberg, Germany, assignor to Eisen-und Drahtwerk Erlau AG, Aalen, Wurttemberg, Germany
Continuation-in-part of application Ser. No. 535,306, Mar. 11, 1966, now abandoned. This application Dec. 3, 1968, Ser. No. 784,531
Int. Cl. B60c *27/07;* **F16g** *13/00*
U.S. Cl. 152—239 **14 Claims**

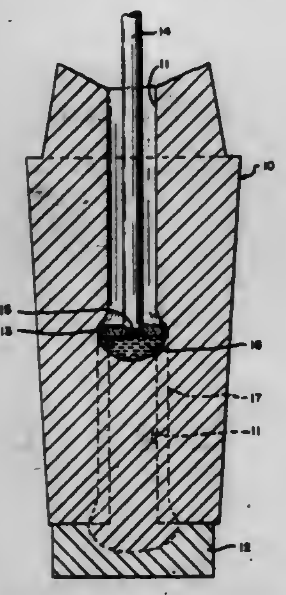


Skid chain for vehicle tires in which strands of chain are arranged in zigzag paths in that portion of the skid chain which extends over the thread of the tire with the deviating points of the chain strands connected to each other and to lateral members at the sides of the skid chain. Double hooks are provided for fastening and detaching with respect to chain links interconnected thereby. These hooks are open for quick assembly and disassembly yet sufficiently restricted for resilient interfit.

3,603,372
ELECTRICALLY OPERATED VENETIAN BLIND

Werner Dietzsch, Oldenburg, Germany, assignor to Firma Justin Huppe, Oldenburg, Germany
Filed Feb. 28, 1969, Ser. No. 803,210
Claims priority, application Germany, Sept. 18, 1968, H 63830
Int. Cl. E06b *9/30*
U.S. Cl. 160—168 **8 Claims**

An electrically operated slatted or Venetian blind including a headrail in which the motor and other electric components are mounted. The electric components are interconnected by plug and socket connections for easy replacement.



Two limit switches in the headrail respectively limit the uppermost and the lowermost positions of the blind.

3,603,373
PROTECTIVE COVER FOR GUIDE PATHS OF MACHINE TOOLS

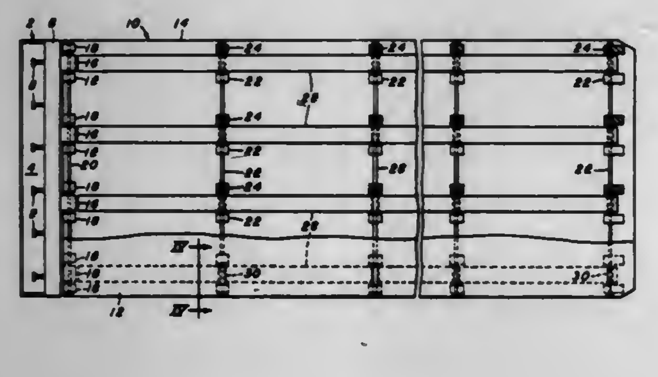
Kurt Loos, Dreistiefental, and Friedrich Haschek, Huttental-Weidenau, both of, Germany, assignors to Kabelschlepp GmbH, Siegen, Germany

Filed Mar. 4, 1968, Ser. No. 710,386

Claims priority, application Germany, Mar. 4, 1967, K 61 592

Int. Cl. E05d *15/06*

U.S. Cl. 160—202 4 Claims



A protective cover for guide paths of machine tools, which comprises a plurality of overlapping and telescopically movable cover sheets, and rolling and slide means, respectively. Each of the cover sheets are supported at a front end wall by means of the rolling and slide means, respectively, on the corresponding of the guide paths and at the rear end on the next smaller of the cover sheets, and a speed-reducing braking device is disposed between the cover sheets, and becomes effective during movement from each other and into each other shortly prior to the prevailing end position.

3,603,374
METHODS OF PRODUCING LARGE STEEL INGOTS

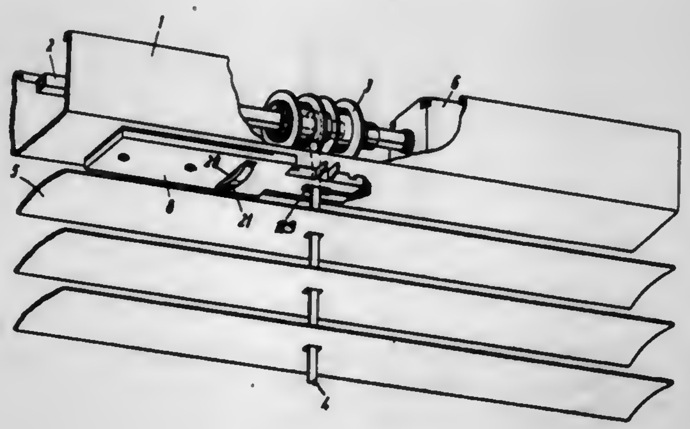
Lloyd R. Cooper, Pittsburgh, Pa., assignor to Heppenstall Company

Filed Feb. 10, 1969, Ser. No. 797,944

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 3 Claims

A method of producing large steel ingots is provided combining the steps of pouring an ingot in the conventional manner, solidifying the same, removing an axial core lengthwise of said ingot to form a central cavity and filling



the cavity with metal from an electrode by electroslag remelting.

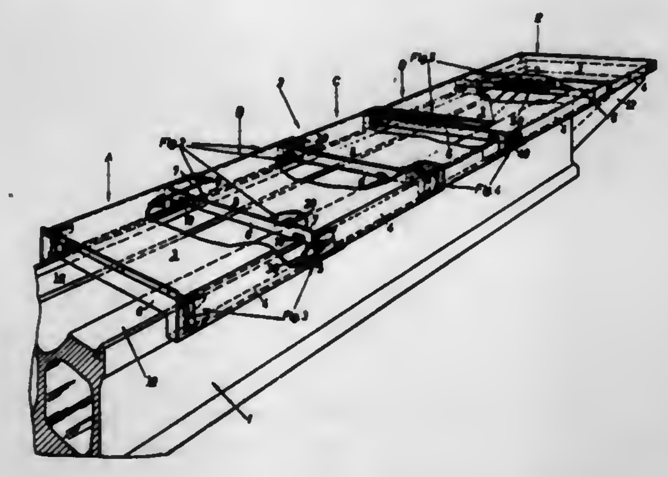
3,603,375
FLEXIBLE STARTER BAR FOR CONTINUOUS CASTINGS

William L. Lauterbach, South Holland, Ill., assignor to United States Steel Corporation

Filed Dec. 31, 1968, Ser. No. 788,306

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 3 Claims



The flexible starter bar of the invention comprises a rigid head portion hingedly connected with an elongated flexible body portion. The body portion is comprised of continuous top and bottom flat thin steel plates connected together by transversely extending spaced tie rods which pass through spaced lugs welded to the inner faces of the flat steel plates. The flat steel plates are spaced apart by pairs of superposed narrow bars longitudinally aligned between pairs of the lugs. Adjoining faces of the spacer bars have mating machined slots aligned with slotted holes in the lugs to accommodate the tie rods.

3,603,376
APPARATUS FOR BENDING CONTINUOUS CAST SLABS

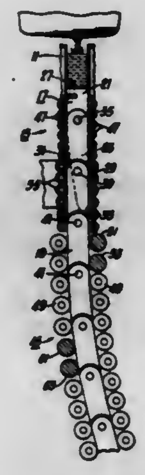
Kurt Reinfeld, and Emmanuel V. Gouye, both of Pittsburgh, Pa., assignors to Koppers Company, Inc.

Filed Apr. 4, 1969, Ser. No. 813,464

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 8 Claims

A starting bar with a unique head portion is connected to a continuous cast slab, and the bar-head portion coacts with a



unique roller apron to effect bending of the continuous cast slab from the vertical toward the horizontal position.

3,603,377
CURVILINEAR MOLD AND SECONDARY COOLING SYSTEM FOR CONTINUOUSLY CAST METAL

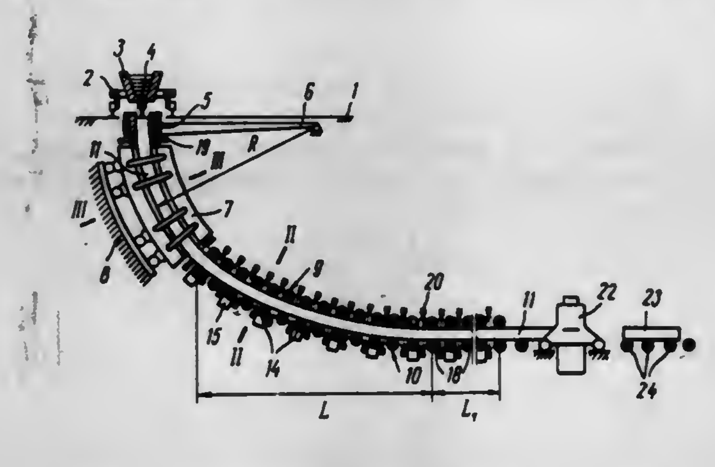
Georgy Lukich Khimich, ulitsa Lenina, 53, kv. 92, Sverdlovsk; Vitaly Maximovich Niskovskikh, ulitsa Festivalnays, 21, kv. 60, Sverdlovsk; Alexei Ivanovich Varaxin, ulitsa Dybenko, 22, korpus 5, kv. 375, Moscow; Evgeny Jukhimovich Gelfenbein, ulitsa 40 Let Oktyabrya, 28, kv. 51, Sverdlovsk, and Vladimir Alexandrovich Bykov, ulitsa Khmeleva, 12, kv. 24, Sverdlovsk, all of, U.S.S.R.

Filed Aug. 9, 1966, Ser. No. 571,305

Claims priority, application U.S.S.R., Aug. 9, 1965, 1021693

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 8 Claims



A plant for continuously casting metal including an oscillating curvilinear mold. Adjacent the curvilinear mold and defining a further curvilinear path exists a system for secondary cooling. The secondary cooling system comprises a series of curvilinear walking bars for maintaining the desired shape of the billet and for pulling the ingot from the mold. Adjacent the bars exist two rows of rollers above and below the path of the billet, the rollers defining the curvilinear path of the billet such that the radius of curvature becomes increasingly continuously greater to an infinite value. There then may be a rectilinear path of rollers, followed by a cutting device for cutting the continuous billet into usable lengths.

3,603,378
CONTINUOUS CASTING WITH CIRCULAR TROUGH MOLD

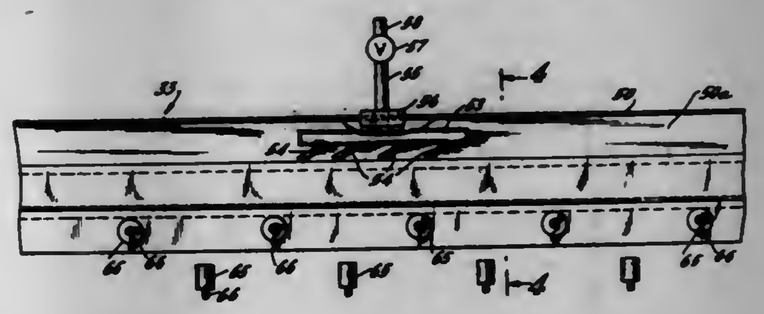
Douglas C. Yearley, Westfield, N.J., assignor to Phelps Dodge Copper Products Corporation, New York, N.Y.

Filed June 21, 1967, Ser. No. 647,680

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 6 Claims

A generally horizontal annular trough forming a circular mold cavity is rotated about a generally vertical axis to transfer molten metal from a feeding station through a solidifying zone and thence through a discharge station where the solidified metal is continuously removed from the mold. The solidifying zone is formed by a cooling station including means for continuously cooling the trough to solidify molten metal in the mold, and a hood overlying at least part of the cooling station forms a substantially enclosed space above the open top of the mold. This space contains nozzle means



for concentrating on the upper surface of the metal a stream of nonoxidizing gas which, prior to complete solidification of the metal, forms a solidified skin across its upper surface to prevent escape of gas from within the metal. Thus, when the metal is of the type that evolves gas to offset shrinkage during solidification, the upper surface of the solidified casting is flat rather than concave.

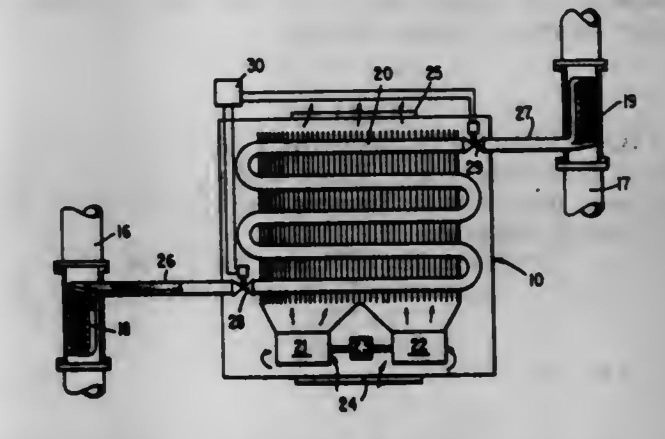
3,603,379
HEATING AND COOLING SYSTEM

Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 8, 1969, Ser. No. 814,293

Int. Cl. F25b *13/00;* **F28d** *15/00*

U.S. Cl. 165—2 7 Claims



A heating and cooling system for controlling the temperature of air circulating within a plurality of separate areas, located within a common enclosure, to provide comfort conditioning to occupants of the areas comprising a plurality of independently operable air-conditioning apparatus including heat-transfer means located within each of the areas, means to circulate air to be supplied to the area over said heat-transfer means in heat-transfer relation with the refrigerant of said apparatus and control means operable to vary the temperature of the air circulating over the heat-transfer means to obtain desired thermal effects. A hot water circulating loop and a cold water circulating loop are provided, the refrigerant passing in heat-transfer relation with the hot water when heating the air and passing in heat transfer relation with the cold water when cooling the air.

3,603,380
GAS DISTRIBUTION SYSTEM FOR EFFECTING HEAT EXCHANGE

Sabastien S. Corhanidis, 28 Carolou St., Athens,107, Greece

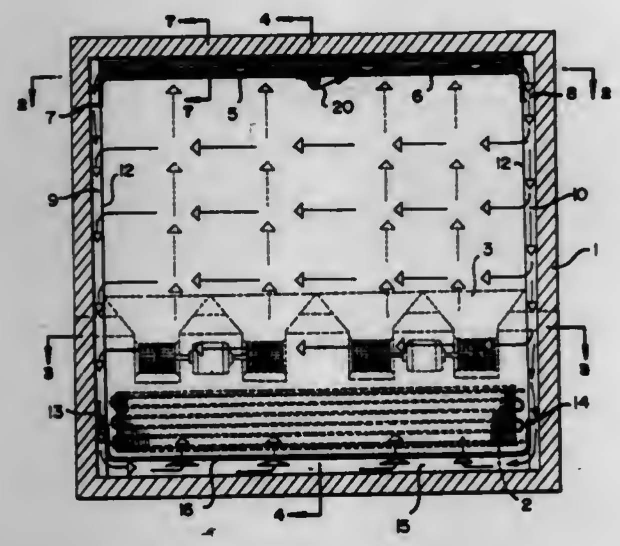
Filed June 9, 1969, Ser. No. 831,401

Claims priority, application Greece, June 14, 1968, May 29, 1969, 34376;8449

Int. Cl. F25b *13/00*

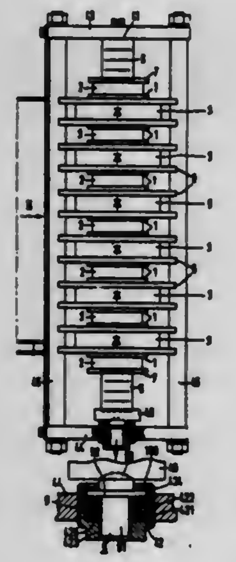
U.S. Cl. 165—2 40 Claims

This disclosure provides a distribution system including a method and apparatus for effecting heat exchange between a gaseous medium and a charge of material. The charge of material is placed in a heat-exchange zone at a location which provides a circulation space around the entire charge. The supply of heat-exchange gas medium is introduced into the gas circulation space at a location adjacent the charge. The gas medium is cycled in a continuous flow throughout the charge of material. A substantially uniform exchange effect is obtained by providing suitable supply and exhaust opening structures to effect equalization of the quantity of gas passing through and affected by the pressure drop in circulation spaces, turbulences, conversion of velocity pressure into static pressure, etc. The system of this disclosure includes an apparatus to effect the method of heat exchange. A specific embodiment of the apparatus includes adjustable structures which control the size of the openings for supplying and exhausting the gas medium.



3,603,381
LIQUID-COOLED ASSEMBLY OF DISC CELLS

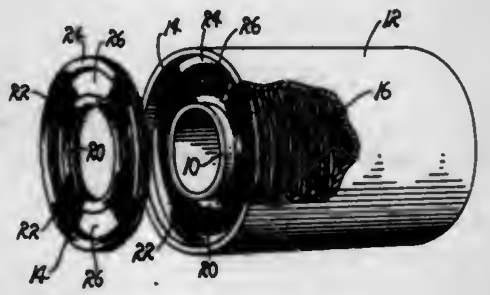
Friedrich Scherbaum, and Klaus Ludwig, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 18, 1970, Ser. No. 20,699
Claims priority, application Germany, Mar. 22, 1969, P 19 14 790.1
Int. Cl. F28f *7/00*
U.S. Cl. 165—80 **10 Claims**



Assembly includes a stack of members having at least one disc cell with a coolant member coordinated therewith and at least one insulating member, and a force-storing member clamping the members of the stack between two opposing bearings of a framework, the disc cell including a cooling pan having a hollow inner space, a channel member having means for supplying thereto and discharging therefrom a liquid coolant, the channel member being located adjacent the cooling pan, so as to close off the inner space of the cooling pan, and sealing means disposed intermediate the cooling pan and the channel member, the force-storing device having such a biasing force as to form a liquidtight force fit between the cooling pan and the channel member.

3,603,382
RADIAL HEAT FLUX TRANSFORMER

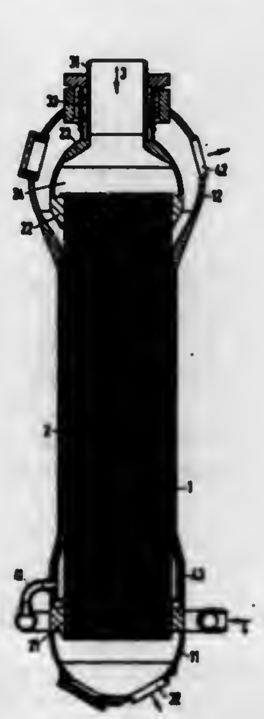
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert J. Buzzard, Palo Alto, and Algerd Basiulis, Redondo Beach, both of, Calif.
Filed Nov. 3, 1969, Ser. No. 873,260
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **2 Claims**



A radial heat flux transformer adapted to be employed in the transfer of thermal energy, particularly suited for use in delivering energy radially and characterized by two concentric cylinders interconnected by a network of groups of radially extended capillary channels having vapor spaces defined therebetween, a particular feature of the transformer being the capability of radially delivering vapor as well as its condensate in opposite radial directions between the concentric cylinders, whereby the device may be employed interchangeably as a flux concentrator or a flux radiator.

3,603,383
STEAM GENERATOR, PARTICULARLY FOR PRESSURIZED WATER NUCLEAR REACTORS

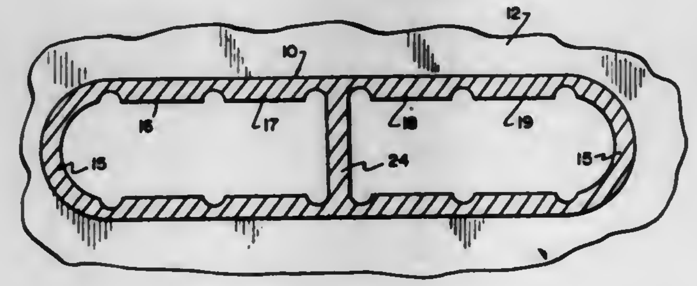
Horst Michael, and Hans-Peter Schabert, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 25, 1968, Ser. No. 715,617
Claims priority, application Germany, Mar. 25, 1967, S109023
Int. Cl. F28f *9/02*
U.S. Cl. 165—158 **6 Claims**



Steam generator particularly for pressurized water reactors includes an elongated pressure vessel, a bundle of heat exchanger tubes located in the vessel and extending substantially parallel to one another in the longitudinal direction of the vessel, and a pair of spaced-apart tube support plates mounted in the vessel and formed with recesses wherein respective ends of the tubes extend. The tubes are spaced from one another a distance that is only a fraction of the diameter thereof, and have a reduced diameter over a length thereof of several decimeters adjacent the tube support plates.

3,603,384
EXPANDABLE TUBE, AND HEAT EXCHANGER

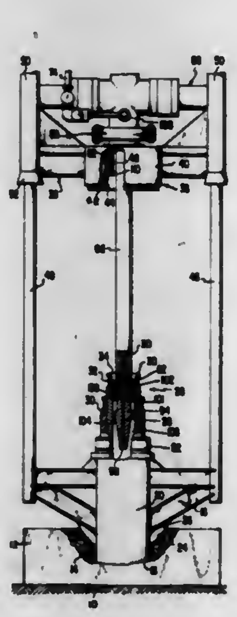
Homer D. Huggins, and Jack C. Dudley, both of Racine, Wis., assignors to Modine Manufacturing Company
Filed Apr. 8, 1969, Ser. No. 814,401
Int. Cl. F28d *7/00*
U.S. Cl. 165—181 **4 Claims**



An expandable tube comprising a bendable body that includes a plurality of adjacent longitudinal passages each having adjacent longitudinal sections positioned inwardly of the tube interior, each section preferably having adjacent edges positioned inwardly with respect to the tube and hinge means at adjacent edges for expansion of the tube body at the hinge means under internal pressure without substantial lateral distortion of the individual sections between the hinge means. A heat exchanger comprising a heat conducting fin having an opening therein of noncircular configuration and a tube of similar noncircular cross section expanded to fit snugly into the opening in which the tube has the structure set out above.

3,603,385
METHOD AND APPARATUS FOR REMOVABLY COUPLING A BLOWOUT PREVENTER STACK TO AN UNDERWATER WELLHEAD CASING

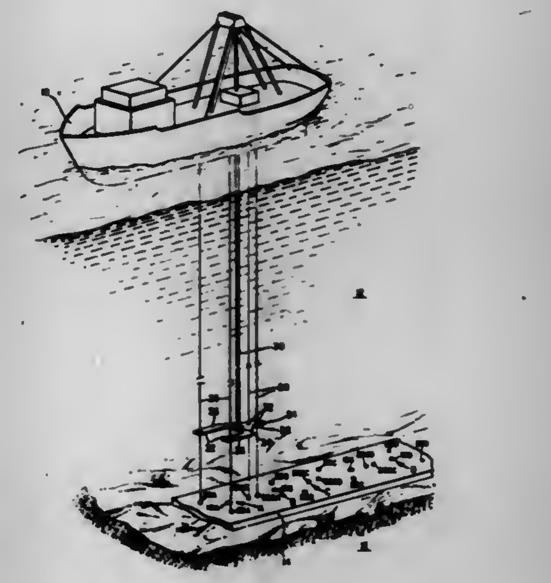
Durward B. Jones, Houston, Tex., assignor to Offshore Systems Inc., Houston, Tex.
Filed Feb. 4, 1969, Ser. No. 796,357
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 **16 Claims**



Use of an elongated, tapered and apertured guide tool extending beneath a blowout preventer stack for sealable insertion into an existing underwater wellhead casing to control final descent and placement of the blowout preventer stack collet connector in coupling position relative to the wellhead casing.

3,603,386
SUBSEA GUIDELINE ANCHORING METHOD AND APPARATUS

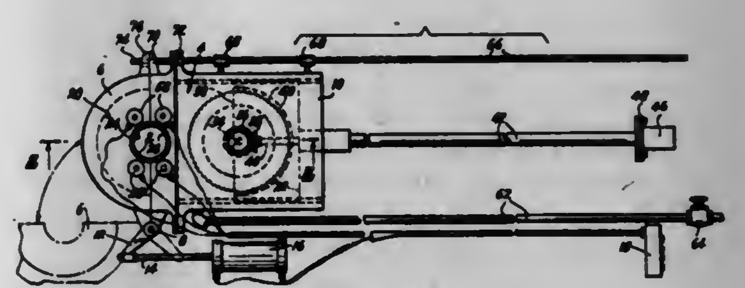
William A. Talley, Jr., Dallas, Tex., assignor to Mobil Oil Corporation
Filed Sept. 17, 1969, Ser. No. 858,661
Int. Cl. E21b *33/035, 43/01*
U.S. Cl. 166—.5 **13 Claims**



A method and an apparatus for locating and anchoring bottom-to-surface guidelines of a subsea guidance and alignment system to be utilized in conjunction with servicing or drilling subaqueous wells by lowering a pair of self-anchoring ends of unanchored guidelines on a spacer frame which is guided to the subaqueous bottom on a pair of previously anchored guidelines. The free guidelines are anchored upon contact of the self-anchoring ends with predetermined anchorage locations on the subaqueous bottom. The operation may be repeated to anchor other guidelines at other anchorage locations on the subaqueous bottom by utilizing the initially free and subsequently anchored guidelines as guides for lowering the space frame carrying the self-anchoring ends of other free guidelines.

3,603,387
BLOWOUT GUILLOTINE

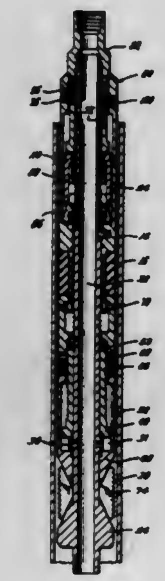
William N. Schoeffler, Carencro, La. 70520
Filed May 19, 1970, Ser. No. 38,654
Int. Cl. E21b *29/00*
U.S. Cl. 166—55 **9 Claims**



A hinged housing can be opened and then closed around a well casing with a tight seal. A rotary cutter disc is slidably mounted in the housing and operates to cut through the well casing within the housing and to polish the upper end of that part of the severed casing extending into the well. Hydraulic means are then actuated to press a face of the cutter disc against the polished end of the casing to positively close and seal the well.

3,603,388
RETRIEVABLE WELL PACKER

James H. Current; Harry C. Ehlert, and Marion D. Kilgore, all of Houston, Tex., assignors to Camco, Inc., Houston, Tex.
Filed Feb. 4, 1970, Ser. No. 8,468
Int. Cl. E21b *23/06, 23/04, 33/128*
U.S. Cl. 166—120 **23 Claims**

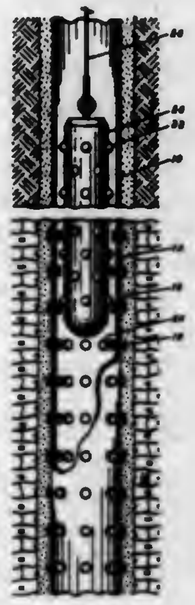


A longitudinally releasably retrievable well packer with a packing seal member surrounding a mandrel having a body slidably engaging the mandrel and a housing slidable relative to the body and the mandrel with releasable engaging means between the housing and he mandrel, and a longitudinally actuated releasably locking means connected to the housing for unlocking and locking the releasable engaging means and coacting means between the body and the locking means for actuating the locking means thereby providing a packer release assembly unaffected by packer seal tightness or upward forces on the tubing below the packer which allows tandem packers to be released one at a time. A shearpin movable in an annular and a longitudinal slot between the body and the housing for releasing the packer by an upward force or by a combination of rotation and upward force. A key and an elongated longitudinal keyway between the body and the housing allowing longitudinal movement therebetween and a key and an elongated longitudinal keyway between the housing and the mandrel allowing longitudinal movement therebetween for transmitting rotational and longitudinal movement to the mandrel after releasing the packer. An integral circulation valve which can be opened and closed by a tubing manipulation after the packer is set without releasing the packer.

3,603,389
WELL LINER

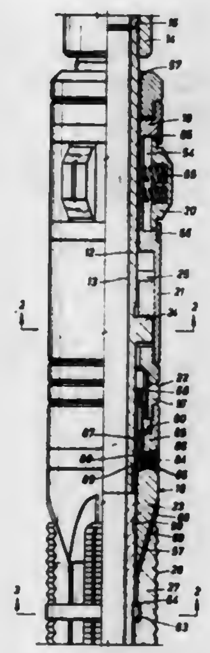
Albert E. Campbell, Taft, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed May 28, 1970, Ser. No. 41,387
Int. Cl. E21b *37/00, 43/08*
U.S. Cl. 166—171 **4 Claims**

A well liner for use in lining a well penetrating a producing formation and formed from an elongated tubular member having a plurality of spaced-apart holes formed therein with a pin having a diameter less than the diameter of the hole extending through each of the holes with a head section on each end of the pin larger than the hole to maintain the pins loosely fitting in the holes. A tool is provided for use in moving the pins to clean the liner.



3,603,390
FLUID PRESSURE-RESPONSIVE WELL PACKER

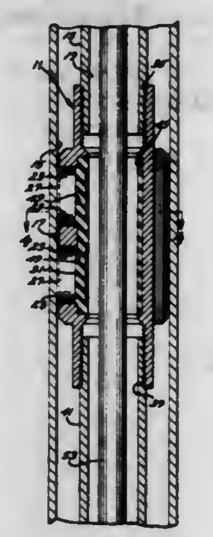
Howard L. McGill, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Division of Ser. No. 722,912, Apr. 22, 1968, Patent No. 3,516,493. Filed Sept. 15, 1969, Ser. No. 870,919
Int. Cl. E21b *33/12, 33/128*
U.S. Cl. 166—196 **4 Claims**



A retrievable well packer apparatus including a body member having upper and lower expander means slidably mounted thereon for movement toward and away from each other, slip means between said expander members and slidably coupled to said body member and one of said expander means, and packing means for sealing off a well bore in response to movement of said body member relative to slip and expander means in one longitudinal direction, said packing means including elastomeric packing elements and pressure responsive parts subject to fluid pressure acting in the opposite longitudinal direction for exerting compressive force on said packing elements.

3,603,391
TUBING ANCHOR

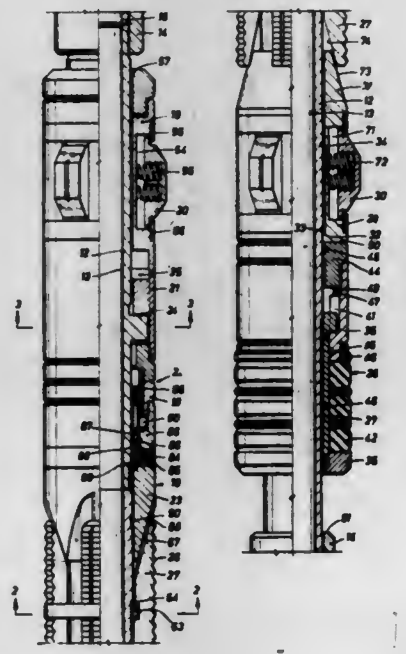
Jack Yann, 1539 Harbor, Long Beach, Calif.
Filed Apr. 3, 1970, Ser. No. 25,395
Int. Cl. E21b *23/00*
U.S. Cl. 166—212 **3 Claims**



A tubing anchor for anchoring the lower extremity of a string of oil well tubing to a well casing. The anchor includes a hollow cage formed with a longitudinal passage having transversely opening windows formed therein. Sliders are disposed in the windows are slidable from a retracted position in said windows to an extended position projecting from said windows for engagement with the surrounding casing. A flexible boot lines the interior wall of the passage and is adhered to the interior wall of the passage and also to the back surfaces of the sliders. The boot has sufficient stiffness to normally maintain the sliders retracted within the windows and has sufficient flexibility to enable the pressure buildup within such boot as a consequence of a predetermined head of liquid in the tubing to flex such boot outwardly in the area of such windows to move the sliders to their extended position for engagement with the casing surrounding the tubing to maintain the tubing anchored firmly with respect thereto.

3,603,392
WELL PACKER ANCHOR

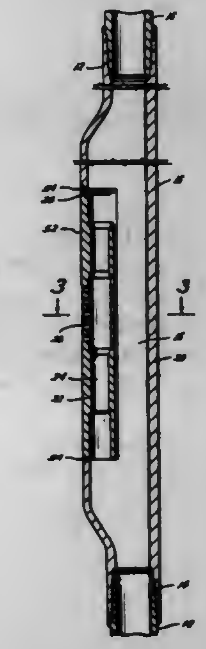
Howard L. McGill, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Division of Ser. No. 722,912, Apr. 22, 1968, Patent No. 3,516,493. Filed Sept. 15, 1969, Ser. No. 871,197
Int. Cl. E21b *23/06*
U.S. Cl. 166—216 **3 Claims**



A retrievable well-packer apparatus including a body member having upper and lower expander means slidably mounted thereon for movement toward and away from each other, slip means between said expander members and slidably coupled to said body member and one of said expander means, and packing means for sealing off a well bore in response to movement of said body member relative to slip and expander means in one longitudinal direction, said packing means including elastomeric packing elements and pressure responsive parts subject to fluid pressure acting in the opposite longitudinal direction for exerting compressive force on said packing elements.

3,603,393
HIGH PRESSURE WELL MANDREL

Ben D. Terral, and Henry W. Hardy, Jr., both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.
Filed Oct. 3, 1969, Ser. No. 863,498
Int. Cl. F04f *1/20*
U.S. Cl. 166—242 **7 Claims**

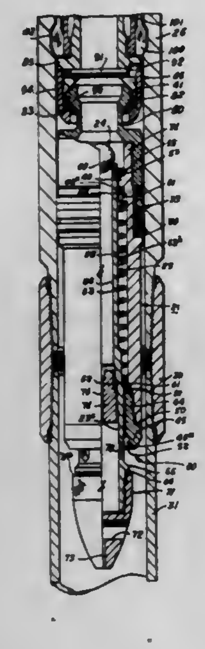


A high pressure mandrel for use in a well tubing having an open bore for alignment with the well tubing and including a valve side pocket housing having an internal tubular valve pocket in which the bore is substantially circular in cross section and the valve pocket housing is welded to the mandrel body by axially extended seams which are laterally offset from the axis of the bore of the body a distance no greater acted upon the radius of the bore thereby reducing the total area acted upon by internal pressures and increasing the capability of the mandrel to withstand high pressures. The mass of the material in the valve pocket housing being sufficient to prevent warping of the valve pocket when the housing is welded to the body thereby allowing the housing to be finished before being welded to the body. The valve pocket housing including a valve latching clamp integrally formed therewith insuring accurate alignment of the latching clamp relative to the side pocket.

3,603,394
WELL TOOLS

George Max Raulins, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Feb. 19, 1970, Ser. No. 12,605
Int. Cl. E21b *33/00;* **F16k** *17/00*
U.S. Cl. 166—224 **14 Claims**

A combination standing valve and safety valve for a tubing string of a well including a ball valve which closes responsive to flow in the tubing string toward a well formation and a tubular valve which responds to predetermined flow conditions to close to prevent flow from the formation into the tubing



string. The valve is installed and retrieved by wire line or pumpdown procedures.

3,603,395

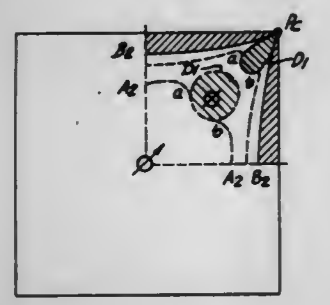
INTERFACE ADVANCE CONTROL IN SECONDARY RECOVERY PROGRAM BY RESHAPING OF THE INTERFACE BETWEEN DRIVING AND DRIVEN FLUIDS AND BY RETARDING CUSP FORMATION

Donald L. Hoyt, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 786,565, Dec. 24, 1968. This application June 30, 1969, Ser. No. 837,783

Int. Cl. E21b *43/22*

U.S. Cl. 166—245 **14 Claims**



The interface between driving and driven fluids in a secondary recovery operation is reshaped after a cusp has developed by injection of fluids via control wells to delay the arrival of the injected driving fluid into the vicinity of a production well, and by retarding cusp formation via wells controlling the advance of flow gradients to spread the interface.

3,603,396

METHOD FOR INCREASING SUBTERRANEAN FORMATION PERMEABILITY

Philip H. Braun, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,343

Int. Cl. E21b *43/25*

U.S. Cl. 166—261 **4 Claims**

A method for increasing the permeability of an already hydrated clay or shale subterranean formation by at least partially dehydrating at least a portion of the formation by heating or injection of a dehydrating liquid or gas, contacting at least part of the dehydrated portion of the formation with a material which hinders rehydration of the formation and thereafter exposing the formation to water.

3,603,397

INTRINSIC MOBILITY CONTROL IN PETROLEUM RECOVERY

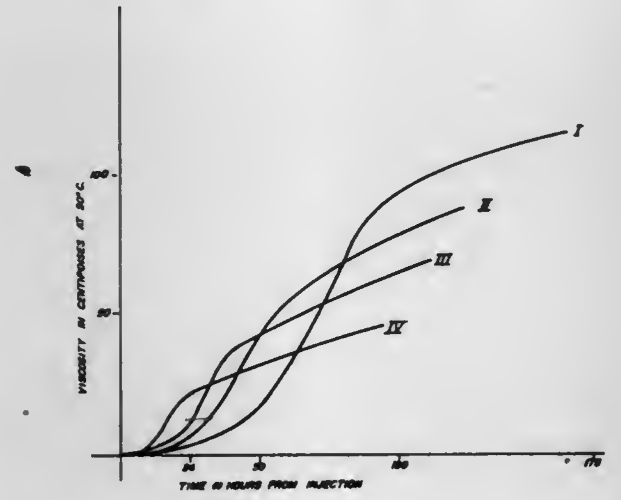
Jean-Marie Peray, Epinay, France, assignor to W. R. Grace & Co., New York, N.Y.

Filed May 14, 1969, Ser. No. 824,506

Claims priority, application Great Britain, May 14, 1968, 22947/68

Int. Cl. E21b *33/138, 43/22*

U.S. Cl. 166—270 **17 Claims**



An improvement in the process of polymer flooding for the secondary recovery of crude oil or sometimes gas in which the polymer is formed underground from injected monomer and a polymer flood whose mobility shows a downward gradient towards the extraction well is provided. Agents for control of intrinsic mobility other than polymers may be formed; the creation of a mobility control agent capable of further change can be used for purposes other than flooding, such as plugging connate water or gas.

3,603,398

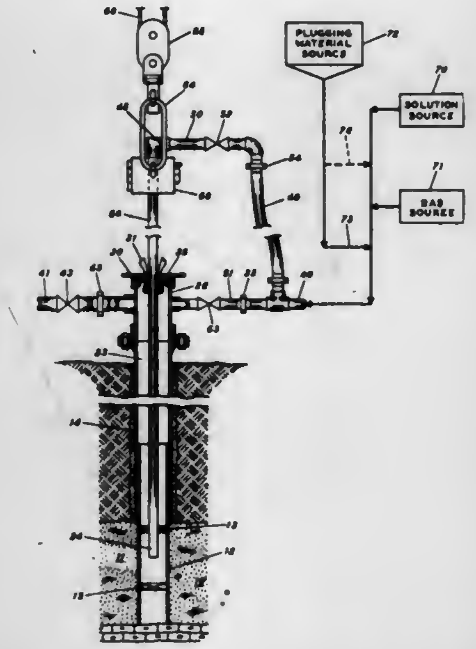
METHOD OF PLACING PARTICULATE MATERIAL IN AN EARTH FORMATION WITH FOAM

Stanley O. Hutchison, Bakersfield, and John C. McKinnell, Taft, both of, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 1, 1969, Ser. No. 838,082

Int. Cl. E21b *43/04, 43/27, 33/138*

U.S. Cl. 166—305 **1 Claim**



A method for placing material in an earth formation penetrated by a well by carrying such material down the well in a gas-liquid foam and moving said foam and material into a desired location in the earth formation.

3,603,399

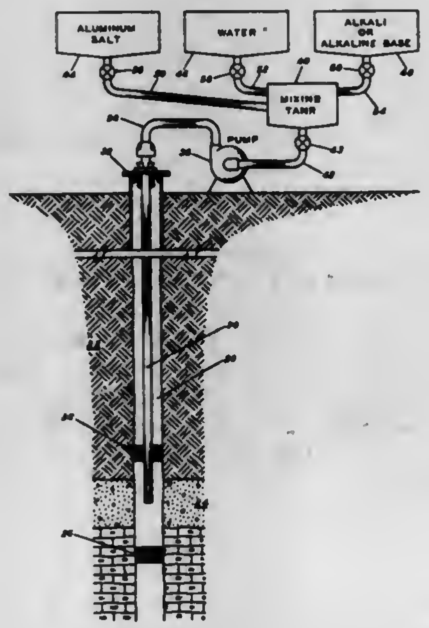
FORMATION PERMEABILITY MAINTENANCE WITH HYDROXY-ALUMINUM SOLUTIONS

Marion G. Reed, Hacienda Heights, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 10, 1969, Ser. No. 875,026

Int. Cl. E21b *43/25*

U.S. Cl. 166—305 R **5 Claims**



The disclosure provides a method of treating a water-sensitive formation penetrated by a well by contacting the formation with a hydroxy-aluminum solution having a ratio of the hydroxyl groups to the aluminum atoms in the range of from 1.5 to 2.7.

3,603,400

FRACTURING SUBTERRANEAN FORMATIONS USING MICELLAR DISPERSIONS

Marion O. Son, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 16, 1970, Ser. No. 20,099

Int. Cl. E21b *43/26*

U.S. Cl. 166—308 **19 Claims**

A subterranean formation is fractured by injecting under fracturing pressures a micellar dispersion comprised of hydrocarbon, aqueous medium, and surfactant. Propping agents are useful in the dispersion. Also, the viscosity of the dispersion is designed to obtain "low penetrating fluids."

3,603,401

TUBING HANGING METHOD AND APPARATUS

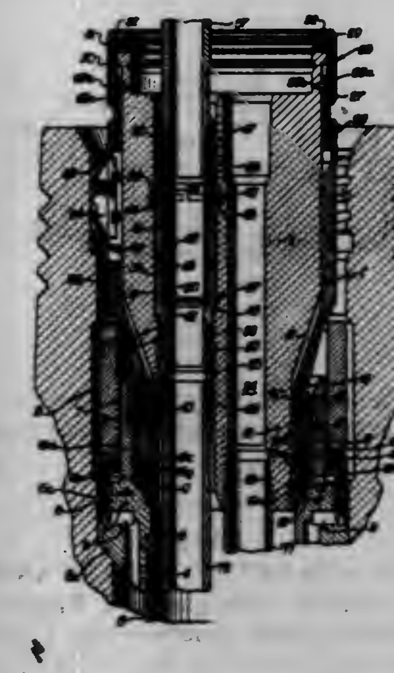
Bobby H. Nelson, and Benton F. Baugh, both of Houston, Tex., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Oct. 22, 1969, Ser. No. 868,319

Int. Cl. E21b *23/00, 33/03, 43/14*

U.S. Cl. 166—313 **26 Claims**

Tubing hanging method and apparatus in which a tubing hanger body supports a first string of well tubing in a well head assembly, and a second string of tubing is thereafter landed and releasably locked in position in the tubing hanger by means of a running tool which enables pressure testing of the second tubing string and its removal, if desired.



3,603,402

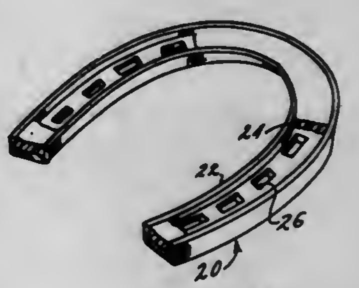
HORSESHOE AND METHODS FOR SHOEING A HORSE THEREWITH

Robert McDonnell, P.O. Box 55, Ridge, N.Y.

Filed Mar. 20, 1969, Ser. No. 808,817

Int. Cl. A01l *03/00, 05/00, 07/02*

U.S. Cl. 168—4 **9 Claims**



A horseshoe molded of a high impact polycarbonate resin attachable to a hoof either by nails through preformed openings in the horseshoe, or by a high impact polycarbonate resin cement. For the latter purpose, the horseshoe is formed with a groove on each of its side faces adjacent its hoof-contacting face for receiving and guiding a cutting nippers for severing the shoe from the hoof. The horseshoe may be provided with partially overlapping bars extending from each end thereof, at its opening, one of said bars having spaced holes formed therein and the other of said bars having a pin projecting therefrom engageable in a selected one of the holes.

3,603,403

AUTOMATIC FIRE EXTINGUISHING APPARATUS

Elwood R. Horwinski, Chesire, Conn., assignor to Lewis Engineering Company, Naugatuck, Conn.

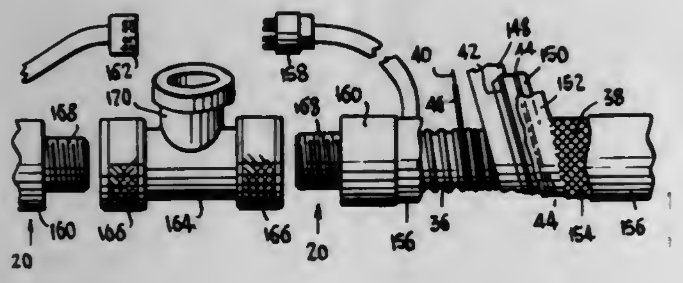
Filed Aug. 20, 1969, Ser. No. 851,624

Int. Cl. A62c *35/00*

U.S. Cl. 169—5 **15 Claims**

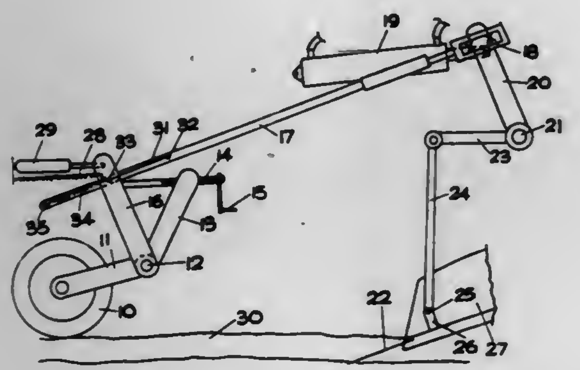
Automatic Fire Extinguishing Apparatus which is independent of commercial utilities such as water supply, electrical service and the like, comprising a local pressurized source of extinguishing fluid and a plurality of flexible distribution hoses having sets of nozzles, said hoses also having detecting electrical conductors which respond to heat and which are connected to responsive power equipment controlling valves for releasing the extinguishing fluid under conditions of fire.

The conductors and responsive power equipment include heat insulation providing a special delay action by which normal changes in ambient temperature have no effect whereas a quick rise in ambient temperature causes quick response of the extinguisher.



3,603,404
HARVESTERS FOR ROOTS, TUBERS AND THE LIKE

William John Whitsed, Peterborough, England, assignor to Root Harvesters Limited, Peterborough, England
Continuation of application Ser. No. 677,536, Oct. 24, 1967, now abandoned. This application May 15, 1970, Ser. No. 37,827
Int. Cl. A01d *21/02*
U.S. Cl. 171—9 **9 Claims**

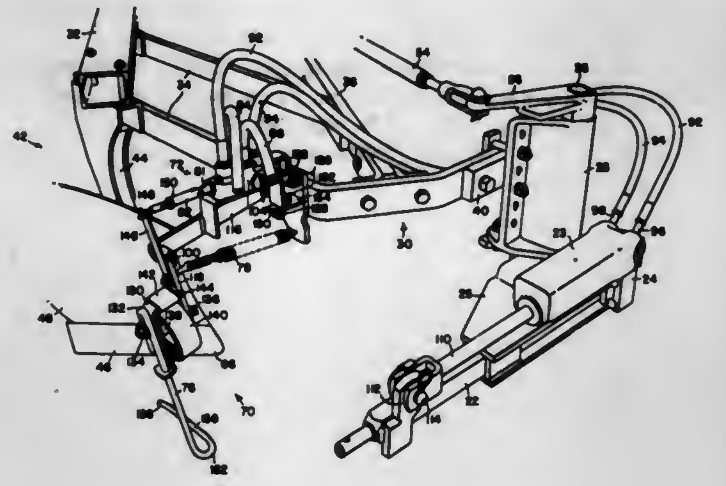


Control means for the digging blade of a root crop harvester comprising means for raising and lowering the digging blade in relation to the harvester frame, a feeler device movable up and down to engage the soil surface and sense the level thereof, a fluid pressure operated device for raising and lowering the blade and valve means associated with the fluid pressure operated device actuated in one sense by the up and down movements of the feeler device and in an opposite sense by up and down adjusting movements of the digging blade whereby the blade is maintained at a desired depth of penetration of the soil.

3,603,405
DEVICE FOR AUTOMATICALLY LANDING A SEMI-INTEGRAL MOLDBOARD PLOW

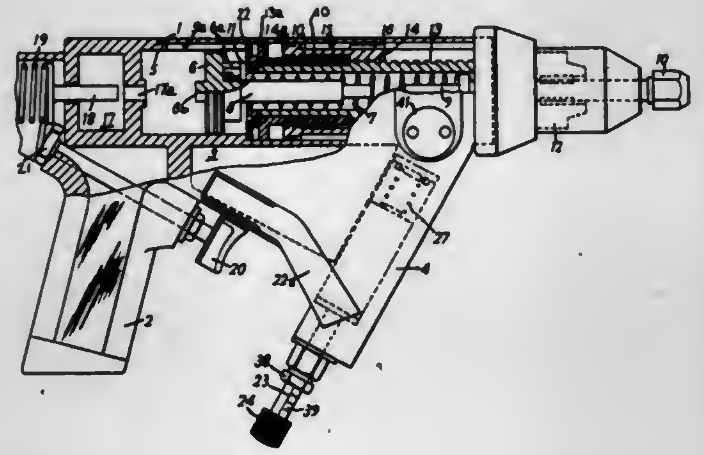
Loren Glenn Arnold, Rock Island, and Richard Dale Nelson, Cambridge, both of, Ill., assignors to Deere & Company, Moline, Ill.
Continuation-in-part of application Ser. No. 733,115, May 29, 1968, now abandoned. This application Jan. 7, 1970, Ser. No. 1,217
Int. Cl. A01b *69/00, 65/02*
U.S. Cl. 172—26 **13 Claims**

An automatic landing device for semi-integral moldboard plows of the type having adjustable hitches with at least a portion of the hitch being interconnected with the frame of the plow by an extensible and retractable hydraulic cylinder for landing. Mounted on the plow frame is a furrow finder having a furrow wall contacting member. The furrow wall contacting member is interconnected with a three-position valve by means of a push rod, the valve controlling flow of fluid from a tractor hydraulic system to the cylinder. The plow frame is shifted relative to the tractor in response to movement of the member so that a fixed distance is maintained between the foremost plow bottom on the plow frame and the adjacent furrow wall.



3,603,406
EXPLOSIVE OPERATED POWER TOOL WITH IMPACT AND ROTATION

Peter Bruno Kahn, Ilford, England, assignor to G. K. N. Screws & Fasteners Limited, Warley, England and The Plessey Company Limited, Ilford, England
Filed Sept. 25, 1969, Ser. No. 860,892
Int. Cl. B25d *9/10*
U.S. Cl. 173—108 **6 Claims**

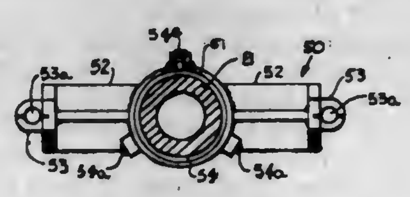


The specification discloses a power tool, particularly for inserting self-tapping screws, comprising a working element which is arranged to be impacted and rotated and means in the body to receive a metered charge of an explosive liquid fuel which when exploded produces high pressure gas which causes the operation of the working element. The liquid fuel is preferably a monofuel.

3,603,407
WELL DRILLING APPARATUS

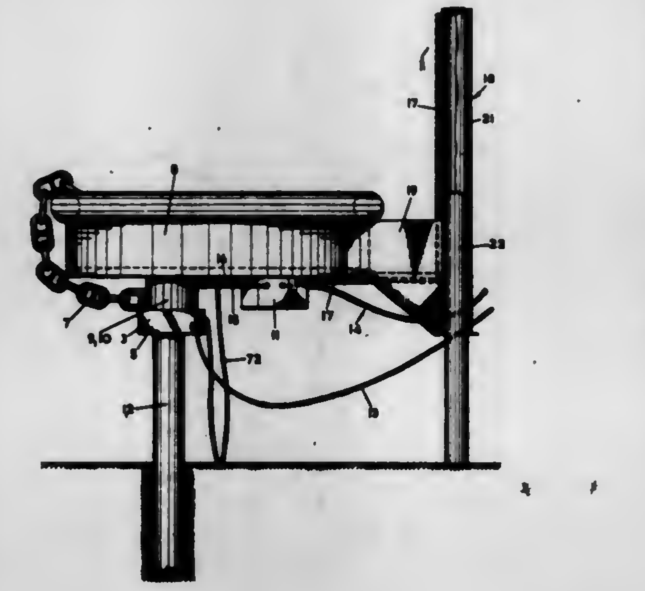
Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind.
Continuation-in-part of application Ser. No. 705,436, Feb. 14, 1968, now abandoned. This application Dec. 29, 1969, Ser. No. 888,711
Int. Cl. E21b *7/12*
U.S. Cl. 175—6 **18 Claims**

Drilling apparatus in which the motive force for the drill bit comprises a fluid motor disposed relatively close to the drill bit, the fluid motor comprising a pair of helicaL gears fitted one within the other, the outer gear having internal helical threads and comprising the rotor to which the drill bit is connected, the inner gear having external threads and being fixed against rotation, the arrangement being such that the inner gear is free to gyrate when driving force flows between the gears so that the outer gear member and the attached drill bit will rotate in a concentric path. Apparatus in accordance with the invention may be used in land drilling operations or adapted for use in underwater drilling operations, such adaptations including the use of a drill support and a flexible connection to a platform or workboat situated above the drilling site.



3,603,408
SUBMARINE DRILLING APPARATUS

August Hendrik Maria Smulders, 13 Van Bronckhorstlaan, Wassenaar, Netherlands
Filed Oct. 6, 1969, Ser. No. 864,104
Claims priority, application Netherlands, Oct. 17, 1968, 68-14 339
Int. Cl. E21b *7/12;* **E21c** *19/00*
U.S. Cl. 175—6 **11 Claims**

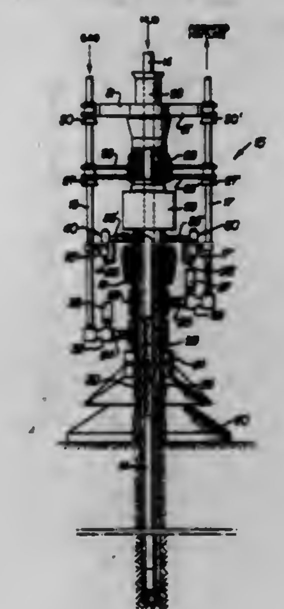


Submarine drilling apparatus comprises a rotor and a stator with a drill casing detachably connected to the stator and a drill which is in the casing and suspended from the rotor. The apparatus is lowered from a vessel to the bottom, where it rests on at least three supports, at least one of which is the drill. The drill is hydraulically operated from a source on the vessel, and the remaining supports are also hydraulically operated, with a distributor valve that is automatically operated by a universally suspended pendulum so as to regulate the hydraulic system to maintain the drill upright. After drilling, the casing is cemented, for example by filling it with cement to provide submarine securement for an anchor chain. The onset of cementing automatically disengages the stator from the casing so that the apparatus can be raised leaving the casing in place. Continued raising of the apparatus disconnects and raises the cementing conduit.

3,603,409
METHOD AND APPARATUS FOR BALANCING SUBSEA INTERNAL AND EXTERNAL WELL PRESSURES

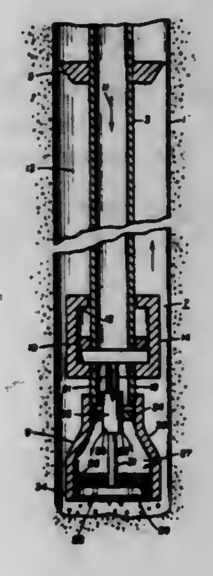
Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Forge and Engineering Company, San Pedro, Calif.
Filed Mar. 27, 1969, Ser. No. 811,052
Int. Cl. E21b *15/02, 41/00*
U.S. Cl. 175—7 **6 Claims**

Method and apparatus for maintaining a pressure balance between internal and external subsea well pressures during underwater drilling, entry and reentry operations conducted from a floating vessel remote from the subsea well comprising injecting gas into the wellhead apparatus in amounts sufficient to cause the density of the well fluid or mud returns below the surface of the sea to approximate the density of sea water and controlling the injection of such gas and thus the internal well fluid pressures by sea water well pressure differential and control means associated with valve means located in gas injection and return lines at the subsea well apparatus.



3,603,410
METHOD AND APPARATUS FOR CAVITATIONAL DRILLING UTILIZING PERIODICALLY REDUCED HYDROSTATIC PRESSURE

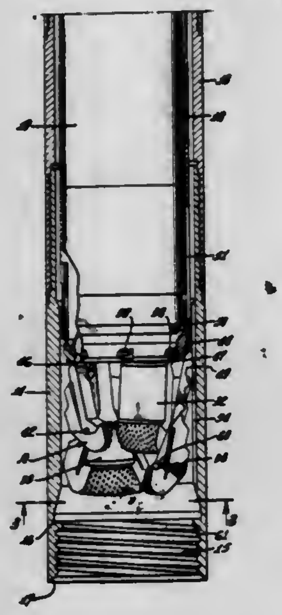
Frank A. Angona, Dallas, Tex., assignor to Mobil Oil Corporation
Filed Dec. 5, 1968, Ser. No. 781,424
Int. Cl. E21b *7/00*
U.S. Cl. 175—65 **9 Claims**



This specification discloses an improved method and apparatus for drilling a liquid-filled borehole into the earth with cavitational energy. The hydrostatic pressure at the borehole bottom is periodically reduced. Simultaneously, high frequency acoustic energy is imposed in the drilling liquid and cavitation is effected at least during the period of reduced hydrostatic pressure. The shock waves resulting from cavitation in the drilling liquid are utilized for drilling the borehole.

3,603,411
RETRACTABLE DRILL BITS

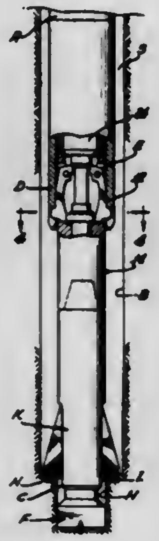
Howard D. Link, Salt Lake City, Utah, assignor to Christensen Diamond Products Company, Salt Lake City, Utah
Filed Jan. 19, 1970, Ser. No. 3,971
Int. Cl. E21b *9/26*
U.S. Cl. 175—259 **27 Claims**



A carrier supports an upper set of downwardly tapering or wedge-shaped drill bit cutters which overlap and alternate circumferentially with a lower set of upwardly tapering or wedge-shaped cutters, the sets of cutters being in retracted position for movement by the carrier through a tubular drill string and into a drive mandrel at the lower end of the latter. Downward movement of the upper set of cutters along and between the lower set expands and couples both sets of cutters to the drive mandrel and increases their effective drilling diameter to a value greater than the outside diameter of the mandrel, the combined cutting surfaces of both sets of cutters being circumferentially continuous. The carrier moves down behind the cutters to lock them in their expanded condition. Elevation of the carrier pulls the upper cutters upwardly along the lower cutters and effects retraction of both sets of cutters inwardly of the mandrel, permitting their upward removal through the drill string to the drilling rig.

3,603,412
METHOD AND APPARATUS FOR DRILLING IN CASING FROM THE TOP OF A BOREHOLE

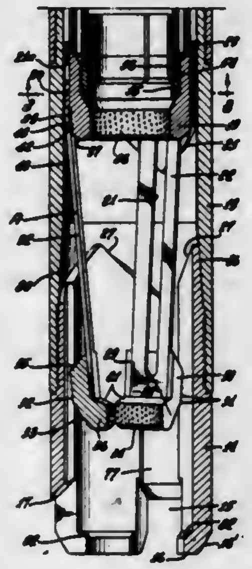
Archer W. Kammerer, Jr., Fullerton, and Gary R. Johnson, Anaheim, both of, Calif., assignors to Baker Oil Tools, Inc., Commerce, Calif.
Filed Feb. 2, 1970, Ser. No. 7,628
Int. Cl. F21b *9/26*
U.S. Cl. 175—260 **8 Claims**



Apparatus and method for drilling in casing at the top of a borehole, such as drilling a borehole commencing at an ocean floor, including inserting a retrievable coupling device in a casing shoe aboveground and expanding the coupling members of the device into shoe slots to secure the coupling device to the shoe, a bit being secured to the coupling device with expandable cutters to drill a borehole larger than the outside diameter of the casing or casing pile. The shoe is then secured to a casing section or sections thereabove and the casing string lowered to bring the bit against the top of the formation, or ocean floor, where drilling of the borehole is to commence. The casing string is rotated, drilling weight being applied to the casing string and through the coupling device to the bit, and drilling fluid pumped down the casing string to remove the cuttings from the bottom of the borehole being produced. When the borehole has been drilled to the required depth, the coupling members are retracted from the shoe slots, and the assemblage of coupling device and bit, with its cutters retracted, elevated through the casing string and withdrawn therefrom at the top of the finished borehole. The casing string or piling remains in the borehole and can be cemented in place therein.

3,603,413
RETRACTABLE DRILL BITS

Werner K. Grill, and Howard D. Link, both of Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah
Filed Oct. 3, 1969, Ser. No. 863,659
Int. Cl. F21b *9/26*
U.S. Cl. 175—261 **27 Claims**

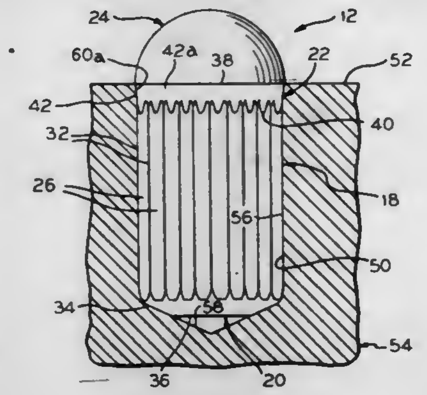


Rotary drill bit cutters lowered on a carrier through a tubular drill string to a drive mandrel or body at the lower end of the string. A device orients or aligns the cutters with slots in the mandrel into which the cutters are expanded and then locked in expanded condition by the carrier, enabling drilling torque and weight to be transmitted from the rotating drill string and mandrel to the cutters, causing the latter to produce a cutting action in the formation. Elevation of the carrier retracts the cutters inwardly of the mandrel for withdrawal through the drill string to the drilling rig. The carrier may support a core tube for receiving a core produced by the cutters.

3,603,414
INSERT FOR DRILLING UNIT

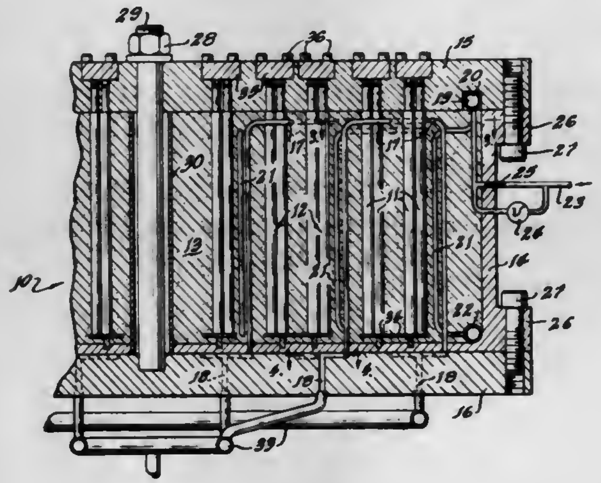
Frank E. Stebley, 3815 Nemesis Ave., Gurnee, Ill.
Filed Jan. 30, 1970, Ser. No. 7,135
Int. Cl. E21c *13/01, 13/06*
U.S. Cl. 175—374 **17 Claims**

A solid wear-resistant sintered metallic carbide insert adapted for forcible insertion into an opening in a working face of a drill member includes a generally polygonal body portion having at least about 12 sides extending between a base end and an opposite head end thereof, and a generally conical wedging portion on the head end of the body portion diverging outwardly therefrom and having an outer diameter greater than the diameter of the body portion, the wedging portion intersecting the body portion whereby the corners formed by the body portion sides terminate intermediate the outer and inner ends of the wedging portion to provide a smooth annular wedging surface on the outer end of the wedging portion, the body and wedging portions being insertable into the working face opening for mounting them therein with the body portion engaging the wall of the opening in an interference fit and the outer end of the wedging portion wedged in the opening adjacent the working face. A unit for drilling earth formations includes a drill member having a working face provided with a generally circular insert opening extending inwardly therefrom, the opening terminating at the working face in an outwardly divergent conical mouth, and the insert mounted in the opening with its body portion engaging the wall of the opening in an interference fit and the outer end of its wedging portion wedged in the mouth of the opening.



3,603,415
THULIUM OXIDE HEAT SOURCE AND METHOD FOR FORMING SAME

Charles H. Allen, and Charles E. Leach, both of Pasco, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 9, 1968, Ser. No. 751,454
Int. Cl. G21g *1/02*
U.S. Cl. 176—10 **9 Claims**

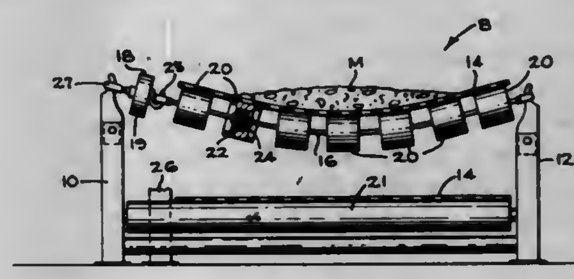


An internally shielded radioisotopic heat block with the preferred fuel, thulium oxide rods, separated from the coolant by a metal heat-exchange medium. The fuel elements may be removed from the heat block with only moderate shielding and reirradiated while still clad.

3,603,416
WEIGHING APPARATUS FOR BELT CONVEYOR

William V. Spurlin, Indiana, Pa., assignor to FMC Corporation, San Jose, Calif.
Filed May 18, 1970, Ser. No. 38,083
Int. Cl. G01g *11/14*
U.S. Cl. 177—1 **14 Claims**

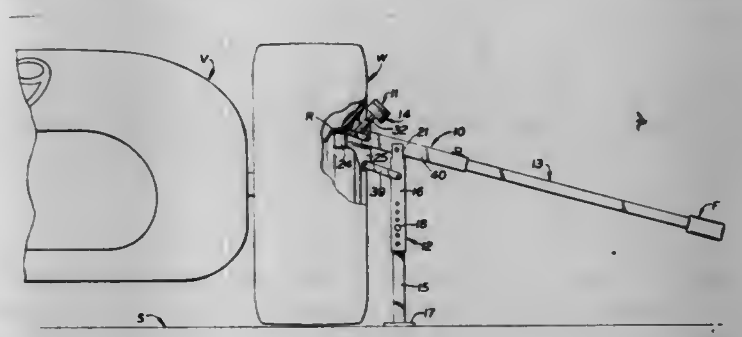
A weighing apparatus for a conveyor belt includes at least one belt supporting roller mounted on a flexible but nonextensible supporting cable or linkage which has at least one end thereof operatively connected to a load cell to measure the tension or tensile force in the supporting cable or linkage.



Belt speed is transmitted to the load cell by a tachometer generator so that the output from the load cell is proportional to the flow rate and can be fed into a totalizer and rate indicator for visual recordation.

3,603,417
WEIGHING APPARATUS FOR WHEELED VEHICLES

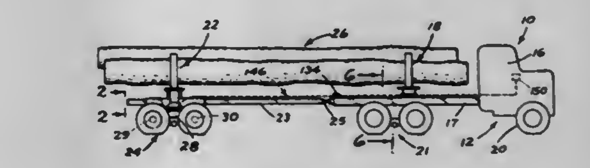
Hilton J. Wachholz, 2460 Medina Ave., Columbus, Ohio
Filed Dec. 16, 1969, Ser. No. 885,457
Int. Cl. G01g *21/00*
U.S. Cl. 177—126 **9 Claims**



A weighing apparatus is provided for determining the weight of an object by lifting and supporting the object on a fluid-pressure-responsive sensing unit having a direct-reading visual weight indicator. The apparatus structure includes the sensing unit carried by a parallelogram linkage mounted on a support strut and a force-multiplying actuating lever connected to the linkage. Forming the sensing unit is a fluid-filled cylinder having a piston slideably mounted therein and a fluid pressure gage in communication with the cylinder. A contact shoe pivotally mounted on the sensing unit overlies the piston and prevents application of lateral forces to the piston which could result in binding as a consequence of the slight lateral displacement of the sensing unit during a lifting operation.

3,603,418
VEHICLE LOAD MEASURING APPARATUS

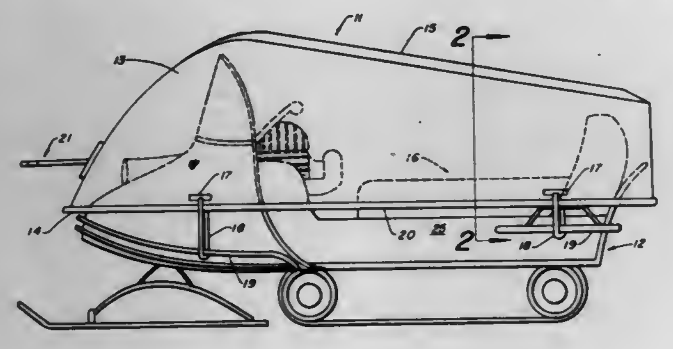
Kenneth J. Schmidt, and James A. Lacock, both of Springfield, Oreg., assignors to General Trailer Co., Inc., Springfield, Oreg.
Filed Oct. 17, 1969, Ser. No. 867,265
Int. Cl. G01g *19/08*
U.S. Cl. 177—136 **8 Claims**



Apparatus for use in a vehicle for measuring a load supported thereon including a deformable member which deforms in relation to the weight of the load, a DC voltage transmitter connected to the member for transmitting a voltage related to the deformation of the member, with a given DC voltage supplied to the transmitter, and an indicator connected to the voltage transmitter for producing an indication related to such voltage. The indicator and voltage transmitter are connected through a coupling which enables selective disconnection of the two. The indicator has a sufficiently high input impedance, whereby any resistance produced in the coupling due to the collection therein of dirt or other foreign matter has a negligible effect on the voltage indicated by the indicator.

3,603,419
COMBINATION COVER AND TRAILING SLEIGH FOR TRACTION SNOW VEHICLES

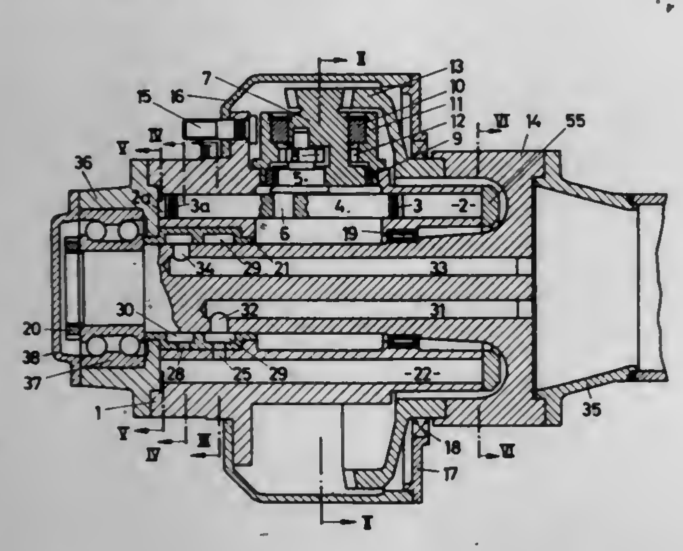
Kenyon L. Riddle, 3789 Hillside Lane, Salt Lake City, Utah
Filed July 15, 1969, Ser. No. 841,911
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **6 Claims**



A combination cover and trailing sleigh including runner means attached to a hollow, structurally rigid hull element. The hull element is adapted to receive the upper portion of a traction snow vehicle in its interior through an opening so that it may be placed atop the vehicle as a cover. One or more runners are attached to the outside surface of the hull element opposite the opening so that the hull element may be towed by the vehicle as a sleigh.

3,603,420
HYDROSTATIC WHEEL-HUB DRIVE MECHANISM PRIMARILY FOR VEHICLES NOT TIED TO RAILS

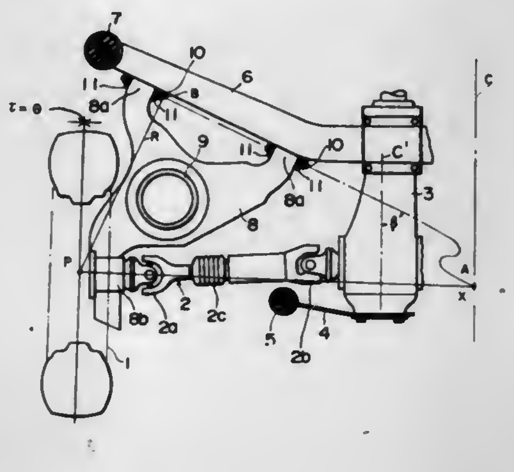
Heinrich Peter Brandt, Wiehl, Germany, assignor to Fritz Kotz and Christian Peter Kotz
Filed June 20, 1969, Ser. No. 834,983
Int. Cl. B60k *7/00*
U.S. Cl. 180—66 F **5 Claims**



A hydrostatic wheel-hub drive mechanism, primarily for vehicles not tied to rails, characterized by the provision within the wheel hub of hydrostatically driven pairs of pistons, each pair having a common piston rod arranged parallel with the axis of the wheel hub and gearing operable to convert the reciprocating motion of the pairs of pistons to rotary motion of the wheel.

3,603,421
INDEPENDENT SUSPENSION DEVICE FOR SUSPENDING AUTOMOBILE WHEELS

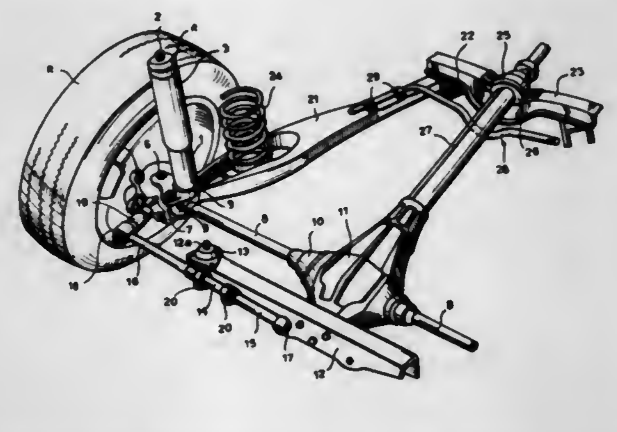
Teruo Maeda, and Susumu Miyata, both of Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Filed Nov. 29, 1968, Ser. No. 779,929
Claims priority, application Japan, Dec. 4, 1967, 42/77,565
Int. Cl. B60g *3/14*
U.S. Cl. 180—73 R **1 Claim**



An independent suspension device for suspending each wheel of an automobile, having a suspension arm means for axially supporting each wheel. The suspension arm means is pivotally carried by a suspension member in such manner that the axis of rotation of the suspension arm means is horizontally slanted relative to the longitudinal axis of the automobile by a first angle, and the axis of rotation of the suspension arm is also vertically inclined with respect to a horizontal plane by a second angle. The first angle is so related with the second angle that the camber thrust force generated in the automobile body by the motion of the wheel relative to the automobile body is always cancelled by the cornering force generated by said motion of said wheel, regardless of the magnitude of the bouncing motion of the wheel. Whereby, the straight maneuverability and the ride of the automobile are greatly improved.

3,603,422
INDEPENDENT DRIVEN WHEEL SUSPENSION

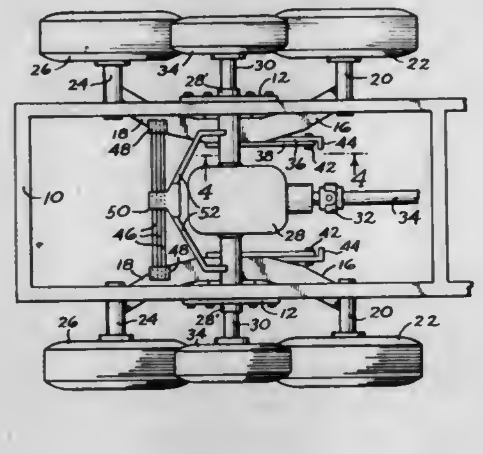
Ettore Cordiano, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy
Filed Dec. 26, 1968, Ser. No. 787,009
Claims priority, application Italy, Jan. 26, 1968, 50290-A/68
Int. Cl. B60g *3/14, 19/02*
U.S. Cl. 180—73 TL **6 Claims**



An independent suspension for a driven wheel of a vehicle includes a trailing arm pivoted at one end to the wheel hub support and at the other end to the suspended body to transmit longitudinal (driving) stresses. The wheel is driven by a stub shaft which is connected to a differential via universal joints and which is effective to transmit transverse loads between the wheel hub support and the suspended body through the casing of the differential. A transverse link is pivoted between the wheel hub carrier and the body to prevent wobbling of the wheel.

3,603,423
TRACTION CONTROL SYSTEM FOR TANDEM TYPE VEHICLE WHEELS

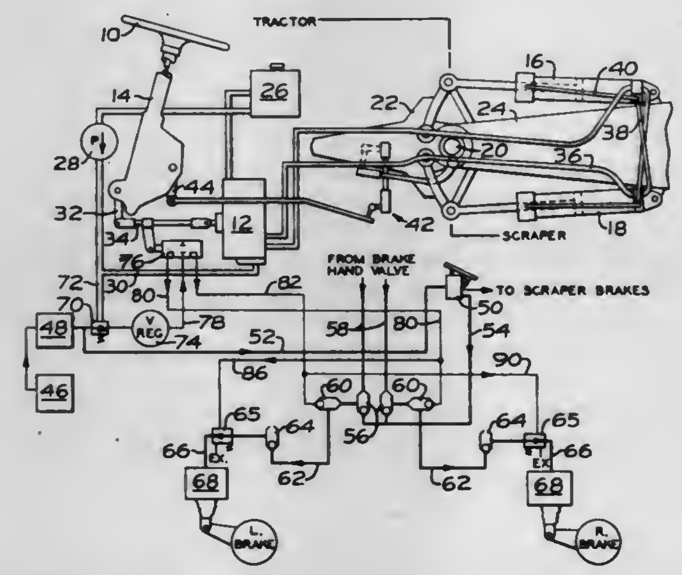
Richard H. A. Schoonover, West Linn, Oreg., assignor to Katrak Vehicle Co., Canby, Oreg.
Filed Mar. 28, 1969, Ser. No. 811,512
Int. Cl. B60k *17/36*
U.S. Cl. 180—74 **4 Claims**



The tandem wheels of a vehicle are interconnected through their axles or drive differential mechanism in such manner that the driving or braking force tending to elevate one of the wheels off the road is opposed by a force derived from the resultant driving or braking torque of the axles or differential mechanism.

3,603,424
AUXILIARY EMERGENCY STEERING FOR ARTICULATED VEHICLES

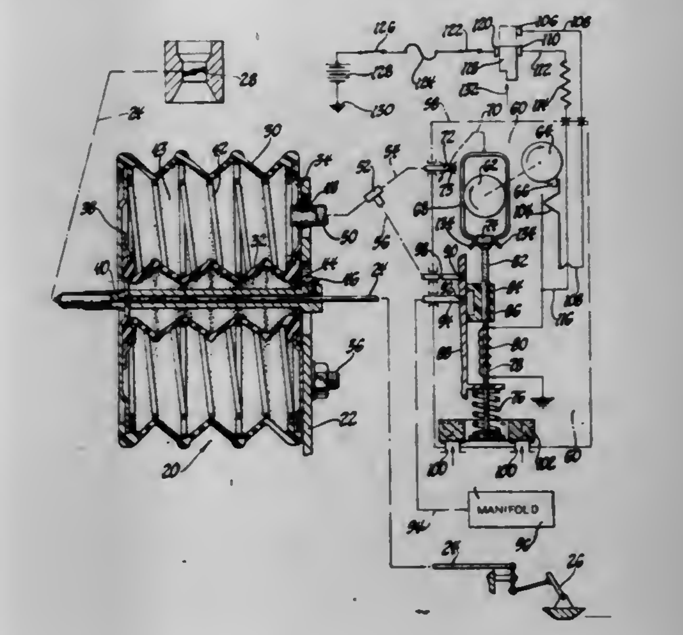
Ernest R. Blood, and Edward J. Ohms, both of Washington, Ill., assignors to Caterpiller Tractor Co., Peoria, Ill.
Filed Feb. 25, 1969, Ser. No. 802,058
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 B **4 Claims**



Emergency steering for a vehicle which is normally steered by a hydraulic fluid system and has fluid actuated brakes. When pressure in the steering system falls below a safe valve air from the brake system is directed through a valve controlled by the steering system selectively to the right brake or left brake depending upon the direction in which the steering wheel is turned thus causing what is known as steering by braking.

3,603,425
VEHICLE CRUISE CONTROL SERVOMOTOR

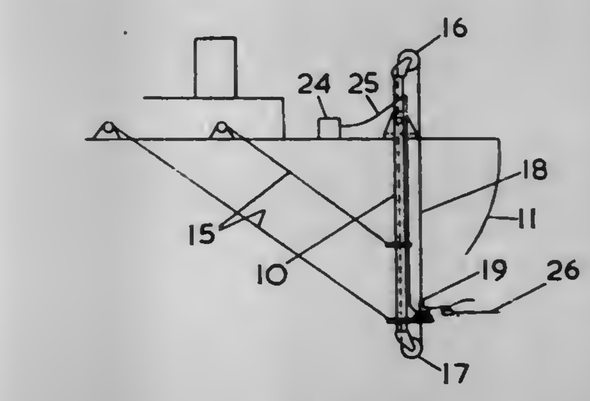
David D. Campbell, Lake Orion, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 12, 1969, Ser. No. 849,321
Int. Cl. B60k *31/00*
U.S. Cl. 180—108 **3 Claims**



A servomotor assembly having application in a vehicle cruise control system including an annular pleated bellows member having a fixed wall closing one end and a movable wall closing the other end defining a fluid pressure control chamber therein. A coil spring is disposed within the bellows member biasing the walls apart. The bellows member and the walls contain central openings receiving a control rod therethrough upon which is mounted a slidably adjustable stop member. The stop member is positioned for engagement by the movable wall during contraction of the bellows thereby actuating the control rod in accordance with the prevailing pressure fluid within the bellows member.

3,603,426
APPARATUS FOR MARINE SEISMOGRAPHIC PROSPECTING

William Neilson, Stevenston, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Continuation of application Ser. No. 775,028, Nov. 12, 1968, now abandoned. This application Feb. 24, 1970, Ser. No. 14,747
Int. Cl. G01v *1/04, 1/38*
U.S. Cl. 181—0.5 VM **13 Claims**



Apparatus for marine seismographic prospecting consists of a boom and a movable charge carrier attached to the boom.

Using this apparatus an explosive charge may be submerged and towed at a constant, predetermined depth behind the ship.

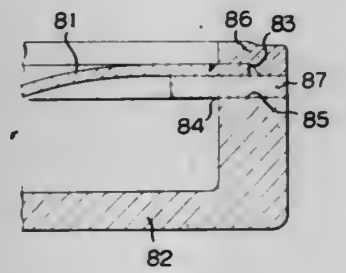
3,603,427
LOUDSPEAKER

Hiromi Sotome, Hamamatsu-shi, Shizuoka-ken, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed May 5, 1969, Ser. No. 821,803

Int. Cl. G10k *13/00;* **H04r** *7/00*

U.S. Cl. 181—32 **7 Claims**



A loudspeaker including a diaphragm of rigid, self-supporting, foamed plastic material clamped at its peripheral portion to a speaker frame, without providing increased compliance at said peripheral portion, to generate sound by bending motion of said diaphragm, said diaphragm having a soft material such as foamed or unfoamed rubberlike material (e.g. natural rubber, synthetic rubber or rubberlike plastic material) applied on at least a part of the peripheral portion at at least one side thereof, said soft material having relatively high specific gravity sufficient to suppress divided vibration of the diaphragm in low frequency sound range.

3,603,428
SCAFFOLDING FOR THE TANKS OF LARGE TANKER SHIPS

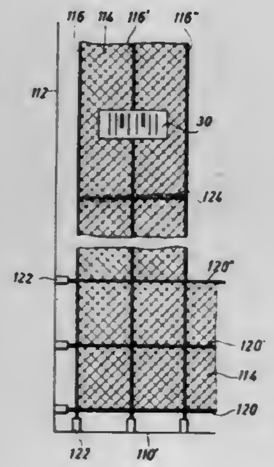
Otto Hanses, Hamburg-Billstedt, Hamburg 74, Germany

Filed Sept. 15, 1969, Ser. No. 857,663

Claims priority, application Germany, Feb. 8, 1969, Sept. 19, 1968, P 19 06 341.3;P 17 81 270.3-22

Int. Cl. E04g *3/00*

U.S. Cl. 182—82 **17 Claims**



Scaffolding for the construction, cleaning and repair of the interior of the tanks of large tanker ships consists of permanently emplaced wire netting secured to the sides of the tank.

3,603,429
STEP ATTACHMENT FOR TRACTOR

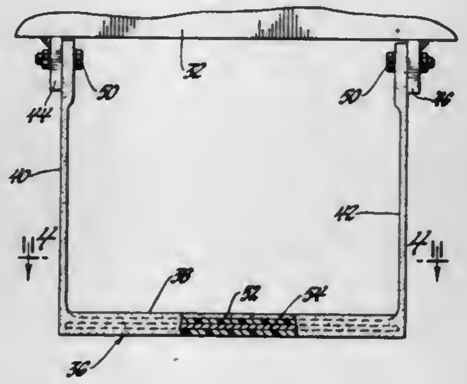
Larry L. Shepherd, Wickliffe, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 15, 1970, Ser. No. 55,061

Int. Cl. E06l *5/26*

U.S. Cl. 182—191 **2 Claims**

A U-shaped step member for attachment to the frame of a tractor. The step member is molded entirely from an elastomeric material and has a foot supporting portion reinforced by a metal insert. The legs of the step member are formed as straps and, when attached to the tractor, are designed to deflect when a force is applied to the foot supporting portion along the longitudinal axis thereof but will resist deflection when a horizontally directed force is applied to the foot supporting portion along the plane of the latter and in a direction perpendicular to the longitudinal axis of the foot supporting portion.



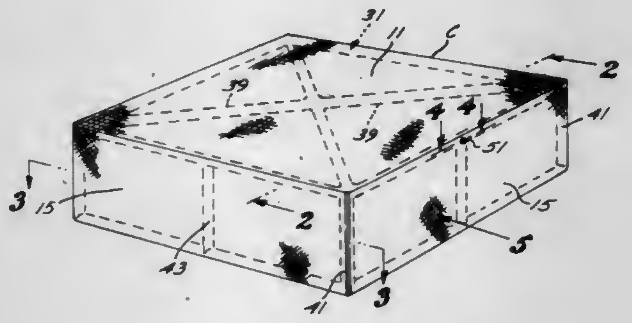
3,603,430
PRESSURE RELIEF IMPACT ABSORBING APPARATUS

Robert T. Kendall, 752 Via Somonte, Palos Verdes Estates, Calif., and Robert S. Tanibata, 16515 Brighton Ave., Gardena, Calif.

Continuation of application Ser. No. 636,706, May 8, 1967, now abandoned. This application Mar. 11, 1970, Ser. No. 18,002

Int. Cl. F16k *17/36;* **A62b** *1/22*

U.S. Cl. 182—137 **10 Claims**



Pressure relief apparatus comprising means defining a fluid-receiving chamber and having a flexible wall portion consisting of elongated elastic strands which are interwoven whereby adjacent and intersecting strands cooperate to define interstices that are substantially closed when the fluid pressure in the chamber is below the relief pressure. When the fluid pressure in the chamber is raised above the relief pressure the wall portion is flexed outwardly and the strands stretched in proportion to the pressure to open the interstices thereby defining a cumulative fluid relief flow area that is proportionate to the increase in pressure over the relief pressure.

3,603,431
LADDER AND SUPPORT BRACKET THEREFOR

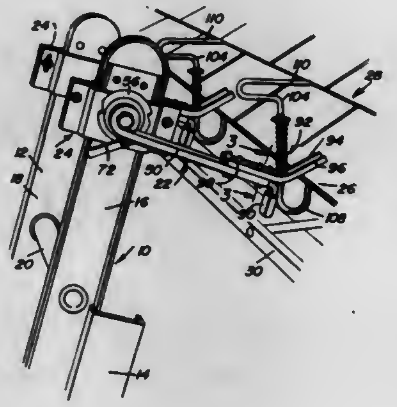
Alfred E. Nameche, 666 W. Spring, Lima, Ohio, and Walter F. Norton, 2343 Shawnee Blvd., Lima, Ohio

Continuation-in-part of application Ser. No. 736,042, June 11, 1968, now Patent No. 3,486,580. This application Dec. 15, 1969, Ser. No. 884,792

Int. Cl. E06c *1/36*

U.S. Cl. 182—206 **11 Claims**

A support arm for a ladder including mounting structure on one end of the arm rotatable relative to the latter about an axis extending transversely of the arm. The mounting structure is adapted for securement to the upper end of a ladder and the mounting structure and arm include structure for releasably locking the arm against rotation relative to the mounting structure in one direction past a predetermined position of rotation of the arm. In addition, spring means is operatively connected between the arm and the mounting structure yieldingly urging the arm to swing in the aforementioned one direction relative to the mounting structure and the free end of the arm includes clamp structure for clamping engagement with a portion of a building structure against which the upper end of the associated ladder is leaned.



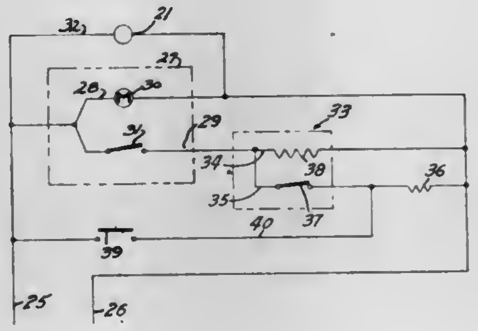
3,603,432
APPARATUS FOR PERIODICALLY DISPENSING A LIQUID

Wallace I. Stenzel, Thiensville, Wis., assignor to Waukee Engineering Co., Milwaukee, Wis.

Filed Dec. 11, 1968, Ser. No. 783,081

Int. Cl. F16n *29/02*

U.S. Cl. 184—6 D **4 Claims**



A device for automatically metering precise amounts of a lubricant to an apparatus requiring periodic lubrication. The device comprises a reservoir to contain the lubricant and a conduit connects the pressure side of the apparatus with the reservoir so that a positive pressure is maintained on the lubricant within the reservoir. A discharge line connects the reservoir with the apparatus requiring lubrication and the flow of lubricant through the discharge line is controlled by a solenoid-operated valve. In addition to the solenoid valve, an adjustable needle valve is located between the solenoid-operated valve and the apparatus and functions to adjust the rate of flow of the lubricant when the solenoid valve is opened. The flow through the discharge line can be viewed through a sight glass located downstream of the needle valve.

Operation of the system is automatically controlled by a dual-timer arrangement including a cycle timer which sets the periodic cycle of lubrication and opens the solenoid valve through a time-delay relay. The time-delay relay sets the time of lubrication for each cycle.

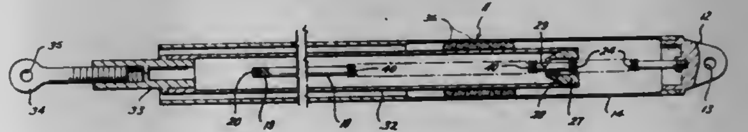
3,603,433
LOW ONSET RATE ENERGY ABSORBER

William H. Keathley, Pasadena, and Clarence J. Wesselski, Alvin, both of, Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 31, 1970, Ser. No. 24,154

Int. Cl. F16f *7/12*

U.S. Cl. 188—1 C **10 Claims**



A low onset rate energy absorber for decelerating a moving mass at a controlled rate without amplification of loads through the system. The embodiment disclosed is in the form of a strut assembly for the crew couch of the Apollo command module. It includes a rod of substantially uniform diameter having one end arranged to receive the force of the moving mass thereagainst in a generally axial direction. A plurality of washers is mounted on the rod in spaced-apart and force-fitting relationship. It includes thrust means arranged to receive the force in the generally axial direction and for initially contacting and axially stroking an end one of the washers and sequentially stroking others of the washers along the rod in response to a force applied in the axial direction. The energy absorber uses friction as a direct means of converting the energy to heat.

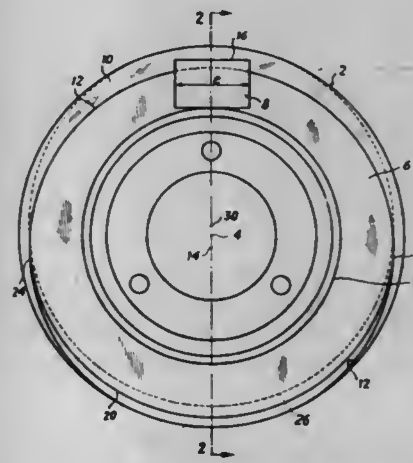
3,603,434
DISC FOR A DISC BRAKE

Roger Leroux, Paris, France, assignor to Societe Anonyme D.B.A.

Filed June 2, 1969, Ser. No. 829,812

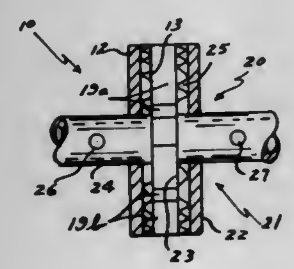
Int. Cl. F16d *65/12*

U.S. Cl. 188—73.6 **3 Claims**



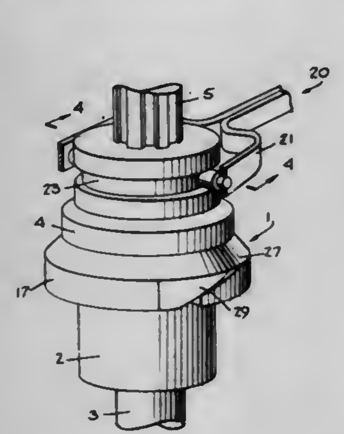
This invention relates to a disc for a disc brake in which the extraction of the braking pads is effected parallelly to the plane of the disc. Each of the faces of the disc comprises at the periphery thereof a cutout portion provided through all the thickness of the disc or through at least a portion of said thickness, the length of the chord joining the intersection points of said cutout portion with the external edge of the groove made by the pad on the corresponding face being at least equal to the maximum size of said pad measured in a direction perpendicular to the direction of extraction of said pad. The pads are extracted easily after turning the disc to bring the pads to protrude out of the cut portion.

3,603,435
AIR COOLED DISC BRAKE ROTOR
Wallace C. Buzzard, 5901 Lancer Court, Dayton, Ohio, and Joseph E. Krysiak, 510 Wilmington Ave, Dayton, Ohio
Filed Oct. 16, 1969, Ser. No. 866,930
Int. Cl. F16d *65/12*
U.S. Cl. 188—218 XL **1 Claim**



An aircraft wheel disc brake rotor having a pair of disc members joined together by curved support rib elements mounted in raised relation on, and arranged to channel cooling air over the internal surfaces of the disc members. This cooling air, which is centrifugally directed by rotational movement of the disc members, is supplied through openings provided in either the rotor itself or in the rotor axle. The internal surface of each disc member is further fabricated with a series of grooves formed into a curvilinear ridge pattern that both provides a greater cooling surface area and ensures more efficient control and direction of the cooling air.

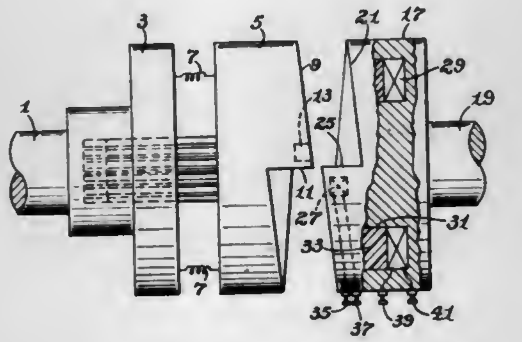
3,603,436
ONE-POSITION CLUTCH
Robert J. Bartholomew, Logan, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Sept. 24, 1969, Ser. No. 860,656
Int. Cl. F16d *11/04*
U.S. Cl. 192—46 **5 Claims**



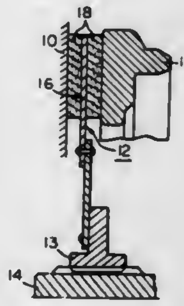
A clutch for physically connecting and disconnecting driven elements. The clutch includes a driving clutch element which releasably engages a driven clutch element which releasably engages a driven clutch element by means of a pair of coupling lugs and slots on the two elements which are so arranged that the clutch is always reengaged with the driving and driven members in the same rotational position.

3,603,437
POSITIVE POSITION BRAKE-CLUTCH
Glenn S. Spencer, Big Flats, N.Y., assignor to The Bendix Corporation
Filed June 8, 1970, Ser. No. 44,300
Int. Cl. F16d *27/04, 43/26, 65/16*
U.S. Cl. 192—53 D **17 Claims**

A pair of members have opposed spiral surfaces formed about an axis and surfaces connecting the ends of each spiral surface to form stops. The spiral surfaces are energy-absorbing surfaces and are urged apart by spring means. The members are relatively rotatable about the axis and relatively movable along the axis. One of said members has disposed therein an annular magnet having a flux path through the members and across a space therebetween. Synchronizing means activates the magnet when there is a specified angular relationship between the surfaces so that the magnet provides flux that draws the surfaces into contact over a small area which increases with relative rotation, thereby increasing the magnetic force between the surfaces and the energy absorbed by the relatively rotating surfaces to slow the relative rotation before the stops engage at a predetermined angular relationship.



3,603,438
FRICTION CLUTCH FOR AN AUTOMOBILE
Toichi Hashizume; Isao Nagai; Katsuhiko Umeda; Tadaaki Otokuni, and Yuji Takahashi, all of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama, Japan
Filed May 19, 1969, Ser. No. 825,642
Claims priority, application Japan, June 5, 1968, June 5, 1968, June 5, 1968, 43/47130;43/47129;43/47128
Int. Cl. F16d *13/40, 69/00*
U.S. Cl. 192—107 C **4 Claims**

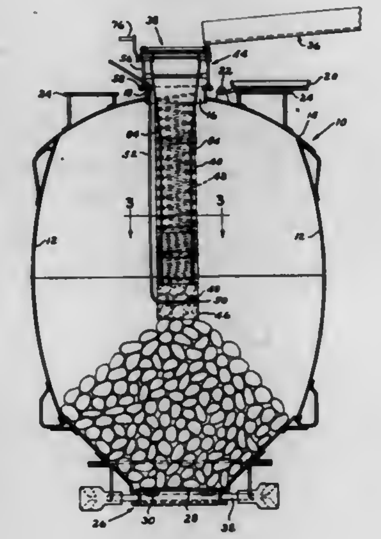


A friction clutch for an automobile which is so formed as to permit quick release of a drive portion and driven portion by providing an additional releasing effort therebetween. The friction clutch comprises a drive portion consisting of a flywheel secured to the engine shaft, and a pressure plate, and a driven portion consisting of a friction disk disposed between the flywheel and the pressure plate and a splined hub to which the friction disk is secured and meshed in spline with the input shaft of a transmission wherein the friction disk is formed in such a manner that it has a predetermined angle with a bend formed at its plate with respect to the flywheel.

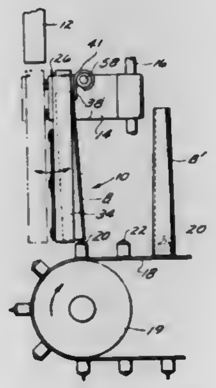
3,603,439
LOADING APPARATUS FOR RAILWAY HOPPER CARS
Ervin I. Pietsch, St. Charles, and John L. Carney, Jr., St. Louis County, both of, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Feb. 20, 1970, Ser. No. 13,250
Int. Cl. B65g *11/10*
U.S. Cl. 193—25 R **5 Claims**

A loading apparatus particularly for loading a railway hopper car with a perishable bulk commodity, such as potatoes or oranges. The loading apparatus includes a flexible fabric chute reinforced circumferentially by a spiral spring wire and having a lower valve portion to control the

discharge of the lading from the lower end of the chute. Rings or hoops are spaced along the height of the chute and have eyes thereon to guide ropes or the like for retracting or extending the chute as the hopper is filled with the lading.

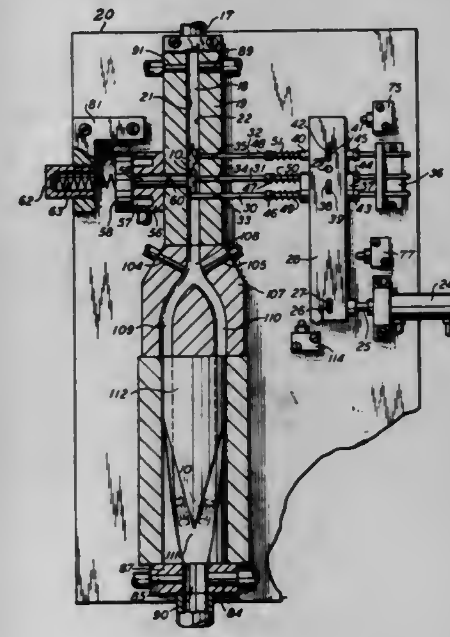


3,603,440
IMPROVED BOBBIN CAGE
Lester W. Pray, Clemson, and Carey A. Glazener, Seneca, both of, S.C., assignors to Maremont Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 798,389, Feb. 11, 1969, now Patent No. 3,531,016. This application Oct. 13, 1969, Ser. No. 865,943
Int. Cl. F16d *11/06*
U.S. Cl. 193—43 **19 Claims**



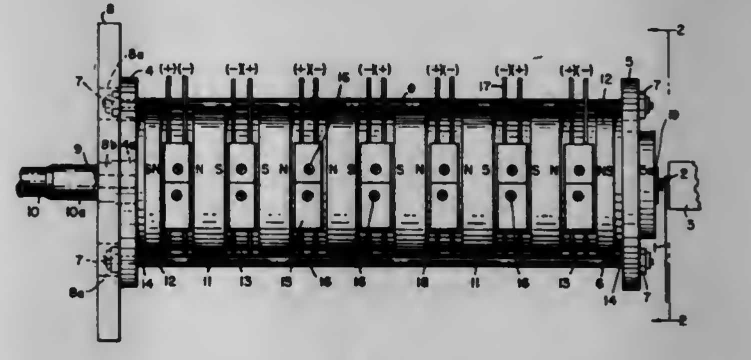
A bobbin tube cage for receiving bobbin tubes dropped therein, for moving tubes so received laterally in an upright position, and for depositing such tubes so moved onto conveyor pegs in an upright position is disclosed and, preferably, comprises an elongate rectangular structure having a substantially open fourth side, a bottom partially open between one or more inwardly directed flanges extending along the bottom from one or more of the facing closed sides, and in particular a guide means having a normally biased swingable gate means fixed for pivotable movement to and outwardly from one of the closed facing sides and having an inwardly directed arcuate convexity partially overlying the lower portion of the open side. The guide means also includes a guide plate fixed between the closed facing sides adjacent their top and across the open side, which guide plate extends downwardly a distance sufficient to somewhat overlap the top portion of a bobbin tube residing within the cage means.

3,603,441
APPARATUS FOR SENSING THE ORIENTATION OF FLAT ARTICLE HAVING A RAISED PORTION ONE SIDE THEREOF
Willie T. Ansell, and James C. McConnell, both of Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Feb. 27, 1970, Ser. No. 14,914
Int. Cl. B65g *47/24*
U.S. Cl. 193—43 A **4 Claims**



An apparatus senses the orientation of a flat article having a raised portion on one side thereof by forcing the article against a wall where a valve stem is depressed if the raised portion faces the wall. A valve enclosing a chamber is opened by the depression of the valve stem to release fluid pressure from within the chamber. Pressure-sensing facilities operated by the fluid pressure in the chamber control an orientating mechanism to insure that all articles are placed into a predetermined orientation.

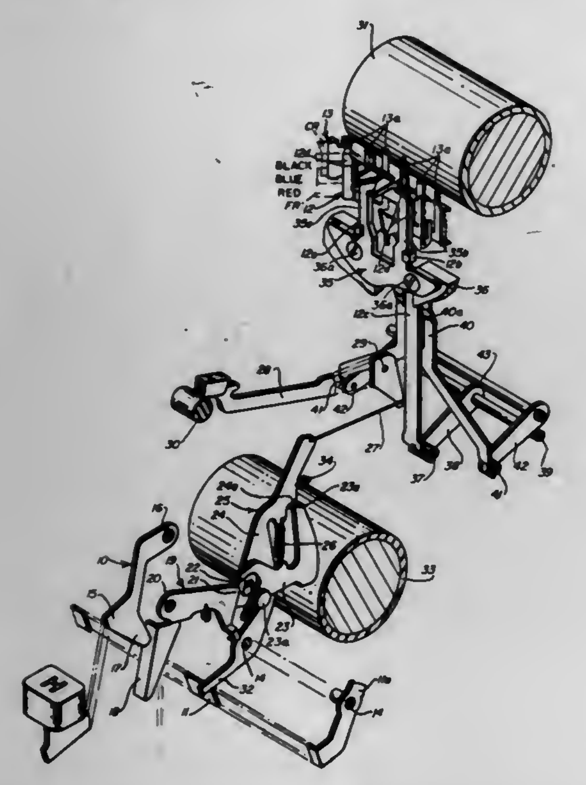
3,603,442
MATRIX PRINTER WITH PARALLEL STYLI AND PLURAL COAXIAL DRIVER COILS
Leonard G. Ward, Melbourne, and John H. MacNeill, Indialantic, both of, Fla., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.
Filed Apr. 1, 1969, Ser. No. 812,221
Int. Cl. B41j *9/00;* **B41f** *19/00*
U.S. Cl. 197—1 **22 Claims**



A matrix printer having electrically energizable circular coils spaced along and wound around a cylindrical center pole, styli wires of different lengths which are attached to the coils and extend substantially parallel to the center pole, permanent magnets, and pole members for providing paths for the magnetic lines of force from the magnets across the sides of the coils in directions substantially perpendicular to their axes. By selectively energizing the coils, selected coils are caused to move along the center pole and the styli wires attached to them are moved to print positions. The styli wires are thereafter withdrawn to nonprint positions by energizing the coils in the opposite directions.

3,603,443
SELECTIVE RIBBON-HANDLING MECHANISM FOR CARBON AND FABRIC RIBBONS

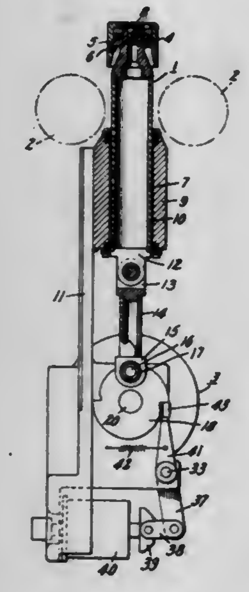
Ronald H. McLean, Newington, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Mar. 19, 1969, Ser. No. 808,516
Int. Cl. B41j *35/22, 35/10*
U.S. Cl. 197—156 **2 Claims**



A typewriter ribbon control for switching the operational mode of a typewriter between carbon ribbon, fabric ribbon and stencil operation, having selector means for selectively coupling and uncoupling a power arm to a fabric ribbon elevating mechanism and to a carbon ribbon elevating mechanism, and simultaneously selectively coupling and uncoupling a power drive mechanism to a fabric ribbon feed mechanism and a carbon ribbon feed mechanism.

3,603,444
HIGH-SPEED SORTING DEVICE

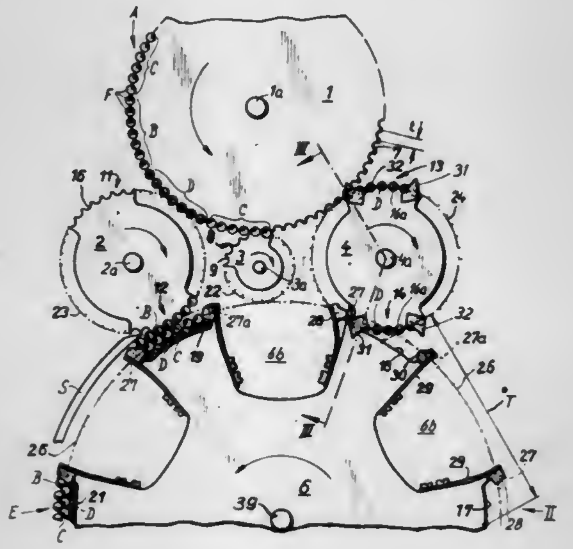
James L. Chengges, Trumbull, Conn., and Benjamin F. Hart, Ballston Lake, N.Y., assignors to General Electric Company
Filed Oct. 24, 1969, Ser. No. 869,121
Int. Cl. B65g *47/88*
U.S. Cl. 198—24 **8 Claims**



A hollow diverter pin is sinusoidally reciprocated, to selectively divert articles from a main conveyor, by a crank driven by a trip release one-way clutch and a continuously rotating motor. The clutch will engage and rotate the crank to a new position of the diverter pin, where a solenoid actuated trip disengages the clutch. With the disengagement of the clutch, a positive brake is also set by means of the solenoid to firmly position and hold the diverter pin in its new position.

3,603,445
APPARATUS FOR MANIPULATING ROD-SHAPED ARTICLES

Wolfgang Zausch, Hamburg, and Gunter Wahle, Reinbek, both of, Germany, assignors to Hauni-Werke, Korber & Co. KG, Hamburg, Germany
Filed June 17, 1968, Ser. No. 737,701
Claims priority, application Germany, June 3, 1971, H 63159 III/79b
Int. Cl. B65g *47/30*
U.S. Cl. 198—31 AA **27 Claims**

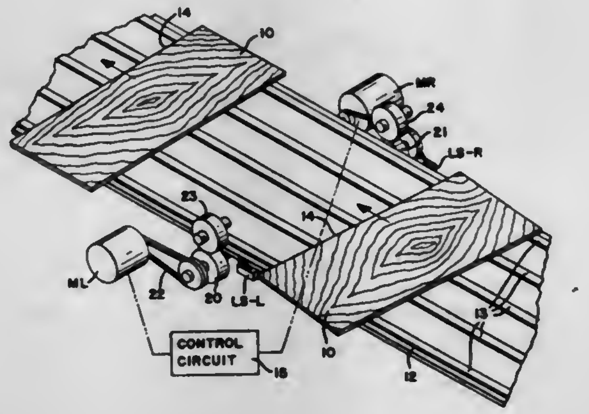


Apparatus for delivering cigarettes from a cigarette machine to a packing machine comprises a supply conveyor which advances a succession of cigarettes past three transfer conveyors each of which removes from the succession a series of groups in such a way that the first transfer conveyor permits predetermined numbers of cigarettes which can form two groups to advance to the second transfer conveyor and that the second transfer conveyor removes a group from each predetermined number and allows a group of cigarettes to reach the third transfer conveyor. All of the transfer conveyors supply groups to the pockets of an assembly conveyor which forms blocks of 20 cigarettes each and delivers such blocks to hollow mandrels in the conveyor of the packing machine. The supply conveyor receives cigarettes from a feed which in turn receives cigarettes directly from a cigarette machine.

3,603,446
SHEET-STRAIGHTENING MECHANISM

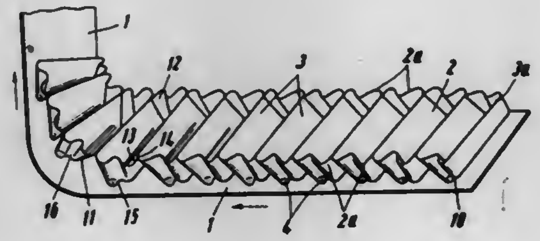
Carl W. Maxey, and Kenneth M. Cage, both of Everett, Wash., assignors to The Black Clawson Company, Hamilton, Ohio
Filed Mar. 27, 1969, Ser. No. 810,967
Int. Cl. B65g *15/50, 47/24*
U.S. Cl. 198—33 **4 Claims**

An apparatus for straightening sheets of material carried by a conveyor includes a sheet-sensing switch on each side of the conveyor actuated by the leading edge of the sheet to indicate the magnitude and direction of misalignment. A timing circuit computes the time difference between the passage of the leading edge of each side of the sheet and controls the speed of drive motors which thereafter move the sides of the sheet independently of the conveyor to straighten it.



3,603,447
BELT CONVEYOR

Richard Pott, Heide b. Detmold, Germany, assignor to Westland-Gummiwerke GmbH & Co., Westerhausen Kr. Melle, Germany
Filed July 24, 1969, Ser. No. 844,310
Claims priority, application Germany, July 31, 1969, P 17 56 905.0
Int. Cl. B65g *17/12*
U.S. Cl. 198—152 **12 Claims**

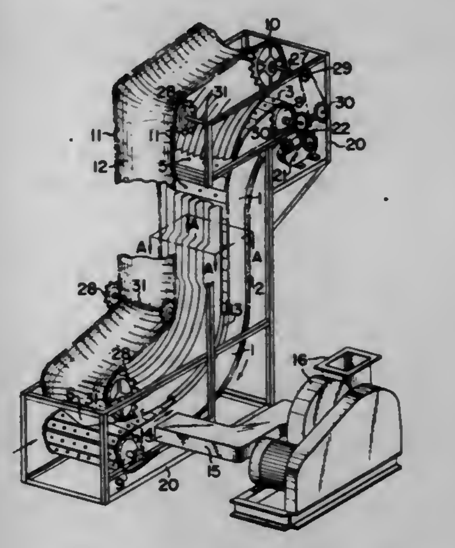


A conveyor comprising an endless band which constitutes a moving track and a plurality of adjacent open-topped foldable transporting members secured with their respective bottom portions to the endless band. The transporting members are arranged so that adjoining wall sections of adjacent transporting members are secured to each other and extend at least in the region of these adjoining wall sections at an acute angle relative to the endless band and in direction of movement thereof.

3,603,448
CONVEYER APPARATUS

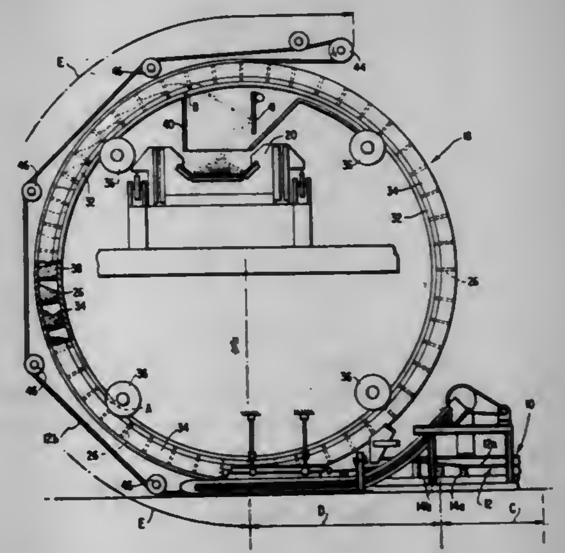
Tohei Okano, and Takehiko Kannari, both of Osaka, Japan, assignors to The Tsubakimoto Chain Manufacturing Co., Ltd., Jotoku, Osaka, Japan
Filed Nov. 26, 1969, Ser. No. 880,134
Claims priority, application Japan, Jan. 6, 1969, 32/1969
Int. Cl. B65g *15/14*
U.S. Cl. 198—162 **6 Claims**

The present invention relates to a conveyor apparatus which comprises an endless slat conveyor which provides an air suction chamber, a pair of chains surrounding the air suction chamber, a plurality of slats extended between the chains, the slats having air suction ports and, if required, an elastic plate, and a plurality of driving sprockets to drive the endless slat conveyor; an endless backup belt which provides a pair of toothed belts (e.g. chains), the belts being maintained in intimate contact with the edges of the slats, and an airtight wide membrane extended loosely between a pair of the toothed belts (e.g. chains); and an air suction device which has an air suction tube connected to the air suction chamber and a blower. This conveyor apparatus is made up of a horizontal part and a vertical or inclined part. Articles supplied on the slats of the horizontal part are covered entirely by the airtight membrane and the membrane is sucked to the surface of the articles when the pressure in the space formed between the slat conveyor and the backup belt drops in the negative. Consequently, the articles are able to be conveyed in the vertical or inclined direction, while holding securely in a sense sandwiched between the slat conveyor and the backup belt.



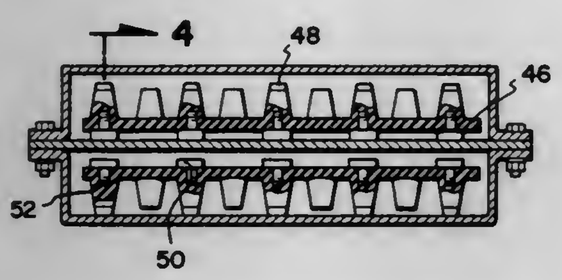
3,603,449
TRANSITION STRUCTURE BETWEEN CONVEYOR AND ROTARY ELEVATOR WHEEL

Frederick O. Snow, III, Wayne; Francis X. Connelly, Rutherford, N.J.; Harold Glazer, Ocean Springs, Miss., and Nancy K. Latincsics, Wanague, Ala., assignors to Hewitt-Robins Incorporated
Filed Oct. 6, 1969, Ser. No. 866,792
Int. Cl. B65g *29/00*
U.S. Cl. 198—167 **12 Claims**



The present invention employs a rotatably mounted wheel in combination with a belt conveyor for elevating material conveyed by the conveyor. The wheel has a plurality of storage cells formed around the periphery of the wheel. The conveyor belt wraps around the peripheral section of the wheel trapping the material on the belt in the storage cells and thereby permitting the conveyed material to be elevated to a discharge location. The material is trapped in the compartments by a back plate or seal belt which is maintained in contact with a portion of the inner surface of the wheel. The conveyor belt is maintained in a troughlike condition during the loading and transporting of the bulk materials conveyed thereby and the side portions thereof are elevated so as to centrally locate the bulk materials thereon prior to contacting the rotatably mounted wheel at which point the conveyor belt is flattened. Stationary and pivotally mounted skirt boards are positioned above and adjacent to the load supporting surface of the conveyor belt so as to guide the bulk materials into the storage cells of the wheel. One modification of the present invention includes the provision of biasing members for resiliently mounting that portion of the conveyor belt subjacent the base of the rotatably mounted wheel so as to assure a sealing contact between the belt and wheel and to compensate for any irregularities in the roundness of the wheel. A second modification of the present invention includes the provision of a pair of return conveyors positioned adjacent the side portions of the conveyor belt along the base of the elevating wheel so as to return all materials inadvertently escaping from the belt to a position on the belt prior to the centering of the bulk material conveyed thereby. One further modification of the present invention includes the provision of removal means for removing material from the outer edges of the conveyor belt and for depositing such material into the return conveyors.

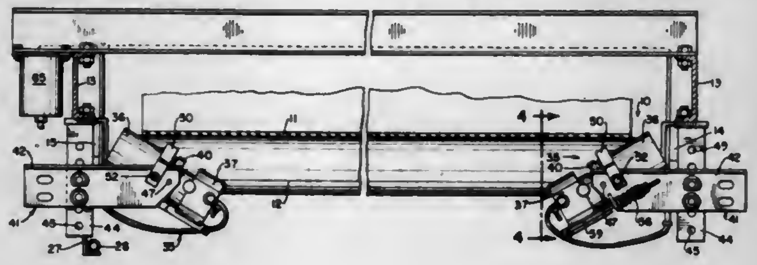
3,603,450
ENCLOSED BELT CONVEYOR
Leon A. Chamberlain; Clarence R. Campbell, and Leif T. Stokes, all of Salt Lake City, Utah, assignors to Envirotech Corporation, Salt Lake City, Utah
Filed Aug. 21, 1969, Ser. No. 851,897
Int. Cl. B65g *15/42*
U.S. Cl. 198—198 **11 Claims**



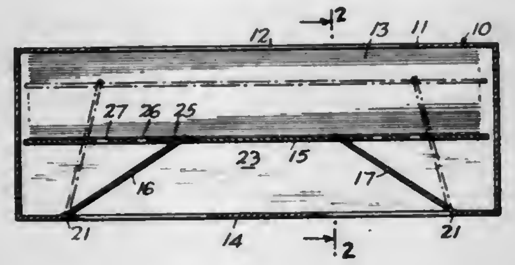
A belt conveyor is disclosed in which the belt is equipped with upwardly projecting material-engaging fingers and wherein at least that section of the working run which passes between feed and discharge is enclosed by a close-fitting conduit. A belt construction is also disclosed whereby at least part of the material-engaging fingers are constructed from or tipped with a low-friction abrasion-resistant material to provide bearing elements. In some cases, only part of the material-engaging bearing fingers serve as bearing elements. In such instances, the bearing element fingers extend outwardly to a greater distance than the other fingers and serve as spacers holding the nonbearing fingers away from the conduit. The underside of the belt may also be provided with relatively thin abrasion-resistant bearing elements.

3,603,451
BELT-TRAINING APPARATUS
Robert M. Promin, Wayne, and Ralph W. Coutant, Fair Lawn, both of, N.J., assignors to Hewitt-Robins Incorporated
Filed Oct. 20, 1969, Ser. No. 867,490
Int. Cl. B65g *27/00*
U.S. Cl. 198—202 **11 Claims**

The belt-training apparatus of the present invention includes two sensing units on opposite sides of a belt run, which is to be maintained in properly centered or trained position in relation to a conveyor-supporting frame, and which is supported on idler rollers. At least one of these belt supporting rollers is angularly adjustable to veer the belt run in properly trained position by the action of these sensing units. When the belt run is properly trained, the belt run does not activate the sensing units. Each sensing unit comprises a sensing roller adapted to be engaged by and frictionally driven by the adjacent edge of the belt run, when the belt run strays laterally from properly trained position, and a hydraulic pump coupled to the sensing roller. A hydraulic circuit includes the two pumps of the two sensing units interconnected by pipe connections, through which hydraulic liquid flows from a pump activated by sensing to an idle pump, and tends thereby to operate the latter pump as a motor. In accordance with the present invention, means are provided for preventing such interplay between the pumps.

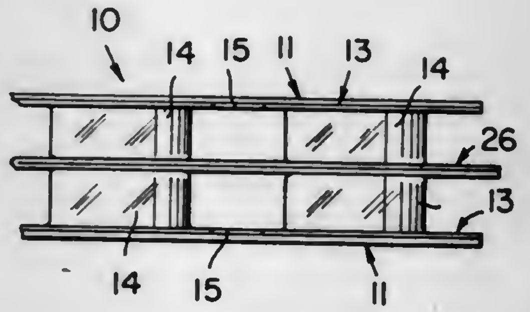


3,603,452
TISSUE BOX WITH ADJUSTABLE AUXILIARY BOTTOM
Irving Singer, 2953 Charlotte Drive, Merrick, N.Y.
Filed June 12, 1970, Ser. No. 45,798
Int. Cl. B65d *5/50, 83/00, 85/62*
U.S. Cl. 206—45.16 **2 Claims**



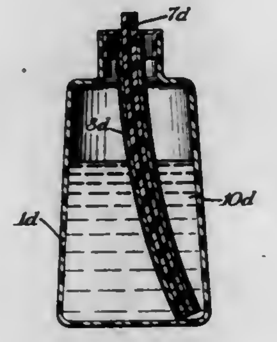
Outlines of two potential braces are punctured on three sides of a rectangle through the main bottom of a paper box. When the stack of tissues in the box is lowered by depletion, the braces are severed on the outlines and swung into the box. A tongue on the freed and raised end of each brace slips into the nearest of a row of parallel transverse slots in a loose auxiliary bottom of the stack. The braces raise and support the auxiliary bottom and the depleted stack at two longitudinally spaced-apart lines so that the top of the stack becomes easily accessible through an opening in the fixed box top. On further progressive depletion of the stack, the braces are again raised in progressive stages to insert the tongues into other slots.

3,603,453
PHARMACAL PACKAGE CONSTRUCTION
John J. Serrell, and George C. Sparks, both of Harleysville, Pa., assignors to Parke, Davis & Company, Detroit, Mich.
Filed June 9, 1969, Ser. No. 831,557
Int. Cl. B65d *75/54, 85/56*
U.S. Cl. 206—47 R **3 Claims**



A pharmacal package wherein a pair of backing sheets are each secured in closing relation with respect to the blisters of a respective blister sheet, and the backing sheets are arranged with the blisters of respective blister sheets in back-to-back adhesively secured relation with respect to each other.

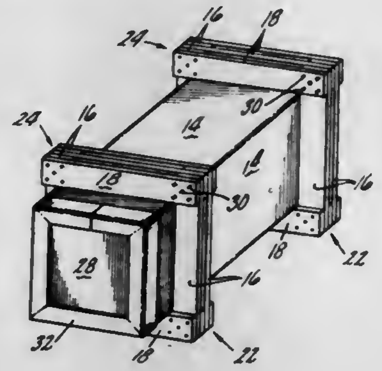
3,603,454
CONTAINER FOR SUBSTANCE INCORPORATING VOLATILES
Helmut W. Raaf, Karlsruhe, Germany, assignor to Pfizer Inc., New York, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,541
Claims priority, application Germany, Sept. 9, 1969, P 17 86 354.6
Int. Cl. B65d *85/70*
U.S. Cl. 206—47 **2 Claims**



A container for a substance, which must retain a necessary concentration of volatile constituents throughout storage and its useful life, includes a main container permeable to the volatiles and a depot element of a sealing material containing the volatile substance and which provides a sustained slow release thereof. This depot element, particularly intended for thin-walled plastic bottles permeable to volatiles, is shown in the following forms:

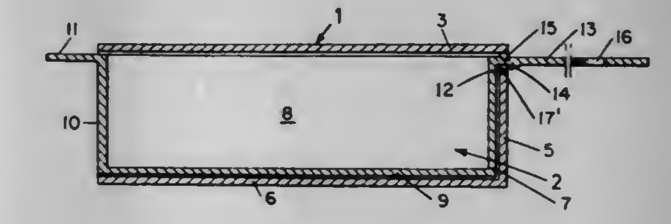
1. Poured fusion of sealing material and volatiles;
2. Granules of the aforementioned;
3. Loose depot element either fused or filled with volatiles;
4. Fixed inside container;
5. Annular depot element surrounding dip tube;
6. Elongated depot element extending above and below surface of liquid;
7. Hollow internal container sealed to wall of container; and
8. Internal partition.

3,603,455
PACKAGE FOR LARGE GLASS PANELS
David A. Bareiss, North Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Aug. 28, 1969, Ser. No. 853,910
Int. Cl. B65d *85/46*
U.S. Cl. 206—62 R **5 Claims**



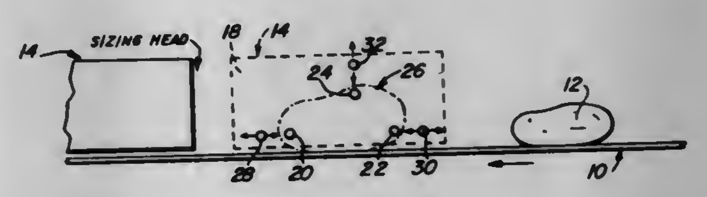
A glass panel shipping and storing container having two similar separate halves, each half formed by spaced L-shaped frame members secured to and held in spaced parallel relation by stiff sheet corrugated cardboard longer than said panels. Each frame member is formed of two legs rigidly joined at one end and formed of spaced boards arranged on edge with respect to said cardboard and intermeshing with an rigidly secured to the boards of the other leg at the joint. The boards of the frame members of one half intermesh with the boards of the corresponding frame members of the other half and are removably secured thereto in the assembled container and form a frame extending entirely around the container. The protruding ends of the cardboard sheets are folded down across the ends of the glass slabs and are secured as by taping to close the package.

3,603,456
DISPLAY HOLDER FOR GOODS
Jean-Marie Bisschop, 98, rue Gerard, Brussels, Belgium
Filed Dec. 16, 1968, Ser. No. 783,967
Claims priority, application Belgium, Dec. 18, 1967, 708,114
Int. Cl. A44b *7/00;* **B65d** *43/16*
U.S. Cl. 206—78 **8 Claims**



A holder to be used for the display of goods, comprising a case and a drawer for sliding within the case, the drawer being provided with a tongue for the suspension of the holder. The tongue passes through a slot provided within the case and having a surface for locking the drawer inside the case in the closed position of the drawer.

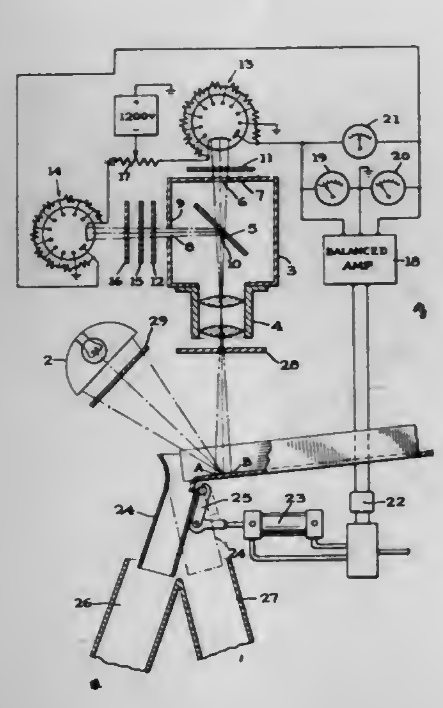
3,603,457
ELECTRONIC PRODUCT-SIZING APPARATUS
John F. Flodin, 902 Taylor St., and Allan T. Flodin, Rte. 2, Sheller Road, both of, Sunnyside, Wash.
Filed May 28, 1969, Ser. No. 828,607
Int. Cl. B07c *5/342*
U.S. Cl. 209—82 **9 Claims**



Articles such as crops are sized while being moved past a photoelectric sizing station by a continuously moving conveyor. A set of spaced sizing cells at the sizing station gauge the dimensions of the article to emit a signal if the size and shape of the article is within a predetermined and adjustable range. Generation of the signal operates an ejection device to remove the article from the conveyor.

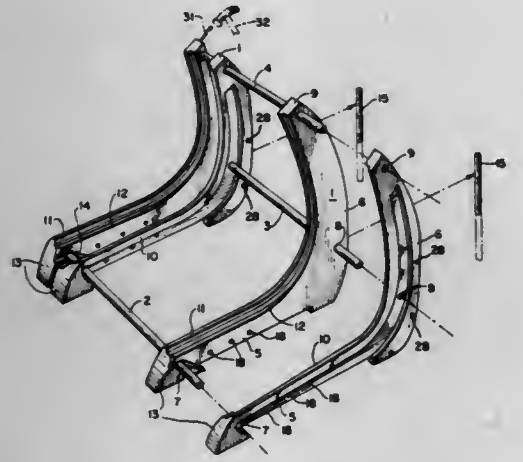
3,603,458
APPARATUS FOR THE DETECTION AND REMOVAL OF SELECTED FOREIGN MATTER FROM A MATERIAL
George N. Bliss, Franklin, Mich., assignor to Diamond International Corporation, New York, N.Y.
Filed Oct. 7, 1969, Ser. No. 864,490
Int. Cl. G06m *7/00*
U.S. Cl. 209—111.6 **16 Claims**

Apparatus to detect and remove yolk-contaminated albumen from uncontaminated albumen as it flows over a darkened area of a chute by means of a camera device focused on said area to receive rays on two focal planes through a beam splitter where photosensitive devices, one responsive to yellow light and the other blind to yellow light, create an imbalance when yolk is present, to operate a diverting mechanism downstream of the darkened area.



3,603,459
ADJUSTABLE BICYCLE RACK

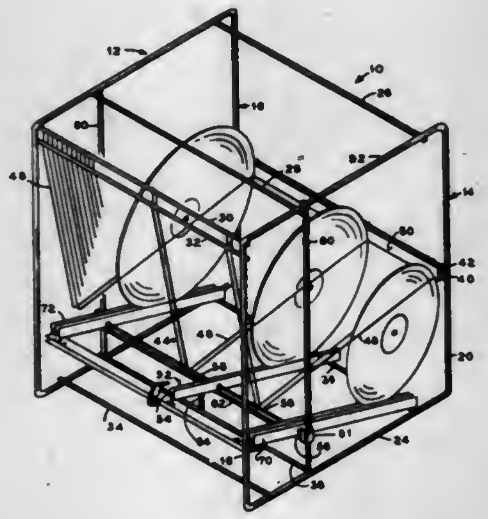
Richard I. Erb, 910 Croton Drive, Alexandria, Va.
Filed Apr. 14, 1970, Ser. No. 28,449
Int. Cl. A47f *7/00*
U.S. Cl. 211—20 **17 Claims**



One or more bicycles may be held in the bicycle rack with adjustments made as to differences in tire width, tire diameter, and space between adjacent bicycles. A pair of mirror image L-shaped supporting members is provided for each bicycle, with each supporting member extending vertically and having a plurality of horizontal holes receiving therein parallel supporting tubes. Releasable fasteners are provided to secure supporting members to the tubes in any adjusted position according to the dictates of the bicycle to be held. Each pair of L-shaped members has oppositely disposed inner bevelled surfaces and outer ribs for guiding a bicycle between them, which bicycle may roll up and over one of the tubes from either direction with the aid of ramp surfaces. The tubes are arranged to engage tread of the tire resting on the support surface and the L-shaped members are arcuate to engage the sidewalls of the tire for approximately 180° of its circumference. For further adjustability, cross pins are provided for smaller diameter tires.

3,603,460
APPARATUS FOR STORING PHONOGRAPH RECORDS

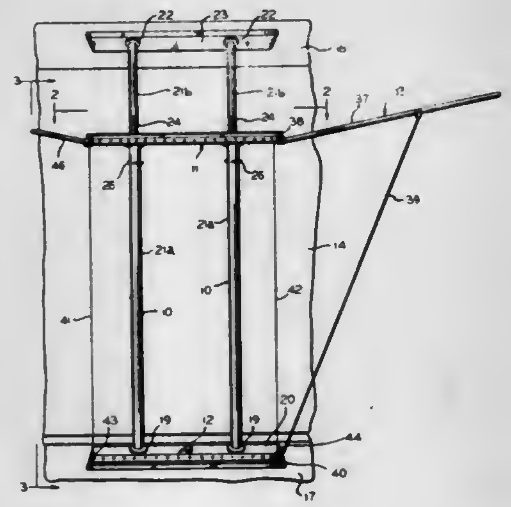
Robert J. Notes, Adrian, Mich., assignor to Lyle W. Roeder, Adrian, Mich., a part interest
Filed Sept. 15, 1969, Ser. No. 858,067
Int. Cl. A47g *29/00*
U.S. Cl. 211—40 **9 Claims**



A phonograph record storage container includes a frame with a plurality of parallel, elongate supports at the bottom thereof to individually support the records. The supports are pivoted at intermediate points and can be tilted downwardly toward the front to move the records outwardly for easy accessibility. The storage apparatus also includes unique wire dividers between the records which effectively separate adjacent records from one another regardless of their size. An indexing mechanism is mounted on the storage container for selectively tilting any one of the elongate supporting members downwardly to facilitate removal of a selected record.

3,603,461
RUG RACK

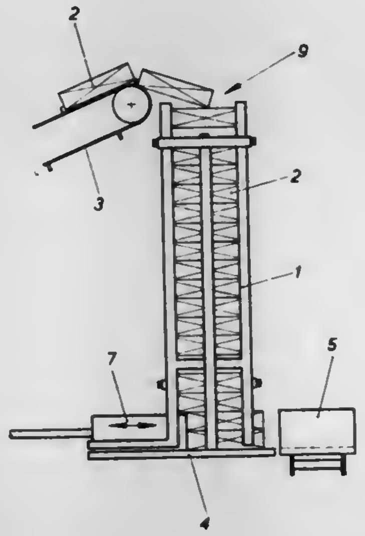
Leon H. Best, Galva, Ill., assignor to John H. Best & Sons, Inc., Galva, Ill.
Filed Dec. 4, 1969, Ser. No. 882,094
Int. Cl. A47f *7/16*
U.S. Cl. 211—47 **13 Claims**



The rack displays rugs in a showroom and includes a plurality of rug hangers pivotally mounted at their upper ends on a hinge bar and at their lower ends on a pivot bar so that half of the rug hangers will normally move by gravity in one direction while the other half will normally move by gravity in the other direction to normally display the rugs hanging on the two centermost rug hangers.

3,603,462
TRANSFER ARRANGEMENT

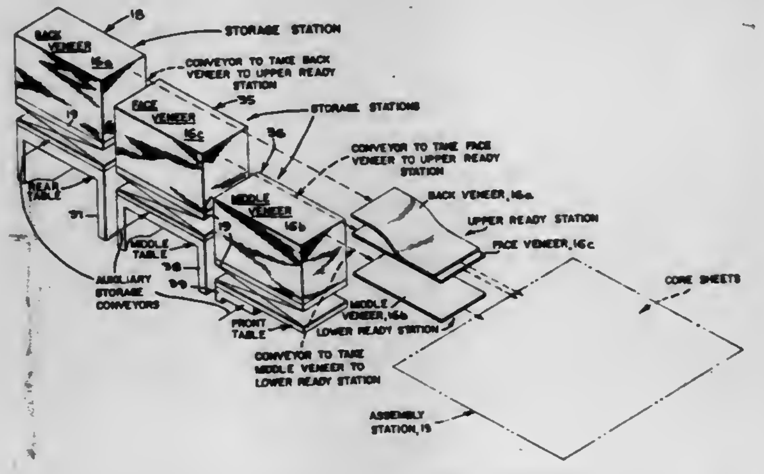
Theo Moser, Stuttgart, Germany, assignor to Hofliger & Karg, Waiblinger bei Stuttgart, Germany
Filed Apr. 16, 1970, Ser. No. 29,167
Claims priority, application Germany, Apr. 17, 1969, P 19 19 521.2
Int. Cl. B65g *59/12*
U.S. Cl. 214—8.5 A **6 Claims**



An upright hollow structure is mounted for pendulous movement about an axis intersecting it in the region of its upper end portion. A supply introduces a succession of discrete stackable articles into the upper end of the structure so that they form in the latter an upright stack. Receivers each having an inlet travel in the region of the lower end of the structure in a path paralleling the plane of pendulous movement thereof. An ejecting device moves with the structure and serves to eject through an opening provided in the lower end portion thereof a predetermined number of articles from the stack into the respective receivers when the inlets thereof are in registry with the outlet opening of the structure.

3,603,463
APPARATUS FOR FEEDING VENEER TO PLYWOOD ASSEMBLY STATION

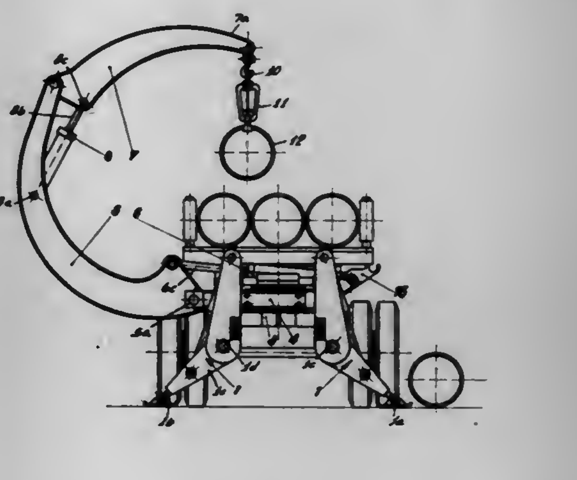
Ronald J. Billett, Sunnyvale; Donald W. Chamberlin, Los Gatos, and Arthur L. McGee, San Jose, all of, Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Apr. 1, 1969, Ser. No. 811,929
Int. Cl. B65g *60/00*
U.S. Cl. 214—8.5 R **9 Claims**



Apparatus for feeding veneer to a plywood assembly station is disclosed. The apparatus has three lift tables in line with the assembly station. The back lift table supports a supply of back veneer, the middle lift table supports a supply of face veneer, and the front lift table supports a supply of middle veneer. Two vertically stacked conveyors extend, respectively, from the outer two lift tables to lift tables to transport back veneer and face veneer, respectively, to an upper ready station. A third conveyor, below the other two conveyors, extends from the front lift table to transport middle veneer to a lower ready station. The back and face veneer are released together from the upper ready station to the assembly station, and the middle veneer is released alternately from the lower ready station to the assembly station.

3,603,464
UNDERCARRIAGE TRAILER FOR HANDLING AND TRANSPORTING ELONGATED BODIES

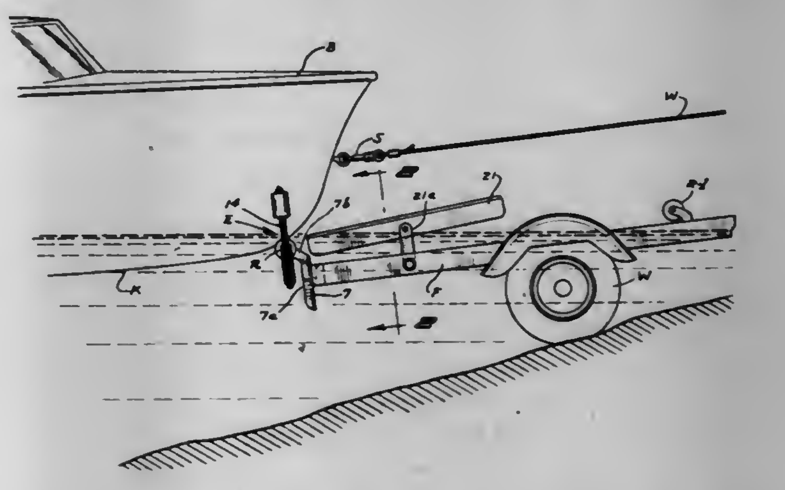
Gheorghe Marcel Teodorescu, Stirbei Voda, Romania, assignor to Interprinderea Montaje Conducte Magistrale, Brasov, Romania
Filed Oct. 1, 1969, Ser. No. 870,508
Claims priority, application Romania, Dec. 2, 1968, 58361
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 **2 Claims**



A trailer has an underslung carriage provided with a lifting installation for depositing elongated bodies upon the trailer and transferring them to and from the trailer. The installation comprises a pair of crescent-shaped articulated arms mounted upon a pivotal support and adapted to lift the elongated bodies for transfer purposes and to surround the bodies to retain them during transport.

3,603,465
BOAT CENTERING AND GUIDING DEVICE FOR BOAT TRAILERS

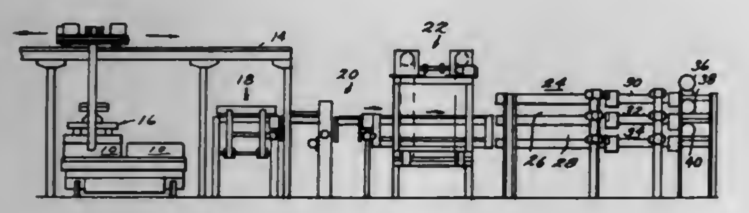
Kenneth J. King, 32 Penn Ave South, Minneapolis, Minn.
Filed Nov. 20, 1969, Ser. No. 878,293
Int. Cl. B60p *1/52*
U.S. Cl. 214—84 **5 Claims**



A novel boat centering and guiding device closely cooperates with the frame, the centered keel-plate-receiving rollers and the winch and winch cable of most conventional types of boat trailers. The device or apparatus employs a pair of spaced oppositely arranged spring-tensioned roller elements mounted close to the respective ends of the trailer roller which first receives the bow of the boat in loading. Upstanding spring mechanisms on which said cooperating rollers are mounted are anchored at their lower ends somewhat below the axis of the receiving trailer boat-receiving roller so the first keel plate portion of the bow of the boat is yieldingly engaged thereby centering the boat relative to the length of the trailer and thereafter the springs yield to the configuration but continue to engage lower portions of the boat adjacent the keel plate thereof for assuring center guiding of the boat throughout its length upon the boat trailer.

3,603,466
METHOD FOR UNLOADING AND BLENDING LAYERED STACKS OF BRICKS OR SIMILAR ARTICLES

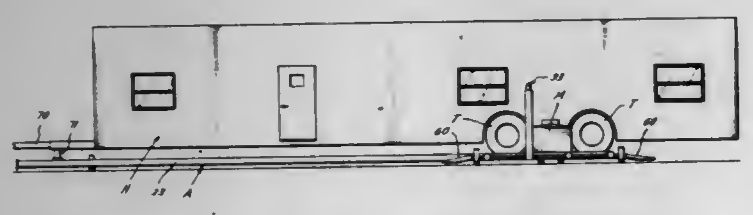
Hans M. L. Lingl, Jr., Paris, Tenn., assignor to Lingl-Bell Corporation, Gleason, Tenn.
Filed May 22, 1970, Ser. No. 39,707
Int. Cl. B65g *59/02*
U.S. Cl. 214—152 **8 Claims**



Apparatus and method for mechanically unloading a layer or double layers of layered stacks of rows of bricks or similar articles stacked, for example, on kiln cars or pallets and for selectively and variably blending bricks from different rows and/or from different layers of the stack to provide a blended balance between different brick firing qualities and/or to achieve special coloring effects in the final blended output. Bricks from one layer of the stack are stored on one of a plurality of storage levels and one or two rows of bricks from each level are separated and mixed with other separated rows of bricks from the same or other storage levels to achieve the desired blending pattern. Special handling also permits the mixing of bricks from less than a whole row of bricks from one layer with less than a whole row of bricks from another layer for increased flexibility in achieving any desired blend.

3,603,467
POWER TRUCKLE FOR TRAILER HOUSE

James H. Siler, Star Rte. A, Box 259, Hobbs, N. Mex.
Filed Apr. 10, 1969, Ser. No. 815,068
Int. Cl. B60b *29/00*
U.S. Cl. 214—334 **8 Claims**

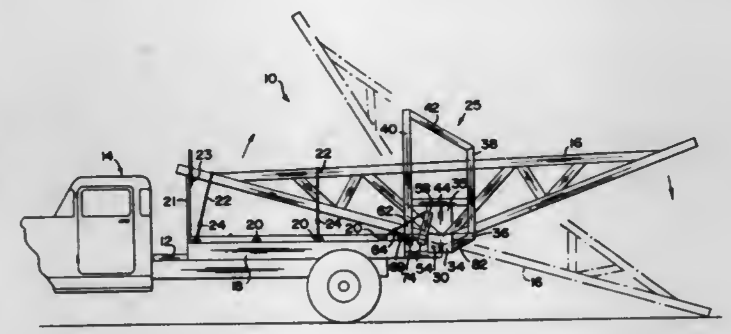


A power truckle adapted to receive a trailer house thereon, and which trailer house is thereafter moved laterally on the truckle to an otherwise inaccessible place for the storage or parking of the trailer house.

3,603,468
RACK FOR TRUSSES

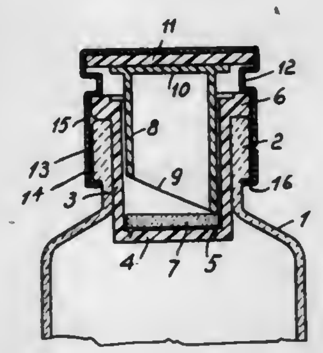
Maurice F. Shave, 5319 Barton Road, North Ridgeville, Ohio
Filed July 24, 1969, Ser. No. 844,332
Int. Cl. B60p *1/04*
U.S. Cl. 214—501 **8 Claims**

A rack for carrying trusses in inverted position which includes a pair of substantially parallel side rails fixed to the bed of a conveyance. Upwardly extending standards at one end of the rails support the forward, end portions of the trusses; independently secured to the bed at the rear end of the rails is a rotatable frame which supports the central portions of the trusses; and the rear portions of the trusses extend beyond the rear of the conveyance. The frame is pivotably mounted on a shaft and includes a pair of lattice like side elements which project radially from the opposite ends of said shaft to provide lateral support for the trusses. Extending between the side elements are two sloping, bottom support plates which converge to form an open, V-shaped trough having substantially the same slope as the trusses near their inverted peak, with one plate on each side thereof. The frame may be locked in carrying position with the V-shaped trough opening substantially upward. The trusses are dumped from the conveyance by pivoting the frame until the V-shaped trough opens toward the rear of the conveyance and the rear portions of the trusses touch the ground.



3,603,469
GUARANTEE CAP

Ambrogio Magni, Viale Monza, 210, Milan, Italy
Filed Feb. 20, 1969, Ser. No. 800,888
Claims priority, application Italy, Apr. 11, 1968, 8589B/68
Int. Cl. A45c *11/04*
U.S. Cl. 215—6 **4 Claims**

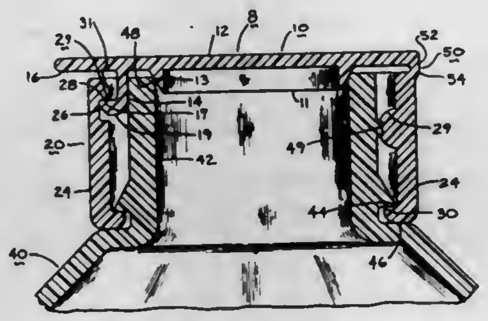


A container having a frangible bottom wall and radially outwardly extending flange at its upper open end is inserted in the neck of a bottle with the flange abutting against the upper face of the bottle neck. A member having at its lower end a cutting edge is located in the container movable from an upper rest position towards the bottom wall of the latter so that by such movement the bottom wall may be broken to thereby discharge the contents of the container into the bottle. A cap surrounding the bottle neck and flange of the container is provided in the region of its upper end with a rolled in groove which forms a shoulder pressing the flange of the container tightly against the upper face of the bottle neck while at the same time providing above the flange a space normally maintaining the cutting member in its upper rest position.

3,603,470
COMPRESSIBLE SAFETY CLOSURE

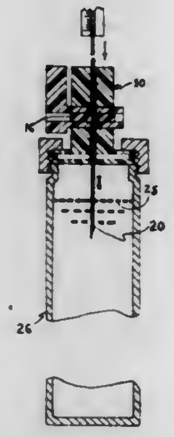
Donald F. Armour, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 2, 1970, Ser. No. 248
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **11 Claims**

A safety closure to prevent children from opening containers such as those holding medicines. The closure includes a skirt for fastening to the container, an overcap for sealing the container opening and a locking mechanism for securing the overcap to the skirt. The skirt has a vertical section having a portion of the locking mechanism thereon and an adjoining outwardly flaring section. On pressing the outwardly flaring section the locking mechanism, including a portion on the overcap, disengages to release the overcap, whereas a similar force applied to the vertical section of the skirt will not result in such disengagement.



3,603,471
SEPTUM VALVES

Rano J. Harris, Sr., and Rano J. Harris, Jr., both of Baton Rouge, La., assignors to Precision Sampling Corporation
Filed Nov. 24, 1969, Ser. No. 879,232
Int. Cl. B65d *51/00*
U.S. Cl. 215—37 **10 Claims**

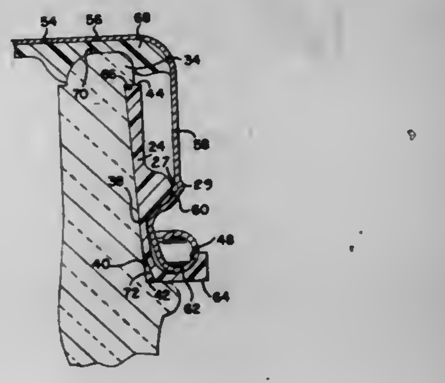


Apparatus for containing fluids, i.e., liquids or gases, within a confined space. In one embodiment, the apparatus comprises a valve structure including a tubular member (with axial opening) which leads into an enclosed space which can contain fluid. A septum, and a stem, provided with a lateral opening therethrough, are integrally mounted or mounted in series. The stem is rotatably mounted within the wall of the tubular member for exposure of the septum to the valve exterior. Exposure of the septum in such manner permits injection or withdrawal of fluid from the enclosed space. In preferred embodiments, the septum is located within an axial opening through the valve stem and lies across the lateral opening of the stem to provide an effective leakproof seal. In other embodiments, the septum is contained within the tubular member in series with the stem. The valve, in all embodiment, is adaptable for use with containers of various types or for use in sample inlet systems, as conventionally used in modern analytical instruments.

3,603,472
TRANSFERABLE FINISH RING AND CONTAINER AND CLOSURE FOR USE THEREWITH

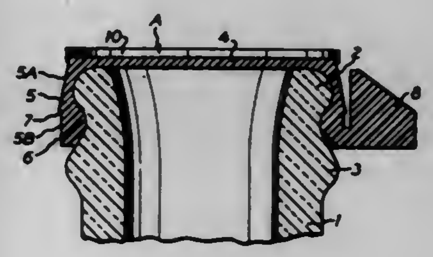
Frank H. Lecinski, Jr., Harwood Heights, and James E. Westfall, Western Springs, both of, Ill., assignors to Continental Can Company, New York, N.Y.
Filed Mar. 5, 1969, Ser. No. 804,486
Int. Cl. B65d *41/08, 41/62*
U.S. Cl. 215—40 **12 Claims**

A finish ring or transfer fitment which may be transferred onto a container, preferably having a cap associated therewith at the time of transfer, in which the finish ring includes means for engaging a ring finish portion of the container, and further includes means for engaging a portion of the container to prevent rotational movement of the ring, and side finish means on a circumferentially extending portion thereof for receiving and retaining a closure member thereover so as to engage the container in a tight-sealing relation. Preferably, the ring also includes a bottom stop or bottom finish portion for locking the closure to the finish ring so the two may be handled as a unit. The finish ring may further include a top seal finish portion, with or without an integrally formed secondary container cover, which may in turn include a tear-out easy opening section. The ring may also include separate seal means for engaging the container, as well as means for being held while the cap or closure is applied thereto, and means for preventing the closure from accidentally backing off from the ring or fitment before, during or after assembly.



3,603,473
CAPS FOR BOTTLES AND CONTAINERS

Ragnar Olof Winberg, Frontgatan 8c, 252 56 Halsingborg, Sweden
Filed Mar. 10, 1970, Ser. No. 18,170
Claims priority, application Sweden, Mar. 12, 1969, 3382/69
Int. Cl. B65d *41/22*
U.S. Cl. 215—41 **2 Claims**

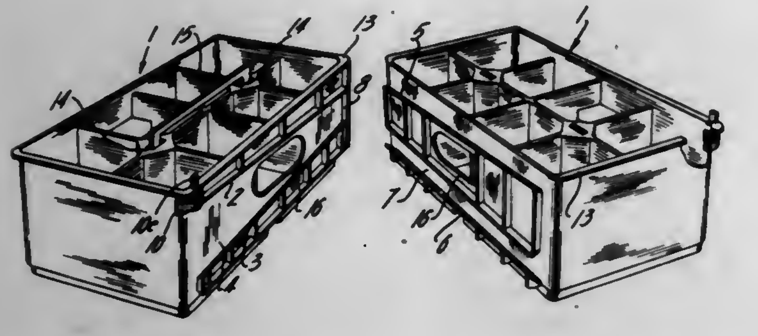


A cap for bottles and containers of the type having a bead at their mouths is provided with a safety ring which embraces the flange of the cap in the mounted position thereof to ensure efficient sealing of the bottle. For easy opening of the bottle the cap has a projection which extends from less than a quarter of the cap periphery and which, upon application of a lifting force against its underside, will act as a lever and cause rupturing or stretching of the safety ring, thus permitting removal of the cap without the use of tools.

3,603,474
INTERLOCKING MEANS FOR DIVISIBLE CONTAINER CARRIER

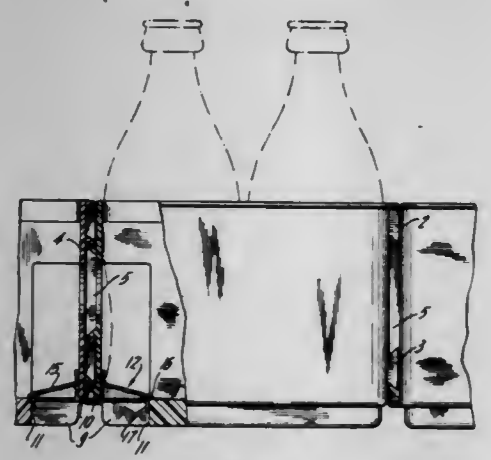
Gerald Erickson, P.O. Box 6175, Surfside, Fla.
Filed June 16, 1969, Ser. No. 833,652
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.4 **5 Claims**

A sectional carrying case capable of being interlocked with another sectional carrying case and having a finger-actuated movable lock guided for movement between a release position in which it permits the case to be interlocked with another case and a locked position in which it prevents separation of a pair of interlocked sectional carrying cases.



3,603,475
INTERLOCKING MEANS FOR DIVISIBLE CONTAINER CARRIER

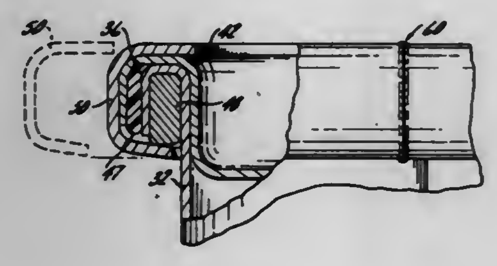
Gerald Erickson, P. O. Box 6175, Surfside, Fla.
Filed June 16, 1969, Ser. No. 833,653
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.4 **7 Claims**



A locking clip for locking together a pair of sectional carrying cases to make up a composite carrying case and having retaining means extending outwardly from opposite sides of the clip to retain the locking clip in position. A composite carrying case made up of a pair of sectional carrying cases having slots in the bases thereof exposing the parts of the sectional carrying cases to be locked together and parts to receive the outwardly extending retaining means.

3,603,476
RECONDITIONABLE CONTAINERS

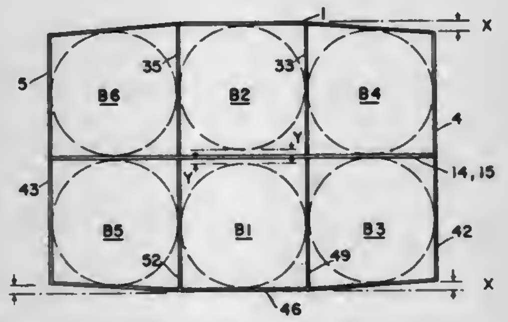
Mattheus J. M. Coppens, Erikalaan, Belgium, assignor to Inland Steel Company, Chicago, Ill.
Filed July 22, 1969, Ser. No. 843,678
Int. Cl. B65d *7/42*
U.S. Cl. 220—67 **13 Claims**



An improved multitrip metallic shipping container which permits repetitive use of the metallic container components while at the same time permitting unimpeded access into the interior of the container and into the normally inaccessible chime portions thereof for cleaning, dedenting and related container reconditioning purposes, and to methods of assembly and disassembly thereof. The positioning of a resilient sealing means, such as a gasket, relative to the cylinder body and a drum head provides a construction with improved resistance to leakage and deformation.

3,603,477
ARTICLE CARRIER

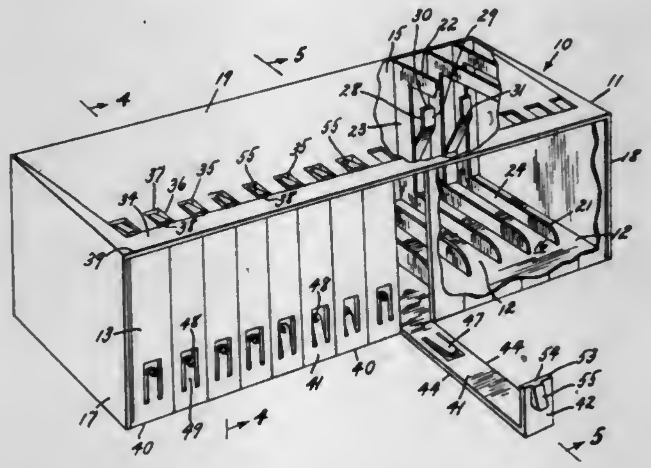
Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation
Filed Oct. 29, 1969, Ser. No. 872,320
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **5 Claims**



A basket style multiple cell article carrier having a low medial handle structure disposed between two rows of articles is specially constructed to provide hand gripping space on each side of the handle and intermediate the top portions of the middle ones of the packaged articles. Toward this end, the end wall panels are somewhat narrower in width than the exterior transverse dimension of the packaged articles while the intermediate transverse partitioning elements are somewhat longer than the exterior transverse dimension of the packaged items so that the middle article or articles on each side of the handle may be moved outwardly somewhat to afford hand gripping space immediately adjacent one or more hand gripping apertures formed in the handle and disposed below the tops of the packaged items midway between the ends thereof.

3,603,478
TAPE CASETTE HOLDER

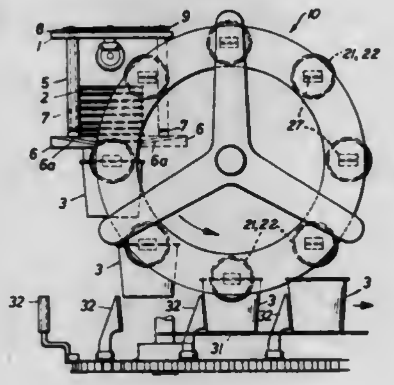
Andrew S. Connan, 53 Roosevelt Ave., Glen Head, N.Y.
Filed Apr. 2, 1970, Ser. No. 25,193
Int. Cl. G07f *11/00*
U.S. Cl. 221—87 **5 Claims**



An integrally molded case, the interior of which is subdivided into a plurality of compartments, each capable of accommodating a tape casette or similar article. Each compartment includes an integrally molded spring engaging one end of the casette, and a hinged lid includes a second resilient element engaging an opposite end of the casette when in closed position, whereby the casette is cushioned against movement along its longest axis, and frictionally retained against movement within the compartment along an axis perpendicular thereto. The resilient means on the lid elements include a projection which normally extends outwardly from the outer surface of the lid element when the lid has been closed upon a compartment containing a casette, thereby giving tactile indication to the user of the presence of the casette within the compartment.

3,603,479
APPARATUS FOR SEPARATION AND TRANSPORTING OF CONTAINERS STACKED UP INTO EACH OTHER

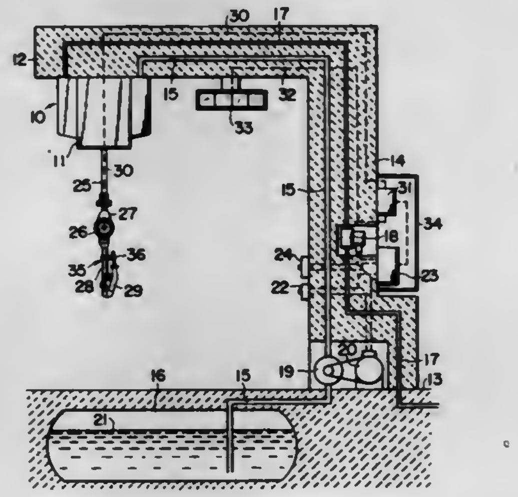
Josef Kuster, and Josef Broll, both of Dusseldorf, Germany, assignors to Benz & Hilgers GmbH, Dusseldorf, Germany
Filed July 2, 1969, Ser. No. 838,526
Claims priority, application Germany, July 10, 1968, P 17 61 814.3
Int. Cl. B65h *3/32*
U.S. Cl. 221—210 **8 Claims**



An apparatus for separation and transporting of containers of paper, cardboard, synthetic material foil or the like, which comprises separation means for a staple of containers. A feeding device includes substantially two conveyor wheels mounted horizontally and continuously rotating. A transporting device is provided and driving members are arranged laterally projecting from the conveyor wheels and having guide slots and pointing towards each other. The axis of the staple and the transporting device are disposed tangentially to the rotating path of the driving members. Means are arranged for causing an additional rotating movement of the driving members about their axis, whereby the guide slots of the driving members are parallel relative to each other in each moving phase of the conveyor wheels.

3,603,480
FUEL SUPPLYING APPARATUS

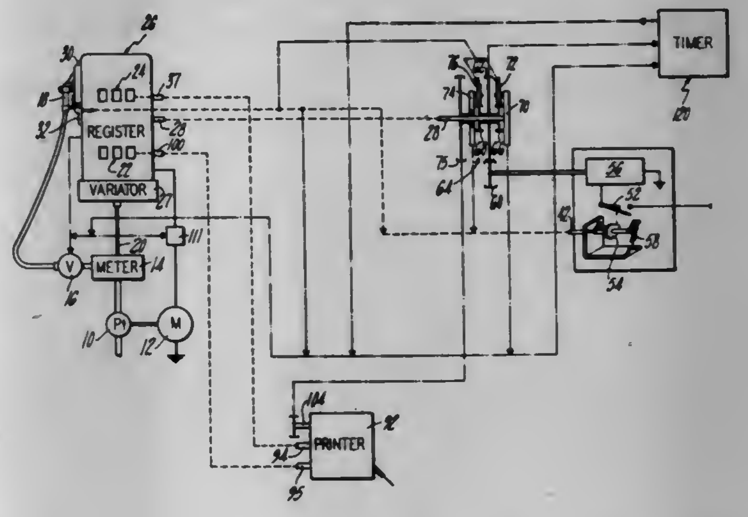
Yoshihiko Irie, Kawasaki; Mitsunori Nishizawa, Kawasaki, and Shunro Yamawaki, Tokyo, all of, Japan, assignors to Tokico Ltd., Kanagawa-ken, Japan
Filed June 27, 1969, Ser. No. 837,028
Claims priority, application Japan, July 2, 1968, 43/56,272
Int. Cl. B67d *5/30*
U.S. Cl. 222—20 **7 Claims**



A fuel-supplying apparatus having a flowmeter and an indicator at a preferred location in a fuel-supplying conduit pipe suspended from above a fuel-supplying service area where vehicles are supplied fuel. The flowmeter and the indicator are provided at a location adjacent a delivery nozzle in the fuel-supplying conduit and readily observable by the operator supplying fuel with said nozzle in hand.

3,603,481
FLUID-DISPENSING APPARATUS CONTROL SYSTEM

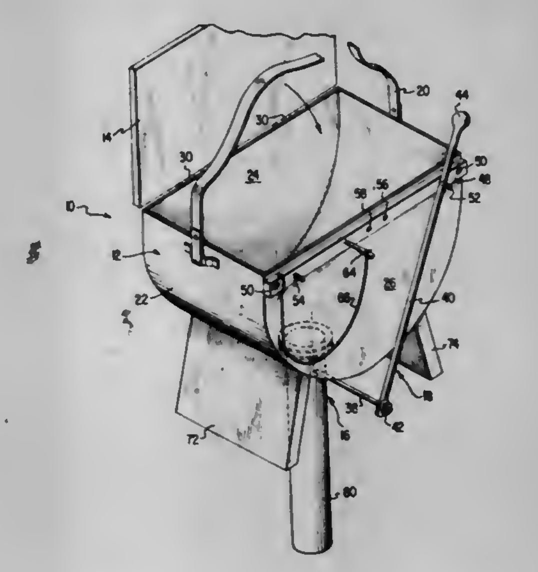
Lawrence Dilger, South Croydon, and Ernest S. Ashford, Felbridge East Grinstead, both of, England, assignors to Veeder Industries, Inc., Hartford, Conn.
Filed Sept. 29, 1969, Ser. No. 861,710
Claims priority, application Great Britain, Oct. 2, 1968, 46,717/68
Int. Cl. B67d *5/06*
U.S. Cl. 222—23 **16 Claims**



A gasoline pump having a control system with a constant speed electric drive motor connected to be energized when the pump is operated to deliver fuel and to remain energized until after the delivery of fuel is completed. One-turn mechanisms comprising drive ratchet wheels driven by the motor and driven ratchet pawls are adapted to be selectively engaged for resetting the pump register when the pump is operated to deliver fuel and for operating a printer after the completion of the fuel delivery to record the amount of the delivery. A timing counter driven by the constant-speed drive motor automatically terminates the delivery after a predetermined interval.

3,603,482
BODY SUPPORTED GRANULAR MATERIAL SPREADER

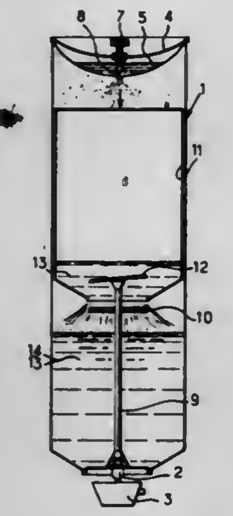
Tom Shelton, Box 102-B Rte. 1, Corbin, Ky.
Filed Aug. 6, 1969, Ser. No. 847,938
Int. Cl. B67d *5/22*
U.S. Cl. 222—43 **4 Claims**



A body supported granular material spreader is provided by a container which receives the granular material. The bottom wall of the container communicates with a depending outlet conduit having a butterfly-type valve mounted therein. The butterfly valve is actuated by a lever and cooperating stop means associated with a wall of the container and with the lever permit opening of the spreader valve between a closed position and a full open position at a plurality of intermediate positions. The spreader is also provided with depending legs which extend a distance greater than the length of the outlet conduit so that the spreader is self-supporting when it is not in use or for filling purposes.

3,603,483
DEVICE FOR STORING TWO PRODUCTS SEPARATELY AND DISPENSING THEM SIMULTANEOUSLY

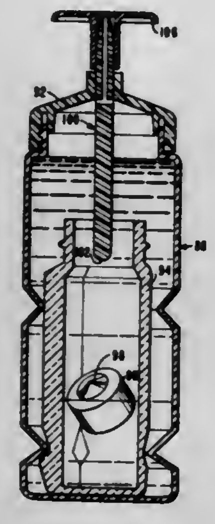
Bruno Morane, Paris; Charles Paoletti, Aulnay Sous Bois; Manlio Maurelli, Vaujours; Louis Merrien, Fontenay Sous Bois, and Robert Sathicq, Villepinte, all of, France, assignors to L'Oreal, Paris, France
Filed Dec. 1, 1969, Ser. No. 881,080
Claims priority, application France, Dec. 5, 1968, 176872
Int. Cl. B67b *7/24*
U.S. Cl. 222—82 **5 Claims**



A device comprising a jacket having a valved end and holding a first product, a container holding a second product slidable within said jacket and in sealing contact with the jacket walls, means for propelling said container toward said valved end, and a rod positioned to open an orifice in said container as it approaches the valved end of said jacket.

3,603,484
A TWO-COMPARTMENT MIXING AND DISPENSING DEVICE

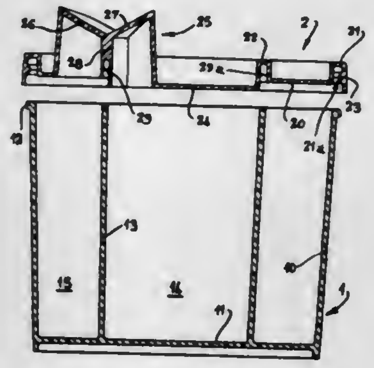
Robert W. Ogle, Newport Beach, Calif., assignor to Mix-O-Matic Corporation, Wilmington, Del.
Filed Feb. 28, 1969, Ser. No. 803,306
Int. Cl. B65d *35/22*
U.S. Cl. 222—94 **5 Claims**



This patent describes a self-contained, two-compartment mixing device comprising an outer container adapted to contain a fluid, and having a fluidtight end closure, an inner container received in said outer container, said inner container having an end closure, said end closure of said inner container facing said end closure of said outer container to isolate the contents of the inner container from the contents of the outer container. In a preferred embodiment of this invention, the end closure of the outer container is provided with a projection having cutting terminal surfaces extending from said end closure inwardly into said outer container, said sharp projection having cutting terminal surfaces being adapted to be compelled toward and through the end closure of said inner container by longitudinal compression of said outer container to establish fluid communication between said inner and outer containers.

3,603,485
CONTAINERS

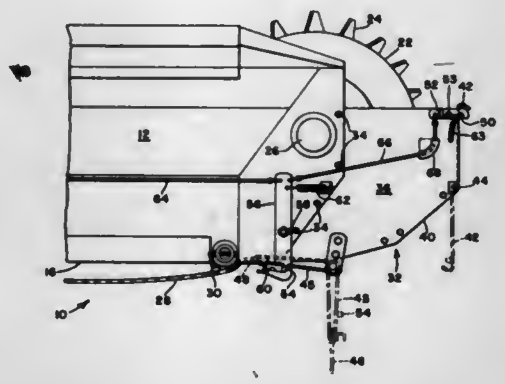
Georges Vivier, Yzeure, France, assignor to Societe Astra de Bouchage, Surboichage et Conditionnement, Rhone, France, a part interest
Filed June 23, 1969, Ser. No. 835,600
Claims priority, application France, June 28, 1968, 50,169
Int. Cl. B67d *5/56*
U.S. Cl. 222—129 **2 Claims**



A container for two products which must be kept separately from each other, but which should be mixed at the time of use, comprises a body having an open upper end and a lower bottom provided with an upwardly extending partition to determine two separate chambers. A cover closes both chambers in a fluidtight manner and it includes a upwardly directed hollow extension having an inner dividing partition which delimits therein two subspaces each communicating with one of the chambers. At the time of use this extension is cut horizontally below its closed upper end and it thus forms a double discharging spout for the contents of both chambers.

3,603,486
ENDGATE AND ENDGATE CLOSURE MECHANISM FOR A MATERIAL UNLOADER

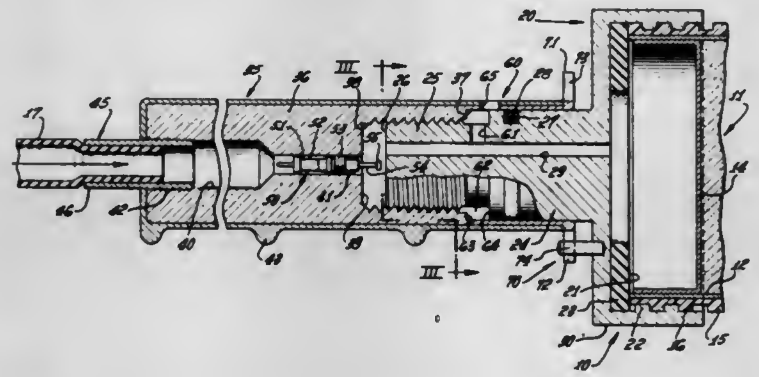
J. Clark Fickle, Moline; Paul Julius Thornbloom, East Moline, and Arnold Burton Skromme, Moline, all of, Ill., assignors to Deere & Company, Moline, Ill.
Filed Jan. 29, 1969, Ser. No. 794,951
Int. Cl. A01c *15/16*
U.S. Cl. 222—311 **20 Claims**



An endgate for conventional manure spreader box which is mounted adjacent the beater and includes a rear and bottom pivotally mounted doors. A spring biased latch is provided to hold each door closed against the force of gravity tending to open them and a single cable extends from the latches to the front of the spreader box to be pulled by the operator to release the latches for selectively allowing the rear door to open for providing additional clearance for the beater and for allowing the bottom door to open to enable the spreader box or conveyor to expel the last of the material from the spreader box.

3,603,487
IN-LINE SEALANT DISPENSER

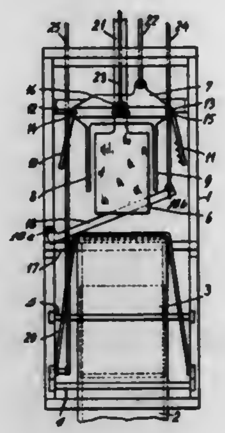
Ralph J. Cook, Torrance, Calif., assignor to Products Research and Chemical Corporation, Burbank, Calif.
Filed Nov. 17, 1969, Ser. No. 877,280
Int. Cl. B65d *83/00*
U.S. Cl. 222—389 **13 Claims**



An in-line sealant dispenser has a socket member receiving the rear end of a cartridge assembly containing sealant to be selectively dispensed therefrom by air pressure, and a rearwardly extending manually rotatable control handle member threaded onto a coaxial boss on the socket member, axially in line with said cartridge, for axial movement relative to said socket upon rotation relative thereto to open and close a valve in the control handle member to regulate the flow of air from an airhose through said handle and socket member air passages to the rear end of the cartridge assembly to selectively dispense the sealant from the dispenser.

3,603,488
APPARATUS FOR MECHANICALLY FOLDING INWARDLY AND CUTTING AN END PORTION OF A LENGTH OF TUBULAR FLEXIBLE MATERIAL

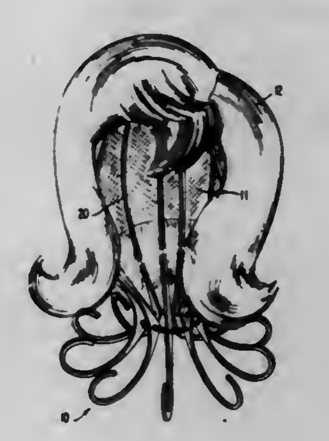
Svend Sigurd Christie Fleischer, Klampenborg, Denmark, assignor to Gustavsson, Pertti, Boras, Sweden
Filed Dec. 4, 1969, Ser. No. 882,062
Claims priority, application Denmark, Dec. 12, 1968, 6066/68
Int. Cl. A41h *33/00, 43/00*
U.S. Cl. 223—37 **4 Claims**



An apparatus is provided for mechanically and successively folding over within itself the end portion of a length of tubular flexible material and thereafter severing the doubled tubular portion from the tubular material. The apparatus includes hollow guide means adapted to concentrically receive the flexible tubular material thereabout, folding means for successively folding over within said guide means the end portion of the tubular material, and grasping means for grasping the double portion of tubular material and for longitudinally displacing said material to an axially displaced position wherein cutting means sever the doubled end portion.

3,603,489
DEVICE FOR STORING WIGS

Olive E. Fleisher, 1216 11th Ave., Vero Beach, Fla.
Filed Apr. 20, 1970, Ser. No. 29,924
Int. Cl. D06c *15/00;* **D06f** *59/00;* **A47g** *29/08*
U.S. Cl. 223—66 **11 Claims**

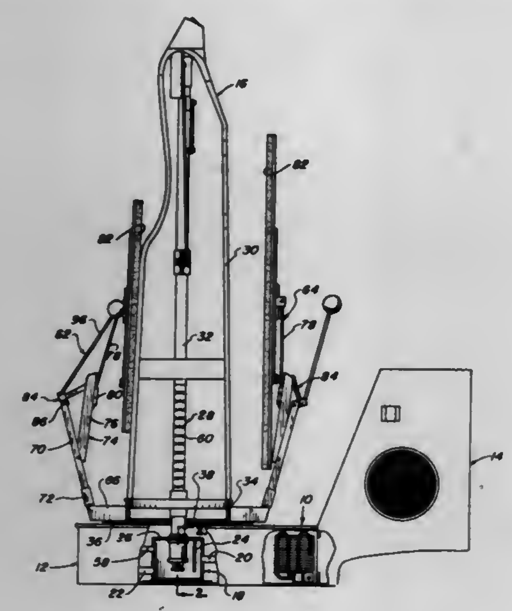


A collapsible wig storing device including upper and lower horizontally disposed rings and a plurality of elongated ribs having apertures in opposite end portions thereof receiving said rings to permit said ribs to be moved angularly around the rings between spaced-apart positions for use in supporting a wig and closely spaced positions for storing the device when not in use. The intermediate portions of the ribs are convexly curved to conform generally to the configuration of a person's head while the lower portions of said ribs are concavely formed to provide outwardly projecting portions for supporting the device in upright position in use. The ribs are made from flexible resilient material to permit two groups of ribs located on opposite sides of the rings to be moved inwardly towards each other thereby causing the rings to move out of horizontal planes causing the ribs in each of the groups to move closer to each other into a collapsed position for storing the device. Preferably, a plurality of coil compression springs are placed on each of the rings between the ribs to facilitate and maintain positioning of the ribs.

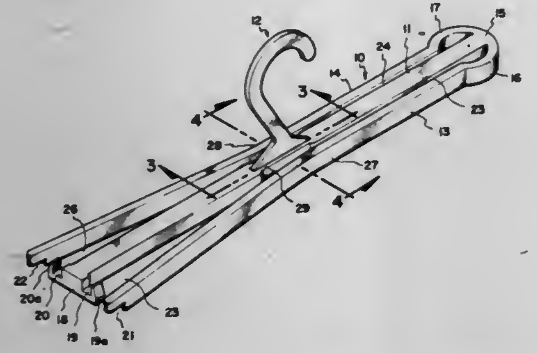
3,603,490
GARMENT FINISHER

Lloyd W. Killey, R.R. #2 Monmouth, Ill.
Filed Mar. 6, 1969, Ser. No. 804,767
Int. Cl. D06f *73/00*
U.S. Cl. 223—70 **4 Claims**

A garment finisher provided with structure in the steam vessel for heating the conditioning fluid to dry the fluid. A transversely C-shaped baffle in an annular chamber permits selective varying of the path of flow of the fluid over a heated wall to thereby control the temperature of the conditioning fluid. A bayonet clamp mount permits ready removal of the clamp and a manually operated spring assembly including a cam closes or opens the clamp for installation or removal of a garment.



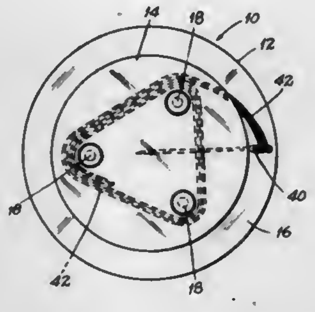
3,603,491
TROUSER AND SKIRT HANGER
Wilford A. Weight, 2333 Logan Circle, Salt Lake City, Utah
Filed Nov. 19, 1969, Ser. No. 878,058
Int. Cl. A47j *51/14*
U.S. Cl. 223—96 **10 Claims**



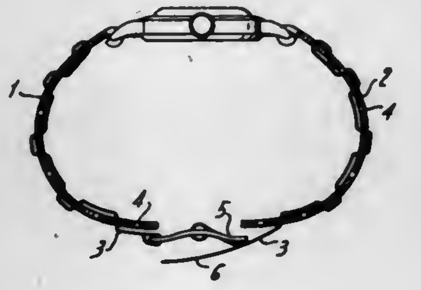
A clothes hanger adapted to hold trousers, skirts, and the like, preferably molded from a plastic material. An elongate, rigid support bar is provided with a suspension hook adapted to extend from its upper surface intermediate its length so as to hang in horizontal position from a clothes rack. A pair of elongate clamping bars have one set of ends flexibly attached to an end of the support bar for hinge action, and extend along the length of the support bar on opposite lateral sides thereof. Hinge action is achieved by reason of the flexibility of the material forming an outwardly curved portion of the clamping bars at the point of attachment. The opposite ends of the clamping bars and the support bar have latching means for latching the clamping bars in clamping position relative to the support bar so as to hold the men's trousers or other items securely between the clamping bars and the support bar. The clamping bars can have a slight outward bow from approximately midlength to the free ends of the bars for achieving a firmer clamping action on the trousers when the bars are latched to the support bar.

3,603,492
NEEDLE AND THREAD HOLDER
Socrates J. Schantz, Marine, Ill., assignor to John S. Schantz and Raymond G. Schantz, Marine, Ill., part interest to each
Filed Apr. 13, 1970, Ser. No. 27,816
Int. Cl. A41h *31/00*
U.S. Cl. 223—109 R **12 Claims**

A needle and thread holder for odd lengths of thread, left in a needle after a sewing operation. The holder comprises a flat base to which is connected a platelike member closely held to the base by at least two and preferably three points of connection located interiorly of the periphery of the platelike member. The thread is adapted to be wound around the points of connection and the needle is inserted between the points of connection radially into the center of the assemblage between the platelike member and the base and held therein by friction. In preferred form, the base is in the form of a disc and the platelike member is formed of a similar disc of smaller diameter and concentric with the base. Such platelike members may be secured to both the front and rear of the base to hold multiple needle and thread assemblies. An enlarged throat between the periphery of the platelike member and the base may be provided for ease in winding the thread around the points of connection and for insertion of the needle.



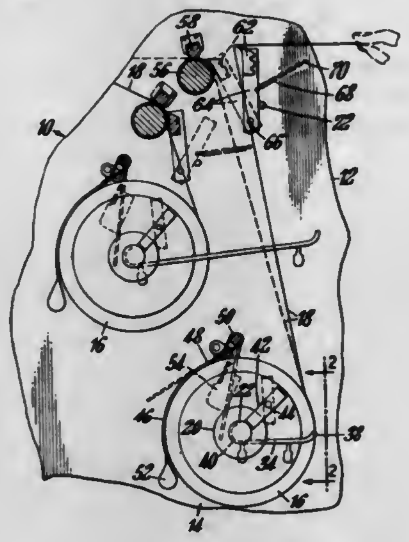
3,603,493
BRACELET, ESPECIALLY FOR A WATCH
Jacques Frohlich, Geneva, Switzerland, assignor to Etablissements Industriels Pierre A. Derobert & Cie, Geneva, Switzerland
Filed Aug. 12, 1969, Ser. No. 849,430
Claims priority, application Switzerland, Aug. 23, 1968, 12732/68
Int. Cl. A44c *5/00*
U.S. Cl. 224—4 D **8 Claims**



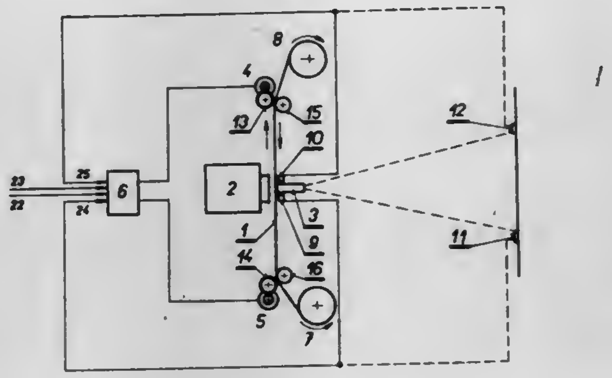
A bracelet, primarily for attachment to watches, comprises a pair of apertured metallic strips which may or may not be hinged together, each strip having one or more flexible bands of metal, plastic or fabric threaded through the apertures. The strips are fastened together by a fastening device connecting the ends of the flexible bands. The bands may have decorative designs thereon and may be of circular or oval shape. The apertures may be rectangular.

3,603,494
DIAZO COPYING MACHINE PAPER SUPPLY ROLL HANDLING
Arnold G. Ulmer, Endicott, N.Y., assignor to GAF Corporttion, New York, N.Y.
Filed July 2, 1969, Ser. No. 838,412
Int. Cl. B65h *19/10;* **B26f** *3/00*
U.S. Cl. 225—89 **2 Claims**

Fresh rolls of paper are loaded in a diazo copying machine by placing each new roll in a mandrel assembly having a shaft provided with wheels which are placed on downwardly inclined rails that guide the assembly into place when the wheels automatically are locked, and from which the paper is drawn while continuously braked until the roll is near exhaustion whereupon an electric switch is automatically operated, stopping further operation pending replacement. A paper tearoff device is also provided to assure straight leading edge for the paper fed into the machine from each fresh roll.



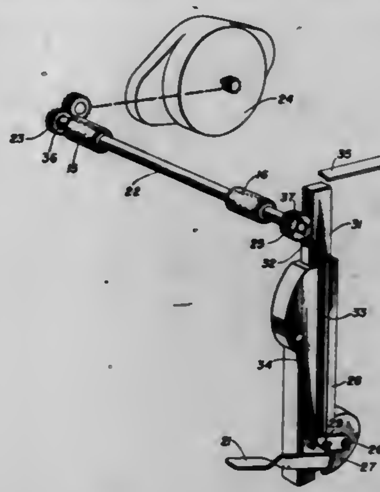
3,603,495
FILM FEEDING EQUIPMENT
Bretislav Stejskal; Vladimir Stepan, and Petr Vlach, all of Prague, Czechoslovakia, assignors to Tesla, Narodni Podnik, Prague, Czechoslovakia
Filed Jan. 9, 1969, Ser. No. 790,044
Claims priority, application Czechoslovakia, Jan. 12, 1968, Jan. 12, 1968, 242-68; 243-68
Int. Cl. G11b *15/20*
U.S. Cl. 226—33 **9 Claims**



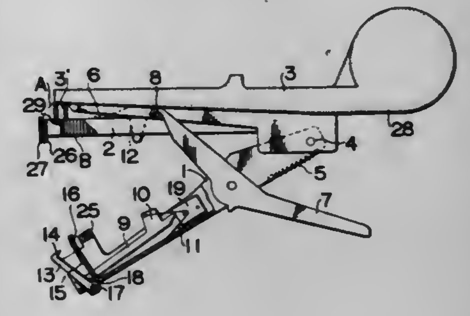
The invention relates to a film-feeding device for advancing a perforated or unperforated film strip of any width by any number of frames in either direction. The feeding of the film strip is effected by means of friction drive powered by two reversing motors. The advancement and braking of the film strip is carried out by variously supplying power to the two reversing motors. The displacement as well as the required positioning of the film strip are determined by sensing synchronizing indicia on the film strip by photoelectric sensors. The two reversing motors are switched from a rest condition to working and braking conditions by a special motor control device which is actuated either by starting signals from a primary source effecting the forward or reverse movement of the film strip or by stopping signals set up by the photoelectric sensors sensing the synchronizing marks.

3,603,496
RECORDER DRIVE MEANS
Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.
Filed May 19, 1969, Ser. No. 825,845
Int. Cl. B65h *17/20*
U.S. Cl. 226—117 **4 Claims**

Recorder apparatus making use of a strip of electrosensitive paper for producing a visual image in response to variations in electrical signal current, a feed means for movement of the strip driven by a motor to move the feed means at a first slow speed and an actuator connected to the feed means to drive it selectively at a second rapid speed.



3,603,497
BINDER FOR GRAPE VINES
Mitsuo Nishikawa, Fujioka-shi, Japan, assignor to Max Corporation, Tokyo, Japan
Filed Dec. 12, 1969, Ser. No. 884,663
Claims priority, application Japan, Dec. 25, 1968, 43/95768
Int. Cl. B25c *5/00;* **B27f** *7/00;* **B21f** *15/06*
U.S. Cl. 227—76 **8 Claims**



The binder of the present invention comprises:

Connecting the pin frame containing the base and pin to the presser at the rear end thereof to the effect that said pin frame and the presser can be freely opened by the operation of the handle.

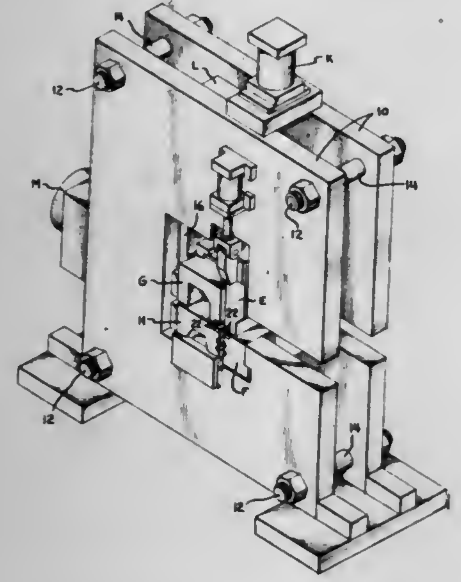
Said presser has tape containing portion, and the tape is drawn out with slight opening and closing force of said handle and is stuck between the end of the base and that of the pin frame.

Thus, grape vines and supporting shelf are inserted in between the base and the pin frame on which tape is stuck, and when the handle is forcibly closed, the grape vines and the supporting shelf are unitedly bound, and the end portion thereof is held with pin, and the tape is cut off with the cutting edge, and the end portion of the tape is slightly lowered from the front end portion of said pin frame by means of opening operation of the handle, and then said tape is taken out of the following slight closing operation of the handle and it is stuck thereon.

By repeating such handle operation as above, the grape vines are bound with tape on the supporting shelf.

3,603,498
SHEET METAL WELDING MACHINE
Lloyd A. Cook, 3468 Roseland Ave, Parkersburg, W. Va., and Lewis W. Buell, 1693 Carey Drive, Charleston, W. Va.
Filed June 13, 1968, Ser. No. 736,635
Int. Cl. B23k *1/00, 37/04*
U.S. Cl. 228—4 **4 Claims**

A heated fusion-bonding sheet metal press having a pair of stationary C-shaped metal frames arranged parallel to one another. Disposed between the two frames is a movable second C-shaped metal frame. Die holders associated with the stationary frames and movable frame are mounted for vertical movement. Heating means associated with the die holders raise the temperature of the sheet metal to below its fusion temperature.



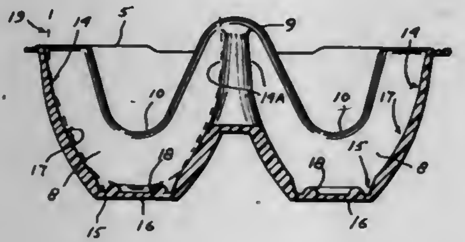
3,603,499
EGG CARTON CELLS

Gerald A. Snow, 5 Pine Ridge Road, Cumberland Foreside, Maine

Filed June 5, 1969, Ser. No. 830,606

Int. Cl. B65d *1/00*

U.S. Cl. 229—2.5 **7 Claims**



Egg receiving cells of egg cartons are disclosed that have a funnel portion, a closed bottom end portion, and an intermediate portion defining with the bottom end portion an annular support for the lower end of an egg, the upper end of which is in contact with the funnel portion. Desirably the cell wall is thicker in the intermediate portion than it is in the funnel portion.

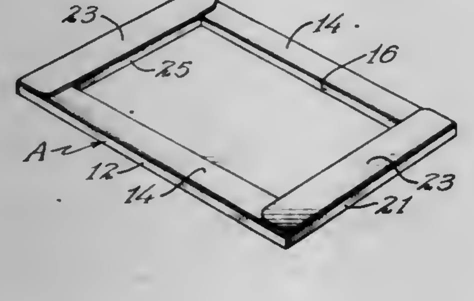
3,603,500
HOLLOW WALLED TRAY

Daniel P. Dutcher, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed June 16, 1969, Ser. No. 833,376

Int. Cl. B65d *5/22, 5/36*

U.S. Cl. 229—34 HW **3 Claims**



A hollow walled tray is provided including a generally rectangular bottom panel, and wall structures hinged to the side and end edges thereof. Each wall structure includes an outer wall panel, a top wall panel, an inner wall panel, and a glue flap. The wall structures are all folded inwardly to overlie the bottom, with the ends of the top panels of one opposed pair of wall structures overlying the ends of the top panel of the other opposed pair of wall structures. When the wall structures are folded outwardly and upwardly into erect form, the inner wall panels of the first opposed wall structure engage between the inner wall surfaces of the other wall structures, automatically locking the walls in hollow tubular relation.

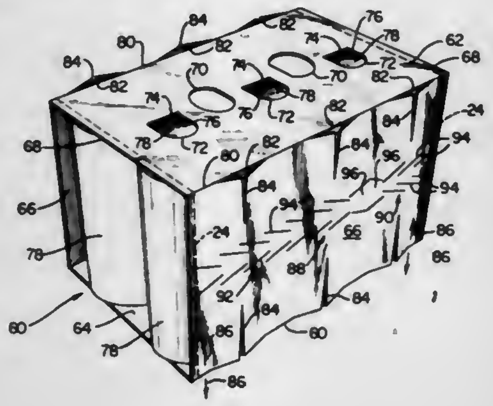
3,603,501
CARTON HAVING TEAR STRIPS FOR CANS

Robert E. Confer, 7338 Club House Road, Boulder, Colo.

Filed Feb. 6, 1969, Ser. No. 797,180

Int. Cl. B65d *5/02, 5/54, 71/00*

U.S. Cl. 229—51 TS **8 Claims**



Open end carton of "six-pack" type has longitudinal slits on corner edges, one for each can. End slits tend to tear through to end margin, releasing cans. Reinforcing strand surrounds each end of container adjacent to margin, and its tensile strength prevents tearing. Tear strip is cut through strand intermediate top and bottom to permit intentional release. Additional reinforcing strands may be provided to retain each lateral row of cans separately, with multiple tear strips to release each row of cans separately. Carton blanks are made by laminating continuous label web and backing web wide enough for several blanks with longitudinal reinforcing strands between webs and spaced laterally at margins and lines of division of master strip. Latter is divided along lines of division to produce single strips having reinforcing strands along both margins, and then single strips are cut laterally to produce individual carton blanks having lines of reinforcement of two parallel margins.

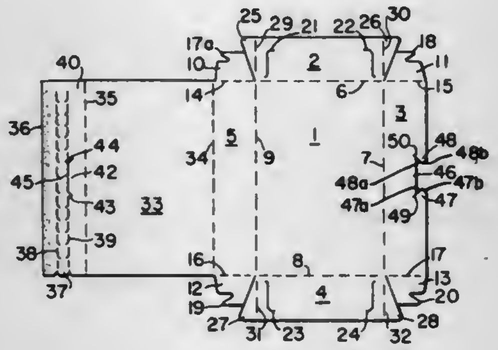
3,603,502
RECLOSABLE CARTON

Sam B. Howard, Smyrna, and Kendrick E. Black, Atlanta, both of, Ga., assignors to The Mead Corporation

Filed June 3, 1969, Ser. No. 830,010

Int. Cl. B65d *5/54*

U.S. Cl. 229—51 TC **3 Claims**



A container having a base portion including a bottom wall and a plurality of sidewalls foldably joined to the side edges of the bottom wall is provided with a cover portion which includes a top panel and a closure panel secured to an edge of the top panel. The closure panel when closed is affixed to one of the sidewalls of the base portion of the container along the edge of the closure panel remote from the top panel and a tear strip which is longitudinally disposed in the closure panel is provided for opening the carton in conventional fashion. A reclosing tab is formed in the upper portion of the closure panel and cooperates with holding tabs disposed along the side edges of a reclosing notch formed in the adjacent side wall of the base portion of the container. The lower edge of the reclosing tab substantially coincides with the upper edge of the tear strip.

3,603,503
AUTOMATIC MACHINE CONTROL DEVICE

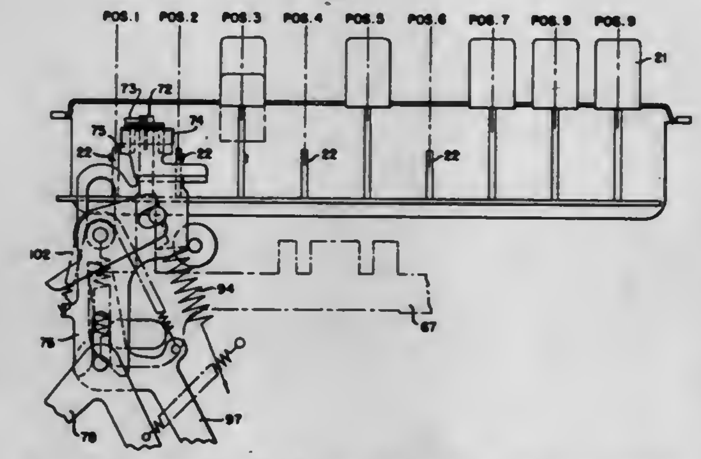
Bernhard O. A. Kasper, and Friedrich Rombach, both of Augsburg, Germany, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 25, 1969, Ser. No. 802,072

Claims priority, application Germany, Apr. 26, 1968, P 17 74 182.1

Int. Cl. G07g *1/00*

U.S. Cl. 235—7 A **7 Claims**



A mechanism for disabling the operation of a change-computing cash register whenever the amount tendered by the customer is less than the amount due.

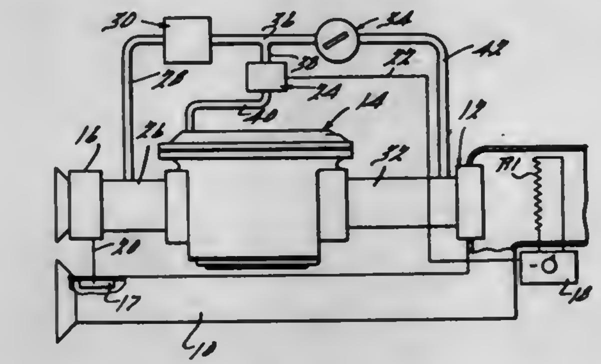
3,603,504
CONTROL FOR DIRECT GAS FIRED MAKEUP AIR HEATING

Charles Stang, Jr., and Herbert J. Schlachter, both of Detroit, Mich., assignors to Maxitrol Company, Southfield, Mich.

Filed Aug. 14, 1968, Ser. No. 752,599

Int. Cl. G05d *23/24*

U.S. Cl. 236—10 **21 Claims**



A control system for use on direct-fired makeup air heating systems utilizing a pilot-operated modulating valve providing a system which is rapid in response and in which hunting is minimized.

3,603,505
TRACK ASSEMBLY FOR TOY VEHICLES

Noriyuki Tsugawa, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

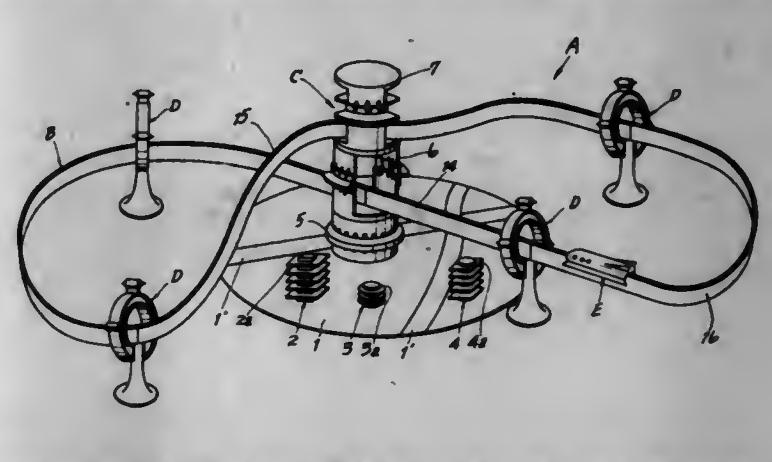
Filed Mar. 4, 1969, Ser. No. 804,128

Claims priority, application Japan, Aug. 29, 1968, 43/74,603

Int. Cl. A63h *19/30, 19/36, 21/04*

U.S. Cl. 238—10 E **3 Claims**

This invention, which encompasses a toy track system of an elevated railroad type, comprises a closed track for toy vehicles, said track being made up of a plurality of different forms of track sections each formed in an elongated boxlike hollow structure with its lower side opened, and a plurality of support means for supporting said track sections, said support means also serving as connecting means for said track sections.



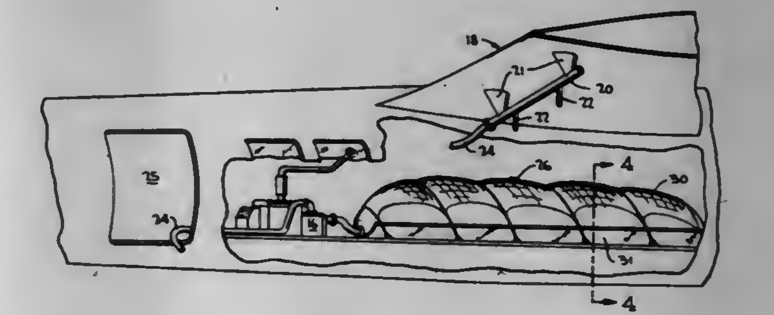
3,603,506
UNIVERSAL CHEMICAL DELIVERY SYSTEM

Charles H. Hubbs, Camp Springs, Md., assignor to Allan M. Lowe, Silver Spring, Md. and Ralph J. King, Annandale, Va., part interest to each

Filed May 2, 1969, Ser. No. 821,201

Int. Cl. B05b *17/02*

U.S. Cl. 239—1 **3 Claims**



A system is disclosed for dispensing of chemicals from an airplane while in flight to a predetermined area at ground level. The material to be dispensed is stored in a collapsible or deflatable storage means removably positioned within the load space of an airplane. A suitable pumping means may be connected to the storage means and communicates with a spray nozzle assembly detachably affixed to the wing or tail assembly of the airplane for distributing the airborne material over the predetermined ground area.

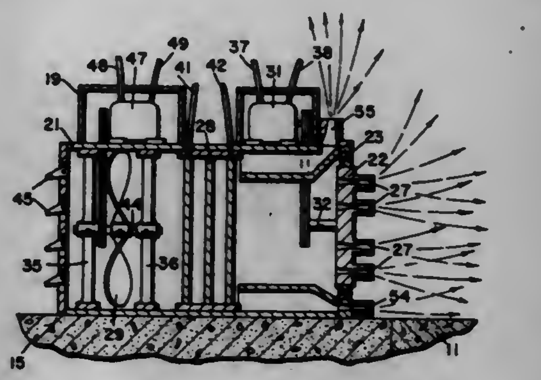
3,603,507
ATMOSPHERIC SNOW-MELTING AND FOG-DISPERSAL APPARATUS

James E. Devlin, 80 Salisbury St., Worcester, Mass.

Filed June 23, 1969, Ser. No. 835,337

Int. Cl. E01h *13/00*

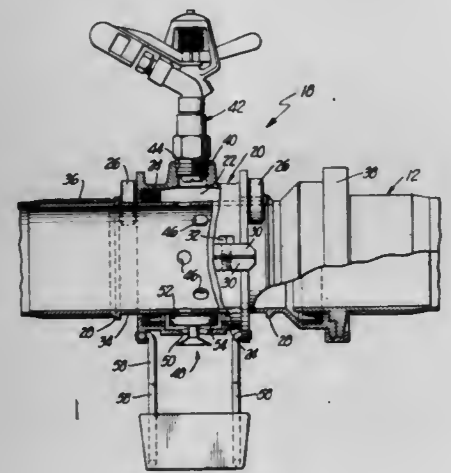
U.S. Cl. 239—14 **7 Claims**



This invention has to do with an apparatus for the treatment of the atmosphere and, more particularly, to apparatus for the melting of snow in the air and the dispersal of fog and consisting of units for projecting streams of hot air in a predetermined pattern in the space to be treated.

3,603,508
ROLL-TYPE FIELD IRRIGATION DEVICE WITH WEIGHT SELF-ALIGNING RISER OUTLET AND AUTOMATIC DRAIN UNITS

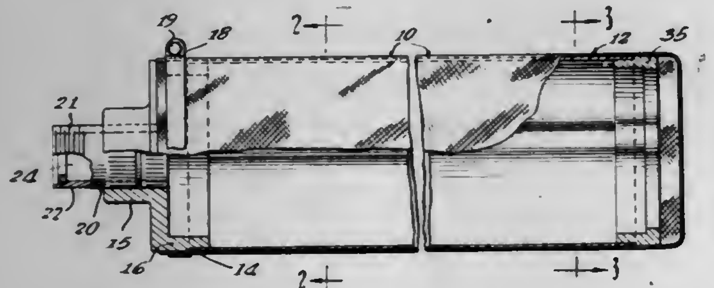
Carl B. Ingram, 12366 S. Elliott Ave., El Monte, Calif., and Louis E. Watson, 1492 N. Mountain, Claremont, Calif.
Filed Mar. 20, 1969, Ser. No. 808,784
Int. Cl. B05b *15/02*
U.S. Cl. 239—111 **3 Claims**



A roll-type mobile field irrigation device is provided with weighted self-aligning riser and drain units. The irrigation device has a long roll pipe adapted for connection to a supply of water under pressure and a number of ground wheels coaxially mounted on the pipe at positions spaced along the pipe to permit the device to be rolled across a field to be irrigated for the purpose of locating the device at selected irrigation stations spaced about the field. The riser drain units are freely rotatable on the roll pipe and are eccentrically weighted to automatically assume aligned upright positions when the pipe is rolled to a new irrigating position.

3,603,509
GAS DISPERSING APPARATUS

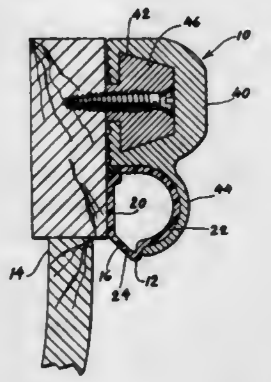
Leonard M. Nechine, Highland Park, Ill., assignor to FMC Corporation
Filed Feb. 24, 1970, Ser. No. 14,255
Int. Cl. B01d *47/02*
U.S. Cl. 239—145 **3 Claims**



An apparatus for dispersing gas in liquid mediums comprising a rigid adapter, a rigid tubular inner member secured to the adapter cooperating with a passage in said adapter to form a continuous conduit for gas, a terminal member for said rigid tubular inner member, a flexible, collapsible porous sleeve, having one permanently closed end and a peripheral dimension approximately equal to the peripheral dimension of a cross section of said tubular member, enclosing said tubular member and said terminal member and secured to the adapter to form an air chamber between the tubular member and the sleeve, said terminal member having means for passage of gas between the interior of the tubular member and the closed end of said sleeve and separate communication means connecting the closed end of said sleeve and the longitudinally extending space between the sleeve and said tubular member.

3,603,510
PROTECTIVE HULL WASHER

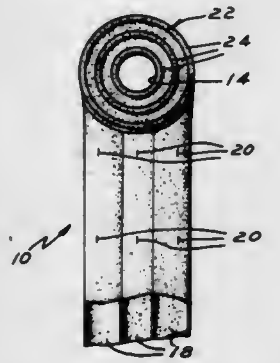
William Wagner, Miami Beach, Fla., assignor to Watsco, Inc., Hialeah, Fla.
Filed Oct. 8, 1969, Ser. No. 864,620
Int. Cl. B05b *15/06*
U.S. Cl. 239—282 **1 Claim**



A molding or rub rail for boat hulls which is adapted to wash the hull, comprising a resilient conduit fastened circumferentially of the hull at the outer extremities thereof and having a plurality of inwardly downwardly directed orifices throughout its length and an inlet connection.

3,603,511
HEAT SEATED ANCHORABLE PERFORATED HOSE

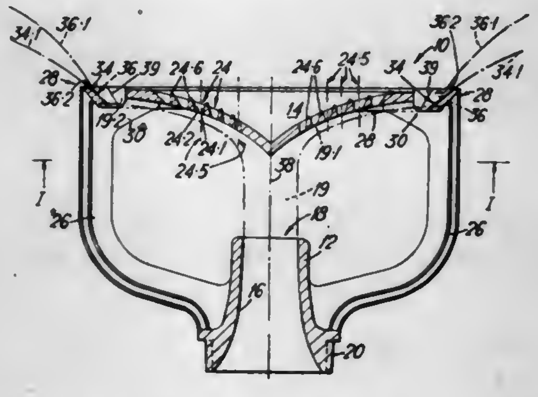
Arthur W. La Pierre, Madison, and Edward A. Kull, Brick Township, both of, N.J., assignors to Monsanto Company, St. Louis, Mo.
Filed Apr. 23, 1969, Ser. No. 818,660
Int. Cl. B05b *15/00*
U.S. Cl. 239—450 **7 Claims**



An improvement in a perforated hose comprising a heat seal at one end thereof in combination with a substantially flat disc portion having at least one aperture therethrough, thereby being adapted to receive anchoring means, e.g., a spike or the like.

3,603,512
SPRAY NOZZLES

Alexander Jan Ham, 6 Blanche Avenue Havenwood, Johannesburg, Republic of South Africa
Filed Sept. 15, 1969, Ser. No. 857,700
Claims priority, application Republic of South Africa, Sept. 25, 1968, 68/6227
Int. Cl. B05b *1/26*
U.S. Cl. 239—504 **10 Claims**

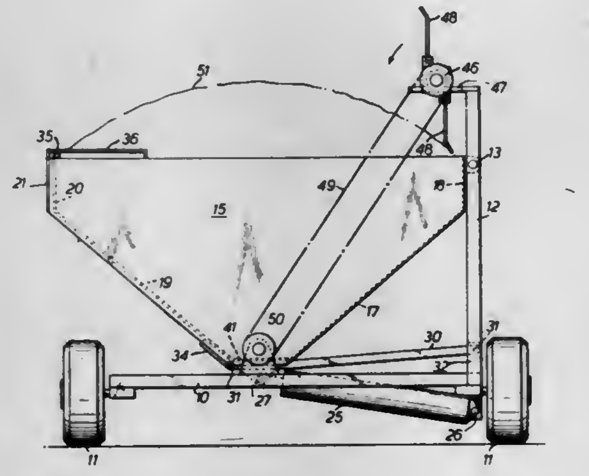


The invention is directed to a method of forming a spray, to a spray nozzle and to a method of making a spray nozzle.

The method of forming a spray includes the step of directing a jet of liquid onto an apertured diffuser element of coniform which diverges in the flow direction of the jet of liquid. The spray nozzle includes a nozzle and an apertured diffuser element of coniform opposite the nozzle outlet and diverging away from the nozzle. The invention also shows that an annular deflector element is provided around the diffuser element.

3,603,513
MANURE SPREADER

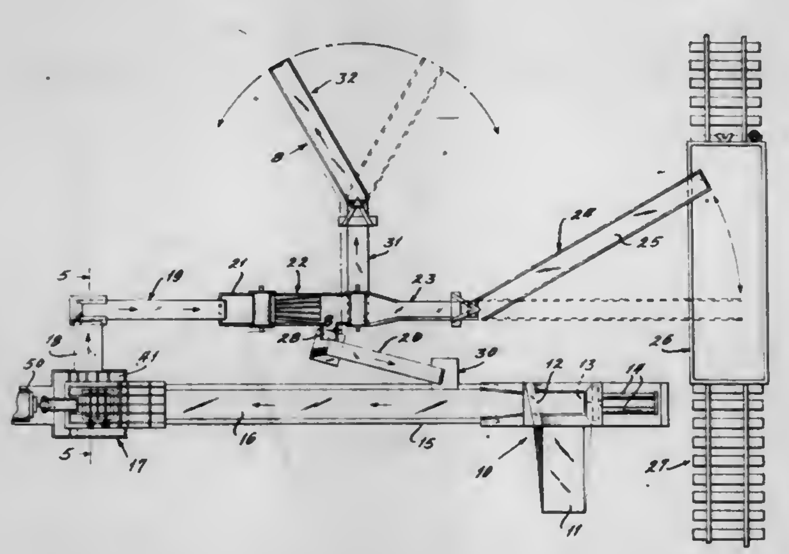
Gwynfor Maple Harries, Efail, Blaenannerch, Cardiganshire, England
Filed Mar. 23, 1970, Ser. No. 21,874
Int. Cl. A01c *3/06*
U.S. Cl. 239—657 **15 Claims**



An agricultural trailer for spreading manure, having a wheeled chassis, a tilting hopper mounted on the chassis and controlled by hydraulic jacks to tilt towards one side and a rotary power operated flail impeller mounted on a fixed axis adjacent the discharge side of the hopper to throw out the manure as the hopper is tilted. Within the hopper is a movable wall connected to the chassis to move automatically towards the flail impeller as the hopper tilts.

3,603,514
SCRAP REDUCING AND REFINING APPARATUS

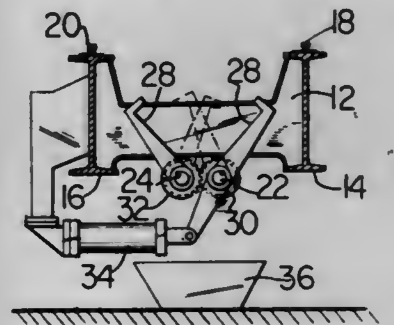
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., Inc., St. Louis, Mo.
Filed July 28, 1969, Ser. No. 845,346
Int. Cl. B02c *13/04, 21/00*
U.S. Cl. 241—31 **8 Claims**



Apparatus for reducing scrap material, such as automobile bodies and waste objects of a bulky and space consuming character, in a unified plant that is operable on a continuous schedule to reduce the scrap to convenient sizes in advance of processing the same through a shredding mill and thence to apparatus for densifying the output of the shredding mill, and for recycling oversize portions of the product for further shredding treatment so that substantially all of the usable scrap may be recovered and separated from those portions that are not usable.

3,603,515
FRAGMENTING SCRAP METAL

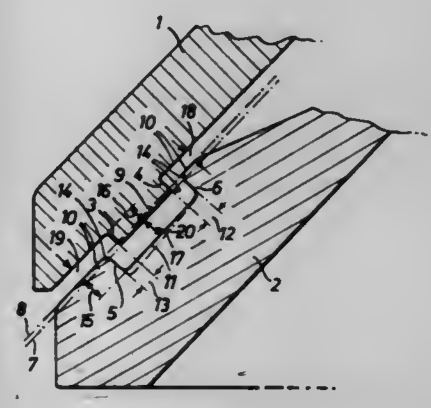
Gunther Lohmann, Eglsee, and Alfons Guminski, Amberg, both of, Germany, assignors to Luitpoldhutte Aktiengesellschaft, Amberg, Germany
Filed Feb. 28, 1969, Ser. No. 803,352
Claims priority, application Germany, Mar. 1, 1968, P 16 08 344.6
Int. Cl. B02c *18/00, 13/00, 19/12*
U.S. Cl. 241—100 **6 Claims**



Fragmenting elongated pieces of scrap metal by means of multiple number of arms operating in scissorlike fashion. The fragmenting apparatus is mounted on the framework of a centrifugal casting machine and acts periodically to break accumulated strips of scrap metal dumped from the casting machine running channel onto the framework. The fragmented pieces then fall to a collection trough from which they are subsequently removed for remelting.

3,603,516
CRUSHER TOOL FOR GYRATORY CRUSHERS

Hanns Decker, Koln-Rath, and Helmut Stockmann, Wesseling Bei Koln, both of, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany
Filed Dec. 16, 1969, Ser. No. 885,467
Claims priority, application Germany, Dec. 21, 1968, P 18 16 359.2
Int. Cl. B02c *2/04*
U.S. Cl. 241—293 **9 Claims**



A crusher tool for gyratory crushers comprising a stationary crushing ring and a rotary and tumbling crushing cone which on their opposed cooperating conical working surfaces are provided with a novel type of cooperating concentrically arranged annular projections and depressions, respectively. The annular projection on the crushing ring in cross section is rectangular with rounded corners and is adapted to enter into a correspondingly shaped annular depression formed in the crushing cone, except that the vertical flanks of the projection are spaced from the vertical walls of the depression in the crushing cone. The height of the annular projection on the crushing ring is at equal or greater than the depth of the associated annular depression in the crushing cone.

3,603,517

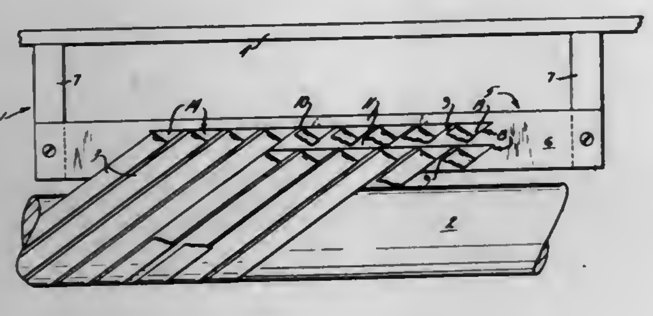
FIBER BAND REGULATOR FOR FIBERGLASS PIPE WINDER

William N. McDonald, and William M. Hogan, both of Little Rock, Ark., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 14, 1969, Ser. No. 790,925

Int. Cl. B65h *27/00, 81/08*

U.S. Cl. 242—7.23 **4 Claims**



A delivery head used to apply fiber reinforcing bands to a mandrel in making fiber reinforced resin pipe has a reciprocating carriage supporting a regulator head for feeding the bands to the mandrel. The regulator head has a plurality of band regulator sets comprising generally triangular openings through the regulator head, and spaced longitudinally along the mandrel forming a pattern through which the separate fiber bands are applied to the mandrel in a continuous wide band.

3,603,518

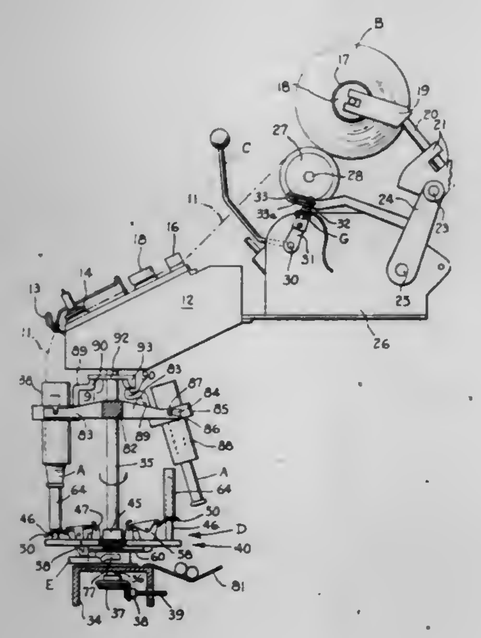
MONITORING APPARATUS FOR A TEXTILE WINDING MACHINE

John M. Cochran, Jr., and Martin F. O'Brien, both of Greenville, S.C., assignors to Frontier Electronics, Inc., Greenville, S.C.

Filed June 23, 1969, Ser. No. 835,559

Int. Cl. B65h *54/22, 63/00, 49/12*

U.S. Cl. 242—35.6 R **4 Claims**



An apparatus for monitoring the operation of a textile winding machine upon which yarn is unwound successively from a plurality of yarn holders and wound onto a larger package. A signal-generating means is provided adjacent a yarn holder indexing mechanism for generating a signal each time a full yarn holder is rotated into the unwinding position. Another signal-generating means is carried by the winding machine for generating a signal responsive to manually restarting the machine, such as takes place after the larger package has been doffed or there has been a mistie.

3,603,519

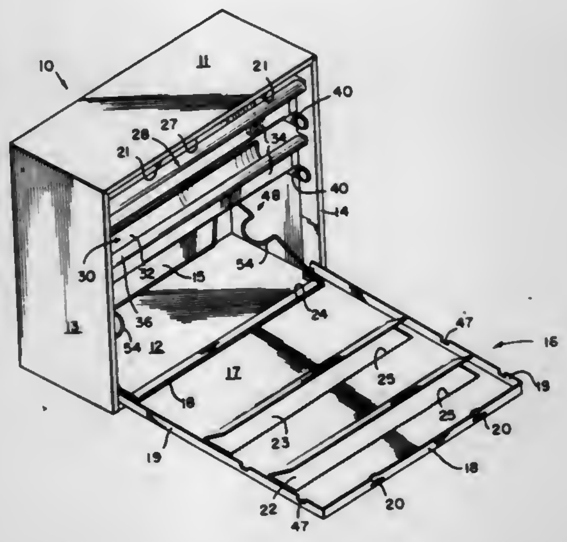
PAPER DISPENSER

Jerry A. Brown, and Charles E. Schroer, both of Columbus, Ohio, assignors to Hamilton Cosco, INC., Columbus, Ind.

Filed Apr. 28, 1969, Ser. No. 819,716

Int. Cl. B65h *19/04;* **A47k** *10/22*

U.S. Cl. 242—55.3 **6 Claims**



A dispenser for holding and dispensing several rolls of paper products, such as wax paper, aluminum foil and paper towels, having a door hinged to the front thereof and provided with slots through which the paper is dispensed. A pair of vertically spaced trays are swingably connected to the sides of the container and are swingable between an operative position for supporting a pair of rolls and an outwardly angled position for loading fresh paper rolls thereon. A wire support having inwardly curved end portions for reception in a third roll of material is swingably connected through the lower portions of the door to the container.

3,603,520

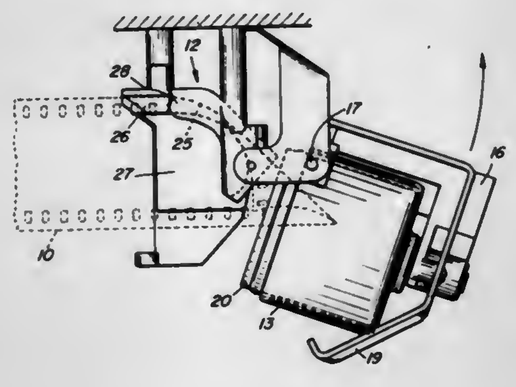
FILMSTRIP TAKEUP

Robert N. McFadden, Fairport, N.Y., assignor to Graflex, Inc.

Filed Feb. 1, 1968, Ser. No. 702,432

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.21 **21 Claims**



An improved filmstrip guide includes an edge abutment surface and an outside guide surface for conforming a filmstrip to the surface of an imaginary cone from which the strip is steered into a coil in an open-ended cylindrical container. The edge abutment surface extends inward from the cone surface and follows a helix on the cone that is a straight line in a development of the cone. The outside guide surface lies on the cone surface next to the edge abutment surface, and both guide surfaces extend about 180° around the cone and terminate near the open end of the container. The cone's rays generally pass through the space inside the coil, and the cone diameter in the plane of the open end of the coil is less than the inside diameter of the coil.

3,603,521

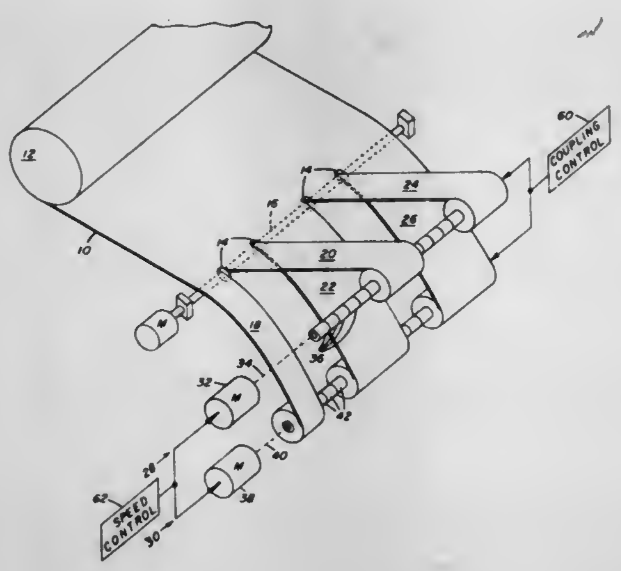
WEB WINDING APPARATUS

Thomas R. Ormsby, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 2, 1969, Ser. No. 829,485

Int. Cl. B65h *35/02*

U.S. Cl. 242—56.2 **11 Claims**



A web-winding system is disclosed as employing clutches so ganged on a common drive that wide webs may be wound simultaneously with, and to the same tightness as, narrower webs. The coupling of each such clutch is controlled by a computer which operates by maintaining constant the total end face area of the supply and rewind rolls. The drive speed is also computer-controlled to minimize the heat-producing slippage within such clutches.

3,603,522

TAPE WINDING APPARATUS

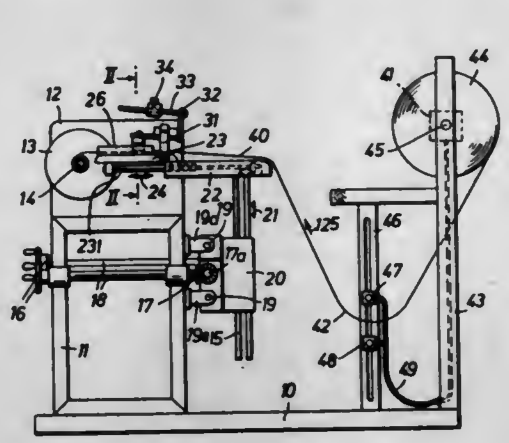
Helmut Herrmann, Cologne, Braunsfeld, Germany, assignor to Metalloxyd GmbH, Cologne Braunsfeld, Germany

Filed July 15, 1969, Ser. No. 841,771

Claims priority, application Germany, Aug. 17, 1968, P 17 74 704.5

Int. Cl. B65h *19/20*

U.S. Cl. 242—56 R **28 Claims**



A tape winding apparatus comprises a tape supply and a tape-winding mandrel receiving tape from the supply and winding the tape in form of a coil. A tape guide channel is arranged upstream of the mandrel and is elongated in the direction of approach of the tape. The tape guide channel confines the tape against movement in lateral direction to assure that the radial faces of a coil wound from the tape will be entirely planar. A friction pad or the like engages one major surface of the advancing tape within the confines of the channel. An arrangement is also disclosed for utilizing this apparatus for automated operation.

3,603,523

COUNTER MECHANISM IN MOTOR-DRIVEN CAMERA

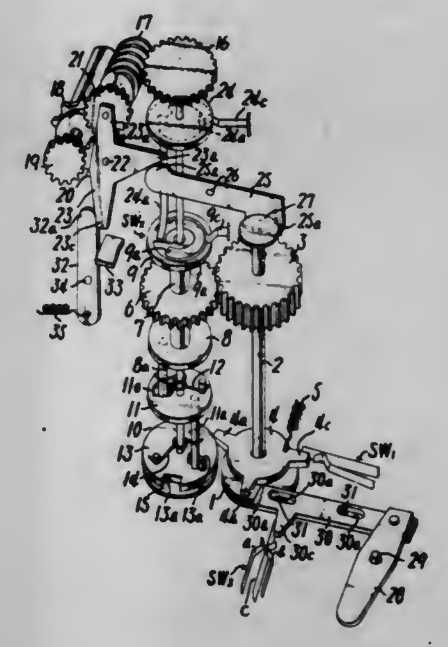
Kaoru Umeda, Sakai, Osaka Prefecture, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 19, 1969, Ser. No. 851,388

Claims priority, application Japan, Sept. 27, 1968, 43/84884

Int. Cl. B65h *25/04;* **G03b** *1/04*

U.S. Cl. 242—57 **9 Claims**



A switch disposed in a power supply circuit of a motor is opened by a counter which is driven relatedly with film transport when a preselected number of film frames have been wound up so as to halt winding operation. The switch is closed again upon effecting rewinding operation while at the same time the circuit is changed from the winding circuit to a rewinding circuit by a changeover switch. When the film has been rewound slightly beyond the windup initiating position while the counter is driven in the reverse direction, another switch is opened to stop the rewinding operation. The counter shaft is returned to the windup initiating position when the camera back cover is opened.

3,603,524

FISHING REELS, ESPECIALLY FLY-FISHING REELS

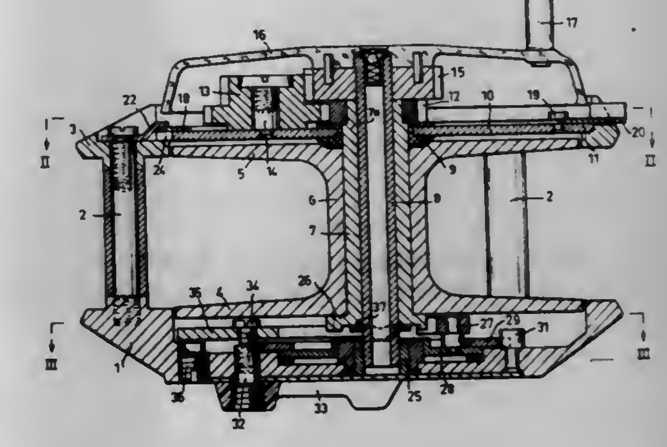
Karl Nurmse, and Hugo Ragnvald Svensson, both of Svangsta, Sweden, assignors to ABU Aktiebolag, Svangsta, Sweden

Filed June 23, 1969, Ser. No. 835,624

Claims priority, application Sweden, June 25, 1968, 8599

Int. Cl. A01k *89/02*

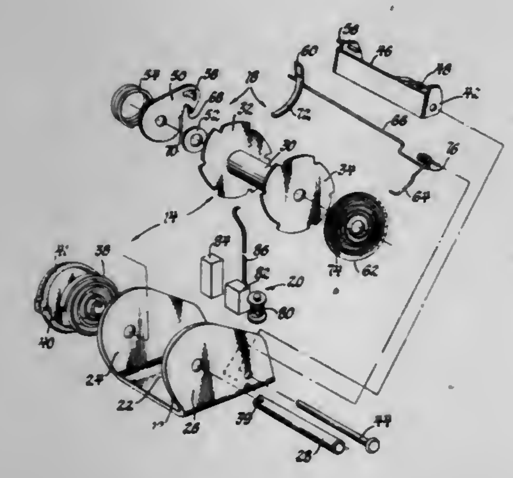
U.S. Cl. 242—84.1 **4 Claims**



There is provided an arrangement in fishing reels by which the different components can be dismantled and exposed by simple manual manipulation, the arrangement being such that the primary reel shaft or spindle connected with the crank and an input gear of the transmission system is detachably mounted in bearings disposed in a side member of the reel while a secondary shaft, which carries an output gear of said transmission and the reel spool and telescoping the primary shaft, is arranged for rotation on the primary shaft and mounted between the reel spool and the crank in a detachable end plate. Suitable locking means are provided which, when moved by simple hand movements to register with component release means, permit the various components to be withdrawn from the reel framework.

3,603,525
RETRACTING REEL ASSEMBLY

William L. Pringle, Grosse Pointe, and John S. Cucheran, Pleasant Ridge, both of, Mich., assignors to Jim Robbins Seat Belt Co., Mt. Clemens, Mich.
Filed July 14, 1969, Ser. No. 841,310
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **9 Claims**

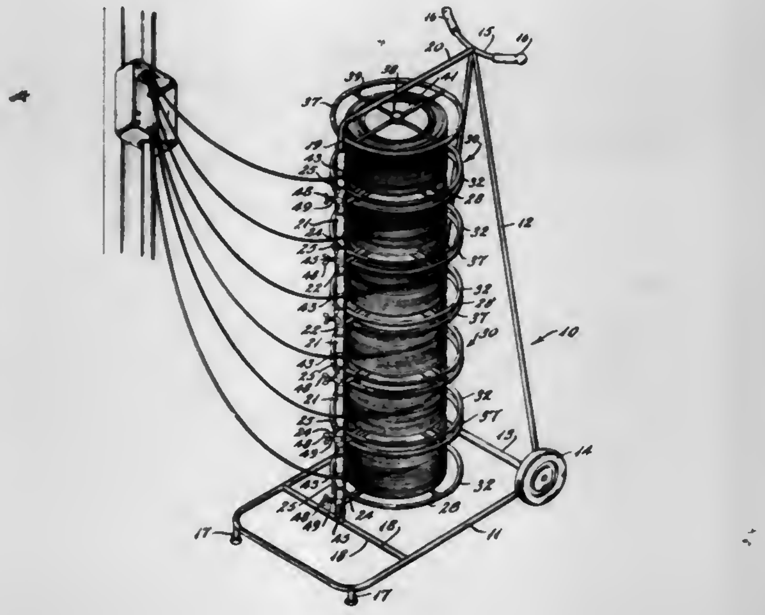


A retracting reel assembly including a U-shaped support member rotatably supporting a reel means upon which a flexible belt element is wound and unwound. A locking pawl is supported by the support member for movement to and from a locking position for preventing rotation of the reel means in the unwinding direction. A clutch member engages the locking pawl and is rotated by the reel means for moving the locking pawl to the locking position. A cam operated stop member is movable to and from a position for preventing movement of the clutch member which would move the locking member to the locked position until a predetermined length of the flexible belt has been unwound from the reel means. There is also included a delay means comprising an electromagnet operable upon the locking pawl, and circuit means for controlling current flow to the electromagnet for preventing movement of the locking pawl to the locked position for a predetermined period following the initial portion of unwinding of the flexible belt from the reel means.

3,603,526
PORTABLE WIRE HOLDER RACK

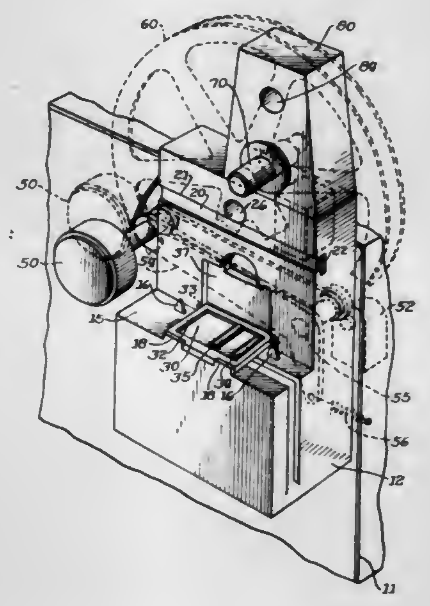
Jesse W. Payne, and Charles E. Rudd, both of Manns Harbor, N.C.
Filed Oct. 15, 1969, Ser. No. 866,595
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.8 **6 Claims**

Portable apparatus for supporting elongated objects of various sizes in such a manner that the objects can be easily applied to the apparatus and arranged so that an undetermined amount of one or more desired sizes can be easily removed without kinking or snarling. The apparatus includes a support post having a plurality of adjustable reels mounted in one position for dispensing the objects and rotatable to a second position for ease of assembly and disassembly.



3,603,527
MOUNTING APPARATUS FOR WEB-HANDLING MACHINE

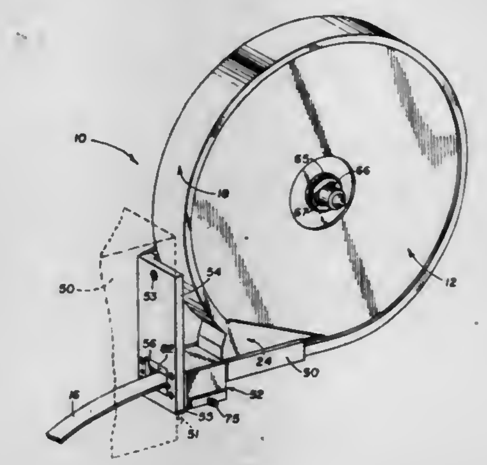
Edward R. Prelletz, Chicago, and Roland R. Rucinski, Villa Park, both of, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Apr. 21, 1969, Ser. No. 817,914
Int. Cl. G03b *1/04;* **G11b** *15/32*
U.S. Cl. 242—195 **32 Claims**



There is disclosed a mounting apparatus for a web-handling machine adaptable for mounting either a web-carrying cartridge, having a reel contained within the cartridge, or a web-carrying reel, comprising a mounting structure having alignment means on the structure to locate the cartridge or reel in an operative position, means to lock the cartridge or reel in an operative position, aperture means within the mounting structure to enable the web to be fed into the web-handling machine and external rewinding means connected to the mounting structure and operable into an operative position for driving the conventional reel or the reel within the cartridge in a reverse direction.

3,603,528
CASING FOR STORING A STRIP OF PHOTOGRAPHIC FILM

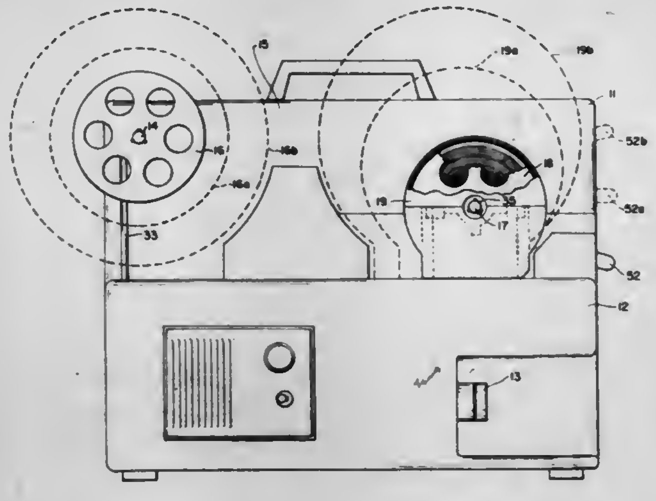
Charles R. Kingsley; John C. Kohler; Robert P. Lehmann, and Lawrence A. Ulmschneider, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 10, 1969, Ser. No. 805,519
Int. Cl. G11b *23/10;* **G03b** *23/04*
U.S. Cl. 242—197 **11 Claims**



A casing or cartridge for storing a strip of photographic film in lighttight relationship is provided. In one illustrative embodiment the casing includes a reel with a hub about which the strip is wound and a pair of flanges, a flexible band disposed about the reel having a recess to receive the peripheral edges of the flanges, and a locking assembly for coupling the ends of the band in a manner to facilitate the relative rotation of the reel with respect to the band and to provide a lighttight passageway through which the strip may be drawn freely.

3,603,529
ADJUSTABLE SPINDLE ARM FOR CARTRIDGE-LOADING MOTION PICTURE PROJECTOR

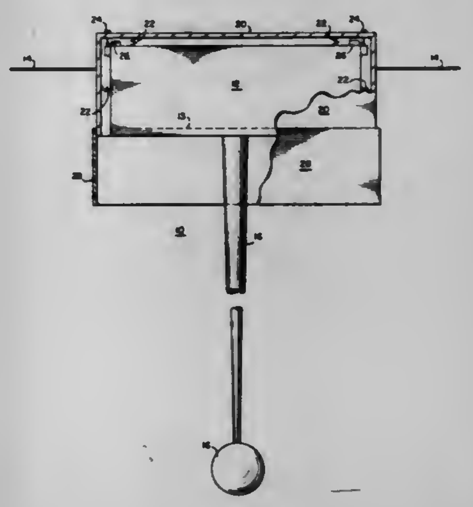
John J. Bundschuh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 20, 1968, Ser. No. 777,286
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—197 **3 Claims**



A motion picture projector provided with means for supporting film supply cartridges of different sizes with the rotational axes of their film supply reels at respective different predetermined positions includes a supply reel support spindle carried by an arm which is angularly adjustable about an axis parallel to the spindle to selectively position the spindle at different ones of such predetermined positions of the reel axis. Preferably, the spindle may be positioned at locations which do not necessarily lie on an arc of a circle thereby allowing for interchangeable cartridges containing reels whose axes do not define the arc of a circle in their respective positions on the projector.

3,603,530
PASSIVE TEMPERATURE CONTROL FOR SATELLITE

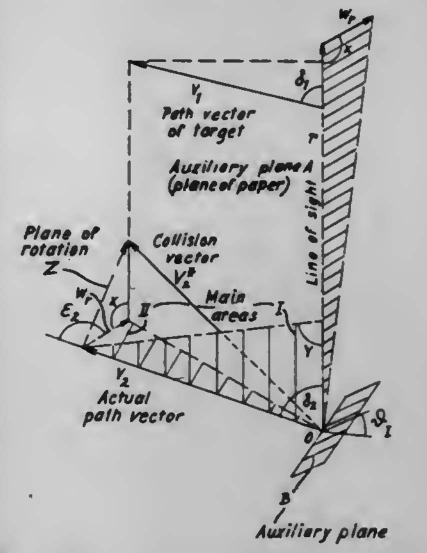
Roger L. Easton; Charles A. Bartholomew, and Robert S. Rovinski, all of Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 3, 1969, Ser. No. 863,457
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SC **9 Claims**



An earth-facing satellite having an inner compartment which contains electronic equipment and an outer housing which is heat isolated from and surrounds the inner compartment except on the bottom side of the satellite. Passive control of the ambient temperature of the inner compartment is obtained by heat exchange between the earth and the bottom side of the satellite and by thermal shields which protect the bottom surface from direct solar radiation.

3,603,531
METHOD AND APPARATUS FOR SPATIAL PROPORTIONAL NAVIGATION

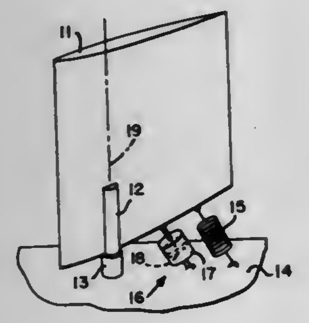
Kurt Brucker-Steinkuhl, Fullenbachstrasse, Dusseldorf-Nord, Germany
Filed Dec. 4, 1968, Ser. No. 781,091
Claims priority, application Germany, Dec. 8, 1967, P 15 31 497.3
Int. Cl. F41g *9/00, 7/00, 7/18*
U.S. Cl. 244—3.16 **9 Claims**



A method of spatial proportional navigation in which the angular velocity of the velocity vector of the steerable body is proportional to the angular velocity of the line of sight and an apparatus for carrying out the method wherein the position and direction of the angular velocity vector is chosen in such a manner that the plane of rotation of the velocity vector of the steerable body or of the steerable body itself contains the velocity vector V_2^* of the collision or constant bearing course, and that the actual course is pursued with the least possible positioning in the collision course.

3,603,532
APPARATUS FOR AUTOMATICALLY STABILIZING THE ATTITUDE OF A NONGUIDED VEHICLE

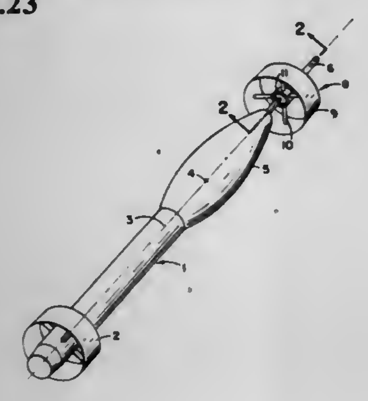
Volker W. Harms, Mountain View, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Apr. 28, 1969, Ser. No. 819,898
Int. Cl. F42b *15/16*
U.S. Cl. 244—3.21 **3 Claims**



The attitude of a nonguided missile, or vehicle, is stabilized with its trajectory by a freely rotatable control surface on the vehicle that is prevented from aligning completely with the incident airstream due to a biasing spring. This results in any vehicle attitude deviation providing a moment to the vehicle that rotates it toward its desired attitude in line with the trajectory. Rapid damping of the vehicle attitude to be in line with its trajectory is accomplished by the control surface rotational movement back to its stable position lagging the rotational movement of the vehicle back to its desired attitude.

3,603,533
SPIN STABILIZED RING-WING CANARD CONTROLLED MISSILE

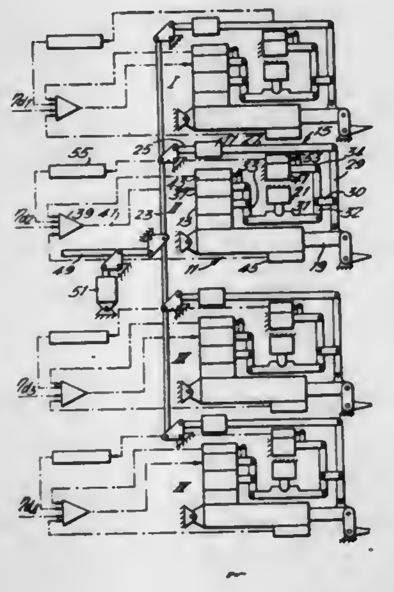
William W. Stripling, Huntsville, Ala. assignor to the United States as represented by the Secretary of the Army
Filed Sept. 29, 1969, Ser. No. 861,690
Int. Cl. F42b *13/00*
U.S. Cl. 244—3.23 **2 Claims**



A spin stabilized circular canard control surface for attitude control of missiles. The canard control surface guides a missile along a path determined by the attitude of a space oriented spinning canard. The canard is spun free around a spherical bearing located on a boom projecting forward of the missile nose and is disposed with its spin axis pivoted about a point in the longitudinal axis of the missile. When a disturbing force causes rotation of the missile axis from the canard axis, the canard applies to the missile a restoring torque to thereby restore coincidence of the missile and canard axes.

3,603,534
SYNCHRONIZED POWER CONTROL

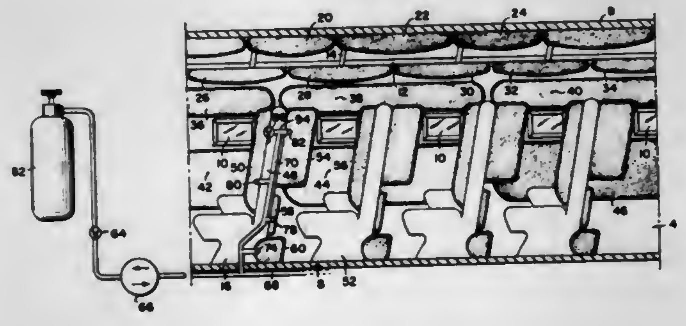
Richard Kenneth Barltrop, Rochester, Kent, England, assignor to Elliott Brothers (London) Limited, London, England
Filed Aug. 6, 1969, Ser. No. 848,031
Claims priority, application England, Aug. 10, 1968, Nov. 18, 1968, 38338/68;54583/68
Int. Cl. B64c *13/36*
U.S. Cl. 244—78 **6 Claims**



The invention is concerned with overcoming spurious operation of force limiter devices included in linkages associated with individual actuator lanes respectively controlling the portions of a split control surface of an aircraft in response to electrical signals supplied to the actuator lanes and to manual movement of a control run of the aircraft. Such spurious operation of the force limiters arises as a result of manufacturing tolerances in the circuitry supplying the electrical signals. The problem is solved by providing in the linkages breakout springs connected to respective ones of the linkages and each of which has a force threshold which is less than that of the force limiter devices and chosen so that disparities in commanded ram positions due to differences in the command signals due to tolerance buildup, may be accommodated by the breakout springs without causing disengagement of a force limiter device from a linkage.

3,603,535
LIFESAVING SUPPORT SYSTEM

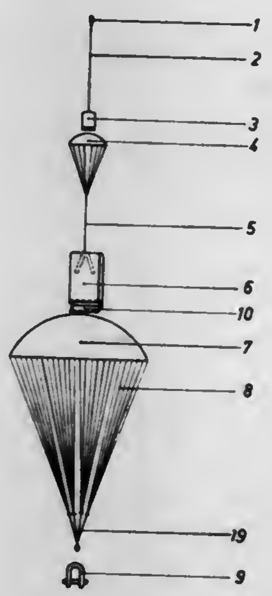
Maurice DePolo, 37 Schappet Terrace, Lansdowne, Pa.
Filed Nov. 13, 1968, Ser. No. 775,300
Int. Cl. B64d *25/02*
U.S. Cl. 274—121 **4 Claims**



A lifesaving support system comprising inflatible panels positioned on the seats, bulkheads and baggage racks of an airplane or the like. A gas system is provided for inflating the panels with carbon dioxide during takeoff and landing, the inflated panels cushion the shock and thereby protect the passengers in case of a crash or a violent landing.

3,603,536
CARGO PARACHUTE ASSEMBLY

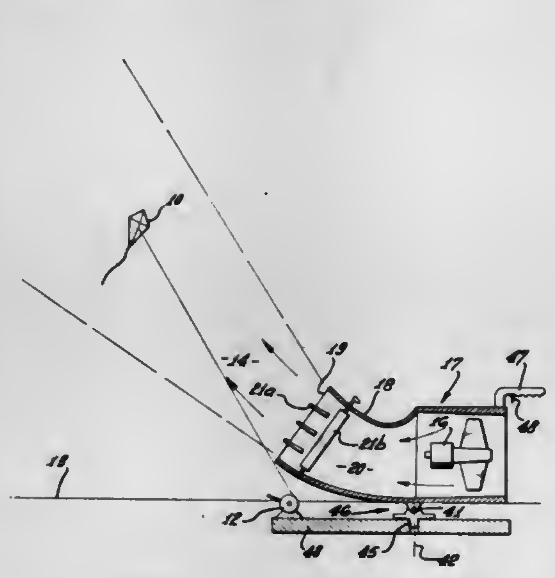
Heinz Dochow, Sachsenried Uber Schongau, Germany, assignor to Richard Kohnke Fallschirmwerk, Ziegelhausen near Heidelberg, Germany
Filed Jan. 16, 1969, Ser. No. 791,668
Int. Cl. B64d *17/40*
U.S. Cl. 244—142 **2 Claims**



The pilot parachute and the cargo parachute, together with all of their fittings, are assembled and packaged as one single complete unit.

3,603,537
INDUCED AIR DISPLACEMENT CONTROL OF FLYING OBJECTS

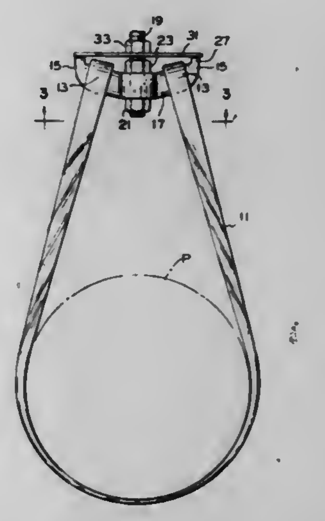
Richard J. Burke, 3428 Ocean Boulevard, Corona del Mar, and Peter B. S. Lissaman, 1201 E. California Street, Pasadena, both of, Calif.
Filed Sept. 2, 1969, Ser. No. 854,711
Int. Cl. B64c *31/06;* **A63h** *27/08*
U.S. Cl. 244—155 **8 Claims**



The invention concerns the provision of an apparatus that includes a light weight tethered object, such as a miniature kite, and a blower having a flow director located for directing blower displaced air toward the object to maintain the object in an elevated position.

3,603,538
ADJUSTABLE CORROSION RESISTANT PIPE HANGER

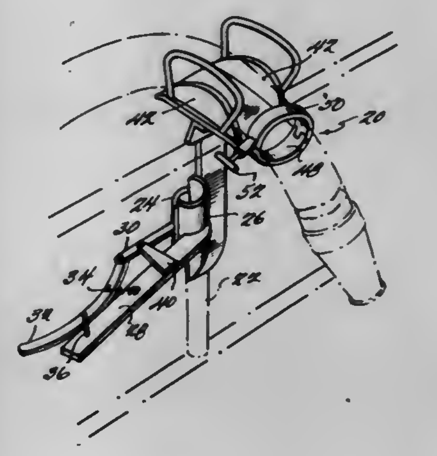
John K. Vitas, 765 S.E. Ridgeview Terrace, Beaverton, Oreg.
Filed Oct. 27, 1969, Ser. No. 869,819
Int. Cl. F16l *3/14*
U.S. Cl. 248—59 **1 Claim**



A pipe hanger having a corrosion resistant strap hung by two eye portions on the arms of a support member, and retained in place by a safety bar. The support member and safety bar are adjustable along a hanger rod to properly locate the strap and the pipe it supports.

3,603,539
SOFT HOSE CLAMP

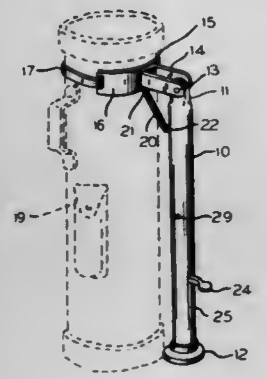
Kenneth K. Clegg, Jr., Route 1, Box 80, High Point, N.C.
Filed Jan. 13, 1970, Ser. No. 2,633
Int. Cl. B05b *15/06;* **A62c** *27/06*
U.S. Cl. 248—79 **3 Claims**



A soft hose clamp for holding a hose discharging fire fighting liquid from a tanker truck into a collapsible stop-and-go tank. In the embodiment of the invention described below, the device is provided with a first adjustable clamping member for affixing the hose clamp to any vertical brace or strut supporting the tank and a second hinged, spring-loaded clamping member for receiving the supply line and holding it securely while the fire fighting liquid is discharged into the tank. The hose can be mounted in place quickly and with one hand and the novel clamp described herein holds the hose firmly in place while water is being transferred from a tanker to a stop-and-go or other similar tank.

3,603,540
GOLF BAG SUPPORT

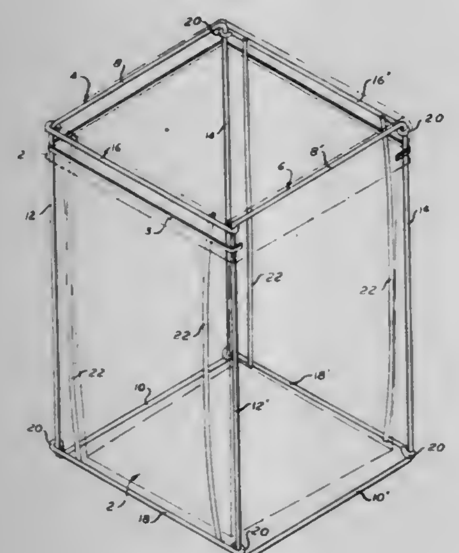
Edwin Gouge, 1007 Milwaukee Avenue, and James E. McDonald, 1613 Manitowa Avenue, both of South Milwaukee, Wis.
Filed July 24, 1969, Ser. No. 844,276
Int. Cl. A63b *55/04, 55/10*
U.S. Cl. 248—96 **5 Claims**



Golf bag support that will retain and support bag in vertical position. A resilient member extends between the bag attaching member and the upright portion of the support.

3,603,541
COLLAPSIBLE BAG SUPPORT

Jacob H. Sturm, and Lucille I. Sturm, both of Route #1, Box 362, Lone Oak, Tex.
Filed Feb. 19, 1969, Ser. No. 800,396
Int. Cl. B65b *67/12*
U.S. Cl. 248—97 **12 Claims**

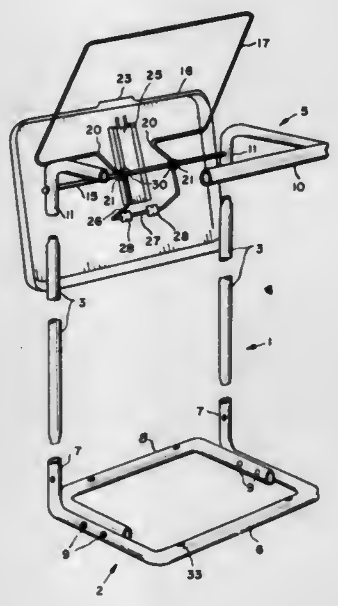


A collapsible bag support having hinged connections between adjoining sides and resilient bars extending between the upper and lower ends of two of the sides to secure the hinged connections at any desired angle.

3,603,542
REFUSE BAG HOLDING RACK

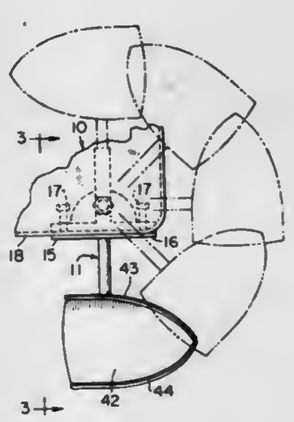
Michael Grille, 33 Florgate Road, Farmingdale, N.Y.
Filed Apr. 1, 1969, Ser. No. 811,899
Int. Cl. B65d *67/02*
U.S. Cl. 248—98 **12 Claims**

A holding rack for disposable flexible plastic bags adapted for casters, wheels or wall mounting and featuring a pivotable bag-holding loop with low durometer coating cooperating with an annular bag-support member for strongly supporting the bag with its end open from the support, and a closing lid for the bag opening having a novel double-hinging bracket allowing positioning of the lid to one side away from the bag opening providing ready access thereto.



3,603,543
IRON SUPPORT FOR ATTACHMENT TO AN IRONING BOARD

Helen P. Bottos, 361 Marlton Avenue, Camden, N.J.
Filed May 14, 1969, Ser. No. 824,525
Int. Cl. D06f *79/02*
U.S. Cl. 248—117.6 **6 Claims**

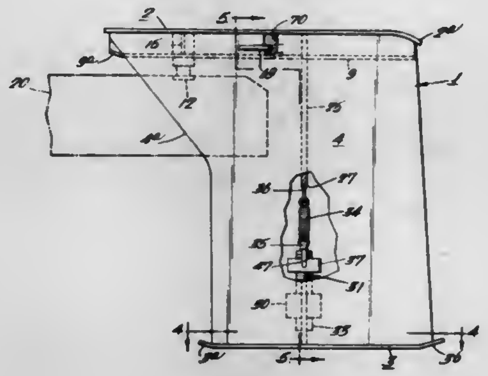


An iron support including means for attachment to an ironing board, a pivotal arm extending from the attachment means, and a platform on the arm for swinging movement between a storage board position beneath the board and a use position extending beyond the board.

3,603,544
TRAILER SUPPORT DEVICE

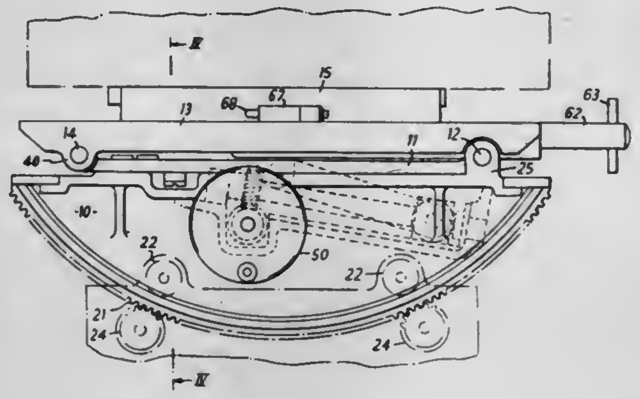
Richard W. Griffith, Green Ridge, Pa., assignor to Sun Shipbuilding & Dry Dock Company, Chester, Pa.
Filed June 26, 1967, Ser. No. 648,920
Int. Cl. B60p *7/00*
U.S. Cl. 248—119 S **2 Claims**

A rigid boxlike structure provides a stand or support for trailers during transport thereof on ships or railway cars. The support has a kingpin which can engage the "fifth wheel" of a tractor, and also has a "fifth wheel" which can engage the kingpin of a trailer. The support can thus be used to couple a tractor to a trailer and, when released from the tractor, can support the front end of the trailer on a ship's deck. The support carries a latching member which is engageable with a fixed latching abutment provided on the deck to secure the support and hence the trailer in position during the voyage.



3,603,545
TILT-TABLE DEVICE

Roy Boniface, London, England, assignor to Ernest F. Moy Limited, London, England
Filed Jan. 22, 1970, Ser. No. 5,053
Claims priority, application Great Britain, Jan. 24, 1969, 4157/69
Int. Cl. G03b *17/56;* **F16m** *11/12*
U.S. Cl. 248—184 **11 Claims**

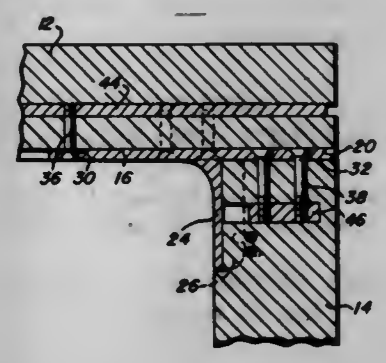


A device for adjusting the angle of tilt of a camera has a table connected to a base below the table by an intermediate plate, one end of the intermediate plate being pivotally connected to the base about a horizontal first axis and the other end being pivotally connected to the table about a second axis parallel to the first axis. A locking bar is mounting on the intermediate plate and is axially slidable in one direction into locking engagement with the base and in the opposite direction into locking engagement with the table. An expandable jack is mounted on the base and is operable to exert on the table an upward thrust, the line of action of which passes between the two axes. The camera is mounted on the table. When the intermediate plate is locked to the base operation of the jack pivots the table about the second axis and thereby tilts the camera upward. When the intermediate plate is locked to the table operation of the jack pivots the table and intermediate plate about the first axis and thereby tilts the camera downwards. The base may have arcuate quadrants centered about a common horizontal axis and mounted on rollers on a support for rocking movement about the common axis.

3,603,546
FURNITURE LEG ATTACHMENT ASSEMBLY

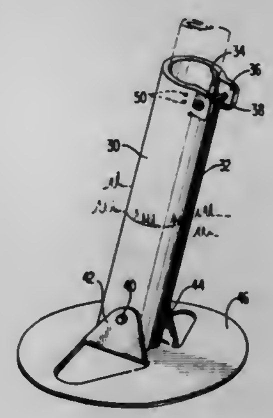
Klaus P. Ruffert, High Point, N.C., assignor to Myrtle Desk Company
Filed Jan. 29, 1969, Ser. No. 794,942
Int. Cl. F16m *11/16*
U.S. Cl. 248—188 **4 Claims**

A leg attachment assembly connecting a furniture leg to an article of furniture for providing maximum rigidity and strength to the leg and eliminating wobbling of the assembled furniture. A bracket plate overlies and is secured to the top end of the leg and underlies and is secured to the undersurface of the article of furniture. A depending support bracket is disposed in a recess in the inner corner of the leg and is secured thereto so that it fits flush into the leg thereby bracing the leg. The plate is attached to the leg and to the article of furniture by employing threaded steel bars that are threaded into a steel locking bar mounted in the leg and in the article of furniture respectively.



3,603,547
STABILIZING AND LEVELING DEVICE

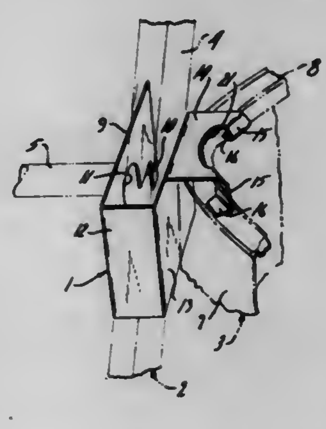
James F. Hills, Atlanta, Ga., assignor to Applied Technical Services, Inc., Smyrna, Ga.
Filed Nov. 27, 1968, Ser. No. 779,458
Int. Cl. F16m *7/00*
U.S. Cl. 248—188.2 **1 Claim**



Apparatus and method for stabilizing and maintaining in a level plane on an uneven surface any object supported by legs comprising adjustable support tubes pivotally attached to a base plate.

3,603,548
PAINT CAN HANGER

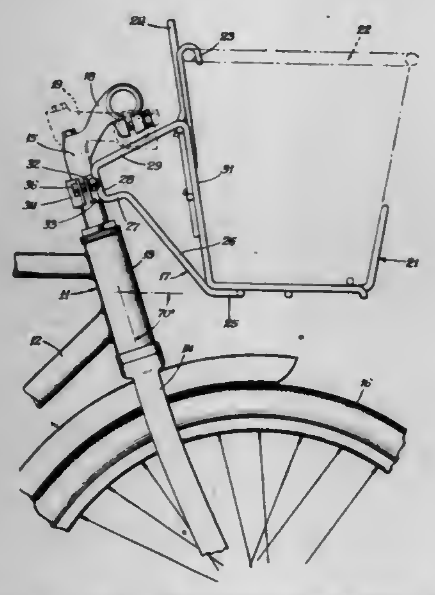
William A. Meyer, III, 1633 South 171st Street, New Berlin, Wis.
Filed May 2, 1969, Ser. No. 821,262
Int. Cl. E06c *7/14*
U.S. Cl. 248—211 **3 Claims**



A paint can hanger has a pair of parallel inner and outer members forming a channel which fits over a ladder side rail and with cutout portions receivable over a round rung or flat step. A web, spaced from the ladder side rail, joins the parallel members. A flange extends inwardly from the inner member and has two channellike fingers which fit over and embrace the can lip. A paint can is secured between the fingers and the side surface of the inner member, both when the hanger is on or off the ladder.

3,603,549
UNIVERSAL SUPPORT FOR FRONT BASKET FOR BICYCLES

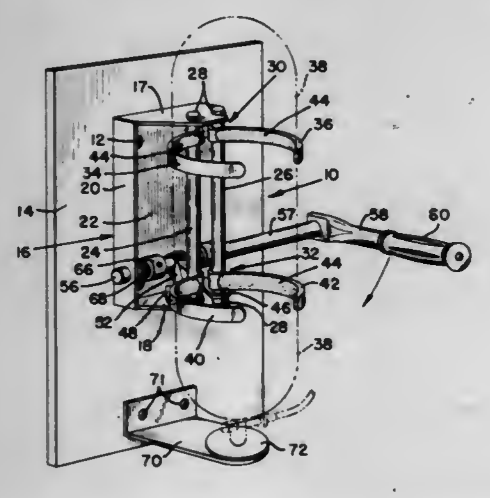
Frank P. Brilando, Niles, and Stanley R. Jameson, Chicago, both of, Ill., assignors to Schwinn Bicycle Company, Chicago, Ill.
Filed Dec. 10, 1968, Ser. No. 782,589
Int. Cl. B62j *9/00*
U.S. Cl. 248—230 **3 Claims**



Support for a carrier removably receiving a front basket universally attachable to any bicycle having a handlebar stem, comprising a pair of side frames each bent from a tube to provide a lower horizontal end portion, a lower reach extending upwardly and rearwardly therefrom and terminating in a downwardly sloping part continuing as an upwardly extending intermediate portion, an upper reach extending upwardly and forwardly from the intermediate portion, and continuing downwardly at its forward end for attachment to the lower horizontal end portion, with the upper and lower reaches converging respectively from the front to the intermediate portions which are spaced from and parallel to each other, and clamping means for engaging the handlebar stem.

3,603,550
QUICK RELEASE SUPPORT

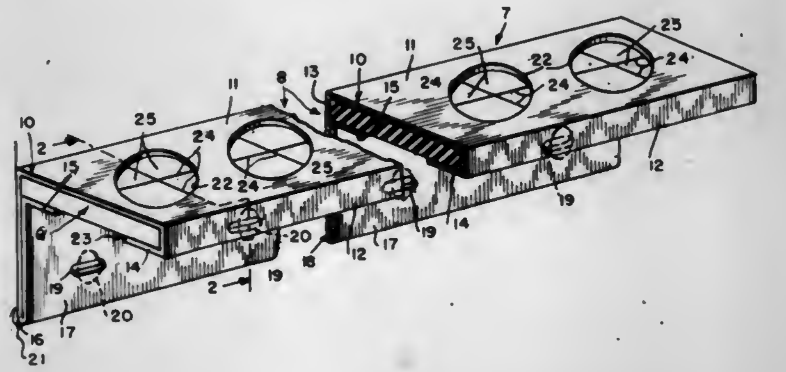
Clarence D. Byrd, Colfax, N.C., assignor to Lacy J. Miller Machine Company, Inc., Welcome, N.C.
Filed Oct. 14, 1969, Ser. No. 866,295
Int. Cl. A62c *33/00*
U.S. Cl. 248—313 **10 Claims**



A quick release support for emergency equipment or the like wherein a dog member is biased into wedging engagement between pivotably mounted lugs secured to jaws which clamp an object therebetween. A release handle is actuated to disengage the dog from the lugs permitting the clamping jaws to open and release the object.

3,603,551
TOOLHOLDING DEVICE

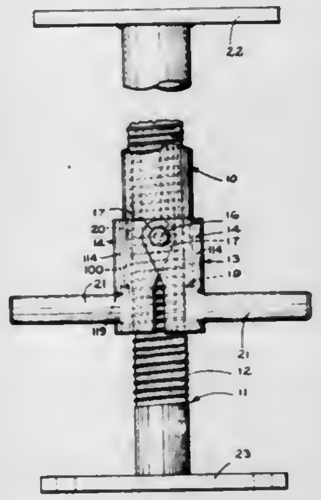
Darwin H. Peterson, 1212 North 13th, Boise, Idaho
Filed May 20, 1969, Ser. No. 826,166
Int. Cl. A47f *7/00*
U.S. Cl. 248—314 **2 Claims**



A device for yieldably gripping long slender shanks of tools or implements of different cross-sectional sizes and shapes for demountably supporting the tools or implements in a stored position and without the use of magnets.

3,603,552
ADJUSTABLE STRUTS

Colin Wheelock, Clevedon, England, assignor to Mills Scaffold Company Limited, London, England
Filed Nov. 14, 1969, Ser. No. 876,935
Claims priority, application Great Britain, Nov. 26, 1968, 55917/68
Int. Cl. F16m *13/00;* **E04g** *25/04*
U.S. Cl. 248—354 S **4 Claims**

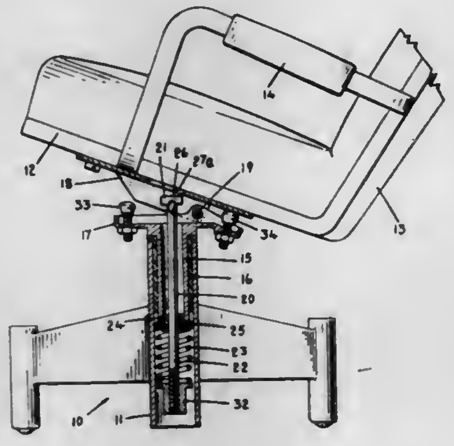


This invention relates to an adjustable telescopic strut with the inner member having a screw thread engaging a rotatable adjusting nut, in which the adjusting nut is readily disengageable from the screw thread to effect rapid adjustment of the strut.

3,603,553
CHAIR CONTROL

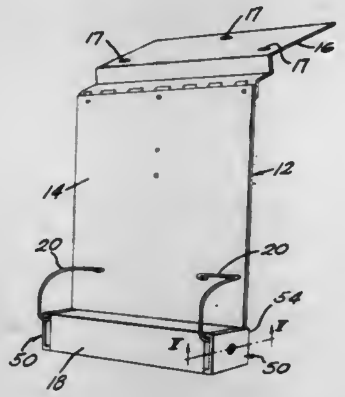
Frank Doerner, Waterloo, Ontario, Canada, assignor to Doerner Products Co. Limited, Ontario, Canada
Filed Oct. 17, 1969, Ser. No. 867,136
Int. Cl. A47c *3/026*
U.S. Cl. 248—381 **1 Claim**

A chair control for a tilting chair having a simplified construction. The chair control has a control tube which is telescopically mounted in the tubular chair post of the chair. The control tube has a fixed control frame mounted on the top thereof and a tiltable frame pivotally mounted on the control frame. The tiltable frame is attachable to the underside of the chair seat. Spring biasing means is mounted within the control tube and operatively connected to the tiltable frame to yieldably resist pivotal movement of the tiltable frame under a backward tilt force applied by the occupant of the chair.



3,603,554
BOOKHOLDER

Henry R. Dickinson, III, 222 Parkhurst, Spring Lake, Mich.
Filed Oct. 3, 1969, Ser. No. 863,549
Int. Cl. A47b *97/04;* **F16f** *1/04*
U.S. Cl. 248—453 **6 Claims**

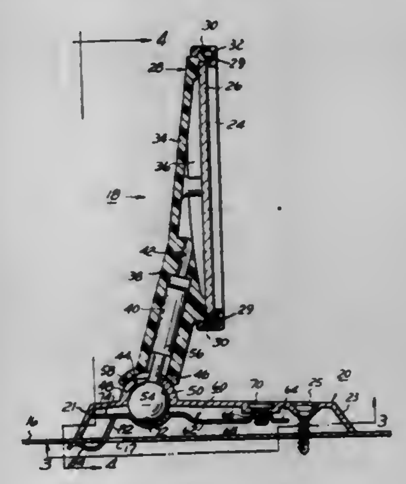


An improved bookholder utilizing a novel spring clamp biased against the support surface of the holder, the clamp including a spring separate from the holddown arm so as to utilize a different gauge wire. In one embodiment the spring contains a coiled extension of the arm, tension being developed in the spring by means of a straight extension of the arm pressing against an axially extending arm of the coil spring. In the other embodiment, a core is contained by the spring and has at one end a camming surface for engagement by an extension of the holddown arm, the extension in this case not curving to form a coil but only a portion of a complete circle. In both embodiments, an end cap is centered within the housing containing the spring mechanisms, the cap including a clamping lip to assist in attaching the housing to the support surface of the bookholder.

3,603,555
OUTSIDE REARVIEW MIRROR ASSEMBLY

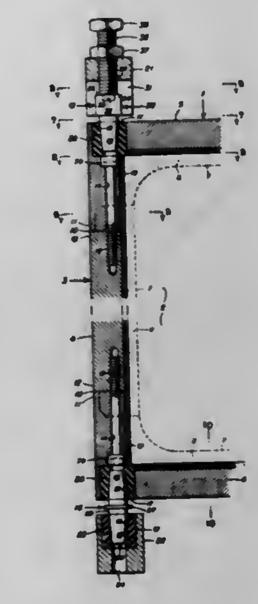
Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 21, 1969, Ser. No. 809,122
Int. Cl. B60r *1/00*
U.S. Cl. 248—481 **8 Claims**

A rearview mirror assembly for attachment to the outside of a vehicle, such as a motor car, at a convenient location for the driver to see and reach for manual adjustment, which is provided with a ball and socket swivel joint secured by a pretensioned adjustable spring retainer. The mirror is supported on a stem which extends into a mirror support column having a ball on the other end for swivel support within a ball socket formed in the base support bracket and the ball is retained in the ball socket by an adjustable pretensioned leaf spring, the construction being such that all members can be preassembled together in a convenient manner. The supporting portions of the mirror are made of plastic material of such strength, at least at the swivel joint, as to break or snap off under impact to provide a safety feature.



3,603,556
PIVOTED MEMBER ASSEMBLY

Virgil L. Frantz, Salem, Va., assignor to Graham-White Sales Corporation, Salem, Va.
Continuation of application Ser. No. 43,036, July 15, 1960, now abandoned. This application Oct. 22, 1965, Ser. No. 516,184
Int. Cl. B60r *1/06*
U.S. Cl. 248—479 **5 Claims**

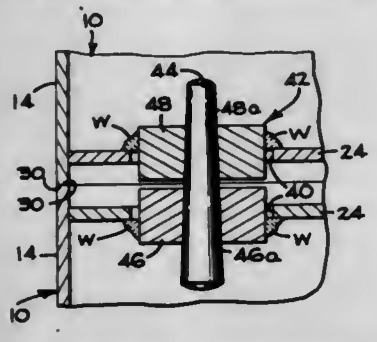


This invention relates to pivoted member assemblies and has as its primary object the provision of an improved pivoted member assembly in which the pivoted member can be held by friction in a selected position despite vibrations to which its mounting is exposed in service.

3,603,557
APPARATUS FOR ALIGNING FORMS

Willard M. Lind, Lakeland, Fla., assignor to FMC Corporation, San Jose, Calif.
Filed July 2, 1968, Ser. No. 742,095
Int. Cl. E04g *9/00*
U.S. Cl. 249—192 **1 Claim**

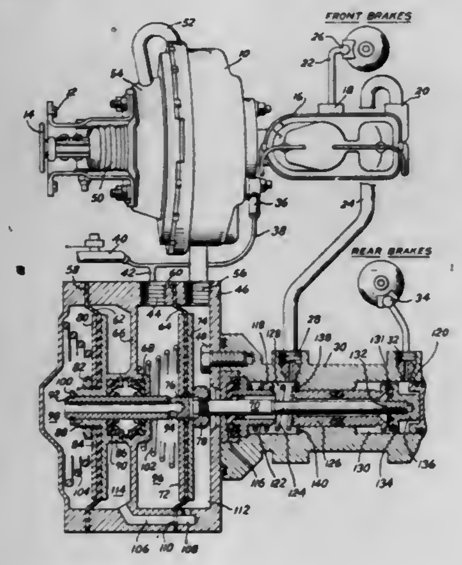
Concrete form sections are made ready for easy subsequent alignment by cutting aligned holes in the opposed end bulkheads of the sections to be aligned and placing between the sections and within the holes alignment devices each of which consist of a set of two apertured plugs which are received upon and snugly engaged with a tapered pin. Each plug of a set is welded to one of the opposing bulkheads and the pin is then removed to permit the form sections to be separated. When the sections are subsequently aligned at the



concrete pouring site, each pin is hammered back into snug engagement with its associated pair of plugs.

3,603,558
BRAKE PROPORTIONING MEANS

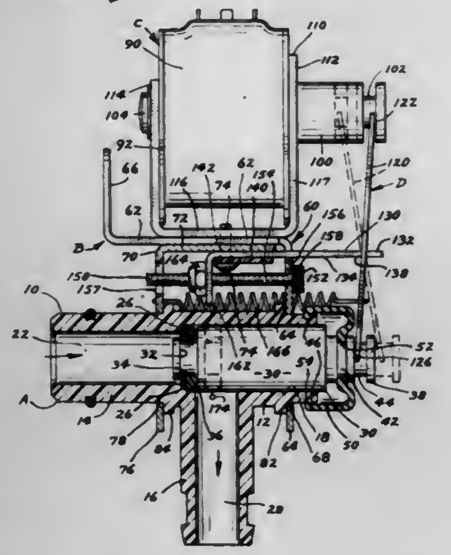
Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation
Division of Ser. No. 773,074, Nov. 4, 1968, Pat. No. 3,517,970.
Filed Jan. 9, 1970, Ser. No. 1,657
Int. Cl. F16k *31/145*
U.S. Cl. 251—61.5 **5 Claims**



A proportioning means for a dual hydraulic brake system that will regulate the brake pressure in one portion of that system in two steps by utilizing a device responsive to a control pressure for proportioning the brake pressure in steps.

3,603,559
SOLENOID-ACTUATED VALVE MECHANISM WITH LEVER-TYPE OPERATING MEANS

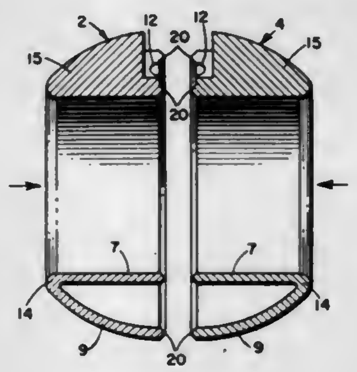
Gilbert V. P. Totten, Minneapolis, Minn., assignor to The Cornelius Company, Onoka, Minn.
Filed Feb. 14, 1969, Ser. No. 799,187
Int. Cl. F16k *31/10*
U.S. Cl. 251—138 **9 Claims**



A plunger-type valve mechanism in which a lever operating the valve plunger is actuated by a solenoid and in which the fulcrum of the lever is adjustable to vary the maximum opening of the valve.

3,603,560
IMPROVED CAVITY WALL VALVE BALLS

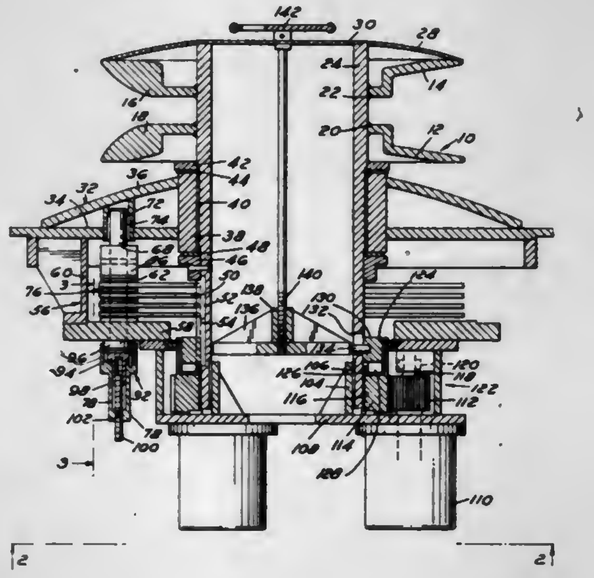
Samuel E. Merrill, and Joseph D. Krosoczka, both of Worcester, Mass., assignors to Sem-Tec, Inc., Worcester, Mass.
Division of Ser. No. 664,426, Aug. 30, 1967, Pat. No. 3,518,742.
Filed Nov. 3, 1969, Ser. No. 877,549
Int. Cl. F16k *5/06*
U.S. Cl. 251—309 **18 Claims**



A valve ball with a cavity therein, formed by casting two semispherical shell-type segments, each having a tubular section therethrough, and bonding the semispherical segments together.

3,603,561
ANCHOR WINDLASS FOR A MARINE VESSEL

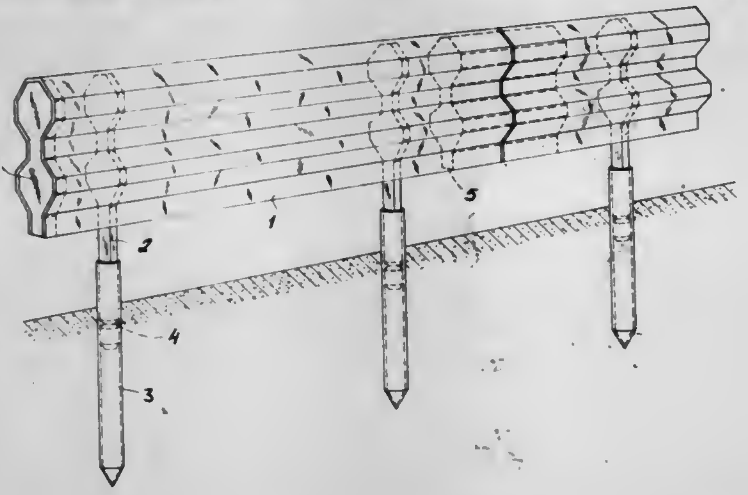
Edward R. Davies, Bloomfield Hills, and Charles E. Gregory, Anchorville, both of, Mich., assignors to Jered Industries, Inc., Troy, Mich.
Continuation of application Ser. No. 734,069, June 3, 1968, now abandoned. This application Dec. 19, 1969, Ser. No. 886,801
Int. Cl. B66d *1/30*
U.S. Cl. 254—150 R **8 Claims**



A powered windlass mechanism comprising an anchor chain winding drum or wildcat, a main support shaft carrying at its upper end the winding drum, driving motors geared to the main support shaft at its lower end, disc brake means for anchoring the main shaft and coupling means for connecting and disconnecting the main shaft and the drive gearing, all of the elements of the windlass mechanism being located in a common housing secured to the deck of a marine vessel.

3,603,562
VEHICLE GUARD RAILS

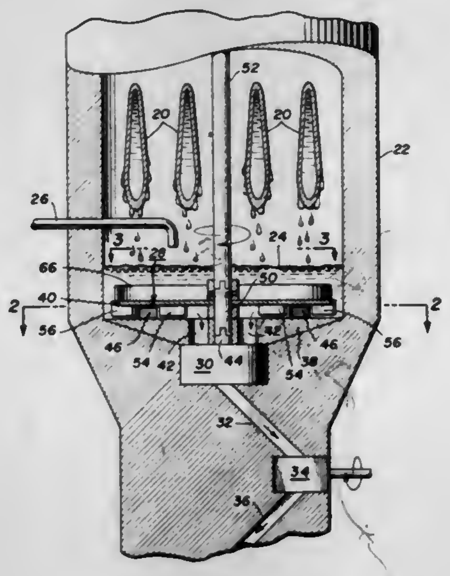
Ernest Glaesener, Dudelange, Grand-Duchy, Luxembourg, assignor to Arbed, Acieries Reunies de Burbach-Eich-Dudelange, (Grand-Duchy de Luxembourg), Luxembourg
Filed Apr. 7, 1969, Ser. No. 814,054
Claims priority, application Luxembourg, Apr. 9, 1968, 55865
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **7 Claims**



Vehicle guard-rail or barrier arrangement for the shoulders and median strips of roads. These vehicle guard rails, the length of which may be more than 20 meters, are constituted by a sheet-metal member (or a plurality of such members arranged in superposed manner), with a thickness less than 3 mm. and folded on themselves, so as to form a kind of closed or open hollow-profiled casing or channel. The vehicle guard rails are mounted on supporting sleeves or posts by means of fixing keys which match the form of the internal hollow of the rail.

3,603,563
BLENDER-PUMP

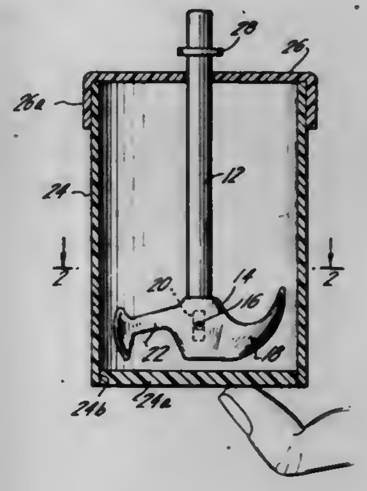
William Edward Holland, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 12, 1968, Ser. No. 783,182
Int. Cl. B01f *7/20;* **B29b** *1/06*
U.S. Cl. 259—7 **3 Claims**



Interleaving vanes on relatively rotating opposed discs blend viscous fluids. The vanes are also inclined to pump the fluid centripetally to a discharge orifice near the axis of rotation.

3,603,564
MIXER

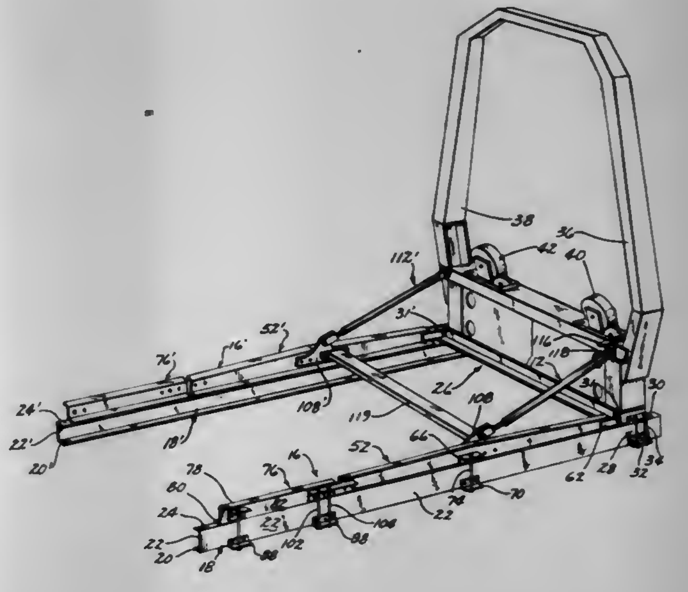
Howard Price, Kings Point, and Bela Szilagyi, Flushing, both of, N.Y., assignors to International Patents & Development Corp.
Filed Oct. 10, 1968, Ser. No. 776,301
Int. Cl. B01f *7/20*
U.S. Cl. 259—107 **13 Claims**



A disposable mixer adapted particularly for dental work. A rotary member has at its end a set of vanes, each having a unique shape for thoroughly intermixing constituents of a mixture within a disposable container. The outermost surface of each of the vanes fits snugly against the internal walls of the container. A shaft secured to the vanes may be driven by motor device for providing the mixing motion. The end of the container may be used to force the mixture from the container after completion of the mixing process.

3,603,565
SUPPORT FRAME FOR A CONCRETE MIXER TRUCK

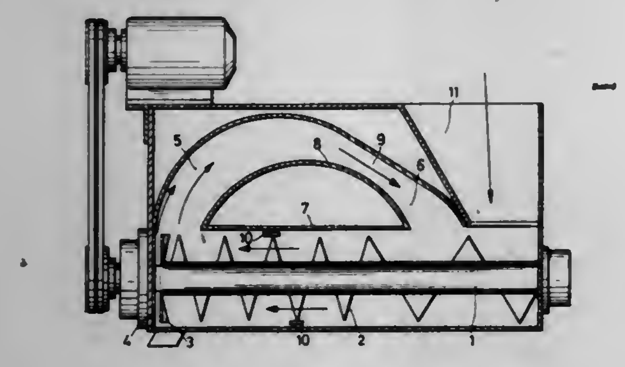
James E. Johnson, Waterloo, Iowa, assignor to Construction Machinery Company, Waterloo, Iowa
Filed July 22, 1969, Ser. No. 843,549
Int. Cl. B28c *5/18*
U.S. Cl. 259—176 **8 Claims**



A support frame for a concrete mixer truck comprising a first and second frame assemblies which are detachably secured to the truck frame members. Each of the frame assemblies includes a frame member which is pivotally secured at its rearward end to the rear drum support means. The first frame member is spaced above the truck frame and is secured thereto intermediate the length thereof. A length adjustable rod or turnbuckle means is pivotally connected at its forward end to the first frame member and is pivotally connected at its rearward end to the drum support means. The forward end of the first frame member is secured to a second frame member which is positioned forwardly thereof and which is secured to the truck frame member. Each of the frame assemblies provides a multiple point suspension system for the concrete mixer drum support means so that the drum support means will be maintained in its proper position with respect to the frame means and mixer drum when the truck is passed over rough terrain so as to prevent the mixer drum rail from moving out of engagement with the rear rollers on the rear drum support means.

3,603,566
A MIXER IN PARTICULAR A BUILDING MATERIAL MIXER IN WHICH A RAPIDLY ROTATING WORM SCREW IS MOUNTED IN A TROUGH

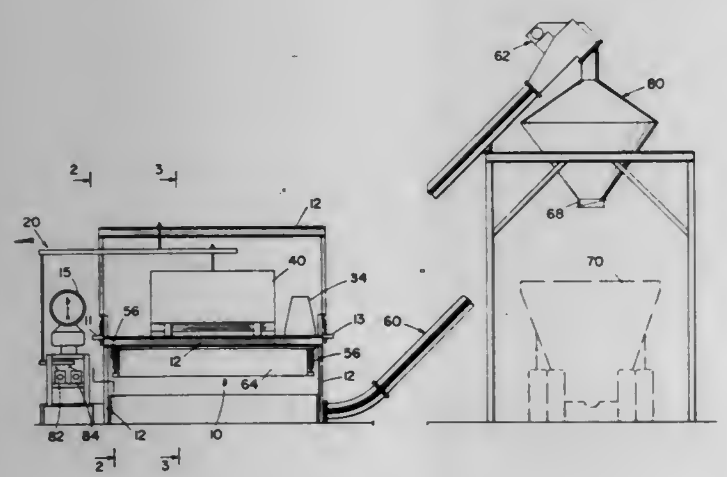
Paul August, C. Cepellades 1, Barcelone 6/Spanien, Barcelona, Spain
Filed Feb. 24, 1969, Ser. No. 801,451
Claims priority, application Germany, Feb. 27, 1968, P 16 32 433.7
Int. Cl. B28c *5/14*
U.S. Cl. 259—178 **3 Claims**



An improved building material mixer having a rapidly rotating worm screw mounted in a trough and a baffle plate disposed perpendicular to or at an angle to the worm screw is disclosed. A recirculation path for the building material is provided having a portion which is narrowed or constricted. Small friction plates may be fixed to the outer part of the worm screw.

3,603,567
HIGH SPEED BLENDING AND LOADING SYSTEM

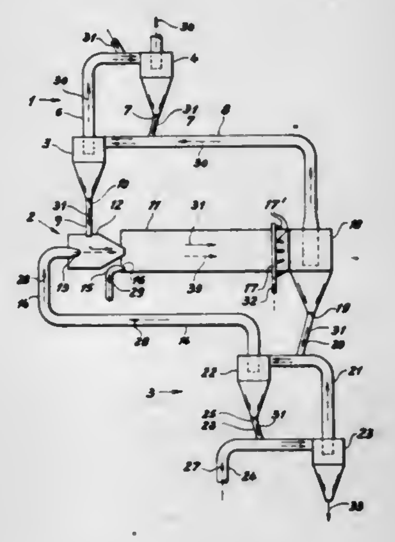
Walter J. Sackett, Sr., Baltimore, Md., assignor to The A. J. Sackett & Sons Company, Baltimore, Md.
Filed Feb. 24, 1970, Ser. No. 13,310
Int. Cl. B01f *5/00*
U.S. Cl. 259—180 **11 Claims**



A high speed blending, weighing, and loading system is provided for handling and processing of materials having two or more ingredients. This system includes a primary weigh-blend hopper having a chute for receiving materials which, if necessary, are conditioned by breaking up of lumps of material in the chute and then passed on to the primary weigh-blend hopper for weighing and blending thereof.

3,603,568
APPARATUS FOR HEAT TREATMENT OF FINE MATERIAL

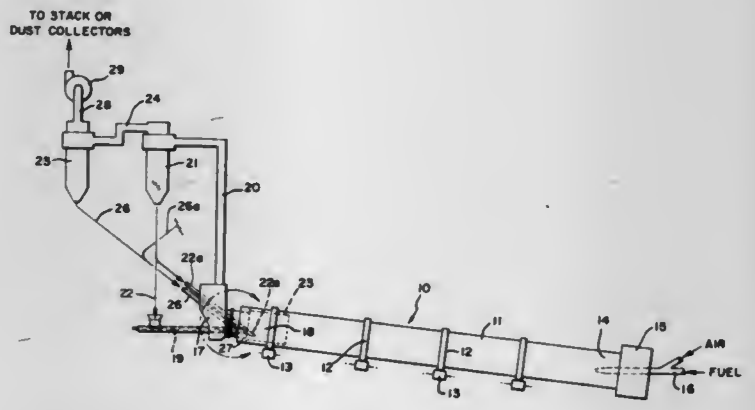
Horst Ritzmann, Neubeckum, Germany, assignor to Polysius AG, Neubeckum, Germany
Filed Oct. 8, 1969, Ser. No. 864,762
Claims priority, application Germany, Nov. 6, 1968, P 18 07 292.9
Int. Cl. F27b *15/00*
U.S. Cl. 263—21 R **3 Claims**



The apparatus comprises preheating, firing and cooling apparatus. Hot gases and fine material are passes concurrently through a firing chamber, and a separator is directly connected to the firing chamber.

3,603,569
KILN PREHEAT AND DRYING SECTION

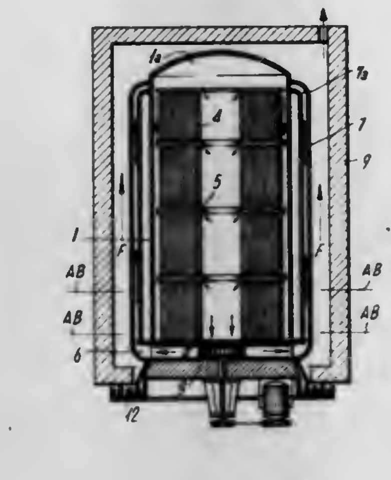
Harry I. Abboud, and Oren C. Furnish, both of Baton Rouge, La., assignors to Kaiser Aluminum & Chemical, Oakland, Calif.
Filed Dec. 29, 1969, Ser. No. 888,378
Int. Cl. F27b *7/32*
U.S. Cl. 263—32 R **7 Claims**



An improved kiln preheat and drying section comprising an inner shell concentric and axially aligned with the kiln shell, and provided with a means to feed raw material to be processed into the inner shell and means to feed dust into the annular space defined by the inner shell and kiln shell; and a process for operating the improved preheat and drying section.

3,603,570
BELL FURNACE FOR ANNEALING TREATMENT OF METAL SHEETS

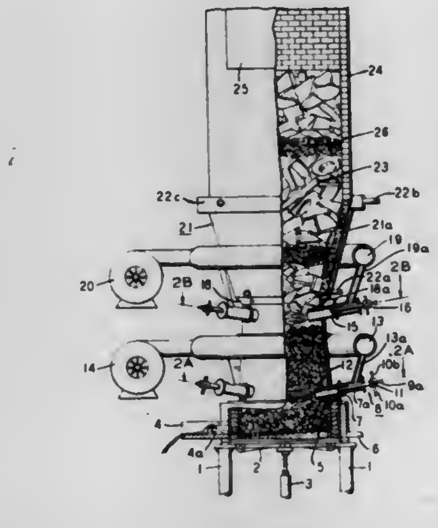
Giulio Galeone, Milan, Italy, assignor to S.C.E.I. Soc. Costruz, Elettrotermiche Industriali S.p.A., Novara, Italy
Filed Mar. 26, 1969, Ser. No. 810,526
Claims priority, application Italy, Apr. 1, 1968, 14686
Int. Cl. F27b *11/00*
U.S. Cl. 263—40 **6 Claims**



A bell furnace for annealing treatment of metal sheets in superimposed rolls has a first outer hood, a second inner hood for protection of the sheet rolls, a cylindrical annular space between the first outer hood and the second inner hood and an upper collecting chamber and a lower collecting chamber within the inner hood. There is disposed a plurality of vertical tubes circumferentially arranged about the sheet rolls externally of the second hood for the passage in ascending stage of the entire protective gas capacity from the lower collecting chamber to the upper collecting chamber; a diffuser is located within the lower collecting chamber and beneath the central bore of the sheet rolls for establishing a fluid circulation within the inner hood and the tubes arranged in the space between the inner and outer hoods.

3,603,571
APPARATUS FOR MELTING SCRAP METAL

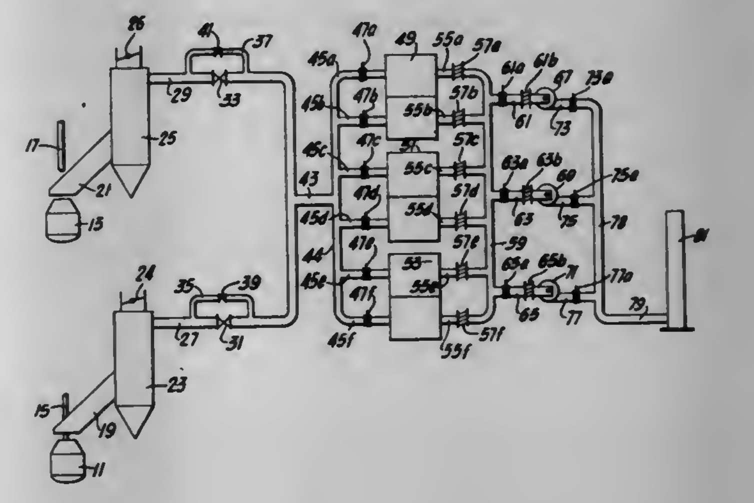
Lewis J. Geiger, Jr., Edison, and James W. Estes, Piscataway, both of, N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.
Filed Aug. 11, 1967, Ser. No. 659,946
Int. Cl. C21b *7/16*
U.S. Cl. 266—25 **15 Claims**



In a shaft furnace, method and apparatus for melting low density metallic scrap. Burners and/or tuyeres are located at two different levels in the body portion of the furnace. The charge is preheated by hot gases rising in the furnace stack, and melted at the upper burner level. As the molten metal trickles down over a support bed, which may either be coke, other types of carbon, or a refractory material, it is superheated to the desired spout temperature, and to provide a product of the desired analysis. A feature is the configuration of burners which imposes a swirling motion on gases entering the furnace.

3,603,572
METHOD AND APPARATUS FOR OPERATING BASIC OXYGEN FURNACES

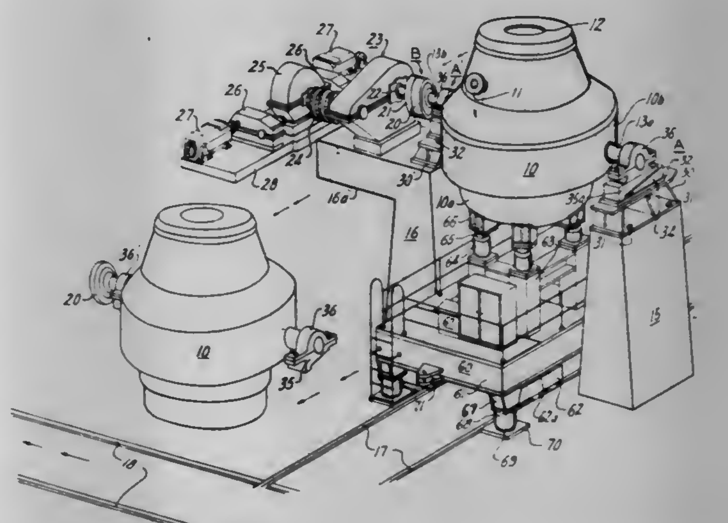
Franz J. Rosentern, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed July 28, 1969, Ser. No. 845,461
Int. Cl. C21c *5/40*
U.S. Cl. 266—35 **5 Claims**



Disclosed is a method and apparatus for simultaneously blowing one basic oxygen furnace and burning in the lining of a second basic oxygen furnace; the waste gases from both operations being handled by a single gas-cleaning system and, by means of proper controls inherent to the method, so that virtually complete burning of all combustibles is assured.

3,603,573
FURNACE REMOVAL

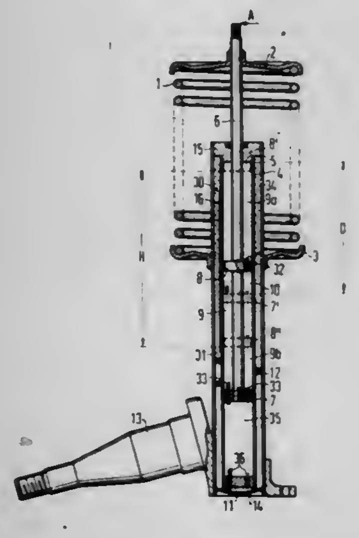
John J. Gill, Beaver, Pa., assignor to Pennsylvania Engineering Corporation, New Castle, Pa.
Division of Ser. No. 664,095, Aug. 29, 1967, Pat. No. 3,504,421.
Filed Jan. 7, 1970, Ser. No. 1,179
Int. Cl. C21c *5/42*
U.S. Cl. 266—36 P **11 Claims**



A shaft-mounted rotatable furnace vessel or converter is provided with bearing housings journaling its shafts that are adapted to be raised and lowered on jack mounts or stands of a pair of spaced-apart stationary support piers. A driven trunnion shaft of the vessel or converter is provided with a conventional separable part type of coupling connecting it to a motor drive mechanism. Each jack mount or stand has a wedge-shaped or inclined slide part carried by a guide member for endwise guided movement, as effected by a reciprocating type of fluid motor operatively connected to one end of the slide part. Each bearing housing has a slide or wedge-shaped portion cooperating with an associated slide part and adapted to be raised and lowered by endwise movement of the slide part. An end retainer having a pair of spaced-apart portions projects upwardly from the jack mount adjacent an end thereof on which the motor is positioned and through which the motor is adapted to operatively extend in its connection to the slide part. This end retainer has an abutment portion to abut one end of an associated bearing housing; it cooperates with an opposite end retainer that is removably secured on the jack mount to abut an adjacent end of the associated bearing housing. The upwardly projecting end retainers positively or securely retain or mount an associated bearing housing with respect to the slide part. The end retainers also function to limit the maximum endwise movement of the slide part in either direction. The inclined or wedge-shaped slide portion of each bearing housing is complementary with the slide part to raise and lower the associated housing when the slide part is reciprocated by the fluid motor. The structure enables a converter vessel or furnace to be raised with respect to its piers or stands, in order that a transport car may be wheeled into position between the piers and stands and into a cooperating position under the vessel, that the support or weight of the vessel may be transferred from the stands to the car, and that the vessel with its bearing housings may be transported or moved from an operating station to a repair or maintenance station and, if desired, from the latter station to a hold station, and then returned to an operating station. The car has means for moving it into an aligned position with respect to the bottom of a converter vessel at any of the stations and for endwise moving the vessel after the second-mentioned end retainer of each of the pair of bearing housings has been removed.

3,603,574
SHOCK ABSORBER FOR INDEPENDENT FRONT WHEEL SUSPENSION

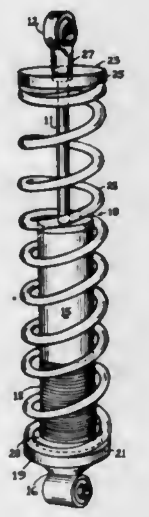
Dieter Lutz, Gildersheimer Strasse 76, 872 Schweinfurt am Main, Schweinfurt am Main, Germany
Filed July 24, 1969, Ser. No. 844,464
Claims priority, application Germany, July 30, 1968, P 17 80 074.7
Int. Cl. B60g *11/56*
U.S. Cl. 267–34 **10 Claims**



In a hydropneumatic shock absorber of the piston-and-cylinder type for a front wheel of a motorcar, an annular spacer mounted on the piston rod or on the inner cylinder wall between the piston and the end wall of the cylinder through which the piston rod passes limits radial deflection of the piston rod under stresses due to steering or to travel of the sprung wheel over an obstacle.

3,603,575
ADJUSTABLE VEHICLE-STABILIZING UNIT

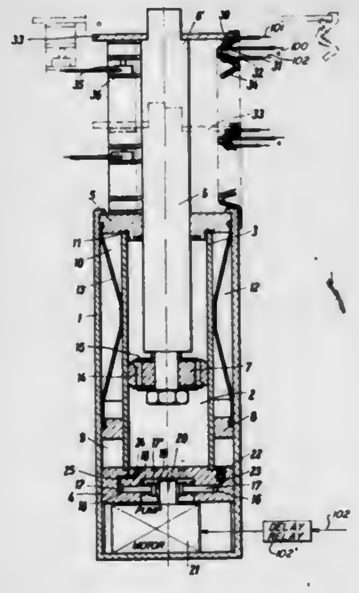
David F. Arlasky, and Robert W. Chapman, both of Chicago, Ill., assignors to Chapman Performance Products, Inc., Chicago, Ill.
Filed July 7, 1969, Ser. No. 841,189
Int. Cl. F16f *5/00*
U.S. Cl. 267–34 **6 Claims**



A combined coil spring and shock absorber unit for vehicle suspension wherein the compression of the coil spring may be adjustable relative to the shock absorber to properly level the suspended vehicle.

3,603,576
HYDROPNEUMATIC SUSPENSION UNIT WITH AUTOMATIC LEVEL REGULATION

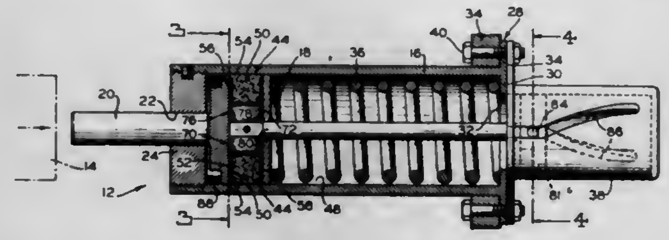
Erich Hahn, Ennepetal, Germany, assignor to Firma August Billstein, Ennepetal, Germany
Filed May 27, 1969, Ser. No. 828,297
Claims priority, application Germany, June 10, 1968, P 17 55 693.3
Int. Cl. F16f *5/00*
U.S. Cl. 267–64 **19 Claims**



A self-pumping hydropneumatic suspension unit is provided with automatic level regulation operative even when the vehicle is stationary. The suspension-unit housing holds an electric pump-driving motor and also a regulating valve. A level-control switch electrically controls operation of the motor on the one hand and of the valve on the other hand in dependence on the vehicle load.

3,603,577
BUFFER DEVICE WITH TORSION BAR ACTUATED BRAKESHOES

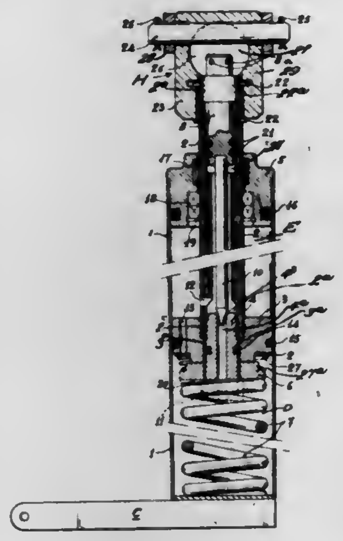
Robert G. DeRaad, Garretson, S. Dak.
Filed Sept. 23, 1969, Ser. No. 860,284
Int. Cl. F16f *3/02*
U.S. Cl. 267–151 **7 Claims**



A buffer device includes a piston slidingly disposed in a cooperating cylinder so as to be displaceable therein by an energized, reciprocative member. A compression spring and a torsion bar are energized by the piston during displacement with the compression spring absorbing sufficient energy from the member to return it to its normal position, and the torque in the torsion bar being applied to a pair of brakeshoes carried by the piston so as to be actuated thereby against the inside of the cylinder to convert to heat the remaining energy imparted to the piston.

3,603,578
HYDRAULIC BALANCING MECHANISM

Jose Pardo Herrera, Avenida de las Torres 92, Zaragoza 9, Spain
Filed June 12, 1969, Ser. No. 832,748
Int. Cl. F16f *5/00*
U.S. Cl. 267–128 **6 Claims**

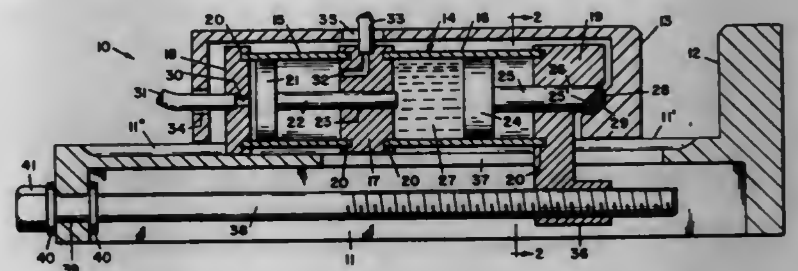


The invention provides an hydraulic balancing mechanism whereby elements or bodies may be oscillated to or from a utile and an inutile position and employs an hydraulic cylinder, a piston therein, a chamber above and a chamber below the piston, a spring in the lower chamber contacting the piston and compressible by movement of the cylinder relative to the piston, a bushing slidable in the piston having a bore, a slidable hollow rod carrying the bushing, there being communication between the chambers through said bore, the rod and a lateral opening in the latter, and valve means for said bore of the bushing operably mounted in the hollow of the rod.

3,603,579
FLUID-ACTUATED VISES

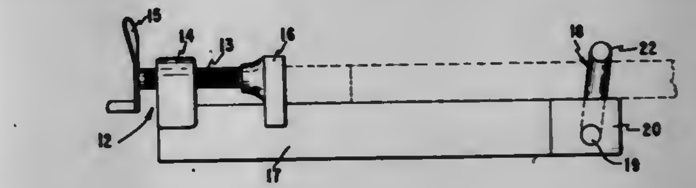
John E. Odom, 3112 Porter Street, Soquel, Calif.
Filed May 22, 1969, Ser. No. 826,901
Int. Cl. B25b *1/18*
U.S. Cl. 269–28 **1 Claim**

An elongated base having a fixed jaw at one end thereof. A movable jaw and its fluid actuator are slidable as a unit on the base for prepositioning the movable jaw relative to the fixed jaw. The fluid actuator consists of an air cylinder and a hydraulic cylinder in tandem. A piston in the air cylinder has a plunger projectable into the hydraulic cylinder for actuating a piston in the latter with a multiplication of force. The hydraulic cylinder piston has a piston rod which slides the movable jaw relative to the fixed jaw while the fluid actuator remains relatively stationary in its preadjusted position on the base.



3,603,580
CLAMP HAVING GRIPPING MEANS

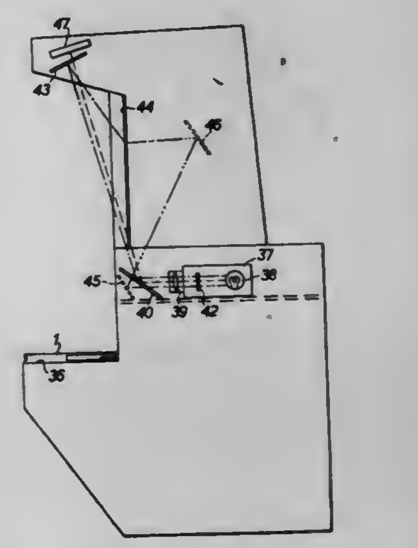
Harold Van Gelder, 6905 Adros Avenue, Van Nuys, Calif.
Filed June 25, 1969, Ser. No. 836,406
Int. Cl. B25b *5/00*
U.S. Cl. 269–42 **3 Claims**



A clamp having gripping means thereby allowing the clamp to hold long pieces of material together without the necessity of the clamp being of great length. The gripping means are easily releasable and comprise a U-shaped member having one leg journaled in a bar forming part of the clamp. The other leg of the U-shape is adapted to engage the workpiece to hold it.

3,603,581
POSITIONING AND SECURING OF WORKPIECES FOR MACHINING OPERATIONS

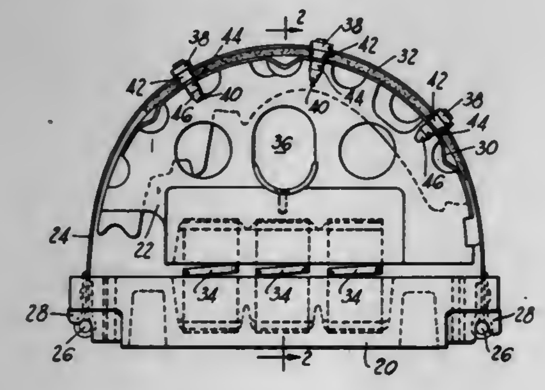
Philip Richard Christal, Deptford, England, assignor to The Molins Machine Company Limited, London, England
Filed Aug. 16, 1968, Ser. No. 753,204
Claims priority, application Great Britain, Aug. 23, 1967, 38864/67
Int. Cl. B23q *19/00*
U.S. Cl. 269–307 **2 Claims**



A method and apparatus for accurately locating a workpiece in positional relationship to a baseplate by projecting a light image having contrasting areas representing areas or features of the workpiece, or supports or clamps, etc., for securing the workpiece to the baseplate. The light image may be that of a template having representational markings or may be of the workpiece of supports, clamps, etc., to be secured to the baseplate. Instructions may be displayed simultaneously with the image and may appear on a separate screen. The template may be a photograph, i.e., print or transparency.

3,603,582
FLEXIBLE HOLDDOWN BAND FOR BRAKESHOE AND LINING-HOLDING FIXTURE

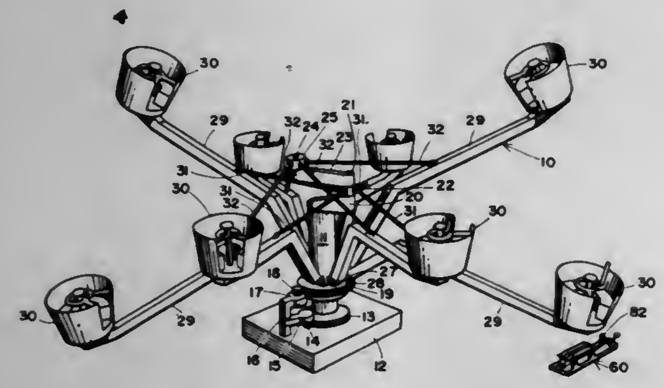
Ralph M. Nelson, South Bend, Ind., assignor to The Bendix Corporation
Filed June 30, 1969, Ser. No. 837,523
Int. Cl. B23q *3/00*
U.S. Cl. 269—321 B **5 Claims**



A flexible arcuate metal band having spaced-apart laterally extending flexible tab portions to which tapered locating pins are fixedly secured. The band is adapted to overlay a brakeshoe and associated brake lining with the tapered locating pins bearing against the edges of the shoe and lining to thereby accurately and positively fix the position of the lining relative to the shoe.

3,603,583
PASSENGER PARTICIPATION AMUSEMENT RIDE

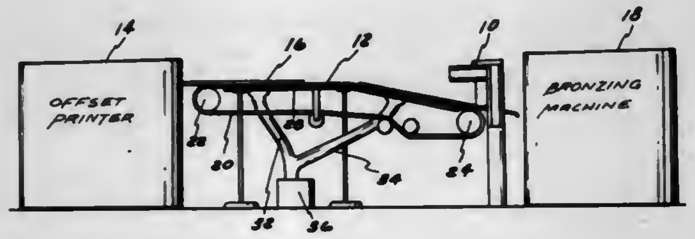
Norman Bartlett, North Miami Beach, Fla., assignor to Marjorie Bartlett, North Miami Beach, Fla., a part interest
Filed Apr. 8, 1969, Ser. No. 814,251
Int. Cl. A63g *1/00*
U.S. Cl. 272—36 **7 Claims**



A passenger participation amusement ride having a plurality of radiating arms on one end of which circular passenger-carrying cars are pivotally mounted, the other end of the arms are pivotally secured to a shaft that permits the simultaneous swinging of the arms in both horizontal and vertical planes. The cars are provided with a bench for seating passengers, which extends only about a portion of the car whereby the cars become unbalanced when loaded with seated passengers so that rotation of the cars is effected as the cars rise and fall and ratchet mechanism connected to the cars so that the cars can only rotate in one direction.

3,603,584
CRIMPING MEANS FOR SHEET FEEDING APPARATUS

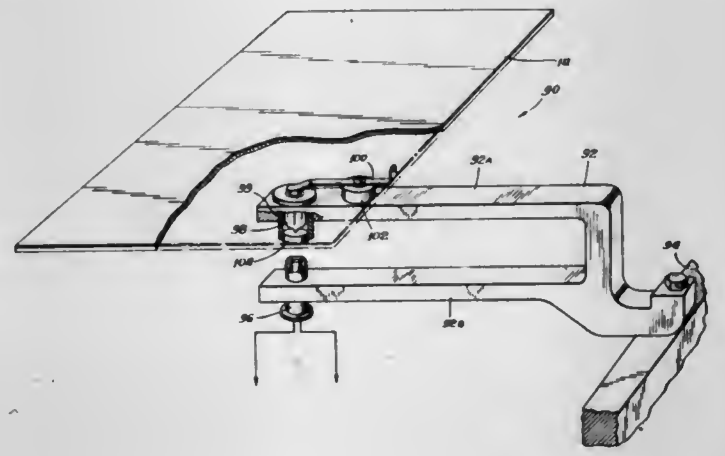
Joachim G. Schmidtke, 22518 Mylls Street, St. Clair Shores, Mich.
Filed Sept. 12, 1969, Ser. No. 857,477
Int. Cl. B65h *9/06*
U.S. Cl. 271—50 **7 Claims**



A conveyor having a plurality of spaced-apart closed-looped belts, the upper sides of which carry sheets of paper from a printing device to a sheet-processing machine, is provided with a feed table disposed between the end of the conveyor and the sheet-processing machine. The feed table has a crimping surface upon which the leading edge of each sheet is bent downwardly by a predetermined amount. A pivotally mounted stop member responsive to the position of the leading edge of the sheet momentarily prevents movement of the sheet relative to the crimping surface while a bar member spaced above and parallel to the crimping surface moves to and from the crimping surface to engage the upper surface of the leading edge of the sheet to crimp the same about the contour defined by the crimping surface.

3,603,585
PHOTOELECTROSTATIC PRINTOUT MACHINE

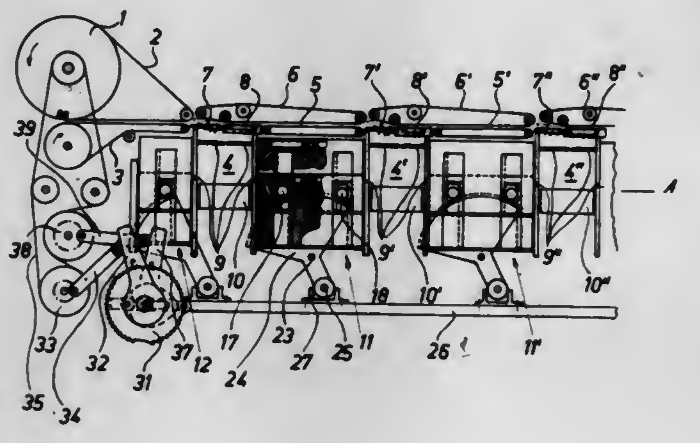
William R. Maloney, Lake Forest, and Arthur L. Hallquist, Mundelein, both of, Ill., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Division of Ser. No. 617,094, Feb. 20, 1967, Pat. No. 3,501,236.
Filed July 24, 1969, Ser. No. 869,983
Int. Cl. B65h *7/14*
U.S. Cl. 271—57 **12 Claims**



A photoelectrostatic printout machine for computers or terminals of communication links in which logic circuits coupled to detectors located at stations spaced along the path of movement of the copy sheet detect paper jams and skewed sheets. An abnormality stops sheet feeding and inhibits the transfer of image signals to the machine. The position of the light-sensitive copy sheets is photoelectrically detected using light to which the sheet does not respond.

3,603,586
STACKING APPARATUS

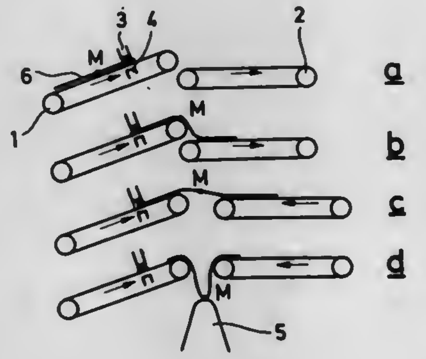
Lorenz Hupfauf, Fuerth, Germany, assignor to Vereinigte Flugtechnische Werke Fokker G.m.b.H., Bremen, Germany
Filed Feb. 25, 1970, Ser. No. 14,120
Claims priority, application Germany, Feb. 28, 1969, P 19 10 203.5
Int. Cl. B65h *31/24*
U.S. Cl. 271—64 **12 Claims**



A stacking apparatus is disclosed having conveyor belts and chutes governed by flaps and containing blower nozzles for depositing blanks into the chutes. Stacking platform establishing horizontally extending rods move down in the chutes while similar rods move up but in a retracted position, to serve as platform for the next stack. The rods run in horizontally stacked guide plates serving also as partition between two adjacent chutes. Each guide plate supports two rods respectively for the two adjacent chutes. Adjacent plates in a stack are moved in opposite direction. A common drive for all plates is geared to the principal drive for the conveyor belts.

3,603,587
APPARATUS FOR STACKING HIDES OR THE LIKE

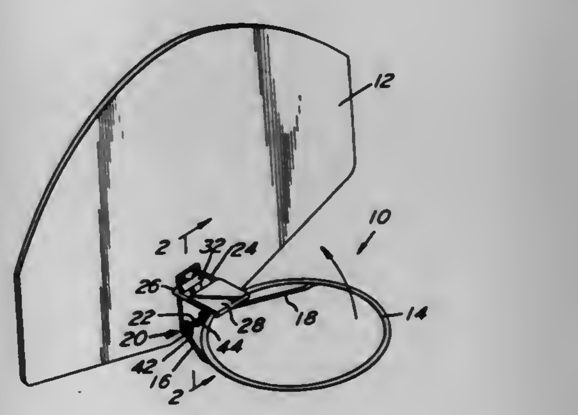
Cornelius Van Dorst, Rijen, Netherlands, assignor to Badische Maschinenfabrik G.m.b.H.
Filed Jan. 26, 1970, Ser. No. 5,857
Claims priority, application Netherlands, Jan. 27, 1969, 6 901 282
Int. Cl. B65h *29/34*
U.S. Cl. 271—65 **14 Claims**



This apparatus is adapted to stack hides or the like of different lengths successively and centrally on each other so as to straddle the narrow head of an upwardly tapering hide support so that the two halves of each hide will be disposed at the front and rear sides of this support and the superimposed hides form a centrally folded stack which takes up very little space and is so accurately balanced on the head of the support that it will not tip over. The apparatus comprises a pair of conveyor belts behind each other, a scanning device, preferably a photoelectric cell, for measuring the length of each hide while traveling along the first conveyor belt and for thereby also determining the position of the center of each hide, and a control mechanism which is responsive to the actuation of the scanning device and controls the operation of the second conveyor belt which receives at least a part of the hide form the first belt and then moves the hide toward the hide support and deposits the hide centrally in the straddling position on the support or on the previously deposited hide.

3,603,588
BASKETBALL GOAL

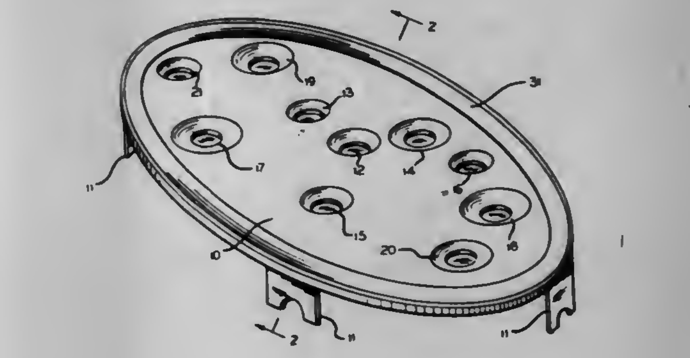
John W. Ebstein, Roslyn Heights, N.Y., assignor to Gabriel Industries, Inc., New York, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,461
Int. Cl. A63b *63/02*
U.S. Cl. 273—1.5 R **8 Claims**



A basketball goal wherein spaced brace rods and a strut are fixed to a rim, and the strut and ends of the brace rods remote from the rim are fastened to a backboard by a unitary mounting plate. The upper portion of the mounting plate has a channel formed therein within which the strut is secured, and the lower portion of the mounting plate is formed with tabs, to which the brace rods are secured, when the goal is attached to a backboard.

3,603,589
POCKETED MARBLE GAME SIMULATING SPACE TRAVEL

Geoge E. Sonntag, 10555 West Spencer Place, Milwaukee, Wis.
Filed Mar. 20, 1970, Ser. No. 21,441
Int. Cl. A63b *63/00;* **A63f** *7/14*
U.S. Cl. 273—95 R **5 Claims**

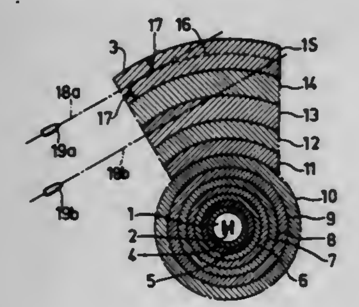


A marble game simulating space travel. Indentations in a playing surface represent 10 solar system bodies. Travel between the heavenly bodies is accomplished by shooting a marble from one indentation to another. Subgrooves represent such things as "Safe Landings," "Crash Landings" and "Lost in Space."

3,603,590

APPARATUS FOR RECORDING HIT RESULTS ACTIVATED BY SHOCK WAVES ENERGIZING HIT DETECTORS

Ulf Carl Iwar Sellman, Roslags-Nasby, Sweden, assignor to A B Flygmal Air Target Ltd., Stockholm, Sweden
Filed May 24, 1968, Ser. No. 731,895
Int. Cl. F41j *5/04*
U.S. Cl. 273—102.2 B **5 Claims**

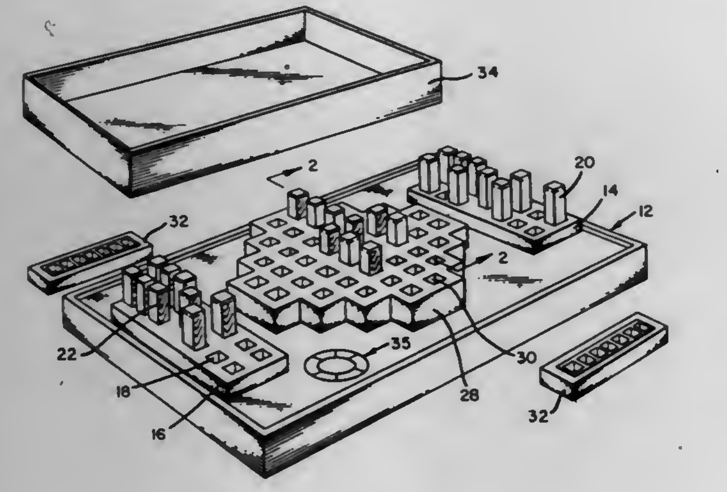


A system for registering the miss distance of projectiles shot at a target. The system includes a means which generates a signal response to each projectile, which signal has an amplitude responsive to the amplitude of the acoustic wave produced at the target by the projectile. The generated signal selectively energizes a plurality of zone-marking units, each of which is responsive to a different amplitude of the generated signal, which amplitude corresponds to a predetermined miss distance from the target. A recording means is operated for each projectile which caUses the generation of the signal in accordance with the response of the zone-marking units to thereby indicate for each projectile its miss distance from the target.

3,603,591

BOARD GAME APPARATUS

Philip L. Shoptaugh, 3317 Florida Street, Oakland, Calif.
Filed May 23, 1969, Ser. No. 827,379
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 AB **1 Claim**

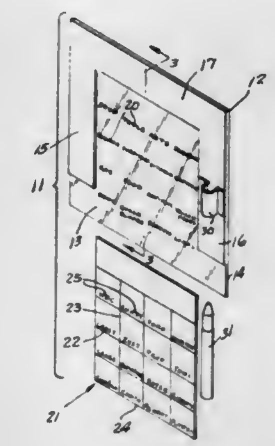


A board game apparatus which comprises plurality of playing pieces with distinctive body colors to designate the players and end colors which are different on each piece. The end colors are selected from adjacent spectral colors when a spectrum is arranged in a circular fashion with red being adjacent to both orange and violet and the other colors being blue, green and yellow arranged in spectral order. The apparatus further comprises a board having pockets which conceal the lower end color of the piece and expose the body color and the upper end color.

3,603,592

APPARATUS FOR PLAYING A GAME UTILIZING THE PERCEPTION OF TELEVISION COMMERCIALS

Joe Bury, 400 South 6th Street, Worland, Wyo.
Filed Jan. 20, 1970, Ser. No. 4,323
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 B **8 Claims**

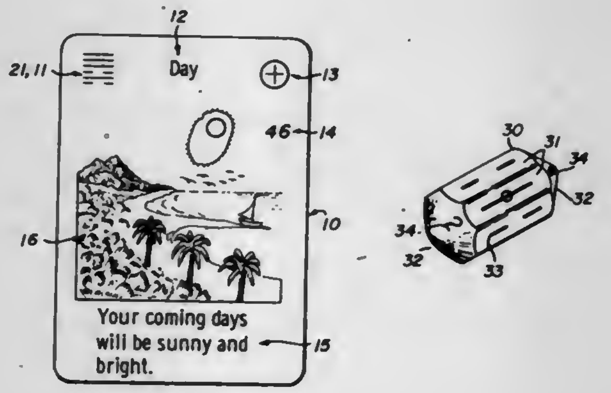


A game apparatus consisting of rectangular background cards having transparent front panels secured thereto at three edges, leaving an open edge. The transparent front panels have indicia which are of the same color as the background card. The indicia consists of rows and columns of generic names of products. Auxiliary cards inscribed with rows and columns of boxes containing trade names may be inserted between the transparent front panel and the background card, so that a trade name and product name will appear in each box. A crayon is furnished to mark a box when the product or trade name is mentioned in a television commercial, so that eventually a contestant can complete a horizontal, vertical, or diagonal row of markings, whereby he is entitled to a score value. The crayon markings are erasable to permit reuse of the background card assemblies.

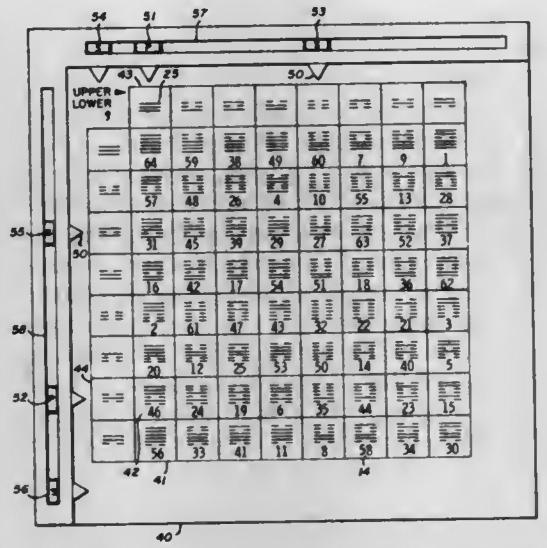
3,603,593

I CHING FORTUNE-TELLING GAME

Kenneth Chew, 2629 Castello Way, Santa Clara, Calif.
Filed June 23, 1969, Ser. No. 835,920
Int. Cl. A63f *9/00*
U.S. Cl. 273—161 **2 Claims**



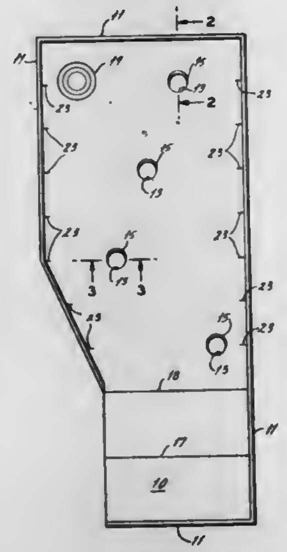
A fortunetelling and competitive wagering game based upon the I Ching. Apparatus for the game includes 64 oracle cards, 3 octagonal dice and a selection board. Each card has displayed thereon a distinctive hexagram and a word, numeral, sign and fortunetelling sentence, each related to or expressing an attribute associated with the hexagram. Each facet of each dice has a symbol corresponding to a component of a hexagram. The selection board has 64 regions in an eight-by-eight array with each region having inscribed thereon a different hexagram. Pointers in slides are selectively alignable with columns and rows of the regions.



3,603,594

GOLF GAME

William D. Kelley, 20-A Valley Road, St. Charles, Mo.
Filed Feb. 16, 1970, Ser. No. 11,653
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 F **3 Claims**



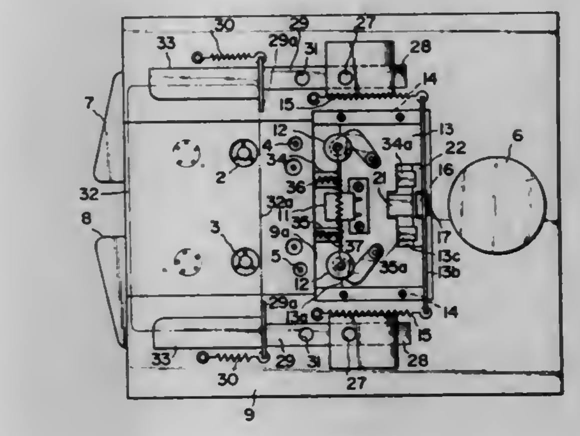
A golf game comprising a flat flexible cellular playing surface having one or more holes (in a golf sense) at predetermined distances from a starting line with a flexible resilient stop bar permanently attached to the edges of the playing surface and each hole being provided with a flexible resilient retaining wall permanently attached to the playing surface at and along a portion of the lip edge of said hole furthest away from the starting line in such a manner so as to deflect a ball into the hole if driven with less than a predetermined amount of force but allowing the ball to continue on its course without deflection if the force so applied exceeds the predetermined amount of force.

3,603,595

MAGNETIC SOUND RECORDING AND REPRODUCING APPARATUS

Eiichi Wada, Yokohama-shi, Japan, assignor to Mondo Kabrishiki Kaisha, Tokyo-to, Japan
Filed Feb. 27, 1969, Ser. No. 802,892
Claims priority, application Japan, Mar. 1, 1968, 43-13275
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 E **2 Claims**

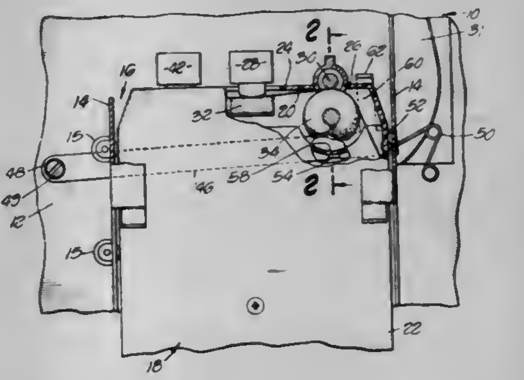
In a tape recorder, a magnetic sound recording and reproducing head and pinch rollers are mounted on a plate member which is moved forwardly in response to the upward movement of an elevator frame including a driving means for upright reel driving shafts and capstans, and is moved rearwardly by a spring. The capstans and the head are moved forwardly in response to the upward movement of the elevator frame which is released by the loading of a cassette to clamp the tape between the pinch rollers and the capstans and the plate member is quickly moved rearwardly by means of an operating member for a fast forward and fast rewind and quick running mechanism to disengage the head and the pinch rollers away from the tape.



3,603,596

CARTRIDGE-RETAINING MECHANISM FOR TAPE DECKS AND THE LIKE

George H. Eash, 3546 Alginet Drive, Encino, Calif.
Filed Nov. 3, 1969, Ser. No. 873,340
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 B **3 Claims**



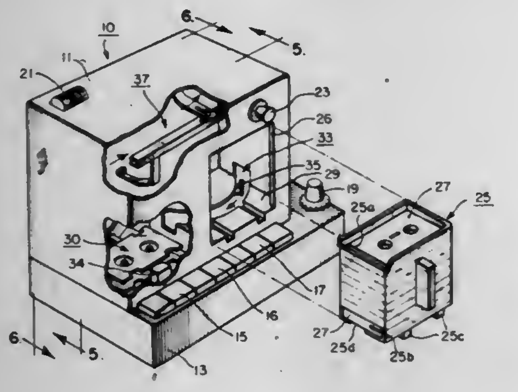
An improved cartridge-retaining mechanism for magnetic tape decks (i.e., players and transcribers) and the like is actuated automatically by the insertion of a magnetic tape cartridge into the cartridge-receiving slot of the deck. A lever arm swingably mounted (e. g., pivotably or rotatably mounted) beneath the cartridge-receiving slot of the deck carries an actuator finger which normally extends into the cartridge receiving slot, and a cartridge-retaining finger which is normally disposed below the slot. Insertion of a tape cartridge into the slot moves the actuator finger forwardly to overcome the force of an over-the-center-type control spring and bring the cartridge-retaining finger upwardly into the cartridge-receiving slot where it engages the underside of the cartridge. Thereafter, the control spring urges the cartridge-retaining finger forwardly to press the pinch roller and the tape in the cartridge against the drive capstan on the deck.

3,603,597

TAPE RECORDER

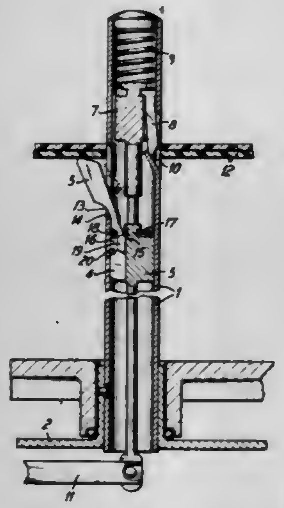
Robert Haake, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Apr. 25, 1969, Ser. No. 819,299
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 F **46 Claims**

A tape recorder is disclosed for automatically playing a succession of tape cassettes of the type having separately reproducible record tracks. A carrier supports one cassette at the play station for reproduction of a first set of record tracks after which a control is actuated to lift the carrier away from the play station, invert the cassette and return the cassette to the play station for reproduction of the second and last set of record tracks. A storage bin holding a plurality of cassettes in stacked relation is positioned laterally adjacent the play station and the vertical path traversed by the carrier in its operating cycle. On its next operating cycle, the carrier momentarily dwells at positions respectively adjacent the top and bottom of the bin while an injector mechanism transfers the one cassette from the carrier into the bin and an ejector lever transfers a successive cassette from the bin into the carrier to permit play of a successive cassette. The storage bin is preferably removable from the recorder and is constructed so as to serve as a convenient, independent storage vehicle for a series of cassettes. Additional features are disclosed.



3,603,598
PILE AXLE

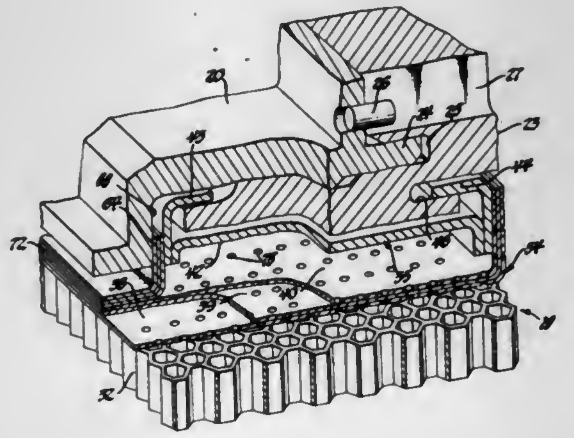
Helmut Laufer, St. Georgen, Black Forest, Germany, assignor to Dual Gebruder Steidinger, St. Georgen, Black Forest, Germany
Filed Feb. 25, 1969, Ser. No. 802,007
Claims priority, application Germany, Feb. 29, 1968, P 16 22 054.5
Int. Cl. G11b *17/08*
U.S. Cl. 274—10 S **4 Claims**



A center spindle for a record-changing phonograph which comprises a sleeve having a plurality of axially directed slots disposed in two groups at different heights, and primary control means are provided in the sleeve and operable by an axial movement thereof. A plurality of primary record-supporting members are each placed in one of the slots of the upper of the groups and coupled with the primary control means such, that the primary record-supporting members are movable into a position outside of the outer periphery of the sleeve by the axial movement. Secondary control means are arranged in the sleeve and operable by an axial movement thereof. A plurality of secondary record-supporting members comprises obliquely upwardly arranged stays and each is placed in one of the slots of the lower of the groups; the upper end of the secondary record-supporting members, corresponding with about the thickness of one record. The secondary record-supporting members are rotatably connected with the secondary control means in an axial plane of the center spindle, and a control edge fixed on the sleeve swings back the secondary record-supporting members from one rotary position outside of the outer periphery of the sleeve into the sleeve by the axial movement. Spring means retain resiliently the secondary supporting members in a primary, median rotary position supporting the records such, that the weight of at least one record exerted upon the secondary record-supporting members swings the latter against the force of the spring means into a secondary rotary position of greater spread. An abutment means is provided on the sleeve within the range of the axial movement of at least one of the secondary record-supporting members. At least one of the secondary record-supporting members has an extension at its lower end such, that it moves during an axial downward movement of this one of the secondary record-supporting members towards the abutment means, thereby locking a further movement of the secondary control means, when the secondary record-supporting members are disposed in their primary, median rotary position, and the secondary record-supporting members pass freely the abutment means, upon moving into their secondary rotary position.

3,603,599
COOLED SEAL

William F. Laird, Waldron, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed May 6, 1970, Ser. No. 35,213
Int. Cl. F01d *11/08;* **F02f** *11/00*
U.S. Cl. 277—53 **6 Claims**

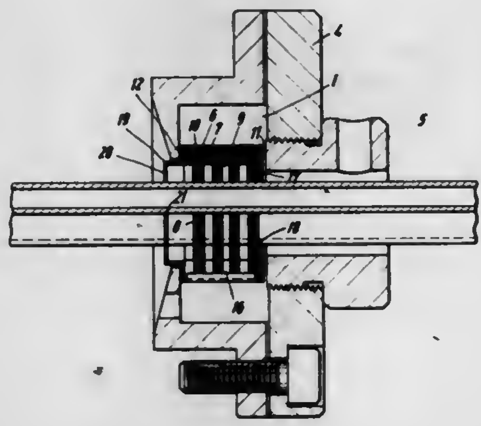


A cooled blade tip seal strip in a turbine has a facing of honeycomb material underlaid by a sheet of porous material to which the honeycomb is bonded. The porous material has numerous distributed pores which conduct fluid from a chamber between the sheet and a structure on which it is mounted through the sheet and the honeycomb cells to provide cooling for the blade tip seal in the hot environment of the turbine.

3,603,600
BORER SEAL

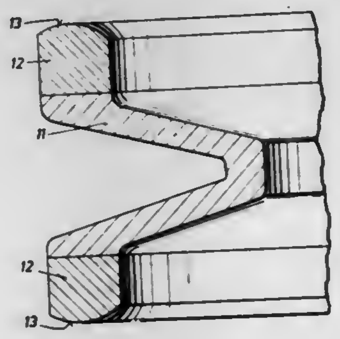
Adolf Lutz, Geisingen Andei, Germany, assignor to Karl Huller, GmbH, Germany
Filed Sept. 23, 1968, Ser. No. 761,566
Claims priority, application Germany, Sept. 27, 1967, H 60333
Int. Cl. F16j *15/56*
U.S. Cl. 277—81 **11 Claims**

A borer seal, especially for bore hole tubes, which includes a plurality of coaxially arranged sealing discs arranged in axially spaced relationship to each other and provided with a central opening therethrough corresponding to the circumferential contour of the borer in connection with which the seal is to be used, and means connecting said sealing discs to each other to a single structural unit.



3,603,601
METALLIC RUBBING RING SEAL FOR ROTATABLE SHAFT PASSAGEWAYS IN APPARATUS WHICH, DURING USE, CONTAIN LIQUID MEDIA

Walter Blomeyer, Wolfgang, and Peter Saul, Lauterbach (Hessen), both of, Germany, assignors to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen, Frankfurt (Main), Germany
Filed Sept. 17, 1969, Ser. No. 858,665
Claims priority, application Germany, Sept. 17, 1968, P 17 75 727.6
Int. Cl. F16j *15/34*
U.S. Cl. 277—83 **3 Claims**

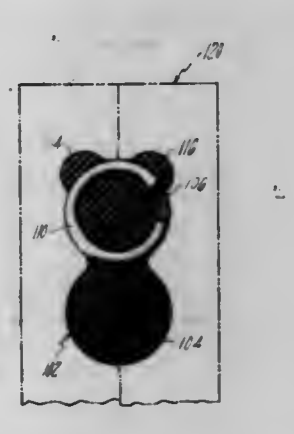


A liquidtight expandable metallic seal for a rotating shaft extending through the wall of an apparatus, said seal being interposed between opposed sealing surfaces in the wall and in a shoulder on the shaFt. The seal is made of spring metal and V-shaped in cross section with the free ends terminating in rubbing rings lying against the sealing surfaces. The center line of the V-shaped section is perpendicular to the axis of the shaft. By moving the shaft axially with respect to the wall, the space between the sealing rings may be adjusted to compress the expandable seal to compensate for wear.

3,603,602
REINFORCED SEAL

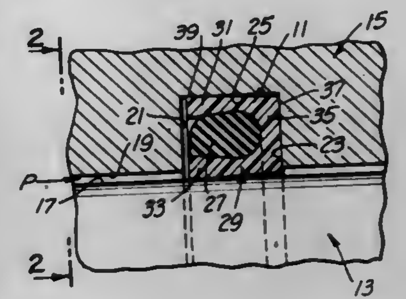
Lawrence D. Padula, New Britain, Conn., assignor to Skinner Precision Industries, Inc., New Britain, Conn.
Continuation-in-part of application Ser. No. 697,389, Jan. 12, 1968, now abandoned. This application Nov. 28, 1969, Ser. No. 880,787
Int. Cl. F16j *15/02*
U.S. Cl. 277—164 **8 Claims**

A composite O-ring-type seal having a molded elastomeric body and a reinforcing spring embedded therein to prevent excessive deformation of the elastomeric body and in which the molded elastomeric body is contoured to provide for accurately locating the reinforcing spring within the body and to provide opposed annular sealing ribs for providing effective sealing.



3,603,603
ROTATING SEAL ASSEMBLY

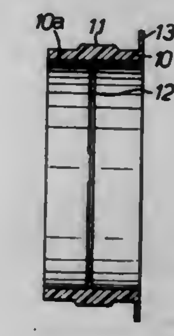
Leslie A. Woodson, Long Beach, Calif., assignor to W. S. Shamban & Co., Los Angeles, Calif.
Filed Sept. 16, 1969, Ser. No. 858,393
Int. Cl. F16j *15/54*
U.S. Cl. 277—165 **14 Claims**



A seal assembly for use between relatively rotatable inner and outer members. The seal assembly rotates relative to both the inner and outer members at a velocity intermediate the velocities of the inner and outer members.

3,603,604
PIPE FITTING

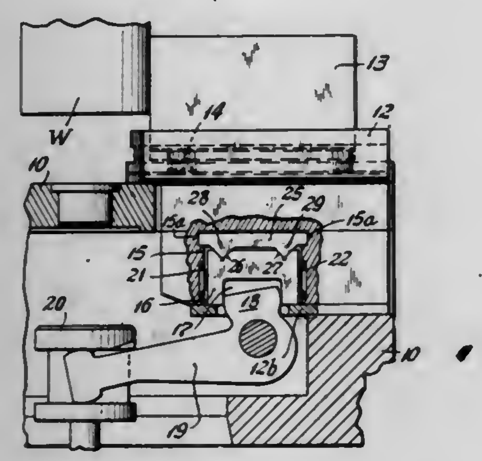
Peter I. Campbell, Warwickshire, England, assignor to C. E. and J. P. Britton Limited, Birmingham, England
Filed July 30, 1969, Ser. No. 846,126
Int. Cl. F16j *15/10*
U.S. Cl. 277—209 **9 Claims**



A seal between a pipe and a socket in which one end of the pipe is adapted to be received is formed by at least one annular membrane or diaphragm carried by the ring and relative to which the pipe is slidable axially when the pipe and socket are slidably engaged.

3,603,605
ANTILIFT DOUBLE-ACTING CHUCK

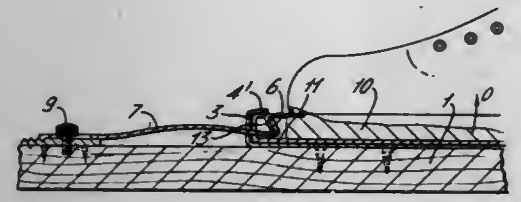
Benjamin C. Webster, Jr., 82 Birchwood Drive, Fairfield, Conn.
Filed Oct. 22, 1969, Ser. No. 868,357
Int. Cl. B23b *31/16*
U.S. Cl. 279—1 DA **6 Claims**



A chuck having a main body provided with slides carrying jaws capable of I.D. or O.D. chucking with each slide provided with a binder member or plate automatically operable, in response to a predetermined partial clamping or chucking pressure applied by the jaw to the workpiece, to draw said slide downwardly on said main body and prevent the jaw from lifting the workpiece from its support and to seal said slide against entry of foreign material.

3,603,606
SKI BINDING

Nils Eie, Tennisveien 6, Slemdal, Norway
Filed Feb. 17, 1969, Ser. No. 799,582
Claims priority, application Norway, Feb. 15, 1968, 581/68
Int. Cl. A63c *9/16*
U.S. Cl. 280—11.35 B **5 Claims**

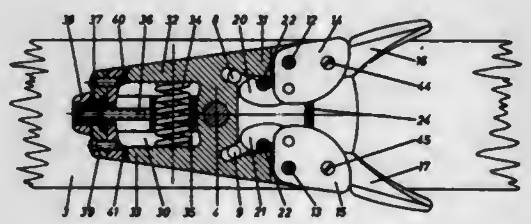


A ski binding comprises a toe iron secured to a ski for receiving the toe portion of a boot and having inwardly turned upper edge portions for engaging the upper surface of the sole of the boot at the toe portion. The boot carries a forwardly extending engagement member which is automatically engaged with a fastening device solely upon insertion of the toe portion of the boot in the toe iron. The fastening device is constituted by a resilient spring blade which is attached at its rear end and extends forwardly so as to be gradually depressed and stressed by insertion of the toe portion of the boot in the toe iron. The spring blade carries a protrusion on the upper surface thereof which is adapted to engage with a bent front portion of the engagement member on the boot.

3,603,607
TOE IRON FOR SAFETY SKI BINDINGS

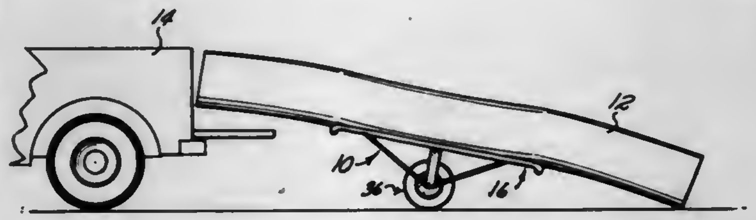
Hannes Marker, and Albert Gustav Oehlmann, both of Garmisch-Partenkirchen, Germany
Filed Sept. 19, 1968, Ser. No. 760,861
Claims priority, application Germany, Sept. 28, 1967, P 15 78 858.6
Int. Cl. A63c *9/085*
U.S. Cl. 280—11.35 T **11 Claims**

Two soleholders are pivoted on vertical axes to a common carrier and laterally engage the toe portion of the skiing boot above the sole. The soleholders are normally locked against a pivotal movement. The carrier is mounted for pivotal movement against spring force on a toe iron part that is fixed to the ski. The carrier has for each soleholder a deflection-preventing means, which can be automatically disabled after a predetermined movement of the carrying member from its central position into the corresponding direction.



3,603,608
DOLLY FOR HANDLING LONG HEAVY OBJECTS

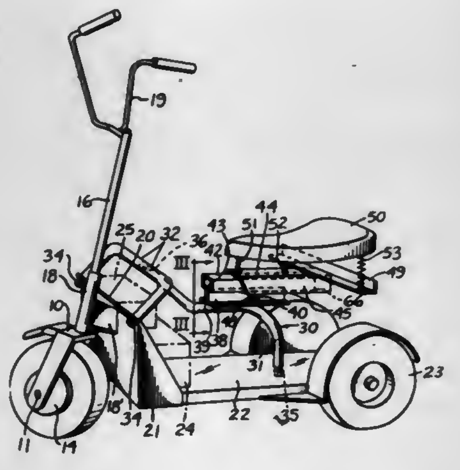
George A. Kirkpatrick, P.O. Box 693, Ridgecrest, Calif.
Filed Aug. 12, 1969, Ser. No. 849,938
Int. Cl. B60p *3/40;* **B62b** *1/00*
U.S. Cl. 280—47.13 R **1 Claim**



A lightweight dolly is provided for handling a long, heavy object, such as a roll of carpet, padding, linoleum and the like, by one person. The dolly has a generally rectangular frame of round tubular material for cradling the object and consisting of straight sides, downwardly bent ends and rounded corners. Dependingly joined to the frame within the side edges thereof is a support structure including a pair of V-shaped members, a transverse sleeve and braces between the sleeve and side members, all of round tubular material. An axle is received in the sleeve and mounts a pair of wheels inwardly of the frame side edges. The dolly is thus devoid of lateral and upward projections. The wheels are provided with pneumatic tires of a size facilitating movement of the dolly up and down steps, over curbs, etc.

3,603,609
COMBINATION STANDING AND SITTING STRUCTURE

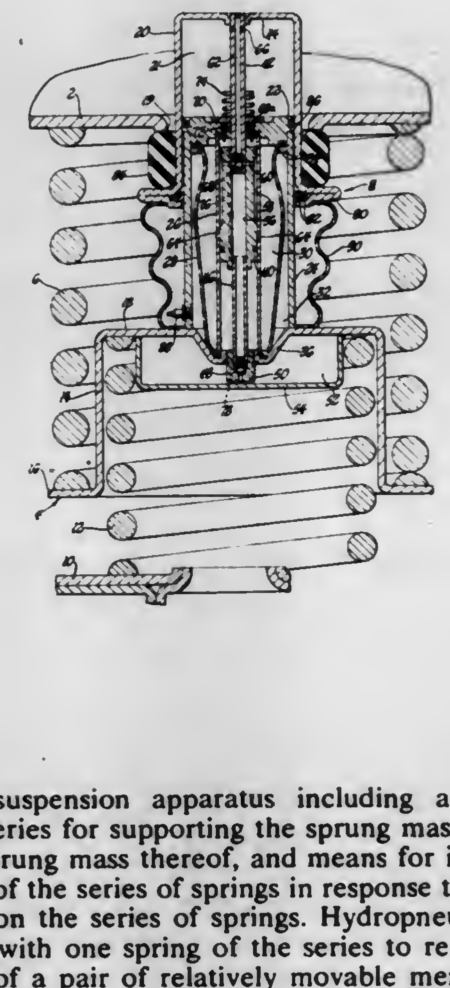
Ion V. K. Hott, and Robert J. Haddix, both of Dayton, Ohio, assignors to The Joyce-Cridland Company, Dayton, Ohio
Filed May 8, 1969, Ser. No. 823,018
Int. Cl. B60n *1/02*
U.S. Cl. 280—62 **9 Claims**



A vehicle having at least three wheels is provided with a frame base including an upwardly inclined forward portion and a substantially flat rearward platform portion to which a Y-shaped tubular support is secured by only three fasteners. A beam is carried intermediately upon the tubular support and has a track readily slidable on the beam. A seat resiliently mounted on the track is readily slidable back and forth on the beam for alternately sitting on the seat to impart tilt with frictional interengagement of the track and beam to prevent sliding movement therebetween and standing on the platform without troublesome release of seat bolts with a wrench or tools.

3,603,610
VEHICLE SUSPENSION APPARATUS

Tom H. Thompson, Dearborn, Mich., assignor to Clifford W. Mezey, Bloomfield Hills, Mich., a part interest
Filed Dec. 20, 1968, Ser. No. 785,656
Int. Cl. B60g *11/58*
U.S. Cl. 280—124 F **39 Claims**

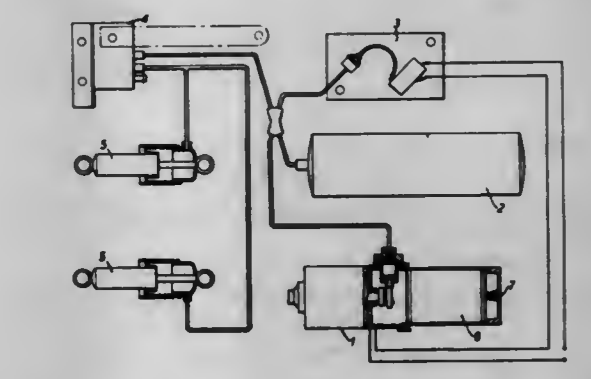


Vehicle suspension apparatus including a plurality of springs in series for supporting the sprung mass of a vehicle on the unsprung mass thereof, and means for increasing the spring rate of the series of springs in response to increases in static load on the series of springs. Hydropneumatic means cooperates with one spring of the series to resiliently resist movement of a pair of relatively movable members toward each other, and responds to static deflection of the associated spring caused by such movement to restore the members to a minimum spacing and the spring to a corresponding minimum static length, and thereafter provides increased resistance to subsequent deflection of the spring from the minimum length until the static load on the series of springs is reduced.

3,603,611
VEHICLE-LEVELLING SYSTEMS

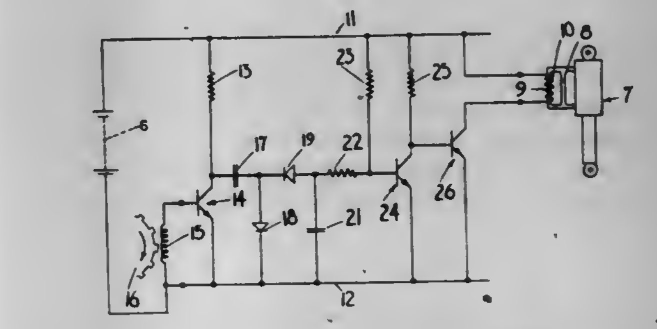
Graham J. Wenham, Tyseley, Birmingham, England, assignor to Girling Limited
Filed May 19, 1969, Ser. No. 825,844
Claims priority, application Great Britain, June 6, 1968, 27,032/68
Int. Cl. B60g *11/26*
U.S. Cl. 280—124 **5 Claims**

This invention relates to a pneumatically operable automatic levelling system for a motor vehicle including a motor/compressor/dryer unit, a reservoir for storing air under pressure, at least one vehicle-levelling strut, a valve for controlling the flow of air under pressure to and from the strut to maintain the vehicle level, and a pressure-sensitive switch for switching off the motor of the unit when the pressure of air in the reservoir reaches a preset upper limit.



3,603,612
SUSPENSION SYSTEMS FOR ROAD VEHICLES

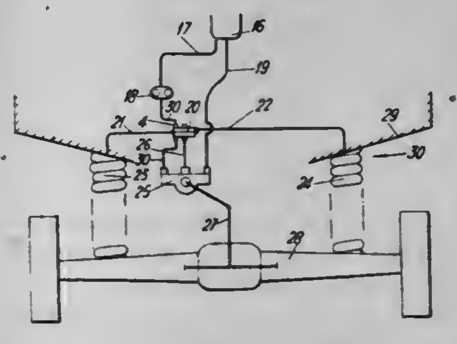
William Frank Hill, Stafford, and Lancelot Phoenix, Birmingham, both of, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 24, 1969, Ser. No. 844,289
Claims priority, application Great Britain, July 29, 1968, 36025/68
Int. Cl. B60g *9/00*
U.S. Cl. 280—124 F **1 Claim**



In a road vehicle suspension the damping of the system is greater at high speeds than low speeds. Typically, a plurality of shock absorbers having adjustable damping characteristics are used, and electromagnetic means adjust the damping characteristic of each shock absorber under the control of speed responsive means so that the damping is increased above a predetermined speed of the vehicle.

3,603,613
VEHICLE LEVEL CONTROL

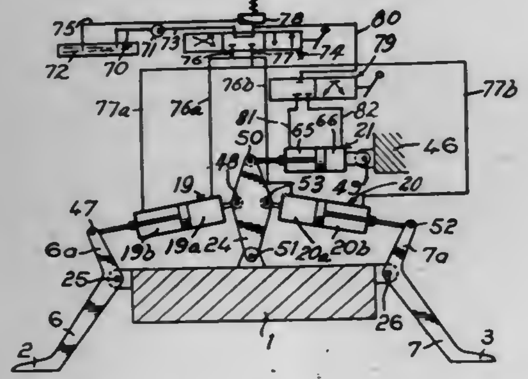
Hans Erdmann, Neu Isenburg II, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed July 7, 1969, Ser. No. 839,257
Claims priority, application Germany, July 26, 1968, P 17 80 049.6
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 **5 Claims**



A vehicle level control system for vehicles in which fluid pressure springs on each side of an axle are connected in parallel to a supply conduit for raising the vehicle and in parallel to a discharge conduit for lowering the vehicle. A check valve system in the parallel conduits prevents cross flow between the fluid pressure springs to stabilize the vehicle. The fluid flow is controlled by a level regulator to maintain a preset road clearance.

3,603,614
MEANS FOR STABILIZING A CIVIL ENGINEERING MACHINE

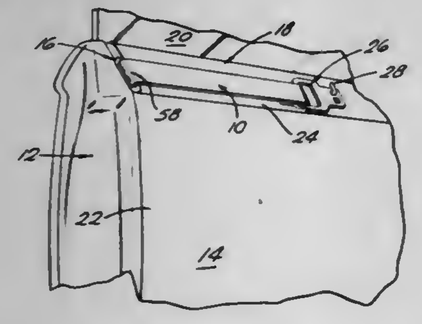
Yves M. Gauchet, Senlis, France, assignor to Societe Anonyme Poclain, Oise, France
Filed June 19, 1969, Ser. No. 834,819
Claims priority, application France, June 21, 1968, 155960
Int. Cl. B60s *9/10*
U.S. Cl. 280—150.5 **10 Claims**



Apparatus for stabilizing a civil engineering machine mounted on an uneven surface. Two props are pivotally connected to the chassis of the machine and are arranged for movement relative to each other and to the chassis by jack means connecting the props. Further jack means connecting at least one of the props to the chassis serve to lock the pivotal connection between each such prop and the chassis thereby locking the props relative to each other and to the chassis.

3,603,615
VEHICLE SAFETY BELT DEVICE

John L. Stehouwer, 425 Russwood Street N. E., Grand Rapids, Mich.
Filed Sept. 24, 1969, Ser. No. 860,569
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **2 Claims**

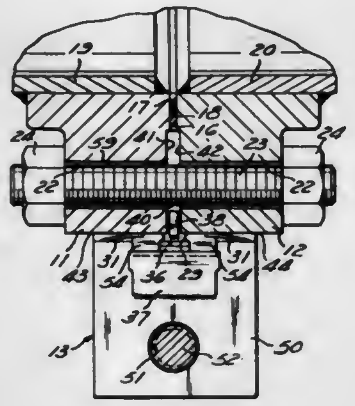


An improved safety belt device utilizing a belt looped around a bar welded or otherwise affixed to the vehicle door within the same, positioned at the rear of the door immediately below the windowledge. The looped portion of the belt comes back upon itself where it is secured by stitching. The free end of the belt mates with a seat belt to retain a passenger.

3,603,616
FLANGE COUPLING REPAIR RING

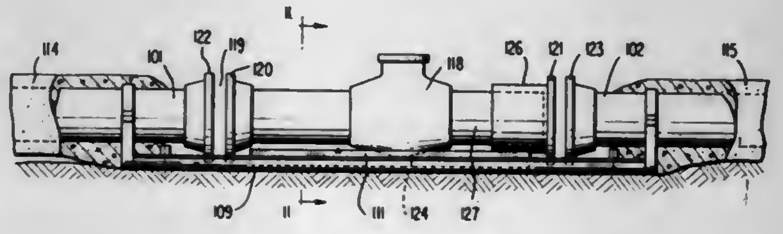
Joseph B. Smith, Cleveland, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio
Filed Aug. 22, 1969, Ser. No. 852,513
Int. Cl. F16l *55/18*
U.S. Cl. 285—15 **5 Claims**

Locating and aligning lug means are provided for a type of coupling used in the repair of leaking flanged pipe joints which index the coupling to the center of the joint, permitting the coupling length to be independent of the length of the joint.



3,603,617
METHOD AND APPARATUS FOR MAKING SUBMERGED CONDUIT CONNECTIONS

Joe C. Lochridge, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.
Filed May 15, 1969, Ser. No. 824,866
Int. Cl. F16l *35/00*
U.S. Cl. 285—24 **11 Claims**



A submerged assembly including longitudinally spaced first and second conduit means, extending between the conduit means and a template carried by the first and second conduit means. By removing the spacer means, a fitting may be installed between the first and second conduit means, with the alignment of the fitting being facilitated by the template means.

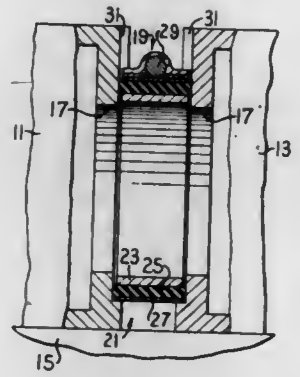
Jack-type flange fittings and telescoping joints may be employed to facilitate the removal of the spacer means and subsequent installation of the fitting.

A method for installing a submerged fitting wherein a conduit means is initially positioned with conduit portions spaced by removable spacer means. When the conduit means is disposed in its submerged location, the spacer means is removed. A template carried between the conduit portions facilitates the positioning of a fitting between the conduit portions.

3,603,618
SEAL ASSEMBLY

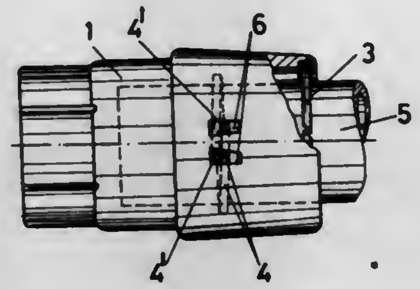
Michael K. Stratton, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 1, 1969, Ser. No. 811,973
Int. Cl. F16l *25/00*
U.S. Cl. 285—31 **7 Claims**

A connector and seal assembly consisting of a ferrule within a rubber seal which, in turn, is surrounded by an adjustable band. Tightening of the band causes the rubber seal to be extruded outwardly from between the band and the ferrule.



3,603,619
CLAMP COUPLING

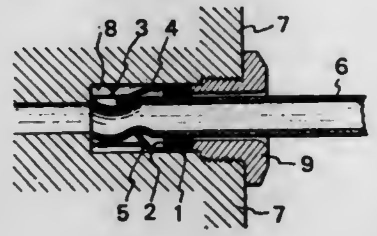
Karl Bengesser, Fraghes No. 6, Klausen, Province of Bolzano, Italy, and Karl Garbislander, Mitterweg 95, Innsbruck, Austria
Filed July 7, 1969, Ser. No. 839,210
Claims priority, application Austria, Feb. 26, 1969, A 1931/69
Int. Cl. F16l *11/12*
U.S. Cl. 285—45 **4 Claims**



A quick-connect pipe coupling consisting of a socket having three inner sections of different bore diameters, at least one clamping ring and one seal O-ring positioned within the bores, whereby the two radially extending free ends of the clamping ring extend through and may be operated in apertures located in the wall of the socket.

3,603,620
TUBE JOINT COUPLING

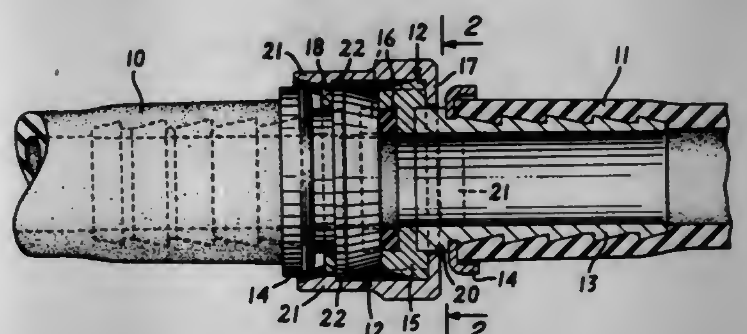
Yoshihiro Nakata, 1169 Iwase, Osawa-machi, and Testuo Kukuminato, 684 Chigusashinder, Osawa-machi, both of Kimitsu-gun, Chiba-ken, Japan
Filed June 6, 1969, Ser. No. 830,997
Claims priority, application Japan, June 24, 1968, 43/55915
Int. Cl. F16l *33/20*
U.S. Cl. 285—189 **4 Claims**



A pipe joint wherein a clamp ring having a pair of inwardly bent claws having different lengths is securely held in position in a joint main body through a gasket by a securing member so that a soft or ductile pipe inserted is bent by the pair of claws, sealed by the gasket and securely held in position by the clamp ring and the gasket as the fluid pressure of the fluid flowing through the pipe expands it radially outwardly.

3,603,621
HOSE COUPLING

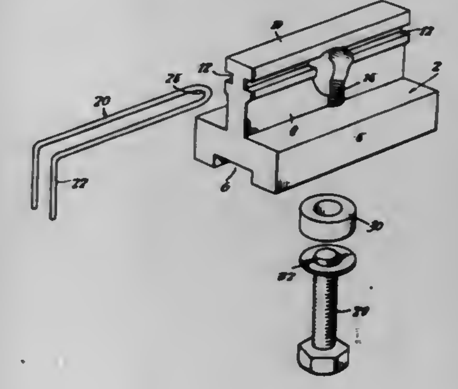
Frederick L. Parsons, 759 Morningside Rd., Ridgewood, N.J.
Filed Oct. 27, 1969, Ser. No. 869,613
Int. Cl. F16l *37/00*
U.S. Cl. 285—319 **3 Claims**



A quick locking and releasing coupling for a pair of members to be coupled together including resilient coupling means projecting from each member to be coupled and snap-locking with the other member to be coupled and a raised cam engageable with the resilient coupling means when they are twisted or rotated relatively to each other to spread the resilient coupling means and release the member with which it was locked.

3,603,622
FIXING DEVICES FOR STRUCTURAL MEMBERS AND CLADDING

Adrian Anthony Cecil March, Oklea, Hartfield, Sussex, England
Filed June 30, 1969, Ser. No. 837,727
Claims priority, application Great Britain, July 4, 1968, 32,036/68
Int. Cl. F16b *3/04*
U.S. Cl. 287—20.927 **6 Claims**

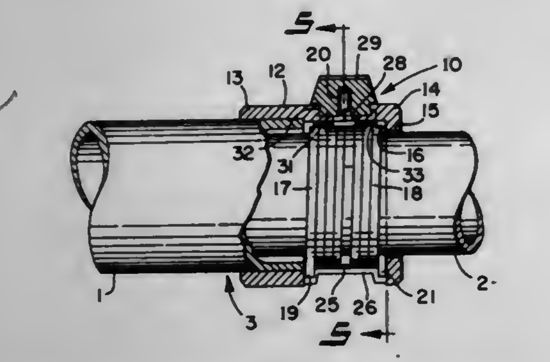


A fixing device for securing roof members such as cladding panels to the main frame members of a building said roof members having a fixing channel provided with a longitudinally disposed engageable formation said fixing device having a tongue for entry into said channel, a laterally displaceable complementary member mounted on said tongue for engagement with said formation in said fixing channel and wedging means for example a screw associated with said device for effecting lateral displacement of said complementary member to the engaged position.

3,603,623
SPRING LOCK FOR TELESCOPING MEMBERS

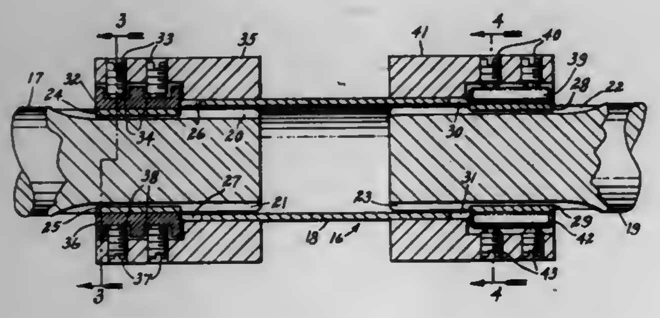
Michael U. Widman, Columbus, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed Jan. 12, 1970, Ser. No. 2,043
Int. Cl. F16b *7/14*
U.S. Cl. 287—58 CT **8 Claims**

A spring lock for releasably retaining a pair of telescoping members in adjusted longitudinal and rotational orientation including a pair of coil lock springs disposed around the inner member and having one end fixed with respect to the outer member. The lock springs normally frictionally engage the outer surface of the inner member, and are wound in the same direction, but they are reversed so that they may be expanded by movement of the other ends of the lock springs toward each other to release the inner member.



3,603,624
ANTIBACKLASH COUPLING

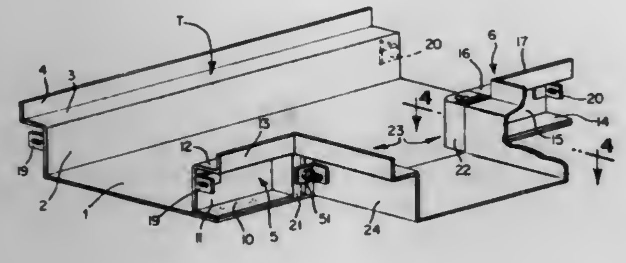
Lawrence A. Attermeyer, Cincinnati, Ohio, assignor to The Cincinnati Milling Machine Co., Cincinnati, Ohio
Filed July 9, 1969, Ser. No. 840,333
Int. Cl. F16d *1/00*
U.S. Cl. 287—109 **22 Claims**



A hollow tubular member of a ductile material connects driving and driven shafts to each other through having equally angularly spaced portions deformed for disposition within equally angularly spaced grooves in each of the driving and driven shafts. By selecting the size of the grooves and retaining means, which are carried by the hollow tubular member but movable into the grooves for cooperation with the equally angularly spaced portions of the hollow tubular member to retain the portions in the grooves, there is no reliance on friction so that the coefficient of friction can be exceeded in the transmission of torque. The hollow tubular member provides a rigid connection between the driving and driven shafts so that there is no backlash.

3,603,625
TRENCHDUCT CONNECTOR UNITS

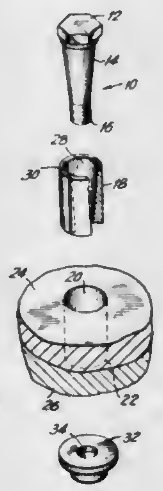
Michael J. Cottrell, Washington, W. Va., and Frederick W. Hudnall, Radford, Va., assignors to Textron Inc., Providence, R.I.
Filed May 18, 1970, Ser. No. 38,070
Int. Cl. F16b *7/18*
U.S. Cl. 287—189.36 **7 Claims**



A unit used for interconnecting trenchduct runs which are in X- or T- or L-type patterns, the unit having one or more specially configured side rails which, in combination with post members, forms one or more openings adapting the unit for the particular pattern desired.

3,603,626
HIGH-STRENGTH JOINT AND FASTENER ASSEMBLY THEREFOR

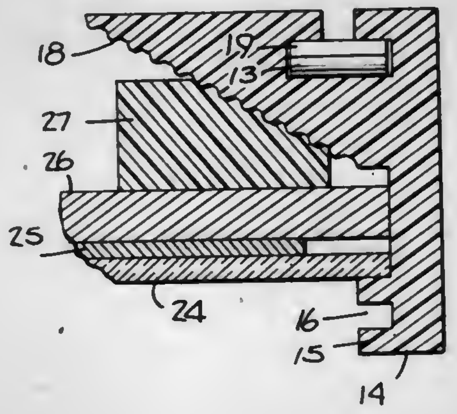
Roger B. Whiteside, Cinnaminson, Burlington, N.J., assignor to Standard Pressed Steel Co., Jenkintown, Pa.
Filed Jan. 27, 1969, Ser. No. 794,123
Int. Cl. F16b *5/00*
U.S. Cl. 287—189.36 **4 Claims**



A high-strength joint and fastener assembly therefor wherein an internally tapered sleeve is placed within substantially aligned bores in mating structural members and a tapered bolt is inserted through the members and into the internally tapered sleeve. A threaded fastener member, such as nut, is threaded on the end of the tapered bolt and is tightened to place a load on the joint thereby radially expanding the tapered sleeve outwardly within each of the bores in the structural members to compensate for variations in the holes due to out of roundness of the holes, misalignment between holes in each structural member, or variations in hole diameter tolerances.

3,603,627
PICTURE FRAME STRUCTURE

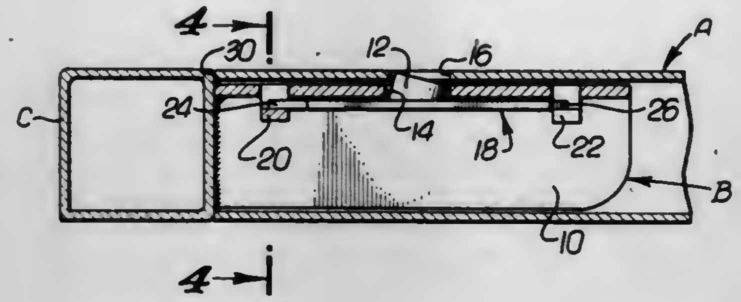
Michael Kaffel, 321 E. 69th St., New York, N.Y.
Filed Dec. 15, 1969, Ser. No. 884,881
Int. Cl. F16b
U.S. Cl. 287—189.36H **2 Claims**



Picture frame formed of extruded vertical and horizontal elements wherein a corner bracket cooperates with channels molded into the profile of the vertical and horizontal frame elements to hold the elements firmly in assembled position and serrated wedges are provided for demountably holding a framed picture in the assembled frame elements.

3,603,628
FRAME CONNECTOR STRUCTURE

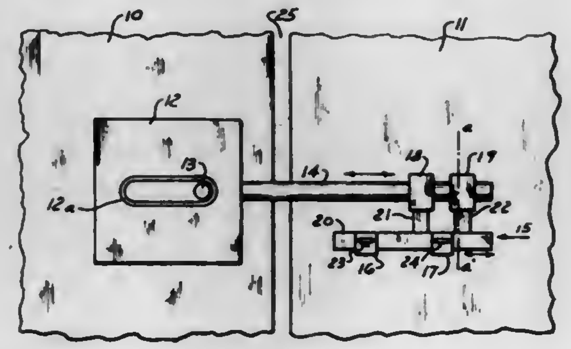
Edward A. Smith, 6641 W. 6th St., Los Angeles, Calif., and Robert L. Day, Burbank, Calif.
Filed July 7, 1969, Ser. No. 839,429
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36H **6 Claims**



A tubular frame element is telescoped over a bracket to which it is to be connected. The frame element has an aperture for receiving a latching projection. The projection is formed on a strip of spring steel held against the inside surface of the bracket. The strip has its opposite ends held by straps struck inwardly from the bracket. The strip is formed so that it may be assembled by inserting one end of the strip under one strap, then bowing the strip so that its other end is positioned to be received by the other strap, and then shifting the strip until the latching projection snaps into an aperture of the bracket whereby the strip is locked in place. The anchoring of the strip at places spaced closely on opposite sides of the projection provides a stiff spring action adequate to ensure against accidental release of the connector structure.

3,603,629
GATE-CLOSURE DEVICE

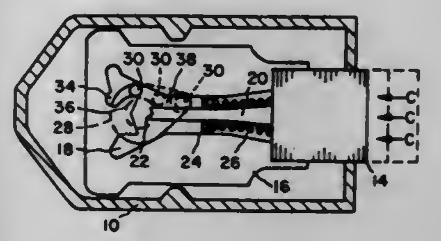
Edward F. Windham, Plantation, Fla., assignor to General Safety Inc., Fort Lauderdale, Fla.
Filed Nov. 28, 1969, Ser. No. 880,553
Int. Cl. E05c *1/04;* **E05b** *15/02*
U.S. Cl. 292—145 **4 Claims**



A gate-closure device for securing one or more gate members in a closed position in which compensation for variations in the lateral distance between the gate members is achieved comprising a slidable bolt and associated housing mounted on a first gate member, a keeper fixedly mounted upon an adjacent support member or second gate member, and a laterally moveable bolt retaining means adjustably mounted on said keeper allowing lateral positioning with respect to said keeper to provide compensation for variations in the separation distance between gate members. The closure device may be used even when the gate members are overlapped.

3,603,630
AUTOMATIC DEADLOCKING LATCHBOLT FOR A RIM LOCK

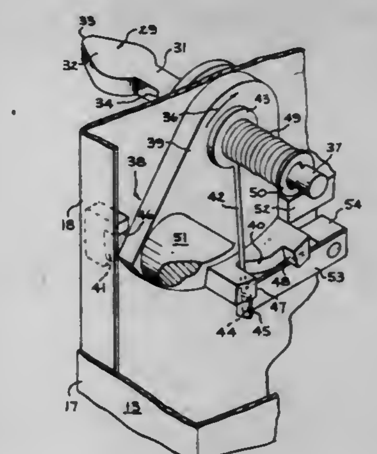
Mathias M. Check, 34 Bowman Drive, Greenwich, Conn.
Filed Aug. 28, 1967, Ser. No. 663,872
Int. Cl. E05c *1/12*
U.S. Cl. 292—169.15 **6 Claims**



A rim lock provided with an automatic deadlocking feature made operational by either closing the door with the latchbolt fully extended or by the unauthorized prying or forcing of the extended latchbolt partially out of the strike in a closed door.

3,603,631
PUSH TO RELEASE LATCH FRICTION TYPE

Frederick M. White, Louisville, Ky., assignor to General Electric Company
Filed Apr. 28, 1969, Ser. No. 819,545
Int. Cl. E05c *13/00*
U.S. Cl. 292—220 **5 Claims**

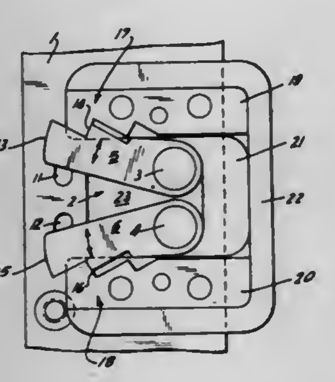


A push release latch particularly adapted for use on appliance cabinets and the like having first and second members movable toward each other to a closed position and away from each other to an open position, is provided comprising a first latch element carried by the first member, and a second latch element carried by the second member. At least one of the latch elements is adapted for rotation relative to the other latch element between a latched position and an unlatched position. At least one of the latch elements has a cam means associated therewith for rotating at least one of the latch elements toward the unlatched position when the members are moved toward each other from the closed position. By this arrangement, the members may be released by the latch from the closed position by moving the members toward each other from the closed position.

3,603,632
VEHICULAR DOOR LATCH

Johann Grass, Heiligenhaus, Germany, assignor to Firma Arn. Kiekert Sohne, Heiligenhaus, Germany
Filed Mar. 17, 1969, Ser. No. 807,519
Claims priority, application Germany, Mar. 29, 1968, P 17 03 084.1
Int. Cl. E05c *3/34*
U.S. Cl. 292—224 **6 Claims**

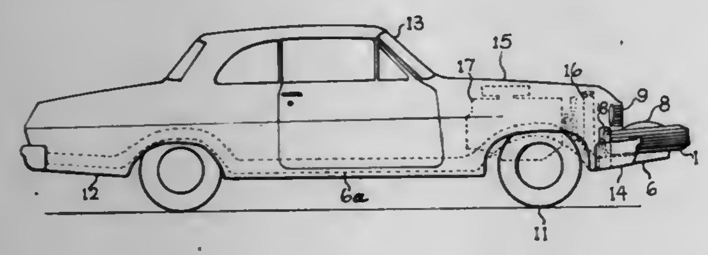
Two pawls are pivoted next to each other and biased away from each other on the edge of a vehicle door while a channel member capable of receiving these pawls is formed on the doorpost. The pawls have outwardly directed teeth and the sides of the channel each have a mating tooth formation.



The channel partially encloses the pawls which are pivoted on a block on the door edge. A mechanism is provided to move these pawls toward and away from each other to operate the latch and to lock the latter.

3,603,633
SHOCK-ABSORBING TIRE BUFFER

Cheston Lee Eshelman, 621 N.E. 30 Terrace, Miami, Fla.
Continuation-in-part of application Ser. No. 748,785, July 30, 1968, now Patent No. 3,502,362. This application Aug. 11, 1969, Ser. No. 848,903
Int. Cl. B60r *19/10;* **B61f** *19/04;* **B61q** *11/12*
U.S. Cl. 293—19 6 Claims

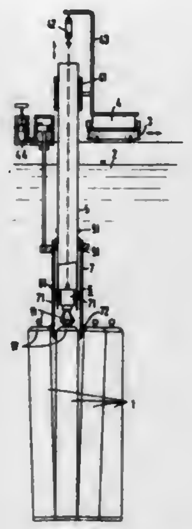


In an automotive highway vehicle, a frame, a transverse structure rigidly connected across the front end of the frame, said structure including a first rigid transverse member having a forwardly facing recess and a second rigid transverse member which also extends forwardly of the first member; a plate mounted on the second member, an elongated slot in the plate, a hub mounted on the plate with means permitting it to slide thereon the length of the slot; a spare wheel and tire mounted substantially horizontally on the hub with the rear portion of the tire nested in the recess.

3,603,634
CENTERING DEVICE FOR NUCLEAR REACTOR LOADING MACHINES

Hermann Kumpf, Dusseldorf-Eller, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Oct. 2, 1968, Ser. No. 764,526
Int. Cl. B66c *1/10*
U.S. Cl. 294—86 7 Claims

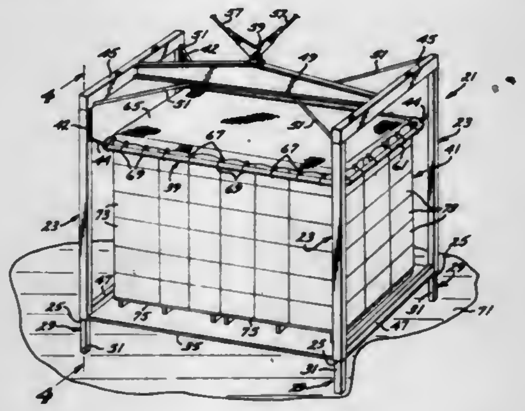
Centering device in a machine for loading fuel elements in a nuclear reactor having a movable vertical tubular loading mast and a fuel element clamping device movable in the mast interior includes a tubular member located at and telescoping the lower end of the mast and being displaceable in the longitudinal direction thereof so as to telescope a fuel element selected from a multiplicity of fuel elements forming a reactor core. The tubular member has a lower edge portion



formed with a surface engageable with the fuel elements of the reactor core located adjacent the selected fuel element so as to align the latter with the mast.

3,603,635
LOAD HOLDING APPARATUS

Allan R. Ide, Cyprus, Calif., assignor to Metropolitan Stevedore Company, Wilmington, Calif.
Filed June 8, 1970, Ser. No. 44,367
Int. Cl. B66c *1/16*
U.S. Cl. 294—67 D 8 Claims

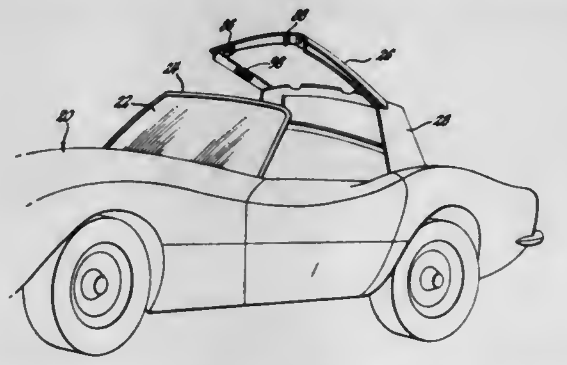


Load holding apparatus including a cargo cage having a floor, the underside of which defines the support base for the cage. The cage includes a plurality of hollow vertical posts which are open on their bottom extremities and have support rods telescoped upwardly thereinto; the lower extremities thereof projecting below the floor when the cage is suspended. A holder is disposed over the cage floor and is suspended at its periphery from the upper ends of the respective support rods whereby the lower extremities of the support rods will engage a support surface onto which the cage is lowered and will be telescoped upwardly in the respective posts to raise the holder off cargo carried on the cage floor for convenient removal of such cargo and when other cargo has been loaded on the floor and the cage is raised, the rods will drop downwardly in the respective posts to lower the holder onto the top of such cargo to hold it in securely on the floor while the cage is manipulated about.

3,603,636
MOUNTING ARRANGEMENT FOR A VEHICLE BODY ROOF PANEL

Richard F. Carella, Mt. Clemens, and James J. Johnson, Detroit, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 24, 1970, Ser. No. 13,499
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 B 4 Claims

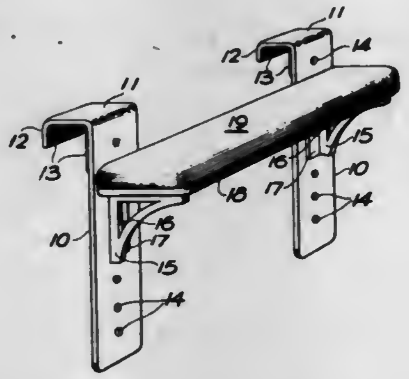
A mounting arrangement for a vehicle body roof panel for closing a roof opening in a vehicle body. A pair of hinge assemblies pivotally support the roof panel on the body for movement between open and closed positions. Each hinge assembly includes a body mounted hinge member and a panel mounted hinge member which are locked to each other by a ball detent when the roof panel is in the closed position. When the roof panel is in the open position, each panel mounted hinge member is detachable from its respective body mounted hinge member and the roof panel is thus removable from the vehicle. A pair of latch assemblies include latch members pivotally supported on the roof panel for movement between latching positions and unlatching positions. When the latch members are in the latching positions, they are engageable with respective body mounted pins to retain the roof panel in the closed position. When the latch members are in the unlatching positions, the roof panel is free to move between the open and closed positions. The latch members are associated with respective sleeve detents movable between locking positions and unlocking positions. In the locking positions, the sleeve detents lock the latch members in the latching positions. A pair of release levers



are pivotally supported on the roof panel and each is connected by a Bowden cable to each of the sleeve detents. Actuation of either of the release levers moves the sleeve detents to the unlocking positions. The latch members are also associated with respective pin detents located within the sleeve detents and movable between locking positions and unlocking positions. When the sleeve detents are in the unlocking positions and the pin detents are in the locking positions, the pin detents lock the latch members in the latching positions. A pair of solenoids are mounted on the roof panel and respectively connected to the pin detents to move the pin detents from the locking positions to the unlocking positions. The solenoids are responsive to actuation of either of the release levers and to the position of a transmission selector lever such that actuation of either of the release levers when the transmission selector lever is in a "park" position causes the solenoids to move the pin detents to the unlocking positions. When the sleeve detents and the pin detents are in the unlocking positions, the latch members are free to move to the unlatching positions and the roof panel is free to move between the open and closed positions.

3,603,637
ADJUSTABLE ARM REST FOR AUTOMOBILES

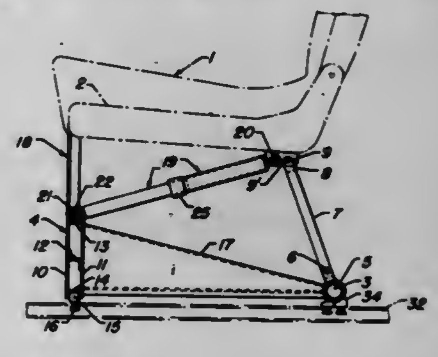
Joe A. DePinto, Box 354, New Bedford, Pa.
Filed Jan. 6, 1969, Ser. No. 789,145
Int. Cl. B60j *9/00*
U.S. Cl. 296—153 2 Claims



An adjustable arm rest including hanger brackets engageable in the window openings of an automobile door and an elongated horizontal arm support portion adjustably secured thereto.

3,603,638
VEHICLE SEAT SUPPORT STRUCTURE

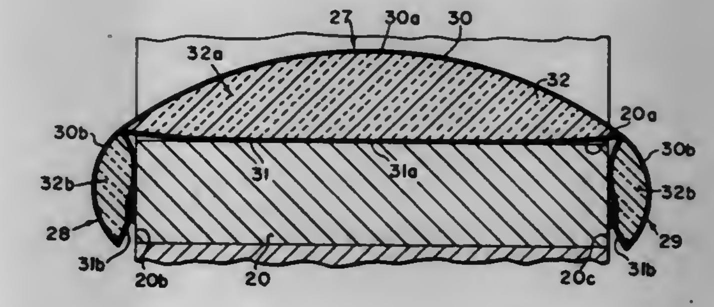
Eugene R. McGregor, Huntington Beach, Calif., and Alex I. Koji, Washington, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 716,173, Mar. 26, 1968, now abandoned. This application Feb. 17, 1969, Ser. No. 799,668
Int. Cl. F16m *11/00*
U.S. Cl. 297—216 10 Claims



A seat-supporting structure particularly adapted for aircraft which provides transverse front and rear beam members for attachment to the vehicle floor; a maximum of individual open luggage storage space under the superposed seat and, at the same time, provides for individual forward and down seat movement against the slowly yielding action of a deformable front panel section which works in combination with energy-absorbing means.

3,603,639
DETACHABLE SEAT PAD FOR SNOWMOBILES AND THE LIKE

Betty A. Wilson, 5240 E. Pickard, Mount Pleasant, Mich.
Filed May 19, 1969, Ser. No. 825,486
Int. Cl. A47c *31/02*
U.S. Cl. 297—219 10 Claims

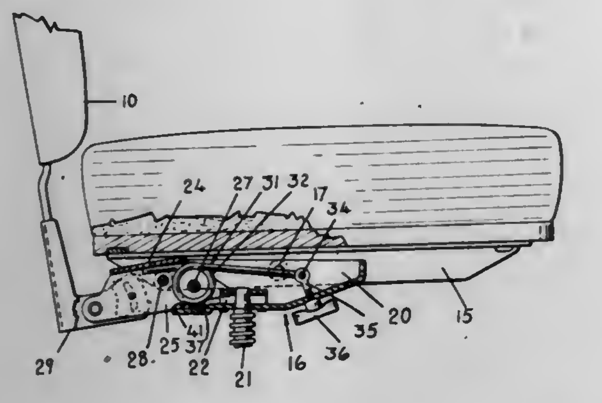


A detachable seat pad for use on the seat of a snowmobile and the like including an upper portion adapted to overlie the top of the snowmobile seat and side portions adapted to extend along opposite sides of the seat. Nonadhesive means is provided for releasably securing the side portions to the side of the seat and preferably includes confronting bristles having free ends provided with interengageable hooks.

3,603,640
CHAIR CONTROL WITH TORSION SPRING WITH TILTING SEAT AND CHAIR BACK

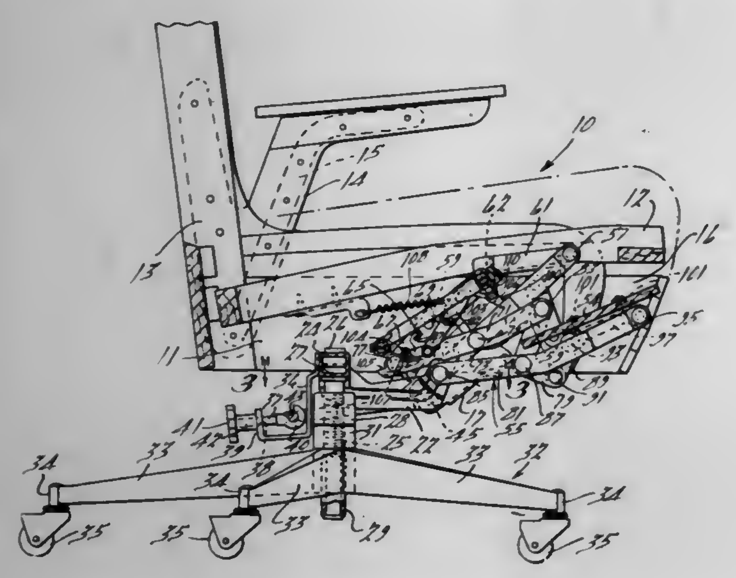
Joseph T. Doerner, Waterloo, Ontario, Canada, assignor to Doerner Products Co., Limited, Waterloo, Ontario, Canada
Filed Nov. 26, 1969, Ser. No. 870,318
Claims priority, application Canada, Sept. 23, 1969, 062732
Int. Cl. A47c *3/00;* **B60n** *1/02*
U.S. Cl. 297—292 3 Claims

A chair control for tilting and posture wherein the control has a first frame member and a second frame member pivotally attached together by a first pivot. The first frame member is mountable on the top end of the chair post which is carried by the chair base. The first frame member is pivotally connected, by a second pivot, to a seat-support member, adjacent the front end thereof allowing the support member to have pivotal movement. The second frame member, in addition to being pivotally connected to the first frame is also pivotally connected to the seat-support member, adjacent the rear portion, by a third pivot. A coiled torsion spring biases the second frame against movement from and return to a normal position to permit pivotal movement of the second frame relative to the first frame. A chair seat is pivotally fastened to the first frame for limited up and down tilting on its pivot. The chair back is mounted in an upright position to the second frame for limited backward movement against the tension of the torsion spring. When the chair back is tilted backward the seat is caused to pivot so that the seat will be tilted downwardly toward the back to a slight extent.



3,603,641
OFFICE-TYPE CHAIR

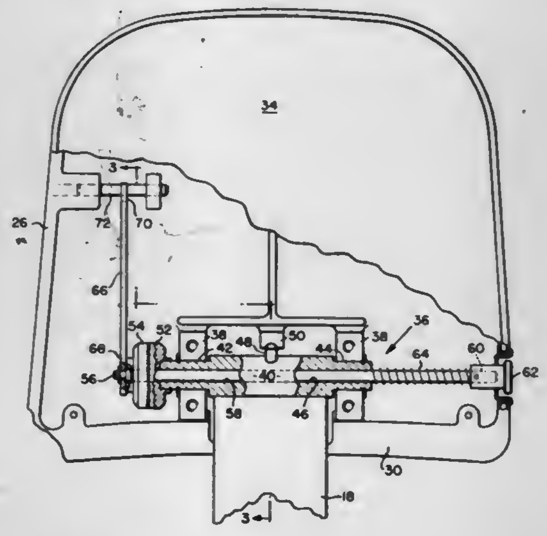
Edward M. Knabusch, and Edwin J. Shoemaker, both of Monroe, Mich., assignors to La-Z-Boy Chair Company
Filed Sept. 12, 1969, Ser. No. 857,406
Int. Cl. A47c *3/00*
U.S. Cl. 297—300 **9 Claims**



The base frame of the chair is pivoted to arms on a cross-member having a central downwardly extending stud with a nut thereon. The lower end of the stud has a sleeve of nylon which forms a bearing with a hub of the base which has supporting feet extending therefrom on the ends of which casters are provided. The base frame has a bracket on each side to which the ends of a U-shaped bar is pivotally secured for forward movement when the base frame is tilted with the seat and back frames fixed or movable relative thereto. The central part of the bar is secured in a hook having a hand nut thereon by which tension is provided to the bar to have it preloaded to conform to the weight of the person occupying the chair. Upon the backward tilting of the base frame the bar will bend from the center to thereby resist the tilting movement. A leg rest and mechanism therefor is secured to the fixed or movable seat frame in position to have the leg rest extend forwardly thereof when in use.

3,603,642
ARTICULATED HEADREST FOR DENTAL CHAIRS AND THE LIKE

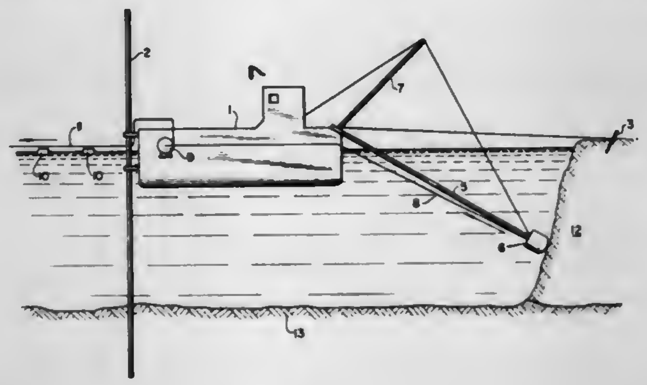
Fritz B. Laessker, Fairport, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Oct. 13, 1969, Ser. No. 865,796
Int. Cl. A47c *1/10*
U.S. Cl. 297—408 **5 Claims**



Disclosed is an articulated headrest for dental chairs in which the mechanism for locking the headrest in position is wholly contained within the headrest. The lock mechanism includes a pair of engageable toothed clutch members, one fixed to the headrest support and one to the headrest, and a lever arm fixed at one end to the latter clutch member and slidably connect at its other end to the headrest. The lever arm permits axial movement of the clutch member fixed to the headrest for disengaging the lock and setting the headrest in the desired position and increases the stability of the headrest.

3,603,643
METHOD OF SEPARATING PEAT INTO FIBROUS SUBSTANCE AND HUMIC SUBSTANCE

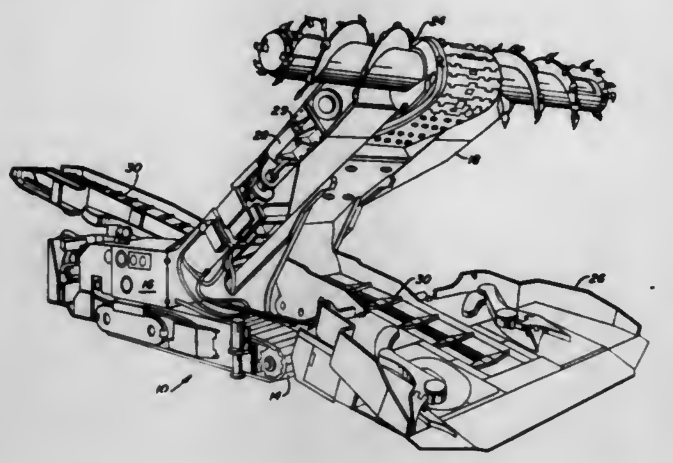
Masao Hirota, Sunagawa, Hokkaido; Kazumi Nakarai, Sunagawa, Hokkaido; Kenji Io, Sunagawa, Hokkaido; Keiji Tanaka, Sunagawa, Hokkaido, and Katsuji Matsuda, Tokyo, all of, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Filed Aug. 8, 1969, Ser. No. 848,522
Claims priority, application Japan, Dec. 30, 1968, 43/96540
Int. Cl. E21c *49/00*
U.S. Cl. 299—9 **2 Claims**



Method of separating peat into its fibrous component and humic component comprising mining peat in the water existing in a peat bed to form a peat slurry, disintegrating it to suspend the fibrous component and humic component in the water, and separating the fibrous component from the humic component suspended in the water.

3,603,644
MINING VENTILATION APPARATUS AND METHOD

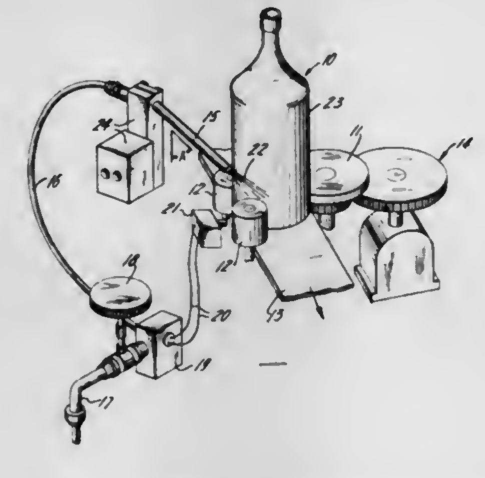
Harold C. McCleery, R.D. #1, Franklin, Pa.
Filed Apr. 15, 1969, Ser. No. 816,224
Int. Cl. E21c *35/22*
U.S. Cl. 299—12 **12 Claims**



A method and apparatus for fully ventilating the face of a mined area by means of an auxiliary flow of air which deflects a normal flow of ventilating air such that a relatively greater area of a mine face is contacted by a passing flow of ventilating air.

3,603,645
AIR SPEED ASSIST

Donald Frederick Hardy, Horseheads, N.Y., assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed Aug. 1, 1969, Ser. No. 846,747
Int. Cl. B65g *47/26*
U.S. Cl. 302—2 **5 Claims**

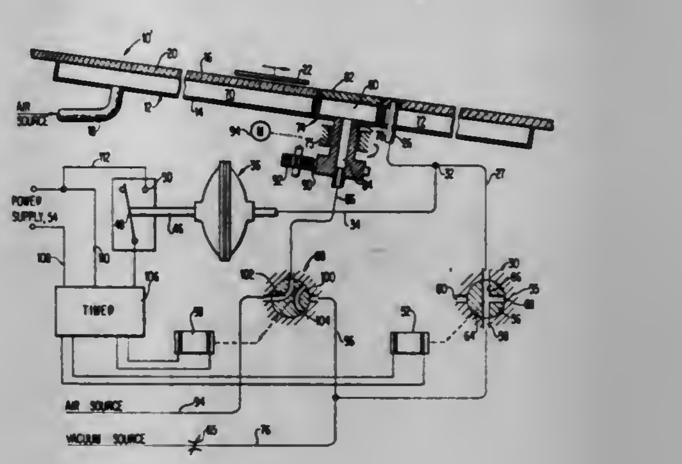


A process and apparatus for assisting the motion of an article such as a bottle on a conveyor. The process comprises detecting when the article needs assistance and at that time directing an airstream at the article at an angle which will assist the article motion. The apparatus comprises an airstream directed at the article which will move the article in the direction of motion of the conveyor, a nozzle for directing the airstream, a valve for controlling the airstream, a detecting mechanism for determining when the bottle motion needs assistance and a relay between the detecting mechanism and the valve for opening the valve to permit the passage of air when the detecting mechanism determines that the motion of the article needs assistance.

3,603,646
SEMICONDUCTOR WAFER AIR SLIDE WITH CONTROLLED WAFER MOTION

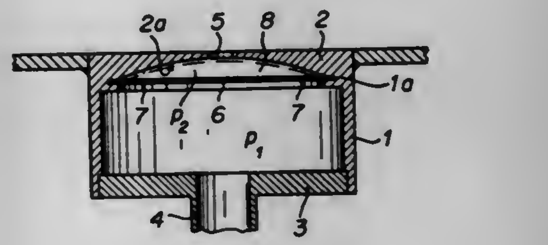
Arkady Leoff, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,454
Int. Cl. B65g *51/02, 53/04, 53/20*
U.S. Cl. 302—29 **10 Claims**

A gravity-type air slide is provided with a series of spaced vacuum holds with a differential vacuum switch in the vacuum supply circuit allowing self-controlled feed of wafers sequentially from one vacuum hold to another along the slide. An inspection station comprising a revolving pedestal with a porous support surface may be placed adjacent to one of the vacuum holes and coupled selectively to positive air pressure or to vacuum pressure by a switch over valve which is also controlled by the differential vacuum switch. The wafer becomes part of the revolving pedestal and inspection is performed on it. Afterwards, the wafer is released from the pedestal and continues along the air slide path by gravity.



3,603,647
PRESSURE-RESPONSIVE AIR DISCHARGE DEVICES

Shimon Arieh, Geneva, and Georges Revillet, Petit-Lancy/Geneva, both of, Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland
Filed Apr. 30, 1969, Ser. No. 820,360
Claims priority, application Switzerland, May 2, 1968, July 3, 1968, 6621;9923
Int. Cl. B65g *53/04*
U.S. Cl. 302—29 **9 Claims**

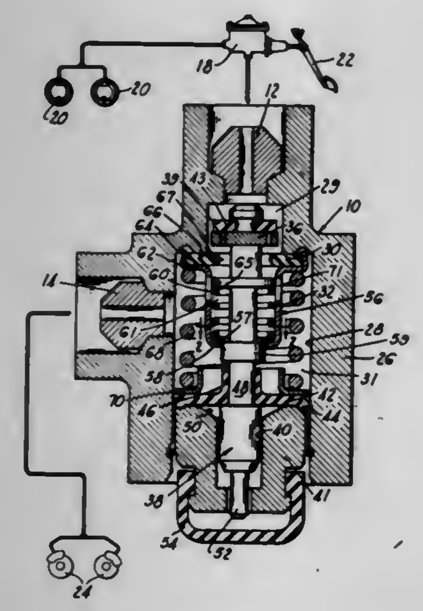


A device for forming, in conjunction with similar devices, a layer of air on a surface to provide support for an object, comprises a casing divided by a flexible, tensioned, membrane into two compartments communicating respectively with a supply of compressed air and a discharge opening. The membrane, which lies near this opening, is normally deformed into contact therewith to close it off but will move away therefrom upon a fluid pressure being exerted on the membrane from the opening side to allow compressed air to flow through the opening via ports formed near the periphery of the membrane.

3,603,648
DOUBLE-ACTING SEAL FOR METERING VALVE

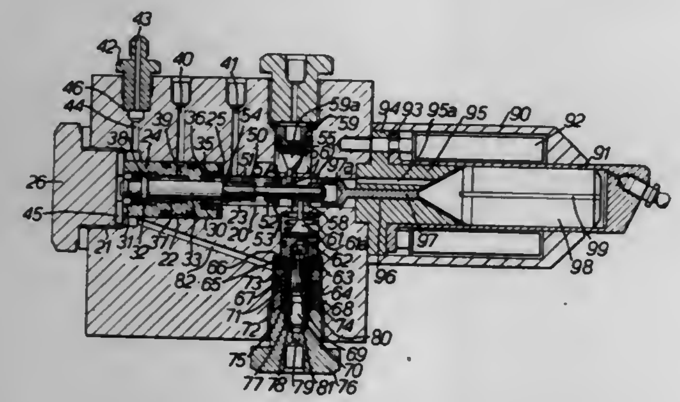
Raymond A. Reznicek; Gerald L. Kretchman, and Samuel E. Stone, all of St. Joseph, Mich., assignors to The Bendix Corporation
Filed Sept. 8, 1969, Ser. No. 855,960
Int. Cl. B60t *11/34, 8/26*
U.S. Cl. 303—6 C **2 Claims**

A metering valve is interposed between the master cylinder and the disc brakes of a braking system employing both disc and drum brakes. The valve permits fluid communication between the master cylinder and the disc brakes until a first predetermined level of pressure is reached whereupon the fluid communication is terminated until a still higher lever of fluid pressure is achieved, whereupon the valve is fully open.



3,603,649
HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Alexander J. Wilson, Warwickshire, England, assignor to Girling Limited, Tyseley, England
Filed Sept. 11, 1969, Ser. No. 856,982
Claims priority, application Great Britain, Sept. 11, 1968, 43124/68
Int. Cl. B60t *8/12, 13/14*
U.S. Cl. 303—21 F **19 Claims**

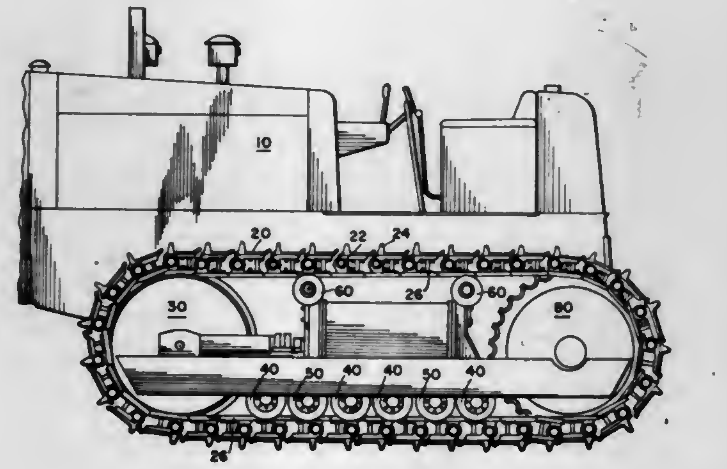


A control unit for a vehicle-braking system comprises a housing incorporating a bore in which works a piston or plunger which, when subjected at one end to fluid pressure from a master cylinder, is movable in the bore in one direction to close a first valve controlling communication between the bore and a return line to the high-pressure source and open a second valve to permit high-pressure fluid from a high-pressure source to pass to a slave cylinder of a wheel brake through an outlet connection in the housing. The unit also incorporates an antiskid device operative to move the piston or plunger in a reverse direction to close the second valve and open the first valve when the deceleration of the braked wheel exceeds a predetermined value.

3,603,650
WHEEL LINERS FOR TRACK-TYPE VEHICLE

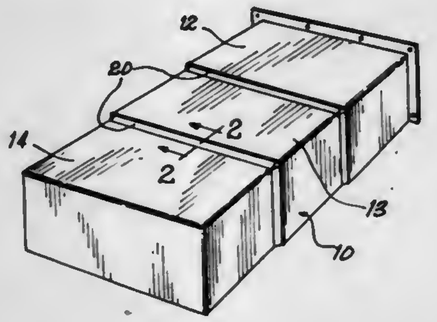
Robert L. Miller, 1320 K St., Anchorage, Alaska
Filed Feb. 18, 1969, Ser. No. 800,093
Int. Cl. B62d *55/14*
U.S. Cl. 305—25 **8 Claims**

An abrasion preventing liner for the track engaging surface of the wheels and rollers of an endless track-type vehicle, such as used in earthmoving, is provided to extend the useful life of the endless track. The liners are made of a material which is softer than that of the track and wheels and is fitted into grooves on the wheels so as to minimize loss of dimensional stability.



3,603,651
MEANS FOR MOUNTING WIPER BLADES ON TELESCOPIC MACHINE TOOL COVERS

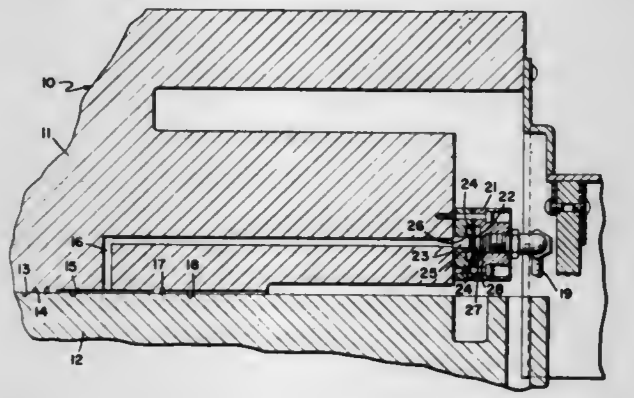
Charles H. Weber, Mayville, Wis., assignor to Maysteel Products Corp., Milwaukee, Wis.
Filed Apr. 17, 1969, Ser. No. 816,888
Int. Cl. F16c *29/00;* **F16j** *13/00*
U.S. Cl. 308—3.5 **5 Claims**



A method and means for mounting wiper blades on telescopic machine tool covers by a mounting strip formed with a generally S-shaped cross section of opposed loops, the innermost loop being crushed flat against said strip and the outermost loop receiving said wiper blade and being clamped together along the length thereof to secure said wiper blade.

3,603,652
SLIDE BEARINGS FOR MACHINE TOOL WAY

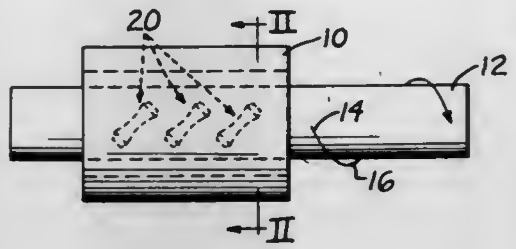
David H. Youden, Worcester, Mass., assignor to The Heald Machine Company, Worcester, Mass.
Filed Mar. 5, 1969, Ser. No. 804,580
Int. Cl. F16c *17/04;* **F16n** *1/00*
U.S. Cl. 308—5 **3 Claims**



This invention relates to a machine tool way, and more particularly, to apparatus providing the bearing system between relatively sliding parts of a machine tool, wherein the way surfaces are maintained in parallel, spaced relationship by pressure fluid.

3,603,653
BEARING ARRANGEMENT

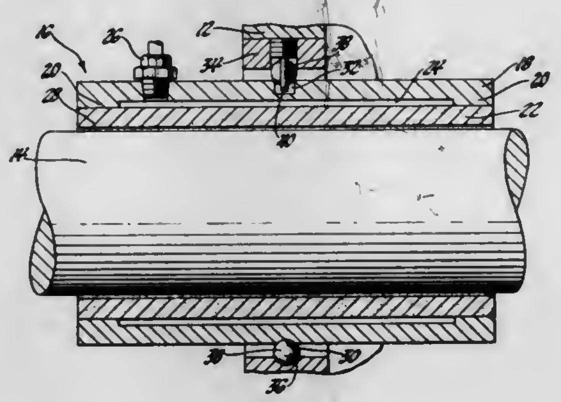
Arthur F. Hudson, 610 Indiana Bank Bldg., Huntington, Ind.
Filed Feb. 5, 1969, Ser. No. 796,865
Int. Cl. F16c *29/06*
U.S. Cl. 308—6 R **5 Claims**



The present invention is concerned with a bearing arrangement in which contoured rollers are introduced into the space between concentric members. The rollers are disposed at an angle to the axis of the members and are contoured so as to have large ends rollingly engaging the inside surface of the outer member and reduced diameter central portions which rollingly engage the outer surface of the inner member. The rollers cause the members to rotate relatively while relatively reciprocating.

3,603,654
BALL BEARING SELF-ALIGNING SEAT

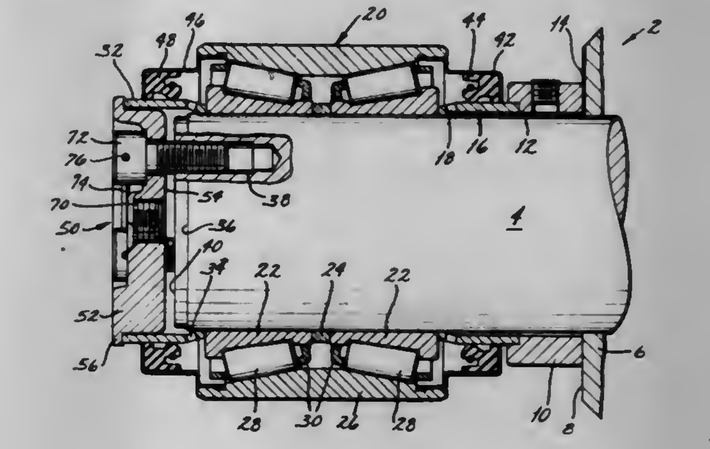
Melvyn R. Bird, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 23, 1970, Ser. No. 21,655
Int. Cl. F16c *21/00*
U.S. Cl. 308—35 **2 Claims**



An externally pressurized gas bearing of the porous sleeve type is used to rotatably support one end of a rotor on an electric motor. The gas bearing housing in turn is mounted on a ball bearing having limited radial play and ball raceways of open curvature thus giving a limited self-alignment to the gas bearing. The ball bearing is normally inoperative due to an interposed frangible link, however, should the gas supply be interrupted during the operation of the motor, seizure of the rotor is prevented by a breaking of the link and rotation of the ball bearing.

3,603,655
BEARING ASSEMBLY

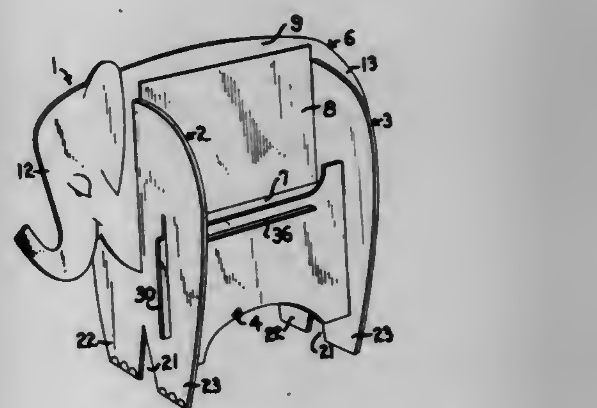
Thomas C. Keller, Canton, and Louis H. Gegenheimer, Lakewood, both of, Ohio, assignors to The Timken Company, Canton, Ohio
Filed Oct. 1, 1969, Ser. No. 862,801
Int. Cl. F16c *13/02*
U.S. Cl. 308—180 **4 Claims**



A bearing assembly has an end cap which is recessed into the outboard wear ring thereof so that the axial projection on the end cap is minimized.

3,603,656
ARTICLE OF FURNITURE

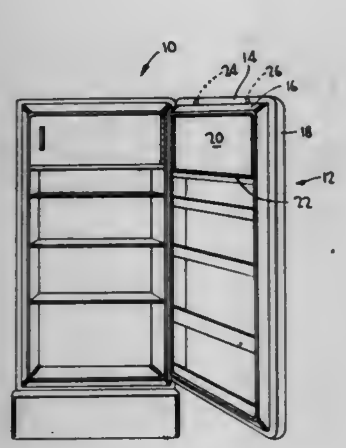
Nathan B. Ferman, 13207 Ashland, Grandview, Mo.
Filed Oct. 16, 1969, Ser. No. 866,902
Int. Cl. A47b *17/00, 97/04;* **A47c** *7/00*
U.S. Cl. 312—195 **6 Claims**



An article of furniture having a plurality of interlocking elements which are assembled and held together without separate fasteners, such as screws, bolts, clamps, pins and the like includes a pair of spaced planar upright support elements positioned in opposed facing relation and a planar brace member extending between and positioned normal to the support elements and a planar work surface having side edges engaging surfaces of the support elements and the brace member and having tabs extending from the side edges and through slots in the support elements and the brace member. A planar generally upright partition extends between and interlocks with the support elements and has a lower edge engaging an upper surface of the work surface and a tab extending from the lower edge and through a slot in the work surface. The brace member has end edges engaging facing surfaces of the support elements and tabs extending from the end edges and through slots in the support elements and at least one of the tabs has a lock tab extending therefrom and positioned to engage an exterior surface of a respective support element. Each of the slots have facing side surfaces positioned to engage opposite side surfaces of the respective tab extending therethrough.

3,603,657
REFRIGERATED SAFETY CABINET

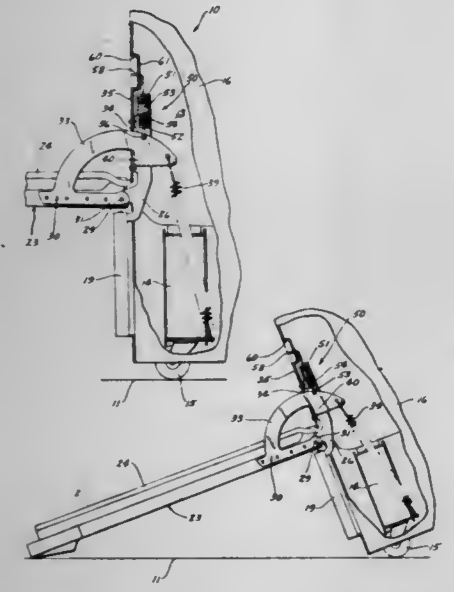
William F. Hassay, 1613 Grunther Ave., Rockville, Md.
Filed Mar. 4, 1969, Ser. No. 804,177
Int. Cl. A47f *3/00;* **F25d** *11/00;* **A47b** *81/00*
U.S. Cl. 312—214 **7 Claims**



A refrigerator having a safety latch medicine compartment integral with the refrigerator door is described. The door latch of the medicine compartment is invisible and integral with the refrigerator door, e.g., below the door seal, and actuated only by touching or pressing one or more predetermined spots on the door. A medicine compartment is provided for normal household use which will maintain drugs at storage temperatures without constituting a hazard to children and/or inattentive adults.

3,603,658
LATCH FOR DISHWASHER DOOR

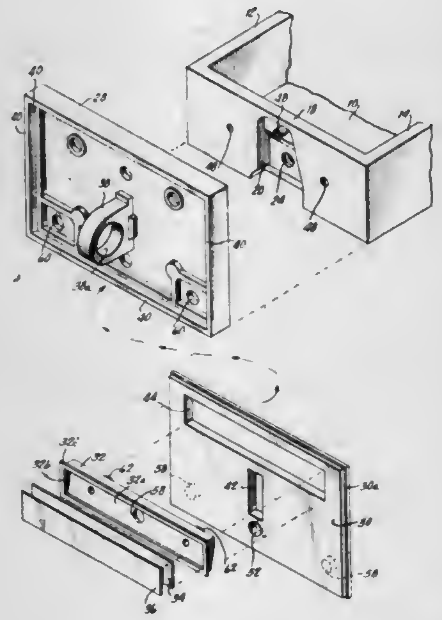
Richard P. Bergeson, Lambs Grove, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed May 1, 1969, Ser. No. 821,046
Int. Cl. A47b *49/00*
U.S. Cl. 312—319 **7 Claims**



A latch is operable for positively locking a front-opening, bottom-hinged dishwasher door in an open substantially horizontal position to prevent an upsetting of the appliance when an overload is applied to the open door. The door is locked relative to the cabinet so that the engagement of the door with the floor, after a small amount of tipping of the dishwasher, will prevent further tipping.

3,603,659
DRAWER HEAD FOR INDEX CARD FILE DRAWERS

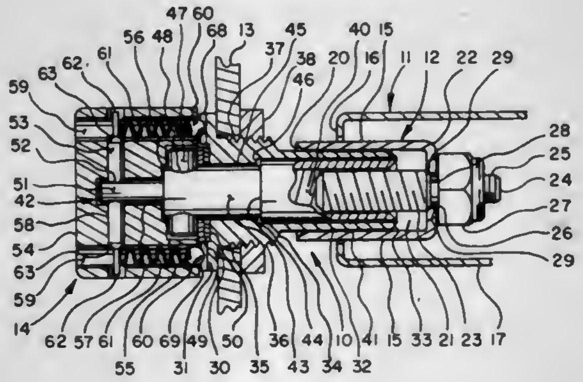
Murray Rothenberg, Pottstown, and Donald A. Richardson, Krausedale, both of, Pa., assignors to Art Metal-Knoll Corporation, New York, N.Y.
Filed June 17, 1970, Ser. No. 47,027
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **9 Claims**



A file drawer, such as an index card drawer of rectangular cross section, having a composite drawer head comprising: a frame plate which attaches to the front wall of the drawer and has (1) a forward projection serving as a drawer pull hook and (2) a marginal forwardly projecting flange; a cover plate which fits tightly within the marginal flange of the frame plate and has an aperture allowing the hook to pass through; and a label frame which fits tightly in an aperture in the insert plate. The label frame is adapted to receive a label and has at least one pair of facing grooves for holding edges of the label. The label, or a label cover, or both, may be resilient and slightly larger than the label frame opening for the purpose of being retained in said grooves in resilient fit.

3,603,660
BOX HOLDDOWN DEVICE

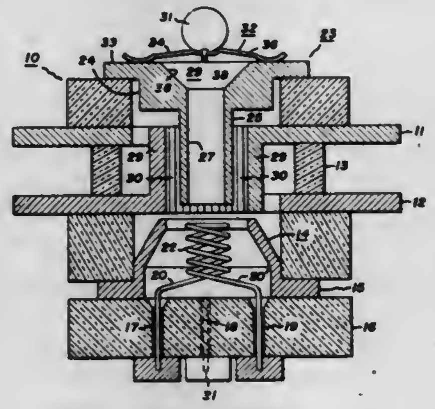
Marvin D. Weltha, Marion, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed May 15, 1970, Ser. No. 37,608
Int. Cl. A47b *88/00, 95/00*
U.S. Cl. 312—333 **17 Claims**



A turn detent lock holddown device for insertion and extraction forcing and guidance of equipment boxes on electronic racks with a fast lead screw and guided dowelling between box and rack mounted device portions and with a ball detent lock for static box in place locking. Further, with a two holddown device equipped box dowell restrainment through one holddown device in all lateral directions and dowell restrainment through the other holddown device only from movement laterally back and forth in the direction that would otherwise permit rotational movement of the box about the longitudinal axis of the device with dowell restrainment in all lateral directions.

3,603,661
VACUUM SEAL

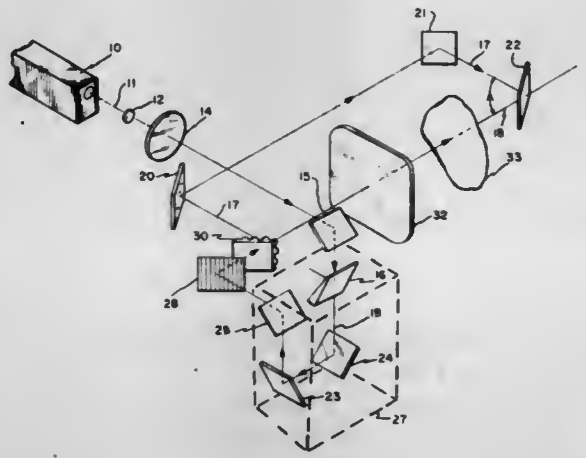
Richard Gray Detro, Scotia, N.Y., assignor to General Electric Company
Division of Ser. No. 426,893, Jan. 21, 1965, abandoned
Filed Sept. 20, 1968, Ser. No. 766,367
Int. Cl. H01j *9/00*
U.S. Cl. 316—17 **6 Claims**



The disclosure provides a method for evacuating and sealing an apparatus such as, for example, a voltage-tunable magnetron device, by providing a large evacuation aperture with a sealing ball spaced above the aperture by a support member comprising solder material. The support member spaces the seal ball away from the aperture enabling one to adequately evacuate the device. After sufficient evacuation the temperature is raised to melt the support and allow the seal ball to close and seal the aperture. The melting support structure provides the solder to seal the ball to the walls of the aperture.

3,603,662
TWO-BEAM, WIDE-VIEWING ANGLE HOLOGRAPHIC APPARATUS

Ralph F. Wuerker, Palos Verdes Estates, and Lee O. Heflinger, Torrance, both of, Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Dec. 29, 1969, Ser. No. 888,459
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **4 Claims**

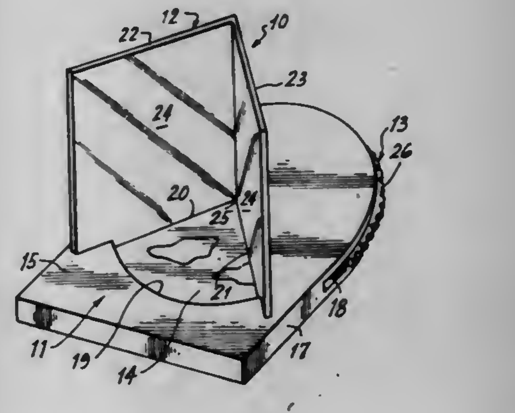


Holographic apparatus for taking holograms in transmission with lasers of limited coherence permitting a wide-viewing angle on the order 50° to 60°. The apparatus features an angle between the reference and scene beams, at the hologram, on the order of 90°. Once the laser beam is enlarged and collimated there is no need for any additional lenses in the path of the reference beam. The scene beam includes a diffuser and a lens system between the light diffuser and the object being holographed. The lens collects light diffused by the light diffuser, focusing it through the object onto the hologram and provides the wide three-dimensional viewing angle for reproduction. Also a beam bender is included into the path of the scene beam for bending the light through an angle of 90° and deliberately introducing path length differences across the cross section of the scene beam.

This invention herein described was made in the course of or under a contract or subcontract thereunder, with the Department of the Air Force.

3,603,663
KALEIDOSCOPE

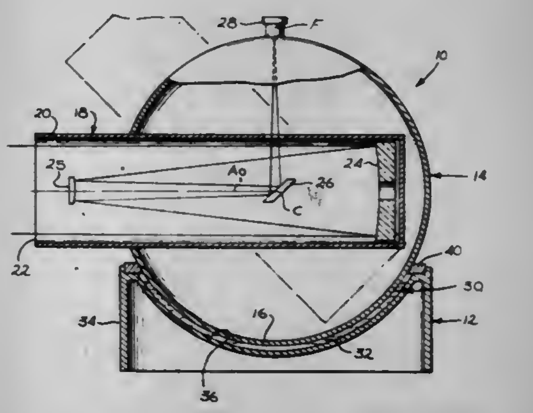
Peter Lewis, Hong Kong, assignor to Miner Industries, Inc., New York, N.Y.
Filed Feb. 10, 1970, Ser. No. 10,129
Int. Cl. G02b *7/08*
U.S. Cl. 350—4 **9 Claims**



A kaleidoscope having a hollow base with a slot along a portion of its periphery and a pair of upstanding reflective walls extending fixedly along the radial edges of a sector-shaped opening in the top of the base, and a disk movable into and out of the hollow base through its peripheral slot and being rotatably located when within the base to expose designs at the opening of the latter for kaleidoscopic display by the reflective walls, such rotatably located disk having its margin projecting through the slot for manual rotation of the disk.

3,603,664
TELESCOPE MOUNTING SYSTEM

Norman J. James, 7354 Valaho Lane, Tujunga, Calif.
Filed July 1, 1968, Ser. No. 741,455
Int. Cl. G02b *23/16*
U.S. Cl. 350—83 **8 Claims**

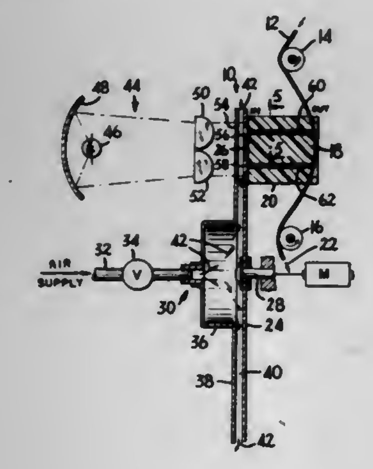


A telescope mount is provided having a supporting base and a generally spherical telescope housing swiveled in the base. The supporting base has an upwardly opening basin receiving the lower portion of the telescope housing and containing a fluid-bearing medium in which the housing floats. The mount is equipped with means for rotating the telescope housing in a tracking mode about an inclined polar axis passing through the center of the housing parallel to the earth's axis of rotation and independently rotating the housing in an elevating mode about a horizontal declination axis extending through the center of the housing normal to the polar axis.

3,603,665

FIBER OPTICS DISK SCANNING SYSTEMS

Peter C. Goldmark, Stamford, and John W. Christensen, New Canaan, both of, Conn., assignors to Columbia Broadcasting System Inc.
Filed Nov. 26, 1968, Ser. No. 779,196
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **8 Claims**

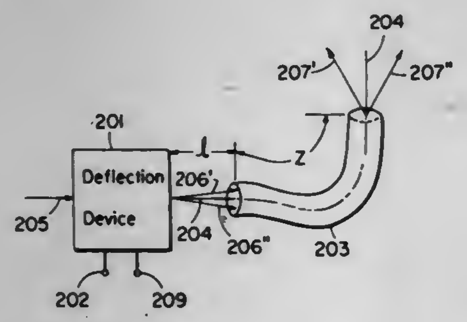


Apparatus for simultaneously scanning two related frames of color TV film includes a disk rotated about its axis at high speed. Narrow radial slits in the disk cooperate with two separate fiber optics channels each formed with an entrance and a narrow exit. A lamp lights the disk, and the disk slits and exits are relatively oriented so that a scanning spot emanates from each exit and executes a rectilinear scan, notwithstanding curvilinear motion of the disk slits as the disk is rotated. Moreover, the fiber optics channels are tapered if necessary so that the scanning lines are of disk length, whether or not the disk slits are all at the same radial location.

3,603,666

LIGHT BEAM DEFLECTION CONTROL DEVICE WITH GRADIENT INDEX LIGHT GUIDE

Teiji Uchida, and Mitsuhito Sakaguchi, both of Tokyo, Japan, assignors to Nippon Selfoc Company, Limited c/o Nippon Electric Company, Ltd., Tokyo, Japan
Filed July 3, 1969, Ser. No. 838,870
Claims priority, application Japan, July 6, 1968, 43/46963 43/46964
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 R **1 Claim**

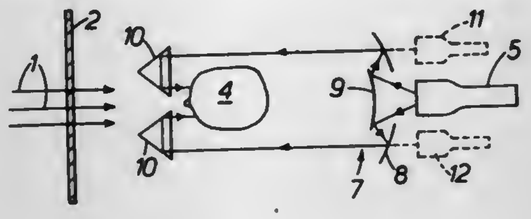


A light beam deflection control device includes an elastic fibrous converging light guide having a refractive index greatest along the guide axis. The guide is disposed in a predetermined configuration having an incident light end face and an emitting light end. Axially disposed adjacent the incident end face, but longitudinally removed, are means for slightly deflecting a coherent light beam whereby the position from the guide axis on the incident face and the angle of incidence are converted into an amplified angle of emission from the emitting light end.

3,603,667

HEAD-UP DISPLAYS

Michael H. Freeman, Denbigh Court, England, assignor to Pilkington Perkin-Elmer Limited, Liverpool, England
Filed June 24, 1969, Ser. No. 836,042
Claims priority, application Great Britain, June, 1968, 31226/68
Int. Cl. G02b *5/12*
U.S. Cl. 350—103 **11 Claims**

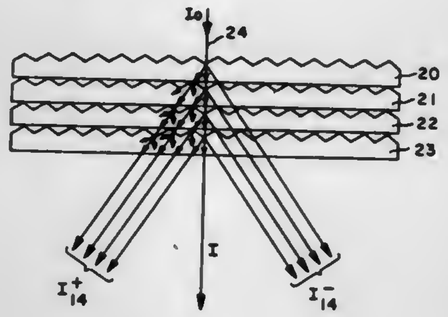


This invention relates to the provision of what is called a head-up display system for use in vehicles such as aircraft or land vehicles so that an observer can simultaneously view the outside scene and also visual information without having to look down to consult a dial or the like. The new system includes a source of light information signals, a collimated light beam carrying the information and travelling in a direction opposite to the direction of movement of light from an outside scene and at least one optical element to reflect light from the collimated beam to cause it to travel along a path parallel to its original path but in the opposite direction so as to superimpose an image of the light information signals on the field of view of the observer.

3,603,668

COMPOSITE DIFFRACTION GRATING FORMED FROM SUPERIMPOSED ALIGNED GRATINGS

Dominick John DeBitetto, Briarcliff Manor, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.
Division of Ser. No. 599,241, Dec. 5, 1966. Filed Jan. 29, 1970, Ser. No. 879,976
Int. Cl. G02b *5/18, 27/38*
U.S. Cl. 350—162 R **2 Claims**



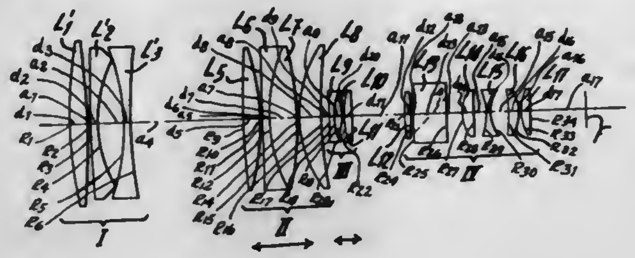
A device for reconstructing a hologram using white light, by providing in the optical path before or after the hologram a dispersion-compensating element. A preferred embodiment employs a diffraction grating. A relatively efficient and inexpensive transmission diffraction grating is obtained by a pile of aligned, superimposed replicas having the same spacing.

3,603,669

VARIABLE FOCUS OBJECTIVE

Kow-Fat Lai, and Christian Lietar, both of Yverdon Vaud, Switzerland, assignors to Paillard S.A., Vaud, Switzerland
Filed Sept. 15, 1969, Ser. No. 857,814
Claims priority, application Switzerland, Oct. 10, 1968, 15136/68
Int. Cl. G02b *15/16, 9/34*
U.S. Cl. 350—186 **6 Claims**

A variable-focus objective comprises in order starting from the front, a first divergent fixed-focusing group, two movable groups, one convergent and the other divergent, said two movable groups filling the role of variator and compensator at the same time, and a fixed convergent rear group, said first group comprising at least three lenses of which the first is a convergent lens, the others being divergent, and of the following limiting ratios for the radii of curvature:



$$1.5|f_1|\le R_1\le 6|f_1|$$

$$0\le\left|\frac{1}{R_3}-\frac{1}{R_2}\right|\le\left|\frac{1}{f_1}\right|$$

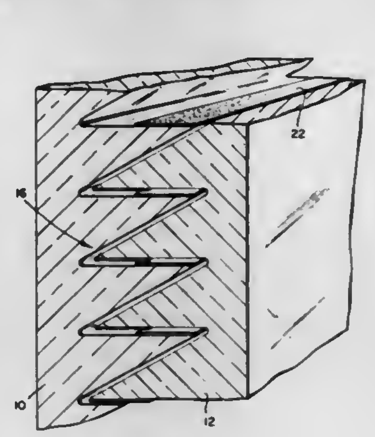
$$0.5|R_6|\le|R_8|\le 4|R_6|$$

where f_1 is the focal distance of the focusing group. The first fixed group may include 3 or 4 lenses of which one is convergent and the others divergent. The focusing distance is $2f_1$ to $3f_1$ and the zoom ratio is about 5.

3,603,670

DIRECTIONAL PANEL ADAPTED TO CONTROL THE PASSAGE OF INCIDENT RADIATION

Sangbong Kim, 422 S. Mansfield Ave., Los Angeles, Calif.
Filed Dec. 29, 1969, Ser. No. 888,463
Int. Cl. G02b *17/00*
U.S. Cl. 350—260 **9 Claims**



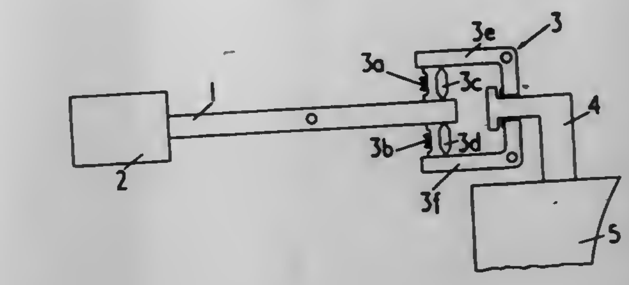
A directionally transmissive optical panel or structure, which is adapted to control the passage therethrough of incident electromagnetic radiation in the visible and invisible spectral regions, is provided. The panel or structure is fabricated with a pair of transparent or translucent plates each having a flat surface and a corrugated surface generally including a series of peaks and valleys extending along the width or horizontal dimension of the respective plates, alternate sections of the corrugated surfaces being fashioned to have an opaque or reflective coating. The corrugated surfaces are maintained in interlocking intimate optical contact.

3,603,671

ASTRONOMICAL TELESCOPES

David Scatcherd Brown, Newcastle, Upon Tyne, England, assignor to Sir Howard Grubb Parsons and Company Limited, Newcastle, Upon Tyne, England
Filed Apr. 25, 1969, Ser. No. 819,162
Claims priority, application Great Britain, May 1, 1968, 20557/68
Int. Cl. G02b *5/08*
U.S. Cl. 350—310 **4 Claims**

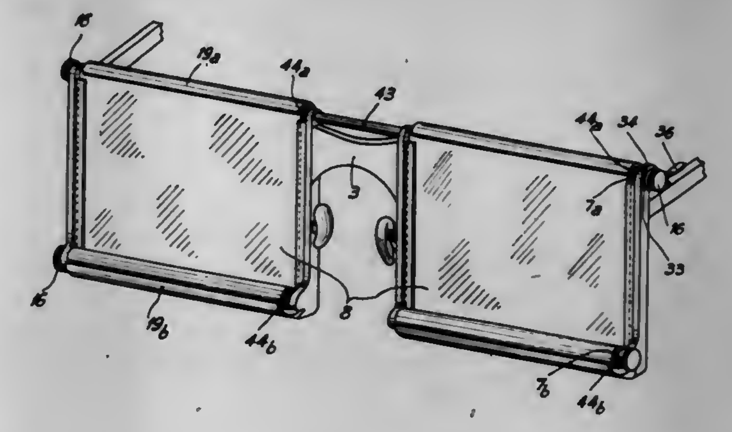
Means for correcting astigmatic distortion produced by changes in orientation of an astronomical telescope mirror, which means comprise a series of devices for applying forces acting in a direction parallel to the optical axis of the mirror in the region of the mirror outer edge which forces increase with increase in the zenith angle and have a sense and a distribution around the mirror edge so as to oppose the said distortion.



3,603,672

DEVICE FOR CONTROLLING THE AMOUNT OF LIGHT RAYS IN OPTICAL INSTRUMENTS

Paul Bastide, 108 rue de Rennes, Paris, France
Filed Apr. 17, 1969, Ser. No. 816,994
Claims priority, application France, Apr. 29, 1968, Mar. 5, 1969, 149875;6906054
Int. Cl. G02b *5/22*
U.S. Cl. 350—314 **11 Claims**



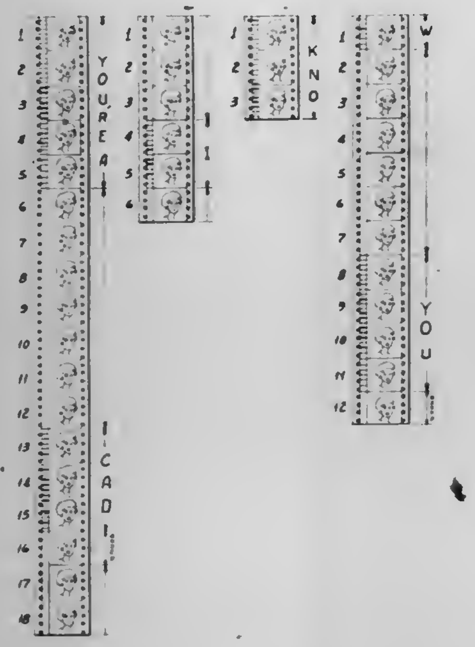
The amount or intensity of light rays passing through a lens or transparent sheet, or reflected by a mirror is controlled by winding a film over the lens or mirror, the film having portions throughout its length having different degrees of opacity or different colors.

3,603,673

METHOD OF INSERTING MUSIC AND LYRICS INTO A DRAMATIC MOTION PICTURE

Morris I. Charlap, New York, and Edwin H. Picker, Riverdale, both of, N.Y., assignors to E. Paul Charlap, Larchmont, N.Y.
Filed Aug. 21, 1969, Ser. No. 852,039
Int. Cl. G03b *31/02*
U.S. Cl. 352—5 **6 Claims**

A dramatic motion picture or parts thereof is divided into sections in which the words and pauses form an approximate rhythmic pattern. Film techniques are then employed to alter the pauses or words or both to provide the rhythmic pattern with a convenient common denominator of a comparatively low number which can serve as a common denominator for the time signature of a musical composition. A musical composition is then composed with an appropriate time signature to provide an easy or listenable rhythm using the common denominator thus achieved. The composition is provided with lyrics and an accompaniment in synchronism with the rhythm built into the film by film-editing techniques. A new soundtrack is photographed with the artists performing the musical composition at a tempo corresponding to the tempo at which the film is to be shown. A composite print is then

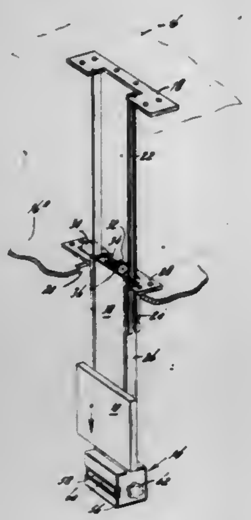


made of the action and the words and music which will appear in synchronism with the lip movements and action of the dramatic motion picture.

3,603,674
EYE-TESTING SYSTEM AND APPARATUS

John C. Abromavage, Tempe, and James F. George, Phoenix, both of, Ariz., assignors to Arcoa, Incorporated, Phoenix, Ariz.

Filed Nov. 19, 1969, Ser. No. 878,095
Int. Cl. A61b *3/00*
U.S. Cl. 351—37 **3 Claims**



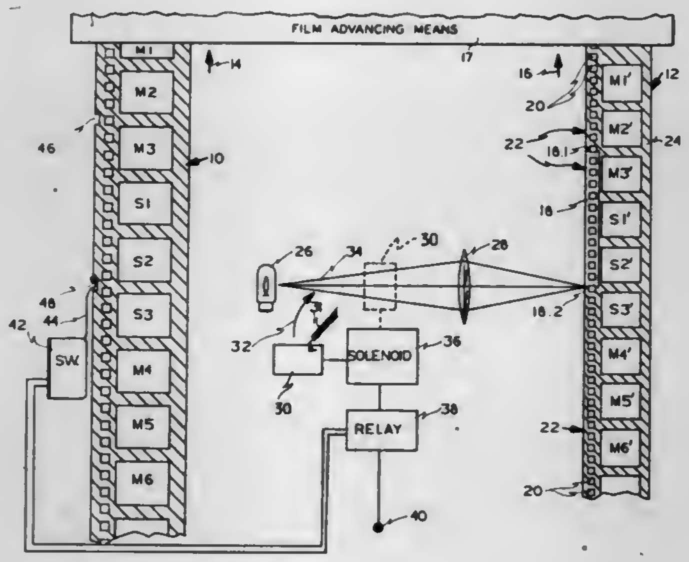
An eye test visual combination for vertically and horizontally positioning charts, screens and the like for stereoscopic vision testing, visual field testing and close reading testing. A system consisting preferably of an electrohydraulic device is used for the positioning of the charts and screens in combination with a frame and adjustable track system and selectively operable multiple display charts to effect different tests.

3,603,675
MOTION PICTURE FILM REPRODUCING APPARATUS AND METHOD WITH PROVISION FOR TRANSLATION OF STOP-MOTION CODING

Charles Woodruff, deceased, late of New York, N.Y. (by Ethel Woodruff, executrix), assignor to Visual Instruction Systems Inc., New York, N.Y.

Filed July 28, 1969, Ser. No. 846,997
Int. Cl. G03b *21/52, 27/52*
U.S. Cl. 352—56 **9 Claims**

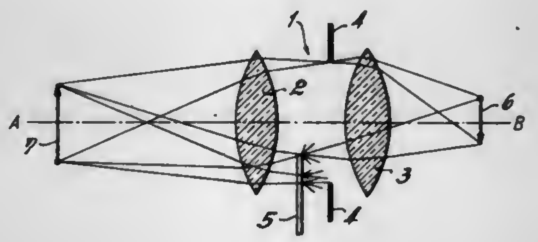
A copy of a motion picture film is prepared and provided with stop-motion coding in the form of a strip along the sprocket edge which includes emulsion-free segments. To accomplish this, an auxiliary light source is focused on the sprocket edge, and a shutter is moved into and out of blocking position to produce alternate emulsion-free and emulsion-covered segments along that edge. The shutter is operated by a solenoid under control of a relay. When the copy film is reproduced from a master film having stop-motion indicia in the form of successive notches indicating the start and finish respectively of a stop-motion segment, the relay embodies a push-push type of movement and is under the control of a microswitch which senses the notches and pulses the relay at the start and finish.



3,603,676
MEANS FOR PRODUCING FADE-IN AND FADEOUT EFFECTS ON MOTION PICTURE FILM

Richard Loewe, Stuttgart, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterluerkheim, Germany

Filed Jan. 14, 1970, Ser. No. 2,790
Claims priority, application Germany, Jan. 18, 1969, P 19 02 427.2
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **11 Claims**

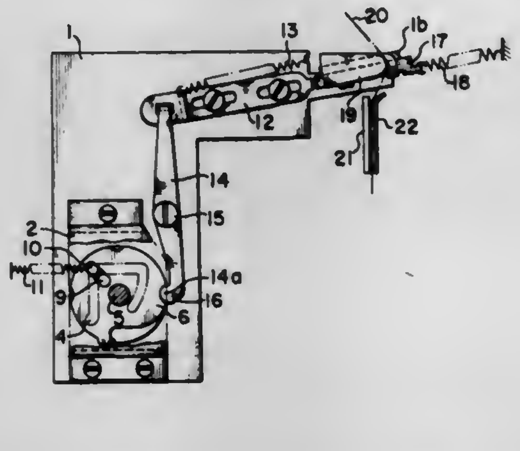


A motion picture camera with a between-the-lens diaphragm wherein the means for producing fade-in and fadeout effects comprises a diaphanous light-dispersing optical element which is movable across the path of incoming scene light between the diaphragm and one lens of the picture-taking objective so that the optical element thereby varies the sharpness of the real image which is produced by the objective. The optical element is movable by a rotary cam against the opposition of a spring and its initial position with reference to the aperture of the diaphragm is adjustable by a selector which can pivot a lever positioned to displace the optical element in response to rotation of the cam or in response to displacement of the selector. A carrier which supports the optical element and is movable by the lever is provided with a mask which can be moved across the path of incoming scene light instead of the optical element to thereby effect the brightness of the real image.

3,603,677
CINEPROJECTOR

Tatsusuke Kadowaki, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 23, 1969, Ser. No. 843,978
Claims priority, application Japan, July 24, 1968, 43/52237
Int. Cl. G03b *21/38*
U.S. Cl. 352—124 **5 Claims**

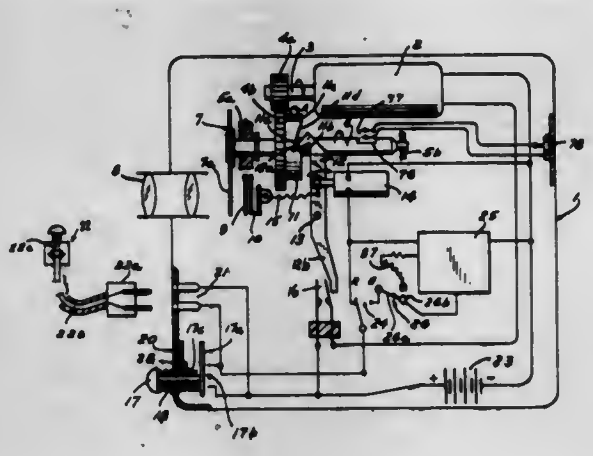


By rotating an operation changeover shaft from the exterior of a cineprojector, it may be set to a normal projection, a reverse motion projection, a stop or film-rewinding position. Upon completion of the normal projection, the cineprojector may be set to stop position automatically while when set to rewinding position the film is disengaged automatically from the pulldown mechanism. All of the operations may be effected from one position.

3,603,678
MOTION-PICTURE CAMERA

Peter Anderl, Munich; Johann Roth, Schwabhausen, and Theodor Steibl, Maisach, all of, Germany, assignors to Niezoldi and Kramer GmbH, Munich, Germany

Filed Jan. 13, 1969, Ser. No. 790,663
Claims priority, application Germany, Jan. 13, 1968, P 16 22 233.6
Int. Cl. G03b *21/38*
U.S. Cl. 352—169 **33 Claims**

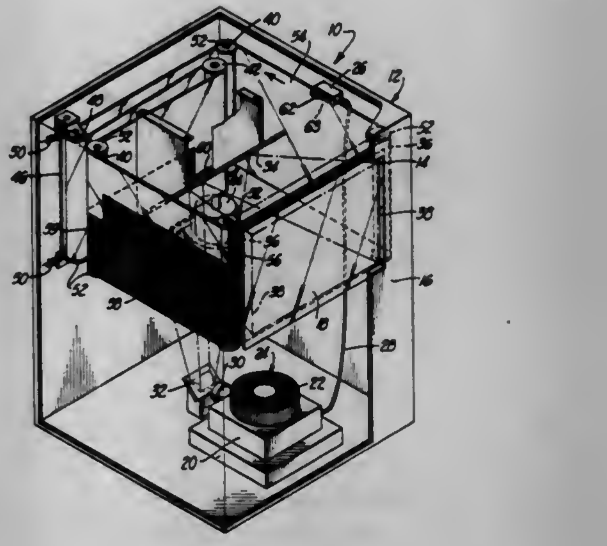


A motion-picture camera which can make a succession of exposures or individual exposures at variable intervals. The drive for the shutter and film-transporting mechanism is blocked in a predetermined position when the trigger is released, and the drive is unblocked by an electromagnet which is energized for a single short period, for a succession of short periods at variable intervals, or continuously in response to depression of the trigger. An electronic, or partly electronic and partly electromechanical, regulator which is built into the camera body controls energization of the electromagnet, at least when the camera is set to make individual exposures.

3,603,679
PROGRESSIVELY ILLUMINATED SIGNS

James F. Davis, 17154 Nordhoff St., Northridge, Calif.

Filed Aug. 9, 1968, Ser. No. 751,551
Int. Cl. G03b *21/22, 21/14*
U.S. Cl. 353—75 **4 Claims**

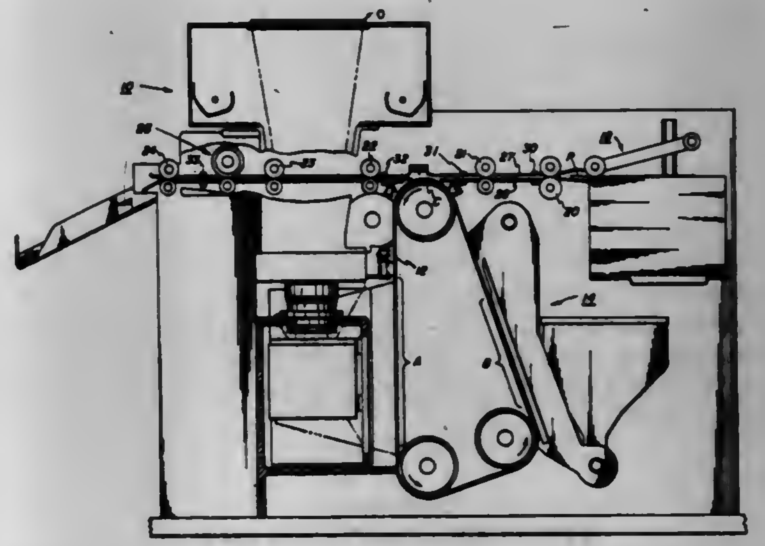


Illuminated signs are disclosed. Each of these signs has a viewing screen located with respect to a projector so that any of a series of different film or transparency frames may be projected on the screen by the projector so as to be capable of being viewed from the front of the screen. In each of these signs a shutter is continuously moved so as to control whether all or a portion of the projected image can be viewed on the screen. Means are provided for periodically projecting a different film frame in accordance with the shutter operation.

3,603,680
ULTRASONIC PAPER DETECTION

Edward D. Barton, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,952
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **3 Claims**

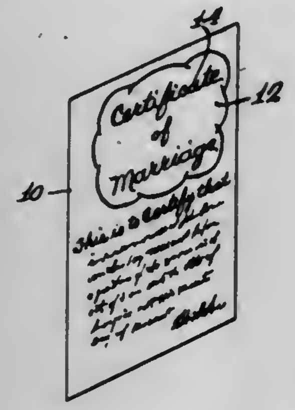


Paper jam detection system for use in a printing machine of the type having sheet feed and transporting means including a plurality of ultrasonic detection devices arranged along the paper path of movement to be influenced by each moving sheet, and circuit means for monitoring in timed sequence the effect upon each of the detection devices as sheets are transported.

3,603,681
METHOD OF REPRODUCING PREDETERMINED IMAGES

Lawrence R. Bortolotti, Carpentersville, and Howard K. Absler, Skokie, both of, Ill., assignors to Uarco Incorporated

Filed Feb. 12, 1969, Ser. No. 798,748
Int. Cl. G03b ***27/32***
U.S. Cl. 355—17 **10 Claims**

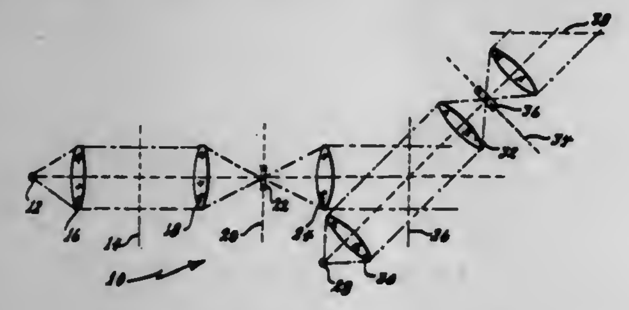


A method by which certain material on a master can be reproduced while suppressing reproduction of other material on either the master or copy paper in xerography or like processes. The method uses a master which has the material to be copied printed in light absorbing ink, while the material on the master or copy paper to be suppressed during copying is printed in transparent ink. As examples, the master or copy paper can have background material or instructions printed in colored transparent ink, while the material desired to be reproduced from the master during copying is printed in light absorbing black ink on the master.

3,603,682
SYSTEM FOR GENERATING INSTANT CONTOURS FROM STEREO PAIRS OF AERIAL PHOTOGRAPHS

Nicholas K. Sheridon, Fairport, N.Y., and Daniel C. Kowalski, Southgate, Mich., assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed Aug. 8, 1969, Ser. No. 848,423
Int. Cl. G01c ***11/04;*** **G02b**
U.S. Cl. 356—2 **5 Claims**



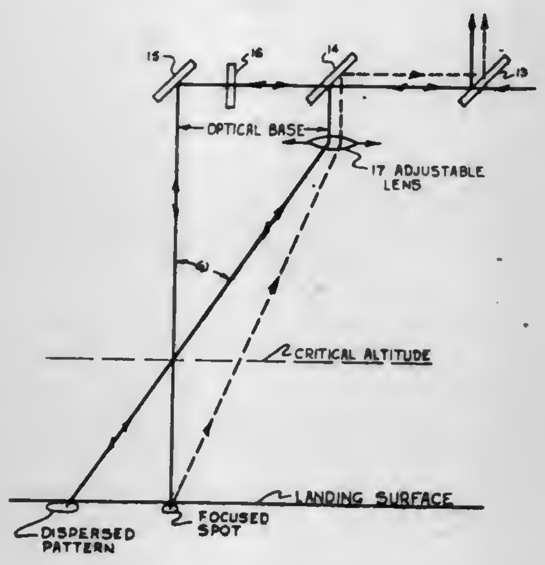
A system for generating instant contours from stereo pairs of aerial photographs. The optical system operates on all information on both aerial photographs simultaneously and in parallel instead of using a scanning technique as is commonly done.

3,603,683
ALTITUDE-SENSING DEVICE

T. O. Paine, Acting administrator of the National Aeronautics and Space Administration with respect to an invention of, and John A. Meyer, Tonawanda, N.Y.

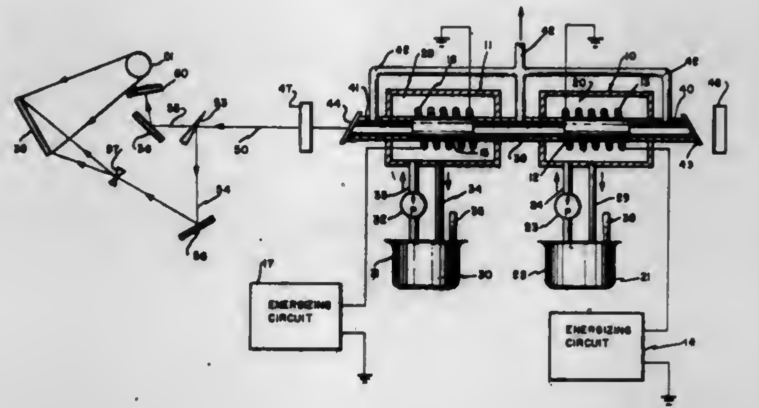
Continuation-in-part of application Ser. No. 417,848, Dec. 11, 1964, now abandoned. This application Dec. 16, 1968, Ser. No. 814,212
Int. Cl. G01c ***3/08***
U.S. Cl. 356—4 **6 Claims**

A device for signaling critical altitude of a flight vehicle above a landing surface formed of a high intensity light source; an optical system for reflecting the light beam downwardly towards the landing surface; a pair of optical systems for receiving images of the illumination produced by the beam; a light-responsive electrical system for generating a usable voltage signal when the vehicle is at the critical altitude.



3,603,684
RECORDING HOLOGRAMS OF OBJECTS WITH RANGE CONTOURS, assignor to Ralph F. Wuerker, Palos Verdes Estates, Calif. and TRW, Inc., Redondo Beach, Calif.

Filed Dec. 18, 1969, Ser. No. 886,077
Int. Cl. G02b ***27/00;*** **G01b** ***9/02***
U.S. Cl. 356—109 **17 Claims**



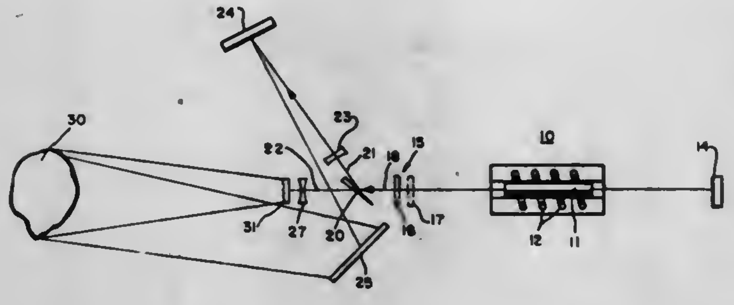
Holographic contour maps with closed controllable spacing of the range contours are made with one or two ruby lasers. For example, two ruby lasers may be provided, each being operated at a different temperature so as to illuminate the object with two separate frequencies. Alternatively, one of the rods may consist of pink ruby and the other of dark ruby. Also, two separate exposures may be taken, each being made with the ruby laser operated at a different frequency. This may be accomplished by selectively causing the ruby to lase at either a frequency corresponding to a transition R_1 or R_2. By controlling the material of the ruby, or its temperature or the particular transition being energized, the spacing of the range contours may be controlled or made adjustable.

The invention herein described was made in the course of or under a contract or subcontract thereunder, with the Department of the Air Force.

3,603,685
MULTIFREQUENCY LASERS FOR HOLOGRAPHIC CONTOURING

Lee O. Heflinger, Torrance, and Ralph F. Wuerker, Palos Verdes Estates, both of, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 18, 1969, Ser. No. 886,258
Int. Cl. G01b ***9/02;*** **G02b** ***27/00***
U.S. Cl. 356—109 **11 Claims**



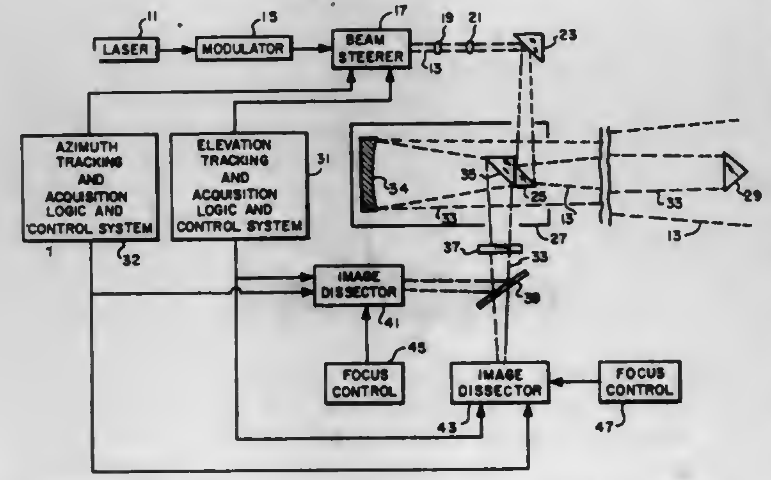
A ruby or other solid laser is made to generate two or more closely adjacent optical frequencies. By illuminating an object to be recorded holographically with the laser light, range contours are generated when the hologram is reconstructed. The range contours can be made to have distances on the order of 5 millimeters or more by utilizing a ruby laser. To this end, one of the two boundaries of the optical cavity for the laser is formed by a suitable mode selector, such, for example, as a Fabry-Perot resonant reflector, a prism or a grating. The thickness of the resonant reflector is so selected that two or more frequencies may be generated within the lasing linewidth of the laser. Preferably, in order to obtain better contrast, the optical length of the cavity is a multiple of the optical thickness of the resonant reflector.

The invention described herein was made in the performance of work under a NASA contract and is subject to the provisions of Section 305 of the National Aeronautics and Space Act of 1958, Public Law 85-568 (72 Stat. 435; 42 U.S.C. 2457).

3,603,686
ACQUISITION AND TRACKING SYSTEM FOR OPTICAL RADAR

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Charles L. Wyman; John M. Gould, Huntsville, Ala.; Robert E. Johnson, Williamville, N.Y., and Paul F. Weiss, Sudbury, Mass.

Filed June 4, 1969, Ser. No. 830,366
Int. Cl. G01b ***11/26***
U.S. Cl. 356—152 **8 Claims**

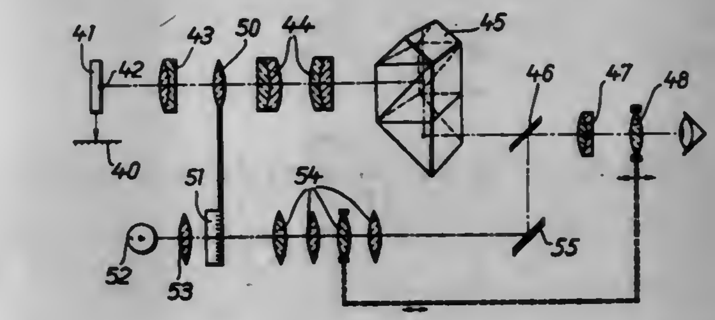


A laser-based tracking system is disclosed having the capability of automatically preforming an acquisition search to locate a target. In the acquisition mode, a laser beam and the instantaneous field of view of an image dissector photomultiplier are electronically and coaxially scanned over the same acquisition field. Upon acquisition of the target, the image dissector's instantaneous field of view is scanned across the target in a cross-scan pattern. The error signal is fed back to the center the laser beam and the cross-scan pattern on the target. If acquisition of the target is lost for a predetermined time the system returns to the acquisition mode to scan both the laser beam and instantaneous field of view of the image dissector over the acquisition field of view.

3,603,687
ALIGNMENT TELESCOPE

Fromund Hock, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Sept. 23, 1968, Ser. No. 761,495
Claims priority, application Germany, Sept. 30, 1967, P 16 23 502.2
Int. Cl. G01b ***11/27;*** **G02b** ***23/00***
U.S. Cl. 356—153 **3 Claims**

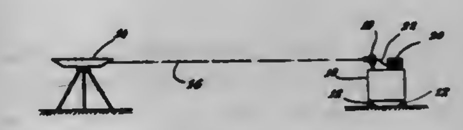


An alignment telescope is disclosed using optically active members which can be tilted or shifted for line-of-sight displacement, but whereby the resulting angular deflection of the line of subject is compensated, for leaving only a residual lateral displacement thereof.

3,603,688
ALIGNMENT APPARATUS

William Reid Smith-Vaniz, Darien, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 8, 1967, Ser. No. 681,476
Int. Cl. G01b ***11/26***
U.S. Cl. 356—172 **6 Claims**



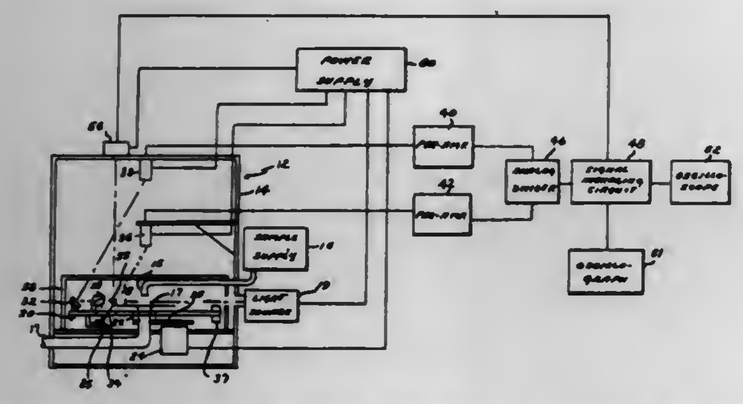
An alignment apparatus comprises a laser light source and means positioned remotely at a target object including an array of photocells for sensing and indicating displacement of a centroid of an impinging laser beam from a reference point of the array. The laser light source includes means for establishing a beam pattern of contrasting light intensity indicative of the centroid of the beam. An impinging light beam of this character enhances detector sensitivity.

3,603,689
SCANNING SCATTERED LIGHT PHOTOMETER

James William Shelnutt, III, Dayton, Ohio assignor to the United States of America as represented by the Secretary of the Air Force

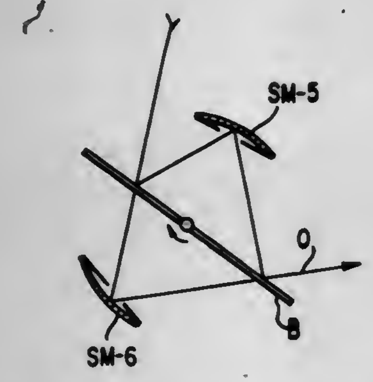
Filed Oct. 13, 1969, Ser. No. 865,899
Int. Cl. G01n ***21/00, 21/40***
U.S. Cl. 356—103 **5 Claims**

A scanning scattered light photometer system having a rotor with a beamsplitter-polarizer and a nozzle for directing an aerosol flow along the axis of the rotor toward an exhaust outlet. The aerosol flow is illuminated by a collimated monochromatic unpolarized light. A polarizing beamsplitter on the rotor separates the scattered light into two perpendicular components. A first mirror on the rotor directs a first polarized component of light in the plane of rotation of the rotor toward a first photomultiplier. A second mirror on the rotor directs light polarized perpendicular to the plane of rotation toward a second photomultiplier. A fixed mirror directs undispersed light toward a photoconductive device to provide a synchronizing output pulse when the polarizer



beamsplitter passes through the beam between the light source and the aerosol flow. The outputs of the photomultipliers and photoconductive device are fed to a ratio and averaging circuit and then to a recorder.

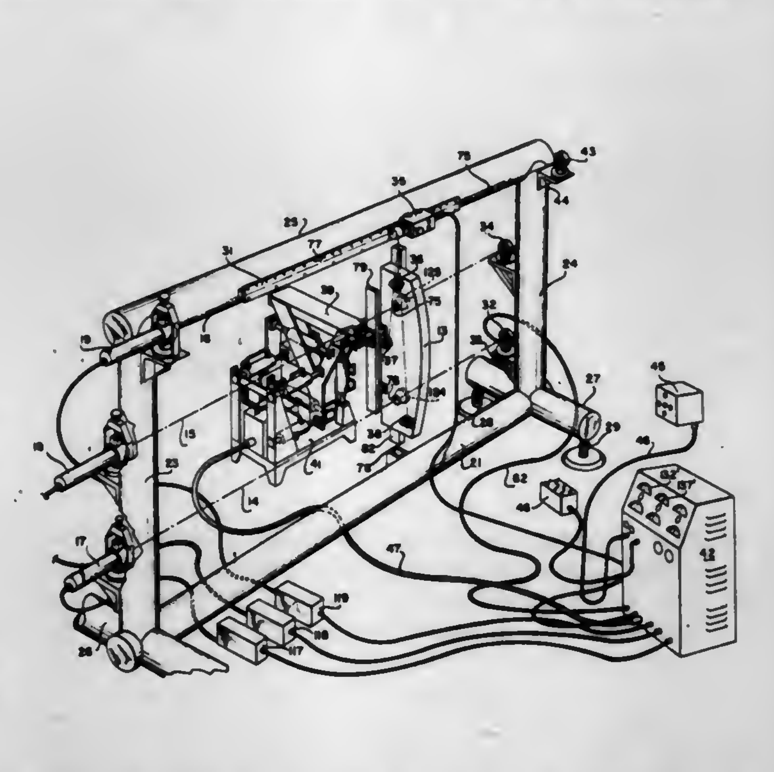
3,603,690
OPTICAL SYSTEMS HAVING SPATIALLY INVARIANT OUTPUTS
Thomas M. Hard, Cambridge, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Oct. 22, 1969, Ser. No. 868,445
Int. Cl. G01b *9/02, 21/48;* **G01n** *21/16*
U.S. Cl. 356—113 **13 Claims**



This disclosure describes optical systems that have output beams that are spatially invariant to the angle of incidence upon a certain rotatable surface forming a part of the systems, and can be used to select the wavelength of the output of an optical source, such as a laser cavity, or to aid in measuring the reflectance of a material in reflectance spectroscopy. The optical systems comprise various combinations of plane mirrors and plane diffraction gratings (or sample surfaces), in some embodiments, spherical mirrors. The plane mirrors, plane gratings and spherical mirrors are either rotated or fixed in space in accordance with a particular embodiment. The moveable suitable movement mechanism, such as a micrometer. By rotating the shaft of the micrometer to a particular incidence angle, the frequency of the output of a laser cavity can be selected. Alternately, the reflectance of a material can be observed for a particular angle. In either case, the output beam remains spatially invariant as the position of the shaft and its attached elements is changed.

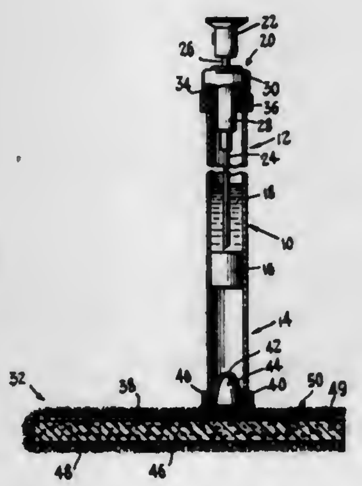
3,603,691
LASER CONTROL FOR AUTOMATIC ALIGNMENT OF STRUCTURES
Ralph A. Hamilton, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed July 25, 1969, Ser. No. 844,952
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **20 Claims**

An automatic part positioning system, such as may be used in tool or jig building, precisely locates or aligns the assembly components of large structures. Any misalignment of a component, with respect to a given spatial reference, is detected and appropriate error signals are generated which control a servosystem to move the component into alignment through three rectilinear axes and three angular axes, as required. These six degrees of freedom are referenced to one or more laser beams which establish the system's spatial reference.



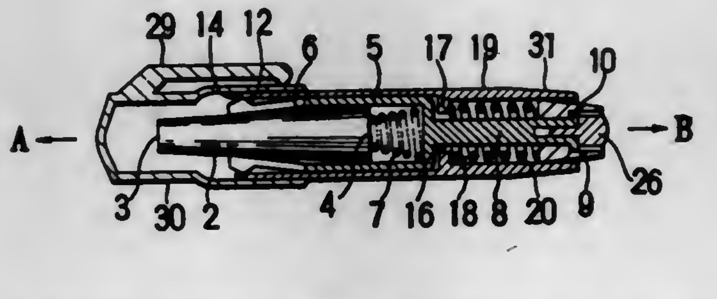
Multiple photoelectric targets, secured to the assembly component for movement therewith, respond to the laser beams to generate the necessary translational or rotational control signals for operation of the servosystem. Activation of the servosystem automatically brings the assembly component into a given position with respect to the system's basic spatial reference and thereafter maintains the established alignment.

3,603,692
COMBINED SPRAYER AND WIPER DEVICE
Charles W. Ball, 96 Orland St., Milford, Conn., and Alexander Brodsky, Fairfield, Conn., assignors to Richard Turico, New Haven, Conn., by said Brodsky
Filed Mar. 13, 1969, Ser. No. 806,876
Int. Cl. A47l *1/08*
U.S. Cl. 401—139 **2 Claims**



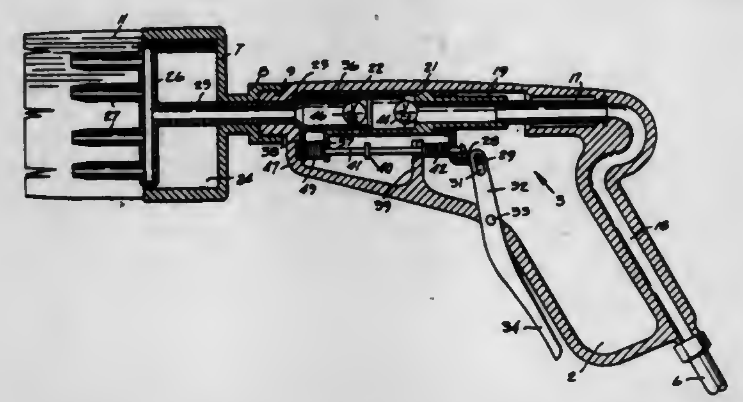
A sprayer and wiper device for windows, furniture and the like, having a tubular handle which pivotally mounts at one end a soft, absorbent wiper pad. The handle carries a cleaning or waxing solution and at its other end a spray device for spraying the solution on window or furniture surfaces. Thus with a single utensil the user can easily spray the desired surface and wipe the same.

3,603,693
AUTOMATIC PENCIL
Miyoshi Mori, Aichi-ken, and Miyako Hyoudou, Shizouka-ken, both of, Japan, assignors to Miyoshi Mori and Masauoshi Suganuma, Japan
Filed Oct. 13, 1969, Ser. No. 865,684
Claims priority, application Japan, Oct. 19, 1968, 43/91,429
Int. Cl. B43k *21/16*
U.S. Cl. 401—81 **9 Claims**



A special receptacle like a fountain pen, or mechanical pencil to hold chalk, so that it may not soil the hands and may be carried and used sanitarily. A chalk-holding cylinder, of an elastic material, is made to slide freely within an outer cylinder, and at the bottom of the chalk-holding chamber of the cylinder, a pushout spring is provided.

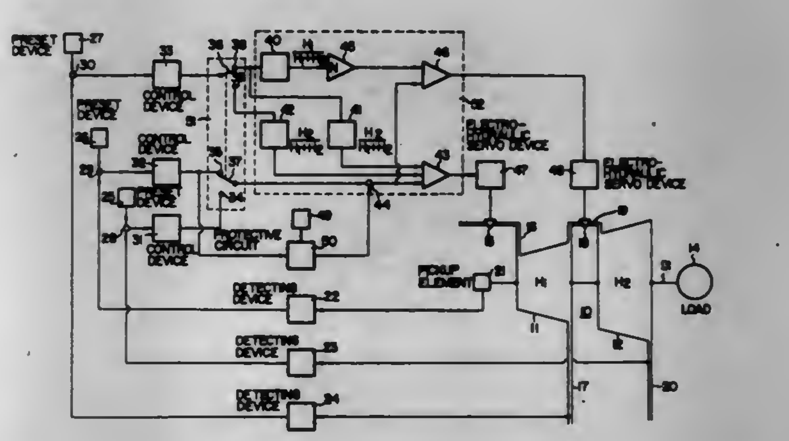
3,603,694
DEVICE FOR FEEDING PAINT TO A PAINTING BRUSH
Ronald D. Hamm, 26 Chester Ave., Fairfax, Calif.
Filed Nov. 10, 1969, Ser. No. 875,438
Int. Cl. A46b *11/06*
U.S. Cl. 401—150 **4 Claims**



A pistol-type handle on the end of which is a hollow hub to which are fixed the bristles of a paint brush; in the hollow handle is a trigger actuated mechanism to pump paint between the bristles of the paint brush; another point is that the pumping mechanism simultaneously with the pumping advances the paint feeding nozzles to feed the paint at the point nearer to the tips of the bristles and after each feeding the nozzles are withdrawn from the bristles into the hollow hub so as not to interfere with the flexing of the bristles in painting; the hollow handle and the pumping device are connected by a flexible hose to a portable paint container which can be carried on the shoulders or back of the person using the device.

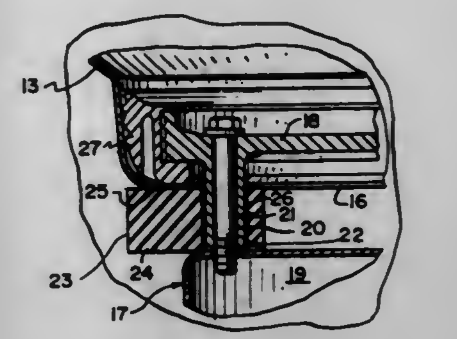
3,603,695
BLEEDER AND BACK-PRESSURE TURBINE CONTROL SYSTEM
Mitsuhisa Yokota, Kanagawa-ken, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha (also known as Tokyo Shibaura Electric Co., Ltd.), Kawasaki-shi, Kanagawa-ken, Japan
Filed July 7, 1969, Ser. No. 839,310
Claims priority, application Japan, July 8, 1968, 43/47146
Int. Cl. F01b *25/00*
U.S. Cl. 415—17 **9 Claims**

Disclosed herein is a bleeder and back pressure turbine control system composed, essentially, of control devices respectively for rotational speed control, back pressure control, and bleeder pressure control, each control device detecting the required value and sending out a control signal; switching means operable for changing turbine operation to a constant speed operation or to a constant pressure operation, the back pressure control device being disconnected from the control system in the former operation, and the rotating speed control device being disconnected from the control system in the latter operation; and electrohydraulic control



devices which, in the former operation, operate a main steam-regulating valve and a bleeder-regulating valve in the same directions under the control of the speed control device, and in the reversing directions under the control of the bleeder pressure control device, and which, in the latter operation, operate merely the main steam-regulating valve under the control of the back pressure control device and the bleeder pressure control device.

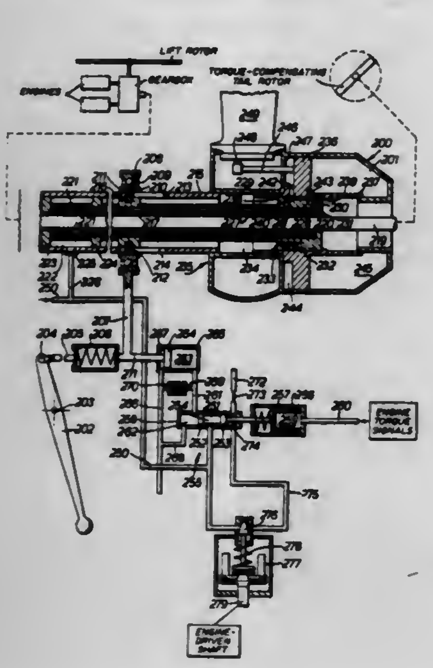
3,603,696
DISHWASHER
Willian T. Lampman, St. Joseph, Mich., assignor to Whirlpool Corporation
Filed Mar. 12, 1970, Ser. No. 18,857
Int. Cl. F04b *21/00;* **B08b** *3/00*
U.S. Cl. 415—126 **5 Claims**



A dishwasher having a motor-pump unit normally positioned in a bottom opening in the tub of the dishwasher with the motor being located beneath the opening and the pump above the opening and within the tub and including a plurality of spaced resilient retainers on the unit movable into engagement with the motor and the bottom of the tub surrounding the opening in locking the unit in position but being movable to an inwardly projecting position when installing or removing the unit during which the dependent motor portion is passed through the tub opening which is larger than the motor portion of the unit.

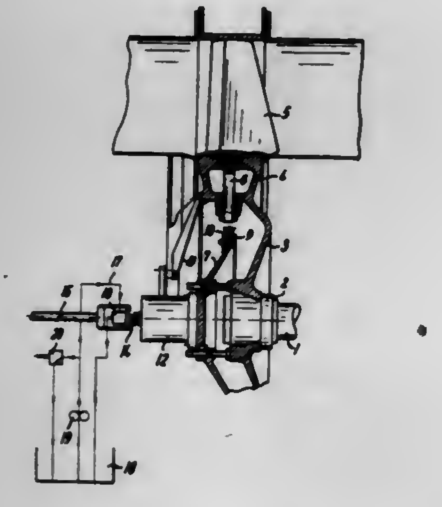
3,603,697
ENGINE, PROPELLER AND ROTOR INSTALLATIONS
Arthur H. Lane, Innsworth, England, assignor to Dowty Rotol Limited, Gloucester, England
Filed Nov. 8, 1968, Ser. No. 774,471
Claims priority, application Great Britain, Nov. 17, 1967, 52496/67
Int. Cl. B64c *27/22*
U.S. Cl. 416—33 **11 Claims**

An engine propeller and rotor installation includes an engine-driven variable pitch propeller and a rotor which can, under certain conditions, be driven by the engines with the propeller. Propeller pitch is adjustable by a pitch control system in response to input or datum signals and in response to engine torque signals. These signals are applied to the system in a manner such that, without substantially reducing the power transmitted to the rotor, propeller blade pitch is changed to reduce power absorption by the propeller by an amount necessary for the engine to avoid reaching a stalled condition.



3,603,698
AXIAL FLOW FAN WHEEL

Carl Erling Jensen, Naestved, Denmark, assignor to Nordisk Ventilator Co. A/S, Naestved, Denmark
Filed Nov. 19, 1969, Ser. No. 877,918
Int. Cl. B63h *3/02*
U.S. Cl. 416—157 **10 Claims**



An axial flow fan wheel with adjustable blades controlled by a hydraulic-driving system comprising a working piston and a cylinder disposed coaxially within the wheel one of them being axially displaceable for adjusting the blades.

The system is supplied with hydraulic fluid with a constant pressure through an adjustment cylinder-piston system coaxially connected with the displaceable part of the driving system.

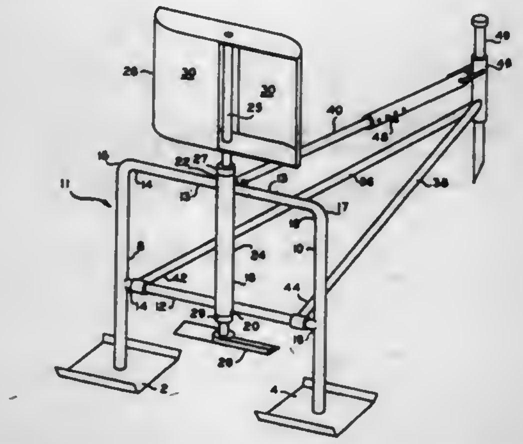
The working piston has a passage throttling the fluid flow.

The sum of the pressure drop through the piston and the drop in the adjustment cylinder-piston system equals the total pressure.

Displacing the adjustment piston relative to the adjustment cylinder disturbs the state of equilibrium. The working piston moves relative to the cylinder and reestablishes the equilibrium state in another position.

3,603,699
LIQUID AGITATOR

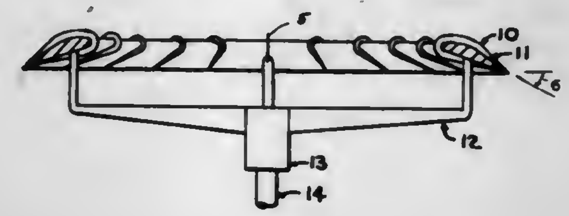
Budd Joe Brashear, 239 N.E. Queenstown, and Donald Max Stapleton, 216 N.E. Queenstown, both of Bartlesville, Okla.
Filed Mar. 16, 1970, Ser. No. 19,640
Int. Cl. C10j *1/18;* B01f *7/24*
U.S. Cl. 416—171 **11 Claims**



A readily portable and adjustable apparatus having an agitating means for contacting and agitating a liquid, adjusting arm elements for porting, positioning and adjusting said agitating means in said liquid, and a power source in operable association with said agitating means. Said power source can be a wind motor, an electric motor or combinations thereof.

3,603,700
ROTATING CIRCULAR WING

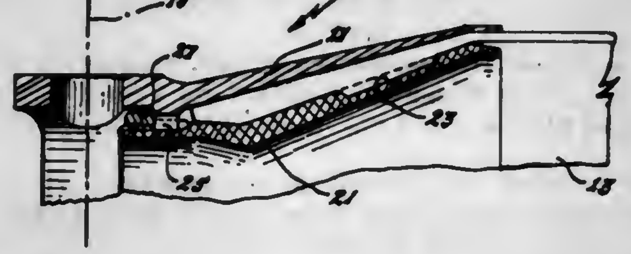
Michael Eskeli, 2932 Sandage Ave., Ft. Worth, Tex.
Filed May 19, 1969, Ser. No. 827,482
Int. Cl. B64c *27/10*
U.S. Cl. 416—180 **6 Claims**



A propulsion device for vertical takeoff and landing type aircraft consisting of one or more rotary circular wings; the wings being of circular shape but having standard airfoil cross sections with vanes on the surfaces to cause air to pass radially outwardly over the airfoil surfaces. Lift is produced by air passage over the airfoil surfaces in a manner similar to standard aircraft wings, but high velocity air flow and high lift is feasible regardless of the speed of the aircraft.

3,603,701
COMPOSITE ROTOR BLADE RETENTION

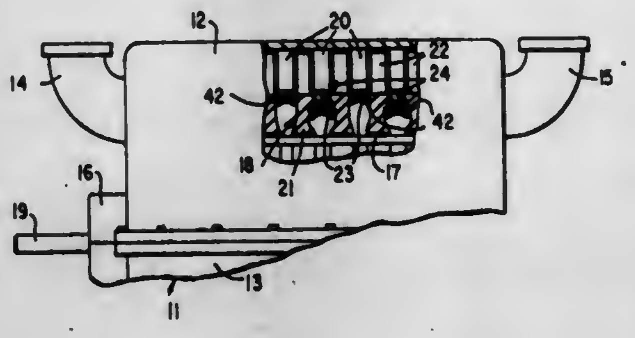
Tadeusz Tarcrynski, Ridley Park, Pa.
Filed Aug. 28, 1969, Ser. No. 853,873
Int. Cl. B64c *27/48*
U.S. Cl. 416—204 **3 Claims**



A system for transferring the dynamic loading forces from a composite rotor blade held between external and internal metallic fittings. A lock nut in communication with a key serves to transmit torque from the internal fitting to the root end socket by preloading against the composite structure to induce compressive hoop stresses therein.

3,603,702
ROTOR ASSEMBLY

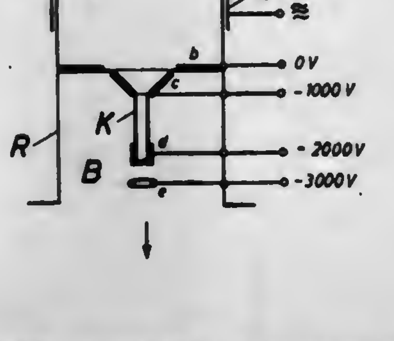
Richard C. Jensen, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 1, 1969, Ser. No. 821,017
Int. Cl. F01d *5/32*
U.S. Cl. 416—220 **2 Claims**



A rotor for use in a turbomachine comprising a shaft, a plurality of wheels axially connected to the shaft, and a plurality of blades mounted circumferentially about each of the wheels. Spacer rings are disposed between alternate wheels and are connected thereto to maintain the wheels in their spaced axial positions. Disposed above alternate spacer rings are a plurality of substantially cylindrical members having a removable portion. When a blade becomes defective, the cylindrical member adjacent thereto will be rotated to align the removable portion with the defective blade. The removable portion of the member is withdrawn to leave an opening adjacent to the base of the defective blade. The defective blade may then be slid into this opening and be removed from the machine.

3,603,703
ONE-OR MULTI-STEPS COMPRESSING IONIC PUMP

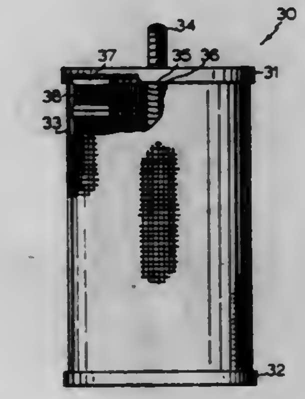
Erich Jakopic, Steyrergasse 17/III, Graz, Austria
Filed Apr. 1, 1969, Ser. No. 811,960
Int. Cl. F04b *37/02*
U.S. Cl. 417—48 **4 Claims**



A one- or multisteps compressing ionic-pump which comprises means for providing a chamber of higher pressure and a chamber of lower pressure, and a separating wall nonpermeable to gas is disposed between the chambers. At least one channel member extends through the wall for the transportation of an ion stream therethrough. The channel member has a large stream resistance for the gas return-diffusing from the area of higher pressure into the area of lower pressure, and a high frequency alternating field is applied in front of the entrance to the channel member in the lower pressure chamber between an anode preset in front of the separating wall and in and behind the channel member in higher pressure chamber connected cathodes, so that particles of gas do not arrive at lower pressure in the space.

3,603,704
RADIANT HEAT REFLECTION IN DEVICES SUCH AS GETTER PUMPS

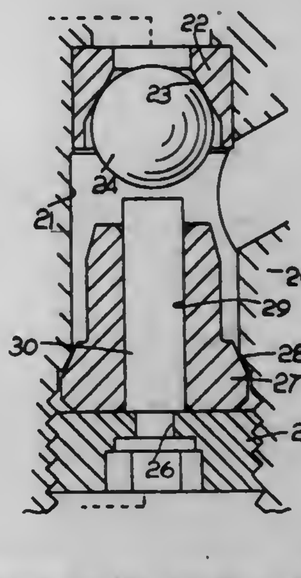
Mario Zucchinelli, and Bruno Ferrario, both of Milan, Italy, assignors to S. A. E. L. Getters S.p.A., Milan, Italy
Filed Oct. 14, 1969, Ser. No. 866,335
Claims priority, application Italy, Oct. 28, 1968, 844740
Int. Cl. F04f *11/00;* H01j *7/16*
U.S. Cl. 417—51 **13 Claims**



A heat reflector having a number of discrete spaced surfaces which present a substantially continual heat-reflecting surface wherein adjacent surfaces are offset with respect to each other sufficiently to provide for the passage of gas molecules at pressures within the molecular flow region as well as at higher pressures. These reflectors which have a high conductance to gases are especially useful when employed with getter pumps wherein they minimize radiant heat losses and reduce the amount of current necessary to heat the getter material employed in these pumps.

3,603,705
CHECK VALVES

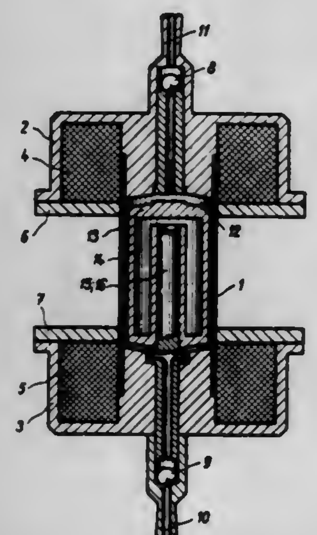
Harin Chandraratna, London, England, assignor to C.A.V. Limited, London, England
Filed Oct. 7, 1969, Ser. No. 864,505
Claims priority, application Great Britain, Oct. 15, 1968, 48844/68
Int. Cl. F04b *5/00;* E03c ; F04b *39/08*
U.S. Cl. 417—253 **1 Claim**



A check valve including a valve member which can cooperate with a seating to prevent flow of fluid in one direction and which can be lifted from its seating by pressure of fluid, the check valve including a piston which is actuated by a fluid pressure so that it urges the valve member onto the seating. In this manner the valve member is closed onto the seating as quickly as possible when the pressure of liquid acting to lift the valve member from the seating falls.

3,603,706
ELECTROMAGNETIC MICROPUMP FOR PROCESSING AGGRESSIVE LIQUID SUBSTANCES

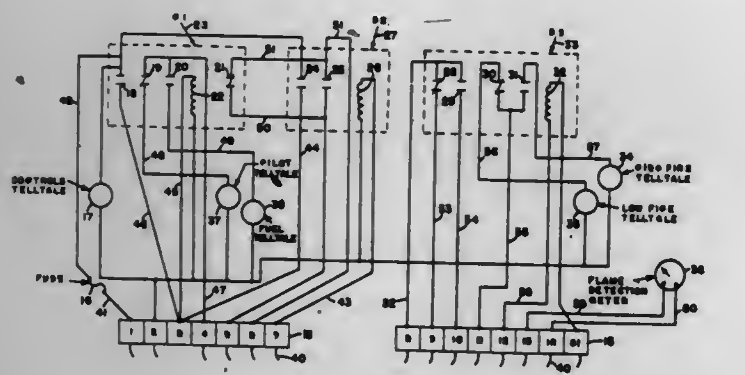
Antonin Cermak, Praha; Slavomir Michalek, Praha, and Zdenek Strait, Rez U Prahy, all of, Czechoslovakia
Filed Mar. 25, 1969, Ser. No. 810,089
Claims priority, application Czechoslovakia, Mar. 26, 1968, 2320-68
Int. Cl. F04b *17/04*
U.S. Cl. 417—417 **5 Claims**



An electromagnetic micropump for processing aggressive liquid substances detrimental for human health, such as, for example, radioactive solutions, or the like. The micropump, is fully compact, explosion proof and packingless. Its pumping element is constituted by an electromagnet core adapted to reciprocate along a stationary piston between a pair of jacketed alternately energized solenoids.

3,603,707
MONITORING DEVICE

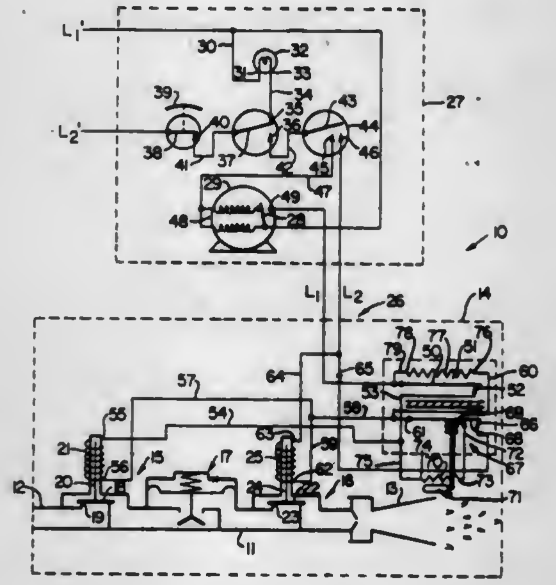
Eugene R. Stantz, deceased, late of 1045 Wallace Ave., Schenectady, N.Y. (by Irene F. Stantz, executrix) 1045 Wallace Ave., Schenectady, N.Y.
Continuation-in-part of application Ser. No. 687,001, Nov. 30, 1967, now abandoned. This application Mar. 2, 1970, Ser. No. 015,715
Int. Cl. F23n *5/24*
U.S. Cl. 431—16 **10 Claims**



Monitoring device for use with large commercial and industrial gas, oil and combination gas-oil burners and burner-boiler units and their associated combustion control devices to continuously monitor and indicate by means of cooperatively associated telltales not only their normal operation, but also to discretely indicate when, where and why a failure or malfunction occurred, comprising controls telltale, pilot telltale, fuel telltale, low-fire telltale and high-fire telltale.

3,603,708
FUEL CONTROL SYSTEM AND PARTS THEREFOR OR THE LIKE

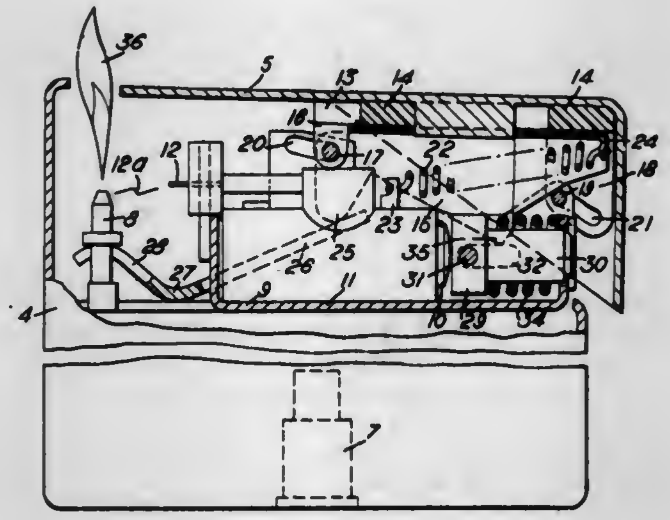
Arthur L. Good, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.
Filed July 9, 1968, Ser. No. 743,479
Int. Cl. F23q *9/08*
U.S. Cl. 431—45 **24 Claims**



This disclosure relates to a fuel control system for a fuel-burning apparatus wherein an electrical switch is adapted to sense the nonignition condition and ignition condition of an electrically operated ignition means for a burner means in such a manner that when the system is initially energized, the switch means effects opening of a first valve means while energizing the ignition means and when the ignition means reaches an ignition condition, the switch means opens a second valve means to permit fuel to flow to the burner means while effectively disconnecting the electrical ignition means from the electrical power source. Such system includes a time delay means which will terminate the operation of the system if after a predetermined time period from the time the first valve means is initially opened, the second valve means does not open.

3,603,709
GAS BURNING CIGARETTE LIGHTER

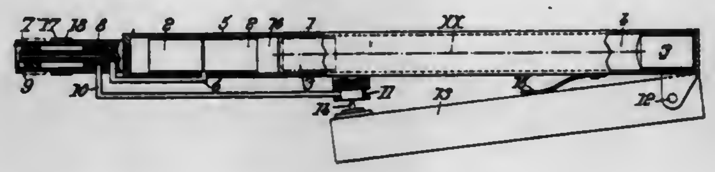
William Retzler, Woodend, Wickham, England, assignor to Tetra Molectric Limited, London, England
Filed Mar. 17, 1969, Ser. No. 807,585
Claims priority, application Great Britain, Mar. 26, 1968, 14552/68
Int. Cl. F23q *2/16, 2/28*
U.S. Cl. 431—131 **3 Claims**



The invention is concerned with a gas-burning cigarette lighter having an ignition mechanism of the kind in which gaseous fuel is ignited in an ignition zone downstream of a burner nozzle by means of a spark generated between a pair of electrodes by the impact of a hammer with a piezoelectric element, one of the hammer and element moving under spring action into engagement with the other of a hammer and element. The mechanism is operated by manual movement of an actuating member from the rest position to an operative position in which part of the actuating member lies outside the confines of the lighter body as defined when the actuating member is in the rest position. The operative movement of the actuating member causes firstly one of the hammer and element to move with the actuating member and away from the other one of the hammer and element to provide or to increase the impact stroke and to cock the mechanism and secondly one of the hammer and element to be released so that it is free to move under the spring action.

3,603,710
LIGHTER HAVING AN IMPROVED PIEZOELECTRIC IGNITION SYSTEM

Gabriel Riveron, Le Vesinet, France, assignor to Societe Flaminaire Marcel Quercia, Paris, France
Filed Oct. 13, 1969, Ser. No. 865,855
Claims priority, application France, Oct. 16, 1968, 170,162
Int. Cl. F23g *2/28*
U.S. Cl. 431—255 **2 Claims**

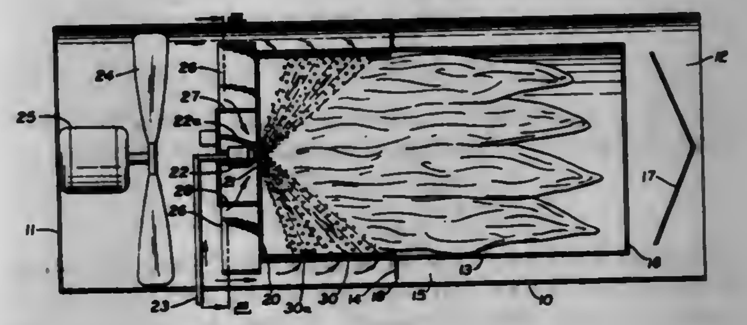


A gas lighter according to the invention has a weight slideable in a cavity within a housing of the lighter, the weight striking an abutment at the end of the cavity to stress a piezoelectric crystal and produce the ignition spark at the burner of the lighter. The weight is adapted to be moved to strike the abutment by gravity upon inverting the lighter, and or by giving the lighter a linear or centrifugal acceleration.

The said weight may also serve to close and open a gas supply valve.

3,603,711
COMBINATION PRESSURE ATOMIZER AND SURFACE-TYPE BURNER FOR LIQUID FUEL

Edgar S. Downs, P.O. Box 242, Worthington, Ohio
Filed Sept. 17, 1969, Ser. No. 858,759
Int. Cl. F23d *11/24*
U.S. Cl. 431—352 **1 Claim**

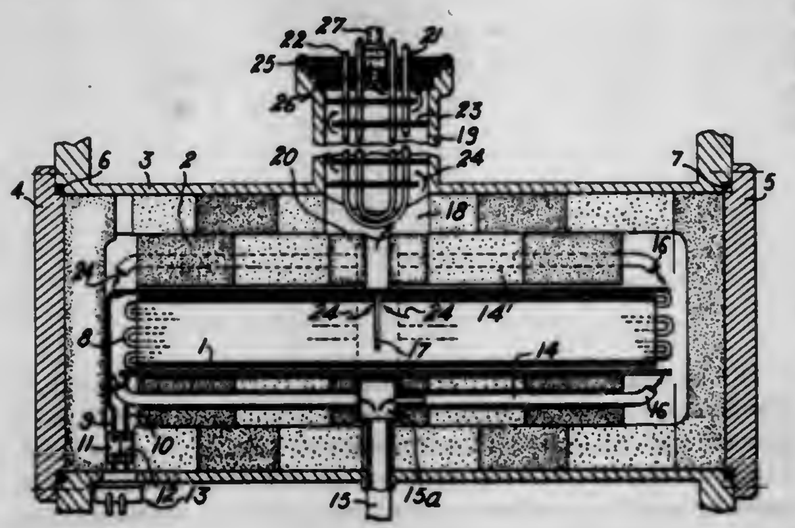


A burner for liquid fuel, such as oil, including a centrally disposed atomizing nozzle of the pressure type which receives the liquid fuel and atomizes it under pressure and sprays the atomized droplets forwardly and outwardly causing a substantial proportion of them to impinge against an annular wall of high porosity and of a nature to give a capillary effect so that the droplets are absorbed immediately and the oil thereof is spread throughout the area of the annular wall which serves as the inner wall of the combustion chamber. Primary air for combustion is supplied directly around the centrally disposed pressure-atomizing nozzle and secondary air for combustion is supplied directly through the porous and absorbent annular wall. A substantial part of the atomized oil, that of the smaller droplets, is burned as it passes from the atomizing nozzle and travels toward the surrounding wall in suspension and the remainder, that of the larger droplets, is burned at the exposed inner surface of the annular wall after it reaches it and is absorbed and spread over the area of the wall for evaporation and combustion.

ELECTRICAL

3,603,712
SINTERING FURNACE

Yves J. M. Masselot, Manosque, and Georges Poujol, Aix-en-Provence, both of, France, assignors to Commissariat L'Energie Atomique, Paris, France
Filed Sept. 23, 1969, Ser. No. 860,186
Claims priority, application France, Sept. 27, 1968, 167878
Int. Cl. H05b *3/62*
U.S. Cl. 13—20 **3 Claims**

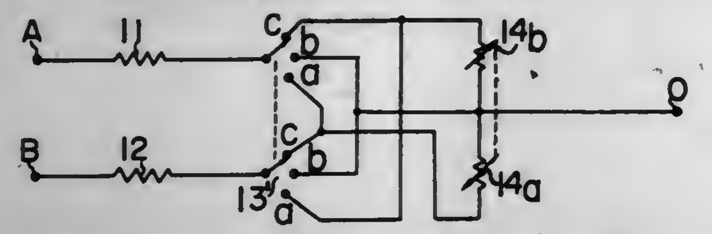


A tube furnace for sintering parts which are loaded with organic products, the internal atmosphere of said furnace being heated to a high temperature by means of an electric resistor. The furnace comprises a tube surrounded by at least one layer of heat-insulating refractory material and an outer metallic casing which is adapted to cooperate at the extremities with leaktight doors. The refractory layer is traversed by a system of pipes through which the sintering gases flow and which serve to heat these latter in the vicinity of the heating resistor prior to injection of the gases at both ends of the furnace tube. A transverse slot is formed at the center of the tube and communicates with a chimney which traverses the refractory layer and outer casing. The chimney is fitted with a system whereby the carbonaceous compounds resulting from the decomposition of organic products during the sintering process are trapped by condensation.

3,603,713
TONE COLOR CHANGING DEVICE FOR ELECTRONIC MUSICAL INSTRUMENTS

Akira Nakada, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka, Japan
Filed Apr. 2, 1969, Ser. No. 812,816
Int. Cl. G10h *1/06, 5/00*
U.S. Cl. 84—1.19 **7 Claims**

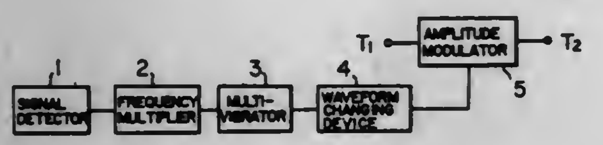
A simple, versatile, and quickly operable tone color changing device comprising a combination of a variable means which may be a multiposition changeover switch or a plurality of variable resistors interlinked with an operable means such as a knee-lever, and a selecting means preferably con-



sisting of a multiposition, double-circuit changeover switch connected with two different tone color signal sources.

3,603,714
METHOD AND SYSTEM FOR GENERATING TREMOLO EFFECTS IN ELECTRONIC MUSICAL INSTRUMENTS

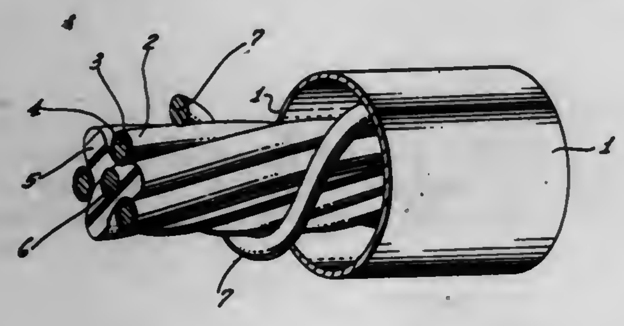
Takeshi Adachi, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Oct. 1, 1969, Ser. No. 862,856
Claims priority, application Japan, Oct. 4, 1968, 43/71863
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.25 **6 Claims**



In an electronic organ having plain keys, tremolo effects or mandolin effects are obtained by a system which comprises a pulse-generating circuit of such construction as to detect lateral movements of the playing keys and produce a detected signal in accordance with the lateral movement, which pulse generating circuit further frequency-multiplies the detected signal and shapes the frequency-multiplied signal into a pulse, which circuit further includes a conversion circuit wherein the waveform of the pulse is converted into a desired form, and an amplitude-modulation circuit wherein the amplitude of a musical signal delivered by the manipulation of the playing keys is modulated in accordance with the waveformed pulse. With this system, tremolo effects or mandolin effects are obtained by the lateral manipulation of the playing keys.

3,603,715
ARRANGEMENT FOR SUPPORTING ONE OR SEVERAL SUPERCONDUCTORS IN THE INTERIOR OF A CRYOGENIC CABLE

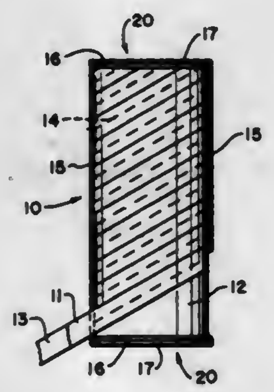
Bernd Eilhardt, Vinnhorst, and Gerhard Karl Ziemek, Hannover, both of, Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Dec. 1, 1969, Ser. No. 881,210
Claims priority, application Germany, Dec. 7, 1968, P 18 13 3?7.6
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 **5 Claims**



Superconductor string elements are disposed in grooves on a carrier extending in helical twist along the carrier axis, the carrier being disposed and coaxially maintained in a tube passed through by cryogenic liquid.

3,603,716
SUPERCONDUCTING R.F. RADIATION SHIELD FOR HIGH Q CIRCUITS

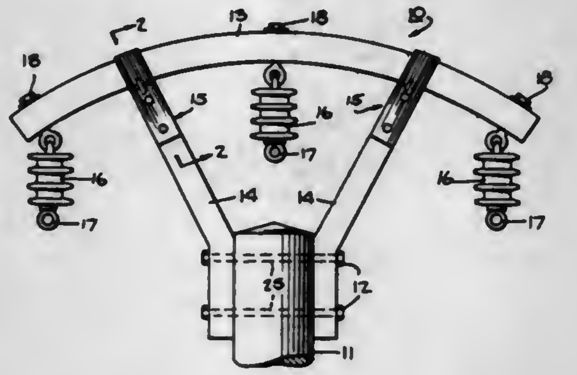
Heiman W. Koren, Huntington, N.Y.; Nicolas Worontzoff, Islip Terrace, N.Y.; Kenneth Siegel, deceased, late of Old Bethpage, N.Y. (Bernice Siegel, executrix), and Yehuda Klinger, Huntington, N.Y., assignors to The United States of America as represented by the Secretary of the Army
Filed June 27, 1969, Ser. No. 845,119
Int. Cl. H05k *9/00*
U.S. Cl. 174—35 TS **8 Claims**



This invention relates to a superconducting R.F. radiation shield and method of constructing said shield. The shield structure is fabricated by wrapping a superconducting ribbon around a cylindrical form with an approximately 50 percent overlap. A thin Teflon tape is employed to insulate successive turns of the ribbon. End plugs may be provided by placing a flat sheet of Teflon across each end covered by a wide sheet of superconducting foil thereby providing an improved R.F. radiation shield for enclosing a superconducting circuit.

3,603,717
CROSSARM ASSEMBLY

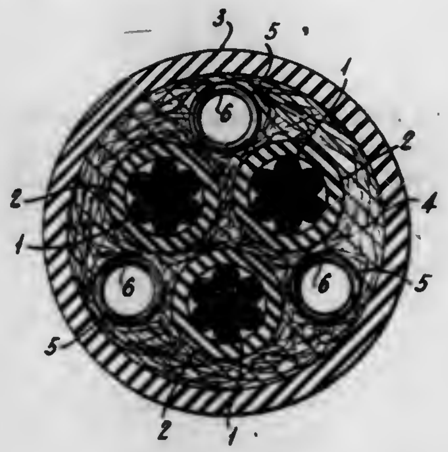
Arthur L. Scott, Columbia, S.C., assignor to C/P Corporation, Columbia, S.C.
Filed Jan. 7, 1970, Ser. No. 1,175
Int. Cl. H02g *7/20;* **E04h** *12/24*
U.S. Cl. 174—45 R **14 Claims**



The crossarm assembly is made of electrically nonconductive noncorrosive materials within an arcuate crossarm and a pair of legs for supporting the arcuate crossarm on a pole. Channel-shaped brackets are used to secure the arcuate crossarm to each leg while a dowel pin is inserted within mating recesses of the crossarm and the support legs in order to position the crossarm and to resist the loading of the crossarm.

3,603,718
ELECTRICAL CABLE STRUCTURE

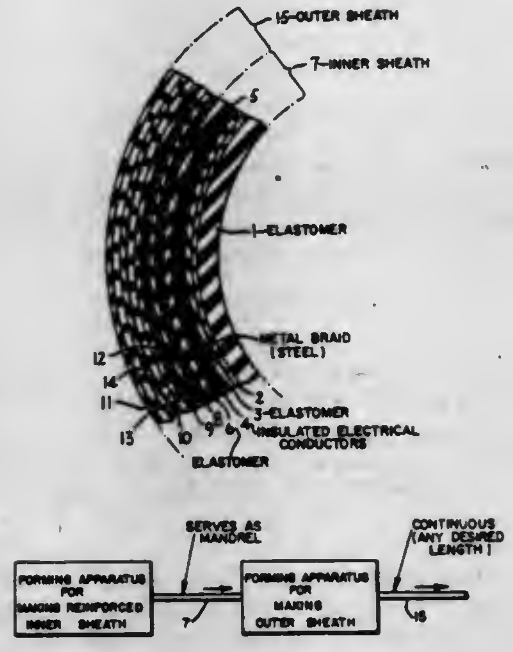
Rudolf Karl Heinz Gedenk, Celle, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany
Filed Apr. 10, 1970, Ser. No. 27,342
Claims priority, application Germany, Apr. 14, 1969, P 19 18 841.1
Int. Cl. H01b *7/00*
U.S. Cl. 174—47 **7 Claims**



Electrical cable structure that is adapted for downhole oil well use or for similar conditions. There are open channels under the sheath with gas permeable walls for dissipating accumulation of hydrocarbon gas.

3,603,719
FLEXIBLE TUBES HAVING INNER SHEATH SERVING AS MANDREL FOR OUTER SHEATH AND METHOD OF MAKING SAME

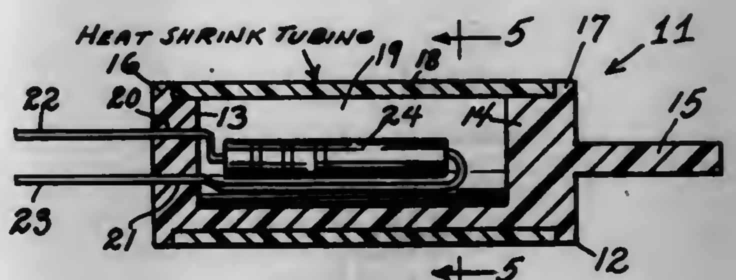
Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Establissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, France
Filed Oct. 13, 1969, Ser. No. 865,861
Claims priority, application France, Oct. 23, 1968, 171,116
Int. Cl. F16l *11/08, 11/12;* **B29d** *23/00*
U.S. Cl. 174—47 **11 Claims**


15—OUTER SHEATH
7—INNER SHEATH
5
1—ELASTOMER
METAL BRAID (STEEL)
12
14
11
13
10
9
6
2
3—ELASTOMER
4 INSULATED ELECTRICAL CONDUCTORS
ELASTOMER
SERVES AS MANDREL
CONTINUOUS (ANY DESIRED LENGTH)
FORMING APPARATUS FOR MAKING REINFORCED INNER SHEATH
7
FORMING APPARATUS FOR MAKING OUTER SHEATH
15

A flexible tube is formed with an outer sheath comprising reinforcing steel cords helically wound and distributed in an even number of layers and an inner sheath comprising a reinforcing braid of steel wires, the wires being in spaced-apart relation to each other. The inner sheath resists crushing and twisting and serves as a mandrel for the manufacture of the outer sheath.

3,603,720
HOUSED ELECTRONIC COMPONENT ASSEMBLY

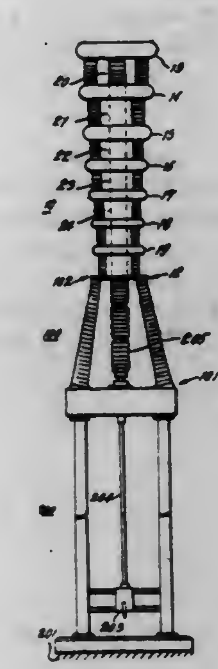
Lee C. Rable, 4602 S.W. Rose St., Seattle, Wash.
Filed Aug. 21, 1970, Ser. No. 65,994
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 R **9 Claims**



A holder consisting of a body of insulating material having a cavity to receive an electronic component. The body has holes in its end wall through which the wire terminals of the component project to act as terminal prongs engageable in a female socket. The body is surrounded by a length of heat shrink tubing to enclose the component. The body has one flat longitudinal wall perpendicular to the plane of the two projecting prongs so as to identify the polarity of the prongs.

3,603,721
INSULATOR COLUMN ARRANGEMENTS FOR A HIGH POWER ELECTRICAL DISTRIBUTION SYSTEM

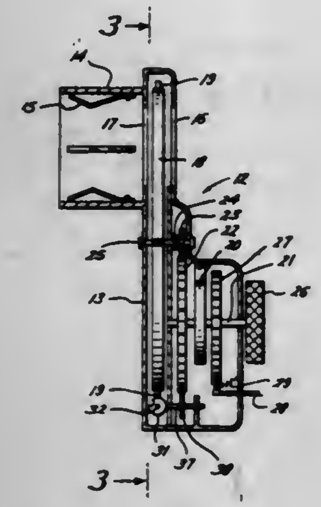
Arem Foti, and Roy H. Albright, both of Greensburg, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Feb. 9, 1970, Ser. No. 9,525
Int. Cl. H01b *17/48*
U.S. Cl. 174—141 R **9 Claims**



An arrangement for supporting electrical switches, buses and the like in a high power distribution system includes a first insulator column capacitively graded along its length so as to provide a substantially uniform voltage distribution from the energized switch or bus, etc., along the length of the column, and a second insulator column to provide the mechanical support for the electrical apparatus and for the first column. When so arranged, the two columns present an overall hourglass appearance and simultaneously exhibit desirable electrical and structural characteristics.

3,603,722
COLOR TELEVISION SYSTEM

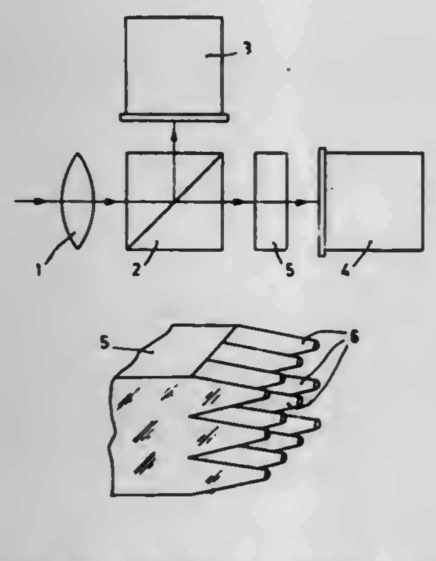
Olin L. Graham, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed June 26, 1970, Ser. No. 50,206
Int. Cl. H04n *9/02, 9/06, 9/34*
U.S. Cl. 178—5.2 R **11 Claims**



A spring-driven optical filter wheel is rotatably mounted in front of the lens of a monochrome television camera. The wheel includes red, green and blue filter sectors and an opaque sector, the latter producing a completely black frame in the resulting video signal. The picture-reproducing apparatus located at the receiving station includes a monochrome television monitor having a second optical filter wheel rotatably mounted in front of the picture tube thereof. A counter counts the vertical sync pulses in the received video signal and advances this second filter wheel at the same rate as are occurring the completely single color frames in the video signal. A black frame detector detects the occurrence of a black frame and synchronizes the counter. A gate circuit is controlled by the counter to pass only completely single color video frames to the picture tube. A color film camera exposes a given segment of color film to the individual red, green and blue images following a given black frame to record a full color image on such segment.

3,603,723
COLOR TELEVISION CAMERA

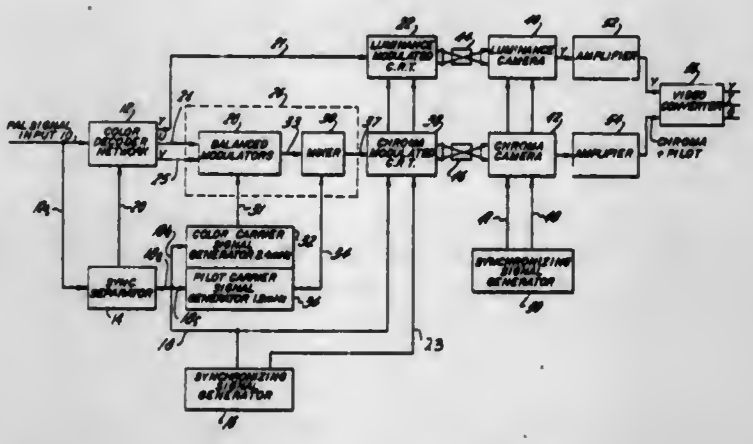
Sing Liong Tan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 29, 1968, Ser. No. 733,108
Claims priority, application France, June 19, 1967, 110938
Int. Cl. H04n *9/08, 3/22*
U.S. Cl. 178—5.4 R **6 Claims**



concentrating color television camera employing at least two camera tubes one of which provides a luminance signal, and the other of which provides chrominance signals. A light-beam splitter directs a portion of the light from the image to the photosensitive layer of the luminance camera tube in which a potential image corresponding to the visible image is formed and another portion to the chrominance camera tube for producing chrominance signals. Between the light-beam splitter and chrominance camera tube, a member capable of concentrating the light on a given number of areas evenly distributed throughout the surface of the photosensitive layer is provided. Scanning of the photosensitive layer by an electron beam thus supplies a chrominance signal which transmits the moving parts of the scene substantially without inertia.

3,603,724
COLOR TELEVISION CONVERSION APPARATUS

Renville H. McMann, Jr., New Canaan, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed June 26, 1969, Ser. No. 836,756
Int. Cl. H04n *5/02*
U.S. Cl. 178—5.4 C **.8 Claims**



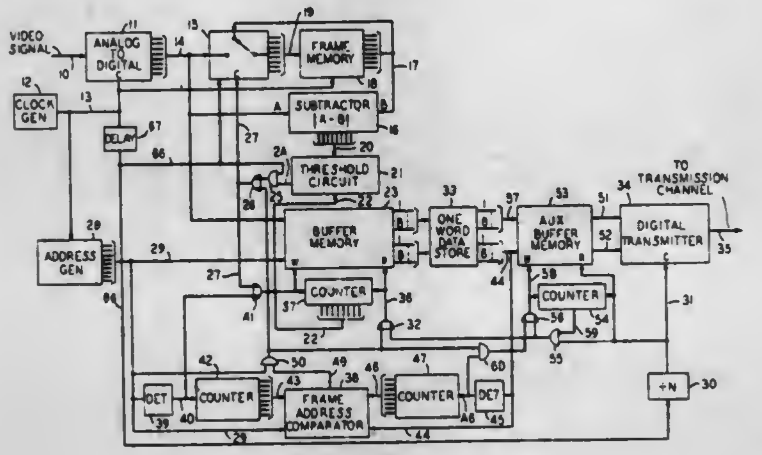
As described herein, PAL Color television signals having a fixed frame frequency are supplied to a color decoder network which recovers and supplies as separate outputs luminance and chrominance representative signals. A pair of balanced modulators are provided for modulating a high frequency color carrier signal in accordance with the chrominance signals and a mixer circuit combines the modulation sidebands of the color carrier signal with a pilot signal having a frequency which bears a fixed relation to the color carrier frequency. The luminance signals and combined modulation sidebands and pilot signal are then supplied to a pair of cathode-ray tubes and the displays are scanned by a pair of cooperating cameras operating at a predetermined frame frequency. The luminance and chrominance signals reproduced by the cameras are then supplied to a video converter network wherein the pilot signal is utilized to extract the modulation from the modulated carrier sidebands to provide color difference signals and the color difference signals are combined with the luminance signals to produce standard NTSC luminance and chrominance signals.

3,603,725
CONDITIONAL REPLENISHMENT VIDEO SYSTEM WITH REDUCED BUFFER MEMORY DELAY

Cassius Chapin Cutler, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 15, 1970, Ser. No. 3,069
Int. Cl. H04n *7/12*
U.S. Cl. 178—6 **12 Claims**

Amplitude samples from a video signal for an entire frame are stored in a frame memory. Each new sampled amplitude of the video signal is compared with a previously stored amplitude corresponding to the same spatial point in the video frame. If the difference between the two amplitudes exceeds a threshold value, the new amplitude replaces the old sample in the frame memory and is written into a buffer memory apparatus for storage prior to transmission to a receiving location. An address word is generated for each sample in order to indicate by its value the location of its corresponding sample within the video frame. The address word for each selected sample is also written into the buffer memory which

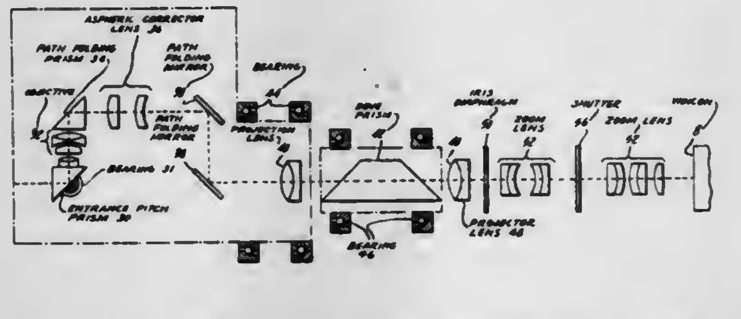
is read on a first-in-first-out basis. The address of each new sample is compared with the address of a sample being held by the buffer memory apparatus in readiness for transmission to the receiving location. If the two addresses being compared correspond to the same spatial point in the video frame, the new sample is written into the buffer memory and



the old sample is read out of the buffer memory even though the latter sample may not be coupled by the buffer memory apparatus to a transmitter for transmission to the receiving location. As a result, less delay is introduced by the buffer memory apparatus since the most recent amplitudes for the spatial points are coupled to the transmitter.

3,603,726
ELECTRO-OPTICAL SIMULATOR SYSTEM

Donovan L. Garber, North Canton; James N. Seidelle, Cuyahoga Falls, Ohio, and John R. Miles, Glenview, Ill.
Filed Jan. 22, 1969, Ser. No. 793,147
Int. Cl. G02b *15/00;* **G09b** *9/08;* **H04n** *7/18*
U.S. Cl. 178—6 **2 Claims**

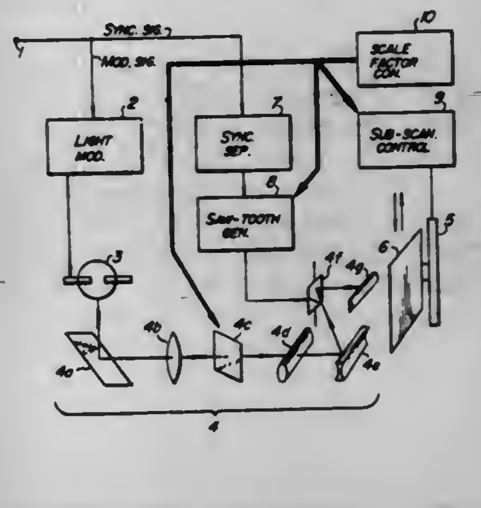


In an aircraft simulator training device an assembly of computer controlled movable lens and television camera-and-display combinations is arranged to simulate the effects of yaw, pitch, roll, and changes in azimuth and range.

3,603,727
VARIABLE SCALE SCANNING SYSTEM FOR IMAGE REPRODUCTION

Masao Kinugawa, Chofu-shi; Masachika Ikeda, Mitaka-shi, and Yutaka Tanaka, Tokyo, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan and Matsushita Graphic Communication Systems Inc.
Filed Mar. 24, 1969, Ser. No. 809,793
Claims priority, application Japan, Mar. 29, 1968, Mar. 29, 1968, Mar. 29, 1968, 43/20,208; 43/20,209; 43/20,210
Int. Cl. H04n *1/04, 1/24, 1/32*
U.S. Cl. 178—6.7 R **3 Claims**

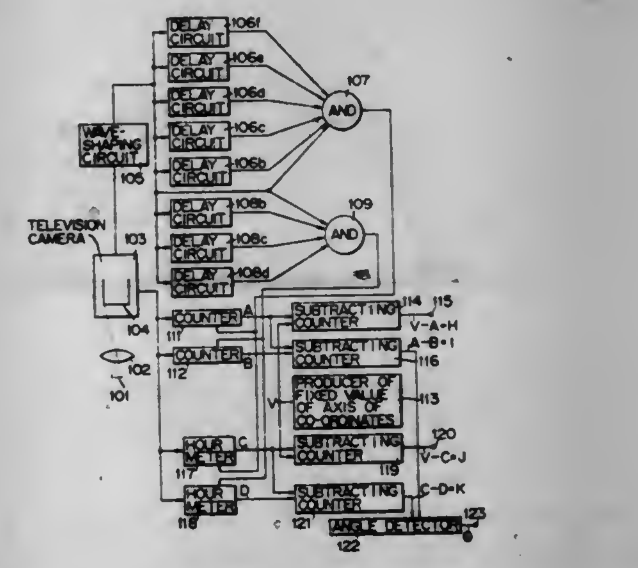
In an apparatus wherein a first record is scanned to be converted to an electric signal which is transmitted to a remote place where a second record is reproduced from said electric signal by scanning a recording medium with light rays emanating from a light source which is intensity modulated with said electrical signal, a variable scanning system using a vibrating mirror for effecting the main-scanning, wherein the scanning width in the main-scanning direction is changed by changing the vibration range (amplitude) of said vibrating mirror, and the subscanning speed and the size of the



scanning light spot are controlled corespondingly to change the scanning width in the subscanning direction, thereby producing a received picture (recorded or produced picture) which is magnified or reduced as desired.

3,603,728
POSITION AND DIRECTION DETECTING SYSTEM USING PATTERNS

Yoshiaki Arimura, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Dec. 26, 1968, Ser. No. 786,882
Claims priority, application Japan, Dec. 28, 1967, 42/83698/
Int. Cl. G06k *9/12;* **H04n** *5/30, 7/18*
U.S. Cl. 178—6.8 **4 Claims**

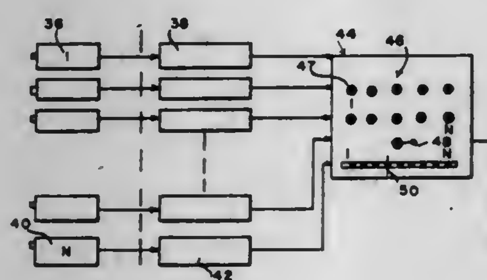


A fine object having patterns on its predetermined surface portions is scanned to produce an image signal containing a pattern signal component. The shape of each pattern is such that the pattern signal component consists of pulses of a predetermined width, interval and number. The image signal is converted and further passed through operation circuits to detect the direction and position of the fine object.

3,603,729
MOTION DETECTOR SYSTEM WHICH SAMPLES ONLY A PRESELECTED AREA

Martin Sperber, Cranford, N.J., assignor to Squires-Sanders, Inc.,, Liberty Corner, N.J.
Filed Mar. 13, 1969, Ser. No. 807,039
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **18 Claims**

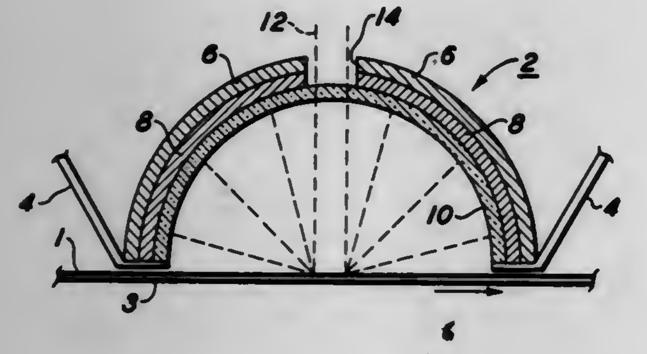
A selected part of a television surveillance camera field is selected for motion detection by variable *x–y* selection circuits; each successive signal sweep of this sample area is alternately fed to one of a pair of capacitive memory circuits the output of which are supplied to a differential comparator circuit to detect changes in the signals between successive sweeps of the selected area, a change in signal producing an output from the differential comparator which activates an alarm.



3,603,730
PHOTORECEPTOR ASSEMBLY

John W. Weigl, Webster, N.Y., and Hazen L. Hoyt, III, Glendora, Calif., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 6, 1969, Ser. No. 831,058
Int. Cl. H04n *1/04*
U.S. Cl. 178—7.1 **9 Claims**



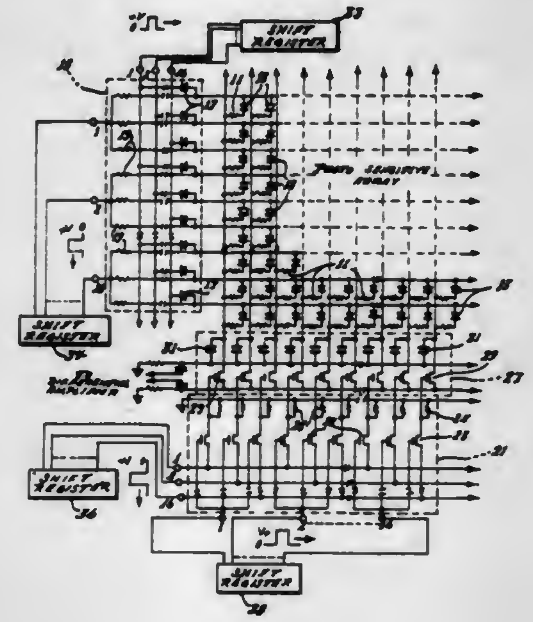
A photoreceptor assembly wherein a sandwich structure of electrode-photoconductor-electrode is positioned adjacent a document to receive reflections therefrom as a scanning beam passing through an elongated slot in the structure is swept across the document which is moved in a direction transverse to the slot.

3,603,731
DIGITAL SCANNING MOSAIC PHOTOSENSING SYSTEM

Paul K. Weimer, Princeton, N.J.

Filed Aug. 27, 1969, Ser. No. 853,420
Int. Cl. H04n *3/12*
U.S. Cl. 178—7.1 R **3 Claims**

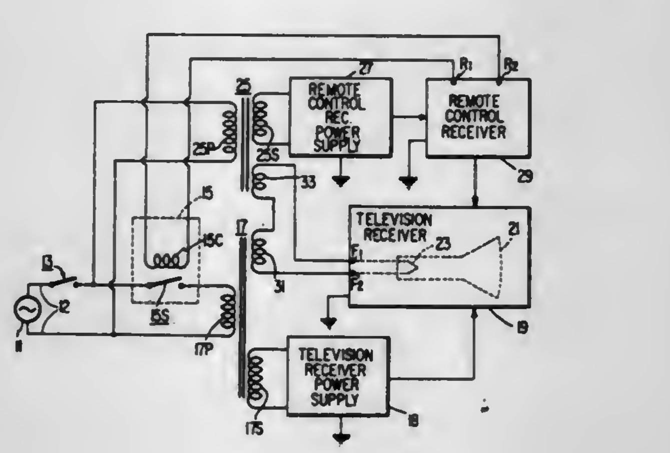
A photosensitive array together with field effect transistors are coupled to the array's columns for video coupling; Schottky-barrier diodes are connected to the rows for vertical decoding, and field effect transistors are connected to the columns for horizontal decoding, the vertical and horizontal decoders being activated in sequence by two pairs of different speed shift registers. The diodes and transistors are formed by thin film evaporation, the diodes having a cadmium sulfide-tellurium interface and the transistors using a cadmium-selenide semiconductor. Double gate field effect transistors can be used as combination decoders and video couplers.



3,603,732
INSTANT-ON CIRCUITRY FOR SOLID STATE TELEVISION RECEIVERS

John Barrett George, Indianapolis, Ind., assignor to RCA Corporation

Filed June 5, 1969, Ser. No. 830,645
Int. Cl. H04n *3/16*
U.S. Cl. 178—7.5 R **5 Claims**

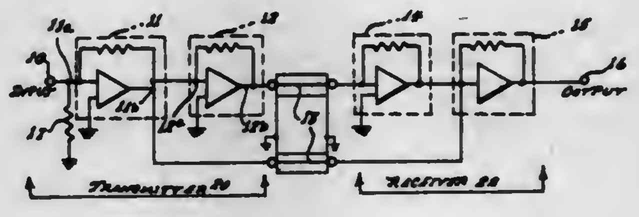


In a solid state television receiver, the primary windings of a main and an auxiliary transformer are both coupled across an AC input line. A single-pole, single-throw switch interposed in one conductor of AC input line subsequent to auxiliary transformer takeoff point permits deenergization of main transformer primary winding without interrupting energization of auxiliary transformer primary winding. One secondary winding of main transformer provides AC input to television receiver power supply. Kinescope filament is energized by circuit comprising a secondary winding of auxiliary transformer in series with an additional secondary winding of main transformer. When switch is closed, receiver is "on" with power supply operative and kinescope filament receiving full rated voltage comprising sum of secondary contributions. When switch is open, receiver is in "standby" condition—with power supply inoperative, but kinescope filament energized at reduced level representing contribution of auxiliary transformer secondary alone. In remote control embodiment, auxiliary transformer has additional secondary winding providing AC input to remote control receiver power supply.

3,603,733
PUSH PULL AMPLIFIER DRIVEN BALANCED TRANSMISSION SYSTEM

Robert B. Alterman, Monterey Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 15, 1969, Ser. No. 841,941
Int. Cl. H04l *25/08*
U.S. Cl. 178—68 **3 Claims**

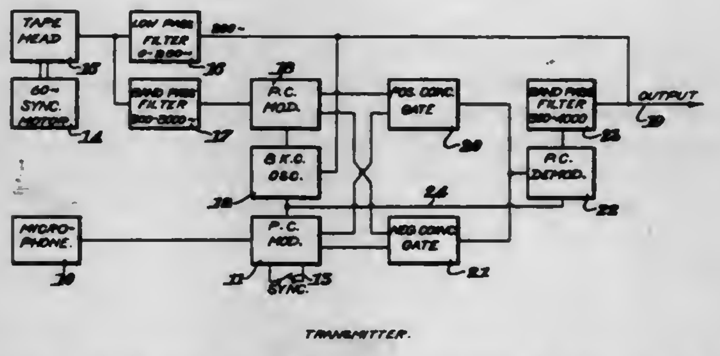


A direct-coupled long-range data transmission system in which each data transmission channel includes a single-ended input data transmitter and single-ended output data receiver interconnected by a balanced pair of transmission line and driven by push-pull amplifiers.

3,603,734
SECRET SIGNALLING SYSTEM

Robert C. Woodhead, Ottawa, Ontario, Canada, assignor to The Minister of National Defense of Canada

Filed Feb. 24, 1950, Ser. No. 146,015
Int. Cl. H04m *1/68*
U.S. Cl. 179—1.5 C **2 Claims**

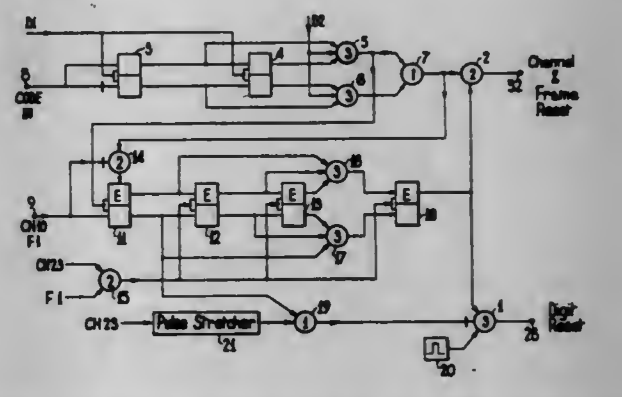


Secret signalling apparatus comprising a source of a message signal to be transmitted, means for producing a transmitter random signal and a transmitter synchronizing signal from a transcription, means for producing a transmitter pulse code sampling frequency having a predetermined phase and frequency relationship with the transmitter synchronizing signal, a first and a second transmitter pulse code modulator each responsive to said sampling frequency and connected respectively to pulse code modulate the transmitter random signal and to pulse code modulate the message signal thereby determining the polarity of each of said transmitter random signal and said message signal at any instant, means adapted to compare the pulse code modulated message signal with the pulse code modulated transmitter random signal and to produce a pulse code modulated transmitter resultant signal comprising a pulse for each occurrence of a predetermined polarity relationship between the pulse code modulated message signal and the pulse code modulated transmitter random signal, a pulse code demodulator responsive to said sampling frequency and connected to demodulate the transmitter resultant signal, transmitter means arranged to transmit the transmitter synchronizing signal and the pulse code demodulated transmitter resultant signal to a receiver, receiver filter means adapted to separate the transmitter synchronizing signal from the pulse code demodulated transmitter resultant signal, means for producing a receiver random signal and a receiver synchronizing signal from a duplicate of said transcription, means for unison-synchronizing the receiver synchronizing signal with the received transmitter synchronizing signal, means responsive to the transmitter synchronizing signal and adapted to produce a receiver pulse code sampling frequency having the same phase and frequency relationship with the received transmitter synchronizing signal as the transmitter sampling frequency has with the transmitter synchronizing signal, a first receiver pulse code modulator responsive to the receiver pulse code sampling frequency and connected to pulse code modulate the receiver random signal and thereby to determine its polarity at any instant, a second receiver pulse code modulator responsive to the receiver pulse code sampling frequency and connected to pulse code modulate the pulse code demodulated transmitter resultant signal and thereby to determine its polarity at any instant so producing a pulse code modulated receiver interim signal, means adapted to compare the pulse code modulated receiver interim signal with the pulse code modulated receiver random signal and to produce a pulse code modulated receiver resultant signal comprising a pulse for each occurrence of said predetermined polarity relationship between the receiver interim signal and the pulse code modulated receiver random signal, and a pulse code demodulator arranged to pulse code demodulate the receiver resultant signal.

3,603,735
SYNCHRONIZING ARRANGEMENT FOR A PULSE-COMMUNICATION RECEIVER

Donald Jack Cleobury, Hinckley, England, assignor to The General Electric Company Limited

Filed July 7, 1969, Ser. No. 839,579
Claims priority, application Great Britain, July 5, 1968, 32242/68
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **9 Claims**



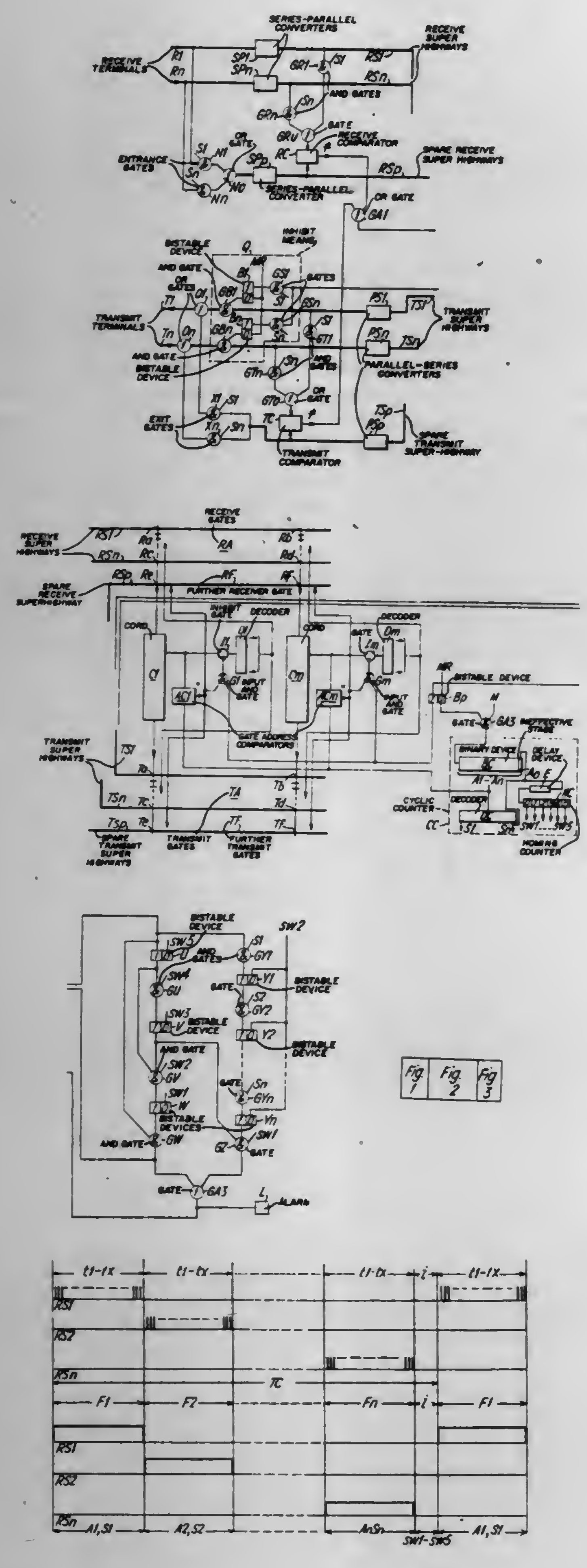
A pulse-code-modulation synchronizing arrangement for a system using a synchronizing pulse pattern having a first simple portion which occurs commonly at random in the transmitted signal and a second more extensive portion which is highly improbable at random. The receiver, in seeking synchronism, resets its phase at each genuine and false occurrence of the simple portion. Synchronism is confirmed if no further reset occurs during the extent of the second portion (which does not contain the simple portion). The above resetting is on a channel basis: digit synchronism is achieved by slipping a digit periodically with sufficient intervening time to obtain overall synchronism by channel resetting if the digit phase is in fact correct. Loss or absence of synchronism is rapidly determined by the closely repeated presence of the common first portion.

3,603,736
TELECOMMUNICATION EXCHANGES

Terence David Morroll, Beeston, England, assignor to Ericsson Telephones Limited, Ilford, England

Filed Sept. 5, 1969, Ser. No. 855,524
Claims priority, application Great Britain, Sept. 24, 1968, 45406/68
Int. Cl. H04j *3/14*
U.S. Cl. 179—15 BF **4 Claims**

A telecommunication exchange having groups of highways carrying pulse code modulated signals and, for each group, a



working superhighway shared by signals carried on the highways of the group, which exchange includes a working spare superhighway to which signals are applied simultaneously with their application to the working superhighways and fault detection means responsive to a fault on a working superhighway or on the working spare superhighway to suppress transmission over the faulty superhighway.

3,603,737

CALL SYSTEM FOR TIME-DIVISION, DELTA-CODE SWITCHING NETWORK

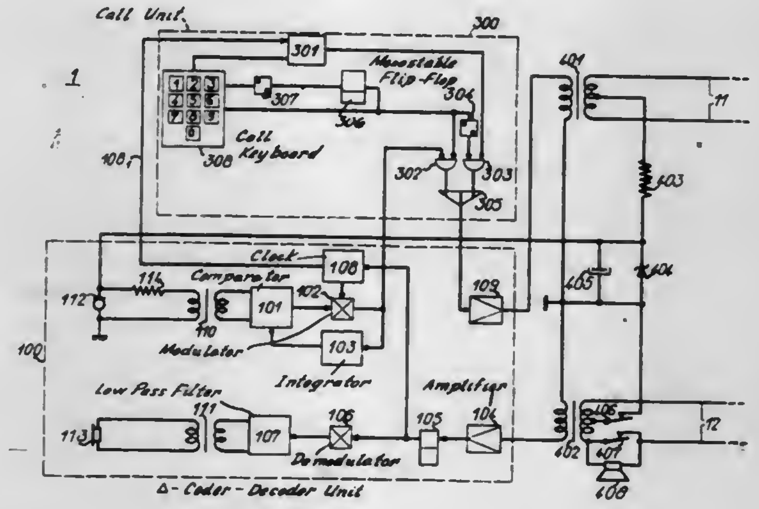
Maurice F. Le Dorh, 34 rue Branly, Perros-Guirec; Yves H. Le Goffic, Pavillon no. 3 Saint Roch, Lannion, and Fernand R. Arnouat, Pen an Rue, Lannion, all of, France

Filed Sept. 15, 1969, Ser. No. 857,687

Claims priority, application France, Sept. 13, 1968, Jan. 24, 1969, 166,157;69 01448

Int. Cl. H04j *3/12*

U.S. Cl. 179—15 AP **3 Claims**



Call system for time-division Δ-code switching system in which the telephone sets comprise a Δ-modem and a keyboard arrangement sending the call numbers expressed in a binary code. The call number comprises a variable call pulse combination, two fixed pulse combinations framing the pulse code combination and a predetermined number of bits of the same value forming a group preceding the call pulse combination and identifying it. As the bits the call pulse and framing pulse combinations and the bits of the identifying group on the one hand have the same frequency as the Δ-code pulses generated by the Δ-modem on the other hand, means must be provided for separating them. In the switching network a counter counts the digits of the identifying group and controls a switching circuit which directs towards two separate ways the Δ-code pulses and the bits of the call number.

3,603,738

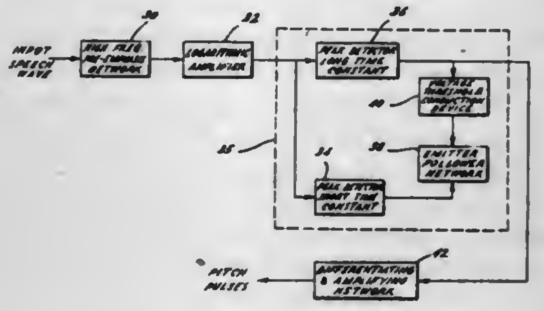
TIME-DOMAIN PITCH DETECTOR AND CIRCUITS FOR EXTRACTING A SIGNAL REPRESENTATIVE OF PITCH-PULSE SPACING REGULARITY IN A SPEECH WAVE

Louis R. Focht, Huntington Valley, Pa., assignor to Philco-Ford Corporation

Filed July 7, 1969, Ser. No. 862,101

Int. Cl. G10l *1/00*

U.S. Cl. 179—1 SA **9 Claims**



A time-domain detector circuit for producing a signal representative of the pitch pulses of a speech wave. The circuit comprises two peak detectors having two different time constants to which the input speech wave is supplied. The output of the shorter-time-constant detector is supplied to an isolating stage (e.g., an emitter follower network). The output of the longer-time-constant peak detector is connected, via a zener diode, to the output terminal of the emitter-follower network. A differentiator circuit is connected to the output terminal of the longer-time-constant detector. When the potential difference across the zener diode rises to a sufficiently high value, the zener-diode conducts, enabling the emitter follower network to load the longer-time-constant peak detector. The shorter-time-constant peak detector detects the pitch pulses and supplies them to the output terminal of the longer-time-constant detector. When the amplitude level of the speech wave is relatively constant, the zener diode isolates the output of the shorter-time-constant detector from the output terminal of the other detector and only the long-time-constant detector supplies an output signal thereto.

One circuit includes an input speech wave, a clipper, ramp generator, peak detector and low-pass filter connected in series. Another circuit includes pitch pulses, a pulse width-to-amplitude converter, a sample-and-hold circuit, a differentiator and a second sample-hold circuit connected in series with delayed pitch pulses timing each sample and hold circuit.

3,603,739

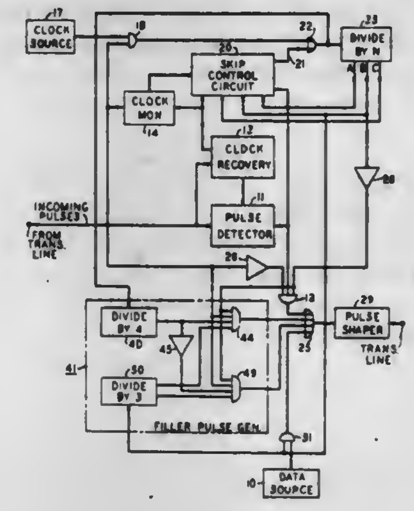
DIGITAL TRANSMISSION SYSTEM EMPLOYING IDENTIFIABLE MARKER STREAMS ON PULSES TO FILL ALL IDLE CHANNELS

James O. Edson, Mansfield Township, Warren County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1969, Ser. No. 885,825

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 AL **4 Claims**



N-digital-sources distributed along a one-way transmission system are multiplexed by having the first such source insert its information in the first time slot of a frame which is defined by apparatus associated with the first source and predetermined pulse signals in each of the other time slots. Apparatus associated with the next source along the transmission system recognizes the location of the second time slot of the frame by examining the received signal to ascertain the existence of one of the predetermined signals in one time slot and a signal not having the characteristics of one of said predetermined signals in the preceding time slot. The apparatus associated with the second source then deletes the predetermined signal from the second time slot and inserts its information in that slot. This process is repeated by each source along the transmission line, with each source inserting its information in the next succeeding time slot.

3,603,740

METHOD AND MEANS FOR RINGING A TELEPHONE SUBSET

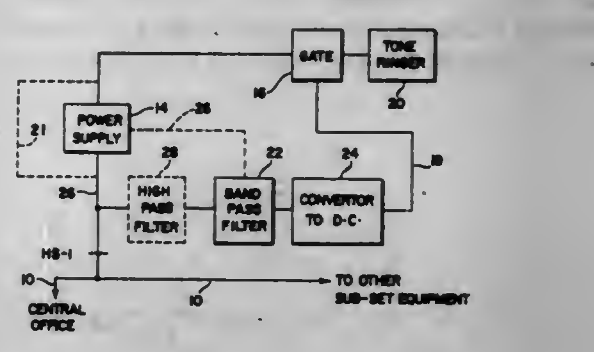
Ronan Malcolm Cambridge, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Aug. 18, 1969, Ser. No. 850,894

Int. Cl. H04m *1/26, 1/50*

U.S. Cl. 179—84 UF **6 Claims**

A gate in the power circuit to the ringing device of a telephone subset is connected to the line from central office and is designed to be opened by signals within a predetermined frequency range appearing on said line.



3,603,741

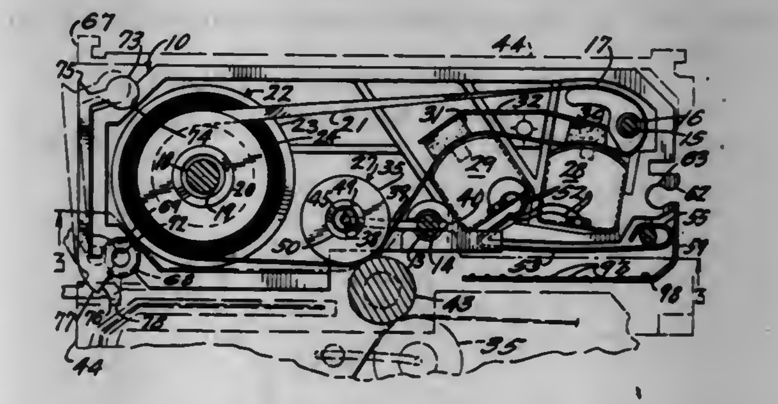
TAPE CARTRIDGE ASSEMBLY HAVING LATCH, PRESSURE ROLLER, TRANSDUCERS AND TERMINALS INCORPORATED THEREIN

John W. Deed, Garden Grove, Calif., assignor to Master Specialties Company, Costa Mesa, Calif.

Filed Feb. 24, 1969, Ser. No. 801,449

Int. Cl. G11b *23/06;* **B65h** *17/20*

U.S. Cl. 179—100.2 Z **3 Claims**



A tape cartridge for an endless magnetic sound-reproducing tape. A record-playback head and an erase head are mounted in the cartridge and are electrically connected to terminals which extend partially along one side and the end of the cartridge. The endless tape extends around a pressure roller assembly which is biased to project from a side of the cartridge for engaging a drive capstan. The pressure roller assembly includes a self-aligning bearing to assure maximum contact with the capstan. Two cartridge holders can be mounted side-by-side to receive two cartridges for simultaneously driving two tapes from opposite sides of the capstan, and a number of the cartridge holders may be stacked for simultaneously driving a number of tapes from the single capstan. Each cartridge holder includes electrical contacts aligned to engage the cartridge terminals and a snap member for holding the cartridge in place. The cartridge further includes a handle to facilitate removal from the cartridge holder.

3,603,742

REPRODUCING SYSTEM UTILIZING ROUND FLEXIBLE MAGNETIZABLE RECORDING CARRIER FOILS

Eduard Schuller, Berlin, Germany, assignor to Telefunken Patentverivertungs G.m.b.H., Ulm/Danube, Germany

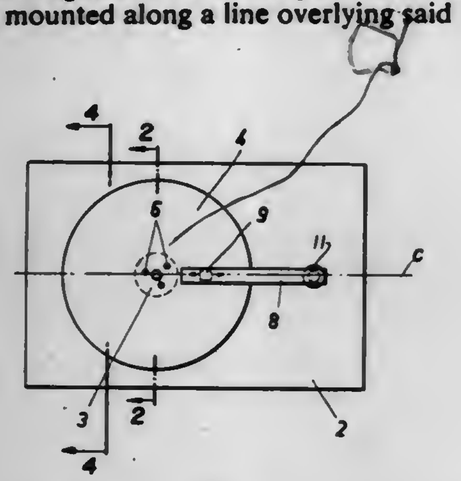
Filed Feb. 27, 1969, Ser. No. 802,858

Claims priority, application Germany, Feb. 29, 1968, P 15 74 491.9

Int. Cl. G11b *5/60, 5/82;* **G01d** *15/28*

U.S. Cl. 179—100.2 P **19 Claims**

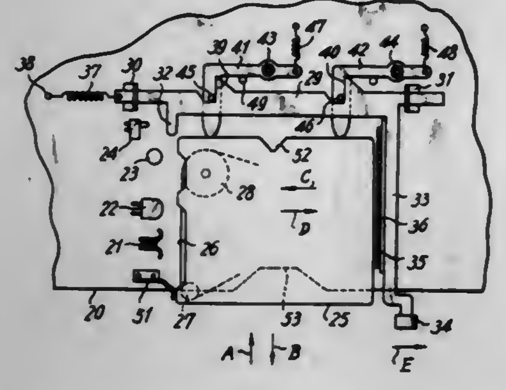
A reproducing system for recording or playback of the type in which a stationary plate is mounted beneath a rotating round flexible foil type record and the stationary plate is formed with an upwardly arched surface with an elongated crest which, when the record is at rest, underlies a diameter of the record. Transducer means which may be either means for placing recording indicia on the carrier, or means for forming playback signals from indicia previously recorded on the carrier are mounted along a line overlying said crest. The air pressure between the record and the arched surface is reduced by air currents generated during rotation of the record. This draws the flexible record into a stiffened curved position relative to the plate, and thus better positions the record relative to the transducer means.



3,603,743
TAPE-CARTRIDGE-POSITIONING APPARATUS

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-To, Japan

Filed Nov. 25, 1969, Ser. No. 879,870
Int. Cl. G11b *23/04*
U.S. Cl. 179—100.2 Z **9 Claims**



A tape-cartridge-positioning apparatus for endless magnetic tape cartridge player, including a reciprocating lever member slidably supported on a deck in a player housing and biased by a tension spring in one direction, a stopper means retaining the reciprocating lever member at a first position, and a guide means guiding the cartridge.

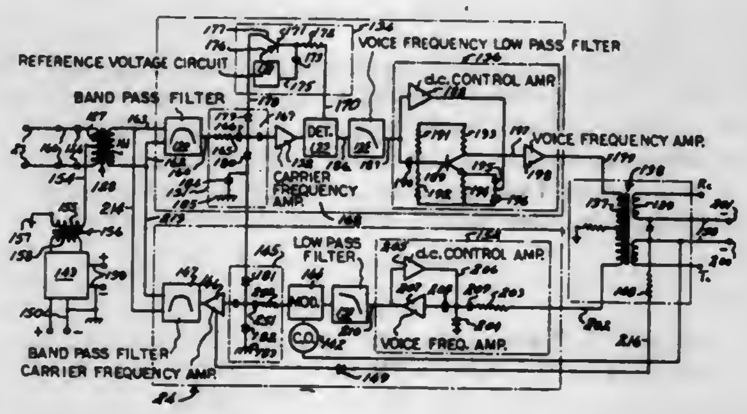
The stopper means is operated by the cartridge which is laterally inserted in the player housing to release retention of the reciprocating lever member whereby the latter is moved from the first position to a second position by the bias of the spring. When the reciprocating lever member is moved from the first position to the second position, a portion of the reciprocating lever urges the rear edge of the cartridge to allow the cartridge is thus guided by he guide means and moved to positioned at the playing position.

3,603,744
LINE TAP UNIT FOR TELEPHONE SYSTEM

Lester Q. Krasin, Dallas, and Clifford E. Greene, Fort Worth, both of, Tex., assignors to Superior Continental Corporation

Division of Ser. No. 491,106, Sept. 29, 1965, Pat. No. 3,475,561.
Filed July 7, 1969, Ser. No. 839,419
Int. Cl. H04b *3/24*; **H04m** *1/60*
U.S. Cl. 179—170.8 **9 Claims**

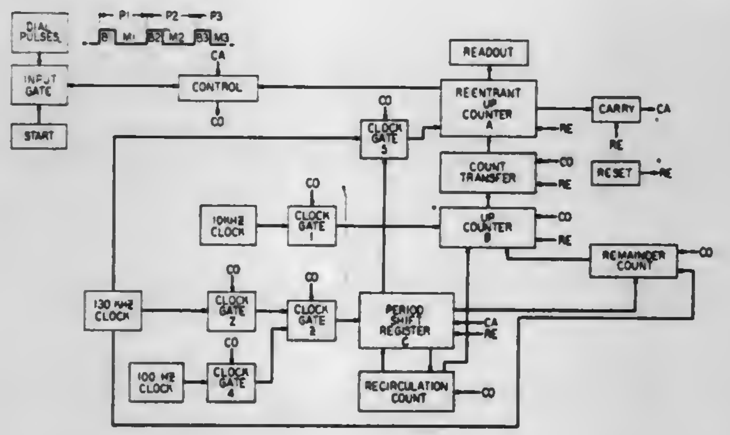
A line tap unit for use in combination with telephone facilities including a central office station having a plurality of central office terminals comprised of channel units with receiver and transmitter sections from which extend a two-conductor transmission line. The line tap units connected to each transmission line at locations remote from the central office terminal include a receiver section operable at the same frequency as a transmitter section of one central office channel unit and a transmitter section operable at another frequency which is the same frequency as a receiver section of the same central office channel unit. Each line tap unit has means for extracting low frequency power from the transmission line to operate its receiver and transmitter sections and coordination control means responsive to the signal received from its central office terminal for automatically adjusting the signal output of its transmitter section so that all signals arrive at a central office terminal at the same level. The coordination control means includes regulator means for comparing a received signal against a fixed reference and for producing a feedback signal proportional to the difference between the received signal and the fixed reference.



3,603,745
MEASUREMENT OF AVERAGE DUTY CYCLE

Henry Mann, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1969, Ser. No. 879,282
Int. Cl. H04m *3/08*
U.S. Cl. 179—175.2 A **16 Claims**

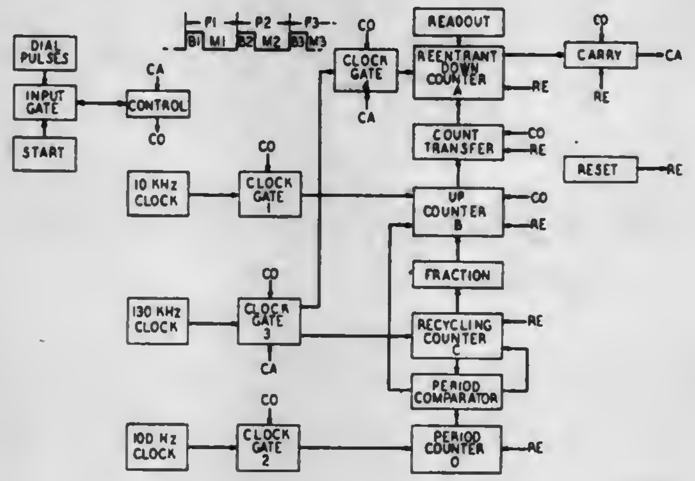


Digital technique is used to control two clock pulse counters and a shift register for measuring an approximation of the average percent break or pulsing speed over a series of telephone dial pulse periods. For percent break, up-counter B serially counts pips of frequency 100*f* during the sum of nine break intervals and the nine's complement (one's complement in the binary form) is placed in reentrant up-counter A. The shift register accumulates pips of frequency *f* during the entire time of nine pulse periods. Dividing circuitry causes the shift register count to recirculate while being serially added to the count in A. Recirculation is stopped when A exceeds its capacity (from capacity to zero count). The number of recirculations is registered as a percent. Fractional control circuitry takes into account any remainder in the shift register. Visual display is provided of the answer in percent. For pulsing speed, a prescribed count is placed in up-counter A and the accumulated shift register count corresponding to the nine pulse periods is used as in percent break to provide an answer approximating the pulsing speed.

3,603,746
MEASUREMENT OF AVERAGE DUTY CYCLE

Robert B. Heick, Eatontown, and Henry Mann, Holmdel, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1969, Ser. No. 879,498
Int. Cl. H04m *3/08*
U.S. Cl. 179—175.2 A **13 Claims**

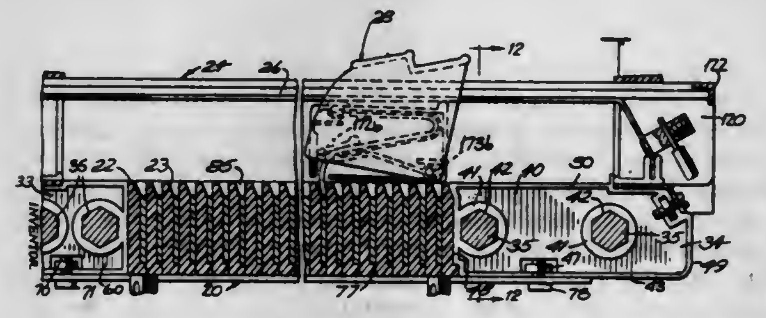


Digital technique is used to control four clock pulse counters for measuring an approximation of the average percent break or the pulsing speed over a series of telephone dial pulse periods. For percent break, up-counter B serially counts pips of frequency 100*f* during the sum of nine break intervals, the total B count is placed as the same count in reentrant down-counter A and counter B is cleared. Counter D accumulates pips of frequency *f* during the entire time of nine pulse periods. Dividing circuitry causes down-counting in counter A and up-counting in counter C under the control of a high-speed clock. Counter C is recycled each time it accumulates a count equal to the count in counter D. Down-counting in A and up-counting in C are stopped when A down-counts from zero to capacity count. The number of recyclings of counter C is registered in the cleared counter B as a percent. Fractional control circuitry takes into account any remainder in counter C. Visual display is provided of the answer in percent. For pulsing speed, a prescribed count is placed in down-counter A and the accumulated count in counter D corresponding to the nine pulse periods is used as in percent break to provide an answer approximating the pulsing speed.

3,603,747
CORDLESS ELECTRIC CROSS-CONNECT PANEL WITH IMPROVED MOVABLE CONTACT BRUSH ASSEMBLY

Ariel R. Davis, 3476 Fleetwood Drive, Salt Lake City, Utah

Continuation-in-part of application Ser. No. 660,988, Aug. 16, 1967. This application Dec. 8, 1969, Ser. No. 883,099
Int. Cl. H01h *9/00, 15/00*; **H02b** *1/04*
U.S. Cl. 200—1 R **25 Claims**

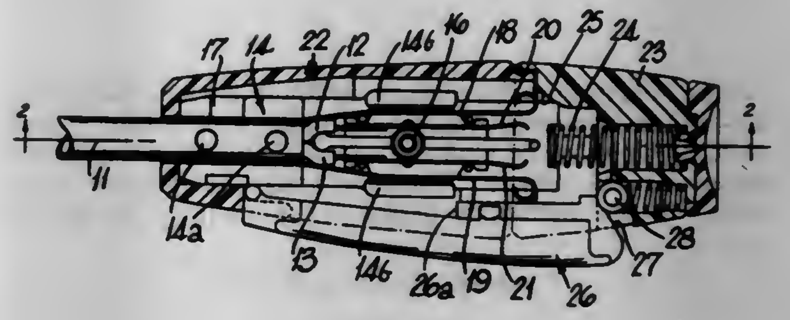


A cross-connect or patch panel has a multiplicity of long bus bars interleaved with insulating strips and parallel side support beams. Transverse members hold the bus bars, insulating strips and beams together. Cross-connect modules are mounted on the support beams to span the bus bars and strips and to slidably carry contact assemblies for engagement with a selected bus bar. The contact assemblies are actuatable between bus bar contacting and disengaging positions.

3,603,748
ELECTRICAL SWITCHES

Edward Cryer, Higham, near Burnley, England, assignor to Joseph Lucas (Industries Limited), Birmingham, England

Filed June 19, 1969, Ser. No. 834,768
Claims priority, application Great Britain, June 28, 1968, 30,902/68
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 B **10 Claims**

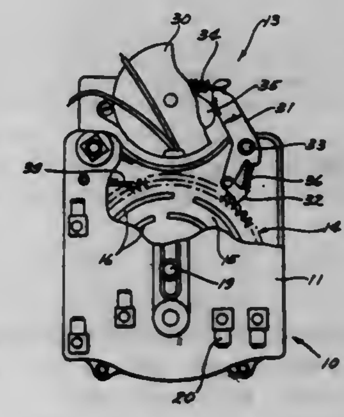


An electrical switch comprising a support member, conveniently the operating lever of a direction indicator switch of a road vehicle. A two part body mounted on the support member, and a first pair of contacts supported by the body. Surrounding the body is a sleeve which is slidable axially relative to the body to operate the first pair of contacts, and mounted on the sleeve is an operating member movable transversely relative to the sleeve to operate a second set of contacts carried by the body.

3,603,749
SUBINTERVAL TIMER DRIVE SYSTEM

Gordon Jerry Davis, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

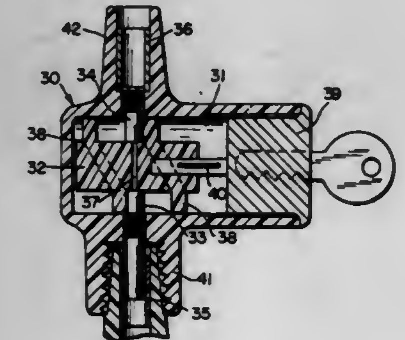
Filed June 15, 1970, Ser. No. 46,142
Int. Cl. H01h *7/08, 43/10*
U.S. Cl. 200—38 C **12 Claims**



A timer drive system including a pair of cam means incrementally and differentially advanceable by a single driven ratchet pawl. The pair of cam means includes ratchet means engageable by the ratchet pawl in a sequence effective for incrementally advancing alternately one cam means and then both cam means so that the cam means are effectively driven at different rates but are maintained synchronized by the common driven ratchet pawl. One of the cam means is operable for effecting subinterval switching.

3,603,750
ANTITHEFT DEVICE FOR MOTOR VEHICLES

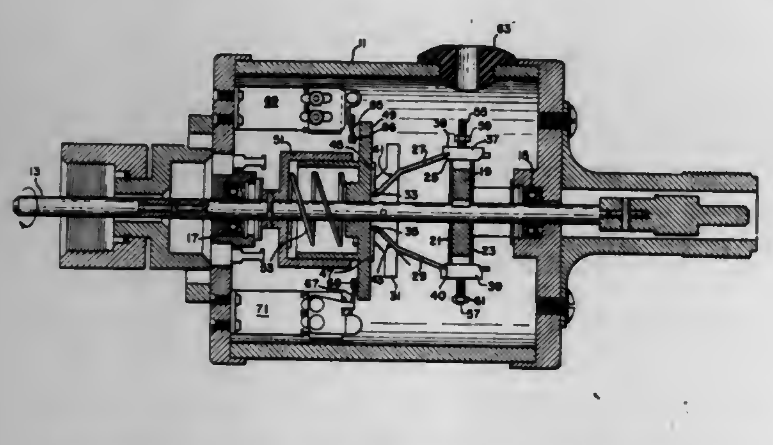
Walo Beier, Hegenheimermattweg 42, Allschwil, Switzerland
Filed Oct. 2, 1969, Ser. No. 863,246
Claims priority, application Switzerland, Oct. 3, 1968, 14783/68
Int. Cl. Ho1h *27/00*
U.S. Cl. 200—44 **13 Claims**



This invention relates to an antitheft device, particularly for motor vehicles, which comprises a lockable current switch which can be built into the HT circuit of the ignition system of the vehicle. The device may be inserted in the supply to the distributor or the HT winding of the ignition coil.

3,603,751
MAGNETIC CENTRIFUGAL SWITCH

Peter B. Smith, Monroe, Conn., assignor to Dynamics Corporation of America, New York, N.Y.
Filed July 22, 1969, Ser. No. 843,404
Int. Cl. H01h *35/10*
U.S. Cl. 200—80 **8 Claims**



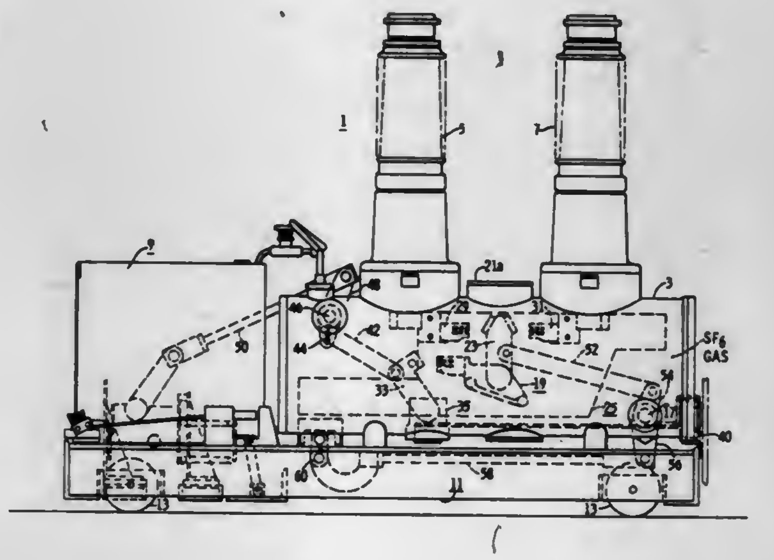
Centrifugal switching device having a magnet rotating with a shaft and an armature attracted by the magnet. The armature also rotates with the shaft and is pivoted so as to operate a switch when the centrifugal force is great enough to free the armature from the magnet. Adjustable nuts are provided to allow for a variation of the operating radius of the mass of the armature.

3,603,752
GROUNDING-SWITCH DEVICE

Russell E. Frink, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 15, 1970, Ser. No. 3,182
Int. Cl. H01h *33/00*
U.S. Cl. 200—148 R **14 Claims**

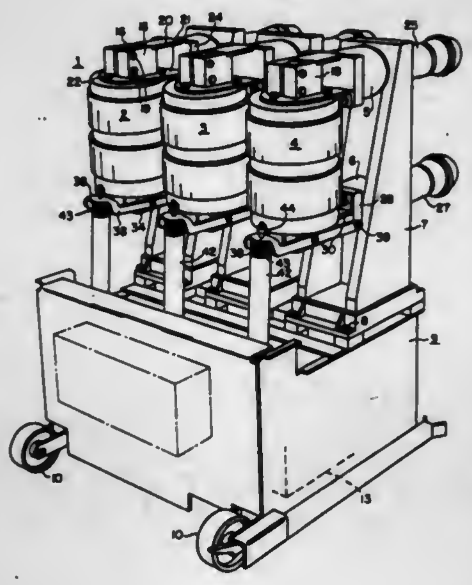
A grounding switch device is provided capable of utilizing the same type of mechanism as a circuit breaker, and adapted for substitution for the circuit breaker structure in metal-clad switchgear equipment. Each pole-unit is provided with a selector switch capable of being manually positioned in either one of two positions, for grounding either the line terminal or the bus terminal, and, additionally, the pole-unit includes a grounding switch capable of being actuated by the quick-acting circuit breaker type of operating mechanism.

The grounding device is of the same dimensions and can be rolled into the same cell structure of the metal-clad switchgear equipment which accommodates the circuit breaker unit.



3,603,753
METALCLAD SWITCHGEAR USING VACUUM INTERRUPTER ELEMENTS

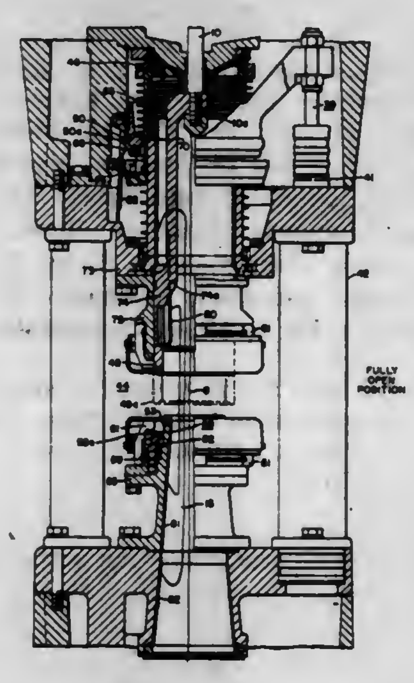
Russell E. Frink, Forest Hills, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 28, 1968, Ser. No. 709,013
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **8 Claims**



A circuit breaker for metalclad switchgear use is provided using vacuum-interrupter elements in substitution of the usually provided magnetic and insulating plate structures, customarily employed. A resilient mounting for the interrupter elements is provided, together with massive end contact blocks for heat dissipation generated within the vacuum-interrupter elements. A pivoted operating lever, connected to the massive contact block secured to the moving contact of the vacuum-interrupter, is operated by a resilient connection to the insulating operating rod of the circuit breaker. Because of the reduced dimensions, the cubicle dimensions may be drastically reduced, if desired.

3,603,754
CONTACT STRUCTURE FOR HIGH-VOLTAGE CIRCUIT INTERRUPTER WITH LINER COMPONENTS

Frank L. Reese, Monroeville, and Hayes O. Dakin, Jr., Irwin, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 6, 1970, Ser. No. 9,373
Int. Cl. H01h *33/02*
U.S. Cl. 200—148 R **10 Claims**

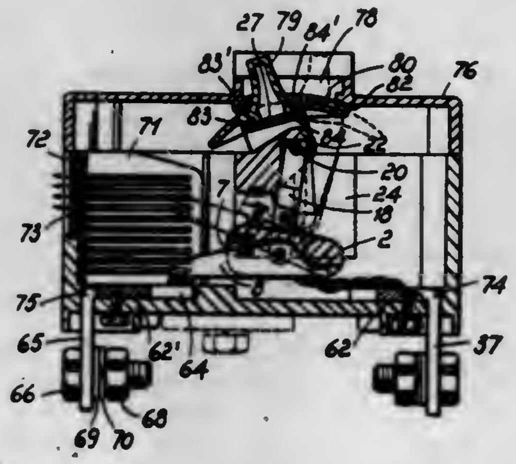


A separable contact structure is provided for a high-voltage compressed-gas circuit interrupter involving at least one of the contacts being tubular to provide a gas flow therethrough, and having a liner component therein. To facilitate movement of the terminal end of the arc, a relatively thin tubular member is inserted interiorly of the hollow contact, and, by electrically connecting the same to the inner anterior end of the hollow contact, the magnetic field situation is such that the terminal end of the arc is encouraged to move axially along the relatively thin tubular liner member to thereby effect considerable elongation of the established arc, and thereby to effect the extinction of the same by a more effective gas flow condition.

As a further extension of this same concept, a cooperable tubular contact structure may be provided, through which gas also exhausts, and a similar relatively thin tubular liner member may also be associated therewith to act in a similar manner.

3,603,755
POWER ELECTRIC SWITCH

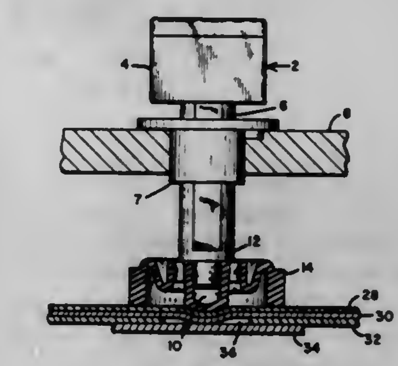
Pierluigi Ranzanigo, Via Violino di Sopra 67, Brescia, Italy
Filed Apr. 9, 1969, Ser. No. 814,667
Claims priority, application Italy, Apr. 13, 1968, 829866/68
Int. Cl. H01h *9/08, 3/46*
U.S. Cl. 200—153 G **8 Claims**



An electric switch comprising a trip mechanism including tiltable contact elements, support means for the tiltable contact elements and operating means for the latter connected to each other to form a single unit which is insertable through the open end of a housing into the latter to cooperate with stationary contacts in the bottom wall of the housing, and the latter is provided with a cover for closing the open end. The cover is formed with an opening through which one end portion of the operating means extends in a sealed manner when the trip mechanism is inserted in the housing.

3,603,756
SNAP ACTION SWITCH

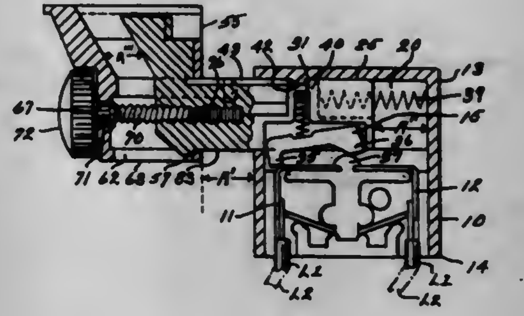
Frank J. Carpentier, and Stanley J. Lins, both of Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Jan. 29, 1970, Ser. No. 6,818
Int. Cl. H01h *3/12*
U.S. Cl. 200—159 B **2 Claims**



An improved electrical switching arrangement wherein a diaphragm-type switch element is operated by a plunger mechanism having a novel molded elastomer return spring operatively associated with the plunger element for providing "snap action."

3,603,757
ADJUSTABLE SWITCH DEVICE

Edward V. Sahrbacker, Brecksville, Ohio, assignor to Lucerne Products, Inc., Hudson, Ohio
Filed Sept. 18, 1969, Ser. No. 859,039
Int. Cl. H01h *9/06*
U.S. Cl. 200—157 **6 Claims**



A trigger-operated electrical switch for a portable electric motor-driven tool to control the application of electrical energy from an energy source to the motor. The switch includes stationary contaCt elements and a stationary resistance element connected into an electrode circuit. The switch also includes a contact carrier having a plurality of movable contact elements which coact with the stationary contact elements and the resistance element to variably control the application of the electrical energy to the motor. A manually actuatable trigger handle is adjustably connected to the contact carrier to enable selective manual actuation thereof. The trigger handle is longitudinally adjustable on the contact carrier to enable the operator to preselect the amount the movable contaCts may be moved relative to the stationary contact elements and resistance element and thus control the speed of the motor.

3,603,758

IMPROVED CONTACT BREAKER ASSEMBLIES FOR USE IN INTERNAL COMBUSTION ENGINE IGNITION SYSTEMS

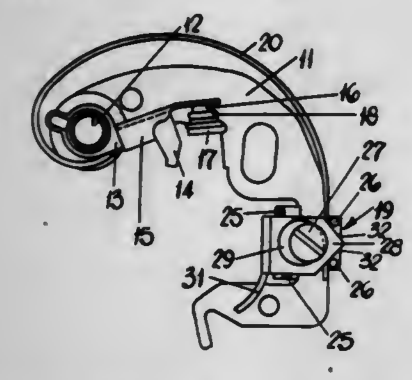
William Lawrence Fry, Haughton; Antony Peter Royle, Solihull, and Peter Darbyshire, Birmingham, all of, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 25, 1969, Ser. No. 879,824

Claims priority, application Great Britain, Dec. 6, 1968, 58154/68

Int. Cl. H01h *3/00*

U.S. Cl. 200—166 CT **4 Claims**



A contact breaker assembly for use in an ignition distributor for an internal combustion engine ignition system includes a plate carrying a fixed contact. A movable contact is mounted on an insulating heel which is pivotable for a movement in a direction to move the movable contact into and out of engagement with the fixed contact. A leaf spring secured at one end to the heel urges the heel to pivot in a direction to engage the movable contact with the fixed contact. The end of the leaf spring remote from the heel is anchored with respect to the plate, and the spring constitutes part of a conductive path to the movable contact. Said other end of the spring is fixed relative to the plate by means of an insulating block which is carried by the plate. The block is shaped to receive said other end of the leaf spring, and is also shaped to receive a conductive terminal in engagement with the leaf spring. A clamping screw is provided for clamping the terminal in engagement with the block and the leaf spring, so that the movable contact is electrically connected to the terminal through the leaf spring. The clamping screw clamps the end of the leaf spring in position, by virtue of engagement of the terminal and the leaf spring, and the arrangement of the terminal and the clamping screw is such that the terminal can be disengaged from the spring and the block without removing the terminal screw completely from the block.

3,603,759

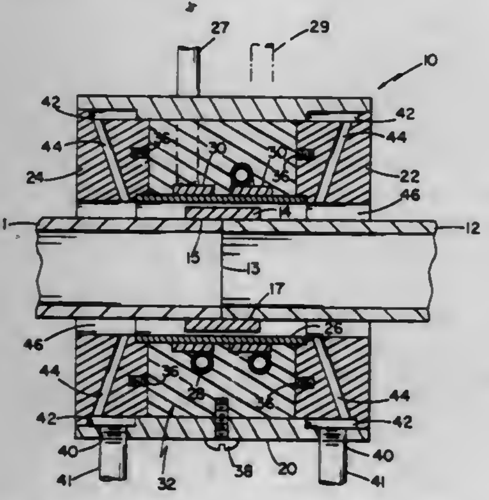
WELDING AND FORMING METHOD

George Raymond Peacock, Louisville, Ky., assignor to Industrial Magnetics, Inc., Canton, Mass. Continuation of Ser. No. 717,749, Apr. 1, 1968

Filed Jan. 14, 1970, Ser. No. 4,173

Int. Cl. B23k *13/00*

U.S. Cl. 219—9.5 **20 Claims**



A forming method in which members are forced together at an interface by causing parallel currents to flow in an adjacent conductors, thereby forcing the conductors toward each other in a direction generally normal to the interface.

3,603,760

APPARATUS FOR EFFECTING THE MAGNETIC-IMPULSE WELDING AND PRESSURE WORKING OF METALS, PREFERABLY FOR WELDING TUBULAR-SHAPED PARTS

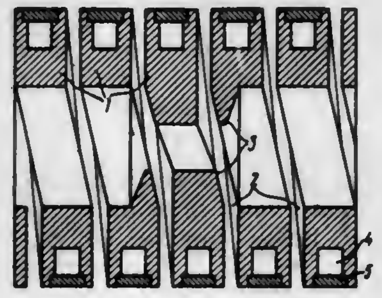
Konstantin Konstantinovich Khrenov, ulitsa Cheljuskintsev, 15, kv. 11, Kiev; Vyacheslav Andreevich Chudakov, ulitsa Bolnichnaya, 14, kv. 2., Kiev; Konstantin Vasilievich Stroganov, ulitsa Avtozavodskaya, 6, korpus A, kv. 202, Moscow; Vladimir Leonidovich Kleiman, ulitsa Chernyshevskogo, 11, kv. 29, Mikhail Mironovich Fishkis, Zvezdny Bulvar, 5, kv. 28, Moscow; Vyacheslav Mikhailovich Nikolaev, ulitsa Molodezhnaya, 14, kv. 71, Miass Chelyabinskoi oblasti; Vladimir Kommunarovich Kalnishevsky, ulitsa Moldezhanaya, 8, kv. 50, Miass Chelyabinskoi oblasti, and Boris Mikhailovich Maltsev, ulitsa Dobroljubova, 4, kv. 6, Miass Chelybinskoi oblasti, all of, U.S.S.R.

Filed Mar. 5, 1969, Ser. No. 804,505

Claims priority, application U.S.S.R., Mar. 5, 1968, 1220255

Int. Cl. H05b *9/02, 5/00*

U.S. Cl. 219—10.79 **5 Claims**



An apparatus for magnetically welding metals comprises an inductor. The inductor includes means defining a plurality of turns axially and annularly spaced from one another. The inductor includes an intermediary portion of the increased thickness defining a welding zone. The intermediary portion is annular and acts to increase the concentration of a magnetic field applied in the welding zone. The turns have respective diameters varying successively toward the welding zone.

3,603,761

APPARATUS FOR PRODUCING FOLD FLANGE TUBES

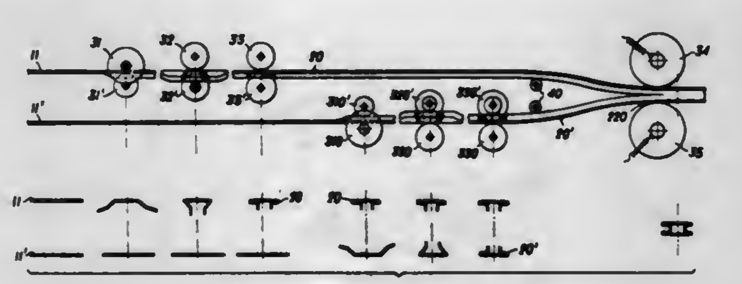
Alfred Wogerbauer, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria Division of Ser. No. 651,836, July 7, 1967, Pat. No. 3,545,496

Filed Jan. 7, 1970, Ser. No. 1,105

Claims priority, application Austria, Aug. 9, 1966, A-7605/66

Int. Cl. B23k *11/02*

U.S. Cl. 219—59 **3 Claims**



The invention comprises an apparatus for producing fold flange tubes, in particular such having complicated cross-sectional shapes, in a continuous manner and with a minimum of tooling equipment, wherein two series of shape rolling stands arranged in staggered relationship in a vertical plane for the formation of component sections, a device for vertically approaching the component sections so formed, and a welding machine for joining the component sections are provided.

3,603,762

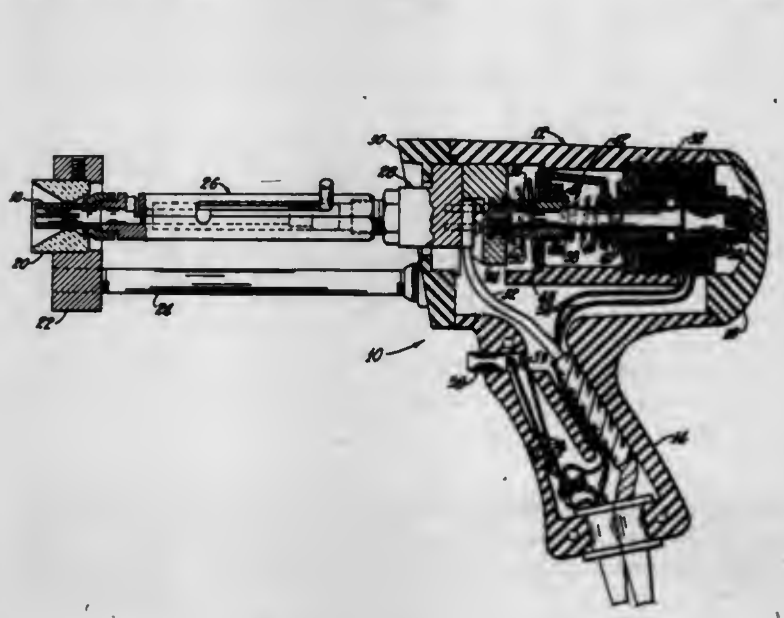
STUD-WELDING TOOL AND STUD-LOADING DEVICE THEREFOR

Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 358,736, Apr. 10, 1964, Pat. No. 3,525,846. Filed May 5, 1966, Ser. No. 547,977

Int. Cl. B23k *9/20*

U.S. Cl. 219—98 **1 Claim**



A system for feeding small studs to a chuck of a stud-welding tool is provided. The stud-welding tool has a chamber behind the chuck into which the studs are fed. A plunger then moves the studs from the chamber into the chuck from the rear.

3,603,763

ELECTRODE FOR BUILDING UP OF STEEL ARTICLES

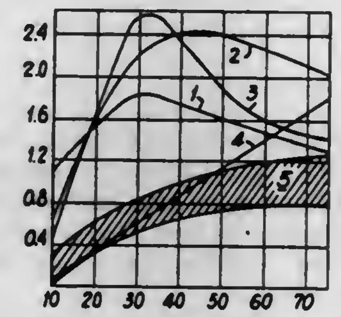
Jury Arsenievich Juzvenko, bulvar Lesi Ukrainki, 2, kv. 59, Kiev; Tamara Vladimirovna Lanina, ulitsa Likhacheva, 8b, kv. 7, Kiev; Vasily Pavlovich Shimanovsky, ulitsa Kievsky spusk, 4, kv. 38, Kiev; Vasily Antonovich Gavrish, ulitsa Kapetanovskaya, 6, kv. 10, Kiev; Mark Antonovich Paschenko, ulitsa Ezhena Potie, 9, kv. 97, Kiev; Alexandr Vasilievich Melnik, ulitsa Lenina, 9, kv. 11, Kiev; Igor Sergeevich Zhurkovsky, ulitsa Kossiora, 6, kv. 29, Dnepropetrovsk, and Moisei Isaakovich Vaksin, ulitsa Frunze, 11, kv. 3, Dnepropetrovsk, all of, U.S.S.R.

Filed June 24, 1969, Ser. No. 835,974

Claims priority, application U.S.S.R., June 28, 1968, 1254046

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 **7 Claims**



Powdered carbide electrodes for building up of steel articles having high wear resistance of the built-up metal are composed of a nickel sheath and a core containing chromium carbides, e.g. Cr_3C_2 and 1–3 percent of aluminum powder, based on the overall weight of the electrode. The core may also contain 1–3 percent by weight of the electrode of sodium fluosilicate to eliminate porosity in the built-up layer and chromium boride, boron carbide or boron-chromium alloys to strengthen the matrix (binder) of the deposited metal.

3,603,764

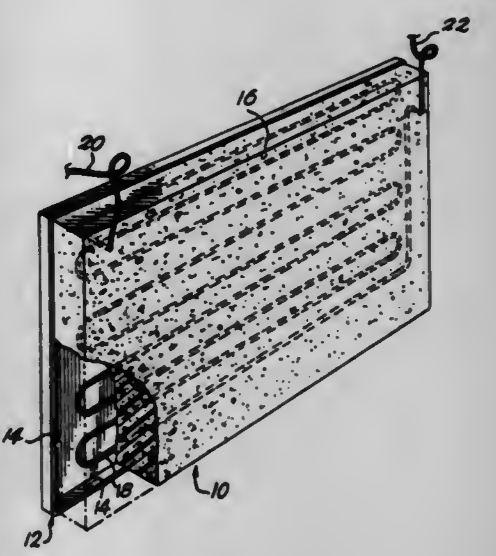
ELECTRIC HEATING PANEL

Hugh Martin, R.R. 1, Box 192, New Salisbury, Ind.

Filed Sept. 11, 1969, Ser. No. 857,126

Int. Cl. H05b *1/00*

U.S. Cl. 219—213 **7 Claims**



An electric prefinished heating panel having a layer of heat conducting material and a layer of heat insulating material with an electric heating element sandwiched therebetween. The heating panel is used with conventional acoustical ceiling tiles to form a ceiling of a room with the heating panels interspersed among the acoustical tiles to provide the desired pattern of heat.

3,603,765

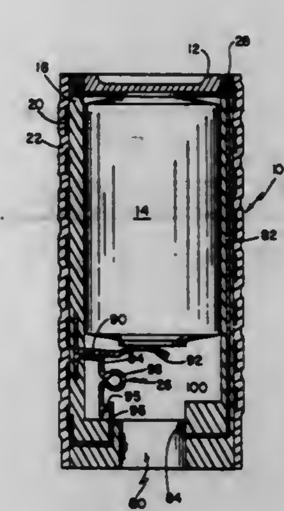
ELECTRICALLY HEATED HAIR ROLLER WITH SELF-CONTAINED POWER SOURCE

Donald L. Underwood, Northbrook, Ill., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 22, 1969, Ser. No. 868,509

Int. Cl. A45d *2/36;* **H05b** *3/00;* **H01m** *45/04*

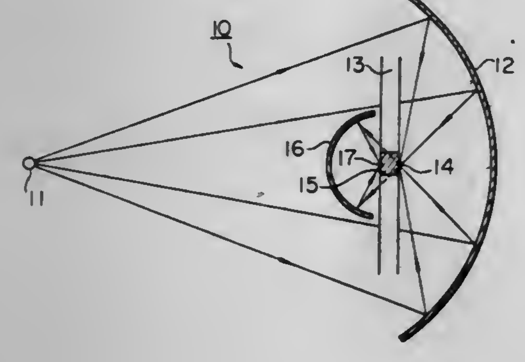
U.S. Cl. 219—222 **8 Claims**



A hollow tubular hair roller about which hair may be wound incorporates a resistive heating element in its tubular wall structure. A battery, which may be rechargeable, is supported within the hollow interior of the roller and connected to the heating element. A zone of heat insulation at least one-sixteenth inch deep and having a thermal conductivity less than 0.003 cal./(sec.) (cm.^{2}) (°C./cm.) is provided between the resistive heating element and the battery. The zone of insulation may be a tube of solid or foamed synthetic polymer or an airgap through which battery supporting nibs extend.

3,603,766
ARC-IMAGE ZONE-REFINING FURNACE

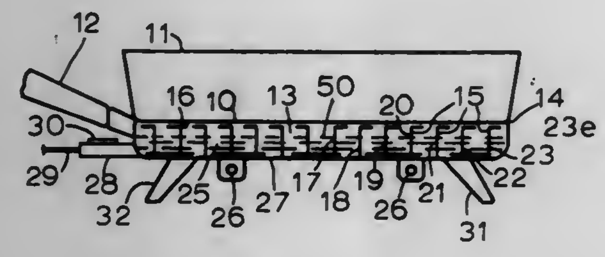
Yoshihiro Kino, and Yasuhiko Nakayama, both of Kodoma, Osaka, Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan
Filed Sept. 15, 1969, Ser. No. 857,841
Int. Cl. H05b *7/18*
U.S. Cl. 219—349 **1 Claim**



An arc-image zone-refining furnace having an auxiliary spherical mirror located opposite to an ellipsoidal mirror. Provision of the auxiliary spherical mirror makes possible not only the processing of a material in the form of a bar having a large diameter but also the reduction in the speed required to rotate the bar.

3,603,767
ISOTHERMAL COOKING OR HEATING DEVICE

Edward A. Scicchitano, Towson, Md., assignor to Dynatherm Corporation, Cockeysville, Md.
Filed Sept. 3, 1969, Ser. No. 854,893
Int. Cl. F27d *11/02*
U.S. Cl. 219—439 **10 Claims**

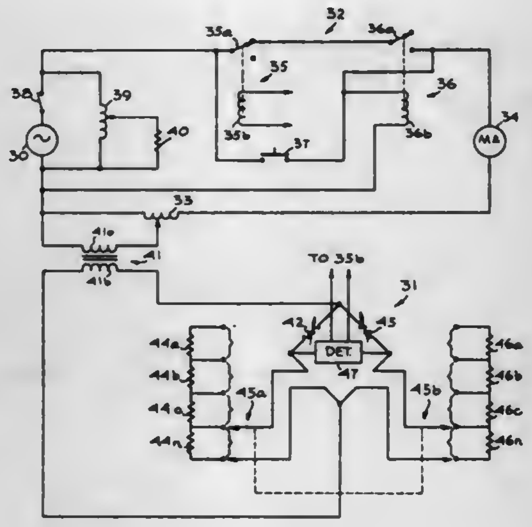


An improved cooking or heating device adapted for many applications, particularly for cooking, and useful to heat many substances, as in the chemical industry. The device is isothermal and incorporates a heat pipe principal.

3,603,768
THIN-FILM RESISTOR ADJUSTMENT

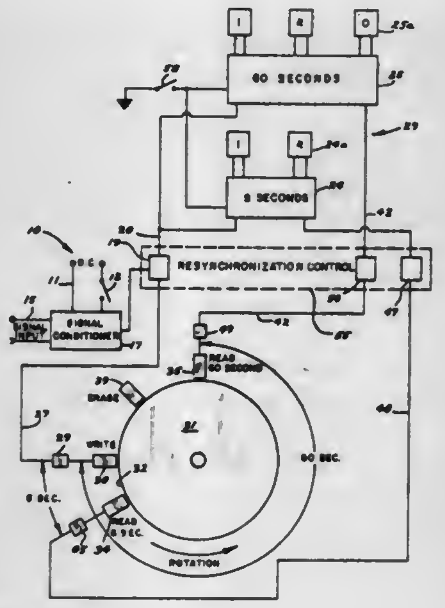
John W. Ireland, and James C. Holloway, both of Canoga Park, Calif., assignors to The Bunker-Ramo Corporation, Stamford, Conn.
Division of Ser. No. 410,439, Nov. 12, 1964, Pat. No. 3,457,636.
Filed May 26, 1969, Ser. No. 852,132
Int. Cl. H05b *1/02*
U.S. Cl. 219—499 **10 Claims**

An apparatus for adjusting the resistance values and temperature coefficients of resistance of thin-film resistors within very close tolerances. The adjustment is achieved through heating of the thin-film resistors to a very high temperature for very short periods of time.



3,603,769
RATE DETECTING APPARATUS

Donald H. Malcolm, Minneapolis, Minn., assignor to Bio Data, Inc., Minneapolis, Minn.
Filed Nov. 3, 1969, Ser. No. 873,246
Int. Cl. G06m *3/06*
U.S. Cl. 235—92 DP **3 Claims**

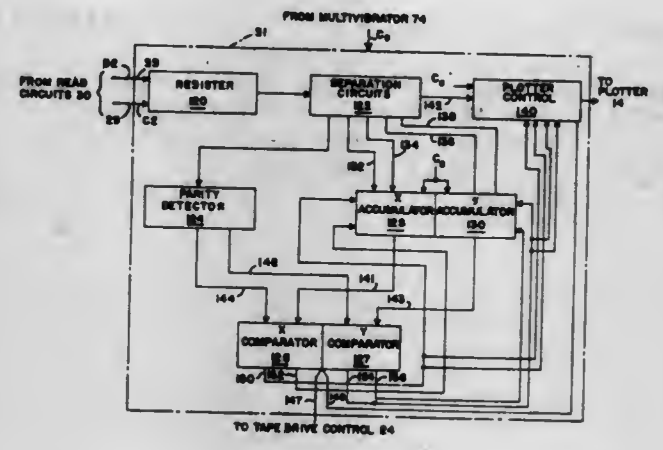


An apparatus giving a precise numerical count of the rate of occurrence of a series of discrete events electrically detected such as of a human pulse rate embodying the use of a counter giving a numerical readout of said rate of occurrence for a fixed interval of time directly preceding the count given.

3,603,770
TAPE BUFFER SYSTEM FOR INCREMENTAL PLOTTER

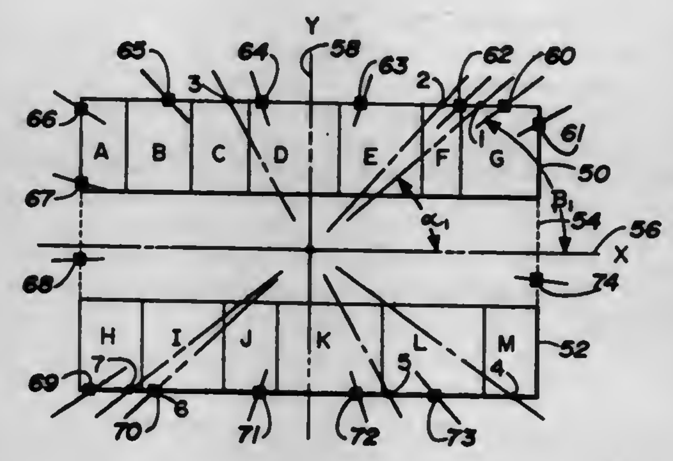
Edward R. Reins, Jr., Monterey, Calif., assignor to Trans-Controls, Inc., Pacific Grove, Calif.
Filed Jan. 6, 1969, Ser. No. 789,168
Int. Cl. G06f *13/08, 7/00*
U.S. Cl. 235—151 **3 Claims**

Magnetic tape buffer equipment for use between a digital computer and an incremental plotter, including a tape loop, storage and forward-reverse drive therefor, writing and reading stations and error-checking circuits operating in a system which provides for periodic checks and correction, if required, of the plotter pen position in order that errors in the plotter display are not propagated throughout the plot.



3,603,771
INPUT/OUTPUT SIGNAL POINT ASSIGNMENT

Donald D. Isett, Dallas, and John W. Lomax, Richardson, both of, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed July 15, 1969, Ser. No. 841,858
Int. Cl. G06f *15/20;* **H01l** *1/24*
U.S. Cl. 235—151 **9 Claims**

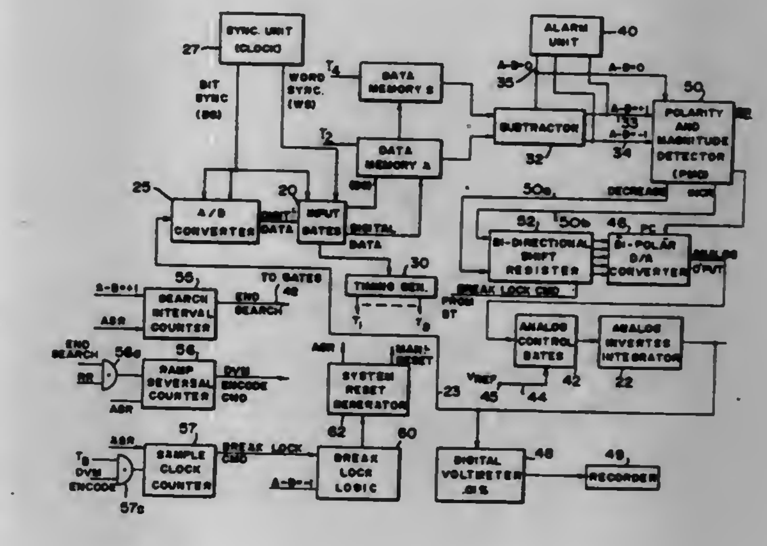


Active components, such as logic gates or flip-flops, formed in a semiconductor substrate are interconnected to input/output bonding pads and other active components in a circuit array in four separate operations. First, after arranging the active components in rows, signal points of all components in one row are interconnected by considering the longest interconnection and proceeding to the shortest. Next, component signal points between rows are interconnected again by considering the longest interconnecting path and proceeding to the shortest path. Third, input/output component signal points are assigned to input/output conductive pads. Finally, interconnecting paths are completed between the input/output component signal points and an assigned pad in a numbered order. Each operation uses a distinct algorithm to complete the necessary steps.

3,603,772
ANALOG-TO-DIGITAL CONVERTER ANALYZING SYSTEM

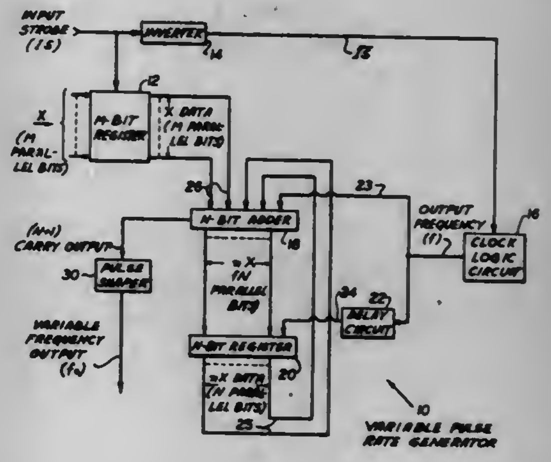
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Willis W. Allen
Filed Sept. 9, 1969, Ser. No. 856,282
Int. Cl. H03k *13/32*
U.S. Cl. 235—153 **17 Claims**

A system in which a variable and measurable analog signal, such as a voltage, is supplied to an A/D converter, which is being analyzed. Successive digital outputs, such as numbers, of the converter are determined and temporarily stored for comparison purposes. Based on the relative values of the successive numbers, the input voltage to the converter is varied, both in polarity and in magnitude, until a voltage is reached, which when applied to the converter there exists a 50 percent probability that the output number is one of two adjacent numbers. The voltage magnitude, or simply the voltage, is recorded to represent one indecision zone. Thereafter, the input voltage is varied to determine another indecision zone between a selected output number and another number, different therefrom by one.



3,603,773
DIGITAL PULSE RATE GENERATOR

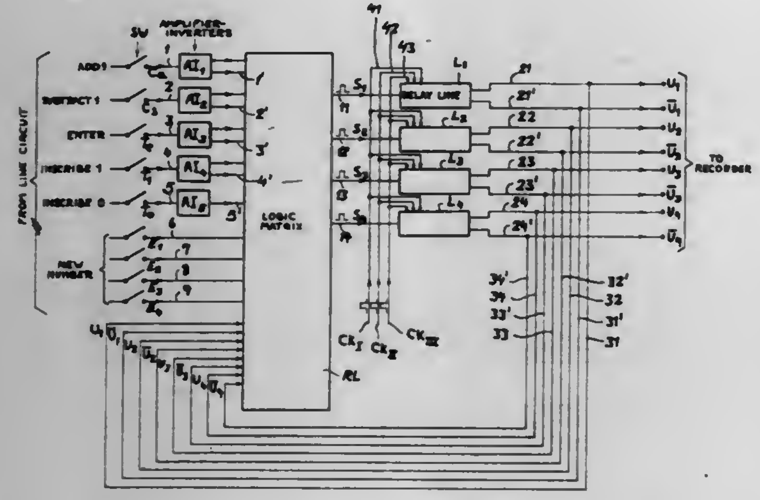
Joseph Carlstein, East Meadow, N.Y., assignor to Vernitron Corporation, Great Neck, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,718
Int. Cl. G06f *5/06;* **H03k** *13/256*
U.S. Cl. 235—154 **9 Claims**



In a variable pulse rate generator, a digital number is applied as parallel bits to a first bit register which stores and then transfers the bits to a bit adder under control of a clocked logic circuit. The bit adder applies its parallel bit output to a second bit register which feeds the bits back to the adder for accumulation. Periodically the adder applies a most significant bit to a pulse shaper thus creating a variable frequency output proportional to the value of the original digital number.

3,603,774
SYSTEM FOR THE MODIFICATION OF DATA STORED IN RECIRCULATING DELAY LINES

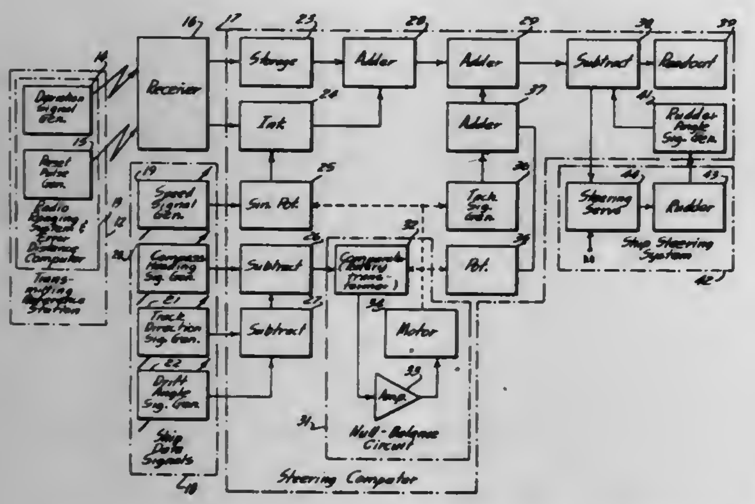
Giorgio DeVarda; Saverio Martinelli, and Aldo Perna, all of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed June 10, 1968, Ser. No. 735,606
Claims priority, application Italy, June 9, 1967, 17,009/68
Int. Cl. G06f *7/50*
U.S. Cl. 235—168 **11 Claims**



In a telecommunication system of the time-sharing type wherein several calls are concurrently conducted over a common line circuit by means of interleaved message signals recurring in a predetermined order, command pulses relating to the several calls are sequentially directed to the input of a register with several parallel memory stages each including a delay line whose delay time encompasses a number of pulse cycles equal to the maximum number of calls to be accommodated simultaneously by the line circuit. Digital pulses traveling along each memory stage are continuously fed back from the output to the input thereof for reinscription until modified by a command signal applied to all the memory stages through a logic matrix for carrying out such operations as "enter 1," "enter 0," "inscribe new number," "add 1" and "subtract 1."

3,603,775
STEERING COMPUTER AND INDICATOR

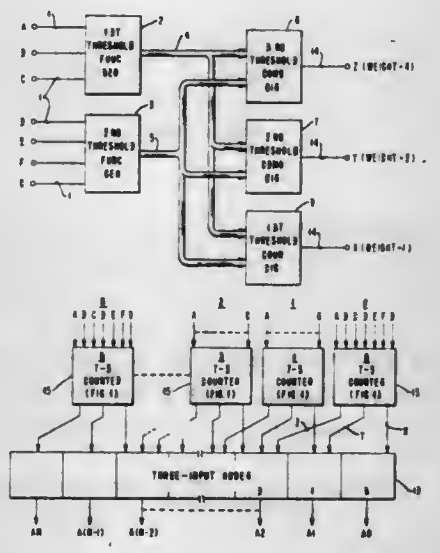
Richard T. Galloway, and David H. Brunk, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed Aug. 21, 1968, Ser. No. 754,268
Int. Cl. G06g *7/66*
U.S. Cl. 235—150.26 **9 Claims**



A steering control system for automatically navigating a vehicle along a predetermined course having a reference station for supplying distance and timing data signals, signal generators for supplying vehicle data signals, a receiver, and a computer for computing the steering mechanism actuations necessary to make said vehicle maintain the aforesaid predetermined course in response to said data signals.

3,603,776
BINARY BATCH ADDER UTILIZING THRESHOLD COUNTERS

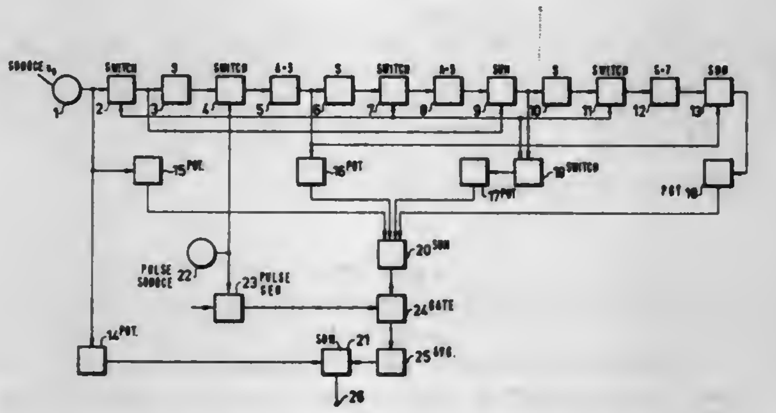
Arnold Weinberger, Newburgh, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,344
Int. Cl. G06f *5/02, 7/50*
U.S. Cl. 235—175 **5 Claims**



Disclosed are counters for counting inputs in terms of a fewer number of outputs. The counters are useful in batch adders for simultaneously adding a plurality of multibit numbers. The counters include first and second binary threshold function generators which each receive a different group of inputs. The generators are in parallel with respect to the inputs and each generates a plurality of binary threshold functions. The binary threshold functions are selectively combined in first, second and third threshold combining circuits to form the counter outputs. The combining circuits are placed in parallel and each circuit logically combines one or more threshold function inputs derived from the function generators.

3,603,777
METHOD AND APPARATUS FOR GENERATING AN ELECTRICAL SIGNAL, REPRESENTING A VALUE OF A FUNCTION OF AN INDEPENDENT VARIABLE

Gunnar Axel Kihlberg, Sollentuna, Sweden, assignor to Jungner Instrument Aktiebolaget, Stockholm, Sweden
Filed Apr. 2, 1969, Ser. No. 812,756
Claims priority, application Sweden, Apr. 25, 1968, 5600/68
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 **5 Claims**



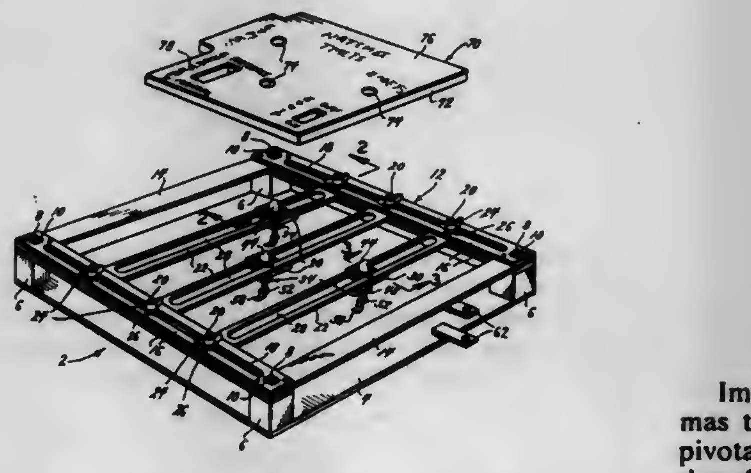
A method of, and apparatus for, generating an electrical signal representing a value of a function of an independent variable. The method comprises the steps of generating an electrical signal, with a period T, representing the variations of the derivative $df(x)/dx$ of the function $f(x)$ within an interval $x_a \leq x \leq x_b$ including the value x_1, and deriving from said signal a pulse-duration modulated signal consisting of pulses having a duration of

$$\frac{x_1 - x_a}{x_b - x_a} \cdot T$$

and a pulse frequency of $1/T$, said pulses indicating the variations in the derivative $df(x)/dx$ within the interval $x_a \leq x \leq x_1$ and deriving from said last-mentioned signal a DC voltage proportional to the mean value thereof and adding to this voltage a further DC voltage of a magnitude corresponding to any constant term, forming a part of the function $f(x)$. Apparatus for carrying out the method is also disclosed.

3,603,778
TESTING DEVICE FOR LIGHT PANELS

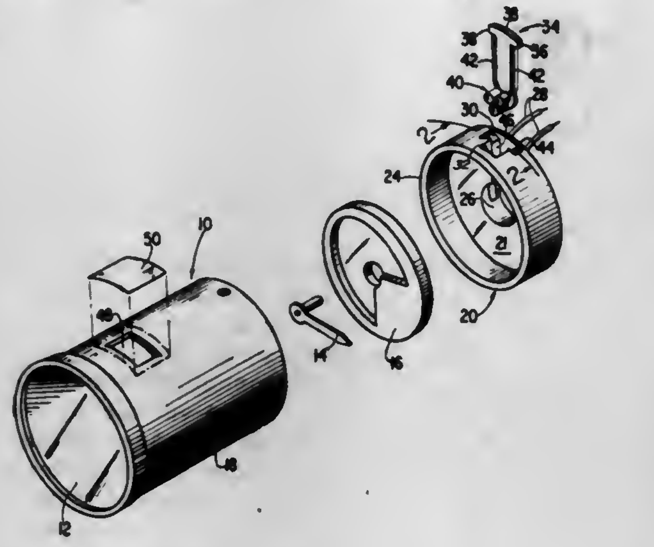
Raymond T. Walsh, Florissant, Mo., assignor to McDonnell Doublas Corporation, St. Louis, Mo.
Filed Feb. 7, 1969, Ser. No. 797,508
Int. Cl. F21v *21/14, 33/00*
U.S. Cl. 240—2 **12 Claims**



A testing device for testing light panels having bulb receiving apertures. The testing device includes bulbs which fit into the apertures and are shiftable on a frame so that the testing device is capable of accommodating light panels having their bulb apertures arranged in varying patterns.

3,603,779
INSTRUMENT ILLUMINATION

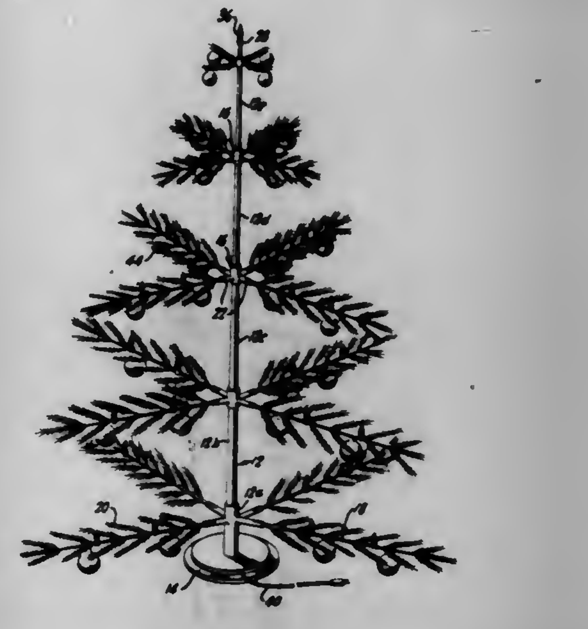
Edgar J. Horne, Perkasie, and Ralph C. Spohn, Greenlane, both of, Pa., assignors to Ametek, Inc., New York, N.Y.
Filed June 5, 1969, Ser. No. 830,785
Int. Cl. G01d *11/28*
U.S. Cl. 240—2.1 **3 Claims**



An instrument casing, particularly for aircraft, is provided with a removable unit carrying a printed circuit element carrier having one or more light bulbs adjacent its end and insertable through a suitably shaped slot in the casing element. The printed circuit carrier is guided in such radial movement and provided with stop means to position the same.

3,603,780
ARTIFICIAL TREE STRUCTURE

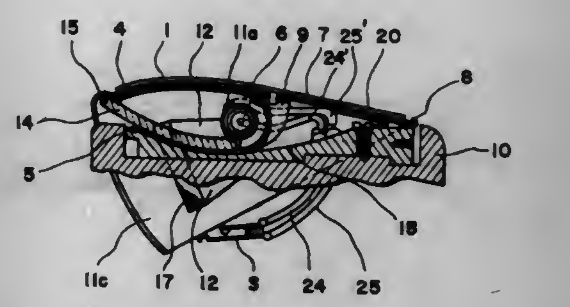
Kenneth C. Lu, 134 York Dr., Piedmont, Calif.
Continuation-in-part of application Ser. No. 636,858, May 8, 1967, now abandoned. This application Jan. 26, 1970, Ser. No. 5,839
Int. Cl. A47g *33/16, 33/06*
U.S. Cl. 240—10 R **5 Claims**



Improved structure for an artificial tree such as a Christmas tree having a hollow trunk with hollow sleeved limbs pivotally mounted on the trunk at decreasing distances therefrom toward the tree top for folding of the structure into minimized volume. Electrical wiring extending from limbs through the tree trunk provides an integral lighting system and adds structural rigidity while limb covers provide maximized realistic appearance.

3,603,781
FOLDABLE STROBO DISCHARGE FLASH SYSTEM

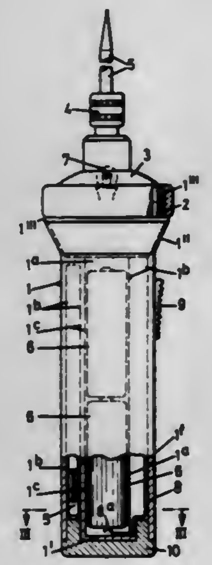
Tatsuo Kobayashi, Handa Kaizuka-shi, Osaka-fu; Yoshifusa Fujii, Mori Kaizuka-shi, Osaka-fu, and Hiroshi Ueda, Nara-shi, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 15, 1969, Ser. No. 816,263
Claims priority, application Japan, Apr. 16, 1968, Apr. 22, 1968, 43/25356; 43/26615
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **7 Claims**



A foldable strobo discharge flash system comprising a cylindrical strobo discharge tube and a reflecting mirror forming a cylindrical curved surface which has the discharge tube at its focal line and is made of flexible and elastic metal plate so as to be folded compactly. One of the edges of the flexible reflecting plate is set on a movable frame member supporting the strobo discharge tube and the curvature of the reflecting plate is varied in coordinating with the operation of the movable frame member. At a full open state of the movable frame member the reflecting plate becomes a reflecting mirror for the strobo discharge tube and at a closed state the reflecting plate is folded flat. Further, the power switch of the strobo discharge tube is turned on or off in coordinating with the operation of the movable frame member.

3,603,782
COMBINED TOOL HOLDER AND FLASHLIGHT

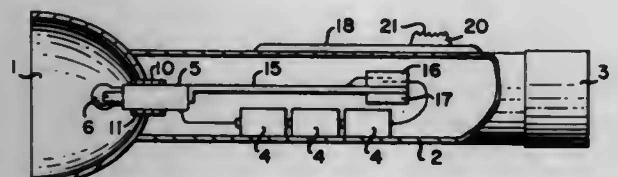
Herbert Wortmann, Ludenscheid, Germany, assignor to Carl von der Crone & Co., Ludenscheid, Germany
Filed Apr. 2, 1969, Ser. No. 812,779
Claims priority, application Germany, Apr. 13, 1968, Nov. 14, 1968, C 17 375; P 18 08 818.1
Int. Cl. B25g *1/08;* **F21l** *3/00, 15/00*
U.S. Cl. 240—6.46 **4 Claims**



In a combination of a tool holder and a flashlight, the flashlight proper illuminates the area in which work is being performed by the particular tool inserted into the tool holder. Various tools may be inserted into the tool holder. To simplify operation of such a composite device the casing of the flashlight is adapted to perform two functions, i.e. to receive the dry cells for operating the flashlight, and to store additional tools which may be inserted selectively into the tool holder.

3,603,783
LANTERN HAVING MAGNETIC LAMP FOCUSING AND SWITCHING

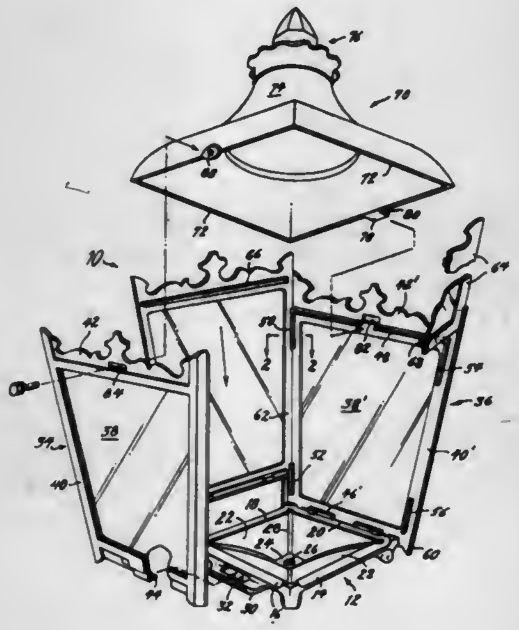
Arthur G. Schwartz, 1119 Smyrna Court, Sunnyvale, Calif.
Filed Mar. 27, 1970, Ser. No. 23,379
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.69 **6 Claims**



Lamp excitation, deexcitation, focusing and defocusing is provided in a lantern assembly by means of a single externally controlled magnet which coacts with an internal hardwired hermetically sealed magnetic reed switch to control lamp excitation and an internal magnetic member for providing lamp position adjustment for infinite focus control. Under high current conditions a pushbutton switch may be a desired substitute for the reed switch. Suitable environmental conditions may further permit the use of slide or wiper contacts for lamp excitation control where good electrical contact between exposed metal surfaces can be readily maintained.

3,603,784
LANTERN

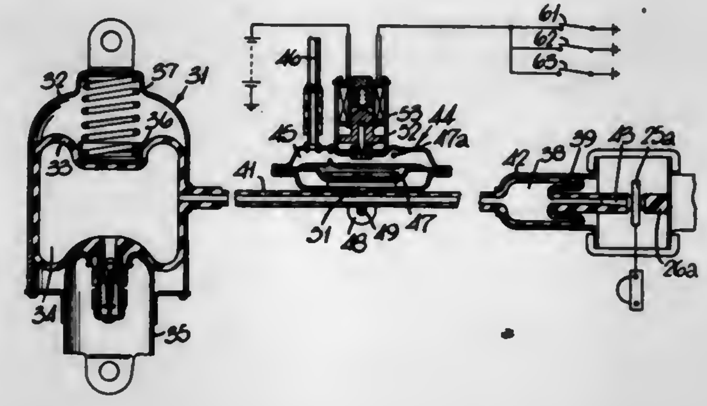
Carl Wellhofer, Glenside, Pa., assignor to Walter Kidde & Co., Inc., Clifton, N.J.
Filed Nov. 12, 1968, Ser. No. 774,749
Int. Cl. F21l *7/00*
U.S. Cl. 240—11.2 R **7 Claims**



A lantern comprised of discrete side panels removably interconnected with each other and removably coupled to a base and roof are disclosed. Two of the side panels are each coupled to the roof and base. The remaining side panels are coupled only to the first-mentioned side panels.

3,603,785
HEADLAMP ADJUSTING SYSTEMS

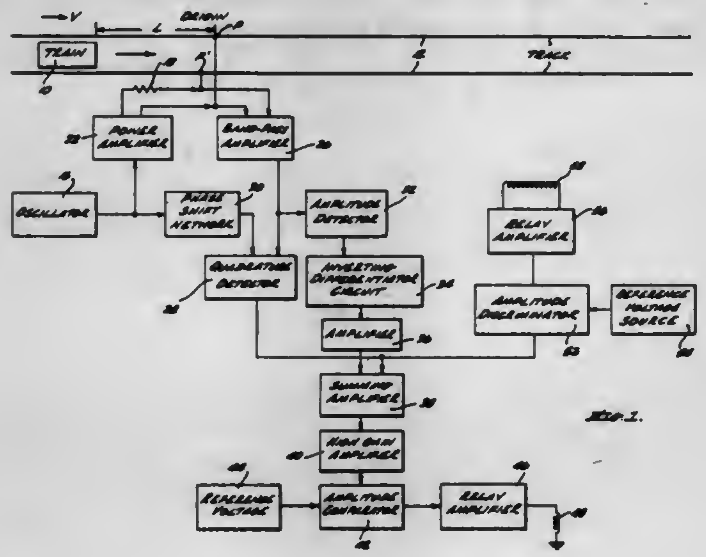
Alfred Dickens Baker, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Feb. 4, 1969, Ser. No. 796,327
Claims priority, application Great Britain, Feb. 9, 1968, 6460/68
Int. Cl. B60q *1/10*
U.S. Cl. 240—61.1 **8 Claims**



In a headlamp adjusting system there is provided a member movable in opposite directions to adjust the position of a headlamp of a vehicle relative to the body of the vehicle so that its beam is tilted upwardly or downwardly respectively. A first piston and cylinder arrangement operatively interconnects the body and the wheel of the vehicle so that movement of the body relative to the wheel moves the piston relative to the cylinder. A second piston and cylinder arrangement is provided for controlling movement of the member associated with the headlamp relative to the body of the vehicle. A conduit interconnects the two piston and cylinder arrangements so that the flow of fluid through the conduit causes movement of the member to adjust the position of the headlamp. A valve is provided in the fluid line between the first and second piston and cylinder arrangements and the valve is operable to prevent flow of fluid between the piston and cylinder arrangements so that the headlamp is not adjusted when the valve is operative. The valve is operated to prevent fluid flow while the vehicle is traveling so that the headlamp position is not adjusted as a result of suspension movements of the vehicle when the vehicle is traveling.

3,603,786
RAILROAD GRADE CROSSING PROTECTION SYSTEM

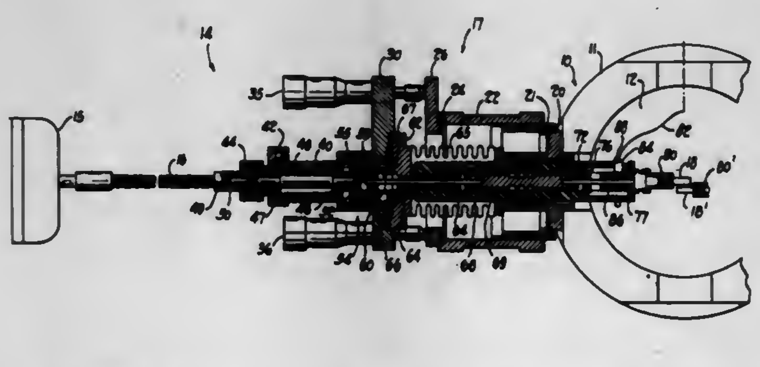
Richard V. Peel, La Verne, Calif., assignor to Marquardt Industrial Products Co., Cucamonga, Calif.
Filed Mar. 17, 1969, Ser. No. 807,626
Int. Cl. B61l *1/06, 29/32*
U.S. Cl. 246—128 **13 Claims**



A railroad crossing warning indicator which predicts the time of arrival of trains to a grade crossing is described, which includes a quadrature detector which provides a distance voltage which is derived from the reactance magnitude, and an amplitude detector which provides a distance voltage derived from the impedance magnitude. The voltage derived from the impedance magnitude is applied to a differentiating circuit which provides the speed of the train. The reactance voltage from the quadrature detector and the impedance voltage derivative circuit from the differentiating circuit are then summed whereby the sum of the two voltages provides an improved estimate of the time of arrival of the train with the decrease in error.

3,603,787
SPARK-TYPE ION SOURCE AND DOWNSTREAM DEFLECTOR FOR MASS SPECTROMETER

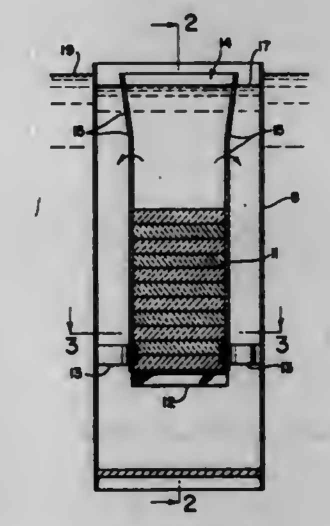
Patrick Powers, Binstead, England, assignor to Associated Electrical Industries Limited, London, England
Filed May 16, 1967, Ser. No. 638,857
Claims priority, application Great Britain, May 17, 1966, May 17, 1966, 21825/66;21826/66
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9SA **28 Claims**



In a mass spectrometer, structure is provided to improve the statistical accuracy of an analytical spectrum especially in that situation where a sample is not homogeneous. The mechanism includes one or both of: (1) structure at the ion source for moving a sample relative to another sample or an electrode of another material; and (2) structure arranged near the ion beam to deflect or suppress the ion beam.

3,603,788
GAMMA RADIATION SOURCE AND METHOD FOR THE TREATMENT OF SEWAGE

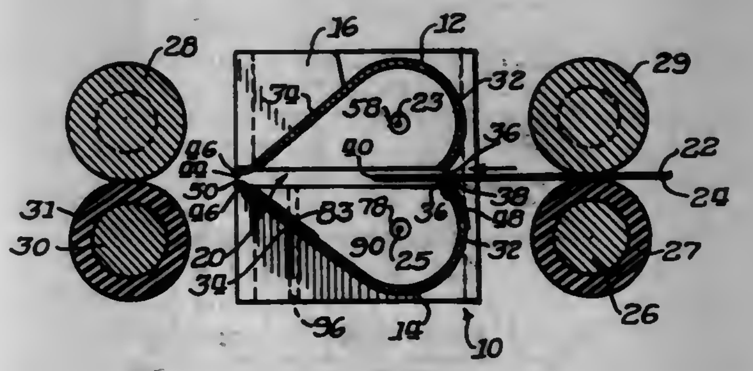
Floro D. Miraldi, 2660 Edgehill Rd., Cleveland Heights, Ohio, and Edward J. Morgan, 19713 Shakerwood Rd., Warrensville Heights, Ohio
Filed May 6, 1968, Ser. No. 726,823
Int. Cl. G01n *21/26*
U.S. Cl. 250—44 **14 Claims**



A method is disclosed for the treatment of contaminated water (sewage) by the gamma rays from fission byproduct waste so as to kill bacteria and/or degrade chemical waste in the contaminated water. The fission byproduct waste is encapsulated in a leach-resistant glass or ceramic product to form a radiation source. The radiation source is held by a holder inside a casing containing coolant. The source, holder, casing and coolant form a natural convection cell for the dissipation of heat. The casing with contents form radiation cells which may be interlocked into rows to form channels. The rows of cells may be fitted with guide vanes to give a generally helical motion and mixing of the contaminated water so as to ensure uniform irradiation of the water. The channels may be cleaned by high velocity water jets. As a result, a treatment plant may be designed and built so that sewage receives at least 0.14 megarads of radiation, which is sufficient to kill at least 99.99 percent of the Escherichia Coli bacteria degrade many chemical compounds, especially the benzyl sulfonate detergents, and accelerate sedimentation.

3,603,789
HEART-SHAPED CORONA DISCHARGE DEVICE

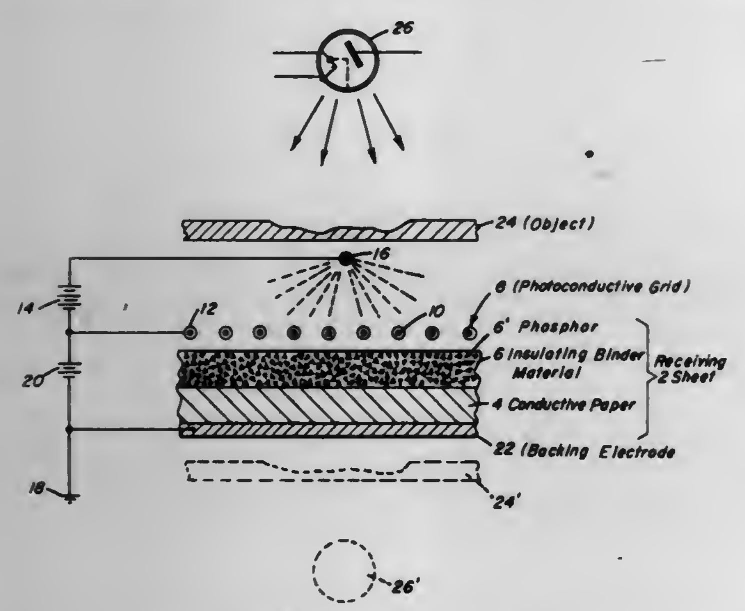
Leo J. Da Prato, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed May 29, 1969, Ser. No. 828,890
Int. Cl. H01j *37/04*
U.S. Cl. 250—49.5 ZC **7 Claims**



Electrostatic charging apparatus for charging a photoconductive coating on a sheet member, having improved guiding means including exterior, converging housing walls for guiding the sheet member to an entrance throat of the charging apparatus and interior converging housing walls for guiding the sheet member to an exit throat of the apparatus. The apparatus is void of any interior mechanical guiding structure, exhibits improved charging efficiency due to a novel housing design, and may also be fabricated economically.

3,603,790
ELECTRORADIOGRAPHIC PROCESS

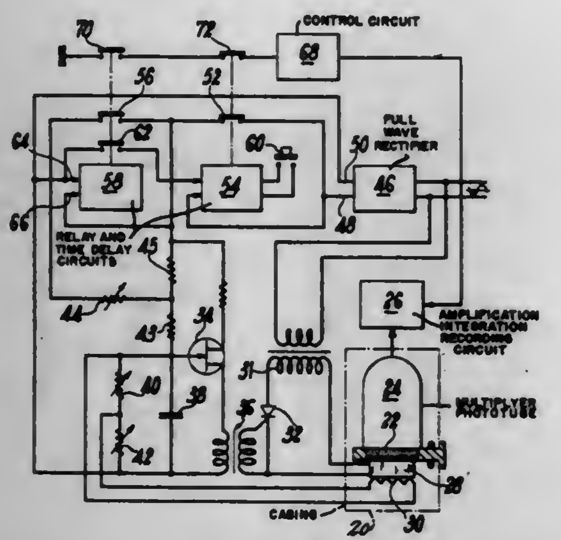
Henry M. Cleare, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 30, 1968, Ser. No. 725,389
Int. Cl. G03g *13/00*
U.S. Cl. 250—65 **13 Claims**



A process by which the radiographic radiation applied to an object for exposure thereof is used to form directly and indirectly a conductivity pattern on a conductive grid comprising a wire mesh completely covered with a photoconductive insulating material. A flow of ions directed toward the grid is modulated to produce a latent electrostatic image on the surface of an image receiving material, the latter and a radiographic fluorescent material are arranged in close proximity to said grid and in contact with a conductive backing member.

3,603,791
METHOD AND DEVICE FOR READING THERMOLUMINESCENT DOSIMETERS

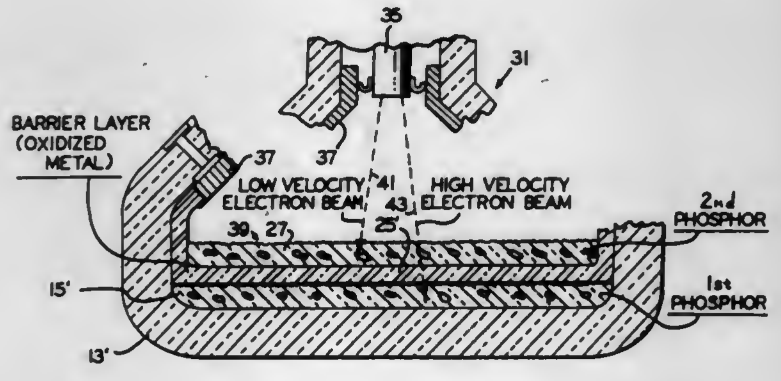
Roger Chenault; Guy Portal; Emile Porrot, and Raymond Prigent, all of Fontenay-Aux-Roses, France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Apr. 7, 1969, Ser. No. 813,830
Claims priority, application France, Apr. 18, 1968, 148,588
Int. Cl. G01t *1/11*
U.S. Cl. 250—71.5 **8 Claims**



Thermoluminescent dosimeters (e.g., Lif, CaF_2) are heated from the variable initial temperature of a dosimeter reader to a predetermined temperature which is higher than the range of emission of peaks which are subject to "fading" for the emission of such peaks to be complete. Immediately after that step, the temperature of the dosimeter is progressively increased to a temperature which is sufficient to cause the emission of all significant peaks and the total light emission of the dosimeter during said temperature rise is then measured. A reader including a temperature regulation circuit is described which automatically carries out the above sequence.

3,603,792
LUMINESCENT SCREEN HAVING A SEPARATION MEDIUM THEREIN

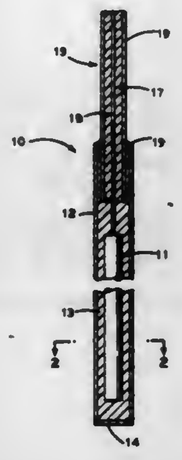
Anthony V. Gallaro, Auburn, N.Y.; Walter F. Kazuk, Loves Park, Ill., and Kenneth Speigel, Seneca Falls, N.Y., assignors to GT & E Sylvania Incorporated
Division of Ser. No. 634,724, Apr. 28, 1971, Pat. No. 3,526,527.
Filed Aug. 26, 1968, Ser. No. 853,085
Int. Cl. H01j *1/62*
U.S. Cl. 250—80 **3 Claims**


35
31
BARRIER LAYER (OXIDIZED METAL)
37
37
LOW VELOCITY ELECTRON BEAM
41
43
HIGH VELOCITY ELECTRON BEAM
2nd PHOSPHOR
39
27
25
15'
1st PHOSPHOR
13'

A plural color cathodoluminescent screen for use in a cathode-ray tube wherein at least two layers of light-emitting phosphors have therebetween a separation layer of electrically conductive oxide material that is substantially translucent to electromagnetic radiation and substantially opaque to the penetration of electron beams of predetermined velocity. The screen includes a nucleation to achieve the uniform disposition of an oxidizable metal which when substantially heated forms the metallic oxide of the separation layer.

3,603,793
RADIATION DETECTOR SOLID STATE RADIATION DETECTION USING AN INSULATOR BETWEEN THE EMITTER AND COLLECTOR

Holland D. Warren, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,791
Int. Cl. G01t *3/00*
U.S. Cl. 250—83.1 **6 Claims**

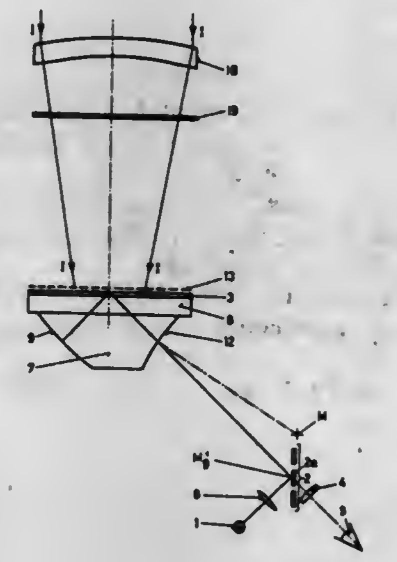


An improved radiation detector which affords a prompt response to changes in the neutron and gamma flux incident upon a ytterbium emitter by using a thickness of insulator

between the emitter and collector that is sufficient to absorb delayed electrons emitted at a lower energy level from the emitter and yet allow prompt electrons emitted at a higher energy level from the emitter to reach the collector. By thus eliminating the delayed electrons, the signal output current of the detector represents the instantaneous value of the incident neutron and/or gamma flux.

3,603,794
APPARATUS FOR TRANSDUCING INFRARED IMAGES INTO VISIBLE IMAGES UTILIZING A LIQUID LIGHT CONTROL LAYER

Fred Mast, Zuzwil/SG, Switzerland, assignor to Ciba Limited, Basel, Switzerland
Filed July 10, 1970, Ser. No. 53,952
Claims priority, application Switzerland, July 18, 1969, 11074/69
Int. Cl. G01t *13/00*
U.S. Cl. 250—83.3 HP **7 Claims**

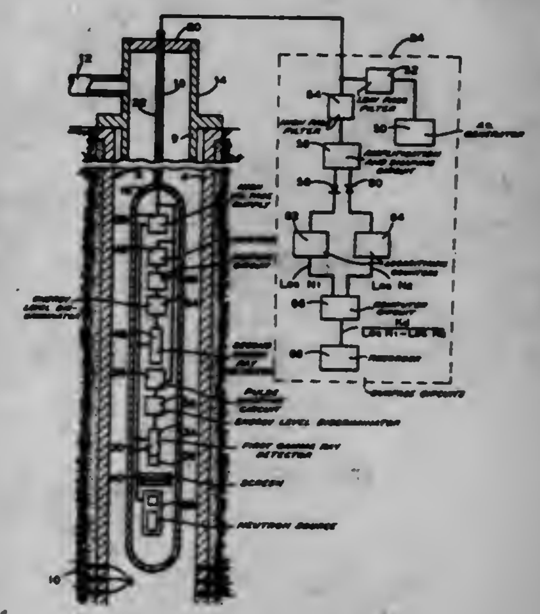


Apparatus for making incoming infrared rays visible includes an infrared optical system which serves to focus the rays through an optical grating onto the surface of a deformable liquid film deposited on a plane face of a transparent prism, the prism being so disposed in the path of a Schlieren-optical system that a beam of visible light produced by a source enters the liquid film from the baCk, is totally internally reflected at its surface adjacent the grating onto a concave mirrored surface of the prism which returns the beam to the liquid where it is again totally internally reflected by the liquid surface and then imaged on the bar-and-slot system of the schlieren-optics. In the absence of incoming infrared rays, the surface of the liquid film remains undeformed and the beam of visible light is turned back into its source. Upon deformation of the liquid surface by incoming infrared rays, visible light returning from the prism passes through the slots of the bar-and-slot system to establish an observable image of the deformation.

3,603,795
METHOD AND DEVICE TO MEASURE THE SPEED OF WATER IN A POLYPHASE FLOW

Louis A. Allaud, Paris, France, assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 31, 1968, Ser. No. 772,325
Claims priority, application France, Dec. 26, 1967, 133789
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 **1 Claim**

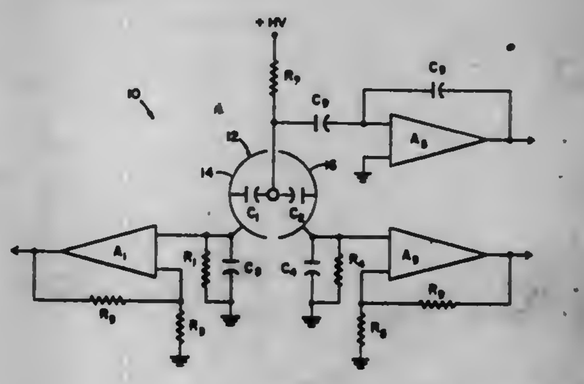
An illustrative embodiment of the invention measures water speed through oxygen activation. Typically, neutrons of sufficient energy to initiate $0^{16}(n,p)N^{16}$ reactions irradiate a fluid stream, as for example, the usual polyphase stream of fluids flowing through the borehole of a producing oil well. Two gamma ray detectors spaced at different distances from each other downstream from the neutron source register the 6 mev. gamma radiation that characterizes N^{16} disintegration.



The water speed then is determined through the ratio of the counts registered by the two detectors.

3,603,796
SEGMENTED GAMMA RAY DETECTOR AMPLIFIER SPECTROMETER

Robert L. Chase, Blue Point, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Jan. 23, 1969, Ser. No. 793,384
Int. Cl. G01t *1/24*
U.S. Cl. 250—83.3 R **1 Claim**

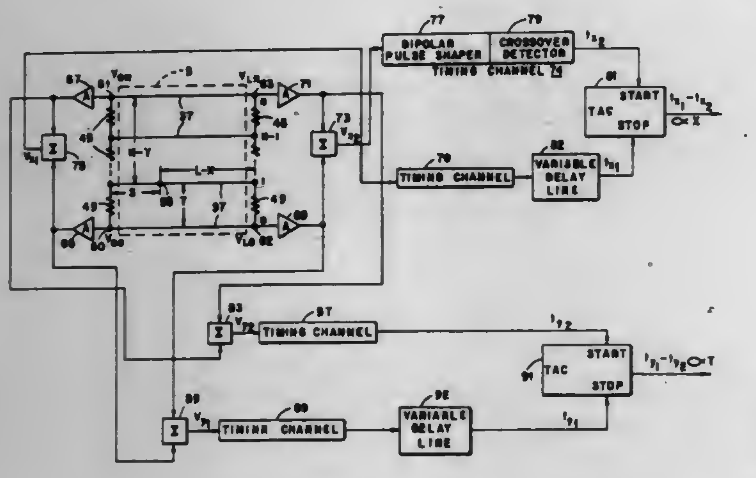


An amplifier for use with a segmented-gamma ray detector employing internal detector summing of the linear signal to eliminate the need for complicated external preamplifier gain adjustment and stability. Each segment of the detector is capacitively coupled to a voltage sensitive preamplifier and a charge preamplifier takes the whole charge of the detector.

3,603,797
TWO-DIMENSIONAL POSITION-SENSITIVE RADIATION DETECTOR

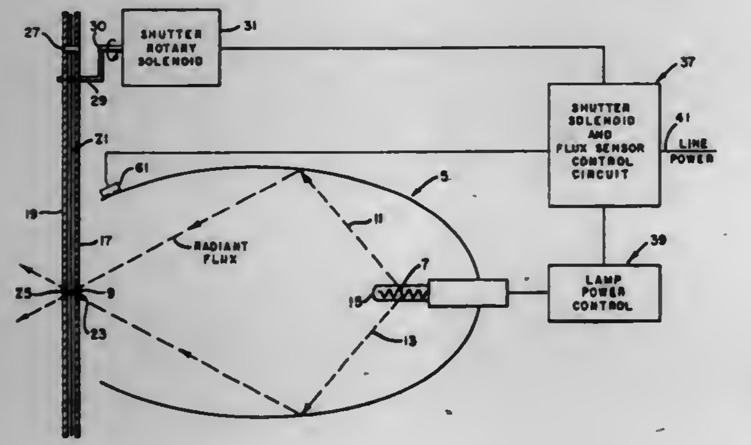
Casimer J. Borkowski, and Manfred K. Kopp, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 10, 1970, Ser. No. 18,125
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 R **8 Claims**

A two-dimensional position-sensitive detector has been provided to measure the coordinates of the location and the energy loss of charged particles and ionizing radiation. The device comprises an ordered array of high resistance collector wires strung in parallel. Adjacent wires are interconnected at both ends by a series of resistors so as to form a four output terminal network. A comparison of the rise times of the output pulses from these four terminals gives the coordinates of an ionizing event within the sensitive area of the detector. The amplitude of the sum of the four output pulses gives the energy loss of the event in the detector gas.



3,603,798
HIGH INTENSITY RADIANT ENERGY PULSE SOURCE HAVING MEANS FOR OPENING SHUTTER WHEN LIGHT FLUX HAS REACHED A DESIRED LEVEL

Larry D. Russell, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed June 18, 1970, Ser. No. 47,443
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J **8 Claims**

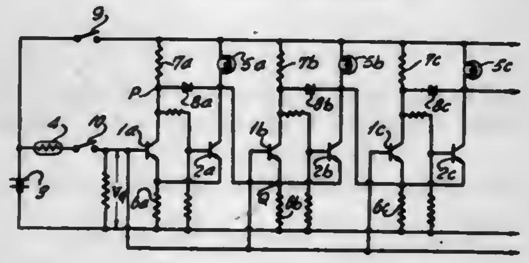


A high intensity radiant energy pulse source is provided which requires no external cooling. A high intensity radiant energy source is located at one focal point of an ellipsoidal reflector and a shutter is positioned in the region of the other focal point. Monitoring means are provided for opening the shutter as soon as a predetermined flux level is reached. Additional means control the duration of time the shutter is open.

3,603,799
LIGHT MEASURING DEVICE COMPRISING A PLURALITY OF BINARY CIRCUITS FOR PROVIDING A DIGITAL REPRESENTATION OF PHOTOCELL OUTPUT

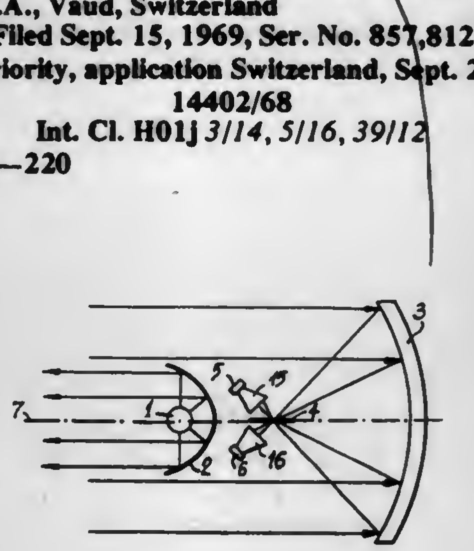
Tsukumo Nobusawa, Aska-shi, Japan, assignor to Asahi Kogaku Kogy Kabushiki Kaisha, Tokyo-to, Japan
Filed Mar. 26, 1969, Ser. No. 810,767
Claims priority, application Japan, Apr. 1, 1968, Mar. 10, 1969, 43/21022; 44/17860
Int. Cl. H01j *39/12;* **G01j** *1/42*
U.S. Cl. 250—214 R **7 Claims**

A light measuring device includes successive transistor Schmitt triggers having emitter resistors of successively higher resistances, the collector of the input transistor of each trigger being connected through a diode to the emitters of the next successive trigger. A voltage divider includes a photoconductor and resistor series connected across a battery the voltage across the resistor being applied to the Schmitt triggers. The trigger outputs are connected to lamps and may be connected to relay solenoids which control the insertion of resistances in a shutter timing RC network. The photoconductor may control the charging of a capacitor which is coupled through a high impedance input amplifier to the Schmitt trigger inputs.



3,603,800
TELEMETER HAVING IMAGE FLUX SEPARATOR WITH OPAQUE AREA AT AN ACUTE ANGLE WITH THE OPTICAL AXIS

Jesus de Andres, Yverdon Vaud, and Giovanni Odone, La Rosiaz, Lausanne Vaud, both of, Switzerland, assignors to Paillard S.A., Vaud, Switzerland
Filed Sept. 15, 1969, Ser. No. 857,812
Claims priority, application Switzerland, Sept. 26, 1968, 14402/68
Int. Cl. H01j *3/14, 5/16, 39/12*
U.S. Cl. 250—220 **10 Claims**



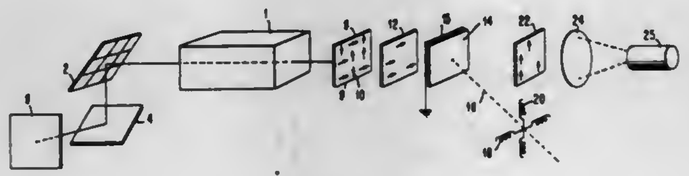
The invention provides a high sensitivity in a telemeter of the type including a convergent optical receiving system reflecting the rays from the object the range of which is to be ascertained and two different photocells the exposure of which to said rays varies in opposite directions in accordance with the location of the point of convergence of said rays and to this end there is provided an element separating the rays impinging on the group of photocells and extending along a straight line passing through a predetermined point of convergence between two ranges of points of convergence for which the photocells are selectively predominant.

3,603,801
ELECTROOPTIC INFORMATION READ-OUT DEVICE USING POLARIZED LASER LIGHT

Thomas J. Harris, Poughkeepsie; Kurt M. Kosanke, Wappingers Falls; Werner W. Kulcke, Wappingers Falls, and Erhard Max, Wappingers Falls, all of, N.Y., assignors to International Business Machines Corporation, New York, N.Y.
Division of Ser. No. 356,442, Apr. 1, 1964, Pat. No. 3,469,206.
Filed Apr. 16, 1969, Ser. No. 839,750
Int. Cl. G02f *3/00*
U.S. Cl. 250—225 **8 Claims**

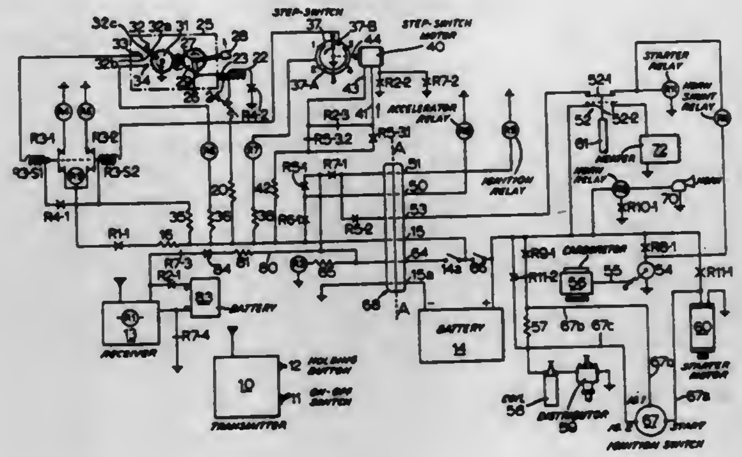
Information from a laser cavity having a magnetic storage member with different areas magnetized in different

directions within the cavity producing different light polarizations is obtained by a polarization selection device including an analyzer and an electrooptic device which is operative in response to a scanning electron beam. The polarization selection device may include a pair of analyzers with their polarization directions orthogonal to one another and the electrooptic device positioned between the pair or a light deflecting device.



3,603,802
REMOTE CONTROL AUTOMOBILE MOTOR STARTER

Frank Petric, 37 Franklin Blvd., St. Catharines, Ontario, Canada
Continuation-in-part of application Ser. No. 799,048, Feb. 13, 1969, now abandoned. This application July 24, 1969, Ser. No. 844,561
Int. Cl. F02n *11/00*
U.S. Cl. 290—37 **22 Claims**

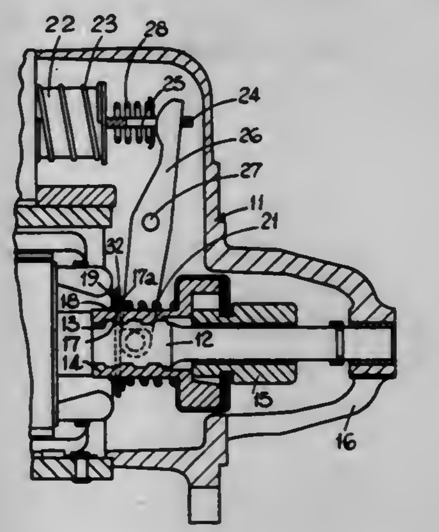


A method and device for starting an internal combustion engine by remote control, in which a single frequency receiver, and preferably a single frequency transmitter, are used. The motor is started by transmitting two signals within a maximum time interval, preferably a predetermined time interval, between them. A discharging capacitor governs the device using a maximum time interval while a timing mechanism together with switch means or a capacitor governs the device using a predetermined time interval.

3,603,803
ELECTRIC STARTER MOTORS

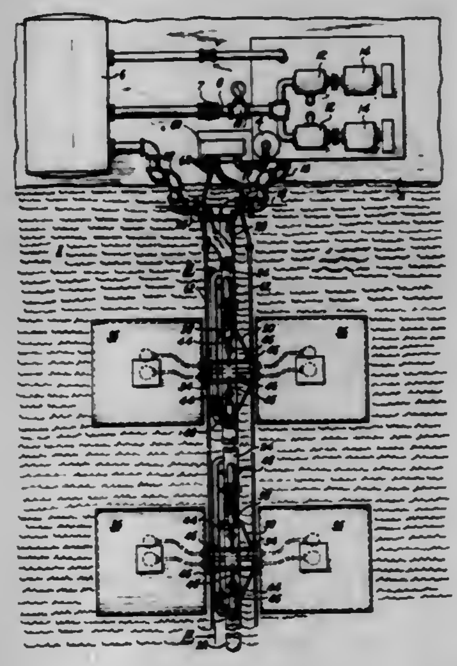
Roy Price Bowcott, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Sept. 25, 1969, Ser. No. 860,871
Claims priority, application Great Britain, Oct. 4, 1968, 47191/68
Int. Cl. F02n *11/02*
U.S. Cl. 290—38 A **3 Claims**

An electric starter motor for an internal combustion engine includes a casing, and a rotor shaft journaled for rotation in the casing. A pinion assembly is mounted on the rotor shaft for rotation with the rotor shaft, and is also capable of axial movement relative to the rotor shaft. A lever is coupled at one end to the pinion assembly, and is pivotally mounted intermediate its ends on the casing. Solenoid means is coupled to the end of the lever remote from the pinion assembly, so that operation of the solenoid means causes pivotal movement of the lever and therefore moves the pinion assembly axially relative to the rotor shaft. The lever is coupled to the pinion assembly through a plate which is pivotally connected to said one end of the lever. The plate is pivotable relative to the lever about an axis extending generally at right angles to the axis of rotation of the pinion assembly, and the pinion assembly is engaged with said plate so as to be rotatable relative thereto. Said plate is capable of movement relative to the pinion assembly in a plane generally at right angles to the axis of rotation of the pinion assembly.



3,603,804
WAVE OPERATED POWER APPARATUS

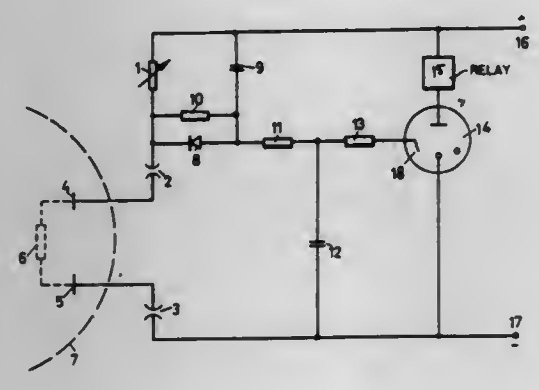
Jesse Marion Casey, Scottsboro, Ala., assignor to Dr. A. Carl Collins and Dawson, McGinty and Livingston, Scottsboro, Ala., part interest to each
Filed Feb. 16, 1970, Ser. No. 11,522
Int. Cl. F03b *13/12*
U.S. Cl. 290—42 **7 Claims**



An elongated U-shaped pipeline has floats pivoted on transverse axes for rocking thereon in response to wave action in water which the floats are buoyant. Rocking of the floats operates pumps arranged in pressure compounding relation and the fluid under pressure is delivered to a shore-based storage tank. The storage tank being sealed allows build up of a pressure head. The fluid is let out through a regulator to operate machinery. Spent fluid from the plant is spilled out into a recovery tank, directly under the motor or turbine. It is then picked up by the lower leg of the pipeline and returned to repeat its cycle again. The floats support the pipeline and can be flooded to sink below the surface to avoid damage by storm waves.

3,603,805
DEVICE FOR CONTROLLING LAUNDRY DRIERS WITH MECHANICAL MOVEMENT OF THE WASHING, IN DEPENDENCE UPON THE DEGREE OF DRYING

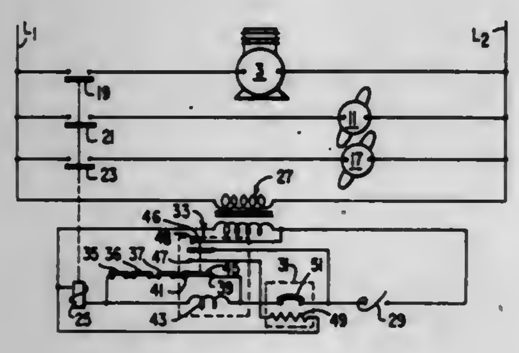
Konstantin Apel, Meersburg, (Bodensee), Germany, assignor to Holzer-Patent AG, Zug, Switzerland
Filed July 11, 1969, Ser. No. 840,925
Claims priority, application Germany, July 11, 1968, P 17 63 659.8
Int. Cl. F26b *25/22*
U.S. Cl. 307—118 **8 Claims**



In a resistance measurement type drier control, the control circuit of the drier includes a capacitor connected to the resistance bridge electrodes and an integrator coupled to the capacitor, the time constants of the capacitor and integrator being related to the drum rotation time.

3,603,806
REFRIGERATION SYSTEM CONTROL

Milton H. Hitzke, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,663
Int. Cl. H01h *43/00*
U.S. Cl. 307—126 **8 Claims**

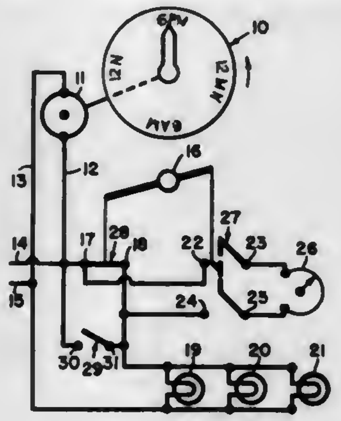


A control circuit for a refrigeration system to provide a delayed automatic system restart after the system is deenergized by one of the safety switches employed therein. Delayed energization of the system when the thermostat contacts close is also provided to prevent rapid cycling, to allow system pressure equalization, and to prevent compressor damage.

3,603,807
TIMECLOCK DIMMING CONTROL

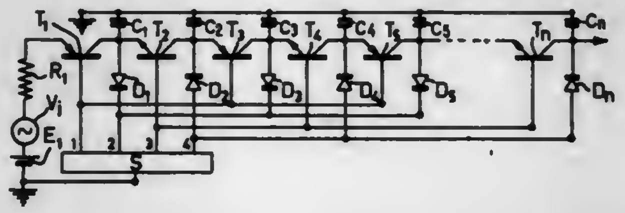
Clifford D. Erdmann, 15338 Leonard St., Spring Lake, Mich.
Filed July 11, 1969, Ser. No. 840,907
Int. Cl. H01h *7/00*
U.S. Cl. 307—141 **2 Claims**

A control system for electrical circuits having "off" periods, "full on" periods, and periods of limited current flow. A timer-controlled switch mechanism incorporates a dimmer unit into a load circuit exclusively during periods of limited current flow, keeping the dimmer isolated completely during other phases of the control cycle.



3,603,808
CAPACITOR STORE

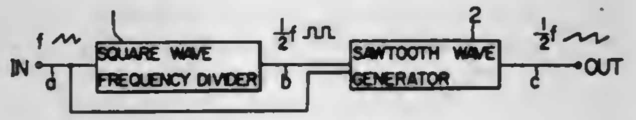
Frederik Leonard Johan Sangster, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 21, 1969, Ser. No. 826,537
Claims priority, application Netherlands, May 25, 1968, 6807435
Int. Cl. G11c *11/00*
U.S. Cl. 307—221 **3 Claims**



A capacitor store wherein a plurality of serially connected transistors of alternating opposite polarity types are interconnected at the respective collector and emitter terminals thereof, at each of which connection points a capacitor is connected between the connection point and ground. Alternate transistors are connected to sources of oppositely polarized switching pulses. In the interval between switching pulses of like polarity a second pair of switching pulses of the same polarity as the corresponding first switching pulses are applied through diodes to the collectors of each transistor in the capacitor store.

3,603,809
FREQUENCY-DIVIDED SAWTOOTH WAVE GENERATING CIRCUIT

Yasuji Uchiyama, Hamakita-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Jan. 2, 1970, Ser. No. 365
Claims priority, application Japan, Jan. 11, 1969, , Jan. 31, 1969, Jan. 31, 1969, Jan. 31, 1969, Jan. 31, 1969, Feb. 3, 1969, 44/2220; 44/2221; 44/6642; 44/6643; 44/6644; 44/6645 44/9291
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 **10 Claims**



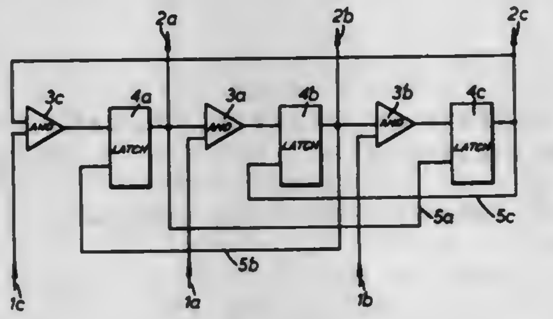
A circuit consisting of a square wave frequency divider which converts its input sawtooth wave having a frequency f into an output square wave having a frequency $f/2$ and a mixer for mixing said output wave and said input sawtooth wave by equal peak amplitudes, said circuit being a principal circuit of the invention and being used to produce a sawtooth wave having a frequency $f/2$.

A plurality of stages each consisting of the circuit mentioned above are successively connected in cascade, whereby a plurality of sawtooth waves having frequencies which are successively divided are produced.

Furthermore, modifications of the circuits mentioned above are described.

3,603,810
SEQUENCE CONTROL CIRCUITS

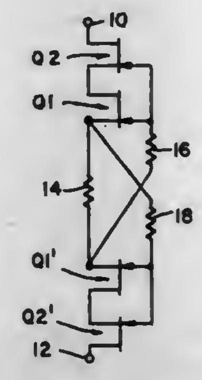
Kenneth Hubert Clayson, Solihull, England, assignor to Wilmot-Breeden Limited
Filed Sept. 3, 1968, Ser. No. 756,939
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **1 Claim**



A circuit having a plurality of adding or "AND" circuit stages and a corresponding number of bistable state or "LATCH" circuit stages connected alternately in sequence to provide associated pairs. Each "LATCH" stage has in use a normal state in which it is inoperative and a triggered state in which an output connection of that stage provides one of a sequence of output signals, one input for the associated "AND" stage, and a changeover signal for an immediately adjacent "LATCH" stage. Additional inputs for the "AND" stages are provided from a connection or connections to which external control signals can be applied, and the application of two inputs to one of the "AND" stages produces an output thereof which acts to change over a corresponding one of the "LATCH" stages.

3,603,811
TWO-TERMINAL BIPOLAR SELF-POWERED LOW CURRENT LIMITER

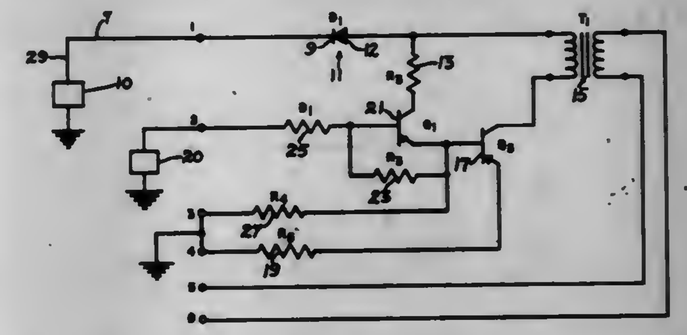
Christopher C. Day, and Bo Holte, both of Newtonville, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Dec. 9, 1969, Ser. No. 883,412
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **8 Claims**



A two-terminal, bipolar, self-powered low current limiter having particularly advantageous use for limiting currents in body electrodes connected to biomedical electronic equipment to the microampere range. In one embodiment of the invention, a pair of series connected field effect transistors form a bipolar current limiting device. In another embodiment of the invention, four field-effect transistors are provided in the form of two series connected bistable devices. In both cases, an additional pair of field-effect transistors can be used to increase the breakdown voltage in both directions.

3,603,812
ELECTROLUMINESCENT PANEL DRIVER

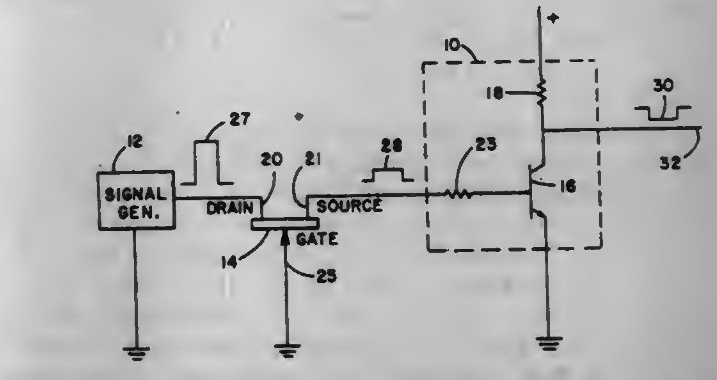
Wolfgang Merel, Cedar Grove, N.J.
Filed Mar. 19, 1964, Ser. No. 353,307
Int. Cl. H03k *3/26, 19/08*
U.S. Cl. 307—239 **1 Claim**



1. A driver of the character described operable from power supply and control voltages below the firing potential of gas filled tubes, said driver comprising: a source of alternating electric current; a voltage step-up transformer having primary and secondary windings; solid state means connected in series with the primary winding of said transformer and with said source of alternating current for half-wave rectifying and for controllably interrupting half-wave current flow through said primary winding; a source of direct current control signals; a first transistor connected to said source of control signals and having conductive and nonconductive conditions in response to changes in said control signals, said first transistor being connected to said solid-state means and operative in one of said conditions to cause said solid-state means to interrupt said half-wave current flow through said primary winding, and in the other of said conditions to cause said solid-state means to permit said half-wave current flow whereby said secondary winding provides an alternating current output of higher voltage than said alternating current source and only in response to a predetermined voltage signal form said control signal source; said solid-state means comprising a rectifier diode, and a second transistor having base, emitter and collector connections, said primary winding being connected in series with said diode and said source of alternating current through said emitter and collector connections of said second transistor; said first transistor having emitter and collector connections connected in series with said diode and said alternating current source, one of said emitter and collector connections of said first transistor being connected to the base of said second transistor, and said first transistor having a base connection coupled to said control signal source.

3,603,813
FIELD EFFECT TRANSISTOR AS A BUFFER FOR A SMALL SIGNAL CIRCUIT

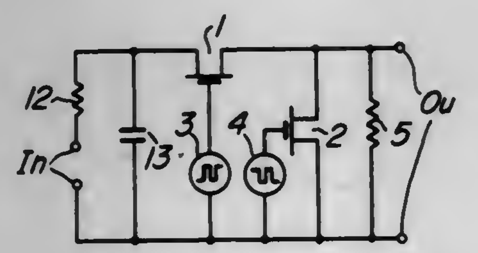
James N. Hall, Palo Alto, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 3, 1969, Ser. No. 881,811
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **2 Claims**



A field effect transistor having its drain and gate electrodes connected across a large signal generator and its source and gate electrodes connected across the input of a small signal circuit for protecting the circuit from high level signal variations at the generator.

3,603,814
SERIES-SHUNT TYPE SEMICONDUCTOR CHOPPER

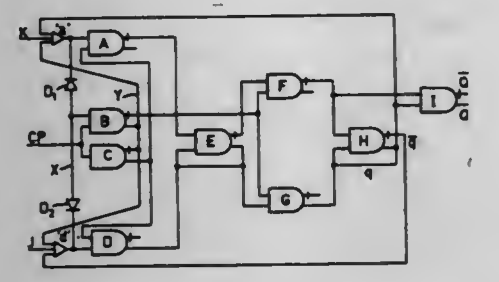
Shin-ichi Ohashi, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 27, 1969, Ser. No. 811,105
Claims priority, application Japan, Apr. 10, 1968, 43/23362
Int. Cl. H03k *17/16, 17/60*
U.S. Cl. 307—240 **5 Claims**



A series-shunt type semiconductor chopper comprising two switching elements which are excited so as to be rendered conductive for a predetermined period of time when they have their conductivities changed, respectively.

3,603,815
BISTABLE CIRCUITS

Ramachandra Aragula Rao, Wallington, Surrey, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 30, 1968, Ser. No. 725,460
Claims priority, application Great Britain, May 2, 1967, 20,191/67
Int. Cl. H03k *3/12*
U.S. Cl. 307—247 **3 Claims**

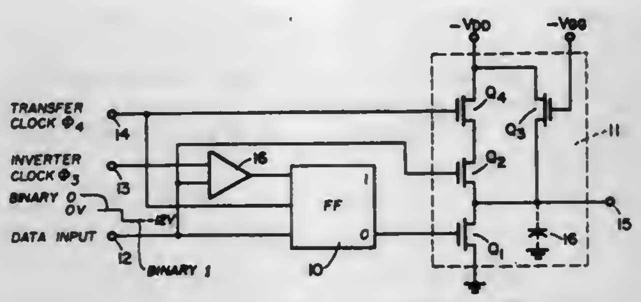


An additional AND-gate connected to the clock pulse input of a J–K flip-flop provides an inhibiting input to each of the J and K input AND-gates in response to a clock pulse received before a flip-flop switching input is applied to the J–K input gates. The inhibiting input prevents the flip-flop from reversing state in response to a switching input applied during a clock pulse, and permits a change of state only if the switching input is received by the flip-flop before the application of the clock pulse.

3,603,816
HIGH SPEED DIGITAL CIRCUITS

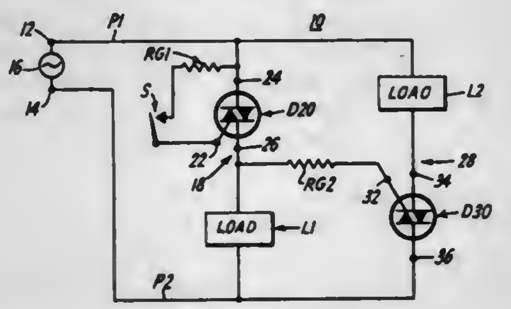
George V. Podraza, Canoga Park, Calif., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.
Filed Aug. 9, 1968, Ser. No. 751,515
Int. Cl. H03k *19/40, 19/00*
U.S. Cl. 307—247 **10 Claims**

Apparatus is provided in digital data equipment for transferring a binary signal to a flip-flop, and deriving therefrom a buffered output signal representing the state into which said flip-flop is being switched by anticipation means coupling the input terminal of the flip-flop to a buffer amplifier driven by the flip-flop. A multibranch, multistage selector tree is employed to selectively couple one of a number of binary signals to the flip-flop. The anticipation means and selector tree overcome and minimize the limitations in switching speeds inherent in such apparatus implemented with insulated-gate, field-effect transistors in an integrated circuit. Switching speed of the flip-flop is increased by the combination of (1) a push-pull arrangement such that when a binary signal is applied to one side the complement of the binary signal is applied to the other side, and (2) an anticipation circuit temporarily shunting current around a load resistor in series with a given one of two cross-coupled active elements.



3,603,817
SOLID STATE ALTERNATING CURRENT SWITCH MEANS FOR SELECTIVE ENERGIZATION OF PARALLEL LOADS

Charles F. Casson, Winslow, Ind., assignor to AMF Incorporated
Filed Oct. 10, 1968, Ser. No. 766,510
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **12 Claims**

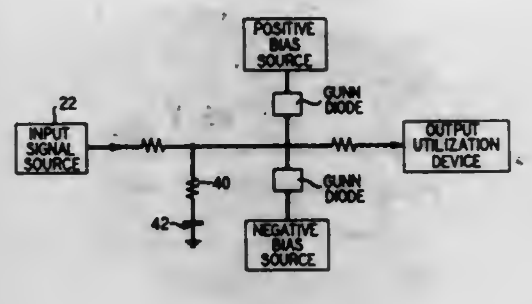


An AC load circuit having first and second loads connected in parallel is provided with switching means for selectively energizing such loads including first and second bilateral semiconductor triodes of the thyristor type connected by their power electrodes in series between their respective loads and opposite sides of an AC source, a control switch and first coupling resistance connecting the gate electrode of the first triode and a second coupling resistance connecting the gate electrode of the second triode to the source and load connected electrodes, respectively, of the first triode.

3,603,818
GUNN-DIODE LOGIC CIRCUITS

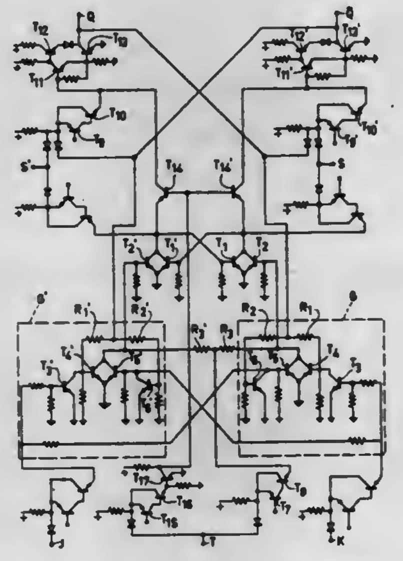
Gerard White, Marlboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 17, 1969, Ser. No. 833,973
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **9 Claims**

Two Gunn diodes are connected in series between oppositely poled bias sources. The sources are selected such that in the absence of high-field domains in the diodes the internal field in each diode is just above the threshold for domain propagation. When a high-field domain propagates in one diode, the internal field available in the other device is below the minimum value required to achieve domain nucleation. By applying a bias current to an input-output node point between the diodes, it is possible thereby to selectively give preference to domain nucleation in either diode. This basic two-diode arrangement is utilized to form a threshold detector, a bistable circuit, a pulse regenerator and an analog-to-digital converter.



3,603,819
JK-FLIP-FLOP

Nicolaas Johannes Maria Molle, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 2, 1969, Ser. No. 812,616
Claims priority, application Netherlands, Apr. 9, 1968, 6,805,036
Int. Cl. H03k *3/12, 3/286*
U.S. Cl. 307—291 **5 Claims**

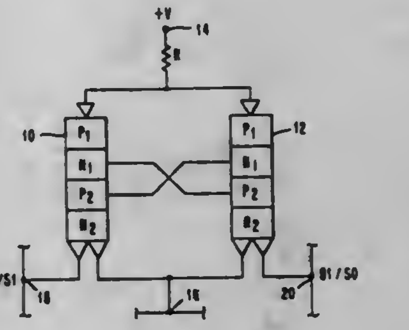


A JK-flip-flop of the master-slave type wherein the output signals from the slave flip-flop are each fed back to a separate input gate each consisting of separate partial gates. The J and K signals are both fed to each of the input gates whereby changes in the J and K signals occurring during a clock pulse are registered in the slave flip-flop.

3,603,820
BISTABLE DEVICE STORAGE CELL

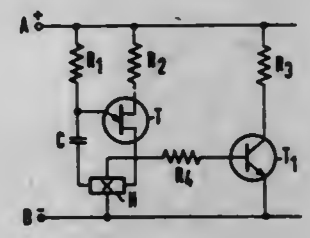
Claus H. Schuenemann, Schonaich, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 26, 1968, Ser. No. 779,045
Claims priority, application Germany, Dec. 15, 1967, P 15 24 892.7
Int. Cl. H01l *19/00*
U.S. Cl. 307—305 **3 Claims**

This specification describes a semiconductor storage cell that employs two cross-coupled PNPN switching devices as its active elements. At any given time one switching device conducts while the other switching device is held off by the crosscoupling between the two devices. By using the mentioned switching devices in place of transistors, the amount of power dissipated by the storage cell is reduced considerably.



3,603,821
CIRCUIT ARRANGEMENTS FOR PULSING THE CONTROL CURRENT OF A HALL GENERATOR

Dieter Flachsbarth, Ruckersdorf, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munchen, Germany
Filed May 19, 1969, Ser. No. 825,585
Claims priority, application Germany, May 21, 1968, P 17 65 454.5
Int. Cl. H01r *5/00*
U.S. Cl. 307—309 **6 Claims**

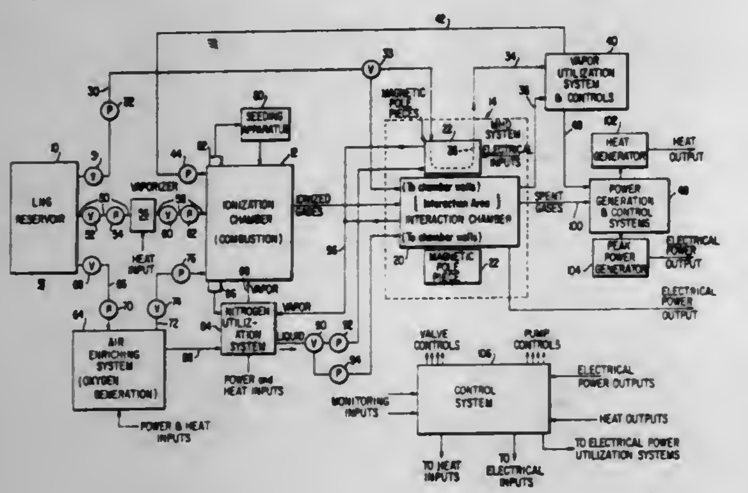


A pulse generator circuit includes a unijunction transistor having an emitter electrode connected to a common point in the connection between the resistor and capacitor of an RC circuit, a base 1 electrode, a base 2 electrode and an interbase path. A Hall generator is connected in series with the unijunction transistor via the interbase path of the transistor and has one control current electrode connected to the base 1 electrode of the unijunction transistor, another control current electrode connected to the capacitor of the RC circuit, one Hall voltage electrode connected to the negative polarity terminal of a source of DC voltage and another Hall voltage electrode galvanically connected to the control circuit of an electronic switching component.

3,603,822
METHOD AND SYSTEM FOR MAGNETOHYDRODYNAMIC GENERATION OF ELECTRICITY

Robert E. Petsinger, Upper St. Clair, Pa., assignor to LNG Services, Inc., Pittsburgh, Pa.
Filed Feb. 7, 1969, Ser. No. 797,460
Int. Cl. H02m *4/02*
U.S. Cl. 310—11 **6 Claims**

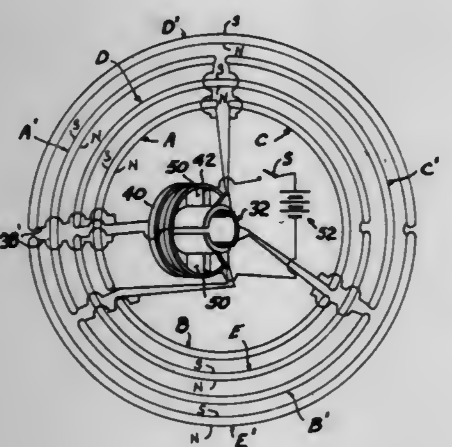
In the magnetohydrodynamic generation of electricity, a method and system are provided employing liquified natural gas as a source of refrigeration, as a source of gaseous medium to be ionized, as a power source for the generation of oxygen employed in the combustion process for ionization of



gases, and as a fuel for various power and heat generation functions.

3,603,823
MAGNETIC MOTOR WITH PLURALITY OF STATORS

Elmer B. Mason, 901 Vickie Dr., Oklahoma City, Okla.
Filed Dec. 9, 1969, Ser. No. 883,526
Int. Cl. H02k *23/36*
U.S. Cl. 310—46 **2 Claims**

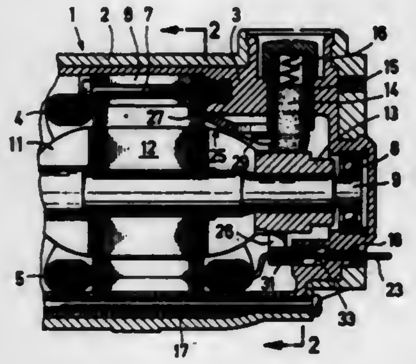


An electric motor frame is defined by spaced-apart generally circular end members which coaxially journal a rotor comprising a drive shaft having a disklike flange secured thereto medially the spacing of the end members. Stator coils are concentrically secured to the inner surface of at least one end plate and field coils are secured to at least one side surface of the rotor in concentric outwardly spaced relation with respect to the stator coils. Brush rigging, connected with the rotor, supports a pair of brushes interposed between a commutator and slip rings concentrically surrounding the drive shaft and supported by one frame end member to complete a current switching action to the stator coils.

3,603,824
WIRING HARNESS FOR ELECTRICAL ROTARY MACHINES

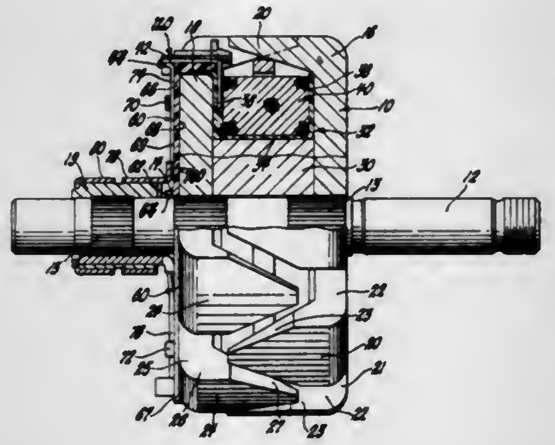
Joachim Csaki, Stuttgart, Germany, assignor to Ackermann u. Schmitt K.G., Stuttgart, Germany
Filed Mar. 11, 1970, Ser. No. 18,660
Claims priority, application Germany, Mar. 12, 1969, P 19 12 535.0
Int. Cl. H02k *13/00*
U.S. Cl. 310—71 **9 Claims**

A wiring harness for assembling electrical rotary machines having field coils and a rotary armature comprises a plastic spider for positioning a resilient metal clip which connects a field coil with a fixed brush and guides a wire connected with a field coil into alignment with an opening in the housing for the wire.



3,603,825
WINDING SPOOL AND LEAD SUPPORT INSULATOR FOR ROTORS OF ALTERNATING CURRENT GENERATORS

John J. Sheridan, Middletown; Gene D. Bricker, Wilkinson, and Donald F. Wigner, Anderson, all of, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 21, 1970, Ser. No. 39,237
Int. Cl. H02k *3/00*
U.S. Cl. 310—194 **3 Claims**



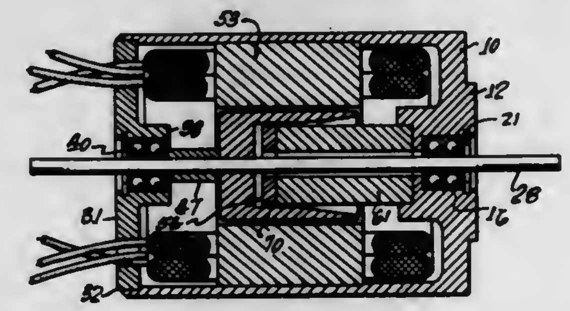
A spool for carrying a field winding and an insulator for carrying leads connected to the ends of the winding are located on opposite sides of an intervening rotor segment. Barrellike projections on the insulator extend through openings defined by the spaces between the pole tips of the rotor segment and engage apertures in ears extending radially from a circular flange on the spool. The leading end of the field winding is guided out to a terminal on the insulator from a central region on the spool through an undercut protective groove on the inside of the flange and then through the aperture and bore in a mating set of ears and projections. The terminating end of the field winding is guided out to another terminal on the insulator through apertures in another mating set of ears and projections. The ends of the field windings are terminated with leads held by the insulator and connected with slip rings.

3,603,826
ROTOR-STATOR ASSEMBLY HAVING REDUCED INERTIA

Simon Saretzky, Sands Point, N.Y., assignor to IMC Magnetics Corporation
Filed Oct. 31, 1969, Ser. No. 872,923
Int. Cl. H02k *1/22*
U.S. Cl. 310—266 **8 Claims**

A stator rotor and permanent magnet assembly constituting a stepper motor or induction-type generator having

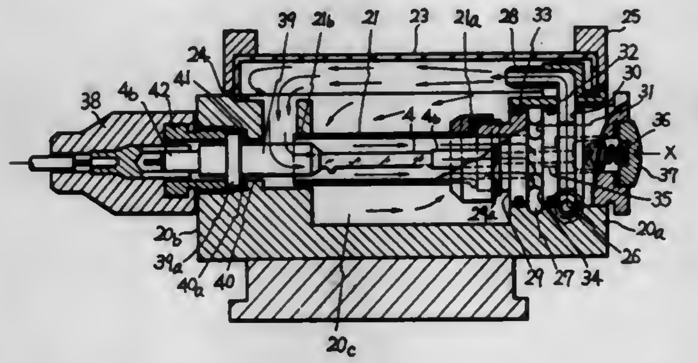
reduced inertia. A nonrotating permanent magnet is provided. A rotor is configured to have a part rotating in a gap between the stator poles and the permanent magnet. The



permanent magnet is mounted at one end from the housing so that the magnetic field is through the stator poles axially of the permanent magnet and through a part of the housing.

3,603,827
COOLING DEVICE FOR MERCURY-ARC LAMP OR THE LIKE

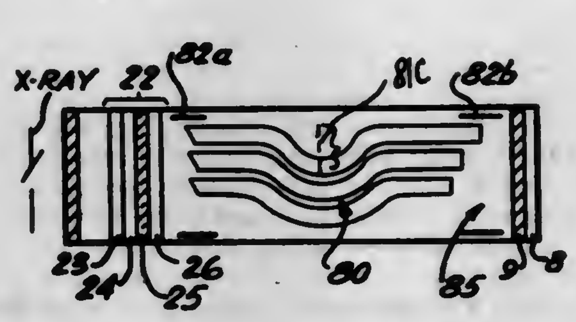
Jiro Degawa, Chiba-ken, and Osamu Takeuchi, Tokyo, both of, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed June 26, 1969, Ser. No. 836,868
Claims priority, application Japan, June 29, 1968, 43/45377
Int. Cl. H01j *7/26*
U.S. Cl. 313—24 **8 Claims**



A cooling device for a mercury-arc lamp having a housing, an inlet nozzle for introducing cooling water into the housing, a mercury-arc lamp, an exhaust port for discharging the cooling water from the housing, a conduit communicating with the exhaust port and containing the lamp, and a transparent window for directing light of the lamp to the outside. The inlet nozzle jets the cooling water in the vicinity of the window.

3,603,828
X-RAY IMAGE INTENSIFIER TUBE WITH SECONDARY EMISSION MULTIPLIER TUNNELS CONSTRUCTED TO CONFINE THE X-RAYS TO INDIVIDUAL TUNNELS

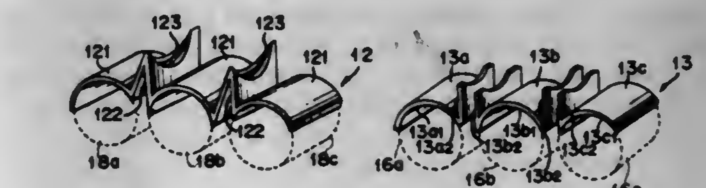
Edward Emanuel Sheldon, 30 East 40th Street, New York, N.Y.
Filed Jan. 28, 1969, Ser. No. 794,507
Int. Cl. H01j *29/68, 13/23, 31/26, 31/50*
U.S. Cl. 313—65 **10 Claims**



This invention relates to image intensifiers of multiplier type and which are especially useful for X-rays images. The novel device is characterized by construction in which each of the discrete X-rays beams corresponding to individual image points strikes the multiplying channel and is prevented from impinging in addition on adjacent multiplying channels. It is found that in order to accomplish this objective the lateral deviation of said multiplying channels between their entrance apertures and their exit apertures cannot exceed 1 mm.; and in addition that the difference of the level of said entrance apertures and said exit apertures cannot exceed 1 mm.

3,603,829
INLINE TYPE TRIPLE ELECTRON GUN ASSEMBLY

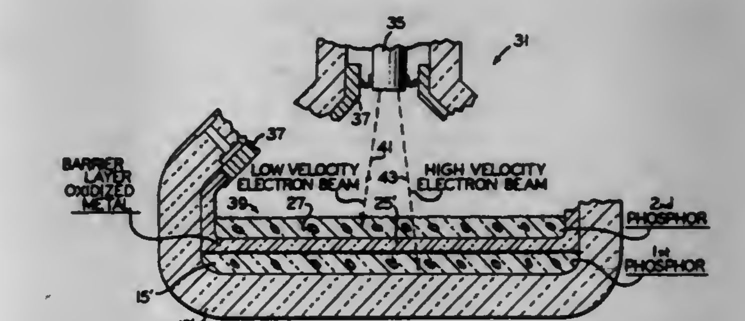
Asahide Tsuneta, Kawasaki, and Shinichi Sawagota, Tokyo, both of, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed May 13, 1970, Ser. No. 36,985
Claims priority, application Japan, May 16, 1969, 44/44,703
Int. Cl. H01j *29/50, 29/02, 19/42*
U.S. Cl. 313—70 C **4 Claims**



An in-line type triple electron gun assembly comprising three electron gun members which are juxtaposed in the common plane and each of which includes a plurality of electrodes spaced apart along its axis, respective corresponding electrodes of three electron gun members being connected by metal supporting strip members which are fused to insulating supporting rods between respective gun members so as to form an integral assembly.

3,603,830
PENETRATION-TYPE COLOR TUBE WITH PHOSPHORS SEPARATED BY CONDUCTIVE BARRIER LAYER

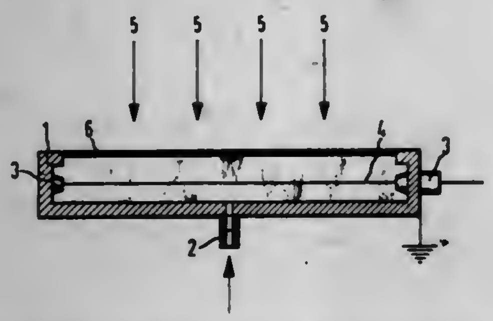
Anthony V. Gallaro, Auburn, N.Y.; Walter F. Kazuk, Loves Park, Ill., and Kenneth Speigel, Seneca Falls, N.Y., assignors to Sylvania Electric Products Inc.
Division of Ser. No. 634,724, Pat. No. 3,526,527. Filed Aug. 26, 1969, Ser. No. 853,083
Int. Cl. H01j *29/28, 31/20, 29/20*
U.S. Cl. 313—92 PF **2 Claims**


35
31
37
37
41
BARRIER LAYER OXIDIZED METAL
LOW VELOCITY ELECTRON BEAM
43
HIGH VELOCITY ELECTRON BEAM
39
27
25
2nd PHOSPHOR
1st PHOSPHOR
15'
13'

A plural-color cathodoluminescent screen for use in a cathode-ray tube wherein at least two layers of light-emitting phosphors have therebetween a separation layer of electrically conductive oxide material that is substantially translucent to electromagnetic radiation and substantially opaque to the penetration of electron beams of predetermined velocity. The screen includes a nucleation to achieve the uniform disposition of an oxidizable metal which when subsequently heated forms the metallic oxide of the separation layer.

3,603,831
RADIATION DETECTOR WITH GAS-PERMEABLE RADIATION WINDOW

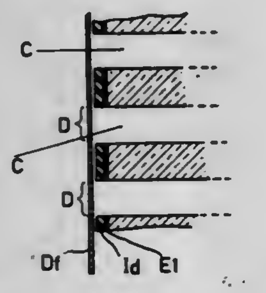
Hermann Kimmel, Parzivalstrasse 10, 8000 Munich, 23, Germany
Filed Sept. 4, 1968, Ser. No. 757,384
Claims priority, application Germany, Sept. 13, 1967, P 16 14 002.0
Int. Cl. H01j *39/26*
U.S. Cl. 313—93 **2 Claims**



A detector for ionizing radiation of relatively low energy of the type in which a normally nonionized gas in a chamber connects two high-voltage electrodes and is ionized by radiation entering the chamber through a window in the chamber wall relatively permeable to the radiation, is provided with a window of fine wire gauze and continuously supplied with gas under a pressure sufficient to prevent entry of contaminants from the environment through the openings in the gauze. The screen window is more permeable to low-energy radiation than known windows.

3,603,832
IMAGE INTENSIFIER WITH CHANNEL-TYPE SECONDARY EMISSION MULTIPLIER

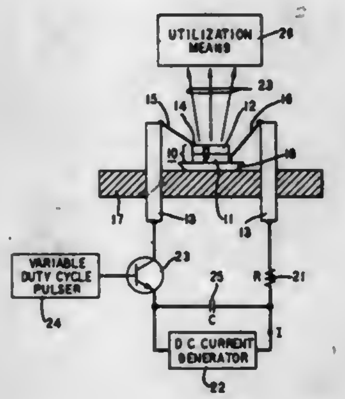
Brian William Manley, Burgess Hill; Pieter Schagen, Redhill, and John Adams, East Grinstead, all of, England, assignors to U.S. Phillips Corporation, New York, N.Y.
Filed Nov. 22, 1968, Ser. No. 785,846
Claims priority, application Great Britain, Nov. 28, 1967, 54133/67
Int. Cl. H01j *31/50, 39/02, 39/14*
U.S. Cl. 313—95 **5 Claims**



An electronic image intensifier including an electron multiplier. The device comprises a photocathode, a fluorescent screen, and a body between and spaced from the photocathode and screen. The body is provided with a plurality of elongated, longitudinal passageways, the walls of which are secondary emissive. Electrodes are provided on opposite surfaces bounding the channels and an electrically conductive electron-permeable membrane covering the entrance to each passageway.

3,603,833
ELECTROLUMINESCENT JUNCTION SEMICONDUCTOR WITH CONTROLLABLE COMBINATION COLORS

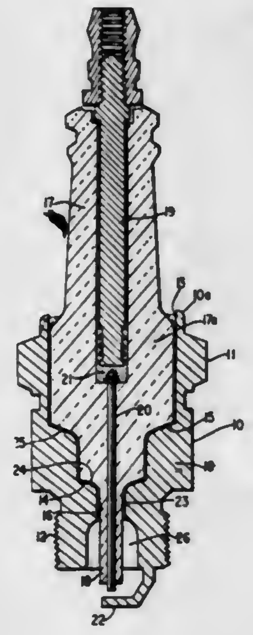
Ralph Andre Logan, Morristown; Walter Rosenzweig, West Orange, and William Wiegmann, Middlesex, all of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 16, 1970, Ser. No. 11,413
Int. Cl. H05b *33/16*
U.S. Cl. 313—108 D **9 Claims**



An electroluminescent PN junction gallium phosphide diode is fabricated with the P-type zone rich in zinc oxygen pairs and the N-type zone rich in isoelectronic nitrogen. In this diode, the apparent color of the emitted light can be controlled by varying the electrical current in the diode, from the red through the yellow to the green portions of the color spectrum. Thereby, an electroluminescent diode device is afforded, having a threefold (or more) positive standby signal characteristic.

3,603,834
SPARK PLUG WITH SINGLE-PIECE CERAMIC INSULATOR WITH TUBULAR PORTION EXTENDING INTO SCAVENGING CHAMBER

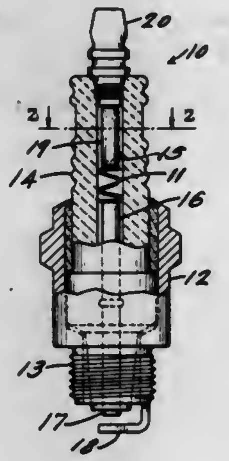
Emil J. Novak, Garden City, N.Y., assignor to Hamilton-Hastings Company Ltd., Downsview, Ontario, Canada
Filed Jan. 8, 1969, Ser. No. 789,805
Int. Cl. H01t *13/16, 13/32, 13/36*
U.S. Cl. 313—11.5 **5 Claims**



A spark plug assembly in which a metallic shell member has an upwardly opening cavity and a downwardly extending hole or opening at the bottom of the cavity, a one-piece insulating member is mounted in the shell member and has an integral, thin-walled tubular portion of relatively small, substantially constant cross-sectional area extending downwardly through the opening of the shell member, and a center electrode means is mounted in a centrally positioned, longitudinally extending opening provided in the insulating member and its downwardly extending tubular portion. The heat range of the plug may be varied by boring a scavenging chamber with a substantially dome-shaped upper end and of large cross-sectional area relative to the insulator tip size and of shallow depth relative to other spark plugs in the bottom of the shell member, the depth of the chamber determining the desired heat range.

3,603,835
SPARK PLUG WITH AN INTERNAL RESISTOR

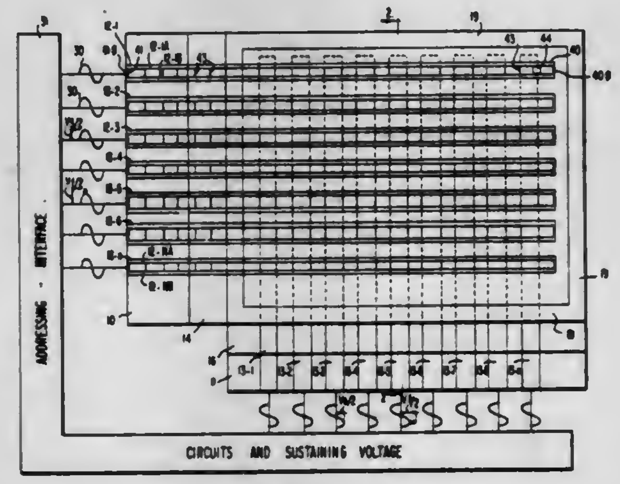
Carl J. Eaton, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio
Filed Jan. 14, 1970, Ser. No. 2,752
Int. Cl. H01t *13/00*
U.S. Cl. 313—118 **7 Claims**



An improved low inductance spring for holding a noise suppression resistor either in the bore of a spark plug insulator or at some other suitable point in the ignition system for an internal combustion engine. The spring is formed from an elongated resilient conductor which is preferably flat. The conductor is shaped to have a plurality of reverse bends which simulate pleats in the bellows of an accordion.

3,603,836
CONDUCTOR CONFIGURATIONS FOR DISCHARGE PANELS

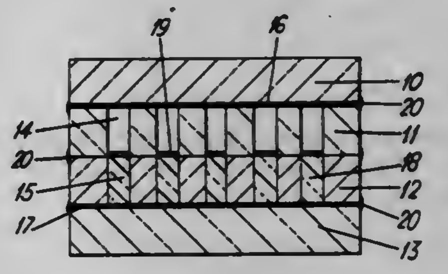
John D. Grier, 1720 Chief Okemos Circle, Okemos, Mich.
Filed Apr. 2, 1969, Ser. No. 812,801
Int. Cl. H01j *1/53, 11/02*
U.S. Cl. 313—201 **11 Claims**



Gas discharge panel conductor configuration and conductor system to increase efficiency of light output conductor configuration which is substantially more likely to be electrically continuous. The conductors of a conductor array on a plate forming the viewing side of the panel are formed by sets of coplanar conductor elements spaced apart so that when a discharge occurs, an observer sees more of the center of the discharge which would ordinarily be partially hidden by a solid conductive line on the viewing side of the panel. The conductor elements of a set may be connected at regular intervals to provide a plurality of electrically parallel routes for conduction in case a section of a conductor element of a set is discontinuous. The gas discharge is more visible since the applied field between selected conductor elements is across two conductors which are not congruent as seen by the observer. Moreover, since the conductor elements are relatively narrow fringe light produced at a discharge site is better seen as to further enhance the delivery of light from the panel. Consult the specification for other features and details.

3,603,837
VISUAL DISPLAY DEVICES

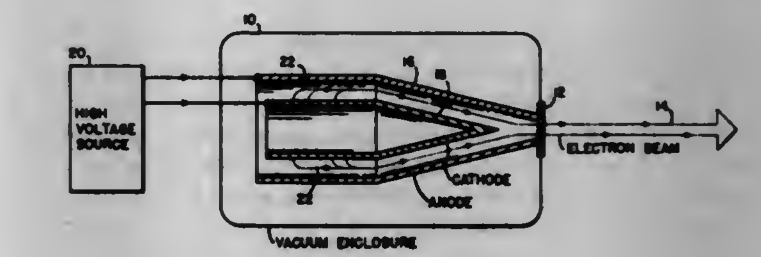
George Christie Turner, 24 Greencroft Romily, Stockport, Cheshire, England
Filed Oct. 27, 1969, Ser. No. 869,799
Claims priority, application Great Britain, Nov. 9, 1968, 53200/68
Int. Cl. H01j *61/30*
U.S. Cl. 313—220 **10 Claims**



A display device comprises a plurality of gas-filled discharge devices arranged in a two-coordinate array. The discharge devices are formed in a plurality of cavities in a block, one end of each cavity being filled with an electrically resistive material and the remainder being filled with gas. Two sets of conductors are formed on the opposite surfaces of the block to enable any selected discharge device to be activated by the energization of the appropriate pair of coordinate conductors.

3,603,838
HIGH INTENSITY ELECTRON BEAM GENERATOR

David C. DePackh, Oxon Hill, Md.
Filed June 20, 1969, Ser. No. 835,025
Int. Cl. H01j *21/00, 29/46*
U.S. Cl. 313—325 **2 Claims**

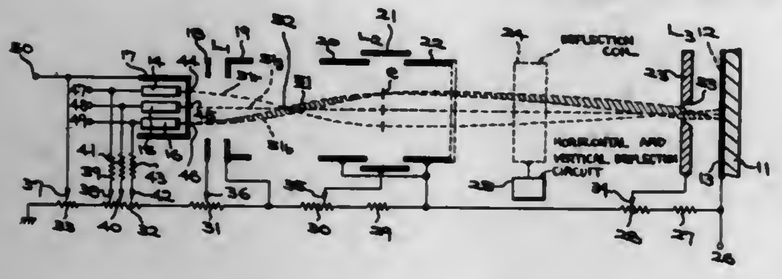


A high current electron beam generator including an anode and a cathode located within a vacuum enclosure. Both the anode and the cathode have a generally conical shape with the cathode being located inside the anode. Alternately, a coaxial alignment may be employed. Upon the application of a high voltage signal across the anode and cathode and due to the particular configurations used, electrons emitted from the cathode are forced to flow for the most part along rather than across equipotential lines of the electric field. This parapotential flow produces a high intensity electron beam which can be subsequently focused for use in various applications.

3,603,839
COLOR TELEVISION PICTURE TUBE OF THE SINGLE ELECTRON GUN TYPE

Kenjiro Takayanagi, Kamamira, Japan, assignor to Victor Company of Japan, Limited, Kanagawa-ku, Yokohama, Japan
Filed June 2, 1969, Ser. No. 829,260
Claims priority, application Japan, June 4, 1968, 43/38,152
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 **4 Claims**

A color television picture tube comprises a single electron gun including a plurality of cathodes arranged in a parallel relationship. A control grid is disposed near the cathodes and formed with a plurality of vertically oriented elongated slits. Each slit is disposed in a position corresponding to the positions of said cathodes. The electron beams, emitted from the electron gun, cross over and focus on a shadow mask. A postdeflection focusing of the electron beams forms an image

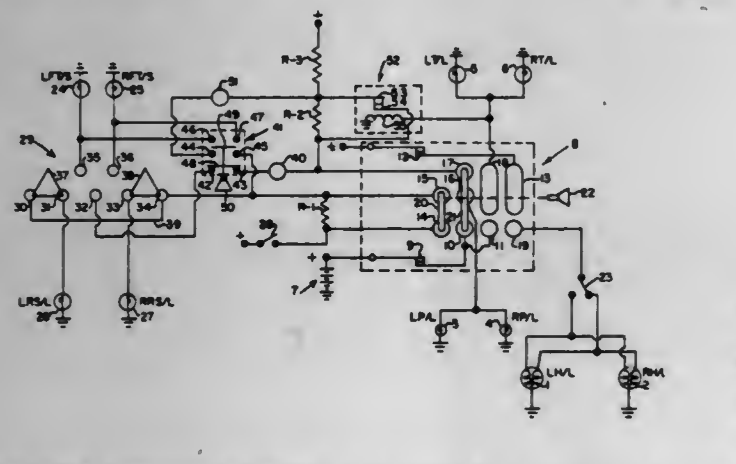


on a phosphorescent screen. A plurality of phosphor dots on the television tube are arranged on positions in which the images are formed.

3,603,840
VARIABLE INTENSITY VEHICLE-SIGNALING SYSTEM

Gideon A. DuRocher, Mount Clemens, Mich., assignor to Essex Wire Corporation, Fort Wayne, Ind.

Filed Oct. 28, 1968, Ser. No. 771,233
Int. Cl. B60q *1/38*
U.S. Cl. 315—82 **6 Claims**

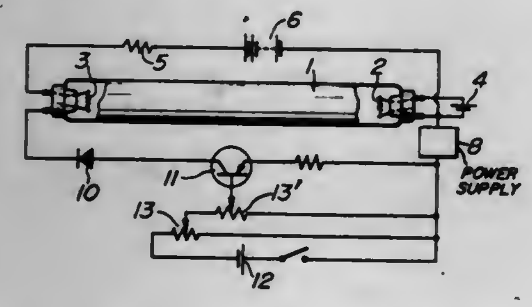


Variable intensity signaling apparatus for a vehicle having operating lamps operable in response to opening and closing of an operating lamp switch and also having stop signal lamps, turn signal lamps and hazard signal lamps operable independently of the operating lamp switch, the signaling lamp circuits including dimming resistances operable in response to operation of the operating lamp switch to vary the brilliance of the signal lamps. The material from which the resistances are formed is temperature sensitive, the resistance varying directly with the temperature.

3,603,841
FLUORESCENT LAMP DEVICE WITH LUMINOSITY CONTROL

Helma Yamada, Kyoto; Masashi Sangen, Kobe, and Kazumasa Nomi, Takatsuki-shi, all of, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Feb. 25, 1969, Ser. No. 802,036
Claims priority, application Japan, Mar. 1, 1968, May 30, 1968, June 21, 1968, Aug. 30, 1968, Sept. 13, 1968, 43/16650; 43/45727; 43/53047; 43/75413; 43/79818
Int. Cl. H05b *37/00, 41/00*
U.S. Cl. 315—171 **4 Claims**

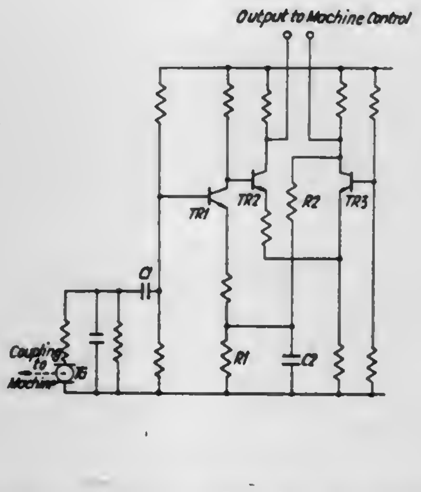


A fluorescent lamp device in which a DC power source of high voltage and small capacity is connected for maintaining a slight glow discharge within the lamp, a main current of the lamp being adjustably supplied from a main power source of large capacity and a rectifier is inserted into the main power circuit for blocking high voltages DC current flowing into the main circuit from the high-voltage source.

3,603,842
ACCELERATION CONTROL OF MACHINES

Bernard Edwin Ash, Bexleyheath, England, assignor to International Standard Electric Corp., New York, N.Y.

Filed Oct. 22, 1969, Ser. No. 868,565
Claims priority, application Great Britain, Nov. 7, 1968, 52771/68
Int. Cl. H02p *7/04*
U.S. Cl. 317—5 **2 Claims**

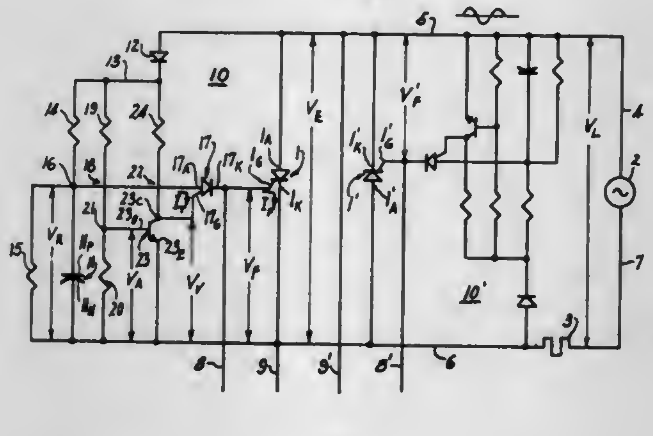


An acceleration control circuit for machinery includes a first transistor coupled to a tachogenerator on the machine to develop a signal proportional to rate of acceleration. An emitter coupled pair of transistors provides an output voltage to control the machinery, with a portion of the output fed back to increase the signal from the first stage. This permits a rapid response to small acceleration changes and a slower response to large changes.

3,603,843
TRANSIENT VOLTAGE PROTECTION CIRCUIT FOR GATE TURN ON DEVICES

Ralph E. Clements, Rockford, Ill., assignor to Barber-Colman Co., Rockford, Ill.

Filed June 17, 1969, Ser. No. 46,893
Int. Cl. H02h *3/20;* **H03k** *17/16*
U.S. Cl. 317—33 SC **10 Claims**

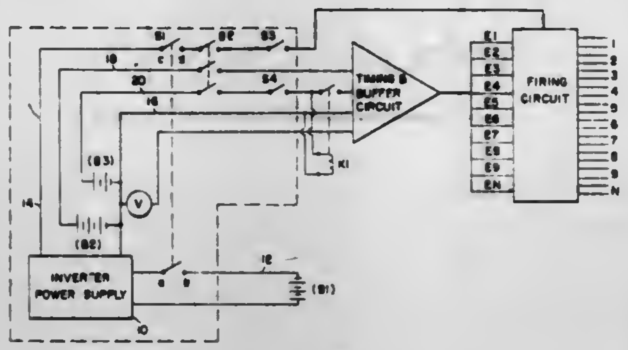


A circuit provides transient high voltage protection in a forward conducting direction to a nonconducting SCR by using the transient to generate a firing pulse for a unijunction transistor, permitting the discharge of a capacitor into the gate circuit of the SCR to turn on the latter before damage has occurred and allow the resultant power to be dissipated in the load.

3,603,844
ELECTRONIC DELAY MULTIPERIOD INITIATING SYSTEM

Fred A. Fritz, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 31, 1969, Ser. No. 846,398
Int. Cl. F23q *7/02*
U.S. Cl. 317—80 **5 Claims**

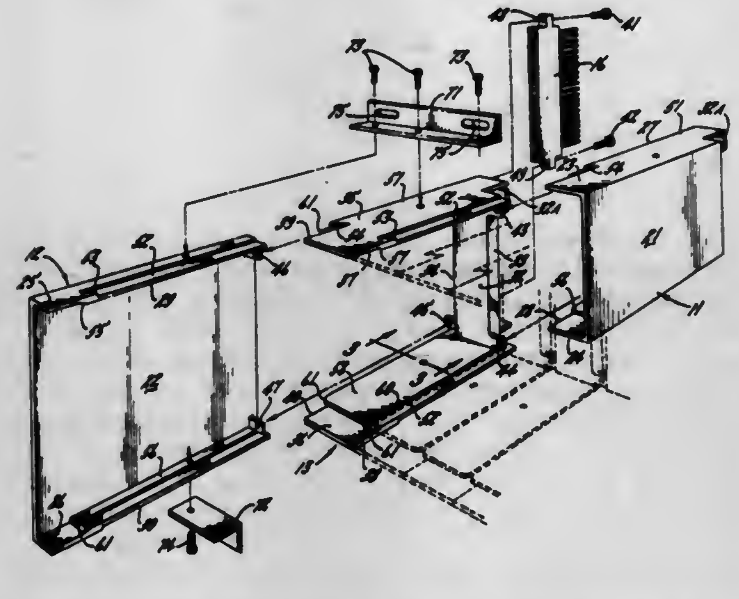


A device for providing electronically delayed multiple point initiating current to electrical initiators in blasting circuits is provided. The device has a plurality of firing circuits each of which employs a firing capacitor connected to a silicon controlled rectifier. A plurality of buffer circuits connected in parallel are provided, each buffer circuit having at least one capacitor which is connected to the control gate of a silicon controlled rectifier of a firing circuit. A timing circuit sequentially actuates discharge of each buffer capacitor into the gate of the silicon controlled rectifier of a corresponding firing circuit whereby the silicon controlled rectifier is made conductive allowing the firing capacitors to discharge into the firing circuit.

3,603,845
EXPANDABLE ENCLOSURE FOR PRINTED CIRCUIT CARDS AND THE LIKE

Howard L. Beers, River Forest, Ill., assignor to Wescom, Inc., Downers Grove, Ill.

Filed July 9, 1970, Ser. No. 53,461
Int. Cl. H05k *5/02;* **H02b** *1/10*
U.S. Cl. 317—117 **12 Claims**

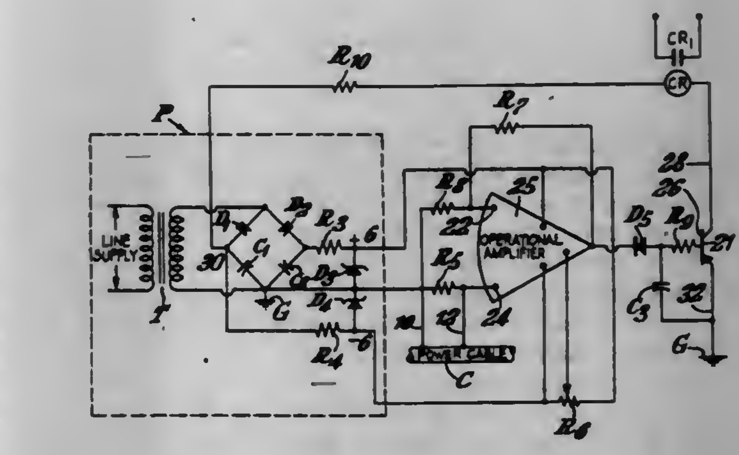


An expandable enclosure to house from one to several printed circuit cards and the like is assembled from a left- and a right-hand end section and, for multiple circuit cards, one or more center sections. Adjacent sections of the enclosure are interlocking, so that the only mechanical connectors required in the assembly are those that are required at any rate to mount the necessary electrical connectors. For over-and-under mounting of the enclosure on a conventional instrument or relay rack there are brackets which are horizontally adjustable relative to the rack but fixed relative to the enclosure, whereas for endwise mounting there are brackets that are fixed relative to the rack but vertically adjustable relative to the enclosure. Further for endwise mounting of the enclosure there are aligning pins extending laterally from either end of the enclosure and locating sockets on the brackets, such that the enclosure may be mounted without any skew relative to the rack by adjusting the vertical positions of the ends of the enclosure so that the aligning pins are received in corresponding ones of the locating sockets.

3,603,846
CURRENT DETECTOR CIRCUIT

Tibor Endre Toth, Bloomfield, N.J., assignor to Union Carbide, New York, N.Y.

Filed May 6, 1969, Ser. No. 822,202
Int. Cl. H01h *47/32*
U.S. Cl. 317—123 **9 Claims**

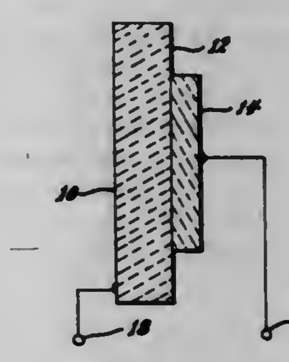


A solid-state current-detector circuit capable of detecting the presence of a predetermined magnitude of AC or DC current in a power cable wherein the current may vary over an extended range which includes means for sensing the voltage drop in a relatively short length of cable which means changes its electrical state when said voltage drop exceeds a predetermined level.

3,603,847
SCHOTTKY BARRIER PHOTODIODE WITH A DEGENERATE SEMICONDUCTOR ACTIVE REGION

Freeman D. Shepherd, Jr., Chelmsford; Virgil E. Vickers, Cambridge, and Andrew C. Yang, Concord, all of, Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed June 11, 1969, Ser. No. 832,111
Int. Cl. H01l *9/00, 15/00*
U.S. Cl. 317—234 R **1 Claim**

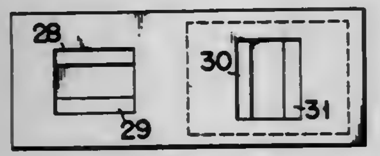


A Schottky barrier photodiode possessing a high quantum efficiency and adapted to operate at long wavelengths. The photodiode is fabricated by providing a nondegenerate semiconductor substrate of one extrinsic conductivity type with a thin layer of a degenerate semiconductor material of the same extrinsic conductivity type as said substrate to form a barrier junction therebetween. The improved quantum efficiency exhibited by the photodiode of this invention is attributed to the use of a degenerate material as the active region.

3,603,848
COMPLEMENTARY FIELD-EFFECT-TYPE SEMICONDUCTOR DEVICE

Tai Sato, Kohoku-ku, Yokohama-shi; Yoshiyuki Takeishi, Mitaka-shi, Tokyo; Yoshihiko Okamoto, Yokohama-shi, and Hisashi Hara, Kamakura-shi, Kanagawa-ken, all of, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

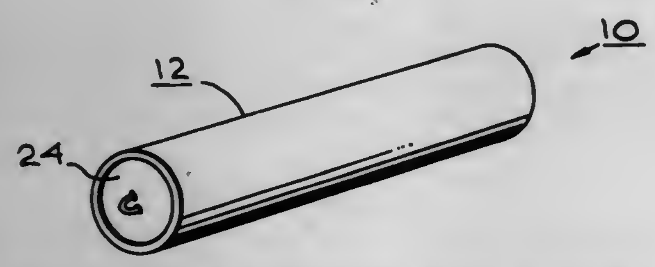
Filed Feb. 25, 1970, Ser. No. 14,174
Claims priority, application Japan, Feb. 27, 1969, 44/14217
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 **7 Claims**



A complementary field-effect-type semiconductor device comprising a unitary substrate of the diamond-type crystalline structure or a compound semiconductor of the zinc-blende-type crystalline structure and at least one pair of field-effect transistors having respective N and P channels lying along the main surface of the substrate and oriented in such a manner that the direction of current through one conductivity-type channel or channels is at right angles to the direction of current through the opposite conductivity-type channel or channels. The main surface and the channels are respectively selected to a special crystal face and a crystal axis.

3,603,849
WOUND CAPACITOR TERMINAL CONNECTION ARRANGEMENT

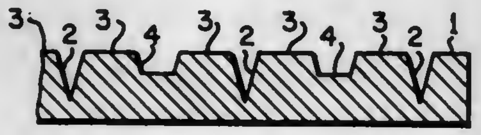
David Kellerman, 1485 South Cardiff, Los Angeles, Calif.
Filed Aug. 3, 1970, Ser. No. 60,250
Int. Cl. H01g *1/14*
U.S. Cl. 317—260 **16 Claims**



A wound capacitor is positioned within a metallic case and, if desired, may be hermetically sealed therein by a pair of dielectric end seals such as glass hermetic seals and has a capacitor-winding body with a first capacitor plate having electrical connection thereto made at one end of the capacitor and a second capacitor plate having electrical connection made thereto at the second end of the capacitor. The capacitor body is provided with at least one dielectric aperture substantially axially aligned therethrough of the type wound with a mandrel, bobbin or winding arrangement for aligning the capacitor. An electrically conductive contact is positioned on each end of the capacitor in an electrical contact with one of the capacitor plates and has a portion that extends into the aperture or apertures. An electrically conductive connector means extends through the dielectric end plates and has a portion extending into the aperture and electrical contact with the electrically conductive contact means therein. A comparatively short portion of the electrically conductive connector means extends outwardly from the outer surface of the capacitor end seal to which terminal wires or other leads may be connected after the completion of the manufacturing of the capacitor and the storing, handling and shipping thereof and upon installation of the capacitor in the circuitry for which it was designed. This provides a very low series resistance in the lead-to capacitor plate connections for AC applications.

3,603,850
CERAMIC CAPACITOR WITH COUNTERELECTRODE

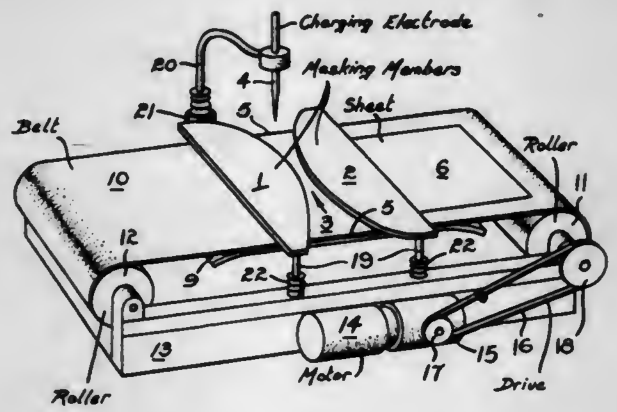
John G. Kirschner, Northbrook, Ill., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Nov. 14, 1969, Ser. No. 876,969
Int. Cl. H01g *3/06*
U.S. Cl. 317—261 **7 Claims**



A ceramic capacitor, particularly a miniature ceramic chip capacitor which can be varied in capacitance, primarily for use in hybrid integrated circuits. The capacitor's metallic electrodes are external and coplanar, being separated by a recess in the ceramic body on one surface of the body, and on the oppositely opposed surface of the body is an external metallic counterelectrode. The capacitor can be varied in capacitance by varying the surface area of the counterelectrode.

3,603,851
METHOD OF CONTOUR CHARGING

Kenneth A. Metcalfe, and Ian E. Smith, both of Lockleys, Australia, assignors to The Commonwealth of Australia, Canberra, Australia
Filed Oct. 31, 1969, Ser. No. 872,870
Claims priority, application Australia, Nov. 11, 1968, 46076/68
Int. Cl. G03g *15/02*
U.S. Cl. 317—262 A **7 Claims**

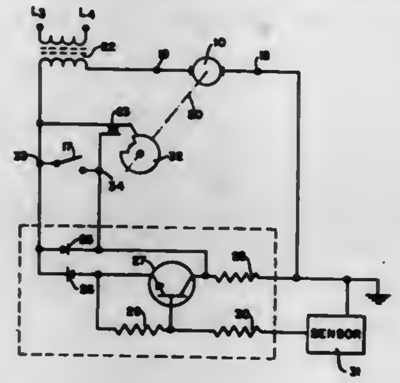


The invention relates to a method of charging electrophotographic coatings wherein successive areas of coating are progressively presented to a charging electrode, the characterizing feature being the interposing of masking means between the charging electrode and the surface to be charged to extend generally transversely to the direction of motion and fixed generally in relation to the charging electrode so that the charging duration of different parts of the area being charged is varied in proportion to the charge intensity at that area. Thus charging intensity is balanced in relation to the distance from the charging electrode. The invention also relates to control of the part of the corona used.

3,603,852
CONTROL SYSTEM PROVIDING DIRECTIONAL CURRENT FLOW TO A MOTOR FOR A TIMER

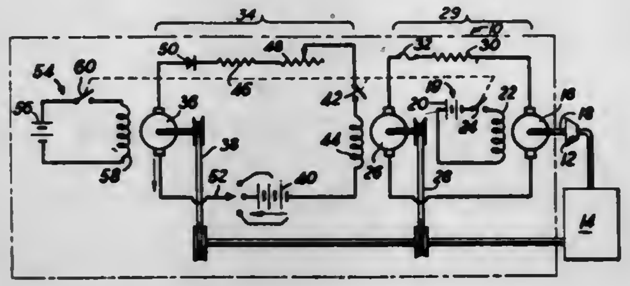
James A. Hirsch, and Robert F. Sheldon, both of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Division of Ser. No. 485,289, Sept. 7, 1965, Pat. No. 3,443,180.
Filed Dec. 30, 1968, Ser. No. 798,562
Int. Cl. H02p *1/58*
U.S. Cl. 318—102 **2 Claims**

A timer for controlling the operation of an appliance which includes a means for controlling the motor of the appliance as well as for controlling the motor of a timer associated with the appliance.



3,603,853
CONTROL SYSTEM FOR DIFFERENTIAL SUPERCHARGER

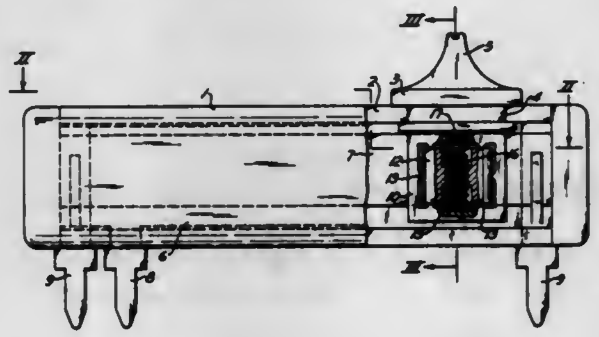
Anthony J. R. Mackay, Bremen, Germany, assignor to Aambeeld, N.V., St. Maarten, Netherlands, Antillen, a part interest
Filed July 30, 1969, Ser. No. 846,061
Int. Cl. H02p *5/20*
U.S. Cl. 318—146 **10 Claims**



An electrical control system for a differential supercharger is disclosed which includes a power generator for providing armature current to the supercharger motor, and a control circuit for providing the field flux to the power generator, the control circuit having a constant direct current source and a direct current control generator in opposition to the constant source. The control generator and power generator are driven by the engine with which the supercharger works. After a minimum engine speed is reached as the engine speed increases the power generator output current to the motor armature decreases resulting in a decrease in supercharging of the engine.

3,603,854
VARIABLE RESISTOR WITH TILTED CONTACT

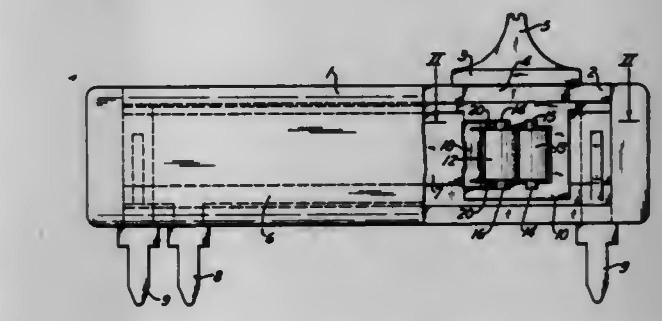
Mogens W. Bang, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.
Filed Aug. 9, 1970, Ser. No. 65,133
Int. Cl. H01c *9/02*
U.S. Cl. 338—183 **11 Claims**



A slide is movable lengthwise between spaced parallel collector and resistance strips. Extending across the space between the strips is a carbon block that is connected to the slide by spring means urging the block to turn on an axis parallel to the strips to press two diagonally opposite areas of the block against the strips so that the block forms a bridging contact between them.

3,603,855
LINEAR MOTION VARIABLE RESISTOR WITH BRIDGING CONTACT IN SLIDE

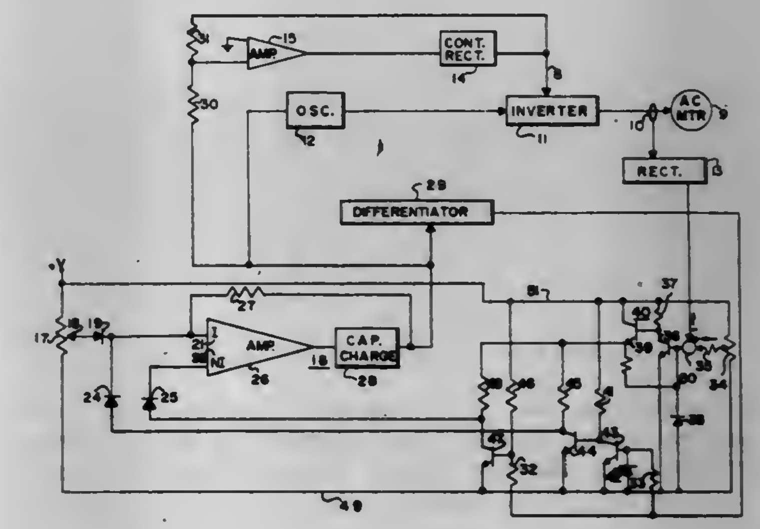
Mogens W. Bang, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.
Filed Aug. 19, 1970, Ser. No. 65,134
Int. Cl. H01c *9/02*
U.S. Cl. 338—183 **9 Claims**



A slide is movable lengthwise between spaced parallel collector and resistance strips. The slide has a transverse opening through it, in which is disposed bridging contact means that project from opposite sides of the slide. Resilient means press the contact means and both the strips toward one another to hold them in engagement.

3,603,856
ACCELERATION-DECELERATION CURRENT LIMIT

David R. Zalar, Milwaukee, and Eugene L. Biiich, New Berlin, both of, Wis., assignors to The Louis Allis Company
Filed June 6, 1969, Ser. No. 830,961
Int. Cl. H02P *5/34*
U.S. Cl. 318—231 **7 Claims**



A current limit for an AC motor drive that is operative whenever motor speed change is commanded and motor current exceeds the current limit value. The rate of change of motor speed is controlled to maintain maximum motor current, i.e., motor current substantially equal to the current limit. This is achieved by moderating the rate of change command to the motor drive circuit in accordance with the amount of motor current in excess of the current limit.

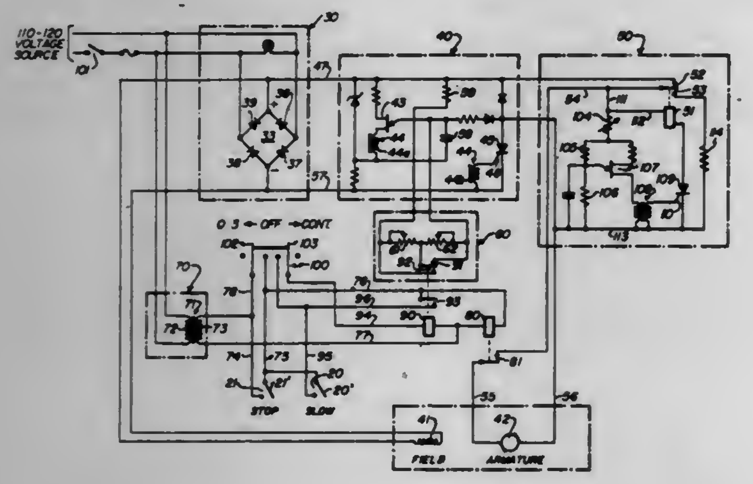
3,603,857
SPEED CONTROL MECHANISM FOR REVOLVING DOORS

Harold E. Crane, 546 Timber Lake, Lake Forest, Ill., and Jack Lord, Des Plaines, Ill.

Filed Feb. 25, 1970, Ser. No. 13,951

Int. Cl. H02p *5/04*

U.S. Cl. 318—302 **4 Claims**



A speed control mechanism for controlling the operation of a motor used to rotate a revolving door, to prevent the latter from being rotated faster than a predetermined maximum speed of rotation. Control is established by sensing the speed of rotation of the door, and, if it exceeds the established predetermined speed, a resistance is connected across the armature of the motor driving the door, which resistance functions as a dynamic-braking means for the motor.

3,603,858
CONTROL MEANS FOR SELECTIVE CONTINUOUS AND INTERMITTENT OPERATION OF ELECTRIC WINDSHIELD WIPERS

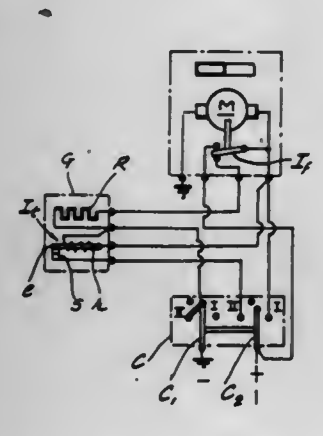
Gilardelli Ugo, Milano, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milano, Italy

Filed June 11, 1969, Ser. No. 832,215

Claims priority, application Italy, June 11, 1968, 17571 A/68

Int. Cl. B60s *1/08*

U.S. Cl. 318—443 **3 Claims**



Control apparatus for electric windshield wipers including a thermal switch having a heating winding for intermittent operation, and a resistor inserted in parallel with the heating winding in an electric braking circuit at the end of a wiping cycle.

3,603,859
SYSTEM FOR MULTICHANNEL VARIABLE-TIME CONSTANT CONTROL

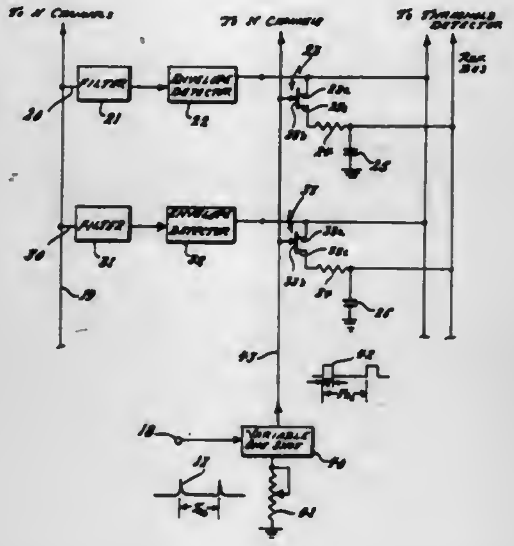
Robert J. McGee, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 9, 1969, Ser. No. 823,425

Int. Cl. H02m *3/06;* **H03k** *17/00*

U.S. Cl. 320—1 **2 Claims**

A system for simultaneously varying the time constant of a plurality of RC networks over a continuous range of values with the time constant of all the RC networks over the full continuous range being the same. In the system each RC network receives its charging current through an FET (Field Effect Transistor) switch. The gates of all the FET switches are connected to a common bus which is driven by a variable monostable multivibrator. By proper selection of the multivibrator trigger frequency and multivibrator output, the RC time constant of each of the networks is simultaneously controlled.



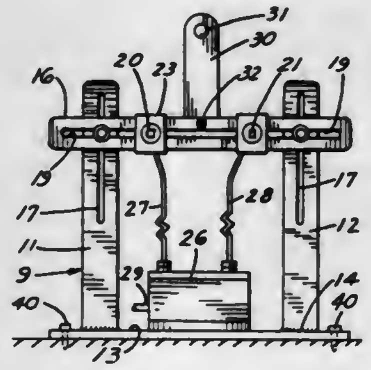
3,603,860
AUTOMATIC BATTERY CHARGER

Paul J. Johnson, 15970 Allen Rd., Milan, Mich.

Filed July 24, 1969, Ser. No. 844,368

Int. Cl. H02j *7/00*

U.S. Cl. 320—2 **2 Claims**



This application discloses an automatic battery charger for use with an electric automobile, golf cart, or any vehicle using a storage battery. The invention resides in the particular combination and arrangement of elements particularly a structure embodying a fixed male charging section, and a portable female section, which is carried on the vehicle. The sections being brought into mating and charging relation when the vehicle is moved into a certain position, and the sections being disconnected when the vehicle is moved away from that position.

3,603,861
ELECTROMECHANICAL DISCHARGE-CHARGE CYCLE-BATTERY CHARGER

Frederic P. Smith Sta Max E. Shirk, and William R. Baynes, Palos Verdes Peninsula, both of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

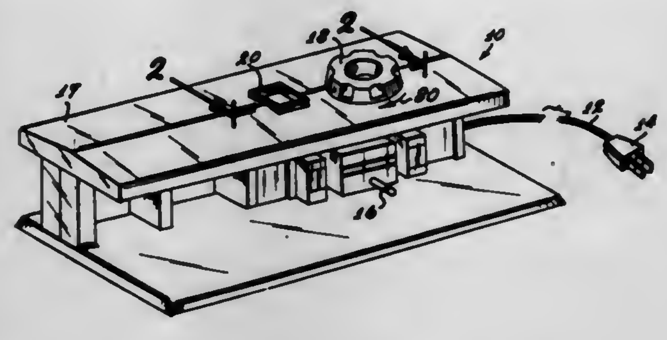
Filed Jan. 22, 1970, Ser. No. 5,007

Int. Cl. H02j *7/02*

U.S. Cl. 320—14 **10 Claims**

This is a battery charger for rapidly recharging relatively small-capacity rechargeable batteries. The batteries are

recharged by being placed in electrical contact with terminals that are electrically coupled to a source of DC current, a current path being completed through the battery or batteries to be recharged. The charger includes a spring-driven rotary switch that sequentially contacts a discharge terminal and then a charge terminal, the battery being thereby first discharged for a predetermined period of time and then charged for a predetermined period of time.



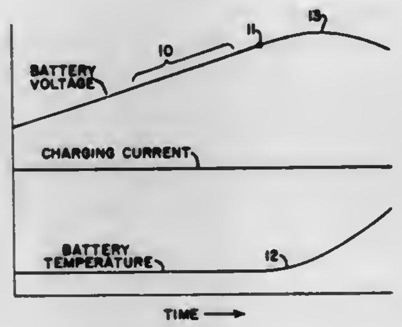
3,603,862
IMPROVED BATTERY-CHARGING CIRCUIT WITH LOCKING AND RESETTING MEANS

Robert F. Chase, Lynchburg, and Ralph R. Sherman, Jr., Forest, both of, Va., assignors to General Electric Company

Filed Dec. 22, 1969, Ser. No. 886,971

Int. Cl. H02j *7/10*

U.S. Cl. 320—39 **13 Claims**



A battery-charging circuit provides a main-charging current to a connected battery until the battery voltage reaches a selected magnitude, after which the charging circuit switches and provides a trickle-charge current to the battery. The charging circuit cannot provide main-charging current again until the battery is disconnected, and a battery subsequently connected to the charging circuit.

3,603,863
CIRCUITRY FOR GENERATING A SQUARE WAVE OF FIXED VOLTAGE AMPLITUDE AND VARIABLE FREQUENCY

Floyd Grossoehme, Cincinnati, Ohio, assignor to General Electric Company

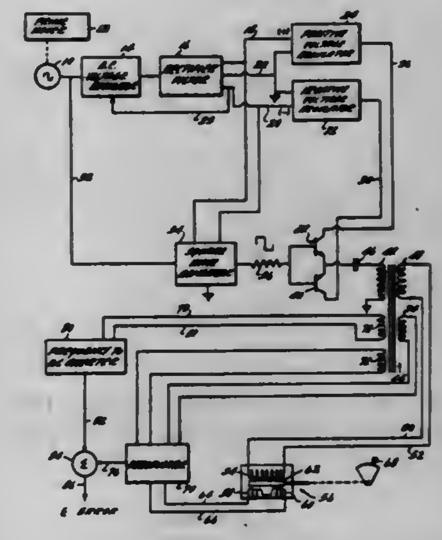
Division of Ser. No. 506,993, Nov. 9, 1965, Pat. No. 3,501,687.

Filed May 9, 1969, Ser. No. 870,832

Int. Cl. H02m *5/44*

U.S. Cl. 321—2 **2 Claims**

A square wave output signal has a fixed voltage amplitude and a frequency directly proportionate to a voltage source which varies both in frequency and amplitude. Positive and negative reference voltages of equal magnitude are derived from a power supply connected directly to the voltage source. These reference voltages are respectively applied to the collectors of a pair of transistors which are interconnected at their emitters. The common emitter connection is connected to the primary of a transformer. A square wave is generated from the power supply and applied to the bases of the two transistors, thereby generating a square wave input to



the transformer of fixed amplitude having a frequency corresponding to that of the voltage source.

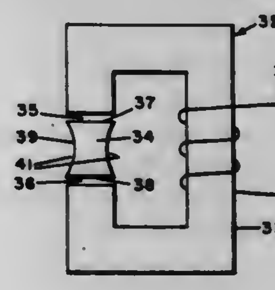
3,603,864
CURRENT DEPENDENT FILTER INDUCTANCE

Sherwood Thaler, Lexington, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1969, Ser. No. 889,555

Int. Cl. H01f *29/00;* **H02m** *1/14*

U.S. Cl. 321—10 **3 Claims**



A current dependent variable inductance having a winding and flux coupled magnetic core portion with cross-sectional areas that vary between maximum and minimum values in planes perpendicular to the flux path. Current flow of greater than a given magnitude in the winding causes saturation of the minimum core area and generation of fringing flux in an adjacent auxiliary airgap. The lengths of the fringing flux lines and accordingly of the auxiliary airgap vary directly with the saturation current in the winding. Thus, the value of inductance provided by the winding varies inversely with that current.

3,603,865
ELECTRONIC ANALOG FOR AN ELECTROMECHANICAL RELAY

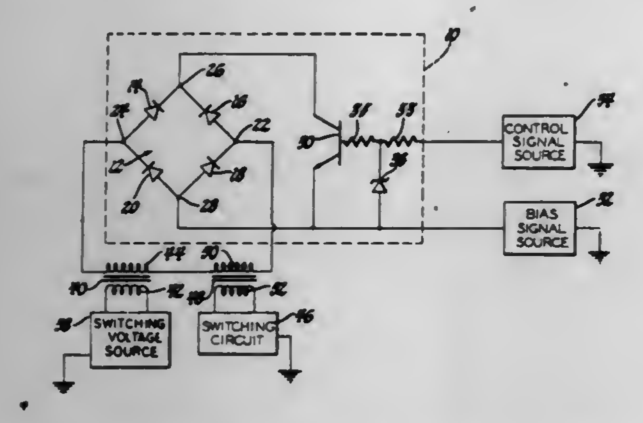
Benjamin C. Liebenthal, La Grange, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1969, Ser. No. 862,433

Int. Cl. H02m *7/12*

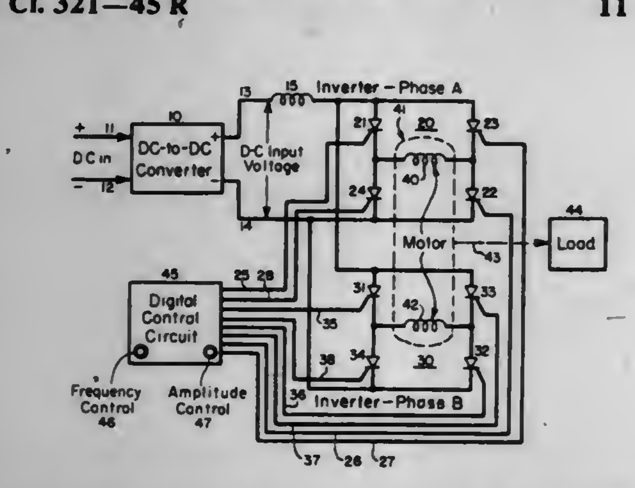
U.S. Cl. 321—47 **1 Claim**

A static relay includes a control circuit which regulates the operation of a switching circuit. The control circuit performs the function of the control winding of a conventional electromechanical relay. The switching circuit performs the function of the switching contacts of a conventional electromechanical relay. The control circuit and the switching circuit are electrically isolated from each other.



3,603,866
ENERGIZING SYSTEM WITH DIGITAL CONTROL CIRCUIT FOR REGULATING MULTIPHASE INVERTER

Kenneth E. Opal, 845 Fifth St., Oakmont, Pa.
Filed Mar. 24, 1970, Ser. No. 22,283
Int. Cl. H02m *7/48*
U.S. Cl. 321—45 R **11 Claims**

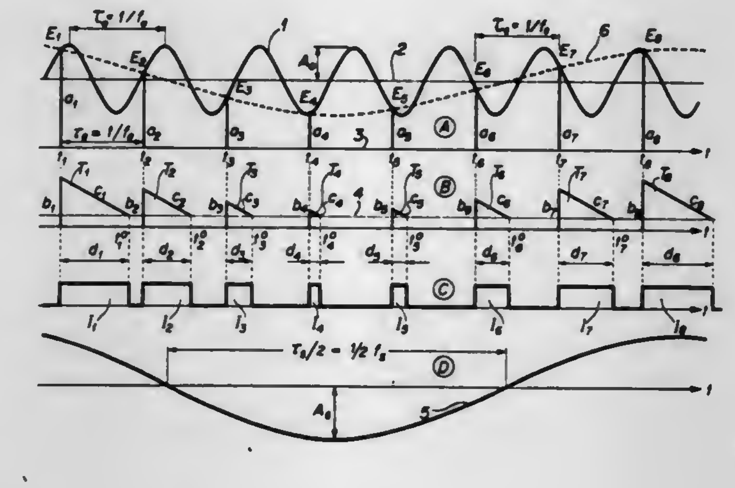


A two-phase electrical motor is driven by two separate inverter circuits under the regulation of a digital control circuit which provides and maintains a phase displacement between the inverter output voltages by utilizing a countdown circuit in connection with a basic clock circuit. The inverter AC output voltages include a plurality of pulses of the same polarity in each half-cycle to provide a resultant AC output voltage related to the clock frequency by another countdown circuit. Pulse duration is controlled to regulate the effective amplitude of the resultant AC output voltages. A chopper circuit prevents voltage swings in a varying DC supply from occurring in the DC input voltage which energizes the inverter circuits.

3,603,867
METHOD OF CONTROLLING A POLYPHASE INVERTER

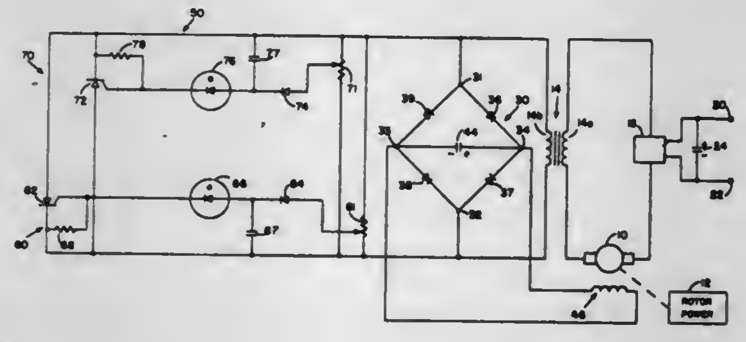
Gerard Cuenoud, Grand-Lancy/Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge/Geneva, Switzerland
Filed June 9, 1970, Ser. No. 44,783
Claims priority, application Switzerland, June 9, 1969, 8769/69
Int. Cl. H02m *5/30*
U.S. Cl. 321—61 **11 Claims**

A method of controlling a polyphase inverter intended to supply a polyphase voltage whose frequency and amplitude must be variable independently. A sine wave of fixed frequency is generated and is sampled at a succession of instants at a frequency close to that of the sine wave. From this sampling is obtained a train of width-modulated pulses whose width corresponds to the amplitude of the sine wave at the successive sampling instants. Any variation in frequency of the sampling results in a corresponding variation in frequency of the pulse train and any variation in amplitude of the sine wave correspondingly affects the width of the pulses. As many such pulse trains as there are phases are produced and the leading and trailing edges of the pulses, which are independently variable by virtue of the sampling frequency and the amplitude of the sine wave being independent, are used to control the firing and extinction of rectifier elements in the inverter.



3,603,868
CONTROLLED FIELD ALTERNATOR CHARGING SYSTEM

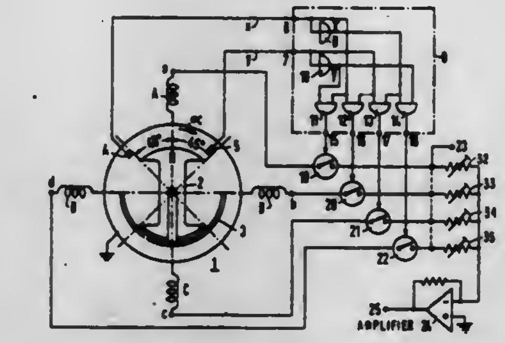
Richard S. Milton, Huntsville, Ala.
Filed Feb. 4, 1970, Ser. No. 8,566
Int. Cl. H02p *9/30*
U.S. Cl. 322—7 **6 Claims**



A control system for charging energy storage capacitors and for providing a source of constant current. The power source is a shaft-driven alternator. The alternator field is controlled by current from a current or control transformer. Energy is coupled from the alternator through the above current transformer to a control circuit and to a load bridge rectifier for conversion to direct current output energy. The energy that is coupled through the transformer secondary is connected through a diode bridge circuit to excite a field coil for controlling the alternator field. Energy is also coupled to an alternating current voltage level sensor that short circuits the current transformer secondary when the output energy is becoming excessive, thereby reducing the alternator field and the output voltage. The load bridge rectifier output is connected to a load capacitance for supplying a fixed DC voltage pulse for additional load circuitry. Load voltage regulation circuitry limits the load capacitor charge level by short circuiting the field coil when the desired voltage level is reached.

3,603,869
DEVICE FOR PRODUCING DIRECT VOLTAGE PROPORTIONAL TO SPEED

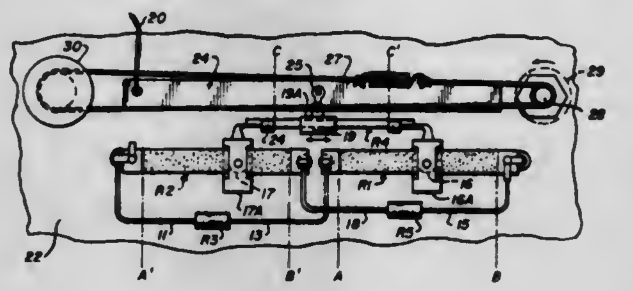
Ingemar Neuffer; Dieter Eichmann, and Frank Langweiler, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 15, 1970, Ser. No. 37,563
Claims priority, application Germany, May 24, 1969, P 19 26 628.5
Int. Cl. H02p *9/00*
U.S. Cl. 322—31 **11 Claims**



A rotatable actuator is mounted on the rotor of an AC machine for rotation therewith. A pair of spaced transmitters are stationarily mounted on the stator of the AC machine in operative proximity with the actuator. Each of the transmitters produces an output signal during the time the actuator passes in close proximity therewith. A control unit couples the transmitters to the control electrodes of a plurality of electronic switches connected to the stationary windings of the machine and controls the conductive condition of the switches. Unipolar phase voltages are cyclically applied to a common output connected in common to the switches and provide a direct voltage proportional to the speed of the machine.

3,603,870
VARIABLE OUTPUT VOLTAGE SELECTOR

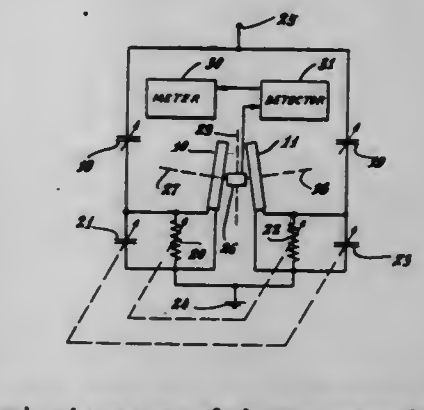
Reuben C. Carlson, Bloomingdale, Ill., assignor to Standard Kollsman Industries Inc., Melrose Park, Ill.
Filed July 7, 1969, Ser. No. 839,166
Int. Cl. H01c *9/02*
U.S. Cl. 323—74 **8 Claims**



Variable output voltage selectors are disclosed herein. In one embodiment the two opposite terminals of an output potentiometer are connected individually with adjustable contactors of a pair of variable resistors that are connected in parallel between circuit points of differing constant voltage levels. A separate resistor is series connected with each of the variable resistors so that the resistive path of each of the variable resistors has a different voltage gradient profile. The contactors are ganged so that each traverses a corresponding distance along its resistor so that a variable voltage range can be effected between the contactors. The output pot has an output contactor adjustable to select a voltage level within the range of voltage determined by the position of the contactors of the pair of variable resistors. In another embodiment an output pot is connected between a pair of contactors which are adjustable in ganged relationship along a single resistive path having lengthwise nonlinear resistivity.

3,603,871
NUCLEAR MAGNETIC RESONANCE PROBE

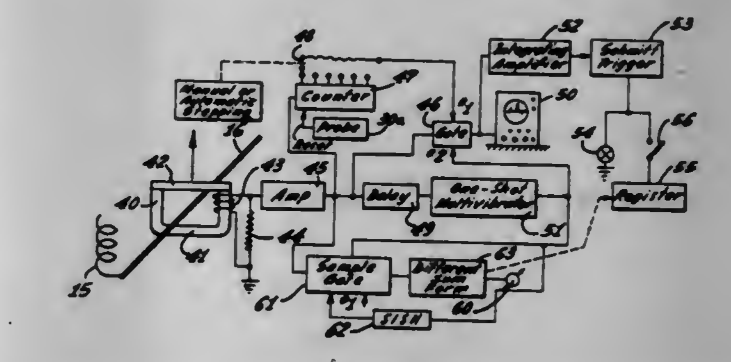
Jeffrey Malcolm Caunter, Beaconsfield, and Peter Higham, High Wycombe, both of, England, assignors to Perkin-Elmer Limited, Beaconsfield, England
Filed Aug. 4, 1969, Ser. No. 847,363
Claims priority, application Great Britain, Aug. 9, 1968, 38051/58
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **9 Claims**



A predetermined amount of electromagnetic intercoupling is provided between segments of a transmitter winding and a receiver winding in a probe for a nuclear magnetic resonance apparatus. Circuit means are provided for adjusting the amplitude and phase of voltages induced in the receiver winding by each transmitter winding segment causing the induced voltages to oppose and to thereby reduce a standing signal in the receiver winding.

3,603,872
APPARATUS USING CURRENT SIGNALS TO ANALYZE THE IGNITION OF AN ENGINE

Edmond R. Pelta, Pacific Palisades, Calif., assignor to Autoscan, Inc., Los Angeles, Calif.
Filed Apr. 9, 1970, Ser. No. 24,429
Int. Cl. G01m *15/00*
U.S. Cl. 324—16 **23 Claims**

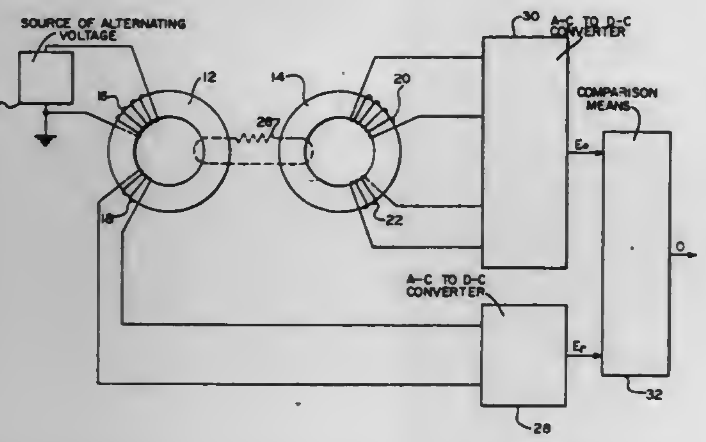


This invention relates to a system for testing the ignition system of an automobile engine. The system develops a first current pulse when the voltage across the distributor gap for each cylinder in the engine breaks down. The system develops a second current pulse when the gap in the spark plug for each cylinder in the engine breaks down. Means are provided for determining whether each individual spark plug is operating properly. Means are also provided for determining the characteristics of the spark plug signal.

3,603,873
CONDUCTIVITY SENSOR

Uldis Cirulis, Midland Park, N.J., assignor to Nus Corporation, Rockville, Md.
Filed Jan. 14, 1970, Ser. No. 2,910
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 R **14 Claims**

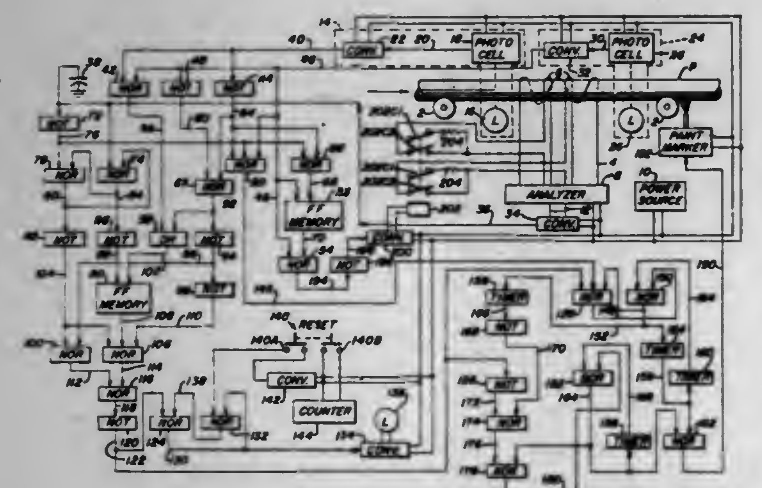
A conductivity sensor having a fluid immersible, conductivity transformer comprised of a pair of toroidal cores on each of which are wound two windings, one of the windings on one core being the input winding, one of the windings on the other core being the output winding, the second winding on the input core providing a reference voltage and the second winding on the output core providing a means for negative feedback to null the flux in the second core. The output voltage and the reference voltages are compared to produce a measurement which is a function of the conductivity of the medium in which the conductivity transformer is immersed.



3,603,874
EDDY CURRENT INSPECTION DEVICE FOR ELONGATED MATERIAL WITH MEANS TO ELIMINATE THE END EFFECT

William L. Posey, Lorain, Ohio, assignor to United States Steel Corporation

Filed June 9, 1969, Ser. No. 831,410
Int. Cl. G01r *33/12*
U.S. Cl. 324—40 **10 Claims**



A control circuit for eddy current inspection of moving lengths of steel pipe has continuously energized primary encircling coils inducing eddy currents in the pipe. When a length of pipe enters the two encircling sensing coils, which detect differences in eddy currents as material discontinuities, the first sensing signals are attenuated. A defect-marking system, which marks according to the location of sensed material discontinuities, excludes the signals resulting from the entrance and exit of the pipe through the coils.

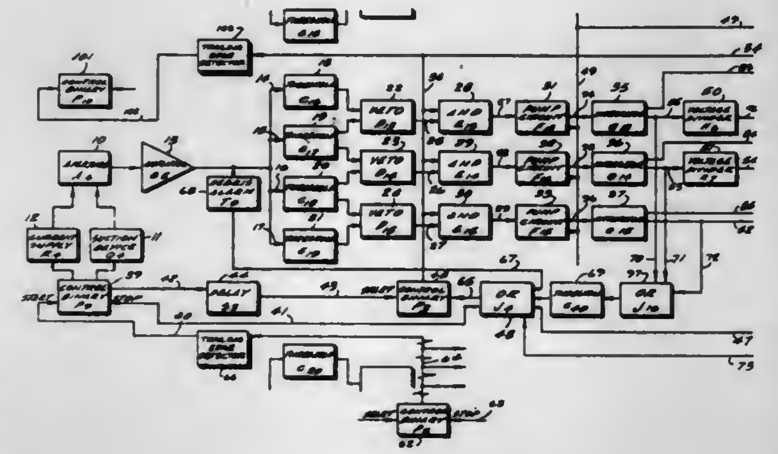
ERRATUM

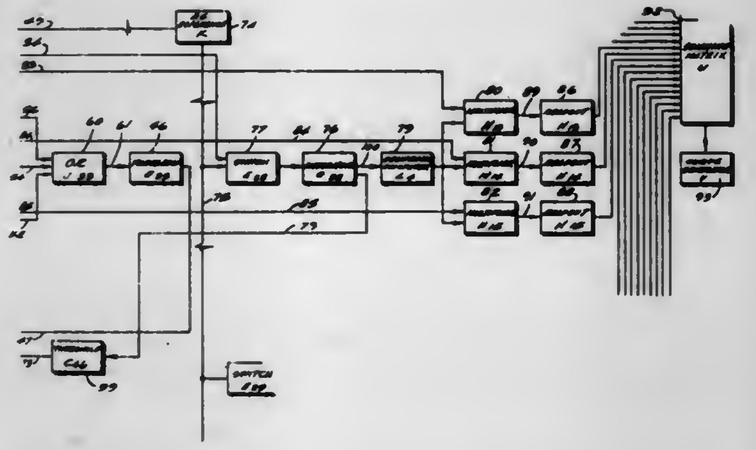
For Class 324—62 see:
Patent No. 3,602,952

3,603,875
PARTICLE ANALYZING METHOD AND APPARATUS EMPLOYING MULTIPLE APERTURES AND MULTIPLE CHANNELS PER APERTURE

Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of application Ser. No. 527,146, Feb. 14, 1966, now Patent No. 3,444,463, dated May 13, 1969. This application May 12, 1969, Ser. No. 823,743
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 R **35 Claims**





Disclosed is an improved method and apparatus for analyzing particles by the Coulter principle of employing an impedance responsive detecting aperture through which pass particles in suspension. Employed herein are a plurality of logically parallel detecting apertures, preferably of different microscopic sizes, each aperture feeding circuitry which is subdivided into a plurality of channels, each responsive to a different narrow subrange of particle size. By time and volume related elements, there is generated an output voltage which is proportional to particle volume per unit time over the entire particle system; hence, statistically valid data is available at all times during an analysis run, even in the event of a malfunctioning blockage of an aperture.

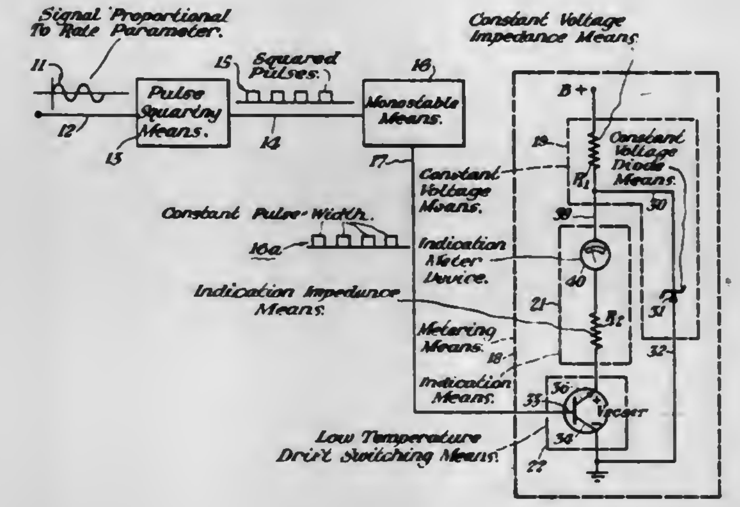
3,603,876
HIGH SPEED RATE INDICATOR HAVING IMPROVED METERING CIRCUIT

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Nov. 25, 1969, Ser. No. 879,732
Int. Cl. G01r *23/02;* **G01p** *3/12;* **G01r** *11/18*
U.S. Cl. 324—78 J **1 Claim**

This disclosure relates to a high rate parameter measuring system which uniquely allows extremely accurate rate measuring due to removal of indication nonlinearity as well as the removal of inaccuracies due to reading over wide ranges of ambient temperatures which are intrinsic to the environment of said system. The system incorporates pulse-squaring circuitry which square incoming rate pulses indicative of said rate parameter, associatively coupled to monostable circuitry

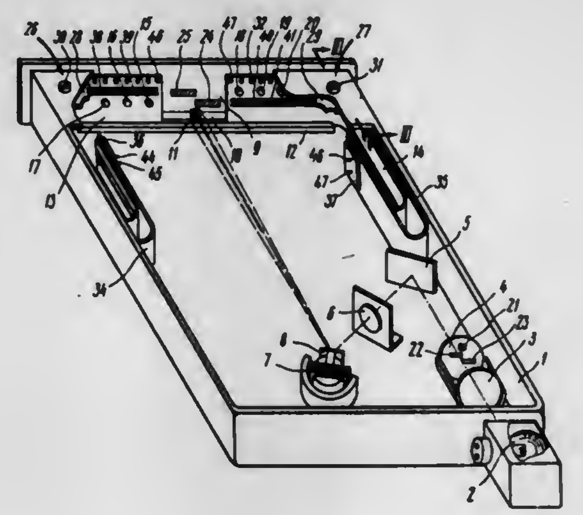
including an operational amplifier which monostable circuitry provides a constant pulse-width output, said pulse-width output, said monostable circuitry output electrically coupled to a metering circuit which produces a linear indication of the rate of said incoming rate pulses and includes a solid state semiconductive component which uniquely cooperates with the aforementioned components to provide the desired results.



3,603,877
LIGHT-CONTACT PHOTOSENSITIVE MEASURING INSTRUMENT WITH SCALE RANGE INDICATORS

Jury Alexandrovich Alexeev, Zheleznovodskaya ul., 21, kv. 6; Boris Abelevich Seliber, Rentgena, 15/31, kv.53, and Vladimir Bakirovich Usmanov, Bolshaya Porokhovskaya, 41, kv. 33, all of Leningrad, U.S.S.R.

Filed June 19, 1969, Ser. No. 834,639
Int. Cl. G01r *13/38, 15/08*
U.S. Cl. 324—97 **5 Claims**

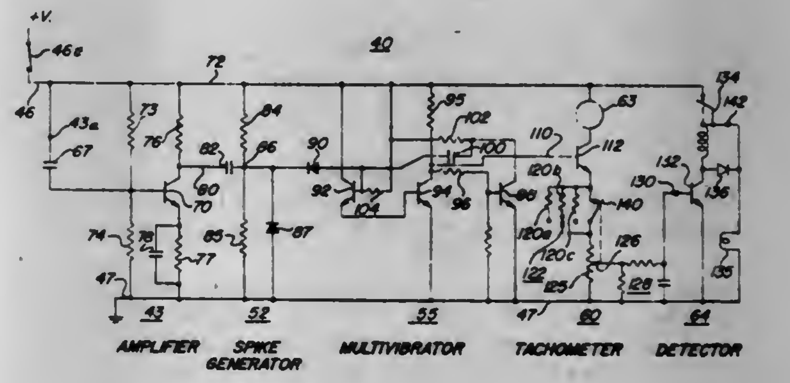


A light-contact measuring instrument comprising a movement with a rotatable mirror for directing a light beam through an optical system producing pointer beams, of which a major pointer beam is projected onto a scale and an auxiliary pointer beam onto light-sensitive elements capable of moving along the scale, in which the light-sensitive elements are disposed on flexible bands associated with driving means for moving the bands along the scale and carrying current leads disposed along the bands for connecting the light-sensitive elements to an external control circuit.

3,603,878
SPEED-MONITOR SYSTEM AND METHOD USING IMPULSIVE IGNITION NOISE

Joseph M. Himmelstein, 120 Norwood Avenue, Long Branch, N.J.

Filed Feb. 25, 1969, Ser. No. 802,139
Int. Cl. G01p *3/48*
U.S. Cl. 324—169 **1 Claim**

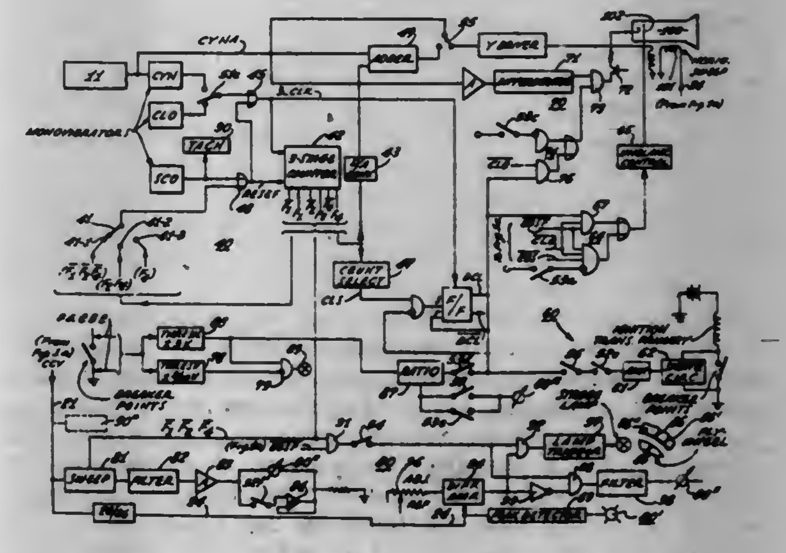


A speed monitor system using impulsive ignition noise in the form of a periodic sequence of noise bursts which is present on the power distribution buss of a motor vehicle. The noise burst are amplified and a pulse is produced for each noise burst to develop a sequence of pulses. An output signal is generated proportional to the time rate of the sequence of pulses and is therefore proportional to the engine speed.

3,603,879
APPARATUS FOR MEASURING THE FREQUENCY OF OCCURENCE OF IGNITION SIGNALS IN A MULTICYLINDER ENGINE

Edmond R. Pelta, Pacific Palisades, and Kenneth Stewart Gold, Canoga Park, both of, Calif., assignors to Autoscan, Inc., Culver City, Calif.

Division of Ser. No. 556,710, June 10, 1966.
Filed May 15, 1970, Ser. No. 37,533
Int. Cl. G01p *3/56*
U.S. Cl. 324—161 **22 Claims**



A ramp voltage is provided to a particular amplitude upon each occurrence of an ignition signal for a cylinder in a multicylinder engine. The slope of the ramp voltage is changed as the rate of occurrence of the ignition signals in the multicylinder engine varies. When the amplitude of the ramp voltage reaches the particular level, the ramp voltage is terminated until the occurrence of the next ignition signal. A sweep is produced in accordance with the ramp voltage.

When the frequency or angular velocity of the multicylinder engine is to be tested, the ramp voltage is produced at the same slope as in the previous paragraph. However, the ramp voltage is produced to a level dependent upon the rate of occurrence of ignition signals. The level of this ramp voltage indicates the rate of occurrence of the ignition signals. The level of the ramp voltage is also measured in each cycle of sequential firing of the multiple number of cylinders, upon a failure of a particular one of the cylinders to fire in each cycle, to indicate the speed of the engine.

3,603,880

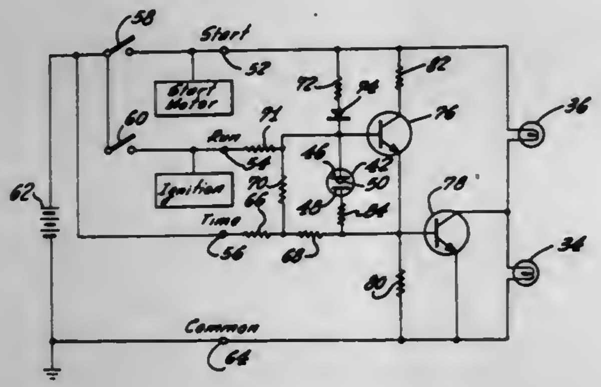
SERVICE COMPUTER FOR INDICATING WHEN A PRODUCT SUCH AS AN AUTOMOBILE HAS TO BE SERVICED

Nicholas L. Brecker, Jr., Woodland Hills, and John B. Murphy, Culver City, both of, Calif., assignors to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed Oct. 16, 1967, Ser. No. 675,520

Int. Cl. G04f *9/00;* **G08b** *21/00*

U.S. Cl. 324—182 **11 Claims**



This invention relates to a service computer and specifically to an automobile service computer for monitoring the operation of a device such as an automobile which requires a periodic servicing and for providing an output indication to the operator of the device when servicing is required. Specifically, the invention relates to an automobile service computer including a pair of output indicators such as output lamps and wherein the output lamps have different current requirements to produce visual indications so that the a passage of current of a first particular level through both of the lamps produces a visual indication in only one of the lamps and a passage of a second particular current level higher than the first through the other lamp produces a visual indication in the other lamp. The invention also includes the use of a computing element such as an electrochemical storage cell which has a pair of electrodes and contains active material for transfer between the pair of electrodes. The storage cell has a plurality of inputs so as to monitor the operation of the automobile and the monitoring results in the transfer of active material between the electrodes in accordance with the operation of an automobile. When all of the active material has been transferred from one of the electrodes, the resistance across the electrodes in the storage cell increases and this increase in resistance is used to control the application of current to either one or both of the output lamps thereby providing the output indication to the operator of the device.

3,603,881

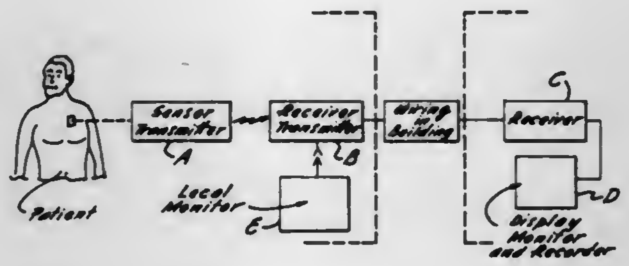
FREQUENCY SHIFT TELEMETRY SYSTEM WITH BOTH RADIO AND WIRE TRANSMISSION PATHS

William E. Thornton, Santa Monica, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed Mar. 1, 1968, Ser. No. 709,569

Int. Cl. A61b *5/04*

U.S. Cl. 325—30 **3 Claims**



A transmission system using a possibly existing wiring system for transmitting RF signals and covering short distances away from the wiring system through VHF transmission. In hospitals, physiological data are transmitted from a sensor VHF transmitter to a fixed VHF receiver RF transmitter coupled to the wiring system in the building. A RF receiver demodulator monitor is coupled to wiring system at the nurses' station. The system is particularly designed for noise suppression.

3,603,882

PHASE SHIFT DATA TRANSMISSION SYSTEMS HAVING AUXILIARY CHANNELS

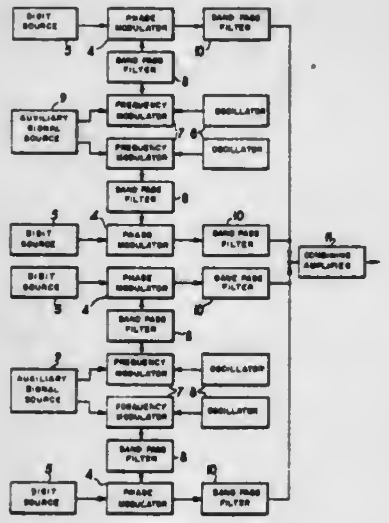
Bernard Wilson, Coventry, England, assignor to General Electric and English Electric Companies Limited, London, England

Filed Apr. 16, 1969, Ser. No. 816,533

Claims priority, application Great Britain, Apr. 17, 1968, 18129/68

Int. Cl. H04b *1/00*

U.S. Cl. 325—47 **4 Claims**



In a data transmission system utilizing phase shift modulation of a carrier signal to transmit pulse coded data from one station to another an auxiliary low frequency signal is transmitted between said stations by frequency modulation of the carrier signal, the maximum phase shift of the carrier signal due to said frequency modulation during any one pulse interval of the data signals being much less than the minimum step phase shift utilized in transmitting said data.

3,603,883

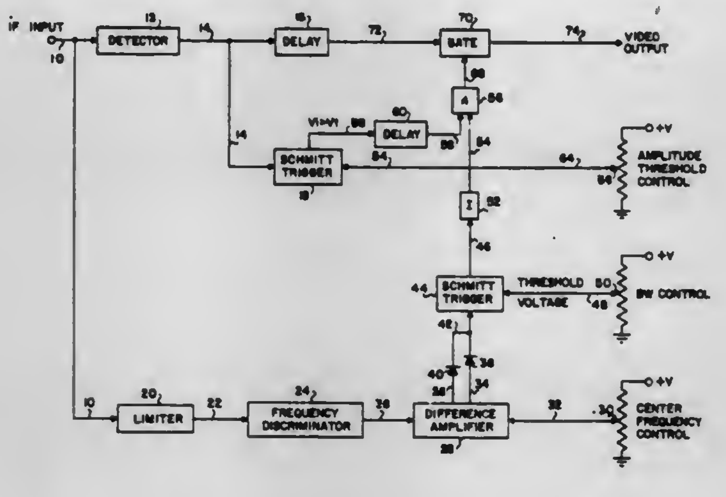
PULSE SEPARATION CIRCUIT

Francis L. Burnham, Silver Spring, Md., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed Mar. 28, 1968, Ser. No. 716,770

Int. Cl. H04b *1/10*

U.S. Cl. 325—324 **9 Claims**



A circuit for separating pulses received on a selected carrier frequency from an environment containing pulses on a plurality of different carrier frequencies which circuit includes a first circuit for generating an output value, such as a voltage level, which is proportional to the frequency of the received input, a second circuit for comparing the output from the first circuit with a value proportional to the selected carrier frequency, and gating means which is operative in response to a match in the comparing circuit for selecting and passing received pulses. Means may be provided for indicating a bandwidth around the selected carrier frequency in which pulses are to be selected and means for permitting the gating means to pass pulses received on carriers within the bandwidth.

3,603,884

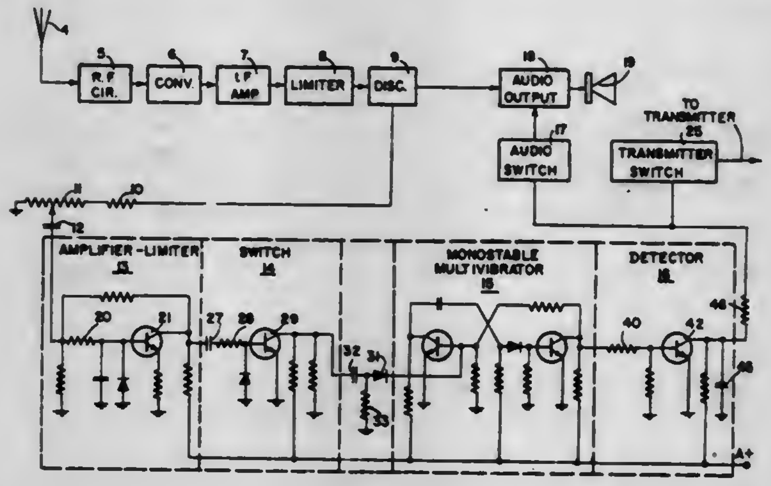
SPEECH-NOISE DISCRIMINATING CONSTANT PULSE WIDTH SQUELCH

Paul J. Zaura, Jr., Glen Ellyn; George C. Hawkins, Hanover Park, and Gary A. Cannalte, Hoffman Estates, all of, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed June 4, 1969, Ser. No. 830,350

Int. Cl. H04b *1/10*

U.S. Cl. 325—348 **6 Claims**



A squelch circuit for a receiver wherein the detected signals at the discriminator are amplified and converted to pulses of constant period or width. The pulses are detected and used to develop a control voltage to actuate an audio or transmitter switch. A decrease in the noise signal due to the presence of a proper radio frequency signal will decrease the pulse rate, increase the control voltage and actuate the switches allowing the audio signal to pass through the audio stages of the receiver and activating an associated transmitter.

3,603,885

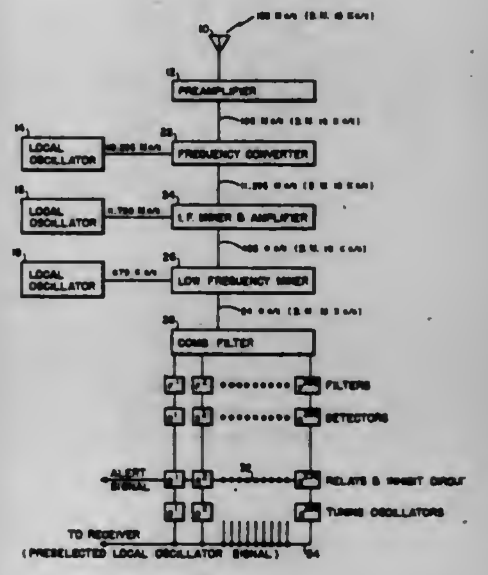
SPECTROGRAPHIC IF PRESELECTOR

Charles A. Bartholomew, and Roger L. Easton, both of Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Mar. 30, 1965, Ser. No. 444,519

Int. Cl. H04b *1/16*

U.S. Cl. 325—432 **8 Claims**



A device for automatically tuning interferometer-type receivers in a space surveillance system comprising receiving means, a comb filter comprising a plurality of channels, each including a filter, and a tuning means connected to each filter.

3,603,886

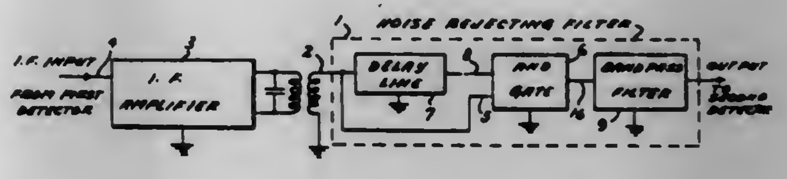
NOISE REJECTING SIGNAL FILTER

Gene M. Norrs, R.D. #1, Verona, N.Y.

Filed Jan. 4, 1966, Ser. No. 518,730

Int. Cl. H04b *1/10*

U.S. Cl. 325—476 **5 Claims**



A noise rejecting network for radio signals in which the signal is delayed by a multiple of the carrier wave half-period and applied along with the undelayed signal to an AND gate which produces an output only when the instantaneous polarities of the two inputs have a predetermined relationship and in which the output does not exceed the lesser instantaneous signal magnitude. A band-pass filter designed to pass only the signal frequencies is coupled to the output of the gate circuit. The use of a plurality of delays of different multiples of a half-period with additional inputs to the AND gate increases the noise rejection.

3,603,887

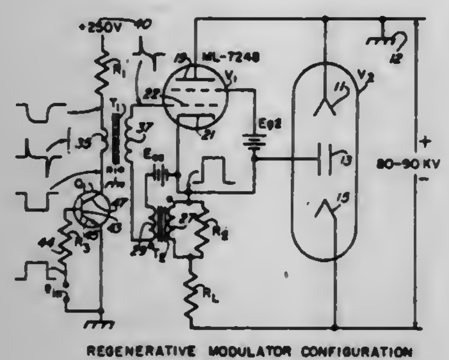
HIGH VOLTAGE REGENERATIVE PULSE MODULATOR

James D. Doss, and Donald C. Hagerman, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 12, 1970, Ser. No. 10,969

U.S. Cl. 328—59 **5 Claims**

Apparatus for generating a rectangular wave positive pulse having an amplitude of 80 kilovolts or more in response to low voltage timing signal pulses in which a thermionic tube has its cathode connected to one terminal of one winding of a feedback transformer and the other terminal is connected to negative high voltage through a load resistor, and the other winding of the transformer is connected in series with the secondary winding of a high voltage input transformer and the series circuit so constructed is connected to the thermionic tube cathode and grid. The primary of the input transformer is connected to the output of a low power amplifier which in turn has its input coupled to a timing signal pulse source having an amplitude of the order of 10 volts.

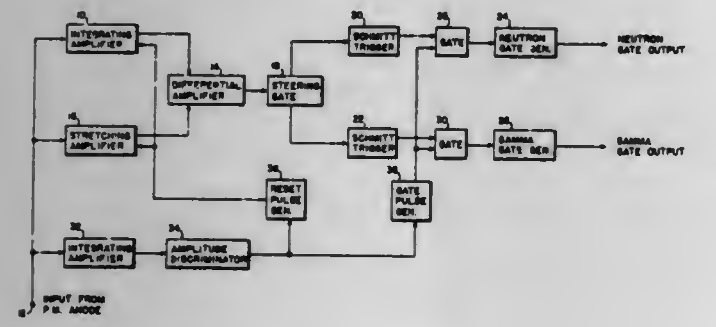


REGENERATIVE MODULATOR CONFIGURATION

3,603,888
PULSE ANALYZER

Dallas W. Jones, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 25, 1969, Ser. No. 802;081
Int. Cl. G03k *5/20*
U.S. Cl. 328—112 4 Claims



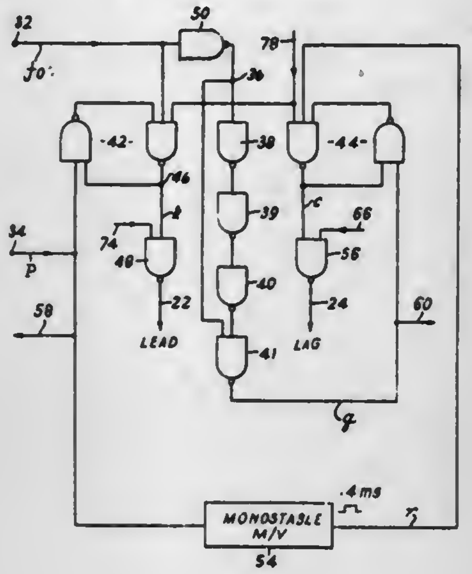
A pulse analyzer comprising an integrating amplifier having its input coupled in common with the input of a stretching amplifier. The outputs of the amplifiers are coupled to respective inputs of a differential amplifier having its output coupled to a steering gate which separates positive and negative pulses for further processing by wave shaping circuits. The analyzer separates input pulses which deliver a large total charge from those which deliver a small total charge for the same initial peak current.

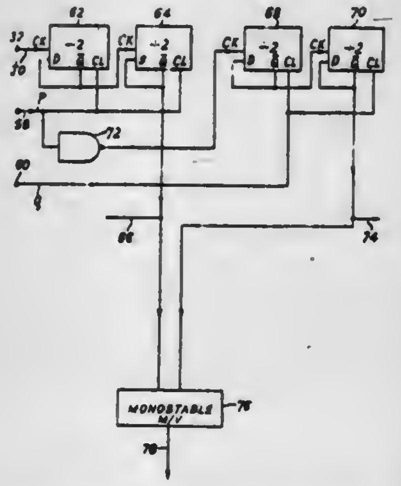
3,603,889
PHASE COMPARATOR USING FLIP-FLOP CIRCUITS

Michael Charles Stevens, Broxbourne, and Brian David Swatton, Harlow, both of, England, assignors to A. C. Cossor Limited, Essex, England

Filed Apr. 16, 1969, Ser. No. 816,587
Claims priority, application Great Britain, May 8, 1968, 21766/68
Int. Cl. H03b *3/04;* **H03d** *13/00;* **H03k** *9/06*
U.S. Cl. 328—133 4 Claims

A bistable flip-flop is set and reset respectively by two signals whose phases are to be compared and provides pulses of width determined by the phase difference. In order to prevent erroneous indication of phase synchronism when one signal frequency is an integral multiple of the other, a frequency comparator blocks the flip-flop when the frequencies are different and itself provides the said pulses, instead of the flip-flop.





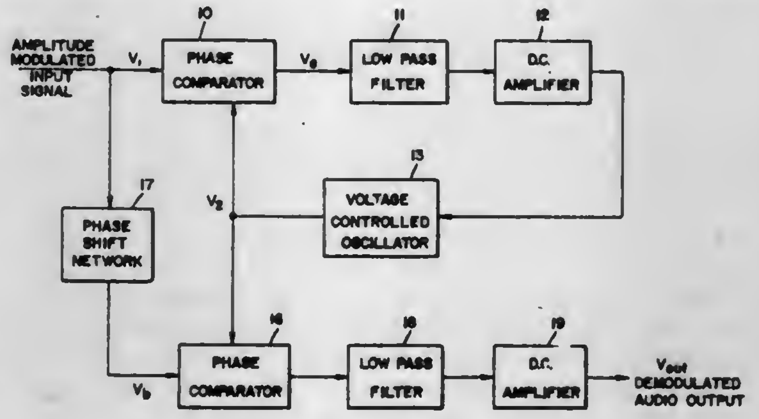
ERRATUM

For Class 328—134 see:
Patent No. 3,602,994

3,603,890
AMPLITUDE DEMODULATOR USING A PHASE LOCKED LOOP

Hans Rudolph Camenzind, Los Altos; Alan Bebin Grebene, Sunnyvale, and David Kleitman, Los Altos Hills, all of, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Feb. 20, 1969, Ser. No. 800,998
Int. Cl. H03d *1/18, 3/00*
U.S. Cl. 329—101 6 Claims

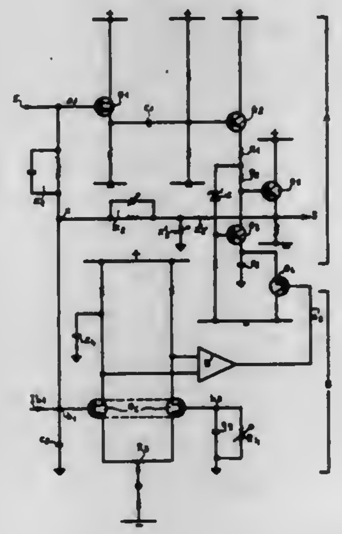


An amplitude demodulator suitable for integration including a phase locked loop which provides a frequency equal to the carrier frequency of the amplitude modulated signal, in phase components of such two signals being multiplied together to provide, after filtering, the original modulating signal.

3,603,891
AMPLIFYING DEVICE WITH WIDE TRANSMISSION BAND AND SLIGHT DRIFT ENABLING A CONTINUOUS COMPONENT TO BE TRANSMITTED

Bernard Jules Alexandre Simeau, Saint-Etienne, France, assignor to Constructions Radioelectriques et Electroniques du Centre, Loire, France

Filed May 28, 1968, Ser. No. 732,733
Int. Cl. H03f *1/02*
U.S. Cl. 330—9 1 Claim



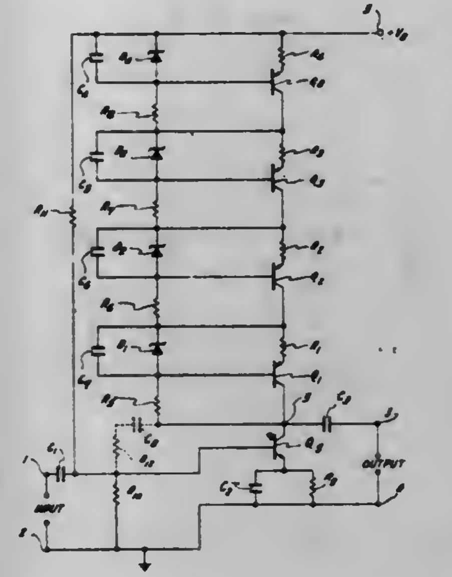
An amplifying arrangement having a wide transmission band and slight drift which enables a continuous high frequency signal component to be transmitted uses two amplifiers, a first one with a wide transmission band and high input impedance and a second one with a low drift and slight transmission band, the inputs of the second amplifier being connected one to a reference fixed potential, the other to one of the inputs of the first amplifier, the output of the second amplifier being connected to the second input of the first amplifier, thus elaborating at the output of the first amplifier a representative signal of the error committed by the first amplifier, said signal being injected in the input of the second amplifier for controlling the first amplifier.

3,603,892
HIGH VOLTAGE TRANSISTOR AMPLIFIER WITH CONSTANT CURRENT LOAD

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; John E. Guisinger, Los Angeles, and George W. Lewicki, Los Angeles, Calif.

Filed Oct. 10, 1969, Ser. No. 865,274
Int. Cl. H03f *3/42*
U.S. Cl. 330—18 2 Claims

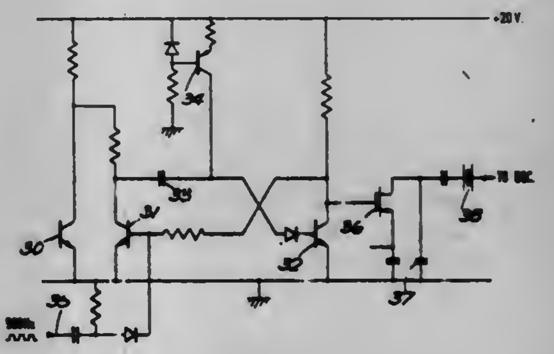
An amplifying circuit is disclosed wherein a constant current source is used as the collector load for an output amplifying transistor to provide high gain voltage amplification. The amplifying circuit has an high output impedance operable from a high DC supply voltage. The constant current source in one embodiment comprises a plurality of cascade connected transistors, having their base bias' fixedly determined by either diodes or voltage cells. The number of cascade connected transistors may be varied to accommodate any supply voltage level while insuring that each load transistor operates below its avalanche breakdown range.



3,603,893
PHASE LOCKED OSCILLATORS

David Geoffrey Hughes, London, England, assignor to Decca Limited, London, England

Filed Aug. 3, 1970, Ser. No. 60,536
Claims priority, application Great Britain, Oct. 14, 1969, 50542/69
Int. Cl. H03b *3/06*
U.S. Cl. 331—17 14 Claims



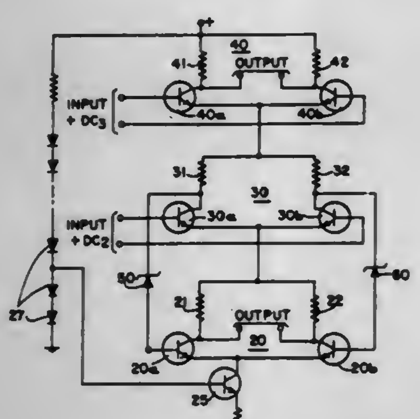
A phase-locked oscillator has an oscillator unit switchable between two frequencies, the switches being controlled by a switching control signal in the form of pulses at a regular repetition rate, said pulses having a duration relative to the repetition period linearly proportional to the amplitude of an integrated phase error signal. The oscillator unit is thus switched regularly between its two frequencies, the relative duration of the operation on each frequency being controlled whereby the mean oscillator frequency is controlled to hold the required phase lock, a high degree of linearity between controlling voltage and average output frequency.

3,603,894
STACKED DIFFERENTIAL AMPLIFIERS

Gildo Cecchin, Niles, and Francis H. Hilbert, River Grove, both of, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 8, 1969, Ser. No. 848,635
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 5 Claims

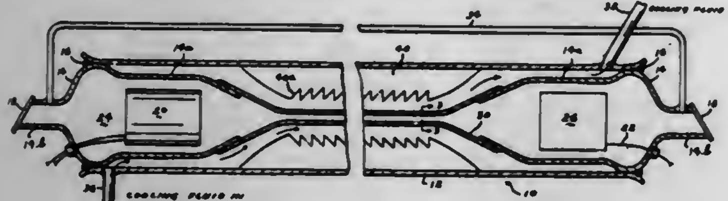
A cascaded train of transistor differential amplifier circuits are operated with a single primary constant current source connected to the first amplifier of the train. The constant current sources for each of the other differential amplifiers are obtained by recombining the signals present on the collectors of the transistors in the next preceding amplifier in



common to the emitters of each of the transistors in the subsequent differential amplifier stage.

3,603,895
GAS LASERS WITH IMPROVED CAPILLARY TUBE

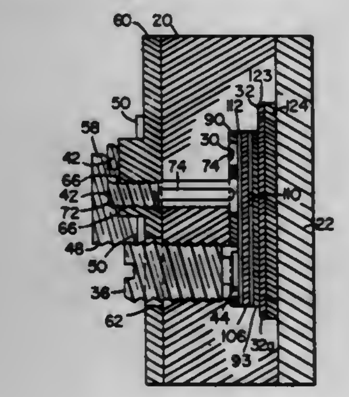
Gustav K. Medicus, 7521 Hyland Avenue (W), Dayton, Ohio
Division of Ser. No. 449,653, Apr. 20, 1965, Pat. No. 3,394,320
Filed May 6, 1968, Ser. No. 726,968
Int. Cl. H01s ***3/02***
U.S. Cl. 331—94.5 **1 Claim**



A gas laser with improved heat flow from the inside of the capillary tube to the cooling fluid is obtained by using a metallic capillary tube internally coated with a dielectric film formed by the anodization of the internal wall of the metallic tube and by turbulating the flow of cooling fluid against the outside wall of the capillary tube.

3,603,896
MICROWAVE PRINTED CIRCUIT NEGATIVE RESISTANCE OSCILLATOR

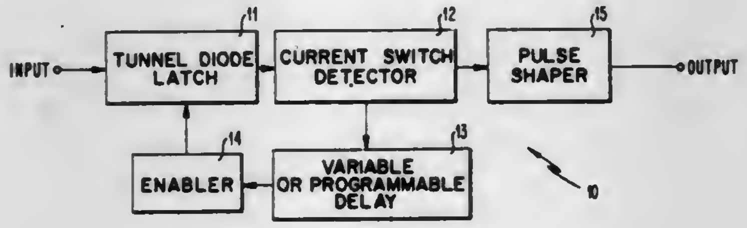
Richard Calvin Havens, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 30, 1969, Ser. No. 889,133
Int. Cl. H03b ***7/14***
U.S. Cl. 331—96 **11 Claims**



An oscillator is disclosed in which the high frequency, as well as a portion of the direct current circuitry, is printed on both sides of a thin sheet of dielectric, the printed circuit being enclosed in a chamber having conductive walls, and in which the frequency and the output power are adjustable by adjusting the position of sapphire rods with respect to the printed circuit.

3,603,897
PULSE CIRCUIT EMPLOYING DELAY LINE TO DELIMIT OUTPUT FREQUENCY

Stanley J. Grubel, Wappingers Falls; Joseph E. La Rou, Fishkill, and Hugh R. Stirling, Poughkeepsie, all of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 2, 1969, Ser. No. 829,632
Int. Cl. H03b ***7/08***
U.S. Cl. 331—107 T **3 Claims**



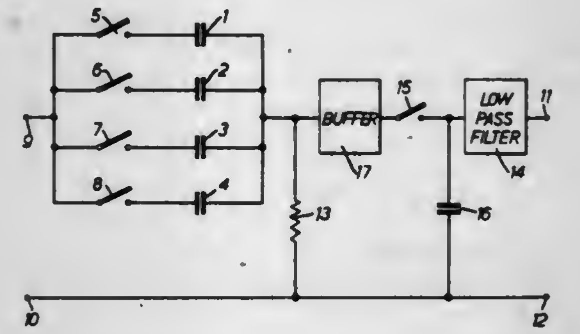
The circuit includes a tunnel diode latch, a detector for sensing the level or state of the latch, an enabler for switching the latch between states, and a delay line coupling the detector to the enabler, for setting and resetting the enabler to thereby switch the latch between states. Since the latch must be reset before the next output pulse can be obtained, the output frequency of the circuit is a function of the delay line length, the time between successive output signals being at least twice the length of the delay line.

ERRATUM

For Class 331—111 see:
Patent No. 3,603,906

3,603,898
N-PARALLEL-PATH CAPACITIVE SWITCHED FILTER IN WHICH ONLY INCOMPLETE SPACED PORTIONS OF INPUT SIGNAL ARE SAMPLED

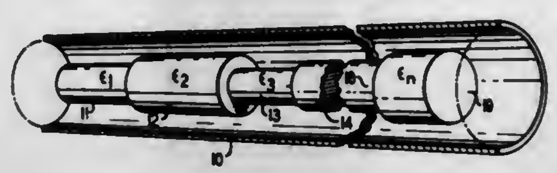
John Howard Dawson, Chelmsford, and David George Francis Fripp, Beckenham, both of, England, assignors to The Marconi Company Limited, London, England
Filed Feb. 2, 1970, Ser. No. 7,794
Claims priority, application Great Britain, Mar. 14, 1969, 13421/69
Int. Cl. H03h ***7/04***
U.S. Cl. 333—70 A **12 Claims**



The invention provides a band-stop filter including a plurality *n* of switchably selectable capacitive parallel paths. Switch means are provided for sequentially and selectively selecting the paths, the switch means being controlled to select each path for a period of time which is less than 1/*n*th (usually 1/4*n*) of the period of a complete switching sequence of all of the paths.

3,603,899
HIGH Q MICROWAVE CAVITY

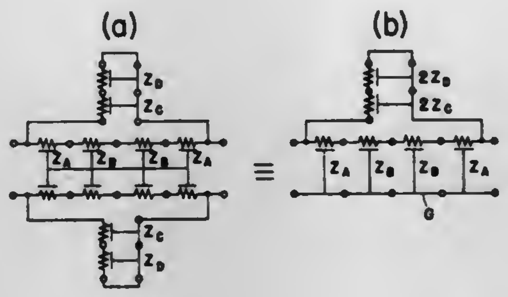
Ernst M. Gyorgy, Madison; Raymond E. Jaeger, Basking Ridge, and Harold Seidel, Warren Township, Somerset County, all of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 18, 1969, Ser. No. 817,355
Int. Cl. H03h ***9/00***
U.S. Cl. 333—73 W **6 Claims**



A low loss microwave transmission structure composed of a section of waveguide within which is concentrically placed an array (one or more) of cylindrical sections of dielectric material with relative dielectric constant greater than four. spaced away from the walls by a significant fraction of the radius (at least of the order of 10 percent) and possessing appreciable discontinuities. In the dielectric loaded sections electromagnetic radiation is propagated primarily within the dielectric so that the losses observed are mainly a function of the dielectric material and are, to first order, insensitive to the wall composition or condition. In this most general form the structure can by synthesized as a low loss filter or equalizer. When operated at frequencies at which the unloaded waveguide is below cutoff a high-Q cavity can be formed. A single section cavity of this type has been used to measure the Q of the low loss high dielectric constant dielectrics. A particularly simple and easily adjustable coaxial input and output structure is available which couples strongly to the cylindrically symmetric TM_{01} mode, all other propagating modes being greatly disfavored.

3,603,900
DISTRIBUTED CONSTANT RC NETWORK

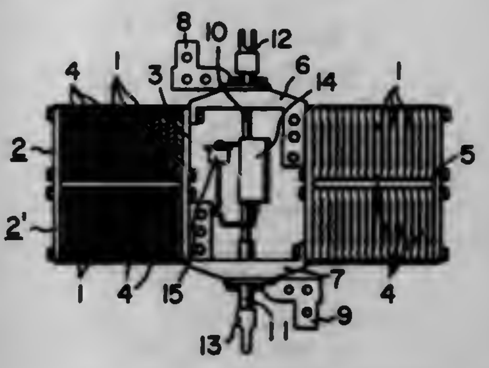
Kozo Hatori, Sapporo; Hitoshi Watanabe, Tokyo, and Nobuyoshi Yoshida, Tokyo, all of, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Oct. 7, 1968, Ser. No. 765,580
Claims priority, application Japan, Oct. 9, 1967, 42/64783
Int. Cl. H03h ***7/06***
U.S. Cl. 333—75 **13 Claims**



Distributed constant RC network apparatus is provided in accordance with this invention having a pair of complex attenuation poles which reside on the plane defined by the complex angular frequency $s=\gamma+j\omega$. According to this invention a plurality of fundamental circuit means containing various unit elements of a distributed constant RC network are developed. Thereafter, two or more of such plurality of fundamental circuit means may be combined in a predetermined manner to form various embodiments of uniform equal length distributed constant RC network apparatus, according to this invention, having a pair of complex attenuation poles located on an arbitrary point on the plane defined by the complex angular frequency.

3,603,901
LINE TRAP

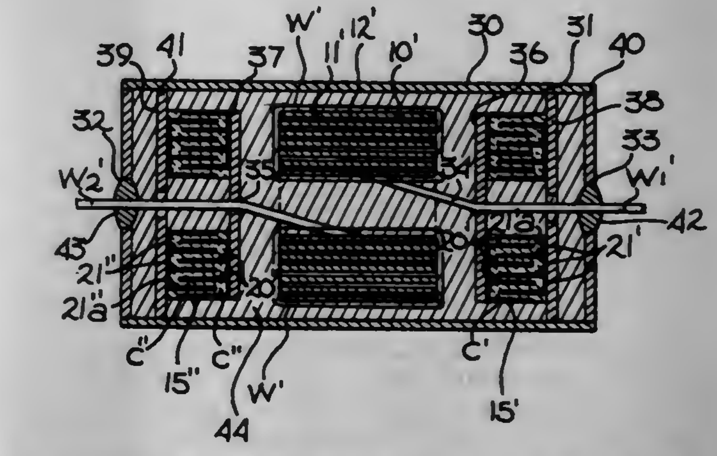
Kazutoshi Matsumoto, Yokohama, Japan, assignor to Nippon Koei Company, Limited, Tokyo, Japan
Filed Sept. 29, 1969, Ser. No. 861,780
Claims priority, application Japan, Oct. 8, 1968, 43/73312
Int. Cl. H03h ***7/10***
U.S. Cl. 333—76 **1 Claim**



A line trap comprising a coil formed by winding a strip of electrically conducting material in convolutions, a supporting frame made of an insulating material for supporting the convolutions of said strip, a spacer for controlling the clearance between the convolutions of the strip, a pair of trap terminals each connected to one of the opposite ends of said coil, and tuning means and an arrester connected in shunt with said coil.

3,603,902
MINIATURE BROAD BAND LOW PASS FILTERS WITH MULTITURN TAPE WOUND INDUCTORS

Peter A. Denes, 9101 Crestwood Ave. N.E., Albuquerque, N. Mex.
Continuation-in-part of application Ser. No. 393,946, Sept. 2, 1964, now Patent No. 3,456,215, and a continuation-in-part of Ser. No. 831,142, June 6, 1969. This application July 14, 1969, Ser. No. 841,234
Int. Cl. H03h ***7/02***
U.S. Cl. 333—79 **10 Claims**

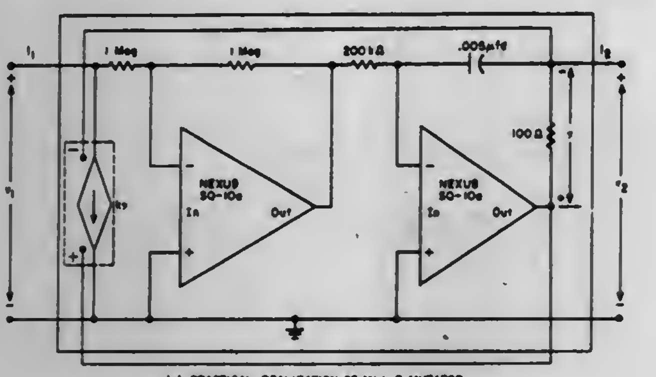


A miniature broadband high frequency low pass filter having at least one multiturn tape wound core inductor and at least one ceramic capacitor whereby the resultant filter exhibits improved insertion loss characteristics even in filter applications having certain amounts of DC or low frequency current passing therethrough.

3,603,903
LINEAR ACTIVE NETWORK DEVICE FOR TRANSFORMING ONE CLASS OF NONLINEAR DEVICES INTO ANOTHER

Leon O. Chua, West Lafayette, Ind., assignor to Purdue Research Foundation
Filed May 27, 1968, Ser. No. 732,403
Int. Cl. H03h ***7/00, 11/00***
U.S. Cl. 333—80 R **14 Claims**

A linear active two-port network element for synthesizing nonlinear network components with arbitrarily prescribed characteristics. The elements, by themselves or in combination, can be utilized for a variety of applications, and are particularly useful in integrated circuit technology. The element included herein is the Mutator. The Mutator essentially transforms, or mutates one class of nonlinear devices into another; for example, a nonlinear resistor may be changed to a nonlinear inductor, a nonlinear inductor to a nonlinear capacitor, a nonlinear capacitor to a nonlinear resistor, and so on.

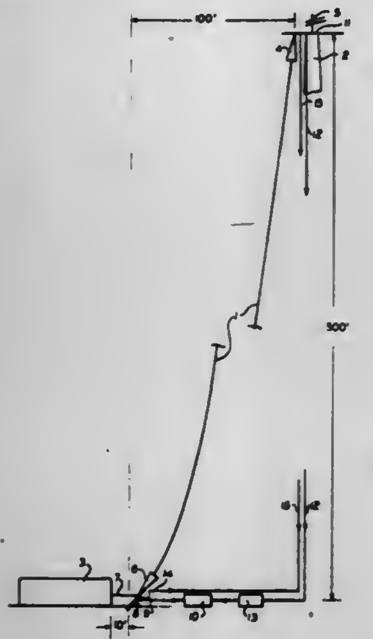


(a) PRACTICAL REALIZATION OF AN L-R MUTATOR

3,603,904

TEMPERATURE CONTROLLED SURFACE WAVE FEEDER LINES

Theodore Hafner, 1501 Broadway, New York, N.Y.
Filed June 4, 1969, Ser. No. 830,932
Int. Cl. H01p *3/08, 1/30;* **H01b** *7/34*
U.S. Cl. 333—95 S **7 Claims**



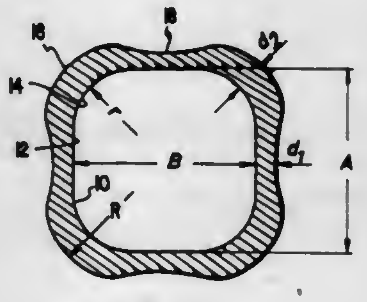
The invention consists of a surface wave antenna feeder in the form of a conductive tubing coated with a dielectric to produce on the outside of the coated conductor a field carrying substantially the entire electromagnetic wave energy from the transmitter to the antenna, and providing inside the tubing a circulating fluid so controlled as to maintain the line at a constant temperature substantially to exclude longitudinal expansion, regardless of the power level of the surface wave and the temperatures surrounding the line.

3,603,905

SYMMETRICAL FLEXIBLE WAVEGUIDE

Erich Schuttloffel, Backnang, Germany, assignor to Telefunken Patentverwertungsgesellshaft m.b.H., Ulm (Danube) Germany
Filed Sept. 9, 1969, Ser. No. 856,271
Claims priority, application Germany, Oct. 5, 1968, P 18 01 536.6
Int. Cl. H01p *3/12,3/14;* **F16l** *9/06*
U.S.Cl. 333—95 A **4 Claims**

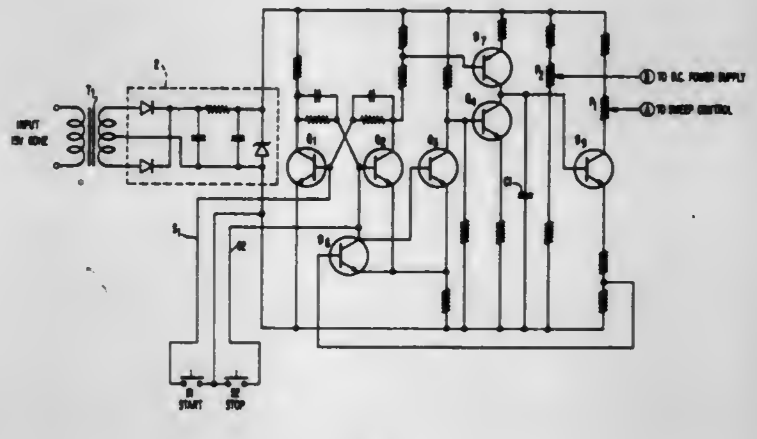
A waveguide twistable of the type which can be wound on a drum for simultaneously transmitting two mutually perpendicular linearly polarized electromagnetic waves comprises a metal tube which has a constant cross-sectional profile along its length. The profile is approximately square and has rounded corners and includes thin wall portions which extend along the entire length of the tube. The thin wall portions are appropriately shaped to maintain the profile substantially symmetrical with respect to imaginary mutually perpendicular lines drawn across the said profiles from the center of each square side when the waveguide is bent about a given radius of curvature, or twisted through a given torsional angle.



3,603,906

ELECTRONIC SWEEP PROGRAMMER CIRCUIT FOR SUPPLYING COIL CURRENT IN TESTING A PISTON ASSEMBLY

Vernon G. H. Naylor, St. Petersburg, Fla., assignor to Simmonds Precision Products, Inc., Terrytown, N.Y.
Filed Sept. 23, 1969, Ser. No. 860,299
Int. Cl. H03k *3/286, 3/295*
U.S. Cl. 331—111 **3 Claims**



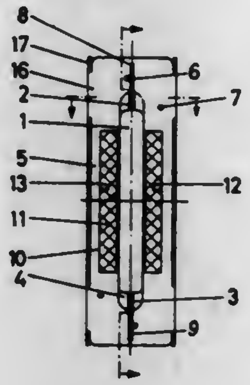
An electronic programmer sweep circuit for testing a piston assembly which utilizes a flip-flop, a storage device and a feedback from the storage device for energizing a trigger circuit forming part of the flip-flop to supply a coil current increasing at a constant rate and similarly decreasing at a constant rate.

3,603,907

SEALED REED RELAY

Josef Staufen Weber, Breisgau, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,624
Claims priority, application Germany, Dec. 7, 1968, G 68 10 352
Int. Cl. H01h *50/04, 51/28*
U.S. Cl. 335—151 **4 Claims**

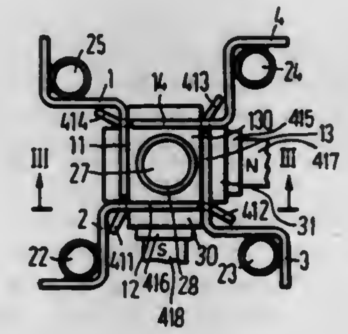
A mounting structure for a reed relay and coil which holds both the coil and the reed envelope individually. The mounting structure has a baseplate of insulting material apertured to contact both the envelope and coil. The aperture is less in width in one area than the diameter of the envelope and in another area less in width than the coil diameter to contact both and them preferably against an enclosing member.



3,603,908

PERMANENT MAGNET SYSTEM FOR TRAVELLING WAVE TUBES

Herbert Sarnezki, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Jan. 21, 1970, Ser. No. 4,541
Claims priority, application Germany, Jan. 28, 1969, P 19 04 131.7
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **10 Claims**



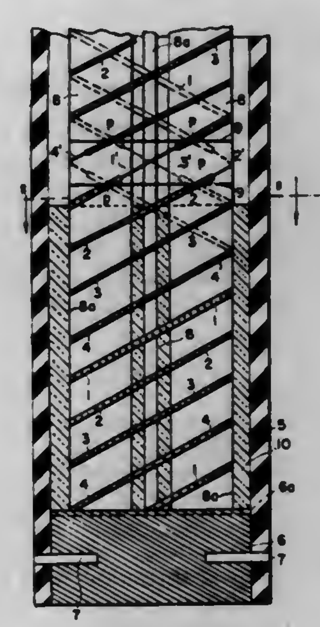
Permanent magnet beam-focusing apparatus comprises a plurality of permanent magnets having pole shoes arranged in a stacked relationship and secured in a plurality of interlocked comblike metal sheets of quadrilateral cross section, the pole shoes resiliently abutting individual fitting edges of the comb teeth to accurately position the magnetic field established by the permanent magnets.

3,603,909

MULTI-FUSE-LINK HIGH-VOLTAGE FUSE HAVING A LINK-SUPPORTING MANDREL AND MEANS FOR EQUALIZING THE INTERRUPTING DUTY OF THE FUSE LINKS

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed July 6, 1970, Ser. No. 52,218
Int. Cl. H01h *85/04*
U.S. Cl. 337—161 **7 Claims**

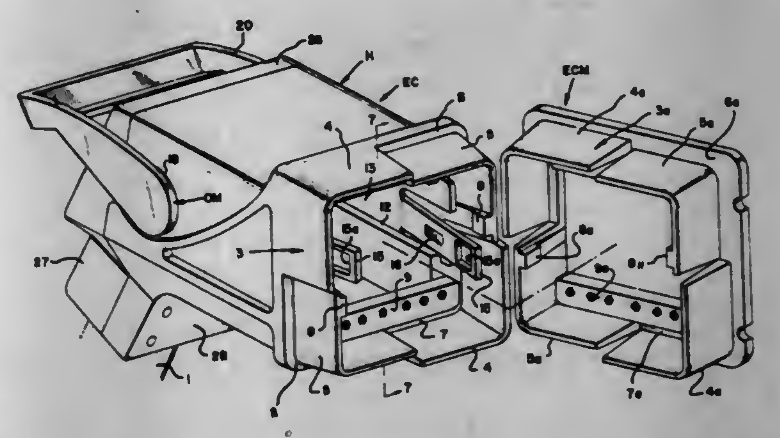
A high-voltage fuse of the kind wherein a plurality of ribbon fuse links are wound around a mandrel structure in helical paths. The fuse further includes a pair of axially spaced auxiliary conductors wound around the mandrel structure adjacent the center region thereof and intersecting each of said plurality of fuse links at a predetermined acute angle. The pair of auxiliary conductors intersect said plurality of fuse links preferably at points where the latter are supported by said mandrel structure, and spot welds located at these points establish connections between said pair of auxiliary conductors and said plurality of fuse links.



3,603,910

ELECTRICAL CONNECTOR MEANS HAVING OPERATING MEANS FOR CONNECTING MULTICONDUCTOR CABLE MEANS

William Ludlow Schumacher, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Mar. 14, 1969, Ser. No. 807,198
Int. Cl. H01r *13/54, 13/62*
U.S. Cl. 339—45 **10 Claims**



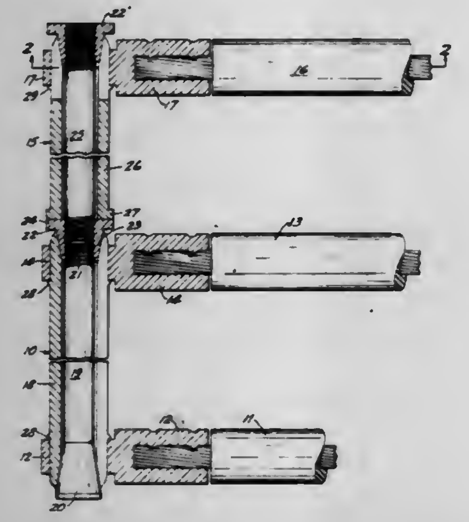
An electrical connector comprises a housing member housing electrical terminals disposed in dielectric blocks. Latching arms are movably mounted in guide slots along opposing sides of the housing member. Cam means are provided in the slots and on the latching arms to cause latching sections of the latching arms to be moved into and out of latching engagement with a complementary housing member when eccentric operating means operate the latching arms so that the mating electrical terminals are connected and operate the latching arms. Polarizing means are provided on the housing members to assure proper engagement therebetween.

3,603,911

CABLE CONNECTOR

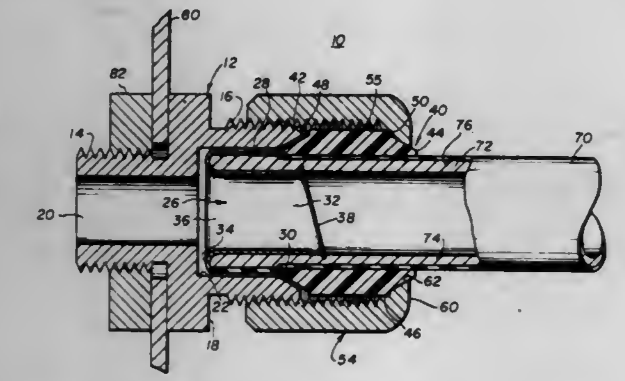
Roy D. Erickson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing, St. Paul, Minn.
Filed Sept. 25, 1969, Ser. No. 860,919
Int. Cl. H01r *7/08*
U.S. Cl. 339—267 **7 Claims**

A connector for joining one or more distribution cables to a supply cable. A radially expandable sleeve fitting within ringlike cable terminal lugs surrounds a threaded rod having a conical head and fitted with an axially extended terminal nut. Each subsequent unit is threaded into the preceding terminal nut.



3,603,912
RACEWAY TERMINATOR

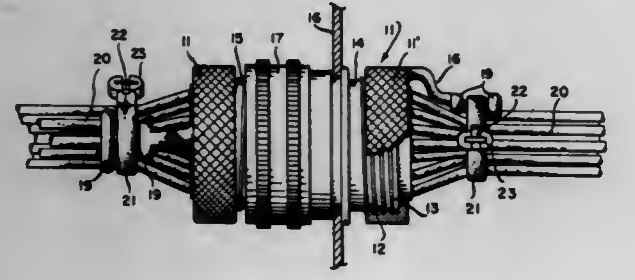
William E. Kelly, Bradley Beach, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Aug. 25, 1969, Ser. No. 852,863
Int. Cl. H01r *13/54*
U.S. Cl. 339—89 C **4 Claims**



A raceway terminator for coupling a jacketed flexible metallic raceway to an electrical enclosure comprising a body portion, a gland nut for assembly therewith, a grounding cone and a sealing ring. The sealing ring has tapered leading and trailing edges and an annular shoulder thereabout which cooperate with an annular rib on the gland nut to provide for the holding of the jacketed flexible metallic raceway as well as providing a moisture seal therebetween and preventing abrasion of the jacket of the raceway by the terminator.

3,603,913
STRAIN RELIEF CLAMP FOR ELECTRICAL WIRING CONNECTOR

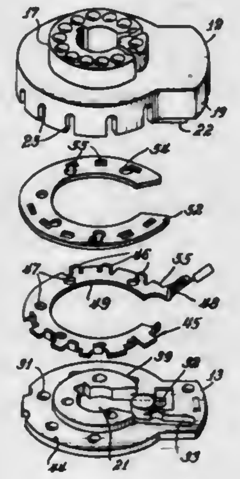
John M. Hasty, Jr., Smyrna, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Apr. 11, 1969, Ser. No. 815,314
Int. Cl. H01r *13/58*
U.S. Cl. 339—104 **8 Claims**



A clamping device is designed for use on general purpose multipin connectors by attaching to the connector and extending therefrom to terminate in a wire-bearing surface with means to facilitate retention of a band or tie string to secure all the wires extending from the connector. This bundle of wires is thereby gripped in a firm and immovable position so that all linear and lateral movement thereof which might occur in operation is prevented from being applied to the point of connection of the several wires with the connector. Thus, stressing and eventually breaking of the connection point of any of the several wires is obviated.

3,603,914
ELECTRON TUBE ARC-OVER RING WITH VENTING MEANS

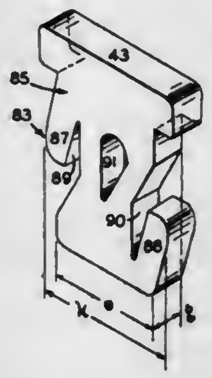
Fred P. Manetti, River Forest, and George H. Miller, Arlington Heights, both of, Ill., assignors to American Plasticraft Company, Chicago, Ill.
Filed Oct. 31, 1968, Ser. No. 772,287
Int. Cl. H01r *13/12*
U.S. Cl. 339—143 **5 Claims**



This invention discloses an electron tube sockets having an arc-over protective device comprising a conductor ring having prongs positioned adjacent selected lead terminals to form an arc gap therebetween to prevent arching between terminals, and further comprising means for venting the socket to enhance the protective function of the device.

3,603,915
MEANS FOR POLARIZING A CONNECTOR ASSEMBLY

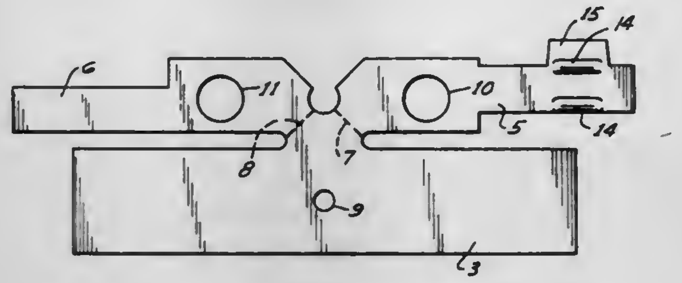
Max L. Jayne, North Warren, and Robert W. Pihlblad, Warren, both of, Pa., assignors to Sylvania Electric Products, Inc.
Division of Ser. No. 737,163, June 14, 1968, Pat. No. 3,566,340
Filed May 18, 1970, Ser. No. 37,960
Int. Cl. H01r *13/64*
U.S. Cl. 339—186 M **3 Claims**



Removable key means for polarizing a multiple-contact connector assembly for accommodating printed circuit boards whereof at least one key of flexural material has armlike side members discretely formed to resiliently fit within respective spaced-apart polarizing channels in a manner that the key can be easily inserted thereinto and resiliently retained therein to provide desired polarization of the assembly. The key is also formed with provisions to provide facile removal thereof when a change of polarization is desired.

3,603,916
ONE-PIECE CLIP AND LOAD SIDE TERMINAL STRAP

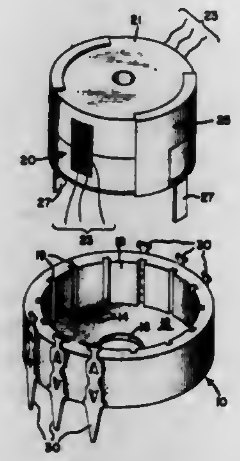
Rolf H. Kindler, Oxford, Ohio, assignor to Square D Company, Park Ridge, Ill.
Filed Sept. 22, 1969, Ser. No. 859,696
Int. Cl. H01r *9/18, 9/12*
U.S. Cl. 339—217 **6 Claims**



The combined fuse clip and terminal strap is a single piece of metal punched in the flat to provide a body portion with arms extending laterally from opposite sides of one end of the body and terminal straps extending laterally from opposite sides of the opposite end of the body. The arms are bent generally normal to the plane of the body to form clips for resiliently clamping onto a fuse received therebetween. The straps are bent about form lines at 45° to the length of the body and 90° to each other so they both lie in face to face juxtaposition with each other and with one strap juxtaposed firmly and resiliently in face to face contact with the face of the body opposite the clip arms. The other strap is juxtaposed firmly against the under face of the first strap. The one of the straps juxtaposed against the body has bosses protruding in the same direction as the clip arms for centering a conducting wire to be connected to the terminal straps. The body and straps have aligned openings through which extends a screw which is in threaded engagement with the body for clamping the combined clip and terminal strap to a supporting base.

3,603,917
MOUNTING DEVICE FOR A WOUND INDUCTOR

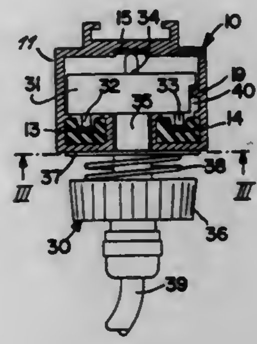
Radford K. Owen, Lynchburg, Va., assignor to General Electric Company
Filed Sept. 2, 1969, Ser. No. 854,623
Int. Cl. H01r *13/50*
U.S. Cl. 339—220 C **8 Claims**



A mounting device for a wound inductor is provided by an insulating cylindrical member that is open at one end and closed at the other end to form a receptacle for the inductor. The cylindrical member has a plurality of equally spaced slots that extend longitudinally along its inner cylindrical surface to locate terminals that extend longitudinally along its outer cylindrical surface. The inductor is fastened in the receptacle and connected to appropriate terminals at the open end. The terminals extend beyond the closed end and can pass through openings in a printed circuit board for soldering.

3,603,918
ELECTRIC POWER DISTRIBUTION SYSTEM

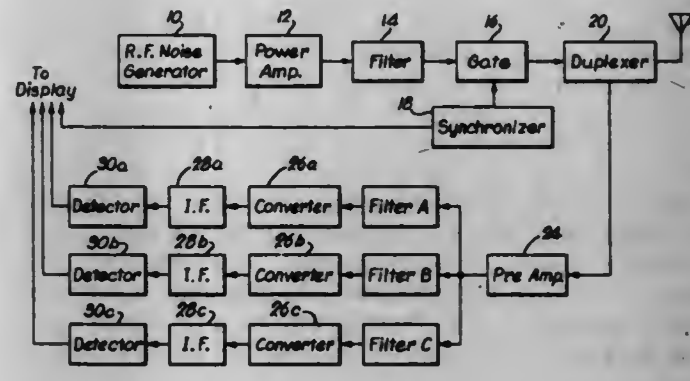
Hans Woertz, Basel, Switzerland, assignor to Oskar Woertz, Inh., H. & O., Basel, Switzerland
Filed June 3, 1969, Ser. No. 829,981
Claims priority, application Switzerland, Dec. 6, 1969, 18225/68
Int. Cl. H01r *13/60*
U.S. Cl. 339—22 T **14 Claims**



Electric power distribution system having at least one current-carrying bar with a continuous elongated slot and corresponding contact parts on current collectors to cooperate with the current-carrying bar.

3,603,919
POLY-PANCHROMATIC TARGET IDENTIFICATION

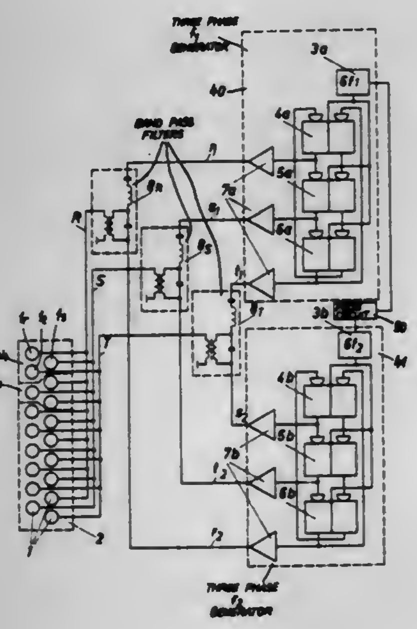
Richard K. Moore, Lawrence, Kans., assignor to The Kansas University Endowment Association, Lawrence, Kans.
Filed Feb. 27, 1969, Ser. No. 802,851
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **10 Claims**



In a radar or sonar system, a continuous spectrum of electromagnetic or compressional wave energy is transmitted and defines a wide band of frequencies. The receiver has one or more channels, the multiple channel arrangement defining subbands of the transmitted frequency band which are separately detected so that an identification signal is derived from each channel respectively. Each identification signal represents the response of the target to that particular frequency subband, such signals being combined as desired to provide a suitable readout. For three information signal output logic, a color cathode-ray tube provides an effective display by controlling each color input thereof in accordance with a corresponding one of the identification signals.

3,603,920
VELOCITY MEASURING DEVICE

Wolfgang Richard Ernst Stedtnitz, Bremen, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Aug. 14, 1969, Ser. No. 850,146
Claims priority, application Germany, Sept. 19, 1968, P 17 98 276.2
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 D **12 Claims**

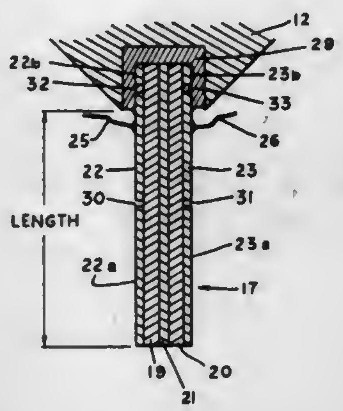


Apparatus for determining the velocity and direction of movement of a vehicle by measuring the Doppler effect, which apparatus includes an array of individual transducer elements mounted on the bottom of the vehicle, each element including means for sending and receiving sound signals and being equidistantly spaced from adjacent elements. Multiphase signal-generating means are provided to generate a plurality of signals of substantially similar frequency to produce sound waves from the transducer elements, with the signals each having a different phase. The transducer elements are electrically connected into groups, the number of groups being a multiple of the number of phase signals produced by the multiphase generator. The transducer elements of each group are arranged in a line, and the lines formed by each group are parallel to the lines formed by other groups and occupy a common plane. A signal of a single phase is applied to each group in cyclical repetition to produce a directive signal from the entire array of transducer elements. A frequency evaluating circuit is provided to evaluate the frequency of signals produced by sound waves striking the transducer elements and a scanner means is provided to successively connect each group of transducer elements to the frequency-evaluating circuit in a cycle having substantially the same period as the cyclical repetition of the sound radiating signal.

3,603,921
SOUND TRANSDUCER

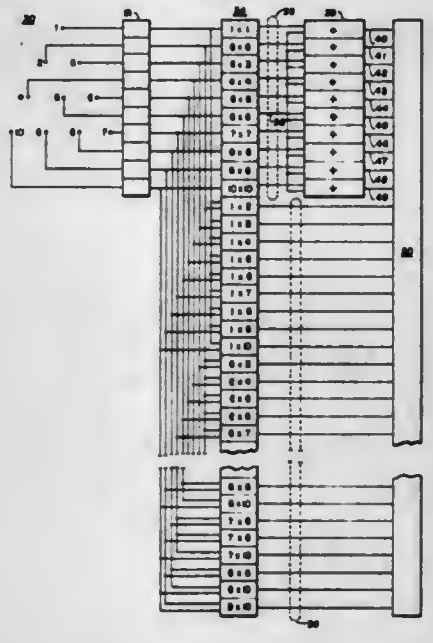
Robert H. Dreisbach, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Continuation of application Ser. No. 596,007, Nov. 21, 1966, now abandoned. This application Dec. 18, 1968, Ser. No. 787,301
Int. Cl. H04r *17/00*
U.S. Cl. 340—10 **18 Claims**

A sound transducer has an inertial mass and one or more acoustic transducer plates fastened along an edge to the mass in cantilever fashion. The plates respond to acoustic energy at their main surfaces.



3,603,922
HIGH RESOLUTION FREQUENCY WAVE NUMBER SPECTRA FOR DETECTION AND LOCATION OF WEAK SIGNALS

George D. Hair, Jr., Irving, and William P. Haney, Garland, both of, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 618,299, Feb. 20, 1967, now abandoned. This application Sept. 22, 1969, Ser. No. 860,120
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5RSC **14 Claims**

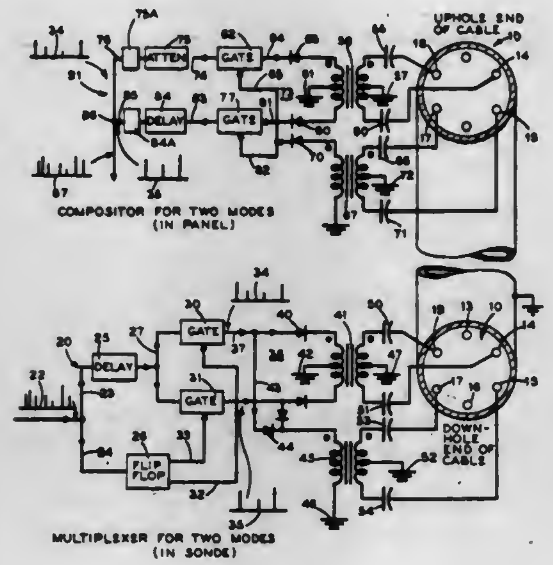


Signals from a plurality of sensors in an array which monitors energy passing through the array are processed for production of a wave-number-plane response employing the autopower spectra of signals from all of the sensor locations and the cross-power spectra between signals from all of the sensing locations, taken in pairs. In accordance with the invention, the autopower spectra are formed for use in production of a wave-number-plane response by summing the autopower spectra from each of the other sensors with a constant which preferably is proportionally related to the autopower spectrum of one of the signals.

3,603,923
SIGNALING SYSTEM

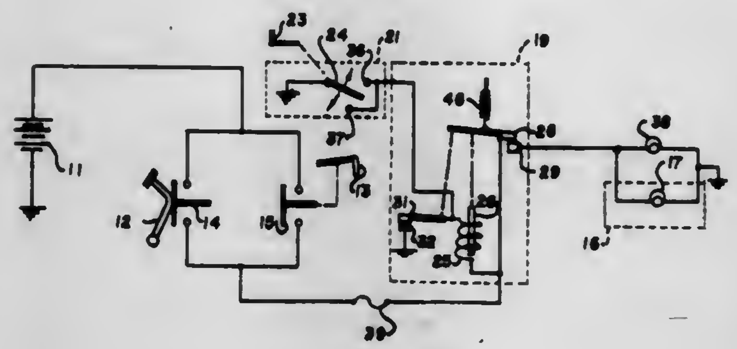
William B. Nelligan, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Sept. 10, 1968, Ser. No. 758,717
Int. Cl. H04j *3/02*
U.S. Cl. 340—18 **9 Claims**

In one illustrative embodiment of the invention, an armored multiconductor cable connects an array of transformers and gate circuits in a borehole logging tool with a similar array at the earth's surface. The downhole gates are enabled in a predetermined order to transmit sequential portions of a logging signal to the surface. A downhole logic circuit applies the successive signal portions to the cable conductors in a series of conductors potential combinations, or modes. The mode signals enable respective gates at the earth's surface to produce a sequence of pulses that corresponds to the original signal.



3,603,924
STOP-WARNING DEVICE FOR VEHICLES

Forest K. Harbert, 10 Highland Avenue, Torrens Park, Australia 5062
Filed May 8, 1969, Ser. No. 823,031
Int. Cl. B60q *1/44*
U.S. Cl. 340—52 **9 Claims**

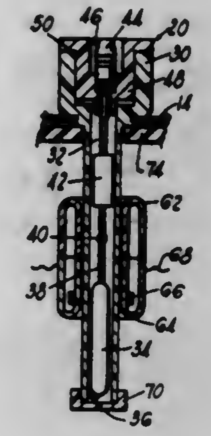


A safety device for vehicles employs a positive warning member visibly displaying the work "Stop" to enable the driver of a vehicle to warn others that the driver intends to stop or is already stopped. A control for the warning member functions independently of existing brake lights but in conjunction with the existing equipment of the vehicle such as the foot brake pedal or hand brake lever and is operational to be turned on by a second actuator only when one of the brakes are first actuated and stays on until the brakes are released.

3,603,925
MASTER CYLINDER RESERVOIR LEVEL INDICATOR

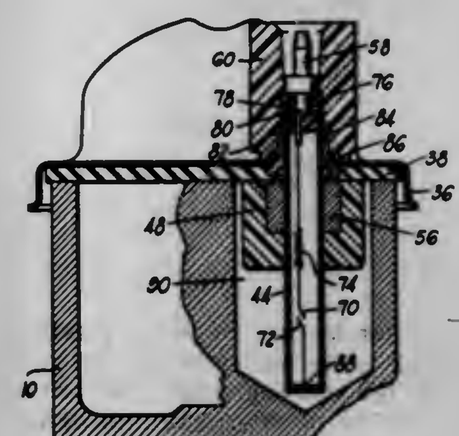
Harold W. Hughes, and Samuel E. Stone, both of St. Joseph, Mich., assignors to The Bendix Corporation
Filed Oct. 21, 1968, Ser. No. 769,327
Int. Cl. B60t *17/22;* **G01f** *23/12*
U.S. Cl. 340—59 **2 Claims**

A reed switch assembly that is integrated with a lid for a fluid reservoir and has a float within which a magnet is affixed to operate the reed switch and close an electrical circuit upon the approach of a predetermined low level of the fluid in the reservoir.



3,603,926
MASTER CYLINDER FLUID LEVEL INDICATOR

Jack A. Kimura, St. Joseph, Mich., assignor to The Bendix Corporation
Filed June 20, 1968, Ser. No. 738,644
Int. Cl. B60t *17/22*
U.S. Cl. 340—59 **1 Claim**

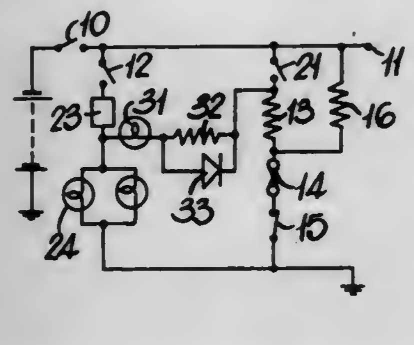


A fluid indicator for closing an electrical circuit upon the approach of a low liquid level in a brake master cylinder reservoir employing a pair of resilient contacts within a switch housing with one of the contacts in electrical connection with the housing and another of the contacts in electrical connection with a connector terminal which are activated by a magnet within a float means which is positioned by the liquid level in the reservoir and including provisions to eliminate the effect of liquid motion in the reservoir on the operation of the switch.

3,603,927
FLUID LEVEL INDICATORS

Arthur P. Osborne, Wellington, England, assignor to Girling Limited, Birmingham, England
Filed Mar. 27, 1969, Ser. No. 811,063
Claims priority, application Great Britain, Apr. 2, 1968, 15756/68
Int. Cl. B60q *1/00*
U.S. Cl. 340—59 **13 Claims**

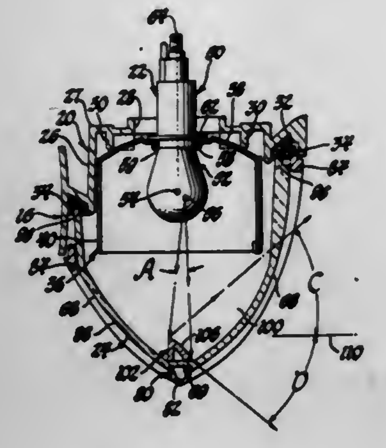
In a fluid level indicator, particularly for a vehicle hydraulic braking system, a fusible link is mounted in the container within which the level of liquid is to be monitored. This link is connected in a circuit such that the link will not fuse provided it is covered, but if it becomes uncovered at any time it will fuse and operate some form of warning device.



3,603,928
PARKING, TURN SIGNAL, AND SIDE MARKER LAMP ASSEMBLY

Guido C. Speedy, Anderson, Ind., and William T. Collins, Jr., Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1969, Ser. No. 852,692
Int. Cl. B60q *1/32;* **G02l** *17/00*
U.S. Cl. 340—87 3 Claims



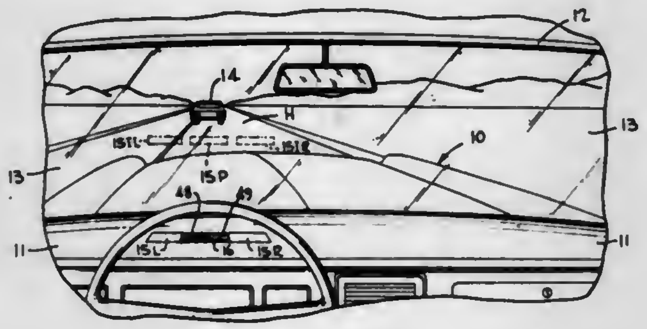
A multiple function motor vehicle lamp assembly includes a housing adapted to be attached to the vehicle, a light source carried by the housing, and a lens mounted on the housing in front of the light source and defining with the housing a lamp envelope. The light source includes two filaments, one of which is intermittently energized for providing a turn signal function and the other of which is steadily energized for providing a clearance or parking lamp function. An elongated mirror having a vertically disposed cylindrical reflecting surface is fixedly secured to an interior surface of the lens and intercepts and redirects a predetermined portion of the illumination projected by the steadily energized filament for providing a side marker lamp function.

3,603,929
DISTANCE MEASURING DEVICE

Thomas T. Drysdale, 4116 Witacre Road, Fairfax, Va.

Filed Sept. 17, 1969, Ser. No. 858,774
Int. Cl. B60r *1/00;* **G01c** *3/00*
U.S. Cl. 340—104 8 Claims

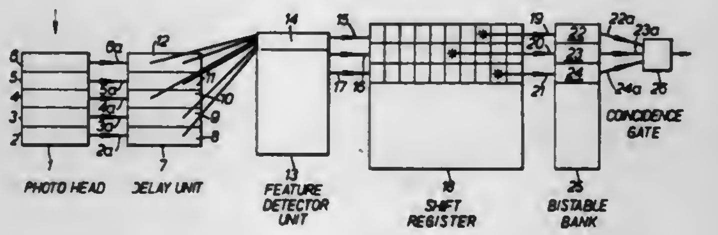
The gauging means is installed in a recess in the top of the dash of an automobile and consists of horizontally relatively movable strips geared to a speedometer means to assume positions the spacing of which bears a relationship to the speed of the car. A phantom image of the two gauge strips is projected upon and reflected from the glass windshield in a position approximately at eye-level and in the line of vision toward a car ahead. The eyes of the observer-driver are naturally focused on the car ahead and thus a double image of the gauge strips is seen and due to the overlap of vision, a centrally disposed composite phantom strip of a length variable according to the speed of the car appears in substantial registry with the view of the car ahead. By proper calibration of the gauge, it will be seen that when the apparent lateral dimension of the car ahead exceeds or falls short of the length of the phantom overlapping image of the gauge strips, the operator can determine whether he should reduce his speed and fall back or whether he can safely increase his speed. The calibration is such that when the length of the gauge image is approximately equal to the observed width of the car ahead, the spacing of the two vehicles is proper for the indicated speed.



3,603,930
OPTICAL CHARACTER RECOGNITION SYSTEM INCLUDING SCANNED DIODE MATRIX

Ronald H. Britt, Ilford, Essex, England, assignor to The Plessey Company Limited, Ilford, Essex, England

Filed July 14, 1969, Ser. No. 841,506
Claims priority, application Great Britain, July 18, 1968, 34245/68
Int. Cl. G06k *9/06*
U.S. Cl. 340—146.3 J 3 Claims



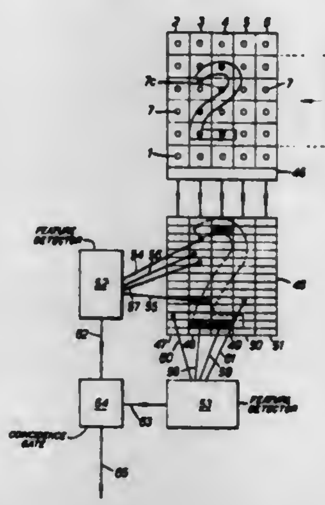
An optical character recognition system comprising a photohead which scans successively a character image to be recognized information being transferred during the scan into a number of tapped delay lines such that information resulting from one complete scan can be presented simultaneously to a detector arrangement capable of recognizing predetermined features of a plurality of different characters, signals indicative of such recognition being fed into a multistage shift register the contents of which are sampled by character detector means which provides a final output signal when predetermined signal state is obtained in selected stages of the shift register.

3,603,931
OPTICAL CHARACTER RECOGNITION SYSTEM INCLUDING A MATRIX OF SCANNED PHOTOSENSITIVE ELEMENTS

Ronald H. Britt, and Peter C. Matthews, both of Ilford, England, assignors to The Plessey Company Limited, Ilford, England

Filed July 16, 1969, Ser. No. 842,200
Claims priority, application Great Britain, July 18, 1968, July 18, 1968, July 18, 1968, 34242/68;34244/68;34245/68
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 J 3 Claims

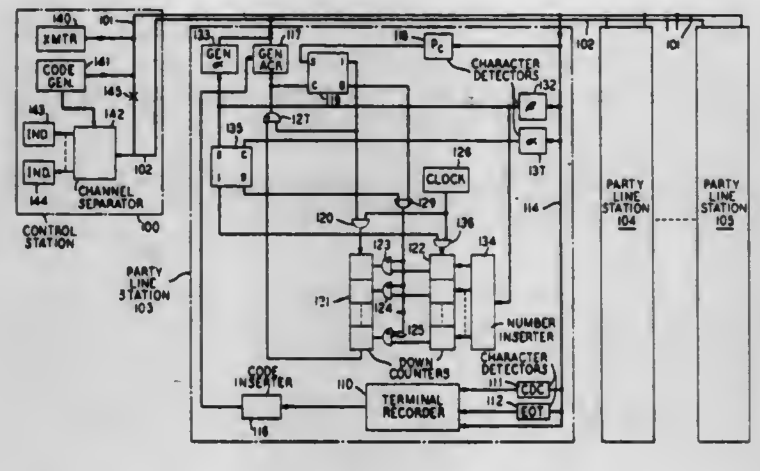
A method of optical character recognition comprising utilizing a photohead having a matrix of photosensitive elements which are scanned successively and sampling the signals obtained during each scan for the purpose of detectingthe presence of signals appertaining to a characteristic feature of one or more characters. The same feature may occur in several different characters but the features are chosen such that a different distinctive combination of features obtains for each character.



3,603,932
PARTY LINE STATIONS FOR SELECTIVE CALLING SYSTEMS

Douglas A. Kerr, Albuquerque, N. Mex., and Bernard B. Kolodner, Philadelphia, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 7, 1969, Ser. No. 814,058
Int. Cl. H04l *7/00;* **H04j** *3/06*
U.S. Cl. 340—147 3 Claims



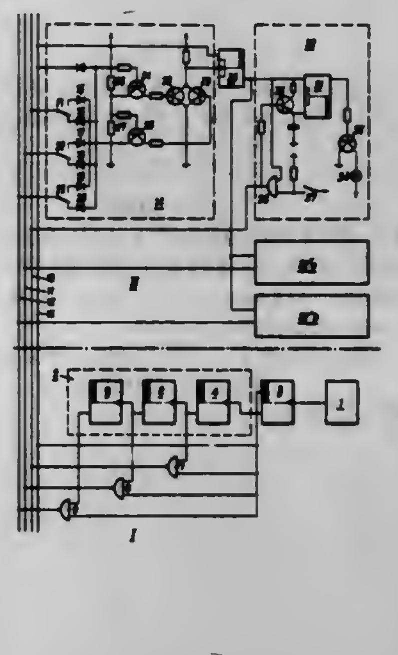
In a party line message distribution system, each station is arranged to provide a delayed response to a common polling or query code on a time division basis by inserting into a time slot individual thereto a response code indicating whether the station is prepared to receive a message. Each station includes an arrangement for modifying the delay to compensate for the delay of the transmission medium. When a station is designated to determine the delay modification, the station sends a test signal which is recirculated back to the station via the control station. The delay of the response is then reduced in accordance with the recirculating time.

3,603,933
APPARATUS FOR THE TRANSMISSION OF INFORMATION

Siegfried Bidermann, Schellenberg, Liechtenstein, assignor to Uninorm Anstalt, Vaduz, Liechtenstein

Filed Apr. 6, 1970, Ser. No. 25,674
Int. Cl. H04g *5/00*
U.S. Cl. 340—172.5 6 Claims

An apparatus for transmission of informations between a plurality of subscriber stations over a common transmission path for light call devices, light call speaking devices, observation devices, remote power devices, persons investigation devices, remote indicators, remote control means and the like, which comprises means for operating receivers of the subscriber stations upon occurrence thereon of a predetermined binary code delivered by an impulse generator over a counter chain including flip-flops. At least to two subscriber stations each are coordinated a predetermined time section divided into at least two part-time periods, in the manner of a time multiplex system. A connection between the subscriber stations is performed by the binary code during the subscriber time period within one time period of the part-time periods and transmits within the other of the part-time periods informations between the subscriber stations, whereby the outputs of the individual steps of the counter chain are fed to signal conduits serving the address and information transmission and an output of a flip-flop delivering a phase frequency to a phase conduit serving the phase transmission. All subscriber stations are disposed over an address-decoding circuit, the inverting AND gates of the latter and diodes for at least two subscriber stations coordinated to each other for the selection of the same binary code are transmitted in the address period equally to the signal conduits, as well as to the phase conduit, whereby for the transmission of informations the one input of a storage is connected to the output of the address-decoding circuit, the other input of the storage is disposed by means of intermediate members on the phase conduit, and the output of which leads to an input of a receiving storage controlling the receiving device, the other output of which is connected with one of the signal conduits, and for emitting the informations the output of the address coding circuit is in connection by means of a switching device likewise with one of the signal conduits.

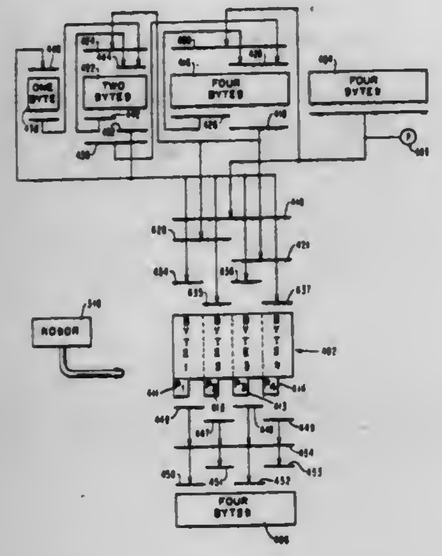


3,603,934
DATA PROCESSING SYSTEM CAPABLE OF OPERATION DESPITE A MALFUNCTION

Harold F. Heath, Jr., Poughkeepsie, and Samir S. Husson, White Plains, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1968, Ser. No. 744,950
Int. Cl. G06f *7/00, 11/00*
U.S. Cl. 340—172.5 13 Claims

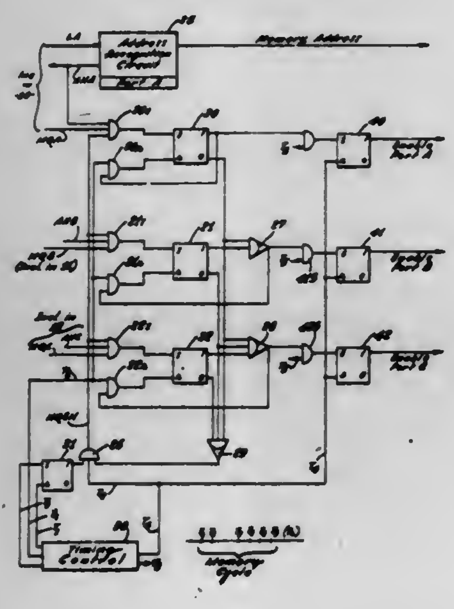
An electronic data processing machine wherein various functional units such as the adder and certain registers may be utilized at one-half or a lesser fraction of their normal operating capability. Upon detection of an error in one of said functional units, the system will determine whether one-half of the unit is functioning properly. Data will be sent through the properly functioning half of the unit in two or more passes to perform the same operation that would have been performed in one pass if there had been no malfunction. Upon termination of the error condition the unit is automatically returned to its normal operating mode.



3,603,935
MEMORY PORT PRIORITY ACCESS SYSTEM WITH INHIBITION OF LOW PRIORITY LOCK-OUT

Ralph C. Moore, Manhattan Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 12, 1969, Ser. No. 823,896
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **2 Claims**



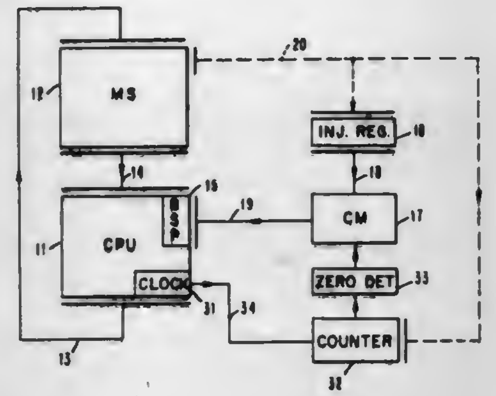
A control system for handling overlapping requests for communication between a plurality of processors and a memory or a memory bank is disclosed causing requests, after acceptance, to be serviced on a predetermined priority basis but preventing acceptance of new requests until all requests pending at the respective previous acceptance phase have been honored.

3,603,936
MICROPROGRAMMED DATA PROCESSINGSYSTEM

DennisP. Attwood, Winchester; David M. Syme, Otterbourne, and Harold W. Tuffill, Brambridge, Eastleigh, all of, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,055
Int. Cl. G06f *11/04*
U.S. Cl. 340—172.5 **20 Claims**

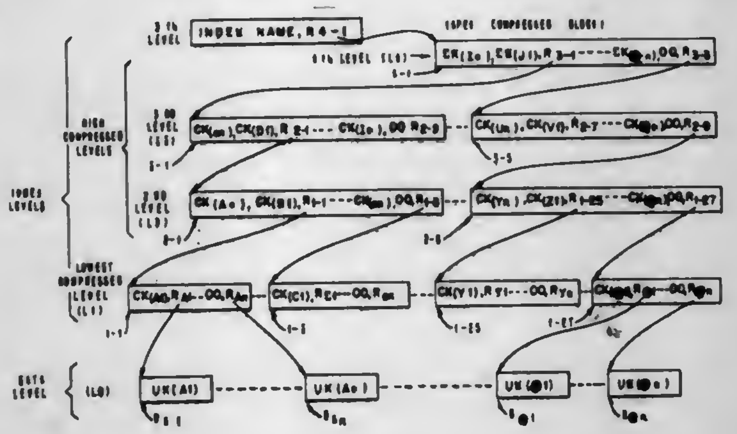
Apparatus for injecting simulated monitoring or control data into a microprogrammed data processing system for diagnostic purposes to initiate a particular system test or response. The data injection takes place at a preselected stage during the execution of a microprogram which stage is identified from microprogram addressing or clocking information.



3,603,937
MULTILEVEL COMPRESSED INDEX GENERATION METHOD AND MEANS

Edward Loizides, Poughkeepsie, and George F. Steigerwalt, Hyde Park, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1969, Ser. No. 836,930
Int. Cl. G06f *7/22*
U.S. Cl. 340—172.5 **42 Claims**



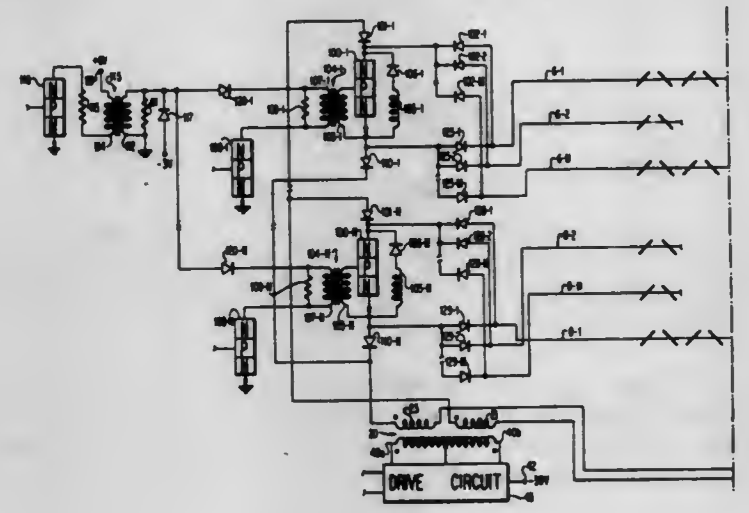
A method and means for generating a multilevel compressed index. The high-level blocks of the index have an entry format of CK_1, CK_2, R in which R is a pointer to a next lower level compressed index block, and CK_1, and CK_2 are each compressed keys generated from uncompressed keys (UK's) represented by pointers on opposite sides of theend boundariesof select low-level compressed index blocks. The generated multilevel index can be searched using the invention described in U.S. application No. 836,825.

3,603,938
DRIVE SYSTEM FOR A MEMORY ARRAY

Thomas S. Cooper, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,451
Int. Cl. G11c *7/00, 5/02*
U.S. Cl. 340—174 M **2 Claims**

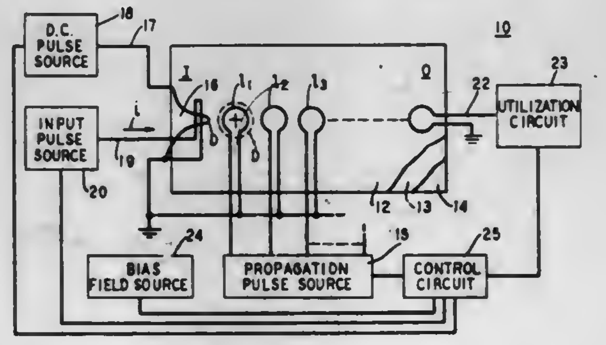
A drive system for a magnetic core array is disclosed which employs transistor switches for selectively applying the energizing currents to the drive lines. The transistor switches are in the form of floating, nonsaturating switches of the type disclosed in U.S. Pat. No. 3,289,008. The secondary windings of power supply transformers provide the sole source of energizing current for the drive lines. This isolates the drive lines from the direct current power supplies thereby minimizing the coupling of currents from the drive lines to the sense lines. The selected transistor switches are turned on to complete series circuits through their respective drive lines prior to application of a square wave voltage pulse applied to the drive lines by the pulse or power transformers. The voltage pulse provided by the power supply transformer is removed a short time prior to the turning off of the transistors. This eliminates the transistor breakdown problem and affords a significant reduction in power consumption. Each transistor switch is used for both read and write operations. This is accomplished by providing isolation diodes which are back biased by the power supply transformers to isolate the commoned collectors and emitters of the switching transistors and thereby prevent current flow in an undesired path. There is thus afforded a substantial reduction in the number of transistors and coupling transformers required in the drive system.



3,603,939
MAGNETIC DOMAIN PROPAGATION ARRANGEMENT

Andrew H. Bobeck, Chatham; Henry E. D. Scovil, Gladstone, and AlfredA.Thiele,East Orange, all of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 30, 1969, Ser. No. 846,208
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **5 Claims**



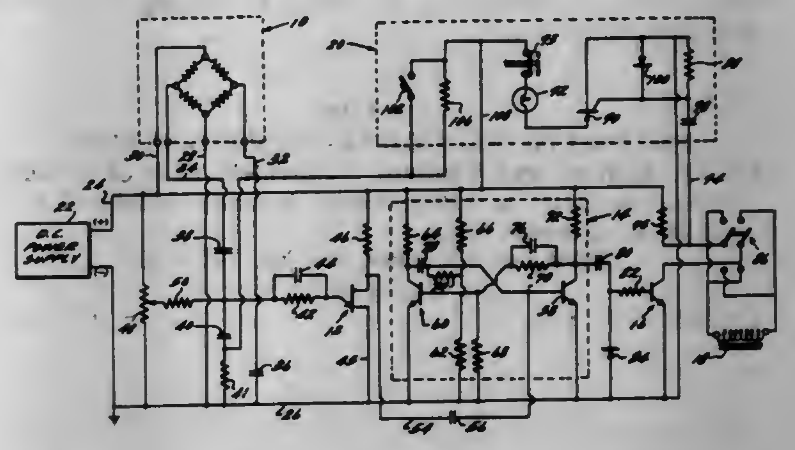
Optimum size of single wall domains in a magnetic sheet is reduced by applying to each face of the sheet a high permeability overlay of prescribed thickness. Increased packing densities and operating margins result.

3,603,940
PULSE STORAGE AND COUNT-OUT DEVICE

Max M. Adams, Cincinnati, Ohio, assignor to General Electric Company

Filed Aug. 28, 1969, Ser. No. 853,643
Int. Cl. G11c *11/06, 7/00*
U.S. Cl. 340—174 QP **10 Claims**

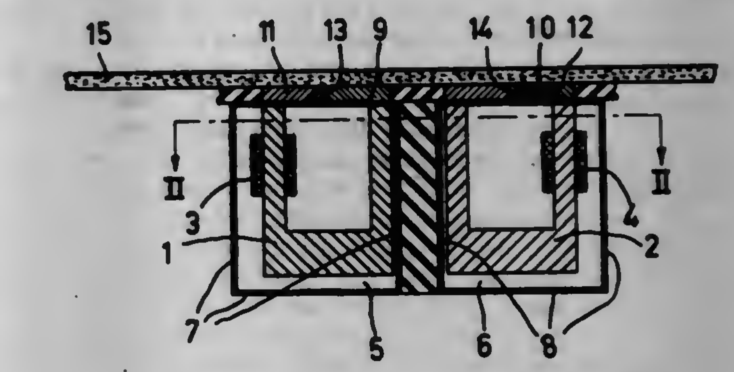
Apparatus for storing and/or counting out a series of magnetic pulses. Circuitry is shown for generating a rectangular pulse to correspond to the sensing of an event. This rectangular pulse applies a predetermined number of volt-seconds to a winding associated with a single magnetic storage core. A count-out circuit includes both means for determining the number of pulses stored and means for determining when the core is saturated. Provision is made to utilize the same circuitry to count-in as to count-out.



3,603,941
COMBINATION OF TWO OR MORE SHIELDED MAGNETIC HEADS HAVING AT LEAST ONE WRITING HEAD AND AT LEAST ONE READING HEAD

Jacob Koorneef, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 16, 1968, Ser. No. 753,125
Claims priority, application Netherlands, Aug. 31, 1967, 6712006
Int. Cl. G11b *5/10, 5/28*
U.S. Cl. 340—174.1 F **4 Claims**

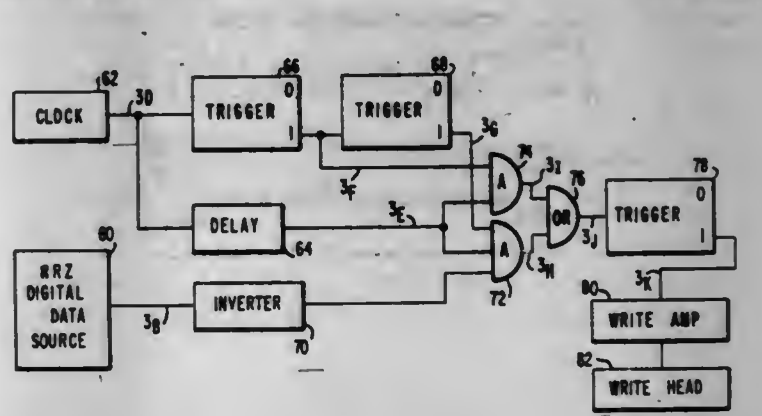


A shielded multiple magnetic head wherein the heads are electrically screened from each other by a box-shaped enclosure of electrically conductive material. The bottom of the enclosure surrounds the lower portion of the head. The top of the enclosure interrupts the head between the upper and lower portions thereof.

3,603,942
PREDIFFERENTIATED RECORDING

Robert F. Heidecker, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,647
Int. Cl. G11b *5/04*
U.S. Cl. 340—174.1 G **9 Claims**

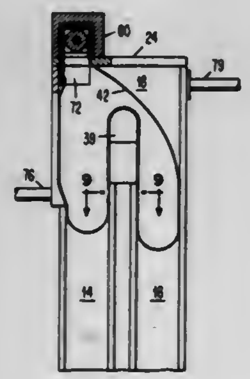


System and method for magnetic recording to produce a read voltage having transitions such as zero crossings representing the recorded data. No differentiation of the read voltage is necessary. High frequency switching of the write current is used at times to maintain the read voltage at a nearly constant amplitude, as well as producing the desired read data transitions.

3,603,943
PNEUMATIC RECORD PROCESSING SYSTEM

Paul J. Badum, and Vladimir Nejezchleb, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,710
Int. Cl. G11b *15/38*
U.S. Cl. 340—174.1 C **16 Claims**

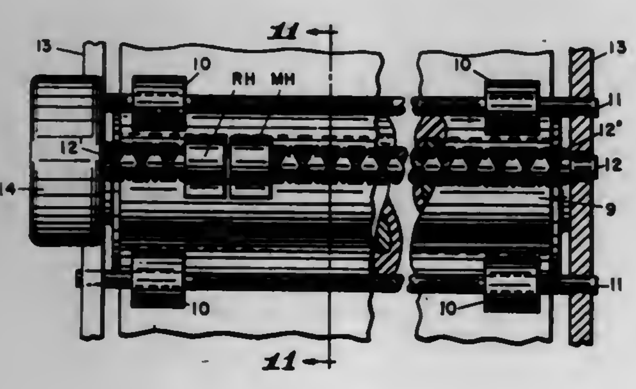


A magnetic storage system for processing record members permanently affixed to storage containers. The system includes a processing chamber including a drive capstan positioned between a pair of storage bins or columns. A container having an elongated flexible record member stored therein with both ends permanently affixed thereto is positioned adjacent the chamber. Means are provided for drawing the portion of the record member between the fixed ends into the chamber and over the drive capstan. This tape portion is then driven back and forth between the storage columns and past a transducer so that information can be written on and read from the member. At the termination of a processing operation, the tape is returned to the storage container and the container is removed.

3,603,944
SYSTEM FOR PROCESSING INTELLIGENCE IN FORM OF BINARY BARS

John F. Taplin, 15 Sewall St., West Newton, Mass.

Filed Apr. 15, 1969, Ser. No. 816,227
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 H **2 Claims**

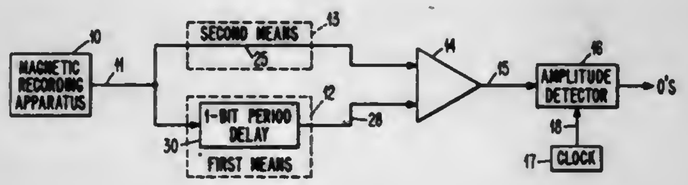


A record of intelligence in binary bar form constituted by deposits of magnetizable ink on a substratum is converted by magnetic carrier-frequency-modulation into a binary carrier-frequency-modulated magnetic patter.

3,603,945
SIGNAL RECOVERY SYSTEM UTILIZING AMPLITUDE COMPARISON AT THE BEGINNING AND END OF A BIT PERIOD

Friedrich R. Hertrich, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1969, Ser. No. 817,829
Int. Cl. G11b *5/04*
U.S. Cl. 340—174.1 H **9 Claims**

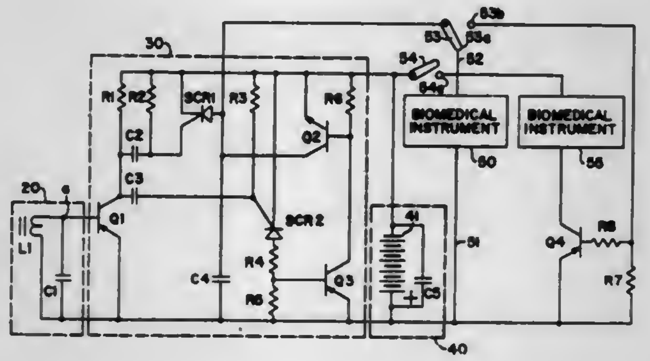


Readback signals from a magnetic media are characterized by having signal components respectively with a frequency F and a double frequency 2F with shifts between such signal components indicating recorded data. Usually, the lower or F frequency signal component has a greater amplitude than the 2F frequency signal. In the recording of binary digital data, a bit period of recording is defined as equal to the wavelength of the 2F signal component. Higher frequency harmonics may be used as the high frequency component wherein the bit period is an integral number of wavelengths of such higher frequency signal component. For data signal recovery, the signal amplitude at the beginning of a given bit period is compared with the signal amplitude at the end of such bit period. If the amplitude comparison shows a substantial difference in amplitude, then the first signal component is indicated; whereas, if the amplitudes are substantially similar, the second or higher frequency signal component is indicated.

3,603,946
TELEMETRY-ACTUATED SWITCH

Robert D. Lee, San Mateo, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 23, 1969, Ser. No. 887,698
Int. Cl. G08c *15/00*
U.S. Cl. 340—177 **12 Claims**

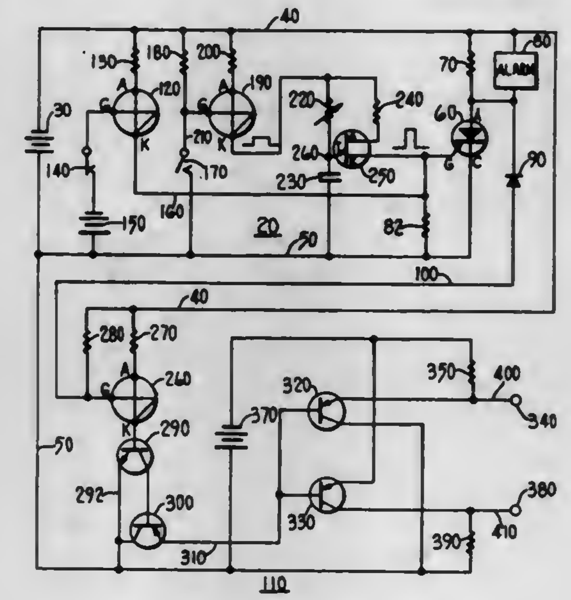


A silicon-controlled rectifier (SCR) provides either a high-impedance or a low-impedance electrical path between, for example, a power source and an instrument. While being switched from its high-impedance to its low-impedance state in response to a first control signal, this SCR is momentarily short-circuited by a transistor which is responsive to both the first control signal and a second control signal. During the momentary short-circuiting, an initial surge of current through a capacitor supplies enough current to the SCR to hold this SCR in its low impedance state. Decay of this current surge with the charging of the capacitor allows this SCR to be switched from its low-impedance to its high-impedance state by again momentarily short-circuiting its anode-to-cathode circuit in response to the second control signal.

3,603,947
MODULAR ALARM SIGNALING SYSTEM

Howard C. Schubert, Leonia, N.J., assignor to Aerolite Electronics Corporation, Union City, N.J.

Filed Oct. 24, 1968, Ser. No. 770,157
Int. Cl. G08b *19/00*
U.S. Cl. 340—213 R **8 Claims**

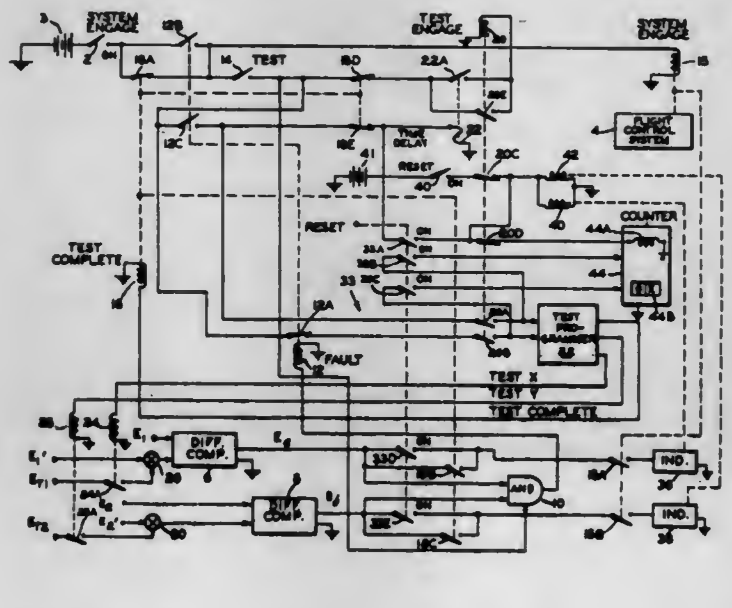


A system including a module for providing an audible or visual and electrical signal in response to a changed condition. The electrical signal is fed to a second module which provides a reversed polarity output onreceiptof the signal. The reversed polarity output is coupled to a third remote module which provides a plurality of indications including an indication of normal conditions and alarm conditions. A fourth module provides power for the system and an auxiliary alarm indication.

3,603,948
FAULT IDENTIFICATION, ISOLATION AND DISPLAY FOR USE WITH AN AIRCRAFT CONTROL SYSTEM

William W. Medlinski, Clifton, N.J., assignor to The Bendix Corporation

Filed Nov. 22, 1968, Ser. No. 778,271
Int. Cl. G08b *23/00*
U.S. Cl. 340—214 **8 Claims**

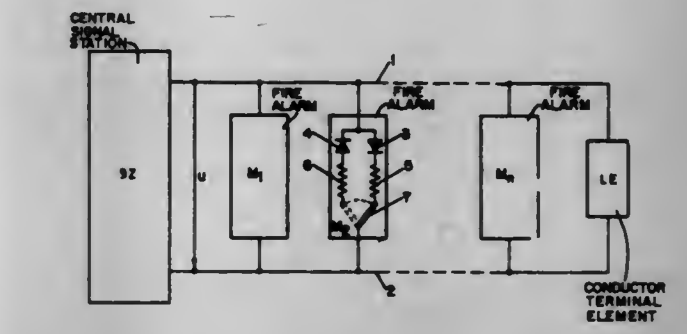


A fault identification, isolation and display device for testing an aircraft control system. The device senses malfunctions in selected portions of the system and provides a visual display which instantaneously identifies and isolates the malfunctioning section and memorizes the fault status of the section until the device is manually or automatically reset.

3,603,949
FIRE ALARM INSTALLATION

Beat Walthard, Stafa, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

Filed June 18, 1968, Ser. No. 738,046
Claims priority, application Switzerland, June 26, 1967, 9031/67
Int. Cl. G08b *29/00*
U.S. Cl. 340—214 **14 Claims**

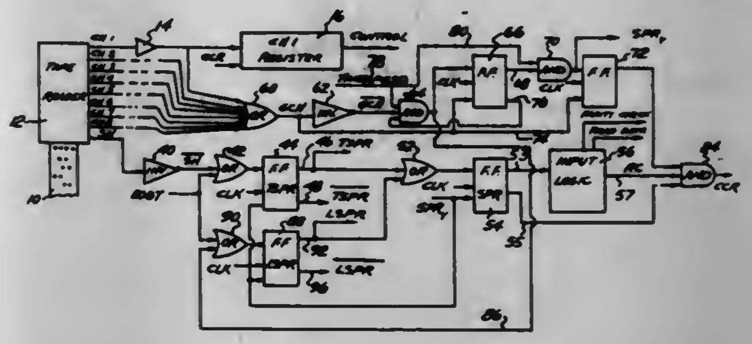


A fire alarm installation is disclosed which provides positive detection of the response or nonresponse of an individual fire alarm during the normal operational condition thereof as well as during a checking operation. Each of the individual fire alarms are provided with circuits which exhibit a high impedance for supply voltages of a first polarity and a low impedance for supply voltages of a second polarity during normal operational conditions. During alarm conditions, however, the impedance-polarity relationships reverse and such is detected at a remote central station.

3,603,950
REDUNDANT SPROCKET LOGIC SYSTEM FOR MACHINE TOOL NUMERICAL CONTROL

Thomas W. Hartford, Livonia, Mich., assignor to The Bendix Corporation

Filed May 21, 1969, Ser. No. 826,557
Int. Cl. G05b *23/00;* **G06k** *7/00*
U.S. Cl. 340—222 **17 Claims**



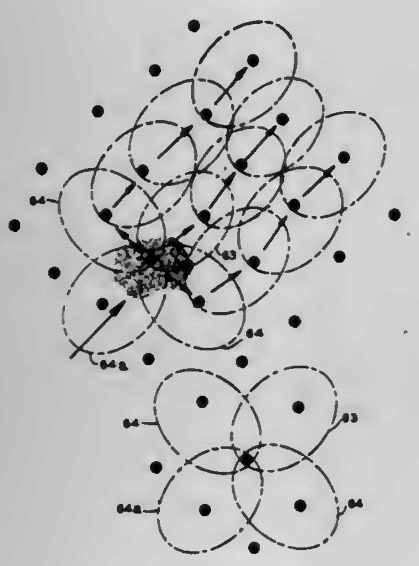
A redundant sprocket logic and malfunction detection system for a machine tool numerical control comprising logic circuits generating a redundant sprocket signal from the instruction bits recorded on each row of coded instruction on a tape. The redundant sprocket signal permits the machine tool control to operate in a normal manner in the absence of reading of the physical sprocket signal corresponding to each row of instruction bits, while providing an alarm signal indicative of malfunction of the system. In the event of absence of both the redundant sprocket signal and the physical signal, an appropriate control signal is generated which shuts down the machine control system.

3,603,951
STORM WARNING SYSTEM

Pat O. Bracken, San Diego, Calif., and George H. Lane, St. Louis, Mo., assignors to Montech Incorporated, Bridgeton, Mo.

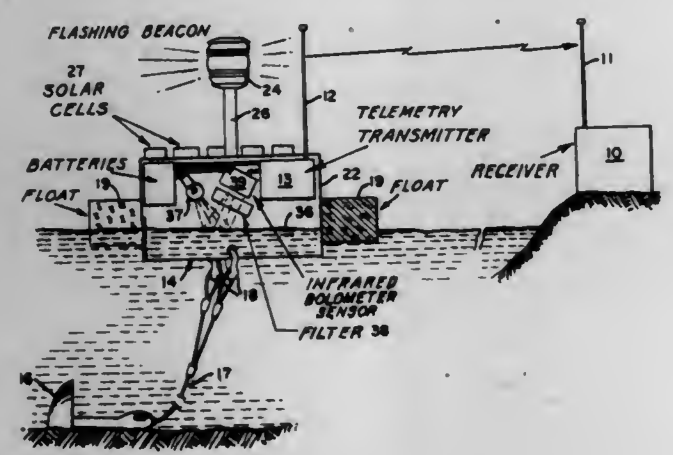
Filed Sept. 3, 1968, Ser. No. 756,819
Int. Cl. G08b *25/00, 19/00*
U.S. Cl. 340—224 **9 Claims**

A public warning system for alerting the public of natural disasters, such as tornadoes and other severe atmospheric disturbances, and having capabilities of giving general warning for civil defense for other emergencies. The system also has the capability to act as a sensor grid to obtain scientific atmospheric or weather or other geophysical data. A unique grid detection system is provided that predetermines and selects the area that will be affected and which residential areas will lie in the path of an approaching tornado. A selective warning of the affected residents is provided by sensor transmitters located in the grid at spaced grid points along the prevailing tornado's track and to some safe distance along each side of the trace by signaling individual receiver alarm devices. The automatic alarm network is self-sustaining and is not dependent upon existing power distribution systems for its actuation.



3,603,952
SPILL SENSORS

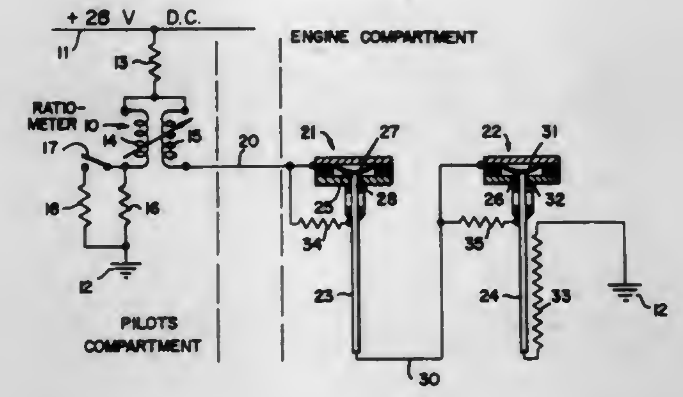
Millard F. Smith, P.O. Box 295 Saugatuck, Westport, Conn.
Filed May 12, 1969, Ser. No. 823,587
Int. Cl. H04b *1/02*; **G01l** *1/16*; **G08b** *21/00*
U.S. Cl. 340—224 **9 Claims**



Sensing methods and apparatus for monitoring the surface condition of a body of water including floating sensor units deployed on the water surface employing reflected infrared radiation detectors to sense the presence of floating hydrocarbons from an oil spill or floating industrial waste, sewage or the like. Telemetry signals report the surface condition of the body of water to a central receiver unit.

3,603,953
FIRE DETECTOR CIRCUIT

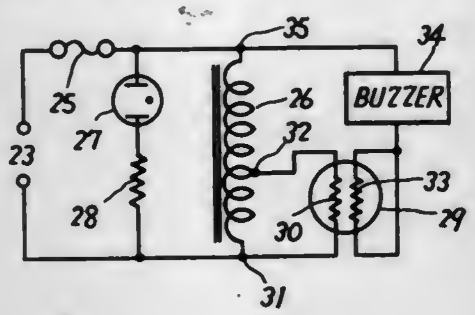
John E. Lindberg, 1211 Upper Happy Valley Road, Lafayette, Calif.; Darrel V. McCoy, Oakland, Calif.; Gordon J. Schanck, Northridge, Calif., and Harry E. Van Cleef, Jr., San Francisco, Calif.
Filed Aug. 18, 1967, Ser. No. 661,559
Int. Cl. G08b *5/36*, *17/06*
U.S. Cl. 340—228 **20 Claims**



A temperature detection circuit of the type including an electrical switch actuated by a temperature-detecting sensor at a predetermined critical temperature, and an electrical indicator in series with the switch, for indication of the actuation of said switch. The circuit is characterized by resistance means which is effectually placed in said circuit in series with the indicator only when the switch is actuated, the indicator including means for giving a different indication for each of the following conditions: (1) when the resistance means is effectually in the circuit, (2) when the circuit from the indicator to the switch is open, and (3) when the circuit from the indicator to the switch is shorted.

3,603,954
GAS ALARM DEVICE

Tutaharu Takeuchi, Osaka-fu, Japan, assignor to New Cosmos Electric Company Limited, Osaka-shi, Japan
Filed Feb. 12, 1970, Ser. No. 10,848
Claims priority, application Japan, Feb. 22, 1969, 44/15836
Int. Cl. G08b *21/00*; **H01c** *13/00*
U.S. Cl. 340—237 R **7 Claims**

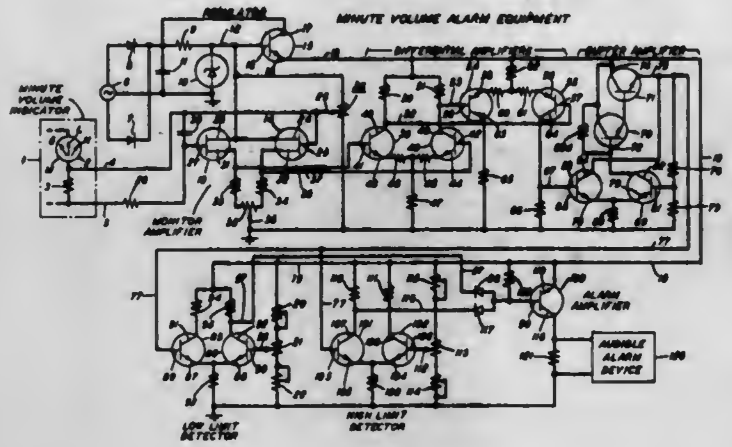


A detecting element for inflammable gases which includes a pair of electrodes formed of a relatively nonoxidizable material which are supported in spaced relationship by an intervening member having parallel grooves for receiving the coils and to which the coils are fixed at least in part and a metal oxide semiconductor covering said electrodes and intervening member.

3,603,955
MINUTE VOLUME ALARM EQUIPMENT

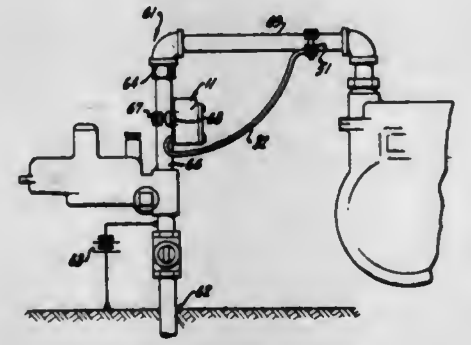
Donald Levy, Spring Valley, and Tibor Rusz, Kingston, both of, N.Y., assignors to Dontl Research Development Manufacturing, Monsey, N.Y.
Filed Mar. 5, 1969, Ser. No. 804,389
Int. Cl. G08b *21/00*
U.S. Cl. 340—239 R **2 Claims**

Minute volume alarm equipment for monitoring the flow of gas and producing an alarm when the gas volume falls without a prescribed range is disclosed. The equipment includes a high input impedance monitor amplifier which senses analog electrical signals in a minute volume indicator. These signals are amplified by a differential amplifier and then coupled through a low output impedance buffer amplifier to low and high limit detectors. When the minute volume falls without the range defined by these limits an alarm amplifier is operated to activate an alarm device.



3,603,956
CATHODIC PROTECTION MONITOR

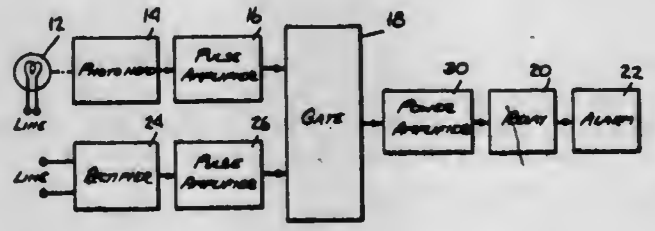
Darrel D. Byerley, Baldwin Park, and Robert B. Fisher, El Monte, both of, Calif., assignors to Tinker and Rasor, San Gabriel, Calif.
Filed June 27, 1969, Ser. No. 837,200
Int. Cl. G08b *21/00*
U.S. Cl. 340—249 **6 Claims**



A device for attaching to piping systems or the like having a cathodic protection potential applied thereto and comprising a visual indicator operated by such potential for producing an alarm indication at an adjustable lower level of applied cathodic protection potential.

3,603,957
INTRUSION ALARM SYSTEM AND LINE VOLTAGE COMPENSATION

Floyd S. Merchant, Box #99 Main Street, Pattenberg, N.J.
Filed Jan. 2, 1969, Ser. No. 788,408
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 **26 Claims**

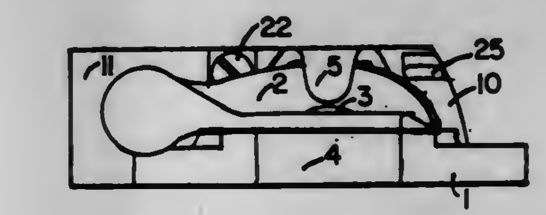


An intrusion alarm system responsive to the amount and rate of decrease of light striking a photohead is provided together with a means to compensate for those line voltage fluctuations which would produce a rapid decrease in light that might trigger a false alarm. The intrusion alarm system employs a pulse amplifier to respond to sudden decreases in light input to a photohead so as to provide a signal which will initiate the alarm.

A rectifier coupled to the same line source as is connected to the source of light provides a rectified output having substantial ripple content. A diode bridge sensor compares the rectifier output with a voltage level on a capacitor, thereby establishing a means to provide a signal indicating sharp changes in line voltage level. A gate responsive to rectifier bridge output and thus responsive to sharp changes in line voltage level is used to disable the system on the incidence of such line voltage changes. Accordingly, false alarms are avoided.

3,603,958
ALARM DEVICE FOR WINDOW OR DOOR LOCK

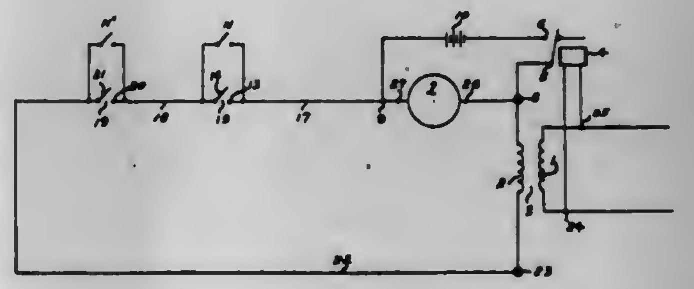
Eric C. Wahlberg, 32 8th Ave., Stamford, Conn.
Continuation-in-part of application Ser. No. 490,176, Sept. 27, 1965, now abandoned. This application June 17, 1968, Ser. No. 747,056
Int. Cl. G08b *13/06*
U.S. Cl. 340—274 **7 Claims**



A unitary alarm device for use with window or door locks which signals unauthorized unlocking, opening or removal. The device is incorporated in the nonoperating portion of the lock assembly which may be used in present installations or new installations without alteration to structures. The device incorporates a structure for deactivating the alarm when unlocking, opening or removal of access structure is authorized.

3,603,959
WARNING INTERLOCK SYSTEM FOR UNLOCKED SAFES

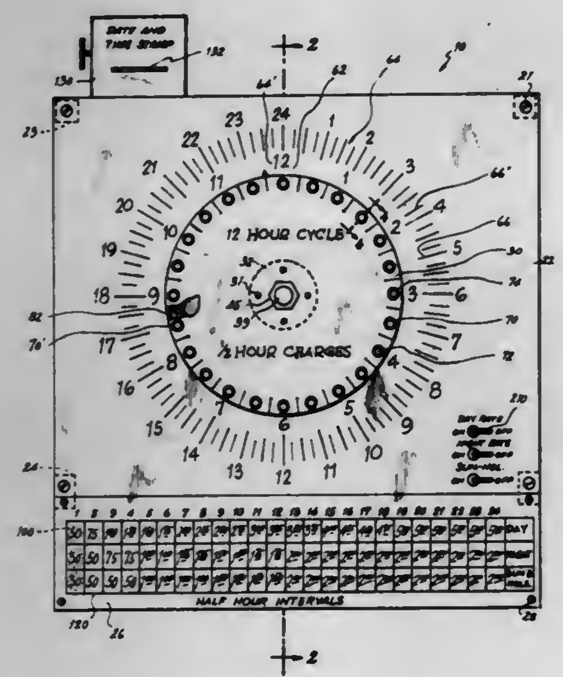
Robert G. Dunn, and Emil J. Walk, Dayton, both of, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force
Filed Jan. 6, 1969, Ser. No. 789,278
Int. Cl. E05g *3/00*; **G08b** *13/08*
U.S. Cl. 340—274 **1 Claim**



A warning interlock system which provides an audible signal when the passageway door is open to an enclosed area containing an unlocked safe. The invention incorporates the use of miniature switches in the passageway door casings and in the lock bolt recesses of safes. The miniature switch contacts are arranged so as to be closed when the corresponding passageway door and safe bolt are open. The closed contacts thus complete a first circuit causing the alarm to be energized. In another aspect of the invention, a relay is utilized in the system in order to complete a second circuit for energizing the alarm upon the loss of potential to the warning interlock system.

3,603,960
PARKING CHARGE DISPLAY DEVICE

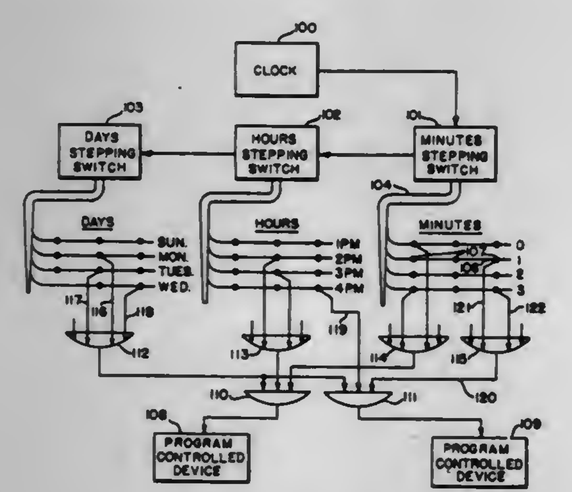
Albert Sanchez, 47 Lincoln Ave., Staten Island, N.Y.
Filed Feb. 25, 1969, Ser. No. 801,990
Int. Cl. G07c *1/30*
U.S. Cl. 340—309.1 **9 Claims**



A parking charge display device has a rotating disk carrying circumferentially spaced switches. The disk is located in front of a clock dial. Spacing of the switches corresponds to time intervals for which parking charges are to be made. Pressing any switch lights one of a row of lamps located behind prices posted on a display panel. Inside the device is a distributor drum with conductive rings wiped by brushes and connected in circuit with the switches and lamps.

3,603,961
PROGRAMMED TIMING SYSTEM

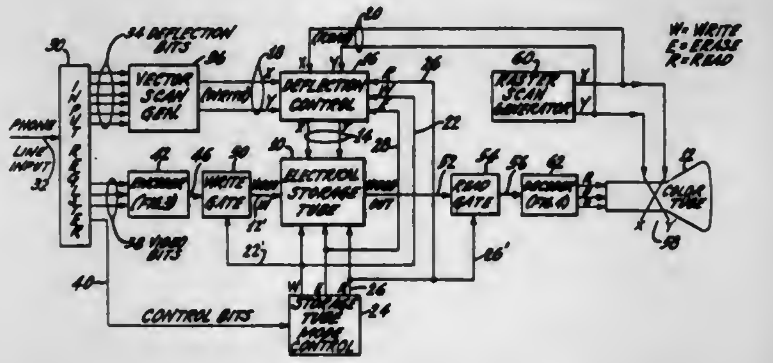
Rudolph M. Duris, Norwalk, and Robert J. Spooner, Essex, both of, Conn., assignors to Edwards Company, Inc., Norwalk, Conn.
Filed Feb. 10, 1969, Ser. No. 798,004
Int. Cl. G04c *23/00, 23/14*
U.S. Cl. 340—309.4 **11 Claims**



A clock mechanism drives day, hour and minute stepping switches which provide energization as time progresses of output circuits for their respective units of time. Matrices of terminals for days, hours and minutes respectively are energized from the output circuits. Control circuits are selectively programmed by energization through gates having input wires detachably connected to selected terminals of the several matrices.

3,603,962
COLOR DISPLAY FOR COMPUTER TERMINAL

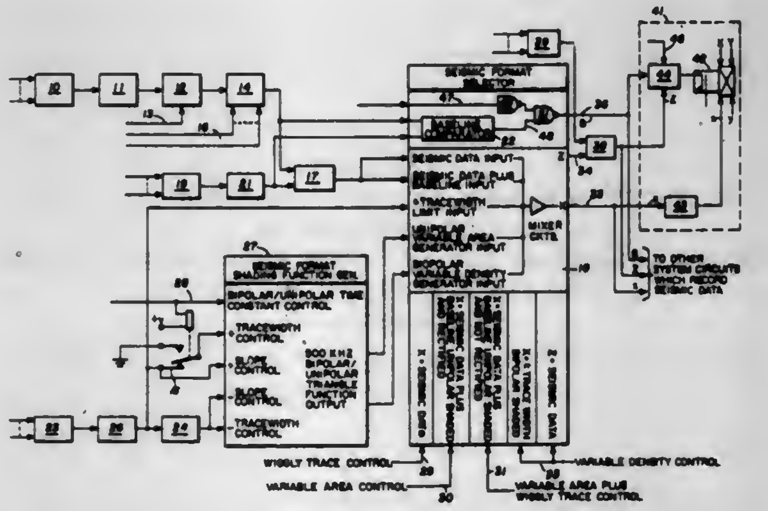
Bernard Joseph Lechner, Princeton, N.J., assignor to RCA Corporation
Filed Mar. 18, 1970, Ser. No. 20,570
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **4 Claims**



A color display system is disclosed which responds to computer-supplied digital signals representing graphic and alphanumeric material. The digital signals include position information bits and color information bits. The position information bits are used to control the beam deflection means of an electrical storage tube. The color information bits are translated in a digital-to-analog converter to a signal having an amplitude determined by the color information bits. This signal is applied to the video signal input terminal of the electrical storage tube, whereby the graphic material is stored as a pattern of stored charge amplitudes. The graphic material is displayed on a color kinescope having beam deflection means synchronized with the beam deflection means of the electrical storage tube. The amplitude-modulated video output signal from the electrical storage tube is applied to a threshold detector means to generate red, green and blue control signals for application to corresponding terminals of the color kinescope.

3,603,963
SEISMIC FORMAT GENERATOR

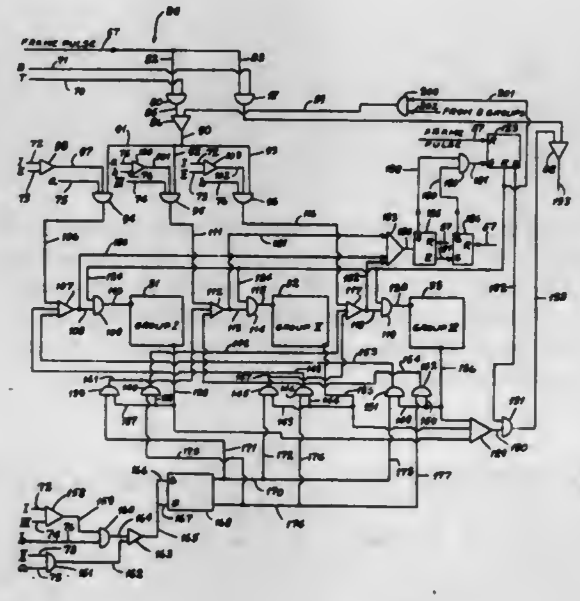
Phillip W. Ward, Arlington, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 29, 1967, Ser. No. 694,691
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **3 Claims**



A seismic format generator for transforming an analog seismic signal into either a wiggle trace format, a variable area format, variable area plus wiggle trace, or variable density format. A shading function generator supplies a unipolar and bipolar shading function to a format selector for the variable area and variable density formats. Input instructions to the format selector determine the selective combination of various input signals to produce a desired seismic format. The seismic format is displayed on a cathode-ray tube which also receives a display blanking signal and an intensity modulating signal from the format selector.

3,603,964
MEANS AND METHOD FOR SEMI-AUTOMATICALLY SEQUENCING THE GENERATION OF COMPONENTS FOR AN ELECTRONIC IMAGE DISPLAY

Lee Harrison, III, Englewood, Colo., assignor to Computer Image Corporation, Denver, Colo.
Continuation-in-part of application Ser. No. 607,078, Jan. 3, 1967, now Patent No. 3,364,382. This application Jan. 12, 1968, Ser. No. 697,512
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **10 Claims**

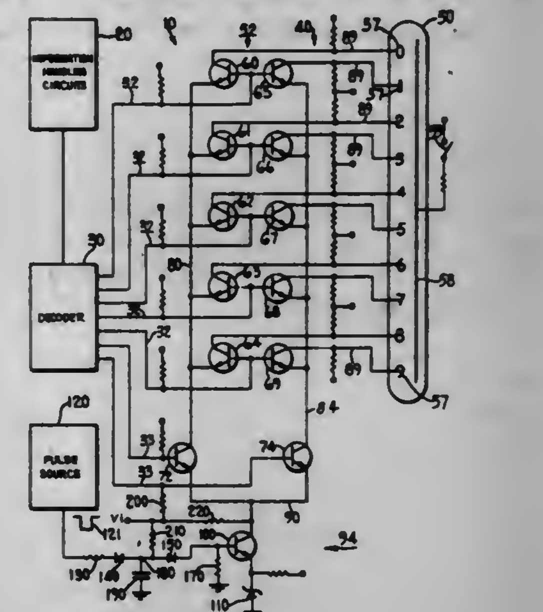


A network for sequencing the generation of parts for the display of an electronically generated image using signals established and controlled according to the viewing angle of the display subject. For sequencing purposes, parts of the display are assigned to sets of three groups connected in a closed loop. Depending upon the angle of viewing the display subject, selective transmission of enabling signals determines which group will start the sequence and in which order the other two groups will follow.

3,603,965
INFORMATION DISPLAY CIRCUIT INCLUDING MEANS FOR BLANKING THE DISPLAY DEVICE

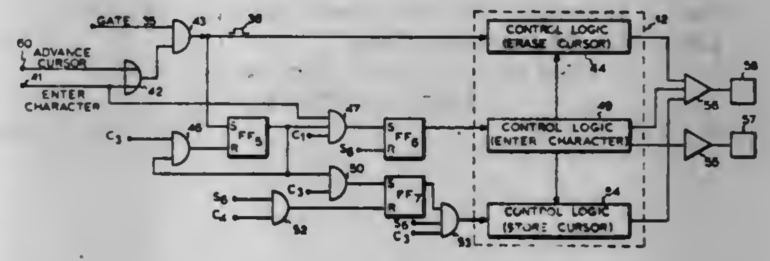
Arpad Somlyody, Raritan, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Filed Feb. 15, 1968, Ser. No. 705,708
Int. Cl. G09f *9/46;* **H01j** *17/48*
U.S. Cl. 340—324 **1 Claim**

The disclosure is of a circuit which can be used in an information-handling and display system and includes a cathode glow display tube containing an anode and ten cathode electrodes which are coupled to a source of information signals in the system through a driving circuit. The driving circuit is a logic circuit which receives information signals from a decoder circuit and applies them to the cathode electrodes of the display tube, and the tube displays a number represented by the information signals when energizing potential is also applied to the tube anode. The driving circuit includes a control circuit which disables both the logic circuit and the display tube at desired times. The logic circuit includes five pairs of transistors connected in two groups with an auxiliary control transistor operating each group. The control circuit includes a transistor connected to the two control transistors for turning them off when desired to blank the display tube. A system is also disclosed for using the principles of the invention for controlling the timing of the application of information signals to the cathode electrodes and switching potentials to the anode electrodes of a series of display tubes in an information-handling instrument.



3,603,966
DATA DISPLAY SYSTEM

Roland S. Gregg, Jr., Canoga Park, and Herman F. Hoegeman, Jr., Thousand Oaks, both of, Calif., assignors to The Bunker-Ramo Corporation, Canogo Park, Calif.
Filed Feb. 14, 1969, Ser. No. 799,265
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **16 Claims**

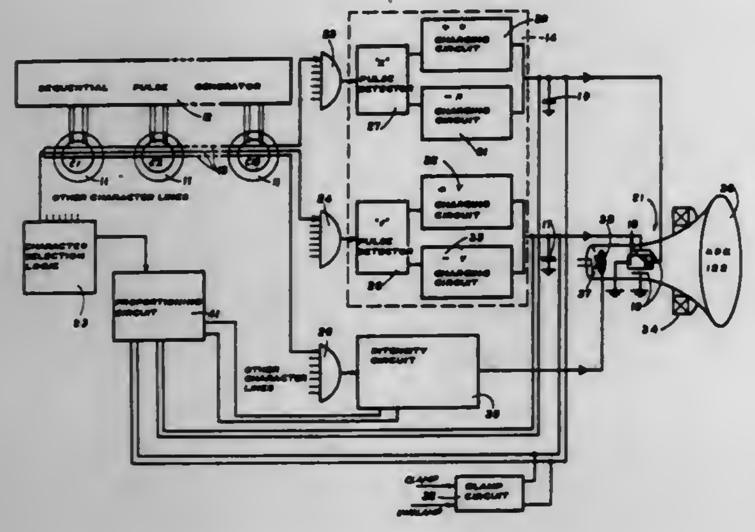

GATE
ADVANCE CURSOR
ENTER CHARACTER
CONTROL LOGIC (ERASE CURSOR)
CONTROL LOGIC (ENTER CHARACTER)
CONTROL LOGIC (STORE CURSOR)
FF5
FF6
FF7

A CRT data display system is provided with means for entering a character in memory for display in any position indicated by a cursor signal. Once a character has been entered, the cursor is automatically moved to the next character position in memory and displayed. The cursor may also be moved without entering a character. Character display is by a dot matrix such that *n* strokes are required to display a character and an additional stroke is required to provide an intercharacter space. The CRT beam is blanked during the additional stroke. The cursor signal is stored in a memory location read during the additional stroke period just preceding the position into which a character may be entered. Apparatus responds to the cursor signal a fraction of the time as the displayed data is repeatedly read for CRT regeneration, thereby displaying a blinking cursor. The cursor is displayed as a block in the character position accessible for entry, all without obliterating any character that may be present in that position.

3,603,967
CHARACTER GENERATOR

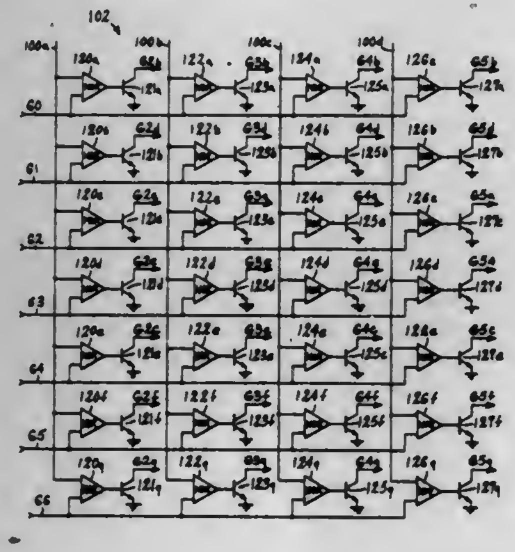
Markvard Hauerbach, San Diego, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed Apr. 29, 1969, Ser. No. 820,118
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **36 Claims**

A character generator is described for producing deflection of a beam in a cathode-ray tube to generate selected characters on its screen. Deflection information representing the selected character is generated by a set of wires (one set for each character) wound on a series of magnetic cores and is read out by sequential energization of the cores. The signals produced by the set are utilized to control charging circuits which produce constant current output signals of appropriate sign representing increments of beam deflection to generate the selected character. The output signals are accumulated by a pair of storage means which are respectively adapted for connection to the horizontal and vertical deflection means of the cathode-ray tube.



3,603,968
MONITORING SYSTEM

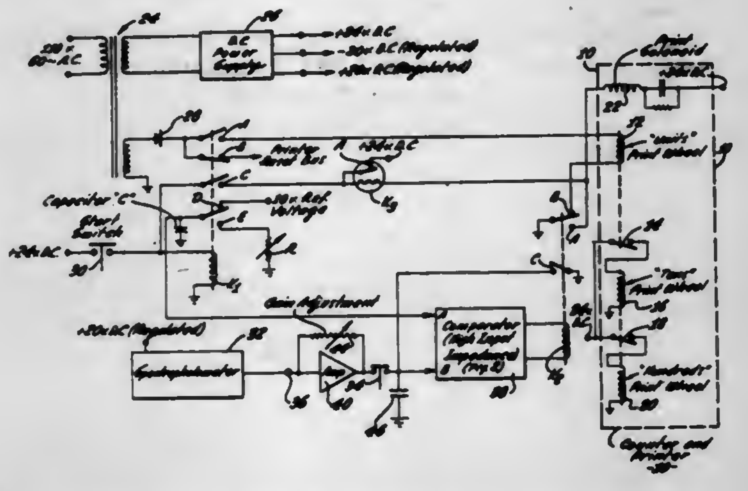
Allen L. Johnson, Meriden, Conn., assignor to Ripley Company, Inc., Middletown, Conn.
Filed June 12, 1967, Ser. No. 645,430
Int. Cl. G09f *9/32*
U.S. Cl. 340—336 **5 Claims**



A system for displaying information from a plurality of metering registers, comprising a plurality of indicators, each of said indicators having a plurality of illumination means which, when actuated in a predetermined order, present symbols, gating means, and control means for providing signals to scan each of said registers in a predetermined order and then to control said gating means to provide signals representative of signals from said registers in the same said predetermined order, to provide signals to actuate said illumination means.

3,603,969
ELECTRONIC DIGITAL CONVERTER

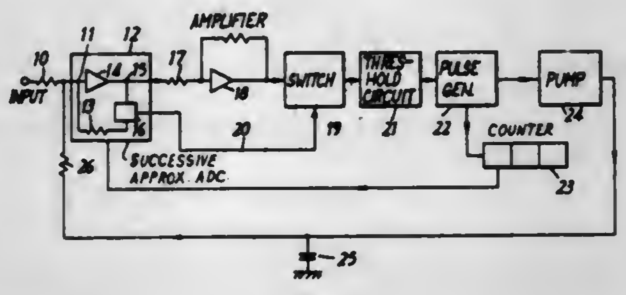
Lamont J. Seitz, Tujunga, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed June 19, 1968, Ser. No. 738,169
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **1 Claim**



A digitizer system and apparatus is provided for use, for example, in conjunction with a spectrophotometer for providing optical transmission readings of a test sample, or for converting optical transmission readings of the test sample into logarithmic readings representative of the optical density of the sample.

3,603,970
SUCCESSIVE APPROXIMATION ANALOG-TO-DIGITAL CONVERTERS

Christopher E. G. Bailey, Cranleigh, and Reginald Catherall, Farnborough, both of, England, assignors to The Solartron Electronic Group Limited, Farnborough, Hampshire, England
Filed July 1, 1968, Ser. No. 741,538
Claims priority, application Great Britain, July 19, 1967, 33126/67
Int. Cl. H03k *13/06*
U.S. Cl. 340—347 AD **5 Claims**

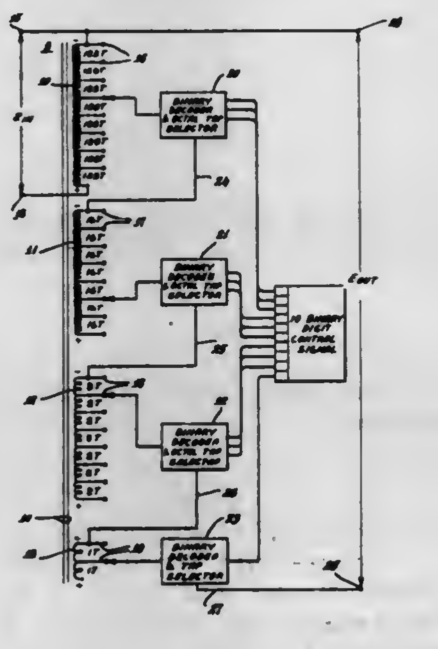


The range and discrimination of known successive approximation analog-to-digital converters have to be restricted undesirably in order to avoid digital errors of one or several bits in the readings. The invention avoids this problem by using a second, small range analog-to-digital converter to measure the residual analog error of the main converter when the latter has settled. The digital value provided by the second converter is preferably automatically added to (or subtracted from) the digital indication provided by the main converter.

3,603,971
APPARATUS FOR CONVERTING BETWEEN DIGITAL AND ANALOG INFORMATION

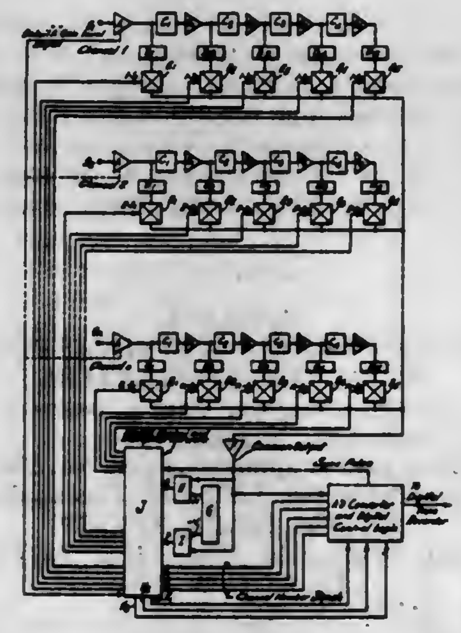
Werner Woschetzky, West Redding, and Gerard T. Paul, Weston, both of, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Aug. 6, 1968, Ser. No. 750,528
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **10 Claims**

Apparatus for converting digital information to an analog voltage which includes a transformer having an ordered plurality of windings, all of which are magnetically flux linked and each of which corresponds to a digit of a digital number. Each winding is divided by output taps into a number of equal segments, the number being determined by the base of the digital number. The number of turns in the segments on each winding is determined by the power of the base represented by the digit to which the winding corresponds and by an arbitrary number of turns selected to correspond to the unit value of the digital number. Means are included for supplying an operating potential to one of the windings, preferably that having the largest number of turns. Switching means, adapted to be controlled by digital information, are provided for connecting one input tap on each winding to one end of an adjacent winding. Means for providing an output voltage are connected to one end of the driven winding and the last output tap. preferably the output is connected to the low voltage end of the driven winding and each tap is connected by the switching means to the low voltage end of the next less significant winding.


BINARY DECODER & TAP SELECTOR
BINARY DECODER & TAP SELECTOR
BINARY DECODER & TAP SELECTOR
BINARY DECODER & TAP SELECTOR

3,603,972
AMPLIFIER SYSTEM

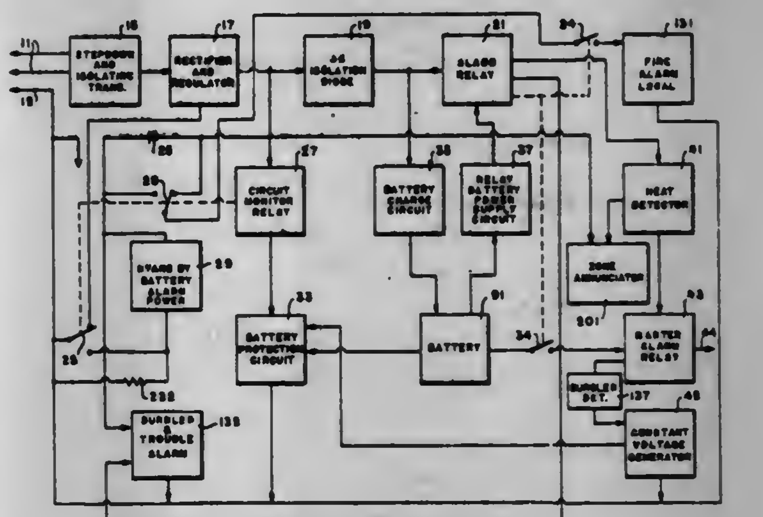
James R. Vanderford, Darien, Conn., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 24, 1968, Ser. No. 786,706
Int. Cl. H03k *13/02, 13/17*
U.S. Cl. 340—347 AD **60 Claims**



A wide dynamic range automatic high-speed digital gain ranging amplifier system having a plurality of amplifier stages coupled in cascade circuit relationship. The respective outputs of the amplifier stages are coupled through a common output circuit to a comparator circuit for comparison with a predetermined reference signal. Sequencing means are provided for momentarily closing switch means in timed sequence for sequentially coupling the respective outputs of the successive amplifier stages to the comparator circuit during successive, relatively brief sampling time intervals. Means are provided for selectively maintaining one of the switch means in its closed position for a holding time interval of longer duration than the sampling time interval when an output signal coupled through said switch means to the common output circuit during one of the sampling intervals bears a predetermined relationship to the reference signal. In a preferred embodiment of the amplifier system, the common output circuit is coupled to an analog-to-digital converter and thence to digital recording means for recording signals corresponding to both the instantaneous digital value of the signal at the common output circuit and the gain level to which the signal is amplified, as determined by the one of said switch means selectively maintained closed to pass the signal to the analog-to-digital converter.

3,603,973
COMBINATION FIRE AND BURGLAR ALARM SYSTEM

Howard O. Hough, 6 Squirrel Hill Road, Wayland, Mass.
Filed Apr. 11, 1968, Ser. No. 720,587
Int. Cl. G08b *19/00, 29/00;* **H02j** *9/00*
U.S. Cl. 340—409 **6 Claims**

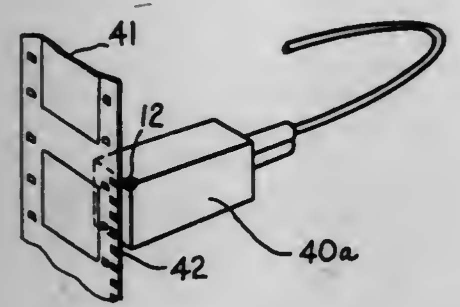


A fire and burglar alarm system for providing automatic detection of a fire or burglary having active and passive components which are capable of operating at very low power levels continuously until the components are called upon to indicate a fire or burglary. The system is provided with alternate sources of power to insure the reliability of operation. Supervisory circuitry is provided for giving visual indication that all sensors and circuitry are in proper operating conditions. Annunciator circuitry is also provided to give visual indication of exact location or zone of conflagration.

3,603,974
HIGH SPEED PHOTO-OPTICAL TIME RECORDING

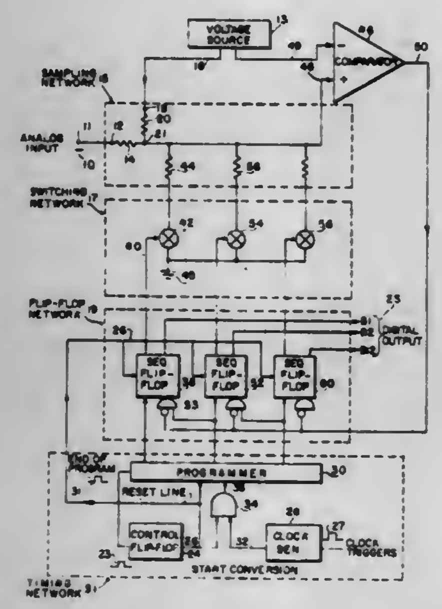
Jesse T. Copeland, Jr., Cape Canaveral, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 31, 1969, Ser. No. 889,556
Int. Cl. G03b *17/24*
U.S. Cl. 346—23 **4 Claims**

An apparatus for placing a permanent time record on photographic film while being used in a high speed movie camera so as to indicate the exact time each frame of film is exposed. A coded source of timing pulses is fed into an electronic circuit that includes an electroluminescent diode that generates light signals corresponding to the timing pulses. These light signals are placed on the film in the camera.



3,603,975
DEVICE FOR ANALOG TO DIGITAL CONVERSION OR DIGITAL TO ANALOG CONVERSION

Bernard M. Gordon, Magnolia, Mass., assignor to Gordon Engineering Company, Watertown, Mass.
Filed Apr. 1, 1969, Ser. No. 811,781
Int. Cl. H03k *13/06*
U.S. Cl. 340—347 AD **9 Claims**

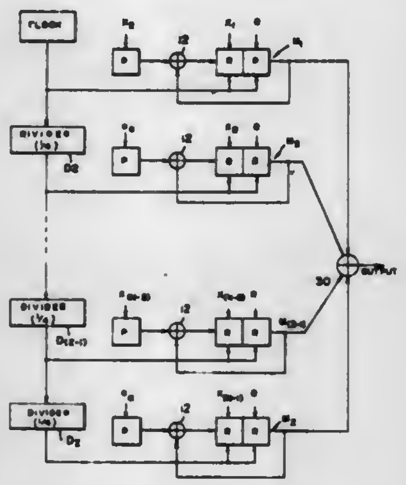


In a successive approximation for converting analog data to digital form or digital data to analog form, the logically programmed sequence is switched at ground potential in order to eliminate transients of the type usually introduced by switching. In order to ensure great conversion accuracy, a voltage source is provided for generating precision reference signals that are extremely unresponsive to input voltage fluctuations.

3,603,976
MODULAR ENCODER

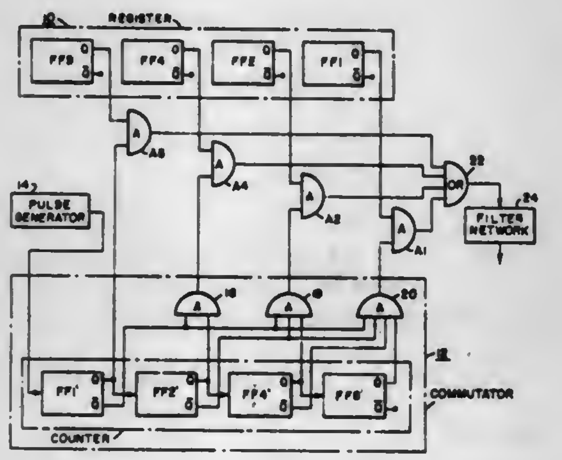
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Tage O. Anderson, 628 Fairview Ave., Arcadia, Calif.
Filed Sept. 24, 1969, Ser. No. 860,751
Int. Cl. H03k *13/256*
U.S. Cl. 340—347 DD **5 Claims**

A biorthogonal encoder of modular design with each module operating in a serial or cyclic mode. The number of modules M is equal to N/2 if N, the number of bits of the data word, is even, or to (N+1)2 if N is odd. Each module includes a 2-bit shift register, a storage bit and a mod 2 gate. The input to the register is a mod 2 function of the register's output and that of the storage bit. The outputs of all the M modules are added mod 2 to provide the 2^N bits of each code word in sequence.



3,603,977
DIGITAL-TO-ANALOG CONVERTER UTILIZING PULSE DURATION MODULATION

Andras I. Szabo, Export, and Miklos Sarkozi, Monroeville, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 19, 1969, Ser. No. 834,710
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **6 Claims**

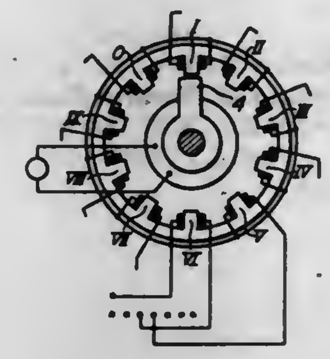


Described is a novel digital-to-analog converter employing pulse duration modulation techniques, and wherein the desired analog signal is derived by integrating pulses of short duration and relatively high repetition rate rather than longer pulses of lower repetition rate. This materially reduces the ripple content of the filtered pulses and reduces the requirements of the low-pass filter connected to the output of the converter.

3,603,978
NONE-AMBIGUOUS READING SYSTEMS FOR ANALOG-TO-DIGITAL CONVERTERS

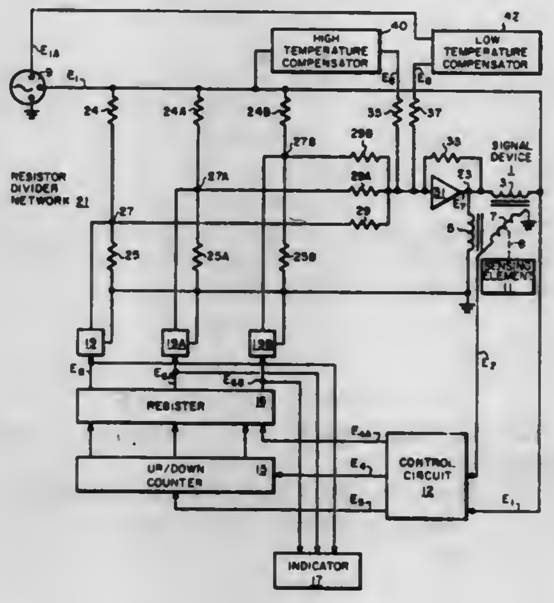
Yasumasa Narukiyo, Nagoya, Japan, assignor to Okuma Machinery Works Ltd., Nagoya, Japan
Continuation-in-part of application Ser. No. 376,689, June 22, 1964, now Patent No. 3,478,346. This application July 24, 1969, Ser. No. 844,339
Claims priority, application Japan, June 24, 1963, 38/33318
Int. Cl. G08c *9/04*
U.S. Cl. 340—347 P **8 Claims**

Reading system free from ambiguity of reading at the boundary of two digits in which two n-digits code disks representing higher order digits and lower order digits are employed and three successive signals from said higher order code disk which generate signals, adjacent two signals of which partially overlap each other, and two signals generated from said lower order disk respectively representing any digits in the higher half and lower half of n-digits are fed to a logical circuit performing a particular logical operation.



3,603,979
DIGITAL SYSTEM INCLUDING TEMPERATURE COMPENSATING MEANS

Henry Kosakowski, Lyndhurst, N.J., assignor to The Bendix Corporation
Filed Sept. 4, 1969, Ser. No. 855,262
Int. Cl. H03k *13/17;* **G01d** *3/04*
U.S. Cl. 340—347 AD **6 Claims**

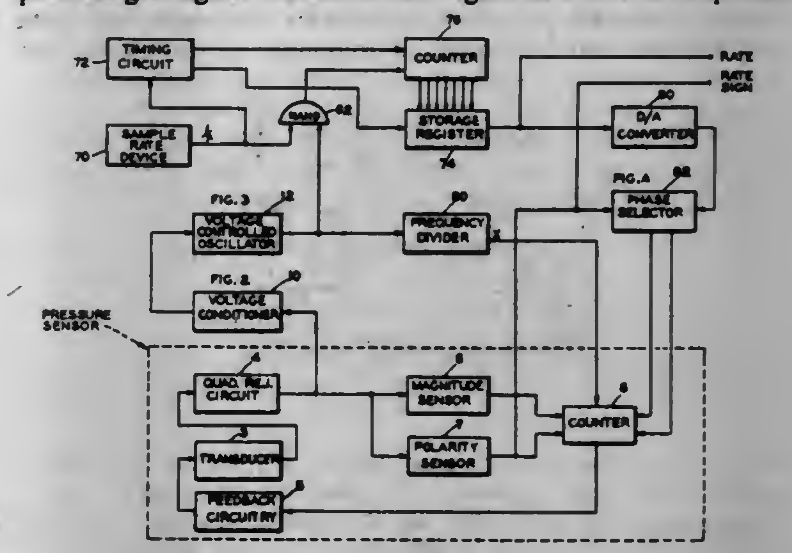


A two-speed system having a counter for providing a digital output corresponding to a condition in which a resolver provides an analog error signal corresponding to the difference between the condition and the digital output. The analog error signal is converted to pulses which are counted by the counter. Followup means connected to the counter and to the resolver nulls the error signal when the count in the counter corresponds to the condition. The null is defined by a pair of reference voltages and the count is stopped when the amplitude of the error signal is greater than one reference voltage and less than the other reference voltage. The counting rate of the counter is controlled by providing a high frequency pulse train to the counter when the error signal is above a predetermined amplitude and a low frequency pulse train when the error signal is below the predetermined amplitude. Independent high and low temperature compensation provides accurate operation over wide temperature range and eliminates trial and error adjustment.

3,603,980
DIGITAL RATE GENERATOR

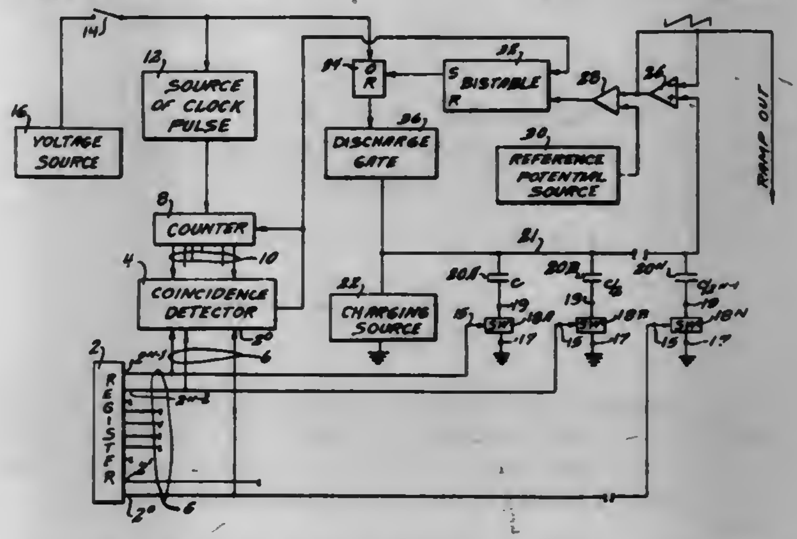
Edgar W. VanWinkle, Rutherford; Henry R. Kosakowski, Lyndhurst, and Walter P. Hollinger, Ramsey, all of, N.J. assignor to The Bendix Corporation
Filed Oct. 3, 1969, Ser. No. 863,622
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **4 Claims**

Apparatus associated with a digital condition sensor for providing a digital condition rate signal as a closed loop function of the sensed condition, and which signal is a continuous and precise measure of condition rate.



3,603,981
DIGITALLY CONTROLLED RAMP GENERATOR

David C. Rollenhagen, Urbana, Ill., and Wolfgang J. Poppelbaum, Syracuse, N.Y., assignor to The United States of America, as represented by the United States Atomic Energy Commission
Filed Oct. 10, 1969, Ser. No. 865,297
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **3 Claims**

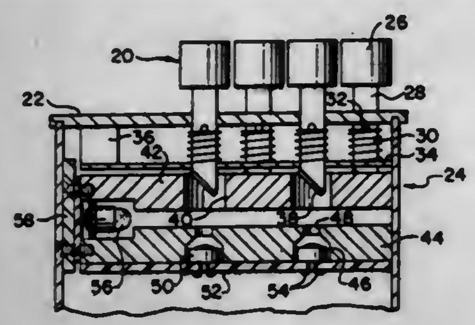


In response to the binary outputs of a register containing a binary number capacitive means are selectively connected to the output of a charging source to produce a ramp signal output having a slope proportional to the magnitude of the binary number. A coincidence circuit activates a discharge circuit connected to the capacitive means to terminate the ramp signal output in response to equality between the binary outputs of the register and the binary outputs of a counter accumulating the output of an adjustable clock pulse source.

3,603,982
DATA ENTRY MEANS

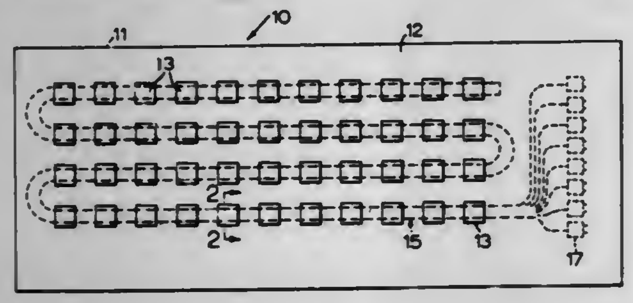
David M. Patti, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed May 2, 1969, Ser. No. 821,311
Int. Cl. G06f *3/02*
U.S. Cl. 340—365 **20 Claims**

An electrooptical data entry means which uses reflected light as a means of encoding characters, each of which is represented by a data entry element. For each character, a photosensitive device is also provided, located in alignment with the corresponding data entry element in a lightproof housing. Also located in the housing is a light source which provides light between the data entry elements and the photosensitive devices. A reflective surface is mounted at an angle on each data entry element, and is so oriented with respect to the light source and the individual photosensitive device for that data entry means, that when a selected data entry device is operated, its reflective surface is moved, from a recess in which it is normally located, into a position which causes it to intercept light from the light source and reflect that light onto the photosensitive device corresponding to the selected data entry element. Illumination of the photosensitive device produces a signal which is effective, through a logical encoding network, to produce an output signal representing the character for the operated data entry element. A shift element is effective, through additional circuitry, to produce a selected one of two possible output signal combinations represented by a given data entry element. Interlocks and various control functions are formed electronically.



3,603,983
MECHANICAL-ELECTRICAL CODE GENERATING DEVICE EMPLOYING FLUID SWITCHING

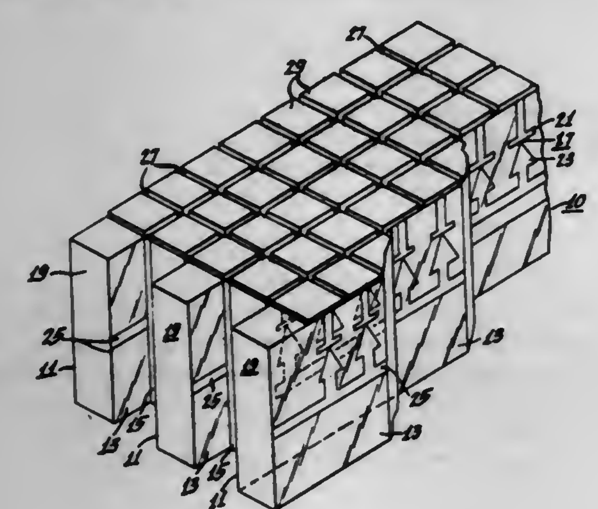
William Mitchell, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed July 23, 1969, Ser. No. 844,103
Int. Cl. G08c *19/00*
U.S. Cl. 340—365 **11 Claims**



A mechanical-electrical code generating device in which a plurality of closed, fluid carrying tubes, each having pressure responsive means for producing a unique electrical signal, are selectively compressible to generate a selected pattern of signals.

3,603,984
PANEL STRUCTURE FOR MATRIX ADDRESSED DISPLAYS

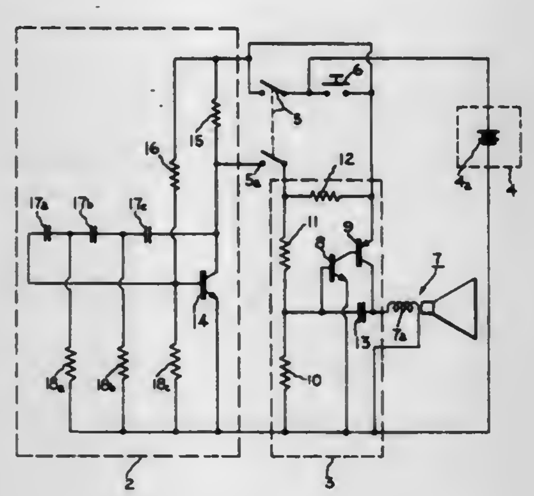
George Harry Heilmeier, Yardly, Pa., and Louis Anthony Zanoni, Mercerville, N.J., assignors to RCA Corporation
Filed Sept. 24, 1969, Ser. No. 860,660
Int. Cl. G08b *5/36*; **G09f** *13/26*
U.S. Cl. 340—378 R **7 Claims**



A panel for a matrix addressed device comprises a plurality of laminated plates having a portion of the matrix addressing circuitry at the laminated surfaces of the plates.

3,603,985
SIREN-HORN CIRCUITRY

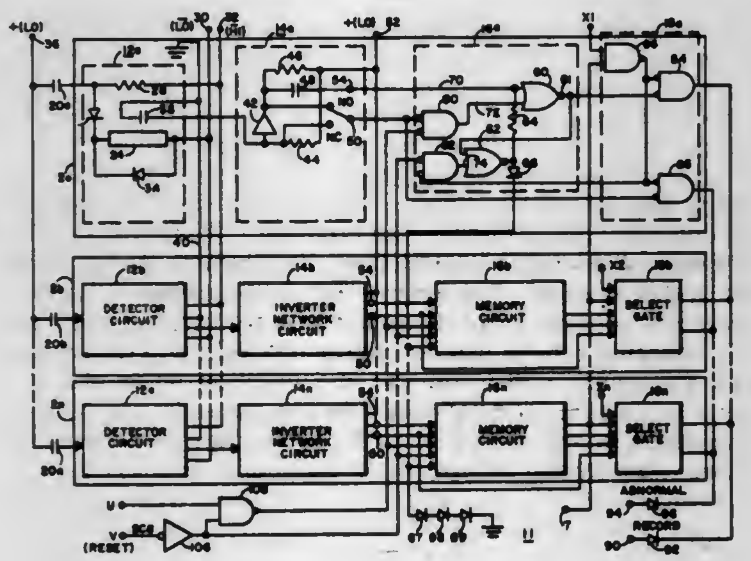
Norman S. Goralnick, 233 Worthen Road, Lexington, Mass.
Filed May 20, 1969, Ser. No. 826,226
Int. Cl. G08b *3/00*
U.S. Cl. 340—384 E **5 Claims**



Variable audiofrequency signals for use in alarms, entertainment devices and like applications requiring sonic outputs from rugged and economical miniaturized equipments which consume little power, are provided by a transistorized circuit wherein sinusoidal outputs from a simple phase-shift oscillator govern the frequencies at which a voltage-controlled audio oscillator drives its load in the form of a voice coil of an inexpensive loudspeaker.

3,603,986
EVENTS RECORDER

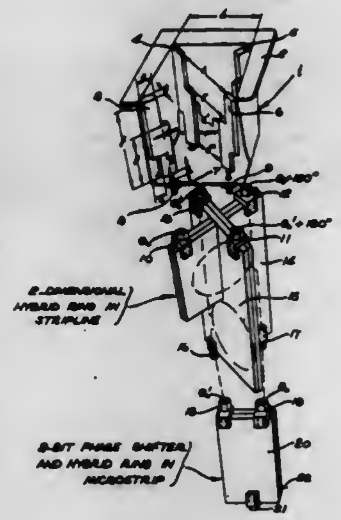
Ben A. Harris, Irondequoit, N.Y., assignor to Rochester Instrument Systems, Inc.
Filed Jan. 28, 1969, Ser. No. 794,657
Int. Cl. G08b *19/00*; **H04q** *3/00*
U.S. Cl. 340—415 **8 Claims**



A sequential operations events recorder is disclosed wherein alarm points or circuits are monitored for providing a printed record in alphanumeric characters the changes in state or event of each of the alarm points or circuits in timed sequence. The first of a series of events is documented in printed form by the recorder to feature a "first out" indication.

3,603,987
POLARIZATION DIVERSITY RADIATOR FOR PHASED ARRAYS

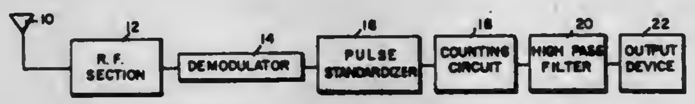
Robert A. Witte, Playa Del Rey, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Nov. 6, 1969, Ser. No. 874,661
Int. Cl. H01q *13/00*
U.S. Cl. 343—786 **7 Claims**


2-DIMENSIONAL HYBRID RING IN STRIPLINE
2-BIT PHASE SHIFTER AND HYBRID RING IN MICROSTRIP

A radiator of the open end (square) waveguide type, having diagonal ridges in its corners. An independent coaxial feed through the closed end of the waveguide provides excitation to each ridge. Opposite ridge pairs are excited together on a 0°/180° basis by hybrid circuits. Each of the two hybrid inputs then controls one opposite ridge pair as a unit. The inputs of the two hybrid circuits are controlled in relative phase by a two-bit digital phase shifter and hybrid ring circuit. The result is a polarization diversity capability with pulse-to-pulse controllability. The ridges are tuned by capacitance and inductance gaps at the feed end and matched at the aperture by quarter wave impedance transformers in the ridges.

3,603,988
PULSE DENSITY DEMODULATOR

George L. Johnson, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Jan. 6, 1970, Ser. No. 1,006
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 R **10 Claims**

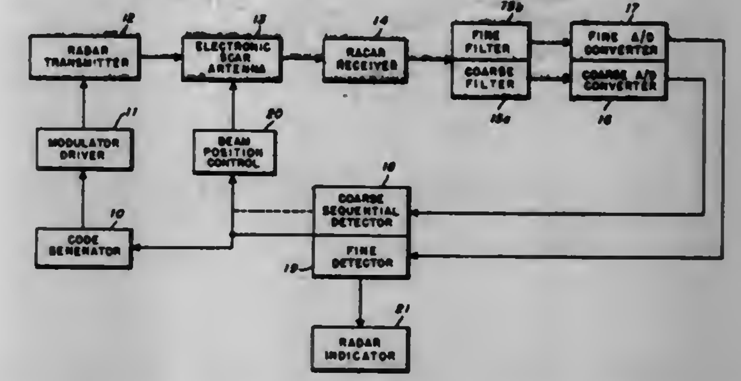


Pulse bursts are separated from background pulse trains by first standardizing the heights and widths of all incoming pulses. The standard pulses are passed to an averaging circuit, where the background pulses provide a DC or low frequency component in the output, whereas the arrival of a pulse burst causes a relatively rapid change in the output. These changes are detected from the background by means of a high pass filter.

3,603,989
TWO-STAGE RADAR SYSTEM

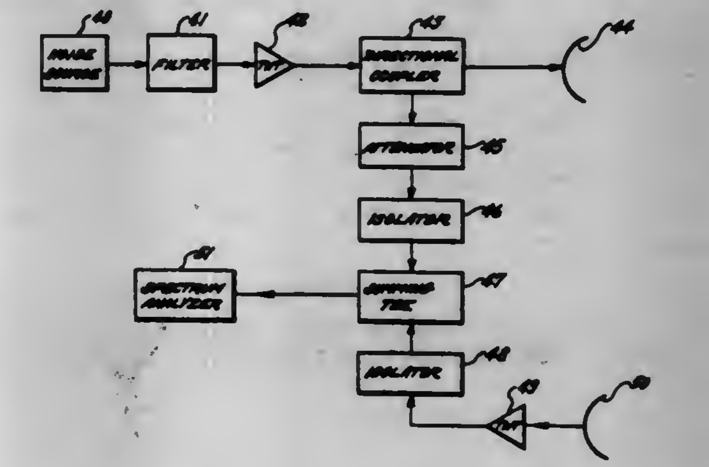
James W. Caspers, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 7, 1965, Ser. No. 463,070
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 R **12 Claims**

1. An improved multiple-resolution-element radar system comprising; means for developing multiple-resolution-element data having a first order of resolution; means for developing multiple-resolution-element data having a second order of resolution within said first order multiple-resolution-element data, said second order being of substantially finer resolution than said first order; a sequential signal detector arranged to receive said first order multiple-resolution-element data, said sequential detector being responsive to said received first order data for producing a first output or a second output indicative of the absence or presence of signal in said first order data, respectively; a second detector arranged to receive said second order multiple-resolution-element data, said second detector being operative for resolving the presence of signal within an incremental element of said second order of resolution and producing an output indicative thereof; and means responsive to said first output of said sequential detector or said output of said second detector for causing said system to develop a new sequence of multiple-resolution-element data.



3,603,990
SPECTRUM ANALYSIS RADAR SYSTEM

Joseph L. Poirier, 26 Brain Road, Chelmsford, Mass.
Filed July 23, 1968, Ser. No. 746,956
Int. Cl. G01s *9/02, 9/24*
U.S. Cl. 343—5 **10 Claims**

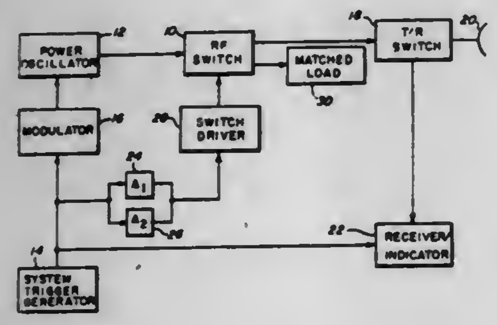


A radar system and method in which the returned target signal is added to a reference signal derived from the original transmitted signal. The power spectrum of the sum signal is modulated. The modulation frequency is a linear function of the range and is measured to determine the range to a target. The transmitted signal must be time stationary (i.e., a noiselike signal) and the range to the target must be equal to or greater than the ratio of the speed of light divided by the bandwidth of the signal.

3,603,991
RADAR FREQUENCY SPECTRUM CONTROL CIRCUIT

Allen Bernstein, Framingham, Mass., and Stephen N. Miller, Haifa, Israel, assignors to Raytheon Company, Lexington, Mass.
Filed Oct. 30, 1969, Ser. No. 870,078
This application filed under Rule 47
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 R **5 Claims**

A pulse radar system wherein the frequency spectrum of each transmitted signal is narrower than the frequency spectrum of each pulse of radio frequency energy produced by the system's power oscillator. The desired narrowing is accomplished by providing a microwave switch in the transmission line between the power oscillator and the antenna, such switch being actuated during the "rise time" and the "fall time" of each pulse out of the power oscillator to divert substantially all the power from the antenna during such times.



3,603,992

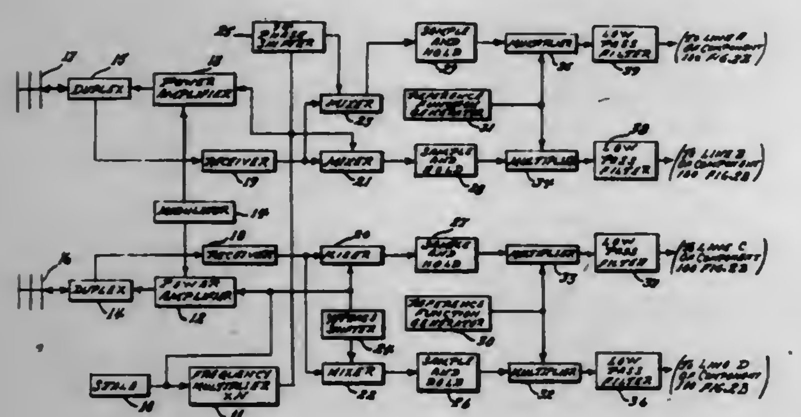
DUAL HARMONIC FREQUENCY SYNTHETIC APERTURE RADAR

William B. Goggins, Jr., Dayton, Ohio, and John K. Schindler, Chelmsford, Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 13, 1969, Ser. No. 876,422

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 R **3 Claims**



A dual harmonic frequency synthetic aperture radar system in which synthetic aperture processing is used to achieve high angular resolution for two radars which operate at two or more harmonically related frequencies. These frequencies are related by the factor N. The processing is done so as to preserve the phase of the target return. After the synthetic aperture processing is completed, the phase angles are available at the two frequencies. The lower frequency phase angle is multiplied by N and compared with the phase angle at the upper frequency to obtain phase signature data on the target.

3,603,993

CONTROL APPARATUS

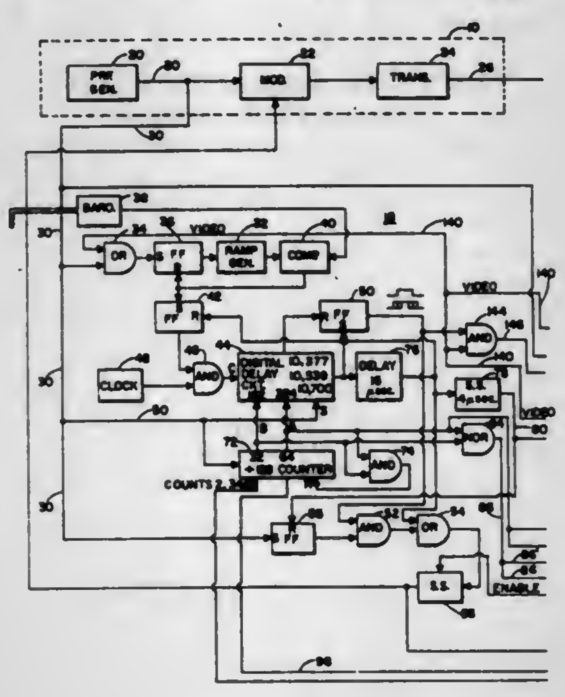
Robert J. Follen, Minneapolis; Charles P. Harman, Jr., St. Paul, and Jackie R. Meyer, Columbia Heights, all of, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

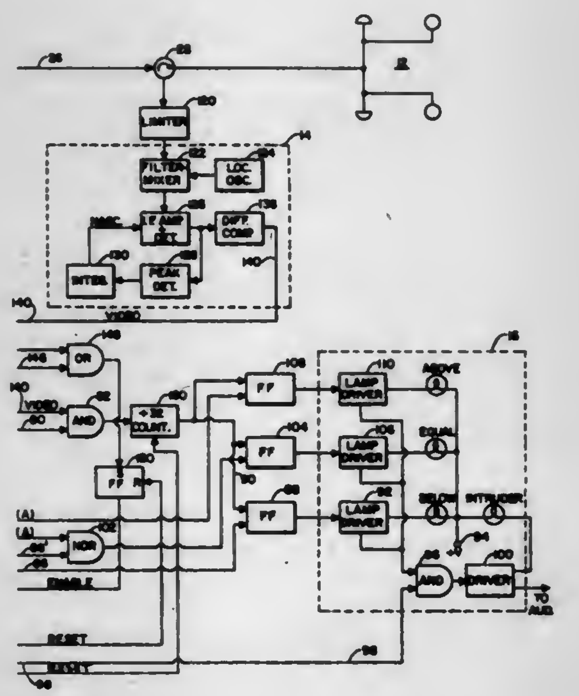
Filed Sept. 26, 1969, Ser. No. 861,244

Int. Cl. G01s *9/56*

U.S. Cl. 343—6.5 LC **5 Claims**

A cooperative proximity warning system wherein interrogation signals from interrogating aircraft are modulated to scan the bands of altitude adjacent the altitude of the interrogator as well as the altitude of the interrogator and responses to the interrogations occur when the altitude of a responding aircraft coincides with the altitude information contained in a received interrogation signal.





3,603,994

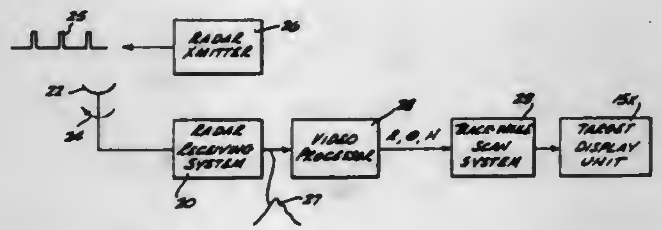
SYSTEM FOR AUTOMATICALLY GENERATING SMOOTHING PARAMETERS IN AN AUTOMATIC TRACK-WHILE-SCAN RADAR SYSTEM

Barry E. Williams, Downey, and Glenn B. Fitzpatrick, Anaheim, both of, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 26, 1966, Ser. No. 546,475

Int. Cl. G01s *9/14*

U.S. Cl. 343—7.3 **12 Claims**



A system that generates variable rather than fixed velocity and position parameters to minimize the mean square velocity and position errors in an automatic track-while-scan system. The velocity smoothing parameter is a function of the time between scans from which video signals from the particular target are received and a variably generated smoothing term. The position smoothing parameter is a function of the correlation criteria as well as of the smoothing term. The system operates to accurately and reliably track targets while maintaining scanning operations.

3,603,995

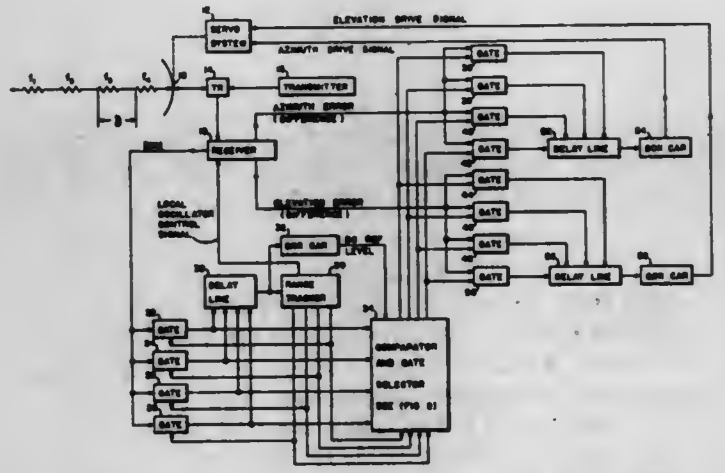
SIGNAL PROCESSOR FOR DIVERSITY FREQUENCY RADAR

Dean D. Howard, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 785,882, Dec. 23, 1968, now Patent No. 3,487,406. This application Dec. 16, 1969, Ser. No. 885,573

Int. Cl. G01s *9/16*

U.S. Cl. 343—7.3 **7 Claims**



A pulse-to-pulse frequency diversity tracking radar wherein target angle scintillation is minimized by using only the frequencies giving the strongest echoes for tracking.

3,603,996

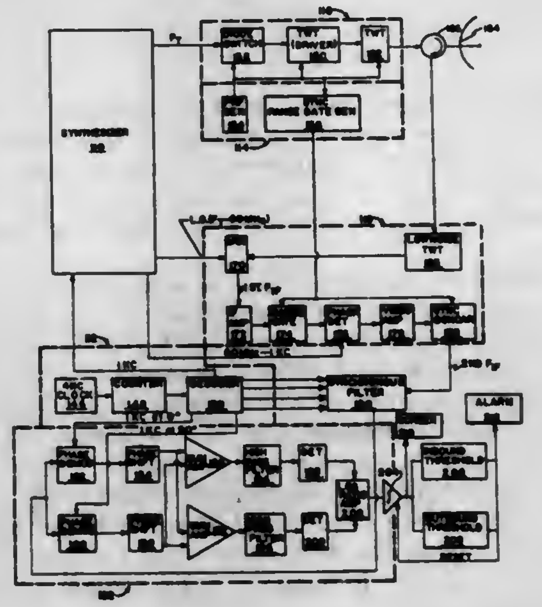
MEANS AND METHOD FOR DETECTING DOPPLER SIGNALS SUBMERGED IN CLUTTER

Jerre M. Murchison, and Alexander G. Antonio, both of Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Filed Aug. 9, 1968, Ser. No. 752,733

Int. Cl. G01s *9/42*

U.S. Cl. 343—7.7 **13 Claims**



A subclutter, personnel detection coherent pulsed doppler radar system for discerning doppler signals submerged in clutter incorporating range gating, clutter rejection and clutter cancellation for use in a highly foliated environment, the received returns gated to eliminate all but those from the surveillance bin at a preselected range, the antenna pattern shaping the resolution cell in both azimuth and elevation. A filter system limits undesired received signals, the passed signal being separated into separate channels for receding or approaching targets, the outputs of the channels being subtracted and then integrated. Since foliage movement is fixed but pliable, the received clutter signal therefrom will integrate to zero voltage level, while with signals received from a target exhibiting continuous radial motion, the doppler signal will integrate to a level which may be displayed or recorded.

3,603,997

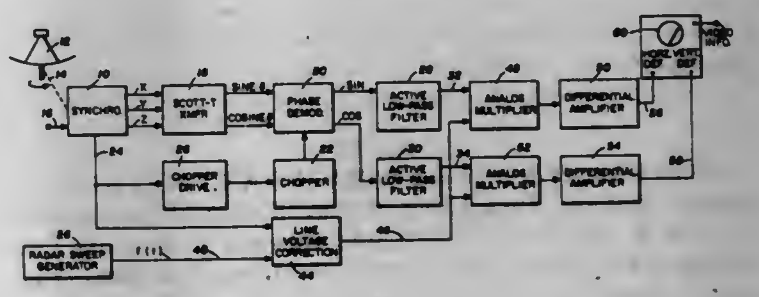
ELECTRONIC RESOLVED SWEEP SIGNAL GENERATOR

Jerome J. Brouwer, Irving; Gerald C. Church, Richardson, and Tom C. Morris, Dallas, all of, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 7, 1969, Ser. No. 822,644

Int. Cl. G01s *7/10, 7/12*

U.S. Cl. 343—10 **18 Claims**



To display radar data on the face of a cathode-ray tube or other display device, it is necessary to generate product functions of the sine and the cosine components of the antenna position angle times the radar-sweep function. Both the sine product function and the cosine product function are electronically generated in respective multipliers. Each multiplier consists of a first differential amplifier pair coupled push-pull to a second differential amplifier pair. To minimize the effect of line voltage variation on the product functions, the sweep voltage is corrected prior to multiplication with the sine and cosine components in accordance with line voltage variation.

3,603,998

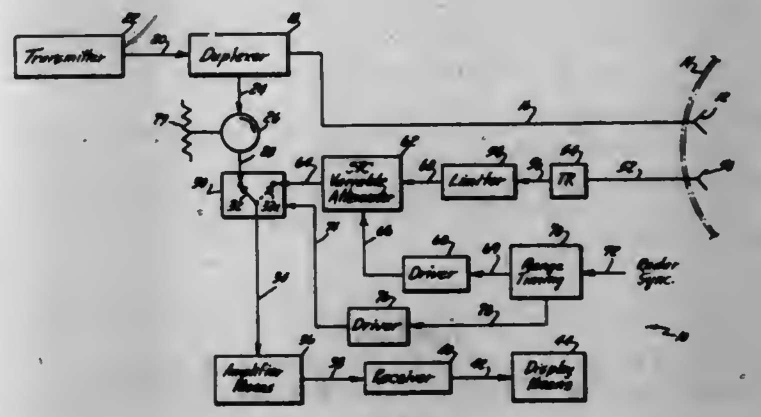
RADAR SYSTEM

Philip Kassel, 8 Woodridge Lane, Seacliff, N.Y.

Filed Oct. 1, 1969, Ser. No. 9,464

Int. Cl. G01s *9/04*

U.S. Cl. 343—12 R **7 Claims**



A height finding radar clutter and range improvement system is described having means for switching between a lowered beam pattern for transmission and a higher beam pattern for reception, thereby improving the signal to clutter ratio for near range and improving long range low altitude detection. The system includes means for effecting the switching as a function of time and range.

3,603,999

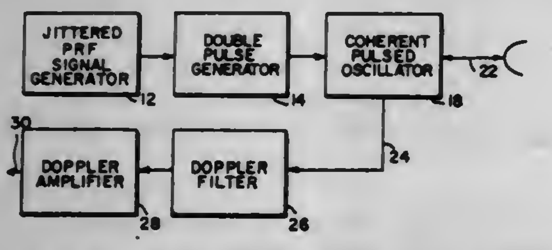
PULSED DOPPLER DETECTION SYSTEM

Benjamin Palleiko, Norwood, Mass., assignor to Sanders Associates, Inc., Nashria, N.H.

Filed Mar. 21, 1969, Ser. No. 809,263

Int. Cl. G01s *7/28*

U.S. Cl. 343—17.1 **9 Claims**



Apparatus is herein disclosed for a pulsed doppler detection system comprising apparatus for generating pulsed pairs including a coherent pulsed oscillator wherein the return from target first pulse of a pair is mixed with the then currently generated second pulse of the same pair within the oscillator when the range delay is correct, and further including means for jittering the pulse pair to decorrelate out of range signals.

3,604,000

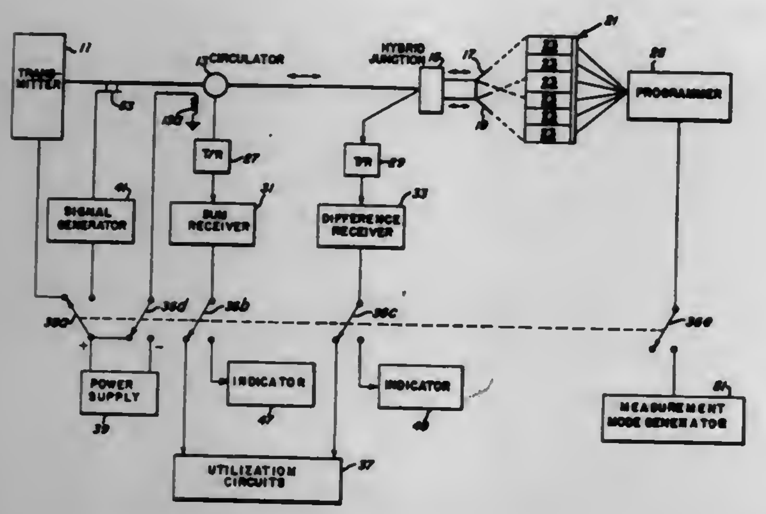
ANTENNA TESTING APPARATUS AND METHOD

Anthony Briana, Lexington; Arthur Crain, Framingham; Burrell R. Hatcher, Bedford, and Edward J. Sheldon, Lexington, all of, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 31, 1969, Ser. No. 846,333

Int. Cl. G01s *7/40*

U.S. Cl. 343—17.7 **5 Claims**



An antenna radiation pattern-measuring system and method for permitting measurement of a selected parameter of a pattern to be measured without requiring the use of a standard target or a remotely located receiver. According to the invention, the beam from an optically fed phased array is periodically focused on a sensor, which may be the feed horn of the antenna, so that substantially all of the energy radiated in the test beam or beams from the array is utilized to measure the selected parameter.

3,604,001

METHOD AND APPARATUS FOR LOCATING COOPERATIVE PERSONNEL IN DENSELY FOLIATED AREAS

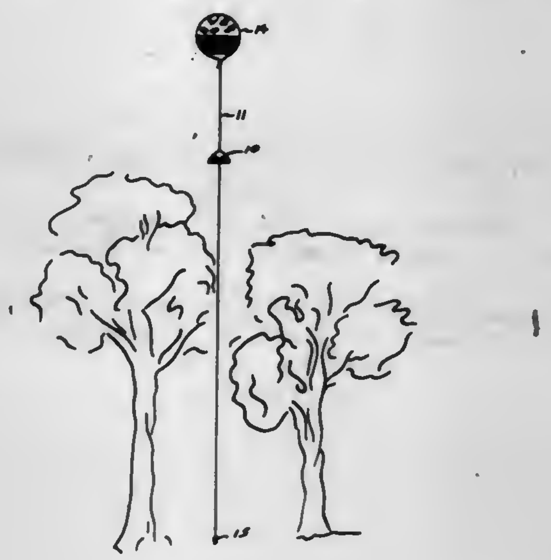
Robert E. Deal, Dayton, Ohio

Filed Dec. 5, 1967, Ser. No. 690,698

Int. Cl. H01q *15/18*

U.S. Cl. 343—18 C **1 Claim**

A balloon-filled with a gas such as helium supports a retroreflector on a line which is secured to the ground. The balloon supports the retroreflector above the trees and foliage. The retroreflector provides a position indication to



an aircraft when the area is illuminated with light in the invisible spectrum, such as from a GaAs laser. The return light energy is sensed with an image converter.

3,604,002

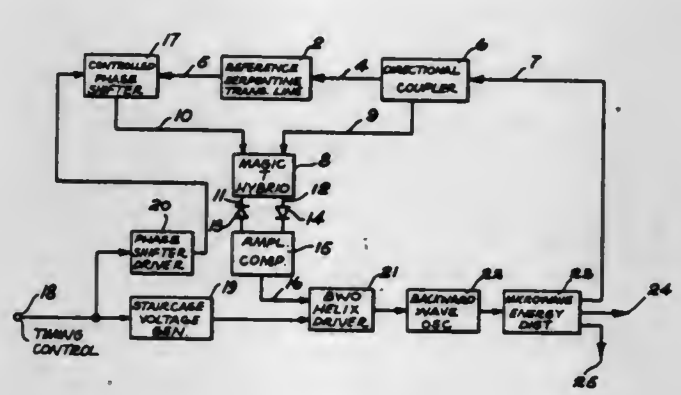
IMPLICIT BEAM ANGLE CONTROL FOR A FREQUENCY SCANNING RADAR SYSTEM

John J. Fling, Malibu, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,689

Int. Cl. H01q *3/22;* **H03b** *3/04*

U.S. Cl. 343—100 SA **10 Claims**



A folded waveguide serpentine transmission line is used as a reference element in a phase-lock loop arrangement for vernier adjustment of programmed frequency steps generated to produce frequency scanning using an antenna arrangement having a beam pointing angle which is a function of frequency.

A controllable oscillator such as a backward wave oscillator is coarse programmed in accordance with a voltage staircase, each staircase step corresponding to a discrete beam-pointing angle. The said reference serpentine is designed to be an integral number of wavelengths long at each discrete frequency and corresponding beam-pointing angle. The phase-lock loop instantaneously detects errors from the aforesaid even integral wavelength relationship across the reference serpentine (equivalent to a 2π serpentine output) and vernier adjusts the backward wave oscillator frequency to produce accurate locking at a 2π radian increment for each frequency step.

A controllable phase shifter in series with the reference serpentine operates to introduce a predetermined selected phase offset for scan interlacing,

3,604,003

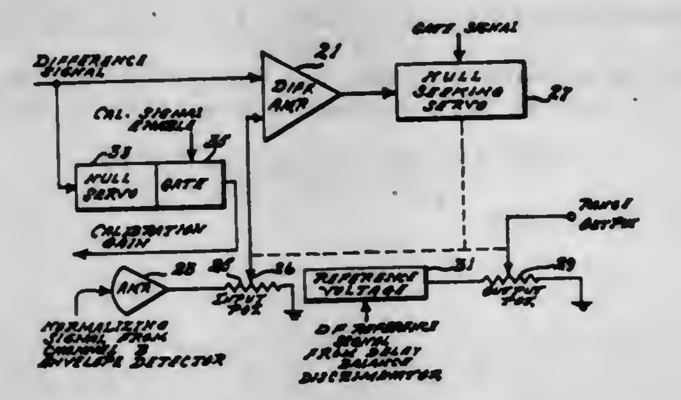
RANGE COMPUTER

Michael Freier, and Leonard P. Balazer, both of Sunnyvale, Calif., assignors to Lockheed Missiles & Space Company, A Division of Lockheed Aircraft Corporation, Sunnyvale, Calif.

Filed Apr. 16, 1969, Ser. No. 817,614

Int. Cl. G01s *5/14, 11/00*

U.S. Cl. 343—112 D **2 Claims**



A range computer for use in a dual source input ranging system where a signal representing the difference between the dual sources is fed to a differential amplifier together with a normalizing signal from one of the sources. A null-seeking servo fed by the differential amplifier parallel drives an input potentiometer controlling the input level of the normalizing signal to the differential amplifier and an output potentiometer controlling the volume of a DC reference voltage, the output of the potentiometer representing the range.

3,604,004

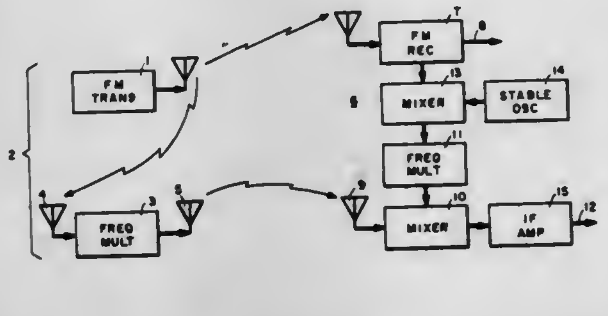
DUAL FREQUENCY RADIO APPARATUS FOR DATA TRANSMISSION AND DIRECTION FINDING

Edward M. Buyer, 74 Oak Road, Bayport, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,870

Int. Cl. G01s *3/04*

U.S. Cl. 343—113 **6 Claims**



A system for radio direction finding on a transmitter station that sends information or data as modulation on a carrier of a frequency unsuitable for direction finding, by utilizing a higher frequency beacon signal derived from and frequency locked to the data transmission.

3,604,005

REMOTE CONTROL BY RELAYS OF COMPONENTS OF AN INTERNAL COMBUSTION ENGINE-POWERED VEHICLE

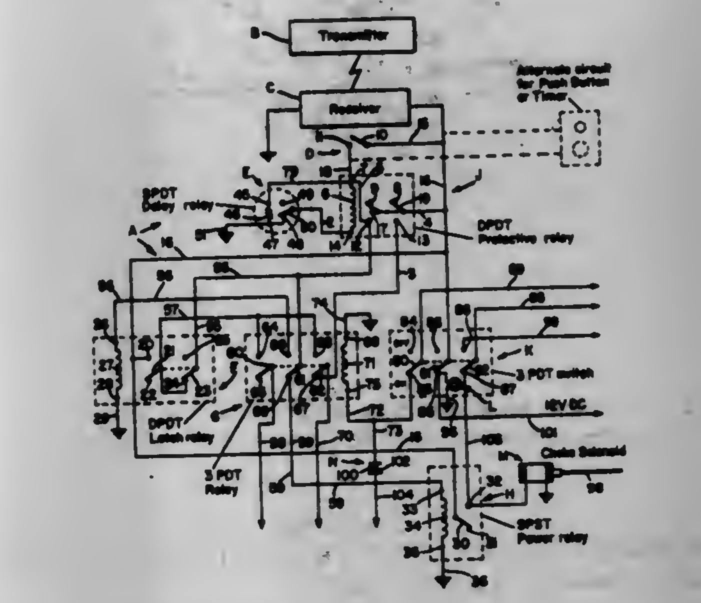
Ralph Edward Gilmore, 2760 N.W. 18th, Oklahoma City, Okla.

Filed Apr. 23, 1970, Ser. No. 31,305

Int. Cl. H04b *7/14;* **H02p** *9/08;* **F02n** *11/08*

U.S. Cl. 343—225 **9 Claims**

The disclosure relates primarily to a compact relays-and-choke solenoid-operated system for remote control energization of electrical components of an internal combustion engine-operated vehicle. Electrically associated with the relays are a wireless transmitter and wireless receiver and various additional electrical components necessary for proper functioning of the system, most of which system is housed within



a container for protection and portability since the system may be readily transferred from one vehicle to another.

3,604,006

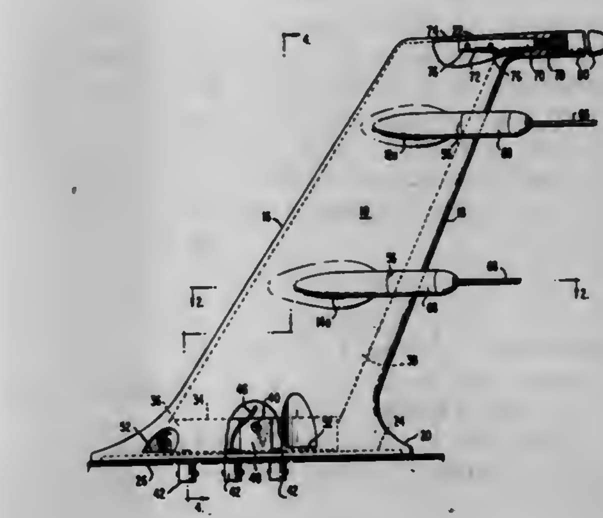
AIRCRAFT MOUNTED MAST FOR MULTIPLE ANTENNAE

William C. Rogers, 5365 N.W. 36th St., Miami Springs, Fla.

Filed Dec. 11, 1968, Ser. No. 782,825

Int. Cl. H01q *1/28*

U.S. Cl. 343—705 **8 Claims**



An antenna mast structure for combining communication, glide slope and omnidirectional localizer antenna functions without mutual interference in a small aerodynamic housing of a moldable material. Protection against accidental damage is afforded by a novel "deerhorn" construction.

3,604,007

COMBINED TELEVISION STAND AND ANTENNA SYSTEM

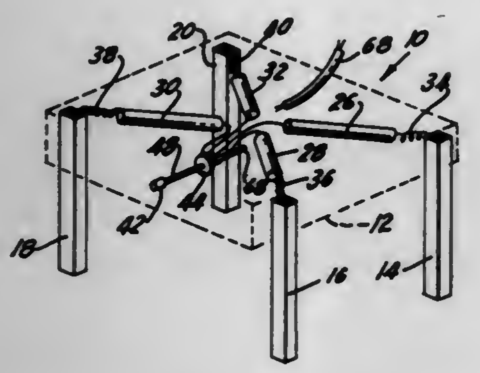
Robert Solby, 90 Riverside Drive, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,594

Int. Cl. H01q *1/00*

U.S. Cl. 343—720 **7 Claims**

A combination stand or table and antenna system for television receivers, in which the legs of the stand are used as antenna segments. Two legs at opposite corners of the stand are used together to form one dipole antenna, and another pair of legs is used to form a second dipole antenna. A circuit is provided for varying the proportion of the signal which is delivered from each antenna to the receiver, thus effectively rotating the antenna system for best signal reception.



3,604,008

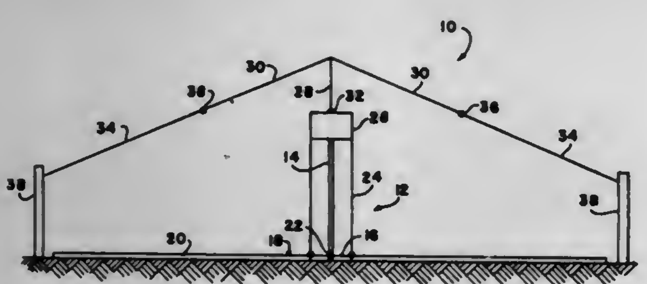
TUNABLE MODERATE-Q TRANSMITTING ANTENNA

Eric A. Thowless, La Mesa, Calif.

Filed Jan. 14, 1970, Ser. No. 2,698

Int. Cl. H01q *9/00*

U.S. Cl. 343—745 **2 Claims**



A tunable moderate-Q transmitting antenna. The antenna can be operated in proximity with a plurality of like antennas in a limited space environment with minimal mutual interference manifested as absorbed power or distorted radiation patterns. The antenna essentially comprises a low-profile, top-loaded short monopole which can be operated above its intrinsic resonant frequency and which can be tuned remotely over a predetermined frequency band by means of a "single-element" tuner.

3,604,009

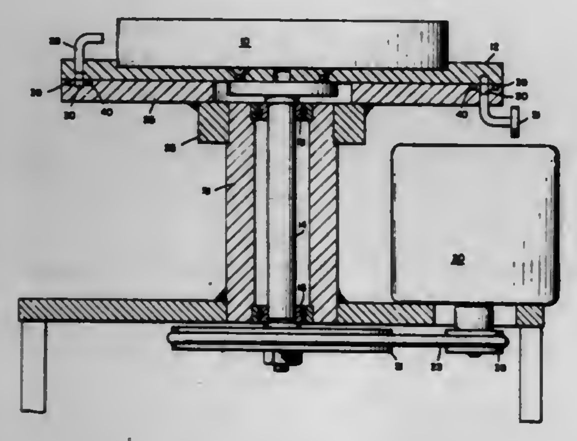
MILLIMETER WAVE-SCANNING LENS ANTENNA

Marvin C. Behnke, Hermosa Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 9, 1968, Ser. No. 782,302

Int. Cl. H01q *17/06*

U.S. Cl. 343—754 **5 Claims**



The apparatus of the present invention provides a high-speed mechanical scanner that operates in the millimeter range of frequencies with a cylindrical quartz lens as a focusing device. A split annular waveguide with one half in constant rotation provides 355° of scan and presents angular information as a function of time. The disclosed electromechanical scanner generates a 3° beam with 16 db. sidelobes and may be scanned at a rate in excess of 10,000 angular degrees per second.

3,604,010

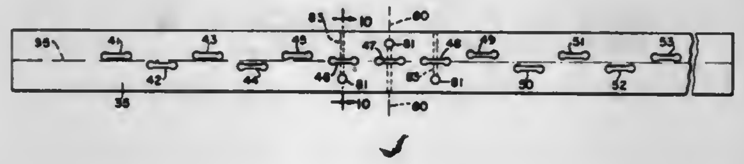
ANTENNA ARRAY SYSTEM FOR GENERATING SHAPED BEAMS FOR GUIDANCE DURING AIRCRAFT LANDING

Leonard Schwartz, Scarsdale, and Robert K. Bevan, Pleasantville, both of, N.Y., assignors to Singer-General Precision, Inc.

Filed Jan. 30, 1969, Ser. No. 795,172

Int. Cl. H01q *13/10*

U.S. Cl. 343—756 **10 Claims**



This specification discloses an antenna system for guiding aircraft during landing. The antenna system comprises slotted waveguides for generating radiobeams of the desired shape to provide wide coverage and eliminate false courses. The spacing between the slots and the coupling of the slots to the waveguides are individually selected to synthesize the desired beam shapes.

3,604,011

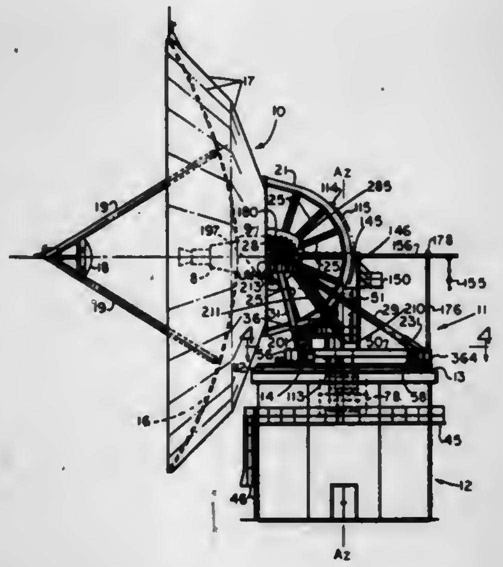
TURRET-TYPE LARGE APERTURE ANTENNA PRECISION MOUNTED ON CIRCULAR TRACK

Robert Dale Hall, La Mesa, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Aug. 5, 1968, Ser. No. 750,444

Int. Cl. H01q *3/00*

U.S. Cl. 343—766 **8 Claims**



An elevation over azimuth turret-type antenna provides roller and track supports for rotational movement of a turret on a pedestal about an Az—Az axis and provides spaced pivots and drive wheels for rotational movement of the antenna reflector on the turret about an El—El axis. The roller supports include radially directed rollers for constraining the movement of the turret support rollers coaxially with their circular track and further include holddown roller elements for preventing the turret from leaving the track due to the eccentric loading of the reflector on the turret. A tubular shaft disposed coaxially of the Az—Az axis is secured to the turret

for rotation with it. The shaft extends upwardly through the several floors of the pedestal and through lower and upper rooms supported on the turret to which access is provided via an elevator mounted for operation within the shaft. An electronics room disposed between the spaced drive wheels increases the working area of the antenna, and bellows and jalousy ladder structures improve the access from the electronics room to functioning parts of the feed structure.

3,604,012

BINARY PHASE-SCANNING ANTENNA WITH DIODE CONTROLLED SLOT RADIATORS

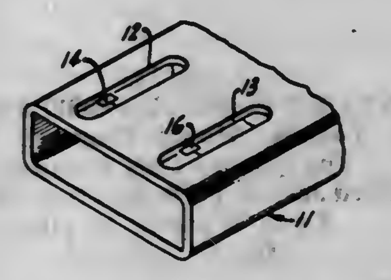
Dale C. Lindley, Sunnyvale, Calif., assignor to Textron Inc., Belmont, Calif.

Filed Aug. 19, 1968, Ser. No. 766,012

Int. Cl. H01q *13/10*

U.S. Cl. 343—768 **3 Claims**

The present invention relates to an antenna having a plurality of radiators energized to produce radiation in at least two adjacent quadrants and having control means for selectively reversing the phase of radiation of individual radiators to thereby provide direction radiation from the array and to scan such radiation.



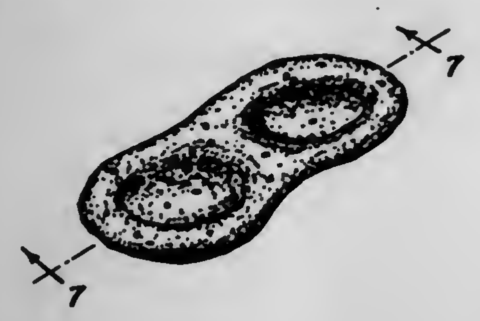
ERRATUM

For Class 346—23 see:
Patent No. 3,603,974

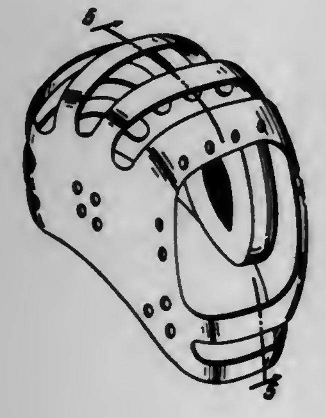
DESIGNS

SEPTEMBER 7, 1971

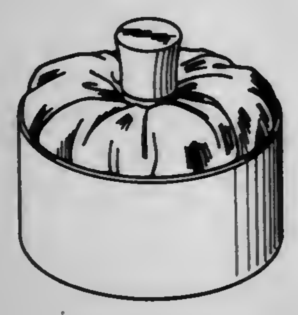
221,723
EXPANDED CEREAL FOOD PRODUCT
Stylianos A. Topalis, Mount Prospect, Ill., assignor to The Quaker Oats Company
Filed July 6, 1970, Ser. No. 23,830
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—2



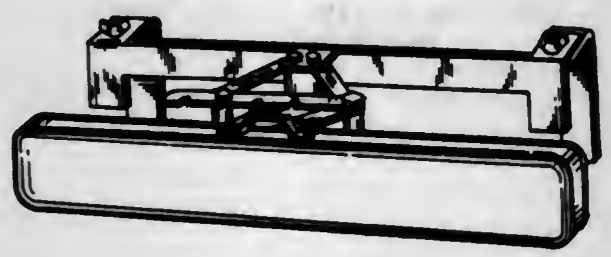
221,724
HEADGEAR FOR WRESTLERS
Bobby E. Douglas, 8 Boyd Ave.,
Bridgeport, Ohio 43912
Filed June 8, 1970, Ser. No. 23,363
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



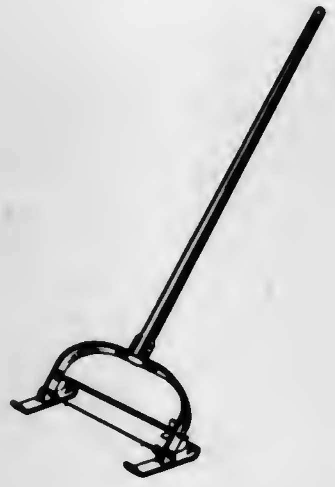
221,725
COMBINED PIN CUSHION AND BANK
Grace R. Tatum, M. R. Reesers Summit,
New Cumberland, Pa. 17070
Filed Apr. 14, 1969, Ser. No. 16,757
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D3—19



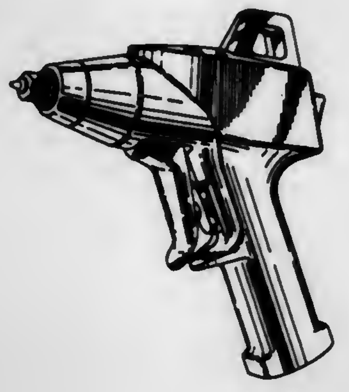
221,726
ADJUSTABLE FOOTREST FOR BEDS
Charles B. Johnson, 1600 E. University,
Des Moines, Iowa 50316
Filed Apr. 3, 1970, Ser. No. 22,238
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D5—4



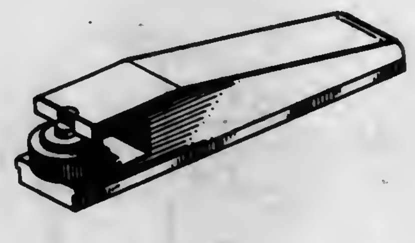
221,727
HAND OPERATED WEED CUTTER
Oscar E. Erickson, 1933 E. 27th St.,
Hibbing, Minn. 55746
Filed July 6, 1970, Ser. No. 23,828
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—7



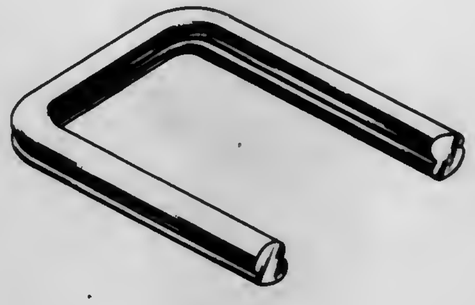
221,728
ADHESIVE DISPENSING GUN
Samuel R. Rosen, Lorain, Alan B. Reighard, Bay Village, Robert G. Baker, Avon, and Lawrence E. Blazey, Bay Village, Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Feb. 12, 1970, Ser. No. 21,409
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—30



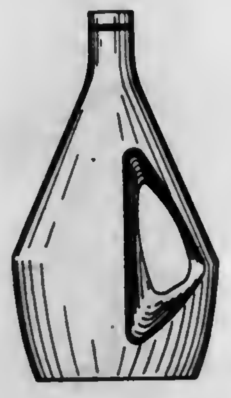
221,729
KNURLING TOOL
Merrill E. Williams, 162 Chelsa St.,
Stratford, Conn. 06497
Filed June 8, 1970, Ser. No. 23,360
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



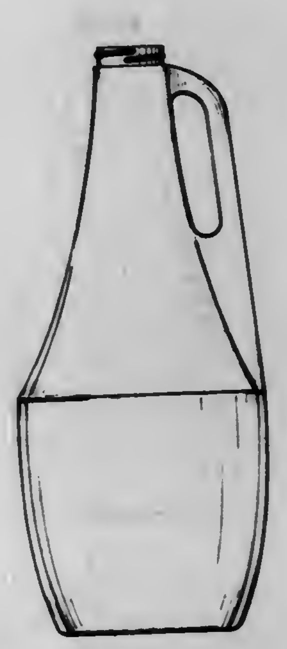
221,730
CLIP FOR SEALING PACKAGES AND THE LIKE
James W. Marietta, Jr., D–Mar, 116 W. 24th St.,
Los Angeles, Calif. 90007
Filed Sept. 18, 1969, Ser. No. 19,200
Term of patent 14 years
Int. Cl. D8—*03, 04*
U.S. Cl. D8—266



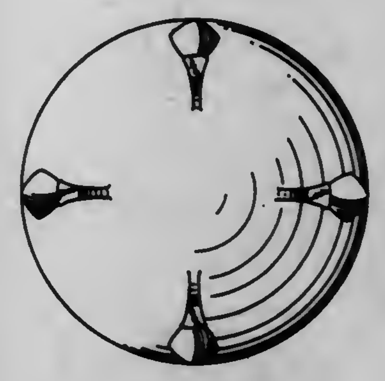
221,731
BOTTLE OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 21,215
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



221,732
BOTTLE
Paul Andrew Lapidus, Monterey, Calif., and Jay Edward Melind, Elk Grove Village, Ill., assignors to American Can Company, New York, N.Y.
Filed June 1, 1970, Ser. No. 23,907
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—41



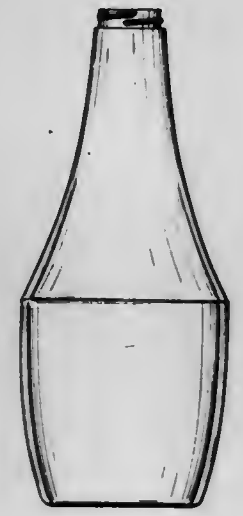
221,733
BOTTLE
Domas Adomaitis, Chicago, and Howard M. Turner, Oak Forest, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Apr. 14, 1969, Ser. No. 16,723
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—111



221,734
BOTTLE

Paul Andrew Lapidus, Monterey, Calif., and Jay Edward Melind, Elk Grove Village, Ill., assignors to American Can Company, New York, N.Y.

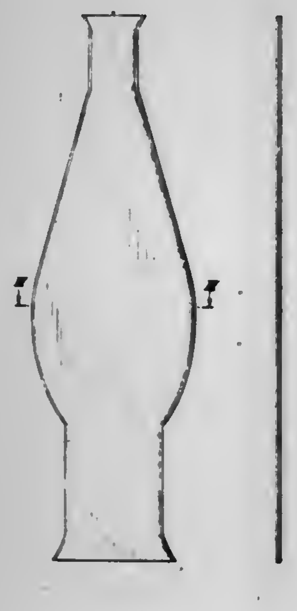
Filed June 1, 1970, Ser. No. 23,212
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



221,735
FORCING BAG FOR DECORATING PASTRY AND THE LIKE

John MacManus, 143—16 22nd Road,
Whitestone, N.Y. 11357

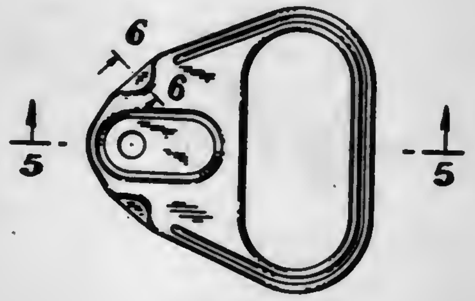
Filed July 24, 1970, Ser. No. 24,112
Claims priority, application Great Britain Feb. 17, 1970
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—194



221,736
PULL TAB FOR A CONTAINER

Edward Charles Jacobs, Wauconda, and Burton Frank Pillnik, Cary, Ill., assignors to American Can Company, New York, N.Y.

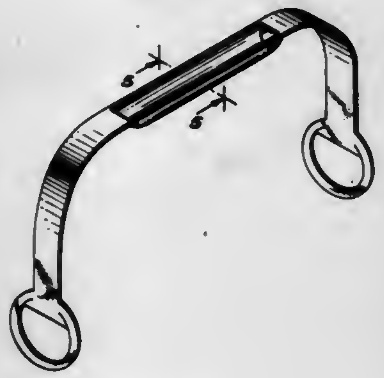
Filed Aug. 3, 1970, Ser. No. 24,268
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—256



221,737
HANDLE FOR A CONTAINER

Richard C. Rheinhart, North Aurora, Ill., assignor to American Can Company, New York, N.Y.

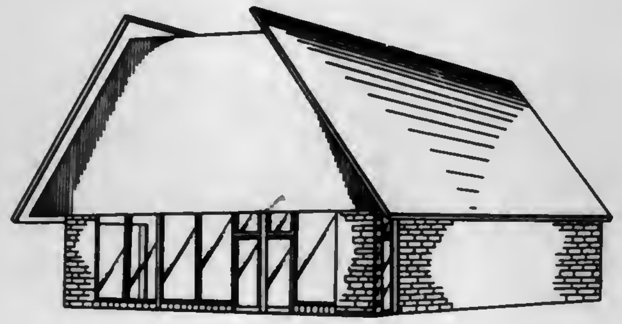
Filed Mar. 25, 1970, Ser. No. 22,057
Term of patent 14 years
Int. Cl. D9—*99*; D8—*03*
U.S. Cl. D9—291



221,738
FOOD SERVICE BUILDING

James T. Hight, Darien, Conn., assignor to American Dairy Queen Corporation, Minneapolis, Minn.

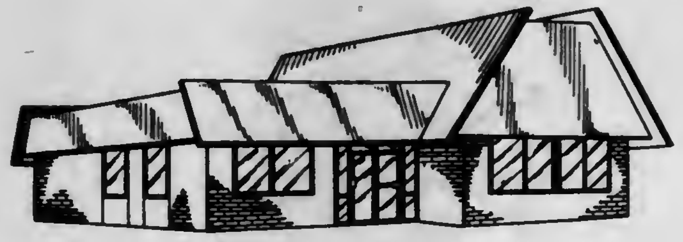
Filed Apr. 14, 1969, Ser. No. 16,709
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1



221,739
FOOD SERVICE BUILDING

James T. Hight, Darien, Conn., assignor to American Dairy Queen Corporation

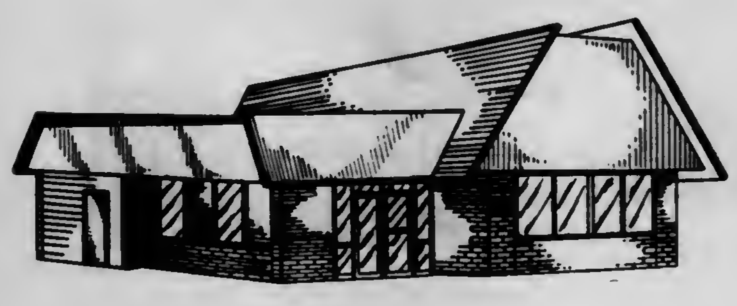
Filed Mar. 17, 1970, Ser. No. 21,928
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



221,740
FOOD SERVICE BUILDING

James T. Hight, Darien, Conn., assignor to American Dairy Queen Corporation

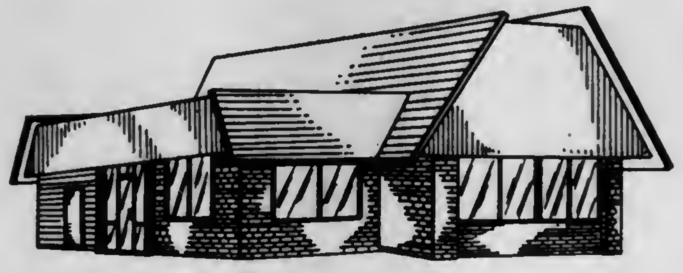
Filed Mar. 17, 1970, Ser. No. 21,935
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



221,741
FOOD SERVICE BUILDING

James T. Hight, Fairfield, Conn., assignor to American Dairy Queen Corporation

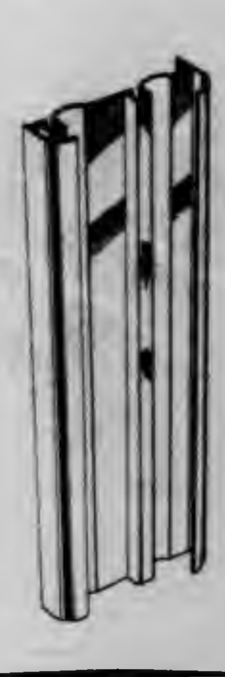
Filed Mar. 17, 1970, Ser. No. 21,936
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



221,742
WINDOW SASH GUIDE

Arthur M. Starck, and William R. Starck, Greenwich, Conn., assignors to A.M.S. Corporation, South Norwalk, Conn.

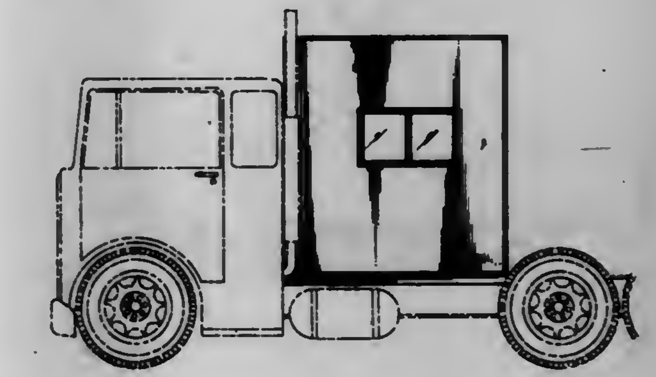
Filed Feb. 24, 1970, Ser. No. 21,570
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—6



221,743
SLEEPER VAN

Kenneth O. Cunningham, 3948 Adams 83704, and Ray Montgomery, Rte. 2, Dalton Lane 83702, both of Boise, Idaho

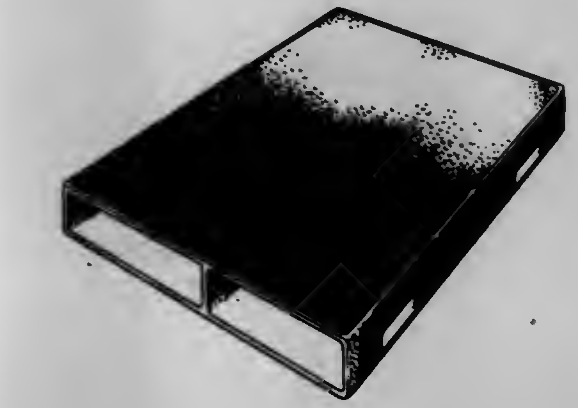
Filed Mar. 9, 1970, Ser. No. 21,830
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3



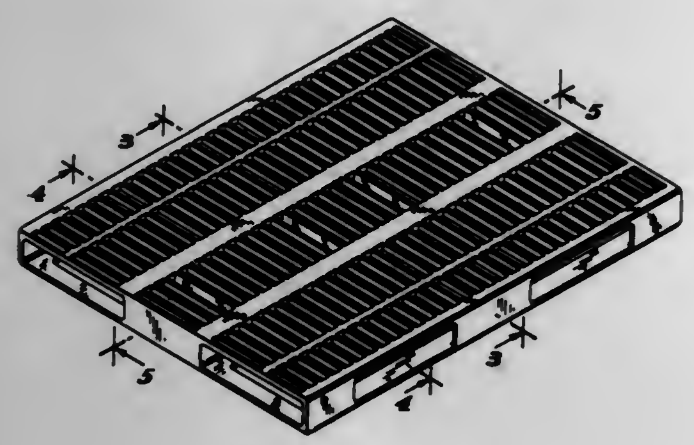
221,744
PALLET

Vincent B. Cetrone, and Albert J. Sopko, Warren, Ohio, assignors to Warren Industrial Manufacturing & Sales Company, Warren, Ohio

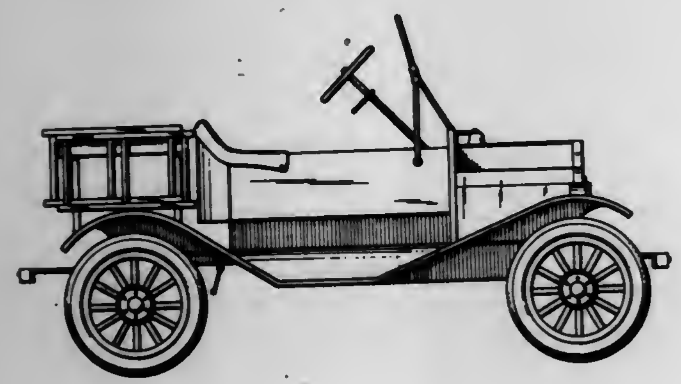
Filed Mar. 30, 1970, Ser. No. 22,113
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D14—3



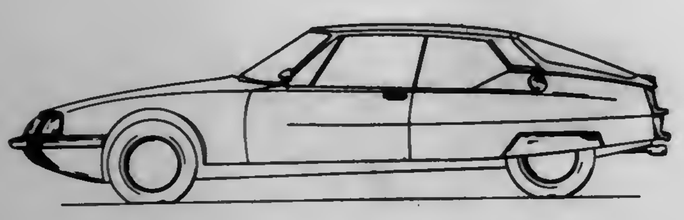
221,745
PALLET
Ernest Cardwell Holdredge, Decatur, Ga., and Larry Lee Marifjeren, Scotch Plains, N.J. assignors to Allastics, Inc., Norcross, Ga.
Filed June 1, 1970, Ser. No. 23,213
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3



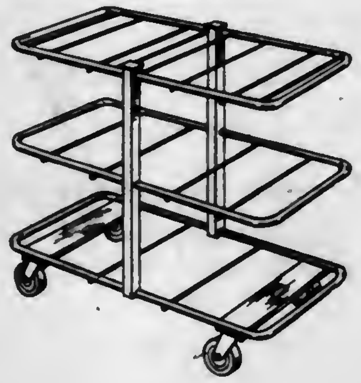
221,746
FIRE TRUCK
Michael Dennis Callahan, 17011 Dover Lane, Independence, Mo. 64056
Filed Apr. 10, 1970, Ser. No. 22,369
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



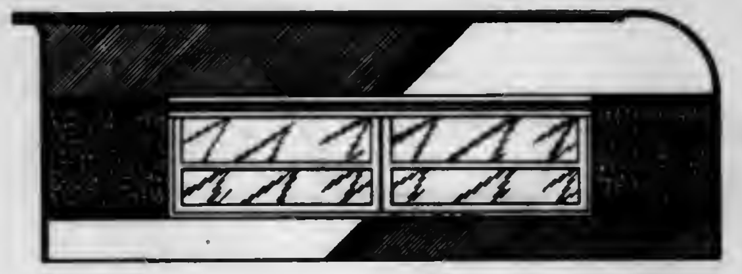
221,747
AUTOMOBILE
Henri Fabien, Bagneux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Aug. 14, 1970, Ser. No. 24,486
Claims priority, application France Feb. 23, 1970
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



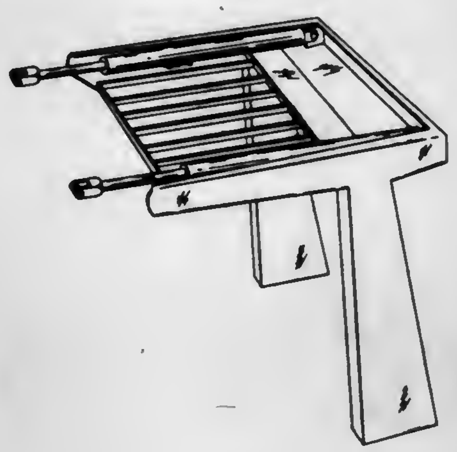
221,748
WHEELED CART
Harold Bloomfield and Melvin F. Roberts, Chicago, Ill., assignors to Bloomfield Industries, Inc., Chicago, Ill.
Filed Sept. 8, 1970, Ser. No. 24,874
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



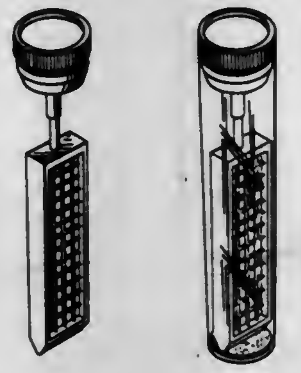
221,749
SIDE PANEL FOR CAMPING COVER FOR PICK-UP TRUCKS
Don J. Reynolds, 7202 Overton, Raytown, Mo. 64133
Filed Dec. 29, 1969, Ser. No. 20,689
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



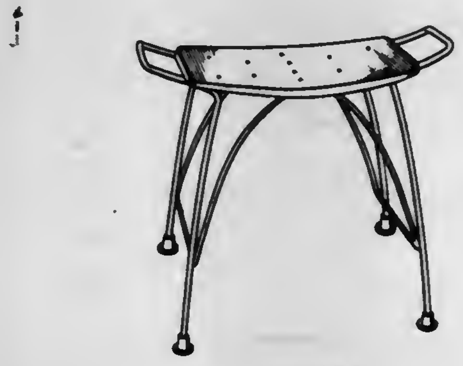
221,750
OVERHEAD GUARD
William P. Downey, Portland, and Richard H. Hunger, Oregon City, Oreg., and Niels Diffrient, New York, N.Y., assignors to Hyster Company, Portland, Oreg.
Filed Oct. 14, 1969, Ser. No. 19,552
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27



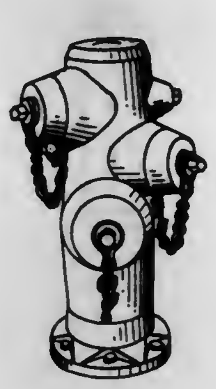
221,751
BACTERIURIA TEST DEVICE
Donald P. Kronish, Rockaway, and Lee S. Zuriff, Parsippany, N.J., assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.
Filed Mar. 25, 1970, Ser. No. 22,047
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—1



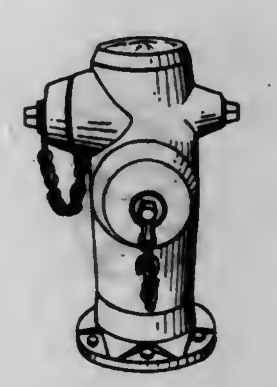
221,752
BATH BENCH
William R. Brewer, 9100 Bartee Ave., Arleta, Calif. 91331
Filed Dec. 15, 1967, Ser. No. 9,803
Term of patent 14 year
Int. Cl. D6—*01*
U.S. Cl. D15—8



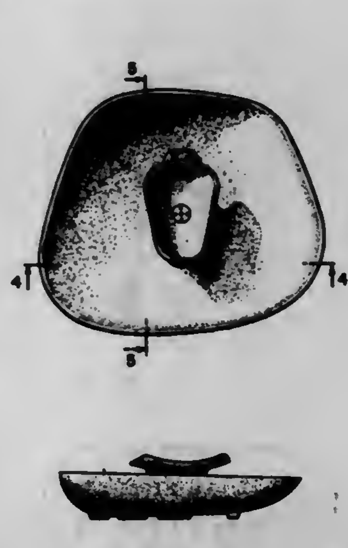
221,753
FIRE HYDRANT
John J. Smith, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.
Filed July 8, 1970, Ser. No. 23,856
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—12



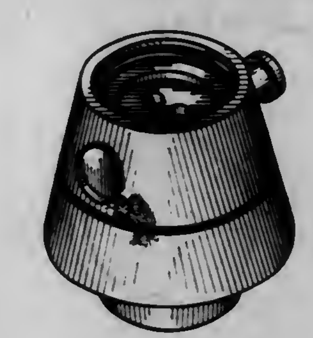
221,754
FIRE HYDRANT
John J. Smith, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.
Filed July 8, 1970, Ser. No. 23,857
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—12



221,755
TABLE FOUNTAIN
Ernest R. Johnson, 2023 Mulford St., Camden, N.J. 08104
Filed May 31, 1966, Ser. No. 2,460
Term of patent 7 years
Int. Cl. D23—*01*
U.S. Cl. D23—13

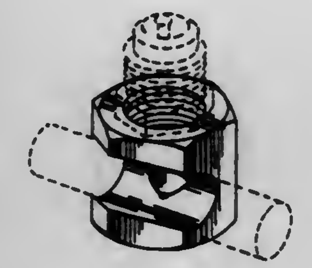


221,756
SPRAY AERATOR
E Burton Benjamin, Highland Park, Ill., assignor to Wrightway Engineering Co., Chicago, Ill.
Filed Nov. 25, 1969, Ser. No. 20,272
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



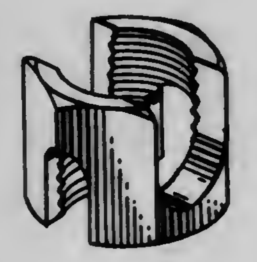
221,757
VALVE RECEIVING TUBING CLAMP
John W. Mullins, P.O. Box 20524,
Oklahoma City, Okla. 73120
Filed Nov. 10, 1969, Ser. No. 20,011
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—40



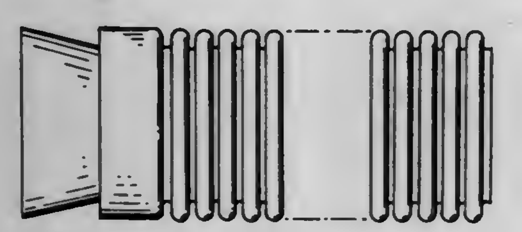
221,758
VALVE RECEIVING TUBING CLAMP
John W. Mullins, P.O. Box 20524,
Oklahoma City, Okla. 73120
Filed Nov. 3, 1969, Ser. No. 19,921
Term of patent 14 years
Int. Cl. D23—*01*

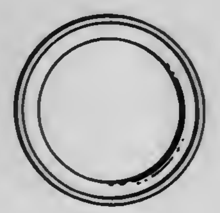
U.S. Cl. D23—40



221,759
CORRUGATED TUBE
Joseph F. Bauman, Trenton, N.J., and Adrian V. Cini, Levittown, Pa., assignors to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.
Filed Oct. 14, 1969, Ser. No. 19,551
Term of patent 14 years
Int. Cl. D23—*01*

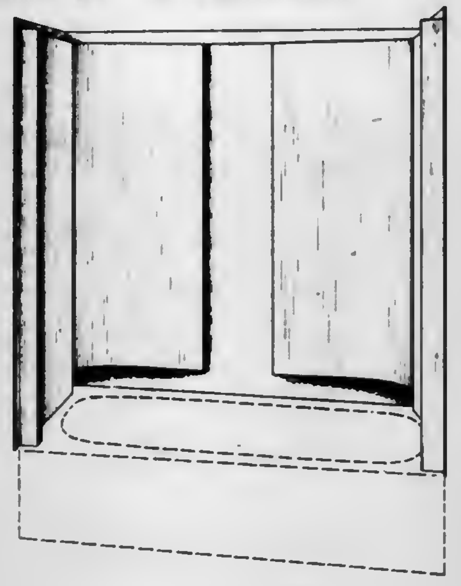
U.S. Cl. D23—45

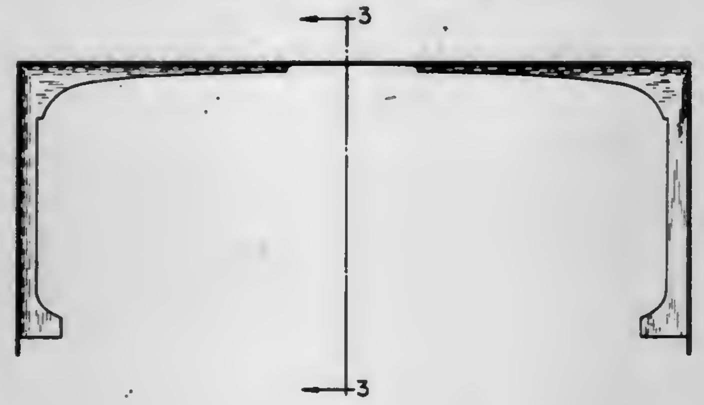




221,760
SHOWER ENCLOSURE WALL UNIT
Norman Van Skyhawk, Salt Lake City, Utah, assignor to American Standard Inc., New York, N.Y.
Filed May 21, 1969, Ser. No. 17,250
Term of patent 14 years
Int. Cl. D23—*02*

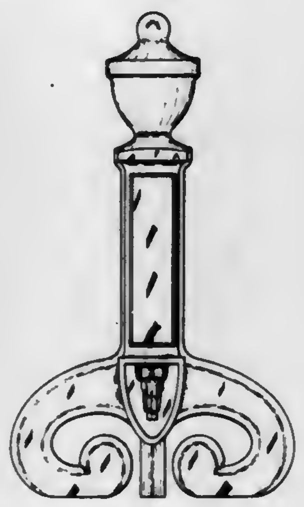
U.S. Cl. D23—49





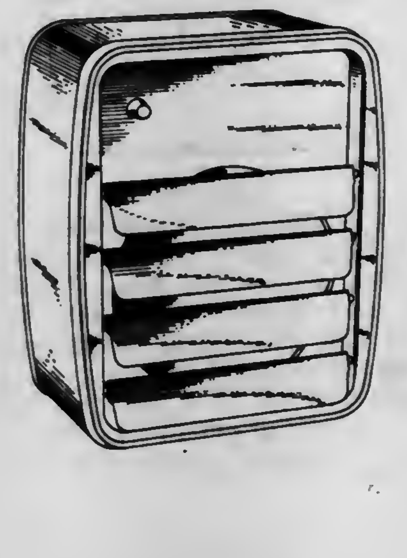
221,761
ANDIRON
Judkins E. Wilkinson, Birmingham, Ala., assignor to Atlanta Stove Works, Inc.
Filed Nov. 28, 1969, Ser. No. 20,312
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—102



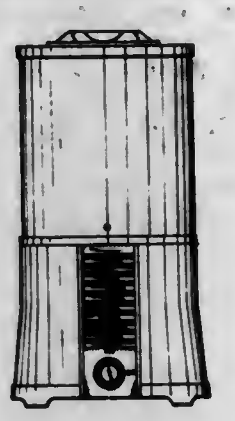
221,762
ELECTRIC SPACE HEATER
Alben C. Boggs, Pittsburgh, and Joseph R. Nelis, Wilmerding, Pa., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Apr. 23, 1970, Ser. No. 22,607
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—111



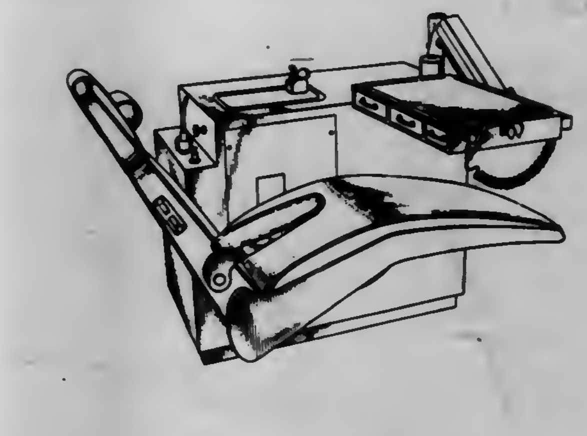
221,763
COMBINED AIR PURIFIER AND DEODORIZER
John E. Gilbertson, 3209 Douglas Ave.,
Des Moines, Iowa 50310
Filed Apr. 6, 1970, Ser. No. 22,285
Term of patent 14 years
Int. Cl. D23—*04*

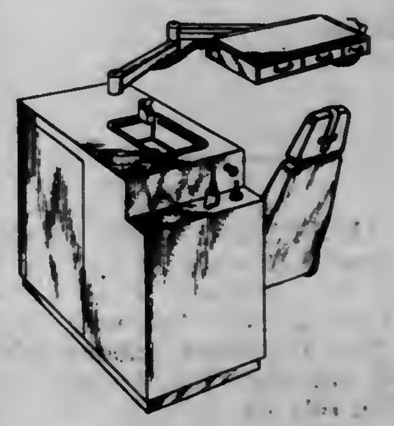
U.S. Cl. D23—149



221,764
DENTAL UNIT
Reece W. Johnston, Fort Worth, Tex., assignor to Unitek Corporation, Fort Worth, Tex.
Filed June 1, 1970, Ser. No. 23,216
Term of patent 14 years
Int. Cl. D24—*03;* D6—*01*

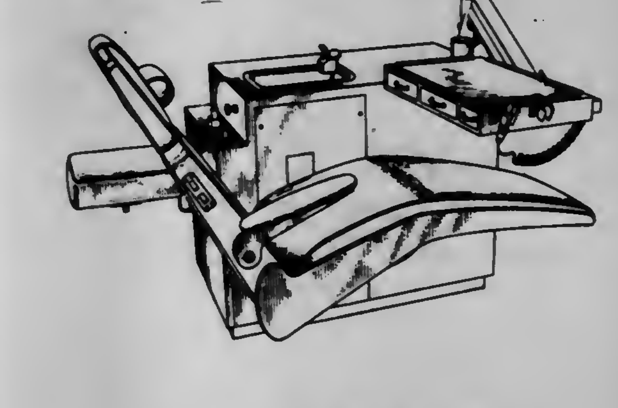
U.S. Cl. D24—1

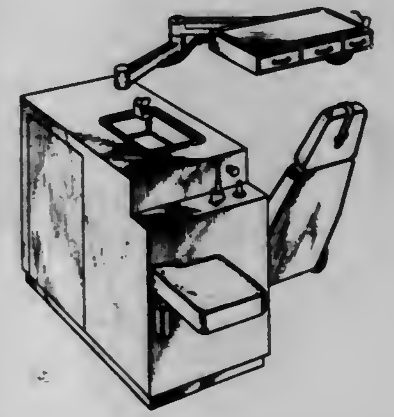




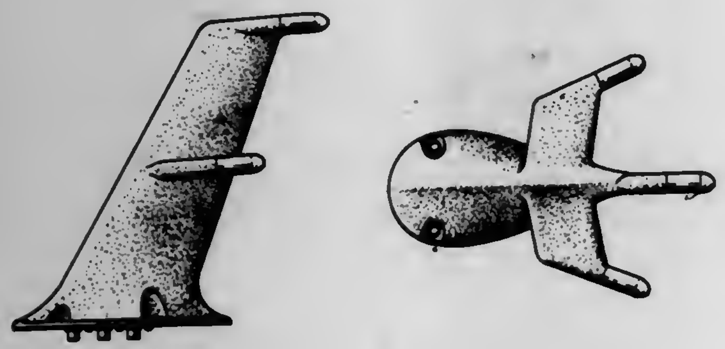
221,765
DENTAL UNIT
Reece W. Johnston, Fort Worth, Tex., assignor to Unitek Corporation, Fort Worth, Tex.
Filed June 1, 1970, Ser. No. 23,223
Term of patent 14 years
Int. Cl. D24—*03;* D6—*01*

U.S. Cl. D24—1

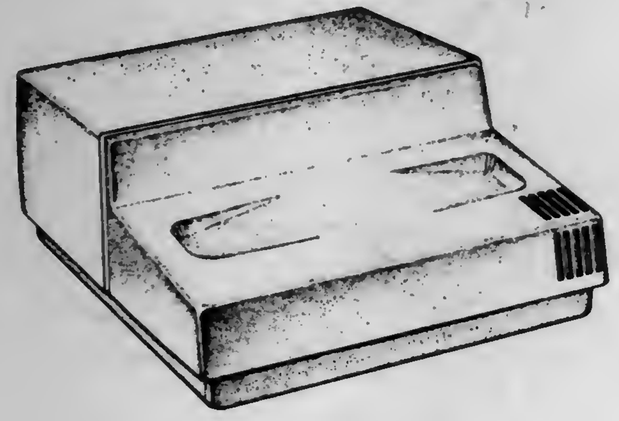


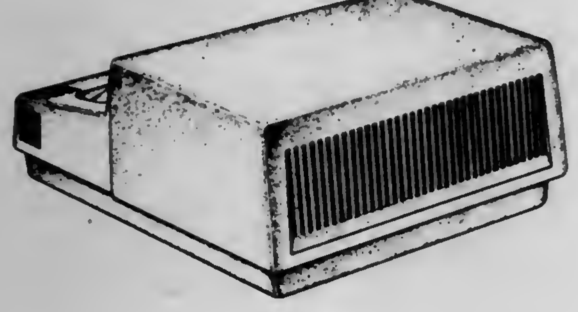


221,766
AIRCRAFT RADIO ANTENNA
William C. Rogers, 5365 NW. 36th St., Miami Springs, Fla. 33166
Filed Jan. 15, 1970, Ser. No. 20,944
Term of patent 14 years
The portion of the term of the patent subsequent to May 27, 1983, has been dedicated to the Public
Int. Cl. D14—*03*
U.S. Cl. D26—14

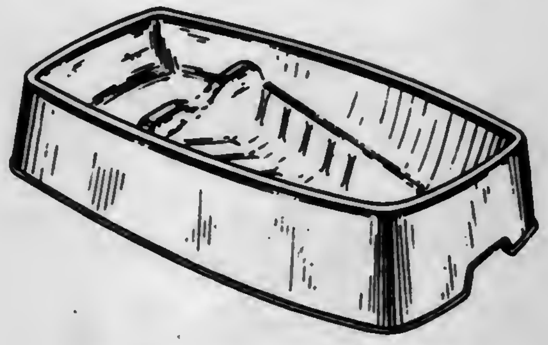


221,767
TELEPHONE DESK STAND
Donald M. Genaro, Haworth, N.J., John Niel McGarvey, Drexel Hill, Pa., Rembert Ryan Stokes, Middletown, N.J., and Gordon Elliot Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed July 15, 1970, Ser. No. 23,963
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

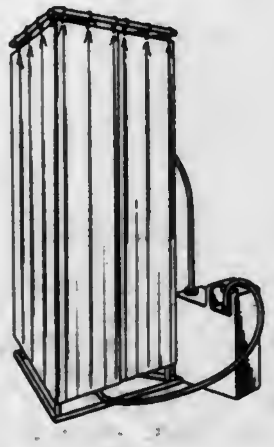




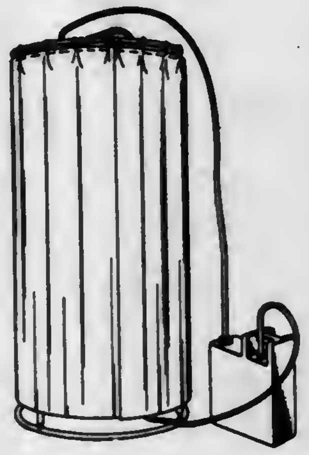
221,768
INFANT'S BATHTUB
John Savedra, Downsview, Ontario, Canada, assignor to Tek Plastics Limited, Malton, Ontario, Canada
Filed Mar. 30, 1970, Ser. No. 22,105
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—52



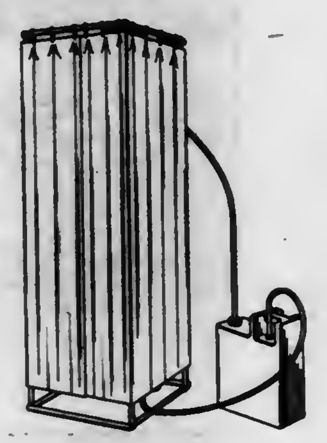
221,769
PORTABLE SHOWER
George T. Le Blanc and Clifford H. Le Blanc, both of P.O. Box 1914, Beaumont, Tex. 77704, and Thomas A. Balmer, and Bobbie G. Hurst, Beaumont, Tex.; said Balmer and said Hurst assignors to George T. Le Blanc and Clifford H. Le Blanc
Filed May 15, 1970, Ser. No. 23,000
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



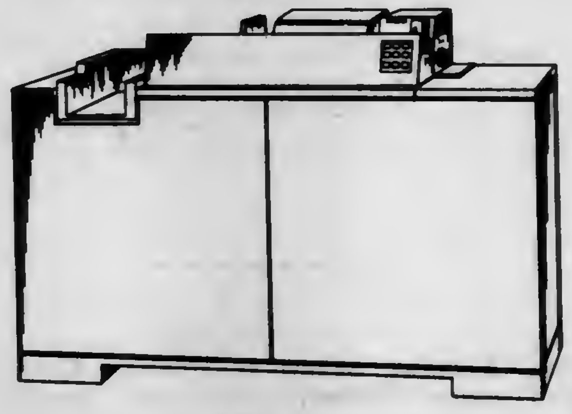
221,770
PORTABLE SHOWER
George T. Le Blanc and Clifford H. Le Blanc, both of P.O. Box 1914, Beaumont, Tex. 77704, and Thomas A. Balmer, and Bobbie G. Hurst, Beaumont, Tex.; said Balmer and said Hurst assignors to George T. Le Blanc and Clifford H. Le Blanc
Filed May 15, 1970, Ser. No. 22,999
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



221,771
PORTABLE SHOWER
George T. Le Blanc and Clifford H. Le Blanc, both of P.O. Box 1914, Beaumont, Tex. 77704, and Thomas A. Balmer and Bobbie G. Hurst, Beaumont, Tex.; said Balmer and said Hurst assignors to George T. Le Blanc and Clifford H. Le Blanc
Filed May 15, 1970, Ser. No. 22,998
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57

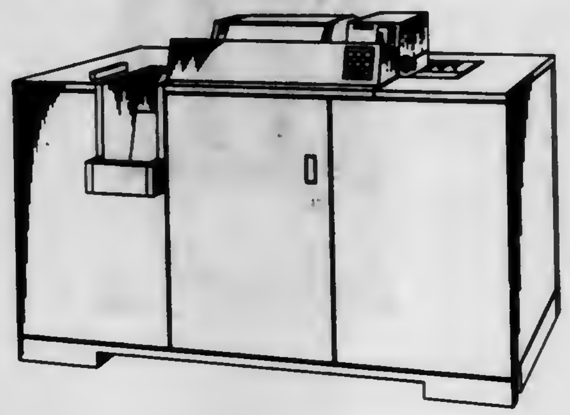


221,772
ELECTRONIC ACCOUNTING MACHINE
Clifford I. Shelkofsky, Endwell, Edward R. Wiener and Ernest Wittner, Vestal, and Edward L. Brown, Carmel, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 8, 1969, Ser. No. 19,047
Term of patent 14 years
Int Cl. D14—*02*
U.S. Cl. D26—5

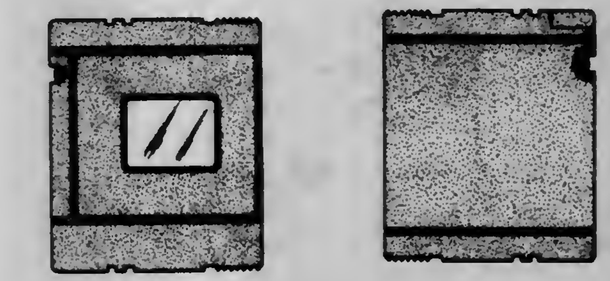


221,773
ELECTRONIC ACCOUNTING MACHINE
Clifford I. Shelkofsky, Endwell, Edward R. Wiener and Ernest Wittner, Vestal, and Edward L. Brown, Carmel, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 8, 1969, Ser. No. 19,058
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

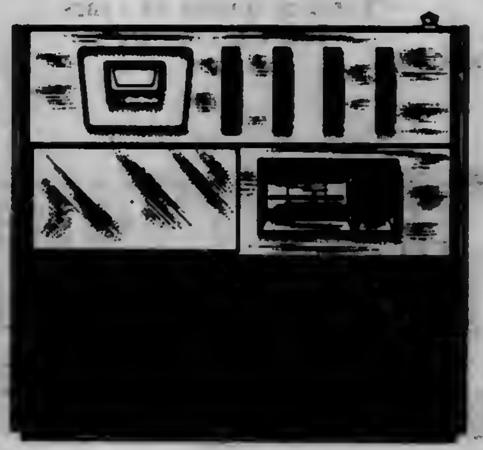
FIG. 1 is a front perspective view of an electronic



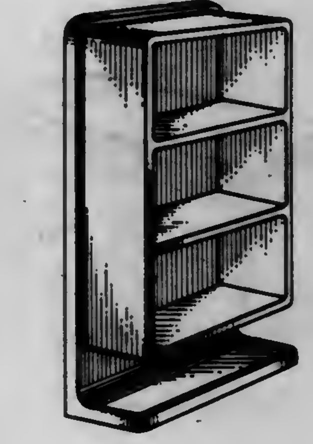
221,774
CARTRIDGE USED FOR RECORDING AND REPRODUCING
Tamao Ikuta and Shozo Moriya, Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 21, 1970, Ser. No. 23,085
Term of patent 14 years
Int. Cl. D14—*01;* D16—*99*
U.S. Cl. D26—14



221,775
COMBINED RADIO AND CASSETTE TAPE RECORDER OR SIMILAR ARTICLE
John S. Maliskas, North Syracuse, N.Y., assignor to General Electric Company
Filed June 5, 1970, Ser. No. 23,336
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

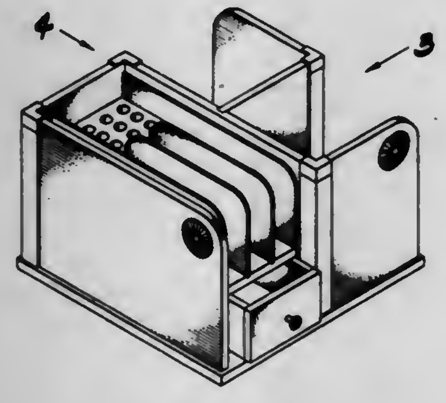


221,776
BOOKCASE
Douglas Deeds, San Diego, and Barry L. Rosengrant, Los Angeles, Calif., assignors to Architectural Fiberglass, Inc., Los Angeles, Calif.
Filed Jan. 19, 1970, Ser. No. 20,968
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—2



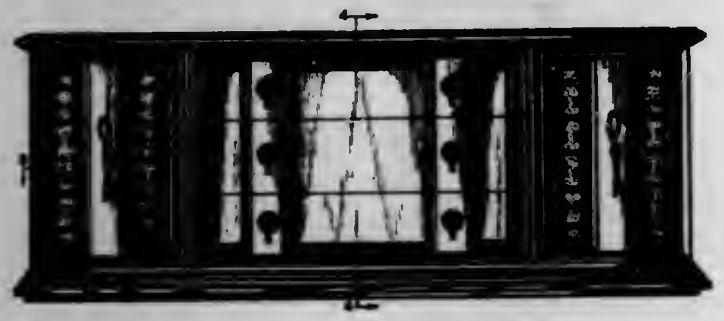
221,777
ARTICLE HOLDER FOR USE ON A DESK

Herbert M. Rose, Los Angeles County, Calif.
Filed Apr. 10, 1970, Ser. No. 22,362
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



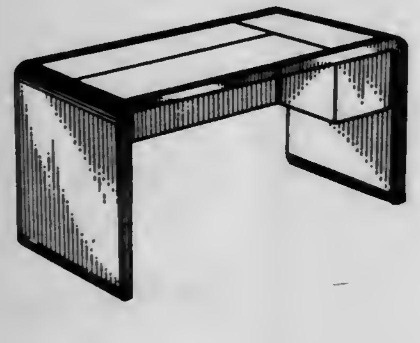
221,778
DRESSER OR SIMILAR ARTICLE

Thomas Szirmay, Montreal, Quebec, Canada, assignor to Wentworth Industries Limited, Montreal, Quebec, Canada
Filed Apr. 14, 1969, Ser. No. 16,708
Claims priority, application Canada Oct. 15, 1968
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—6



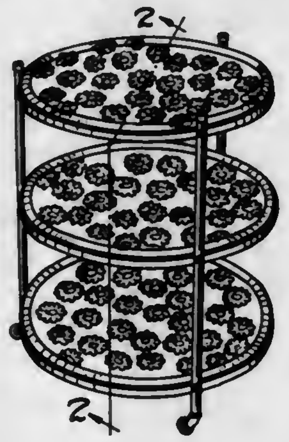
221,779
DESK

Douglas Deeds, San Diego, and Barry L. Rosengrant, Los Angeles, Calif., assignors to Architectural Fiberglass, Inc., Los Angeles, Calif.
Filed Jan. 19, 1970, Ser. No. 20,967
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—7



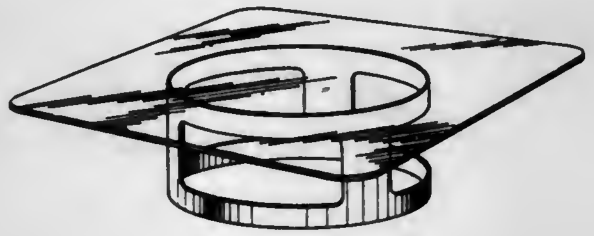
221,780
3-TIER PATIO TABLE

Alan Bedol, Shaker Heights, Ohio, assignor to The Marshallan Manufacturing Company, Cleveland, Ohio
Filed Mar. 13, 1970, Ser. No. 21,889
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



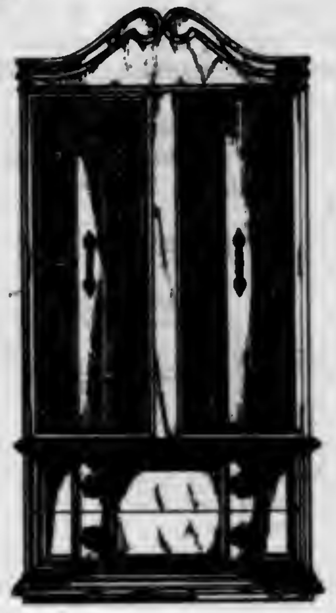
221,781
TABLE

Robert A. Caigan, 1134 1st Ave. New York, N.Y. 10021, and Gideon Loewenstein, 39—37 46th St., Long Island City, N.Y. 11104
Filed May 7, 1970, Ser. No. 22,883
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



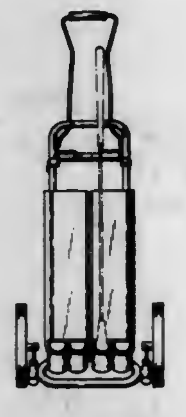
221,782
ARMOIRE

Thomas Szirmay, Montreal, Quebec, Canada, assignor to Wentworth Industries, Montreal, Quebec Canada
Filed Apr. 14, 1969, Ser. No. 16,713
Claims priority, application Canada Oct. 15, 1968
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D33—19



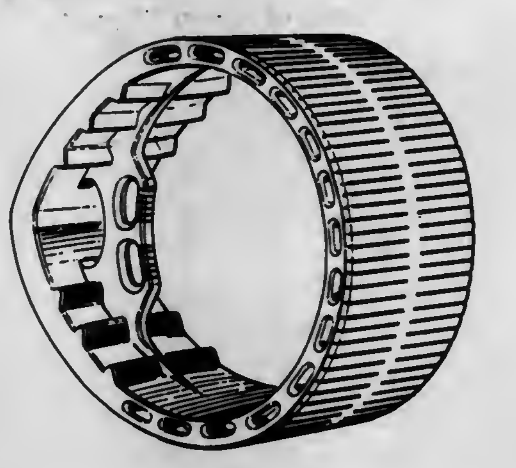
221,783
GOLF CLUB CARRIER

Henry P. Yokers, Menomonee Falls, Wis., assignor to Sit 'N Rest Golf, Inc., Milwaukee, Wis.
Filed Apr. 23, 1968, Ser. No. 11,581
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



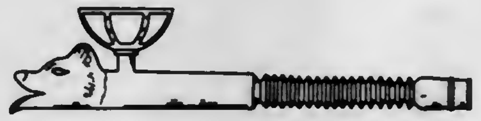
221,784
ROLLING TOY

John A. Gale, 978 E. Shady Lane, Wayzata, Minn. 55391, and Donald Delone Heinz, 2403 Lincoln St. NE., Minneapolis, Minn. 55418
Filed Mar. 18, 1970, Ser. No. 21,948
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



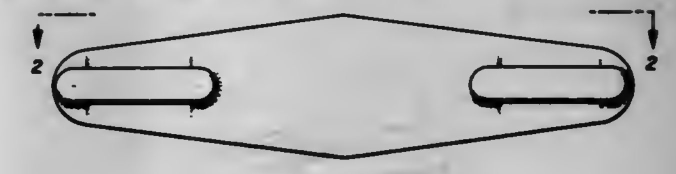
221,785
TOY BLOW PIPE

Zaki Ishag, London, England, assignor to Commodex Limited, London, England
Filed Apr. 22, 1970, Ser. No. 22,570
Claims priority, application Great Britain Dec. 5, 1969
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



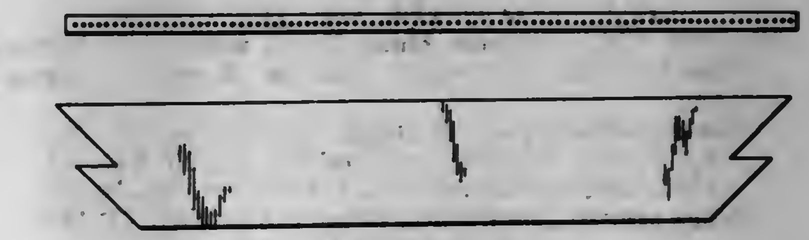
221,786
FLEXIBLE BALL PROJECTOR TOY OR SIMILAR ARTICLE

Walter F. Hayne, P.O. Box 4688, Oakland, Calif. 94597
Filed June 12, 1970, Ser. No. 23,455
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



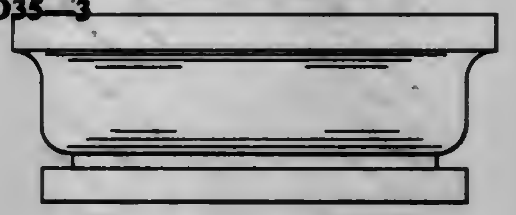
221,787
PLASTIC FLOWER WINDOW PLANTER

Dale C. Rucker, 1205 NE. 113th, Portland, Oreg. 97229
Filed Nov. 12, 1968, Ser. No. 14,382
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D35—3



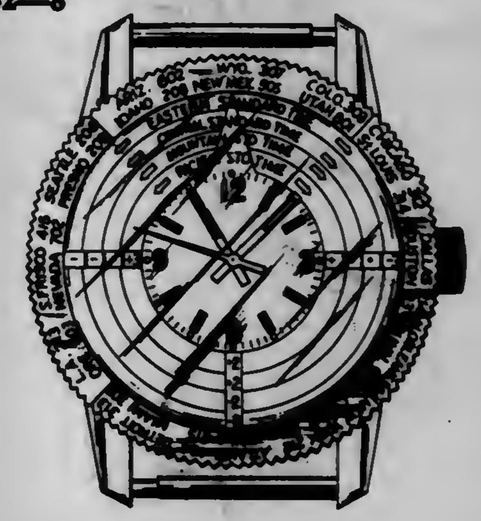
221,788
PLANTER BASE FOR YARD LIGHT POLE

Herman E. Erickson, 2325 W. 2nd St., Duluth, Minn. 55806
Filed May 15, 1970, Ser. No. 23,001
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3

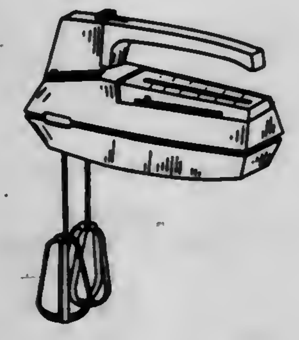


221,789
WATCH

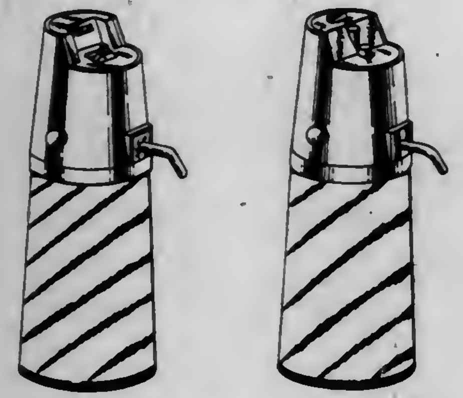
Jack Kolbrener, New York, N.Y., assignor to Invicta Societe Anonyme, La Chaux-de-Fonds, Switzerland
Filed Nov. 21, 1969, Ser. No. 20,216
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



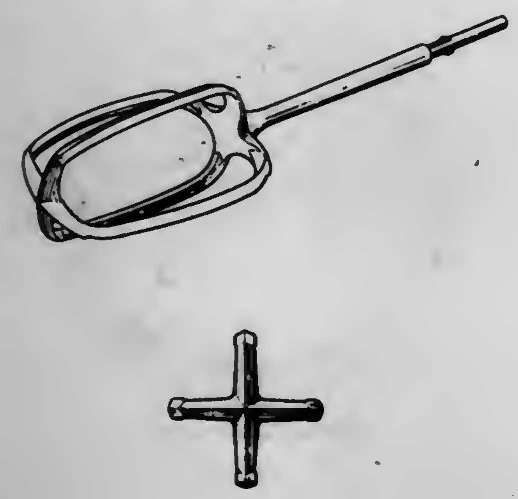
221,790
MIXER
Henricus Franciscus Theresia Schellens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 3, 1968, Ser. No. 14,756
Claims priority, application Switzerland June 5, 1968
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D44—1



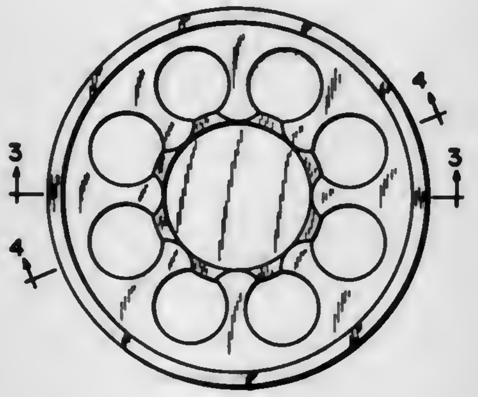
221,791
COMBINED MIXER AND DISPENSER
Yiu Dak Chi, Kowloon, Hong Kong, assignor to Forda Manufacturing Company Limited Kowloon, Hong Kong
Continuation-in-part of design applications Ser. No. 9,475, Nov. 20, 1967, and Ser. No. 10,737, Feb. 23, 1968. This application Dec. 4, 1969, Ser. No. 20,370
Claims priority, application Great Britain Oct. 12, 1967
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1



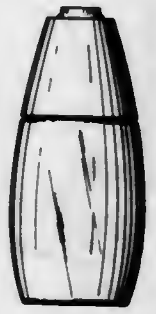
221,792
BEATER
Glenn M. Moffatt, Thornhill, Ontario, and Allan T. Thomas, Downsview, Ontario, Canada, assignors to Samson Dominion Limited, Scarborough, Ontario, Canada
Filed Mar. 2, 1970, Ser. No. 21,695
Term of patent 7 years
Int. Cl. D7—*04*
U.S. Cl. D44—1



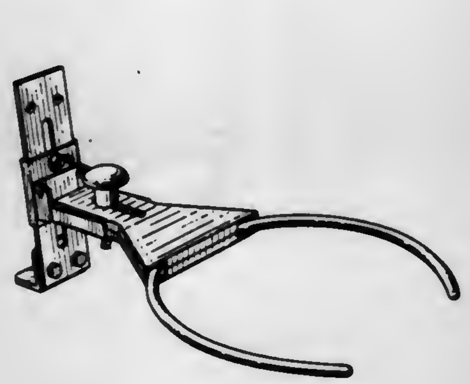
221,793
CANDLE WARMER OR THE LIKE
Ronald G. DePuy, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 30, 1970, Ser. No. 24,223
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—10



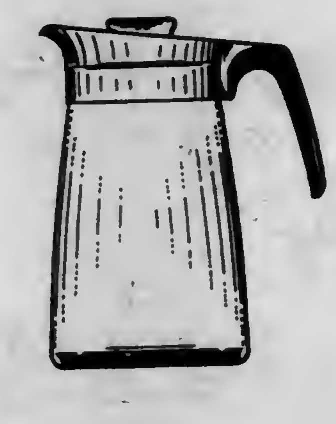
221,794
CONDIMENT SHAKER
Mel Appel, Livingston, and Martin Schnur, Fort Lee, N.J., assignors to Gemco-Ware Inc., Freeport, N.Y.
Filed Feb. 10, 1970, Ser. No. 21,394
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D44—22



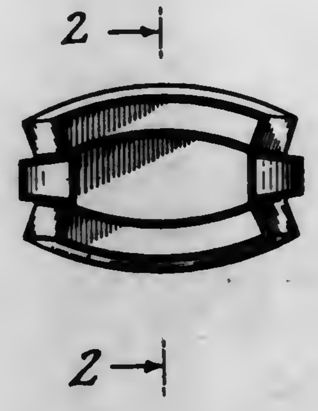
221,795
POT HOLDER
Albert E. Jenks, P.O. Box 311, Rte. 1, Olathe, Kans. 66061
Filed June 1, 1970, Ser. No. 23,227
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29



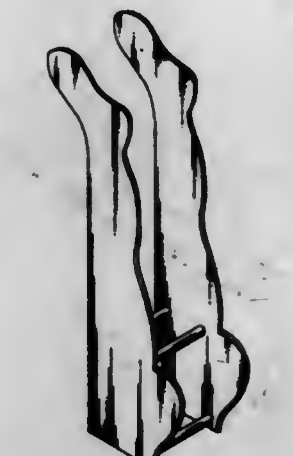
221,796
COFFEE MAKER
Richard W. Greger, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 20, 1970, Ser. No. 24,041
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—26



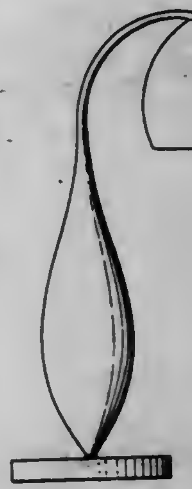
221,797
RING
Robert H. Annesley, Houston, Tex., assignor to Stuckey and Speer, Inc., Houston, Tex.
Filed Sept. 10, 1970, Ser. No. 24,940
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10



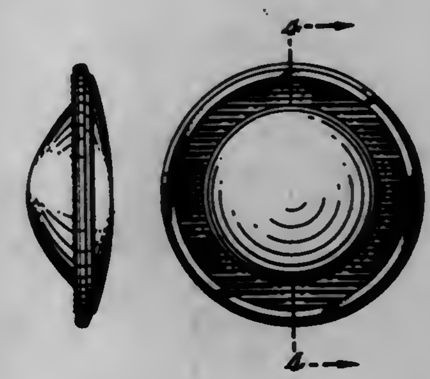
221,798
PANTY HOSE SIZING FORM
Robert E. Merritt, Mount Airy, N.C., assignor to Renfro Hosiery Mills Company, Mount Airy, N.C.
Filed Nov. 20, 1969, Ser. No. 20,190
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D47—5



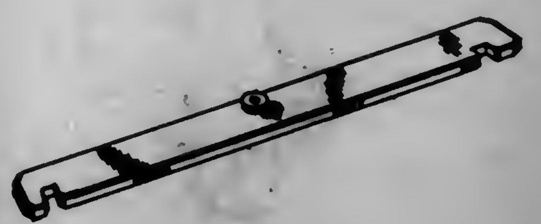
221,799
LAMP
Marion E. Johnson, 784 Hall Road, Dahlgren, Va. 22448
Filed Feb. 9, 1970, Ser. No. 21,631
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—20



221,800
FLUTED CONVEXO-ASPHERIC LENS
Howard A. Schaefer, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Apr. 2, 1970, Ser. No. 22,208
Term of patent 14 years
Int. Cl. D26—*06, 99*
U.S. Cl. D48—32

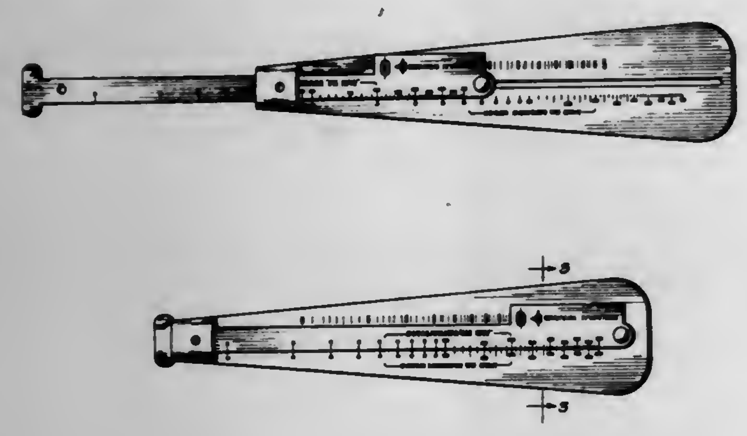


221,801
DISPENSING GUIDE FOR A BOXED COIL OF WIRE
Guido Zecchin, Winsted, Conn., assignor to Hudson Wire Company, Ossining, N.Y.
Filed Sept. 10, 1969, Ser. No. 19,086
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D52—1



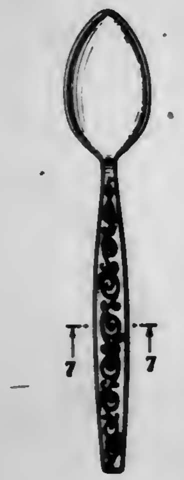
221,802
SLIDE RULE
Addison W. Learned III, and Rosalie C. Learned, both of 88 Dorset Road, Holliston, Mass. 01746
Filed Sept. 2, 1969, Ser. No. 18,962
Term of patent 14 years
Int. Cl. D10—*99*

U.S. Cl. D52—6



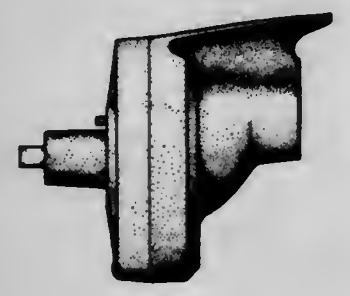
221,803
SPOON OR SIMILAR ARTICLE
James Russell Price, Esmond, R.I., assignor to Gorham Division of Textron Inc., Providence, R.I.
Continuation-in-part of design application Ser. No. 19,088, Sept. 10, 1969. This application Aug. 4, 1970, Ser. No. 24,304
Term of patent 14 years
Int. Cl. D7—*03*

U.S. Cl. D54—12



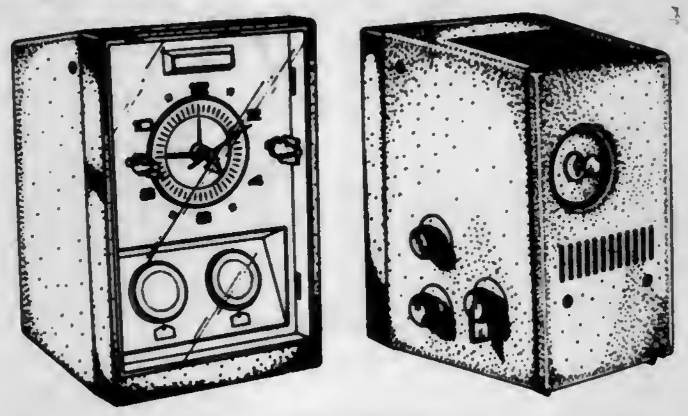
221,804
SPEED INCREASER ATTACHMENT FOR FOOD MACHINES
Richard S. Hartley, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed May 25, 1970, Ser. No. 23,111
Term of patent 14 years
Int. Cl. D15—*08*

U.S. Cl. D55—1



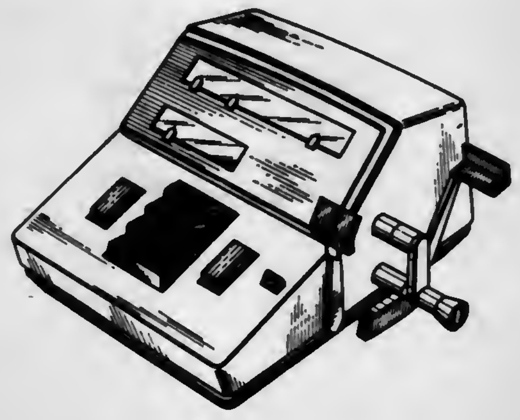
221,805
COMBINED RADIO RECEIVER AND CLOCK OR SIMILAR ARTICLE
Benito Mishiro and Haruhiro Koga, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed July 1, 1970, Ser. No. 23,798
Claims priority, application Japan Mar. 20, 1970
Term of patent 14 years
Int. Cl. D10—*01;* D14—*03*

U.S. Cl. D56—4



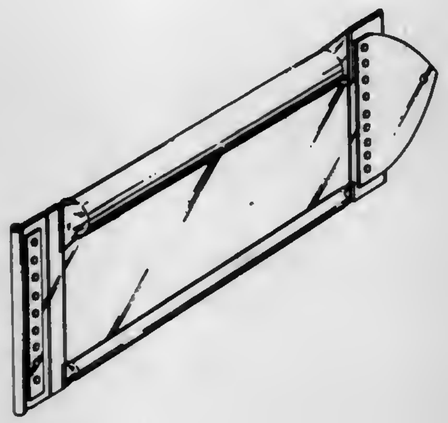
221,806
CALCULATING MACHINE
Alfons Boothby and Georg Joseph, Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed Jan. 16, 1969, Ser. No. 15,382
Claims priority, application Germany Aug. 28, 1968
Term of patent 14 years
Int. Cl. D18—*01*

U.S. Cl. D64—11



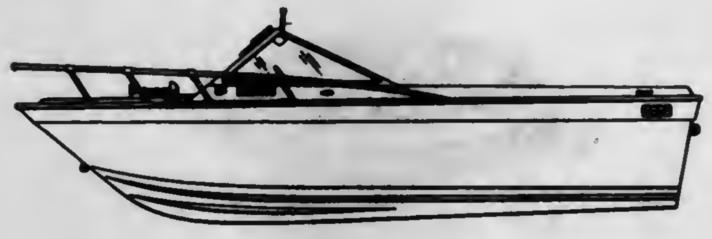
221,807
WEIGHTED FLOTATION WATER BARRIER END PANEL
Frank Meyers, Los Angeles County, Calif.
(301 Via Monte D'Oro, Redondo Beach, Calif. 90277)
Filed Mar. 26, 1970, Ser. No. 22,246
Term of patent 14 years
Int. Cl. D31

U.S. Cl. D71—1



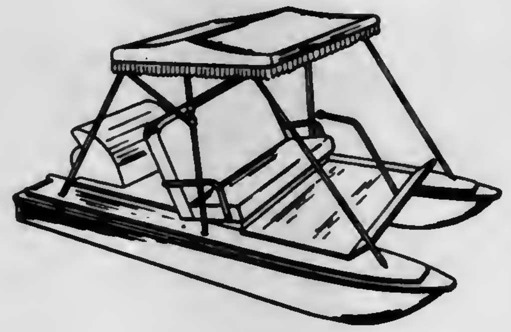
221,808
BOAT
Terry J. Simpkins, Dublin, Ohio, assignor to AMF Incorporated
Filed May 4, 1970, Ser. No. 22,793
Term of patent 14 years
Int. Cl. D12—*06*

U.S. Cl. D71—1



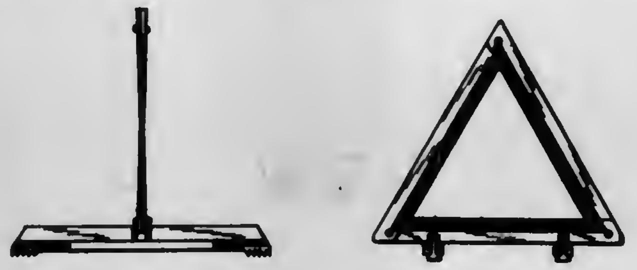
221,809
PADDLE WHEEL BOAT
Dale E. Love, Holland, Mich., assignor to Lovecraft Boat Company, Holland, Mich.
Filed May 20, 1970, Ser. No. 23,071
Term of patent 14 years
Int. Cl. D12—*06*

U.S. Cl. D71—1



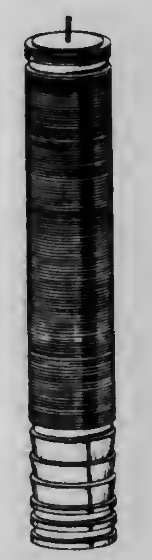
221,810
TRAFFIC SIGNAL
John M. Kiniry, Satellite Beach, Anthony Finazzo, Indian Harbor Beach., and John R. Carroll, Satellite Beach, Fla., assignors to Tri-Vec, Inc., Satellite Beach, Fla.
Continuation-in-part of design application Ser. No. 12,234, June 6, 1968. This application Aug. 11, 1969, Ser. No. 18,631
Term of patent 14 years
Int. Cl. D29—*99*

U.S. Cl. D72—1



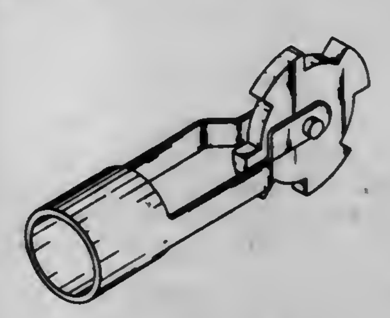
221,811
CANDLE
Wilfred L. Reiher, Sun City, Ariz., assignor to Candle World
Filed Sept. 23, 1968, Ser. No. 13,667
Term of patent 14 years
Int. Cl. D26—*05*

U.S. Cl. D73—1



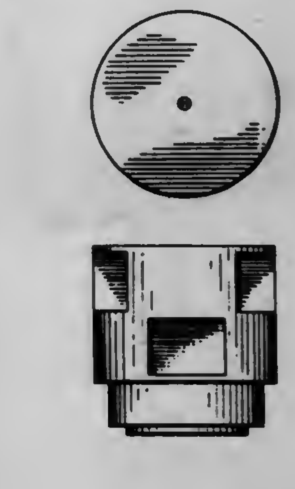
221,812
MARKING WHEEL ATTACHMENT FOR AN INK MARKER
John D. Locatelli, 4014 35th Ave. SW., Seattle, Wash. 98126
Filed May 15, 1970, Ser. No. 23,019
Term of patent 14 years
Int. Cl. D19—*06*

U.S. Cl. D74—13



221,813
INVERTIBLE ROTATABLE DISPLAY STAND
Allan M. Patrick, 5990 Veronique St., Ville Brossard, Quebec, Canada
Filed Oct. 2, 1969, Ser. No. 19,376
Term of patent 14 years
Int. Cl. D6—*01*

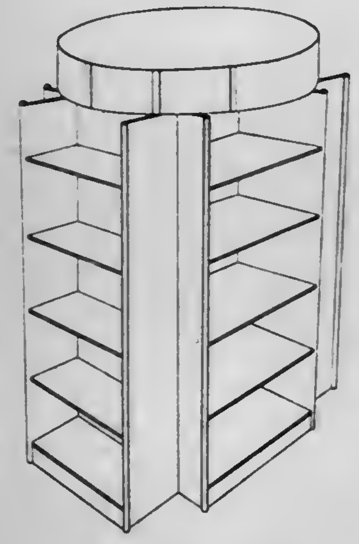
U.S. Cl. D80—9



221,814

MERCHANDISE DISPLAY STAND

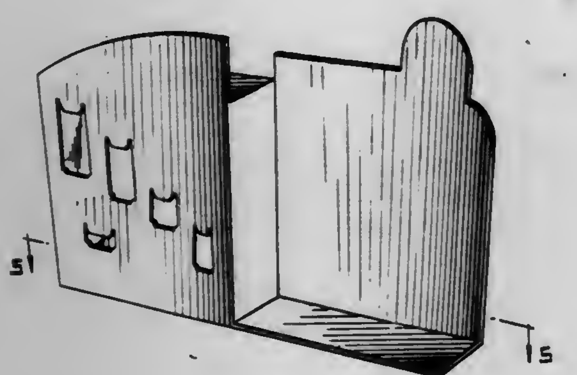
William S. Leath, Birmingham, Ala., assignor to Ebsco Industries, Inc.
Original design application Feb. 24, 1969, Ser. No. 15,865. Divided and this application Oct. 17, 1969, Ser. No. 19,840
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D80—9



221,815

DISPLAY STAND OR SIMILAR ARTICLE

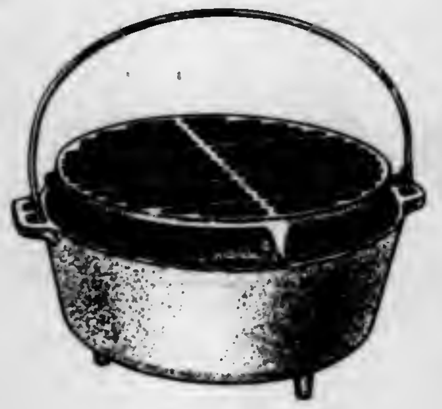
Jay F. Schweickart, deceased, late of Lancaster, Ohio, by Beverly J. Schweickart, administratrix, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Feb. 17, 1970, Ser. No. 21,464
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



221,816

COOKING GRILL

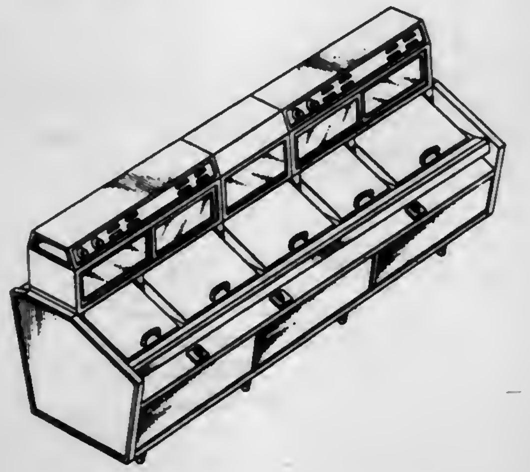
Robert M. Bryan, Birmingham, Ala., assignor to Atlantic Stove Works, Inc.
Filed July 24, 1969, Ser. No. 18,391
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



221,817

FISH FRYING RANGE

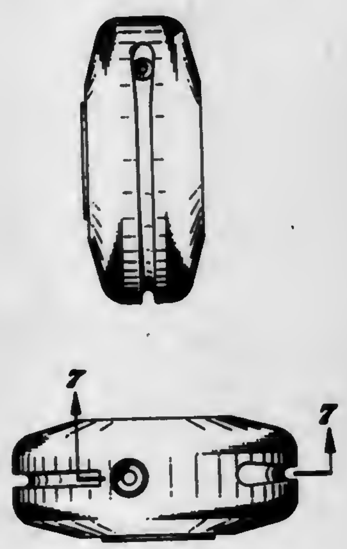
Dean Hutchison, Sacramento, Calif., assignor to Dean Industries, Ltd., Inglewood, Calif.
Filed Apr. 23, 1969, Ser. No. 16,861
Term of patent 7 years
Int. Cl. D7—*04*
U.S. Cl. D81—10



221,818

IMPLANTABLE MEDICAL-ELECTRONIC CIRCUITRY

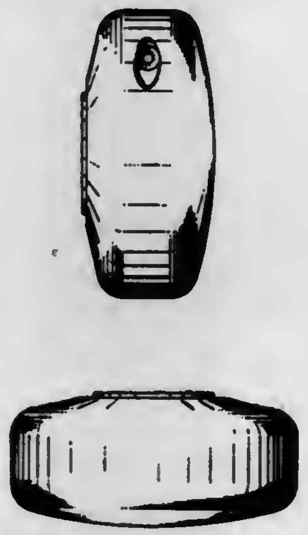
William M. Chardack, Buffalo, N.Y., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Oct. 7, 1969, Ser. No. 19,444
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



221,819

IMPLANTABLE MEDICAL-ELECTRONIC CIRCUITRY

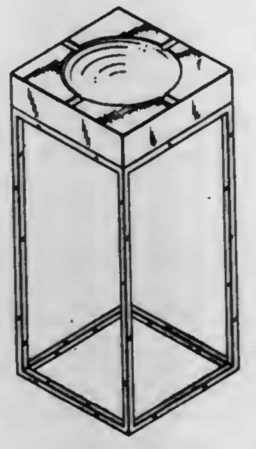
William M. Chardack, Buffalo, N.Y., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Oct. 7, 1969, Ser. No. 19,448
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



221,820

SMOKING STAND

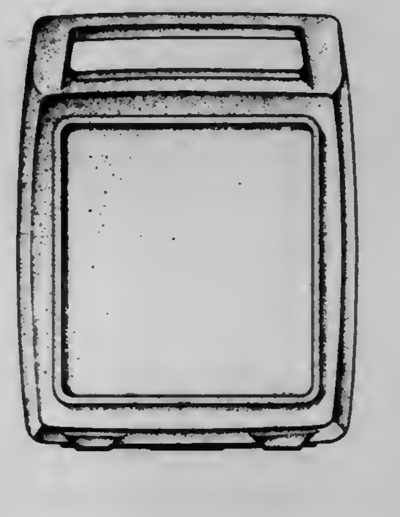
Miguel Rodrigo Mazure, San Isidro, Lima, Peru
Filed Feb. 26, 1970, Ser. No. 21,636
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2



221,821

CARRYING CASE

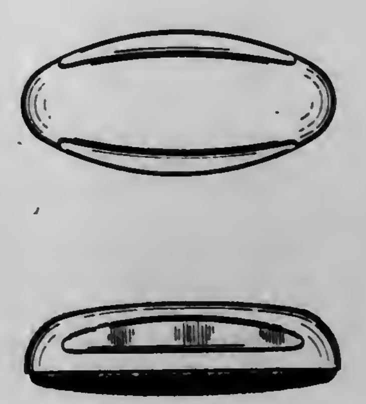
Donald Michael Genaro, Haworth, and Walter William Grote, Murray Hill, N.J., John Niel McGarvey, Drexel Hill, Pa., and Rembert Ryan Stokes, Middletown, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Aug. 3, 1970, Ser. No. 24,270
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



221,822

CLOTHING BRUSH

Raymond Kieves, Winnipeg, Manitoba, Canada, assignor to Imperial Products, Inc., Minneapolis, Minn.
Filed June 26, 1970, Ser. No. 23,690
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D86—13



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TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF SEPTEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Aambeeld, N.V.: *See—*
Mackay, Anthony J. R., 3,603,853.
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Abboud, Harry I.; and Furnish, Oren C., to Kaiser Aluminum & Chemical Corporation. Kiln preheat and drying section. 3,603,569, Cl. 263-32.
Aberg, Sven Ulrik, to Molnlycke Akiebolaget. Diaper. 3,603,314, Cl. 128-284.
Abromaitis, Andre T., to McGraw-Edison Company. Pointer-dial arrangement for dual pressure gauge. 3,603,282, Cl. 116-129.
Abromavage, John C.; and George, James F., to Arcoa, Incorporated. Eye testing system and apparatus. 3,603,674, Cl. 351-37.
Absler, Howard K.: *See—*
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Adams, John: *See—*
Manley, Brian William; Schagen, Pieter; and Adams, John,3,603,832.
Adams, Max M.; and Underwood, Donald L., to General Electric Company Gillette Company, The. Pulse storage and count-out device Electrically heated hair roller with self-contained power source. 3,603,940, Cl. 219-222.
Addressograph-Multigraph Corporation: *See—*
Maloney, William R.; and Hallquist, Arthur L., 3,603,585.
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Adolff, Jurgen Martin; Heintschel-Heinegg, Egbert; and Loskant, Winfried, 3,602,968.
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Albright, Roy H.: *See—*
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Alexeev, Jury Alexandrovich; Seliber, Boris Abelevich; and Usmanov, Vladimir Bakirovich. Light-contact photo-sensitive measuring instrument with scale range indicators. 3,603,877, Cl. 324-97.
Alfa-Laval Aktiebolag: *See—*
Finch, Nigel, 3,603,292.
Alibert, Vernon F.; and Carey, Thomas H., to Columbia Research Laboratories, Inc. Transducer for detecting pressure changes in fluid flow. 3,603,152, Cl. 73-398.
Allaud, Louis A., to Schlumberger Technology Corporation. Method and device to measure the speed of water in a polyphase flow. 3,603,795, Cl. 250-83.3
Allen, Charles H.; and Leach, Charles E., to United States of America, Atomic Energy Commission. Thulium oxide heat source and method for forming same. 3,603,415, Cl. 176-10.
Allen, Willis W.: *See—*
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Allied Chemicals Corporation: *See—*
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Aloi, Anthony J., to General Electric Company. Firing mechanism for high rate of fire revolving battery gun. 3,603,201, Cl. 89-12.
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Anderson, Arthur H.; and Fox, Roger A. Pressurizing device for mobile units. 3,603,238, Cl. 98-64.
Anderson, Carl M., to Carrier Corporation. Pressure relief valve. 3,603,333, Cl. 137-70.
Anderson Electric Corporation: *See—*
Eddens, Fletcher C.; and Reed, Karl F., II, 3,602,956.
Anderson, Frank R.; and Castro, Albert J., to Westates Space-Era Products, Inc. Ribbon-inking machine. 3,603,283, Cl. 118-6.
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Aach, Allyn J., 3,602,916.
Angelo, Alfred, Inc.: *See—*
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Ansell, Willie T.; and McConnell, James C., to Western Electric Company. Apparatus for sensing the orientation of flat article having a raised portion on one side thereof. 3,603,441, Cl. 193-43.
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Murchison, Jerre M.; and Antonio, Alexander G.,3,603,996.

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  Jackman, Robert M.; and McDonald, William N., 3,603,182.
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Applied Technical Services, Inc.: *See—*
  Hills, James F., 3,603,547.
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  Glaesener, Ernest, 3,603,562.
Arblaster, Dennis. Throw-away condensate collector. 3,603,313, Cl. 128-275.
Arce, Henry L., to Ametek, Inc. Control device. 3,603,167, Cl. 74-388.
Archibald, Kenneth W. Sculptured bridge and sound post for stringed instruments. 3,603,193, Cl. 84-309.
Arcoa, Incorporated: *See—*
  Abromavage, John C.; and George, James F., 3,603,674.
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Arimura, Tohru; Kamata, Masamoto; Saito, Morio; and Okamoto, Terumi, to Nippon Kokan Kabushiki Kaisha. Computer control system for rolling metal strips using feed-forward and prediction. 3,603,124, Cl. 72-8.
Arimura, Yoshiaki, to Tokyo Shibaura Electric Co., Ltd. Position and direction detecting system using patterns. 3,603,728, Cl. 178-6.8
Arlasky, David F.; and Chapman, Robert W., to Chapman Performance Products, Inc. Adjustable vehicle stabilizing unit. 3,603,575, Cl. 267-34.
Armour, Donald F., to Monsanto Company. Compressible safety closure. 3,603,470, Cl. 215-9.
Arn. Kiekert Sohne, Firma: *See—*
  Grass, Johann, 3,603,632.
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Arnold, John B.: *See—*
  Arnold, Gerald D.; and Arnold, John B.,3,603,001.
Arnold, Loren Glenn; and Nelson, Richard Dale, to Deere & Company. Device for automatically landing a semi-integral moldboard plow. 3,603,405, Cl. 172-26.
Arnouat, Fernand R.: *See—*
  Le Dorh, Maurice F.; Le Goffic, Yves H.; and Arnouat, Fernand R.,3,603,737.
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Asahi Kogaku Kogy Kabushiki Kaisha: *See—*
  Nobusawa, Tsukumo, 3,603,799.
Ash, Bernard Edwin, to International Standard Electric Corporation. Acceleration control of machines. 3,603,842, Cl. 317-5.
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  Asher, Robert G.; and Asher, Frances E.,3,603,022.
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  Dilger, Lawrence; and Ashford, Ernest S.,3,603,481.
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  Albizati, Peter J.; Asin, Samson; Beers, Alfred B.; Child, Thomas A.; and Giangrande, Mario L.,3,603,366.
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  Wolber, Robert; and Assmus, Friedrich,3,603,075.
Associated Electrical Industries Limited: *See—*
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Atlantic Richfield Company: *See—*
  Braun, Philip H., 3,603,396.
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Attwood, Dennis P.; Syme, David M.; and Tuffill, Harold W., to International Business Machines Corporation. Micro programmed data processing system. 3,603,936, Cl. 340-172.5
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Jayne, Max L.; and Pihlblad, Robert W., to Sylvania Electric Products, Inc. Means for polarizing a connector assembly. 3,603,915, Cl. 339-186.

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- Kooi, Else, to U.S. Philips Corporation, mesne. Method of manufacturing a semiconductor device and device manufactured by said method. 3,602,982, Cl. 29-577.
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- Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Flexible tubes having inner sheath serving as mandrel for outer sheath and method of making same. 3,603,719, Cl. 174-47.
- Leoff, Arkady, to International Business Machines Corporation. Semiconductor wafer air slide with controlled wafer motion. 3,603,646, Cl. 302-29.
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- Leroux, Roger, to Societe Anonyme D. B. A. Disc for a disc brake. 3,603,434, Cl. 188-73.6
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- Levy, Donald; and Rusz, Tibor, to Donti Research Development Manufacturing Corporation. Minute volume alarm equipment. 3,603,955, Cl. 340-239.
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter 1—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Recognition of Attorneys and Agents, Standards of Conduct, and Patent Aplication Petitions

These rule changes eliminate present provision for the recognition and registration of firms of attorneys and agents for practice in patent and trademark cases, and permit registered attorneys and agents to file papers in patent applications without the need for filing powers of attorney or authorizations. The changes further establish the Code of Professional Responsibility of the American Bar Association as the standard of conduct for those practicing before the Patent Office insofar as the Code is not inconsistent with Patent Office rules. Other changes eliminate the present requirement for a petition or other express request for a patent and liberalize requirements as to inventor names.

The changes relating to the discontinuance of the recognition and registration of firms are intended to obviate problems incident to such registration such as, for example, the lack of certainty as to the responsibility of individual attorneys and agents for actions taken by registered nonpartnership business entities, such as professional corporations, the problems associated with the rights to firm names and registration numbers upon dissolution or reorganization of firms, and the recognition as "firms" of groups of attorneys or agents, such as parts of corporation organizations, when the attorneys and agents are not in fact associated as partners. Acceptance of papers filed in patent applications by registered attorneys and agents upon a representation that the attorney or agent is authorized to act in a representative capacity is for the purpose of facilitating responses on behalf of applicants in patent applications, and, further, to obviate the need for filing powers of attorney or authorizations of agent in individual applications when there has been a change in composition of law firms or corporate patent staffs. Interviews with a registered attorney or agent not of record will, in view of 35 U.S.C. section 122, be conducted only on the basis of information and files supplied by the attorney or agent.

Provision is made for an applicant to supply an address to receive correspondence from the Patent Office concerning his application, in addition to his residence address, so that the Patent Office may direct mail to any address of applicant's selection, such as a corporate patent department, a firm of attorneys or agents, or an individual attorney, agent, or other person. In connection with patent applications pending upon the effective date of the changes in which a firm is the only representative of record (and in connection with divisions and continuations thereof not requiring execution by the applicant), the address of the firm will be considered to be the correspondence address for the application. Powers of attorney and authorizations of agent in favor of registered individual attorneys and agents will, of course, continue to be recognized and accepted.

The amendments to §§ 1.344 and 2.13 are intended to provide a more definite and uniform standard of conduct for those engaged in practice before the Patent Office than do present rules. The Code of Professional Responsibility of the American Bar Association is incorporated by reference in the rule with a statement as to where copies thereof may be inspected or obtained. The rule specifies that the standards referred to are those set forth in the Code of Professional Responsibility as amended February 24, 1970, and the rule does not, therefore, refer to standards imposed by later amendments of the Code. Any standards in other Patent Office rules which are inconsistent with standards imposed by the Code (as, for example, the limitations in § 1.345(b) on the distribution of professional announcements and the duties imposed by § 1.205(b)) remain in force.

The elimination of the requirement for a petition requesting the grant of a patent and the relaxation of requirements as to the names of applicants are intended to simplify patent application procedures. Section 1.76 is being revoked as redundant in view of revisions in § 1.57.

Notice of proposed rule making regarding revocation of §§ 1.35 and 1.61 and revision of §§ 1.14, 1.21, 1.33, 1.34, 1.36, 1.51, 1.52, 1.57, 1.76, 1.341, 1.343, 1.344, 1.346, 1.347, 2.13, and 2.15 of Title 37, Code of Federal Regulations was published in the Federal Register of January 15, 1971 (36 F.R. 611). Interested persons were given an opportunity to participate in the rulemaking process through submission of comments in writing and at an oral hearing held on March 23, 1971. The rules are being adopted after full and careful consideration of all the material submitted. The departures from the published text reflect certain of the views expressed in the submitted material.

Effective date. This revision shall become effective on the date of its publication in the Federal Register (7–2–71).

In consideration of the comments received and pursuant to the authority contained in Section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), and Section 31 of that Act (66 Stat. 795; 35 U.S.C. 31), Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. In § 1.14, paragraph (a) is revised to read as follows:

§ 1.14 *Patent applications preserved in secrecy.*

(a) Except as provided in § 1.11(b) pending patent applications are preserved in secrecy. No information will be given by the Office respecting the filing by any particular person of an application for a patent, the pendency of any particular case before it, or the subject matter of any particular application, nor will access be given to or copies furnished of any pending application or papers relating thereto, without written authority in that particular application from the applicant or his assignee or attorney or agent of record, unless it shall be necessary to the proper conduct of business before the Office or as provided by this part.

* * * * *

2. In § 1.21, paragraph (h) is revised to read as follows:

§ 1.21 *Patent and miscellaneous fees and charges.*

* * * * *

(h) For registration of an attorney or agent:

For admission to examination for registration to practice, fee payable upon application	$35.00
On registration to practice	25.00

* * * * *

3. Section 1.33 is revised to read as follows:

§ 1.33 *Correspondence respecting patent applications and proceedings.*

(a) The residence and post office address of the applicant must appear in the oath or declaration if not stated elsewhere in the application. The applicant may also specify and an attorney or agent of record may specify a correspondence address to which communications about the application are to be directed. All notices, official letters, and other communications in the case will be directed to the correspondence address or, if no such correspondence address is specified, to an attorney or agent of record (see § 1.34(b)), or, if no attorney or agent is of record, to the applicant, or to any assignee of record of the entire interest if the applicant or such assignee so requests, or to an assignee of an undivided part if the applicant so requests, at the post office address of which the Office has been notified in the case. Amendments and other papers filed in the application must be signed: (1) By the applicant, or (2) if there is an assignee of record of an undivided part interest, by the applicant and such assignee, or (3) if there is an assignee of record of the entire interest, by such assignee, or (4) by an attorney or agent of record, or (5) by a registered attorney or agent not of record who acts in a representative capacity under the provisions of § 1.34(a). Double correspondence with an applicant and his attorney or agent, or with more than one attorney or agent, will not be undertaken. If more than one attorney or agent be made of record and a correspondence address has not been specified, correspondence will be held with the one last made of record.

(b) An applicant who has not made of record a registered attorney or agent may be required to state whether he received assistance in the preparation or prosecution of his application, for which any compensation or consideration was given or charged, and if so, to disclose the name or names of the person or persons providing such assistance. This includes the preparation for the applicant of the specification and amendments or other papers to be filed in the Patent Office, as well as other assistance in such matters, but does not include merely making drawings by draftsmen or stenographic services in typing papers.

4. Section 1.34 is revised to read as follows:

§ 1.34 *Recognition for representation.*

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent Office in a patent case, his personal appearance or signature shall constitute a representation to the Patent Office that, under the provisions of this part and the law, he is authorized to represent the particular party in whose behalf he acts. In filing such a paper, the attorney or agent should specify his registration number with his signature. Further proof of authority to act in a representative capacity may be required.

(b) When an attorney or agent shall have filed his power of attorney, or authorization, duly executed by the person or persons entitled to prosecute the application, he is a principal attorney of record in the case. A principal attorney or agent so appointed, may appoint an associate attorney or agent who shall also then be of record.

§ 1.35 [*Revoked*]

5. Section 1.35 is revoked.
6. Section 1.36 is revised to read as follows:

§ 1.36 *Revocation of power of attorney or authorization; withdrawal of attorney or agent.*

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of his power of attorney or authorization, and the applicant will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of his own selection.

7. Section 1.51 is revised to read as follows;

§ 1.51 *General requisites of an application.*

Applications for patents must be made to the Commissioner of Patents. A complete application comprises:

(a) A specification, including a claim or claims, see §§ 1.71 to 1.77.

(b) An oath or declaration, see §§ 1.65 and 1.68.

(c) Drawings, when necessary, see §§ 1.81 to 1.88.

(d) The prescribed filing fee. (See 35 U.S.C. section 41 for filing fees.)

8. In § 1.52, paragraph (a) is revised to read as follows:

§ 1.52 *Language, paper, writing, margins.*

(a) The specification and oath or declaration must be in the English language. All papers which are to become a part of the permanent records of the Patent Office must be legibly written or printed in permanent ink.

* * * * *

9. Section 1.57 is revised to read as follows:

§ 1.57 *Signature.*

The application must be signed by the applicant in person. The signature to the oath or declaration will be accepted as the signature to the application provided the oath or declaration is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims. Full names must be given, including at least one given name without abbreviation together with any other given name or initial.

§ 1.61 [*Revoked*]

10. Section 1.61 is revoked.

§ 1.76 [*Revoked*]

11. Section 1.76 is revoked.
12. In § 1.77, paragraph (h) is revised to read as follows:

§ 1.77 *Arrangement of application.*

* * * * *

(h) Signature. (See § 1.57.)

§ 1.341 [*Amended*]

13. Section 1.341 is amended by revoking paragraph (d).
14. Section 1.343 is revised to read as follows:

§ 1.343 *Persons not registered or recognized.*

Only persons who are registered or given limited recognition as provided in § 1.342 will be permitted to prosecute patent applications of others before the Patent Office.

15. Section 1.344 is revised to read as follows:

§ 1.344 *Professional conduct.*

Attorneys and agents appearing before the Patent Office must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended February 24, 1970, insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the Solicitor, U.S. Patent Office, Room 11C04, Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 E. 60th Street, Chicago, Ill. 60637.

16. Section 1.346 is revised to read as follows:

§ 1.346 *Signature and certificate of attorney.*

Every paper filed by an attorney or agent representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney or agent, except papers which are required to be signed by the applicant or party in person (such as the application itself and affidavits or declarations required of applicants). The signature of an attorney or agent to a paper filed by him, or the filing or presentation of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief, there is good ground to support it; and that it is not interposed for delay.

17. Section 1.347 is revised to read as follows:

§ 1.347 *Removing names from registers.*

Attorneys and agents, registered to practice before the Patent Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications. The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names so removed published in the OFFICIAL GAZETTE. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate.

18. Section 2.13 is revised to read as follows:

§ 2.13 *Professional conduct.*

Attorneys and other persons appearing before the Patent Office in trademark cases must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended February 24, 1970, insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the Solicitor, U.S. Patent Office, Room 11C04, Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 East 60th Street, Chicago, Ill. 60637.

19. Section 2.15 is revised to read as follows:

§ 2.15 *Signature and certificate of attorney or agent.*

Every paper filed by an attorney at law or other person representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney at law or other person except those papers which are required to be signed by the applicant or party. The signature of an attorney at law or such other person to a paper filed by him, or the filing of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief there is good ground to support it; and that it is not interposed for delay.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for
Science and Technology.

[FR Doc. 71-9387; Filed 7-1-71; 8:49 am]

Published in 36 F.R. 12616, July 2, 1971

Establishment of Manual of Trademark Examining Procedure

Preliminary work has begun on the preparation of a Manual of Trademark Examining Procedure.

Directives on trademark examining procedure will be issued by the Patent Office from time to time and, when appropriate, will be included in the Manual at a later date. The directives will be numbered sequentially and those issued prior to publication of the Manual will be designated as Series 1. These directives will constitute the guidelines for the examination of trademark applications.

Trademark Examining Directives are available through the Superintendent of Documents, Washington, D.C., 20013 at an annual subscription of $1.50 plus 50¢ for foreign mailing.

ROBERT GOTTSCHALK,
July 27, 1971. *Acting Commissioner of Patents.*

Printing of Chemical Patents

In view of financial and scheduling considerations associated with the closing of Fiscal Year 1971, no chemical patents will appear in the patent issues of August 24 and 31, and September 7 and 14, 1971. Chemical patents will again be issued on September 21, 1971.

RICHARD A. WAHL,
July 6, 1971. *Acting Commissioner of Patents.*

Re: Trademarks

[37 CFR Part 2]

ACCESS TO PENDING APPLICATIONS

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) the Patent Office proposes to revise § 2.27 of Title 37, Code of Federal Regulations as set forth below.

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before October 15, 1971. No oral hearing will be held.

The only substantive change made in § 2.27 is elimination of the requirement to show good cause for access to pending applications. The amendment is intended to liberalize access to pending trademark applications. A written request for access will continue to be required, however, so that a record of those persons having access to pending applications may be maintained. The proposed amendment also restructures the form of the rule by dividing it into four sections for easier reading.

The text of the proposed revised section is as follows:

§ 2.27 *Pending application index; access to applications.*

(a) An index of pending applications including the name and address of the applicant, a reproduction or description of the mark, the goods or services with which the mark is used, the class number, the dates of use, and the serial number and filing date of the application will be available for public inspection as soon as practicable after filing.

(b) Access to the file of a particular pending trademark application will be permitted prior to publication under § 2.81 upon written request.

(c) Decisions of the Commissioner and the Trademark Trial and Appeal Board in applications and proceedings relating thereto are published or available for inspection or publication.

(d) After a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

Approved: August 9, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for
Science and Technology.

[FR Doc. 71-12161; Filed 8-19-71; 8:45 am]

Published in 36 F.R. 16194; Aug. 20, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,600,236, S. J. Gibel, MUFFLER WITH A PLURALITY OF PASSAGES; **3,380,553,** same, EXHAUST MUFFLER WITH EXPANSION CHAMBERS IN INLET COVER DOME, **filed** Mar. 24, 1971, D.C., N.D. Ohio (Cleveland), Doc. 71-C-281, *Allied Witan Company* v. *Fabco-Air, Inc.*

2,611,813, Sharpless and Eichert, Jr., MAGNETIC DATA STORAGE SYSTEM, **filed** Apr. 10, 1964, Ct. of Cl., Washington, D.C., Doc. 99-64, *Technitrol, Inc.* v. *The United States.* Four claims (5, 16, 19 and 23) held representative. Defendant fully licensed under claim 16. Defendant licensed under all other claims except to the extent such claims are validly limited to the automatic reset feature. Case remanded to the trial commissioner to determine if claims represented by claims 5, 19 and 23 enforce the reset feature and if so whether patent is valid. If answers are affirmative then issue of infringement to be determined.

2,647,590, C. A. Anderson, Jr., HYDRAULIC ELEVATOR, **filed** May 13, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c865, *Advanced Hydraulics, Inc.* v. *Clark Equipment Company.* Claims 1 to 8 of patent are not infringed by defendants. Validity of patent is not in issue because patent expired Aug. 4, 1970, Apr. 26, 1971.

2,693,498, H. L. Penberthy, ELECTRODE ASSEMBLY FOR GLASS FURNACES, **filed** May 10, 1971, D.C., W.D. Wash. (Seattle), Doc. 9680, *Harvey L. Penberthy, Penberthy Electromelt, Inc.* v. *Chester K. Rhett, C. Rhett, Inc.*

2,703,277, Spendelow, Jr. and Crafts, NICEL-BASE ALLOY FOR HIGH TEMPERATURE SERVICE, **filed** May 5, 1971, D.C. Mass. (Boston), Doc. 71-980-J, *Cabot Corporation* v. *Cyclops Corporation.*

2,704,346, E. J. Schaefer, MOTOR CONTROL FOR SUBMERSIBLE SUMP PUMP, **filed** Apr. 6, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c849, *Franklin Electric Co.* v. *Universal Electric Supply Co., Universal Electric Co.*

2,707,985, F. C. Binnall, BAG MAKING MACHINE; **2,740,740,** same, METHOD OF MAKING BAGS, **filed** Apr. 28, 1971, D.C. Conn. (New Haven), Doc. 14372, *FMC Corporation* v. *Fischel Industries, Inc.*

2,740,740. (See 2,707,985.)

2,765,699, J. La Torre, BLIND BOLT UTILIZING DISTORTABLE COLLAR AND DEFORMABLE LOCKING NUT MEMBER, **filed** Apr. 12, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-877-HP, *National Screw & Manufacturing Co.* v. *Lockheed Aircraft Corp. et al.*

2,773,119, L. W. Parker, TUNING SYSTEM FOR RADIO AND TELEVISION, **filed** Apr. 20, 1971, D.C., S.D. Fla. (Miami), Doc. 71-603-C-CA, *Louis W. Parker* v. *Motorola, Inc. et al.*

2,774,951, Kinkaid and Hammell, TERMINAL CLIP, **filed** May 18, 1971, D.C., N.D. Ill. (Chicago), Doc. No. 71c1210, *AMP Inc.* v. *Ramex Mfg. Co.*

2,776,214, Lloyd and Harriman, METHOD OF TREATING EGG WHITES, **filed** Mar. 18, 1968, D.C. Del. (Wilmington), Doc. 3502-C, *Armour and Company* v. *Standard Brands, Inc.* Order of dismissal, on agreement, case dismissed with prejudice, May 3, 1971.

2,777,416, W. C. Messick, FIRE ALARM DEVICE, **filed** Apr. 19, 1971, D.C., E.D. Pa. (Philadelphia), Doc. CA-71-917, *Falcon Safety Products Inc.* v. *Standard Farrington Alarm Signal Corp. et al.*

2,800,631, Suess, Trenkler, Hauttmann and Rinesch, METHOD OF CARRYING OUT MELTING PROCESSES, **filed** Apr. 1, 1971, D.C. Ind. (Hammond), Doc. 71-H-91 (2), *Kaiser Industries Corporation et al* v. *Bethlehem Steel Corporation.* **Same, filed** Apr. 1, 1971, D.C., N.D. Ind. (Hammond), Doc. 71-H-92 (2), *Kaiser Industries Corporation et al.* v. *Inland Steel Company.* **Same, filed** Apr. 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c812, *Kaiser Industries Corporation et al.* v. *United States Steel Corporation.* **Same, filed** Apr. 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c816, *Kaiser Industries Corp. et al.* v. *International Harvester Company (Wisconsin Steel Division).* **Same, filed** Apr. 1, 1971, D.C. Del. (Wilmington), Doc. 4094, *Kaiser Industries Corporation et al.* v. *Wheeling-Pittsburgh Steel Corporation.* **Same, filed** Apr. 1, 1971, D.C. Del. (Wilmington), Doc. 4095, *Kaiser Industries Corporation et al.* v. *Ford Motor Company.* **Same, filed** Apr. 1, 1971, D.C., S.D. Ill. (Springfield), Doc. 4788, *Kaiser Industries Corporation et al.* v. *Granite City Steel Company.* **Same, filed** Apr. 1, 1971, D.C. W.D.N.Y. (Buffalo), Doc. C-1971-151. *Kaiser Industries Corporation et al.* v. *Republic Steel Corporation.*

2,812,898, E. H. Buell, REVERSE ACTION ROTORS FOR USE IN A JET PROPULSION SYSTEM; **2,871,982,** same, LUBRICATING, COOLING AND OIL SEALING SYSTEM FOR COUNTER ROTATING ENGINES, **filed** Dec. 17, 1970, D.C., N.D.N.Y. (Utica), Doc. 70-CV-447, *Gino Pietropaoli, executor for Ernest H. Buell, deceased* v. *United Aircraft Corporation.* Complaint dismissed without prejudice, Apr. 28, 1971.

2,871,982. (See 2,812,898.)

2,922,718, I. S. Saverslak, METHOD OF PREPARING COOKED FOWL; **3,036,922,** same, PROCESS OF PREPARING BONELESS COOKED POULTRY PRODUCT, **filed** Apr. 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c810, *Irving S. Saverslak* v. *Davis Cleaver Products Co.*

2,942,512. (See 3,038,363.)

2,949,053. (See 3,038,363.)

2,953,279, R. S. Coffman, SAFETY PRESSURE RELIEF DEVICE, **filed** June 2, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1326-F, *Black, Sivalls and Bryson, Inc.* v. *Ametek, Inc.*

2,960,328, M. C. Tate, WEIGHING APPARATUS AND SYSTEMS, **filed** Jan. 17, 1962, D.C., S.D.N.Y., Doc. 62-C-265, *The A. H. Emery Company* v. *Marcan Products Corporation et al.* Filed Judgment #71,429 in favor of plaintiff, Apr. 7, 1971.

2,976,576, Wichterle and Lim, PROCESS FOR PRODUCING SHAPED ARTICLES FROM THREE-DIMENSIONAL HYDROPHILIC HIGH POLYMERS; **3,220,960,** same, CROSS-LINKED HYDROPHILIC POLYMERS AND ARTICLES MADE THEREFROM, **filed** May 13, 1970, D.C., W.D.N.Y. (Buffalo), Doc. C-1970-212, *Griffin Laboratories, Inc.* v. *National Patent Development Corp. and Flexible Contact Lens Corporation.* Voluntary dismissal, May 14, 1971.

2,981,689, E. Albers-Schoenberg, SQUARE LOOP FERRITES, **filed** Feb. 24, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c497, *Electronic Memories & Magnetics Corp. etc.* v. *Control Data Corporation.*

3,005,375, L. Sherman, BLOOD TYPING SLICES, **filed** May 5, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1098-RJK, *Leonard Sherman* v. *Jack Rubin, doing business as Clini-Tek Specialties, Jackson Products, and Omni-Tek.*

3,033,988, H. E. Edgerton, METHOD OF AND APPARATUS FOR THE CONTROL OF ELECTRIC IMPULSES; **3,519,879,** F. T. Ogawa, FLASH APPARATUS WITH AUTOMATIC LIGHT TERMINATION HAVING GATING AND ANTICIPATION MEANS; **Re. 26,999,** F. P. Elliott, CONTROL SYSTEM FOR TERMINATING THE DISCHARGE THROUGH A FLASH LAMP, **filed** Feb. 26, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c515, *Honeywell, Inc., EG & G Inc.* v. *Metz Apparatewerke et al.*

3,036,922. (See 2,922,718.)

3,038,363, B. F. Miessner, ELECTRONIC PIANO; **2,942,512,** same; **2,949,053,** C. W. Andersen, TONE GENERATOR, **filed** May 24, 1971, D.C., N.D. Tex. (Dallas), Doc. CA-3-4803-C, *The Wurlitzer Company* v. *Electrokey, Inc. et al.* **Same, filed** May 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1146, *The Wurlitzer Company* v. *Neil A. Kjos Music Company.*

3,078,477, Schmid and Maciukiewicz, WALL CLOSET CARRIER, **filed** Feb. 27, 1970, D.C., N.D. Ohio (Cleveland), Doc. C70-192, *Zurn Industries, Inc.* v. *Josam Manufacturing Co.*

3,220,960. (See 2,976,576.)

3,238,736, H. K. Macintosh, LIQUID NITROGEN FREEZING SYSTEM; **3,345,828,** Klee and Berreth, PARALLEL FLOW CRYOGENIC FREEZER; **3,403,527,** Berreth, Howells, Klee and Miller, TRANSVERSE-PARALLEL FLOW CRYOGENIC FREEZR, **filed** Mar. 26, 1969, D.C., M.D. Fla. (Tampa), Doc. 69-132-C, *Elmwood Liquid Products Inc. and Reliquifier Corporation of America* v. *Singleton Packing Corporation and Air Products & Chemicals Inc.* Action dismissed, counterclaims dismissed on merits, Mar. 11, 1971.

3,345,828. (See 3,238,736.)

3,380,553. (See 2,600,236.)

3,381,332. (See D. 182,889.)

3,381,333. (See D. 182,889.)

3,403,527. (See 3,238,736.)

3,513,718, J. J. Tomecek, CONTROL SYSTEM ADJUSTMENT MEANS, **filed** Mar. 1, 1971, D.C., E.D. Mich. (Detroit), Doc. 361,123, *Robin Products Co.* v. *Jerry J. Tomecek.*

3,519,879. (See 3,033,988.)

Re. 25,999. (See 3,033,988.)

D. 182,889, V. K. Fremstad, HINGE OR SIMILAR ARTICLE; **3,381,332,** Jerila and Fremstad, SELF-LATCHING HINGE; **3,381,333,** T. T. T. Jerila, SELF-LATCHING MECHANISM FOR HINGES, **filed** Mar. 19, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-650-WPG, *Ajax Hardware Manufacturing Corp.* v. *Jaybee Manufacturing Corporation.*

New Procedures for Processing Orders for Certified Copies When Material Is Not Available for Photocopying

The previous practice of the Document Services Division in handling customer's requests for certified copies of material not yet processed in the Application Division has been to return the order to the customer requesting him to reorder 30 days after receipt of his Official Filing Receipt.

In order to improve this procedure, as of August 2, 1971, all requests for certified copies of material that has not been processed in the Application Division and has not been placed on microfiche are processed in the following manner.

1. Each order is given a control number.
2. The customer is notified as follows:
   a. He will receive an acknowledgment of the receipt of his order.
   b. He will be given the assigned control number for ease of reference in case an inquiry is necessary.
   c. He will be informed that his order will be held in the Document Services Division until the copy can be reproduced from microfiche. No definite time can be given.
3. An Advance Order File has been set up in the Service Unit of the Document Services Division and the microfiche is checked daily.

For further service to its customers, the Document Services Division will furnish the Serial Number and Filing Date of the latest application available on microfiche for publication in the OFFICIAL GAZETTE.

ROBERT J. RISH,
Aug. 2, 1971. *Acting Assistant Commissioner*
for Administration.

Dedications

2,758,865.—*Winfred M. Brooks,* West Orange, N.J. SEAL. Patent dated Aug. 14, 1956. Dedication filed June 16, 1971, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,325,988.—*Norman E. Klein* and *Edgar Dare Bolinger,* Spartanburg, S.C. BALANCED ELASTICIZED MULTIFILAMENT YARN. Patent dated June 20, 1967. Dedication filed June 22, 1971, by the assignee, *Deering Milliken Research Corporation.*

Hereby dedicates to the Public the entire terminal portion of the term thereof falling on and after Jan. 5, 1977.

Disclaimers

3,373,265.—*Louis A. Smitzer,* Chicago, Ill. INFORMATION STORAGE AND RETRIEVAL PROCESS AND CODED RECORD CARD THEREFOR. Patent dated Mar. 12, 1968. Disclaimer filed Mar. 3, 1971, by the assignee, *Bell & Howell Company.*

Hereby enters this disclaimer to claims 2 and 6 of said patent.

3,552,469.—*Lee M. Corless,* Grosse Pointe Woods, Mich. TIRE BEAD SEATER. Patent dated Jan. 5, 1971. Disclaimer filed June 16, 1971, by the assignee, *Bruce Caulkins, Inc.*

Hereby enters this disclaimer to claims 10, 20, 24, 25 and 27 of said patent.

Certificates of Correction for the Week of Sept. 14, 1971

D. 220,316
D. 220,425
3,254,889
3,256,012
3,372,006
3,438,339
3,462,416
3,499,779
3,501,138
3,504,005
3,509,127
3,514,584
3,518,221
3,518,311
3,521,739
3,528,433
3,529,037
3,531,233
3,532,253
3,538,089
3,540,391
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3,546,604
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3,579,817
3,580,426
3,580,929

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 24, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-04-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	*3-05-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-15-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-03-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-24-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	12-11-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	*3-23-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-14-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-18-70
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	8-06-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-06-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	*5-14-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-04-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	9-11-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	7-10-70

* Date of Oldest Application (New)

Expiration of patents: The patents within the range of numbers indicated below expire during August 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,685,085 to 2,688,132, inclusive
Plant Patents	Numbers 1,294 to 1,299, inclusive

PATENTS

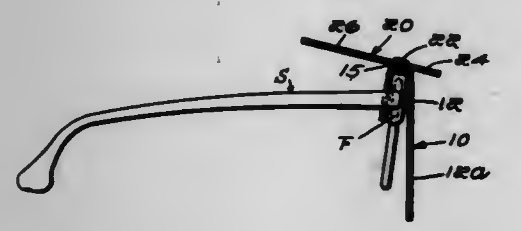
GRANTED SEPTEMBER 14, 1971

GENERAL AND MECHANICAL

3,604,013

EYE PROTECTOR FOR USE WITH SPECTACLES

Harold W. Hammond, 67 Hyslop Road, Brookline, Mass.
Filed Sept. 23, 1969, Ser. No. 860,202
Int. Cl. G02c *9/04*
U.S. Cl. 2—13 **3 Claims**

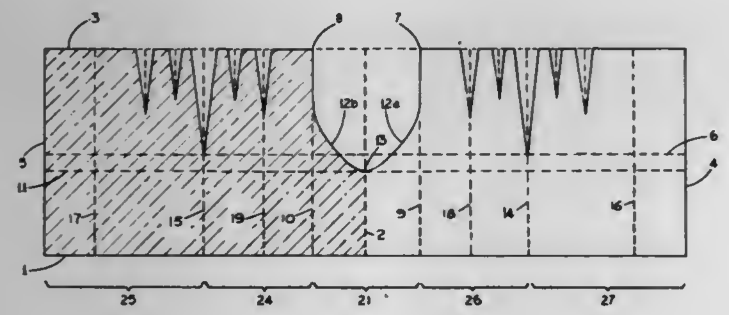


An eye protector has a visual member having two shading visual portions spaced oppositely apart which also serve as attaching or supporting means for mounting on a spectacle frame. An overhead shade, which is supported by said visual member, extends forwardly and rearwardly from the latter, and protects the eyes from overhead light.

3,604,014

SEMICULOTTE SKIRT

Yolande Saint-Arnaud, 3255 Ridgewood Ave. Apt. #6, Montreal 247, Quebec, Canada
Filed Apr. 18, 1969, Ser. No. 817,325
Claims priority, application Canada, Jan. 31, 1969, 41,709
Int. Cl. A41d *1/14*
U.S. Cl. 1—212 **2 Claims**



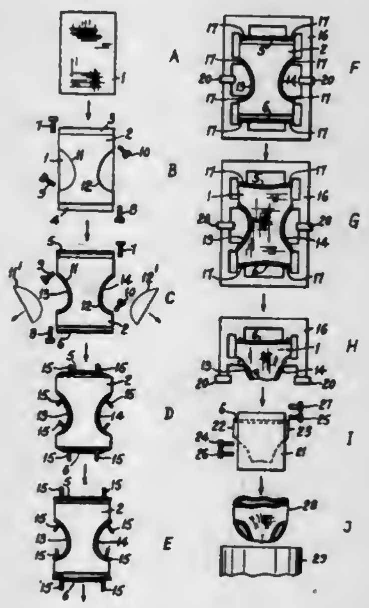
A semiculotte skirt which is wrapped around the body of the wearer such that it passes in front of the right leg to the back of the wearer, between the legs to the front of the wearer and around the front of the left leg to the back of the wearer.

3,604,015

WEARING APPAREL

Michael D. Dove, Hertford, England, assignor to Courtaulds Limited, London, England
Filed Oct. 23, 1968, Ser. No. 769,936
Claims priority, application Great Britain, Oct. 26, 1967, 48738/67
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 **7 Claims**

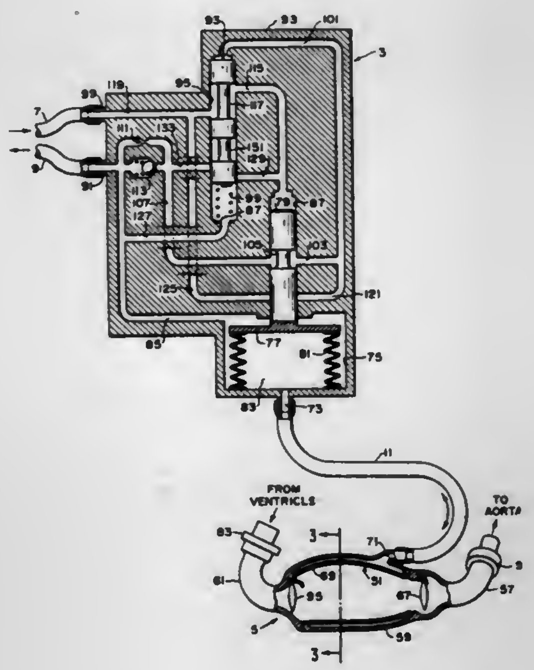
A continuous process for manufacturing briefs in which a flat blank is formed having side edges with leg-shape cutouts and end edges destined to form the waist. Elastic is bound to the leg holes and the end edges under controlled tension, and the blank is folded and the sides joined to form the garment.



3,604,016

MULTIPLE FUNCTION BLOOD COUPLER

Thomas C. Robinson, West Newton, and Fred N. Huffman, Sudbury, both of, Mass., assignors to Thermo Electron Corporation, Waltham, Mass.
Filed Feb. 6, 1969, Ser. No. 797,068
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **4 Claims**

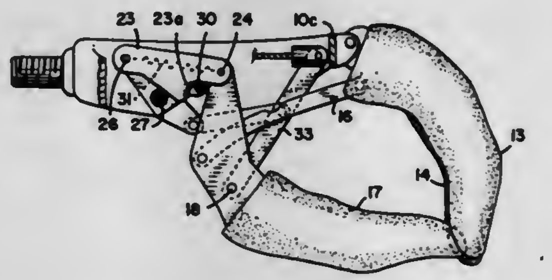


An integrated blood coupler for a totally implantable heart-assist circulatory support system incorporating a diaphragm-type blood pump adapted to be connected between the left ventricle and aorta of the host, in which the pumping energy for the assist pump is produced by an implantable power supply that inherently produces waste heat as a byproduct, wherein the waste heat is discharged to the blood stream through the diaphragm of the blood pump, and in which the diaphragm serves as the physiological sensor for producing pressure signals to synchronize the assist system with the circulatory system of the host.

3,604,017

SPRING-ACTUATED PROSTHETIC HAND WITH A FRICTIONAL LATCHING CLUTCH MEANS

Robert N. Brown, Los Gatos, and Glenn E. Brown, Cupertino, both of, Calif., assignors to D. W. Dorrance Co., Inc., Campbell, Calif.
Continuation-in-part of application Ser. No. 812,194, Apr. 1, 1969. This application Nov. 10, 1969, Ser. No. 875,205
Int. Cl. A61f *1/06*
U.S. Cl. 3—12.7 **2 Claims**

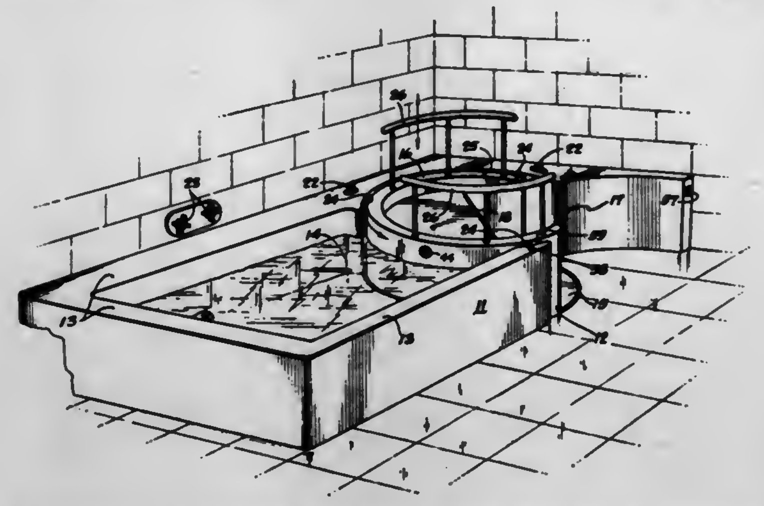


A prosthetic hand of lightweight construction having pivotally attached fingers including a forefinger, a middle finger proximal to the forefinger, and thumb which open and close simultaneously. The thumb is provided with an extension that is connected to a rotatable member which is spring biased to move the fingers into their closed position for gripping an object. The lever connecting the thumb extension to the rotatable member is provided with a frictional clutch surface that restrains moving of the fingers from their closed position. unless an excessive predetermined opening force is exerted on the fingers which could damage the hand. A cable-actuated lever is connected to the rotatable member for overcoming this restraining action and moving the fingers on their pivots to the open position to release their grip on said object. The frame holding these fingers and members is encased in a human-looking self-skin foam.

3,604,018

BATHTUB

Malachy J. Moran, 13875 Saratoga Ave., Saratoga, Calif.
Filed Dec. 24, 1969, Ser. No. 887,923
Int. Cl. A47k *3/00*
U.S. Cl. 4—173 **6 Claims**

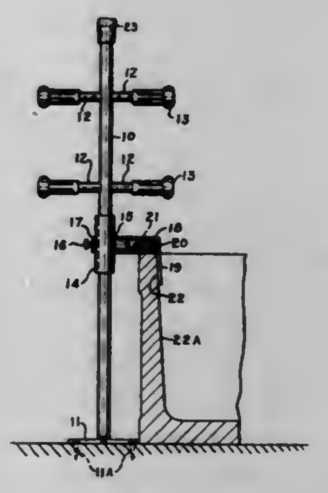


A bathtub for invalids includes a fixed part and a rotatable drum or cylindrical part. The fixed part includes sidewalls on three sides with the other side abutted against the rotatable part. The rotatable part has cylindrical sidewalls with a segment open to provide an entrance into the bathtub. With drum part rotatably positioned such that the open segment faces away from the fixed part of the tub, the cylindrical walls abut against and span across the open side of the fixed part of the bathtub to retain water therein. An invalid may sit on a seat within the drum part and the drum may be rotated until the open segment faces the open side of the fixed part of the bathtub. The seat may then be lowered to the bottom of the tub or to any desired intermediate level. To get out of the tub, the seat is raised and then the drum is rotated until the open segment faces away from the remainder of the bathtub. Alternatively, an invalid may enter and stand in the drum part with the seat in a lowered position recessed in the bottom of the drum. A hand rail may be raised from a recessed position in the cylindrical wall for the invalid to grasp while standing and while the drum is rotating for either entrance into or departure from the bathtub.

3,604,019

BATHTUB SAFETY APPLIANCE

Alton B. Garner, Box 727, Wichita Falls, Tex.
Filed Nov. 17, 1969, Ser. No. 877,239
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 H **15 Claims**

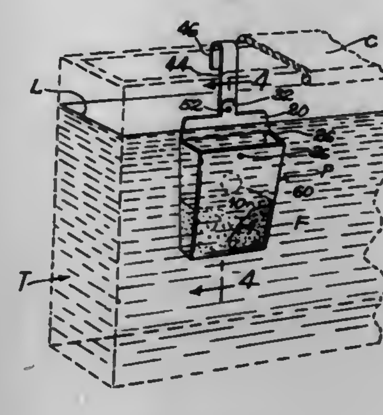


A safety device for assisting persons into and out of a bathtub. The safety device is equipped with means that facilitate easy attachment to the tub and the floor while providing supporting means for the user.

3,604,020

TOILET TANK SANITIZING DISPENSER

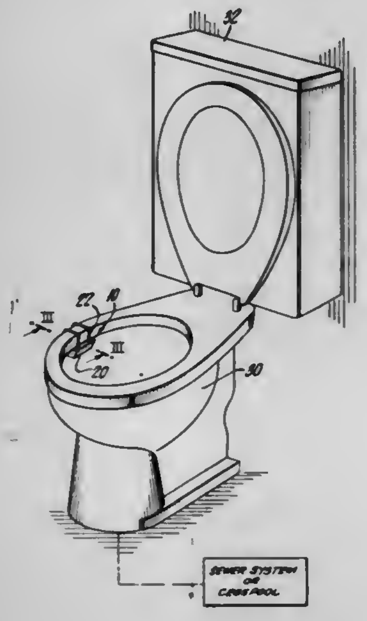
Nickolaus Moisa, 301 Madison St., Yorkville, Ill.
Filed June 25, 1969, Ser. No. 836,263
Int. Cl. E03d *9/02*
U.S. Cl. 4—228 **8 Claims**



A dispenser package for sanitizing toilet tanks and bowls including a body portion suspendible below normal water level in a toilet tank and a strap hanger for so suspending the body portion. The body portion contains a sanitizing formulation. The package provides a pair of openings for circulation of water through the package. The formulation contains a relatively insoluble dispenser aid such as ground gravel to maintain the formulation's water permeability during the life of the package.

3,604,021
URINAL TABLET

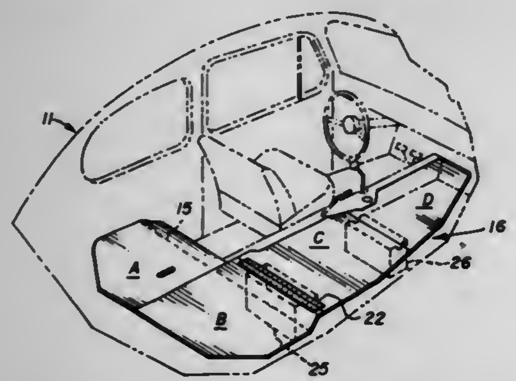
Albert C. Nolte, Jr., Oyster Bay Cove, N.Y., assignor to Elton Industries Corporation, New York, N.Y.
Filed May 15, 1969, Ser. No. 824,999
Int. Cl. E03d *9/02*
U.S. Cl. 4—231 **4 Claims**



A tablet for use in a toilet, urinal, or the like which has an ingredient a substance for increasing the decompositional rate of the waste material in a cesspool sewage system or the like.

3,604,022
FOLDABLE PLATFORM ASSEMBLY FOR VEHICLES

Jack V. Smith, 502 Racine Ave., Aurora, Colo.
Filed May 16, 1969, Ser. No. 825,294
Int. Cl. A47d *7/00*
U.S. Cl. 5—118 **4 Claims**

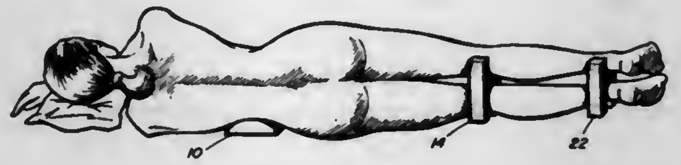


A foldable floor platform assembly has flat panel sections hingedly connected together at adjacent edges which extend to provide a generally level support area above the floor of a vehicle and fold into a compact portable form which may be carried within the vehicle. Collapsible box-shaped base units support the connected ends of the panel sections along and on both sides of the hinged connections with the free ends adapted to engage the floor surface in the vehicle to support the assembly in a generally level position.

3,604,023
TRUE LATERAL BODY POSITIONING ARRANGEMENT FOR RADIOGRAPHY

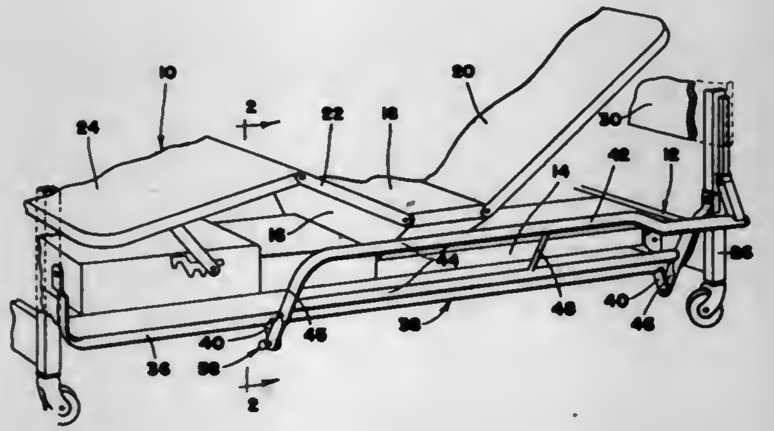
Edmond J. Lynch, 1511 Midvale Ave., Catonsville, Md.
Filed Aug. 27, 1969, Ser. No. 853,396
Int. Cl. A47c *21/00;* **A 47g** *9/00*
U.S. Cl. 5—327 **2 Claims**

A body and support arrangement is provided for adjusting and supporting a patient lying laterally recumbent upon flat examination tables where the body members must be maintained immobile and aligned as nearly as possible parallel with respect to the top of the table and positioned as if in a lateral, vertical stance. A plurality of positioner blocks are provided having body member accepting notches or bridges and surfaces for holding the ankles and knees, and supporting the abdomen and pelvis in a true lateral position.



3,604,024
SNUBBER FOR SAFETY SIDES

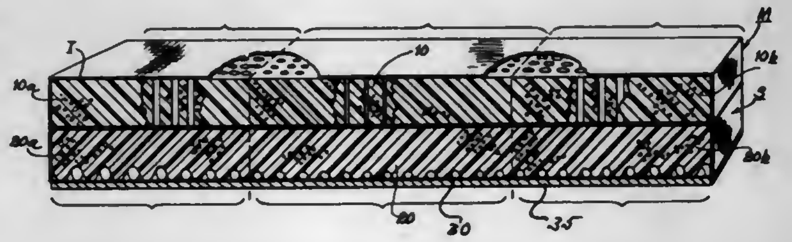
Xavier Walter Polanski, Lansing, Ill., assignor to Simmons Company, New York, N.Y.
Filed July 14, 1969, Ser. No. 841,512
Int. Cl. A47c *7/50, 22/00*
U.S. Cl. 5—331 **5 Claims**



A retarding device for braking the free fall of a safety side on an invalid bed or the like, comprising a wedge on at least one of two relatively rotatable members that are in sliding contact with one another and arranged so that the wedge serves to increase the pressure of the sliding contact as the safety side swings down from its erected position to its stowed position. The wedge is molded of resiliently compressible material in a form to facilitate its installation at a pivot joint, and to prevent its rotation with respect to one of the two relatively rotatable members.

3,604,025
FOAM BEDDING

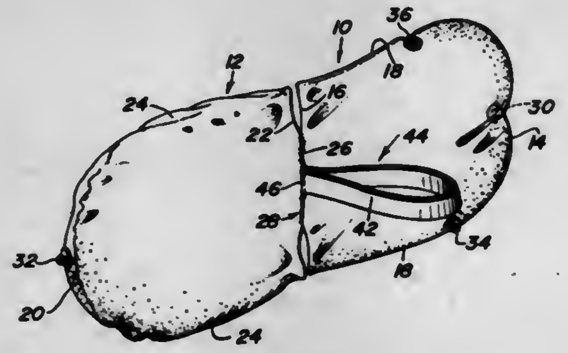
Billy P. Mims, Oak Park, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 18, 1969, Ser. No. 817,478
Int. Cl. A47c *23/00, 25/00*
U.S. Cl. 5—345 **1 Claim**



Foam resin bedding for use a box spring and mattress, both having areas of differential resistance to weight, the middle area having greater resistance than the end areas. This is accomplished in the box spring by forming on one side integral tapered protuberances extending normally from the face thereof, the protuberances in the midportion being smaller and closer spaced than those at the ends. In the mattress element the differential resistance is obtained by varying the size and or number of the pins extending through the foam body in the mold, as regards the midportion and end portions of the molded body.

3,604,026
TRAVEL PILLOW

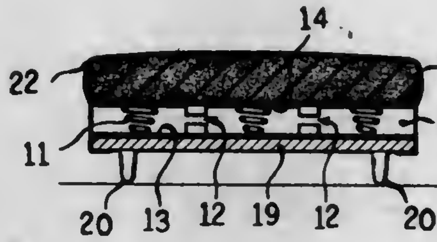
Bernice Holmen Scheips, 1011 E. St., Fairbury, Nebr.
Filed Oct. 27, 1969, Ser. No. 869,460
Int. Cl. A47g *9/00*
U.S. Cl. 5—337 **6 Claims**



A foldable and spreadable pillow wherein duplicate padlike half-sections when folded and fastened together provide a pillow which is comparable in size and shape with individual headrests currently used on the backrests of automobile seats. These suitably cushioned half-sections have limited median portions of side-by-side edge portions stitched and thus hinged together. Outer marginal edges are provided with connectable snap fasteners which hold the half-sections folded. Median portions of one half-section also have snap fasteners which permit said half-section to be manually folded and doubled upon itself and crammed and lodged in a limited holding space whenever available. Strap-Type handles are also provided.

3,604,027
CONSTRUCTION FOR BED OR CHAIR

Shunichi Konno, 13, 17-Ban Daito-Cho Ashiya, Hyogo, Prefecture, Japan
Filed Aug. 4, 1969, Ser. No. 847,061
Int. Cl. A47c *23/00*
U.S. Cl. 5—351 **2 Claims**

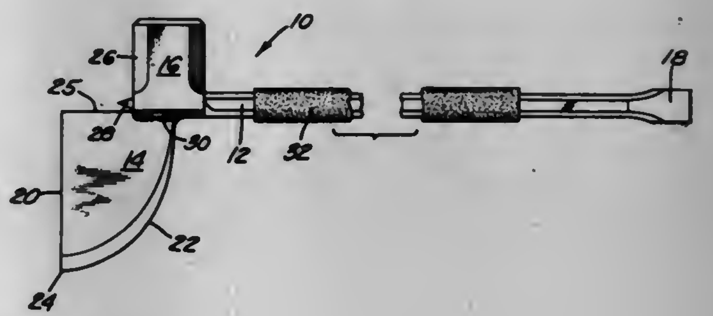


A bed or chair construction is provided with a plurality of helical springs for resiliently supporting a horizontal top plate above the frame. At least one electromagnet is secured to each of the top plate and the frame, and the electrical circuit for the electromagnets energizes the electromagnets in such a manner that the facing portions of the electromagnets on the top plate and on the frame have the same magnetic polarity. The electrical circuit also includes a variable resistor for varying the magnetic force.

3,604,028
RESCUE AXE

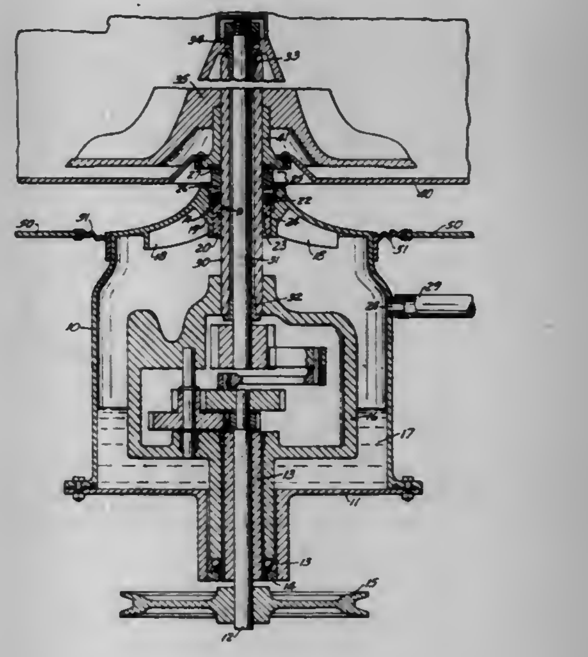
Jerry Wardwell, 40106 Lynnwood, Hemet, Calif.
Filed Jan. 8, 1969, Ser. No. 789,784
Int. Cl. B25f *1/00*
U.S. Cl. 7—8.1 **3 Claims**

A combination tool for use by wreckers, firemen, and other rescue workers in cutting through sheet metal structures, such as wrecked automobiles, to make an opening through which trapped persons can escape. The tool comprises an elongated handle havinga pointed axe blade and sledge hammer head at one end, together with metal-gripping means whereby the blade can be driven into sheet metal and then worked with a lever action in the manner of a can opener, to cut an opening in the sheet metal. The sledge hammer head lends mass to the axe blade, and also provides means for breaking solid obstacles, or for driving stakes. At the other end of the handle is a pry bar.



3,604,029
METHOD AND APPARATUS FOR SEALING AND LUBRICATING A WASHING MACHINE TRANSMISSION

Neil A. Bain, 1024 E. Rose St., St. Paul, Minn.
Filed Aug. 20, 1969, Ser. No. 851,693
Int. Cl. D06f *35/00;* **F16j** *15/54;* **F16n** *1/00*
U.S. Cl. 8—159 **3 Claims**

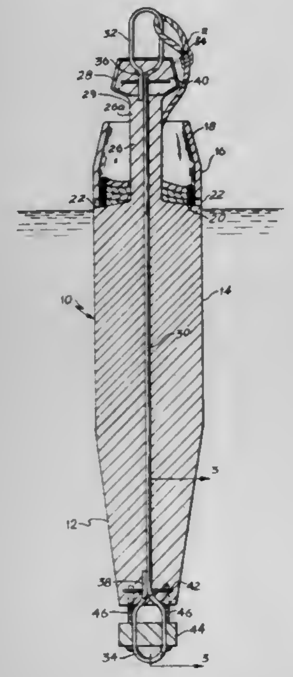


The normally frequent tendency of certain automatic washers to soil clothes by oil leaking from the transmission is dramatically reduced by placing a snug seal around the transmission drive tube and venting the gear case oil bath to the atmosphere.

3,604,030
BUOY FOR MOORING VESSELS

Harold E. Claflin, 288 Bar Cliff Ave., Chatham, Mass.
Filed June 30, 1969, Ser. No. 837,846
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 **2 Claims**

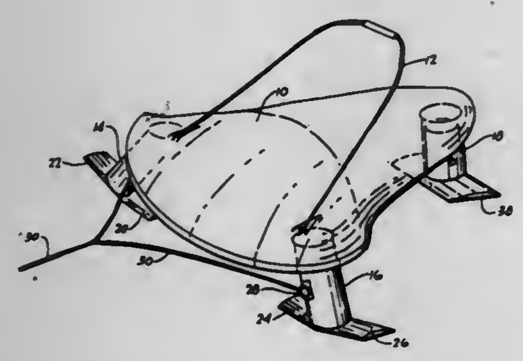
A buoy for a floating vessel has a compartment at the upper portion, in which to store and protect a mooring line or rope when not in use. Above the compartment is an entrance defined by a neck and a head, above it, which receives said line on its way into the compartment.



3,604,031

HYDROFOIL BOARD

Michael J. Cahill, 53A Beaver Terrace Circle, Framingham, Mass., and Ernest G. La Casse, 2008 Bentely Place, Charlotte, N.C.
Filed Feb. 25, 1969, Ser. No. 802,032
Int. Cl. A63c *15/00;* **B63b** *1/30*
U.S. Cl. 9—310 C **4 Claims**



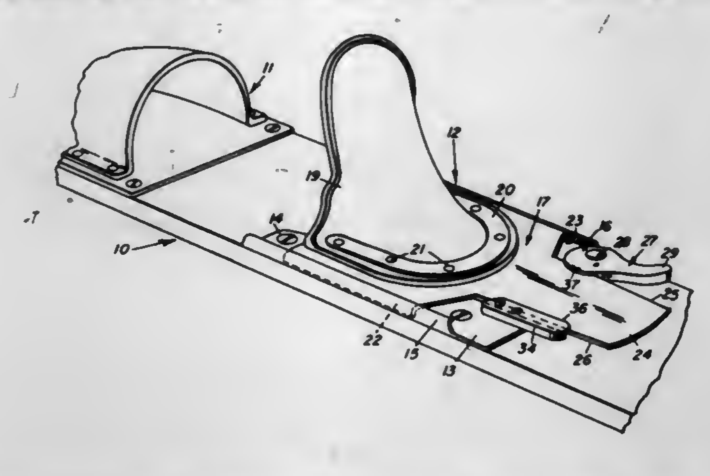
A generally flat generally horizontal platform is provided with a plurality of generally downwardly extending struts secured at upper ends to the bottom surface of the platform and at bottom ends to corresponding inclined foils. The apparatus is adapted to be towed in water behind a motor boat and to be ridden in the same manner as water skis and the like. In use the platform rises vertically out of the water to a height determined by the length of the struts.

3,604,032

ADJUSTABLE WATER SKI BINDING

Adolf Kiefer, and William J. Meucci, both of 2051 Railroad Ave., Northfield, Ill.
Filed May 26, 1969, Ser. No. 827,757
Int. Cl. A63c *15/06*
U.S. Cl. 9—310 AA **19 Claims**

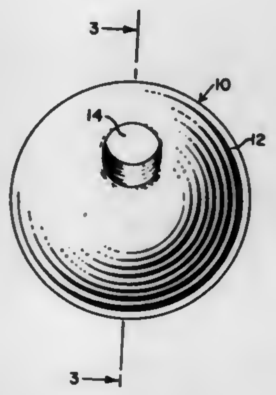
A water ski binding including two assemblies for engaging the foot of the user, one of the assemblies being slidable toward and away from the other assembly for adjustment to the size of the foot, the movable assembly including means which permits unrestrained movement toward the other assembly, but locks the assembly in its adjusted position.



3,604,033

BUOYANT AQUATIC RECREATIONAL DEVICE

John L. Lino, 8200 E. Blvd., North Bergen, N.J.
Filed May 2, 1969, Ser. No. 821,326
Int. Cl. B63c *9/10*
U.S. Cl. 9—340 **3 Claims**

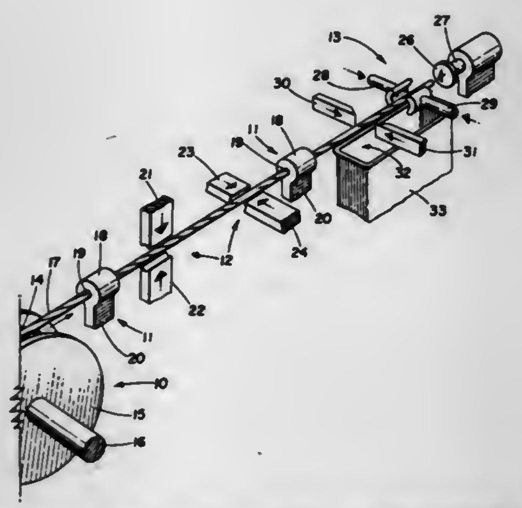


A buoyant aquatic recreational device of generally spherical shape having at least one opening therethrough which opening does not go through the geometrical center of the buoyant body and is sized to receive a person's arms so that when the body is placed in water under a human, it will support the human.

3,604,034

METHOD AND APPARATUS FOR MAKING NAILS WITH FLAT CIRCULAR HEADS

Walter Hermann Leistner, 97 Alamosa Drive, Willowdale, Ontario, Canada
Filed Jan. 7, 1969, Ser. No. 789,449
Int. Cl. B21g *3/20, 3/28*
U.S. Cl. 10—46 **10 Claims**



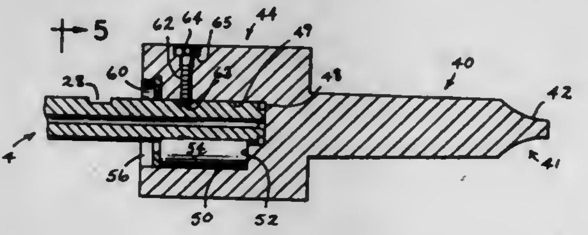
Apparatus and a method for making nails with flat circular heads and a shank of a noncircular cross-sectional shape and

the method comprises: unwinding drawn wire from a roll of wire and advancing the wire by an intermittent drive means; passing the wire through guide means to provide a straight length of wire; engaging a portion of the wire with die means to form a cylindrical portion on the wire having a circular cross-sectional shape and a length substantially sufficient to form the head of the nail; feeding the wire into a nail-making machine wherein the head is formed from the cylindrical portion and shearing the nail off at the end of the shank to form the nail.

3,604,035

FLOATING TAP AND TAP HOLDER

Grover Edward Hendricks, 2241 Lake Street, Niles, Mich.
Filed Feb. 5, 1968, Ser. No. 703,025
Int. Cl. B23g *1/00, 5/06, 5/14*
U.S. Cl. 10—129 **5 Claims**

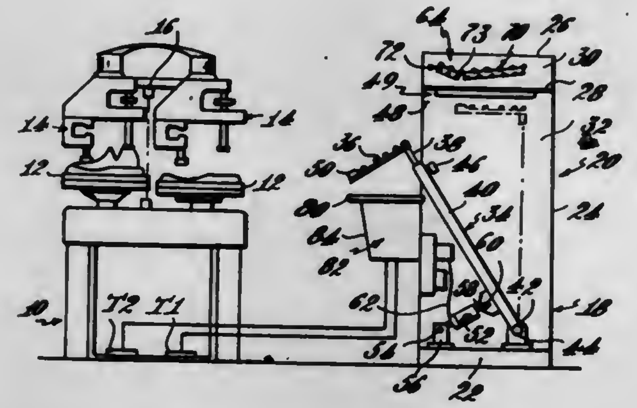


A tap and tap holder combination in which the tap has an elongated straight fluted shank. The tap holder has a shank portion for mounting in a machine spindle and a socket portion having an axial socket bore and a longitudinal internal groove mounting a longitudinal lug therein. The tap is loosely mounted within the socket bore with the longitudinal lug projecting into the tap shank flute.

3,604,036

COMBINATION SOLE-PRESSING AND ACTIVATING APPARATUS

Robert B. Dunlap, Medway, Mass., assignor to Compo Industries, Inc., Waltham, Mass.
Filed Apr. 16, 1970, Ser. No. 29,136
Int. Cl. A43d *00/00*
U.S. Cl. 12—1 R **17 Claims**

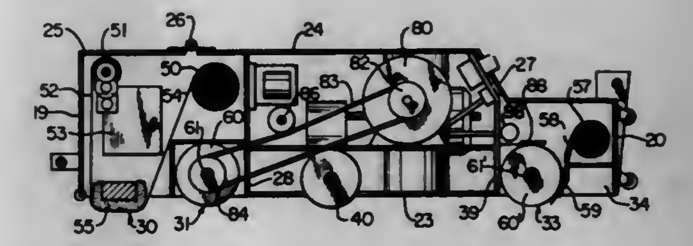


A sole-pressing machine having right and left sole-pressing assemblies for attaching soles to lasted uppers, a conditioner having right and left supports movable into and out of confronting relation to a heating grid for activating adhesive preapplied to soles, said sole supports having an initial position withdrawn from confronting relation to the grid, and a control circuit containing a starting switch operable to initiate a cycle of operation by effecting movement of the right sole support into confronting relation to the grid while the left sole support remains out, and cycling switches associated with the treadles by means of which operation of the right and left sole-pressing assemblies are effected, operable following initiation of a cycle of operation alternately to effect movement of the left sole support into operative position in consonance with the operation of the right sole-pressing assembly and to effect movement of the right sole support into operative position in consonance with the operation of the left sole-pressing assembly.

3,604,037

AUTOMATIC FLOOR MAINTENANCE MACHINE

Robert E. Varner, Cheyenne, Wyo., assignor to Paul V. Horst, Eastlake, Colo.
Filed Dec. 23, 1968, Ser. No. 785,991
Int. Cl. A47l *11/282*
U.S. Cl. 15—4 **14 Claims**

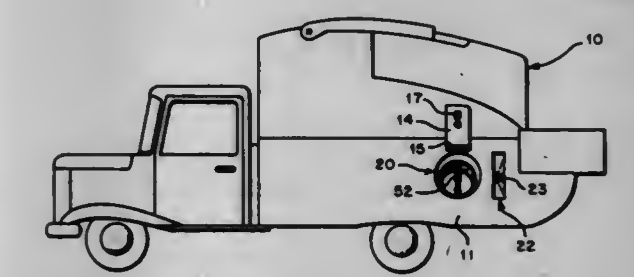


The apparatus of the present invention is specifically adapted for use in dressing, buffing and cleaning bowling lanes automatically through a coordinated sequence of operations which can be preselected and automatically performed over a given distance of travel. The machine is equipped with retractable cleaning and dressing buffer units which are driven independently of the main drive to selectively engage the lane surface either independently of one another, or simultaneously; and in association with the activation of liquid- or fluid-dispensing units is capable of carrying out a variety of different operations at selected intervals automatically and without interruption along the course of travel of the apparatus.

3,604,038

REFUSE CONTAINER AND LID CLEANER

Rocco F. Di Ilio, 708 Worthington Drive, Warminster, Pa.
Filed Sept. 11, 1969, Ser. No. 856,949
Int. Cl. A47l *25/00*
U.S. Cl. 15—56 **10 Claims**



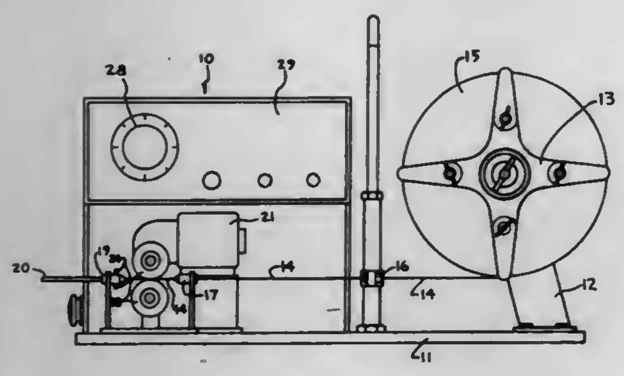
A refuse truck having integral therewith a refuse container and lid cleaner. The truck contains openings in one of the side portions thereof to provide access to the cleaners. The container cleaner includes an L-shaped brush provided with specific mounting and water supply connecting means. The shape of the brush permits the effective cleaning of the entire inside of the container.

3,604,039

CLEANING MEANS FOR GUIDE BUSHINGS

Hal F. Aldridge, Raleigh, N.C., assignor to Aeroglide Corp., Raleigh, N.C.
Filed Sept. 24, 1969, Ser. No. 860,609
Int. Cl. B21c *35/06*
U.S. Cl. 15—102 **3 Claims**

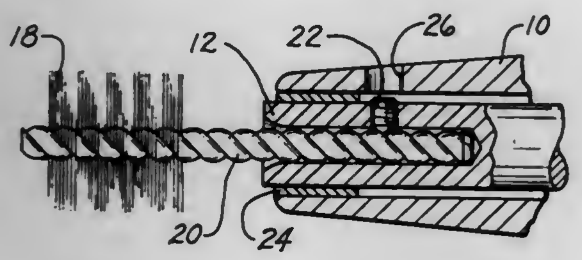
In abstract, a preferred embodiment of this invention is a fibrous material inserted in a vertical opening of a guide bushing used on a wire-feeding machine to clean the wire before it enters an associated automatic welding device.



3,604,040

CLEANING TOOL FOR PIPE AND FITTINGS

Richard L. Cohen, 33 Briar Lane, Roslyn Heights, N.Y.
Filed Mar. 11, 1969, Ser. No. 806,138
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.1 4 Claims

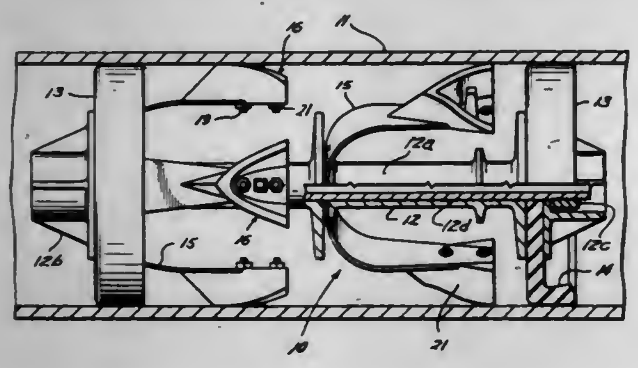


A power-driven rotary tool has a chuck that cooperates with a tool shaft having a long spiral groove. The tool is drawn into the power-driven chuck and then it is rotated. Reverse relative rotation of the tool causes it to be ejected. The preferred tool is a wire brush having bristles held between twisted wires that form the tool shaft and provide spiral grooves.

3,604,041

PIPELINE CLEANING DEVICE

Burton Ver Nooy, Broken Arrow, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.
Filed Nov. 26, 1968, Ser. No. 778,948
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 10 Claims

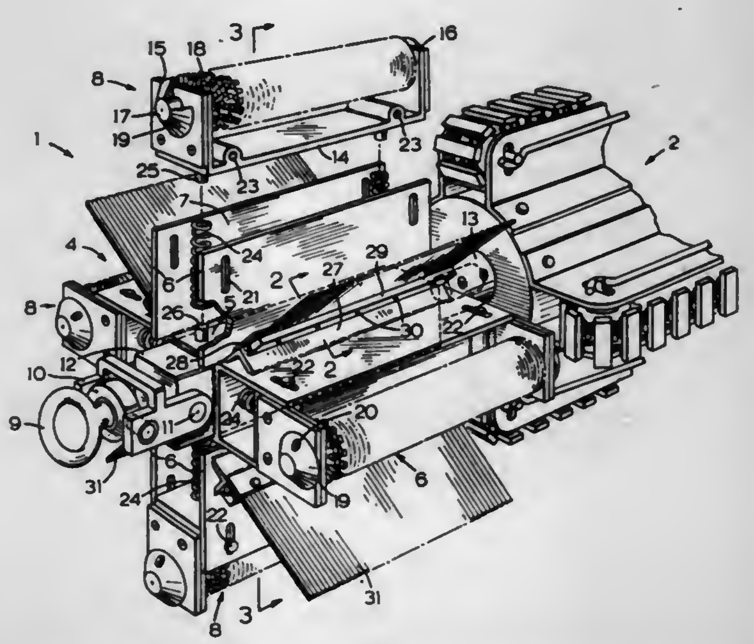


A pipeline cleaning device comprising a body adapted to be moved forwardly through the pipeline, a plurality of springs mounted on the body, and a scraping element carried on each spring for engaging the inner wall of the pipeline in circumferentially spaced-apart relation. Each scraping element includes a base connected to the spring, a V-shaped blade upstanding from the base for tightly engaging the pipeline wall with its apex on the forward end thereof, and a relatively stiff rod extending from the base for tightly engaging at its outer end with the pipeline wall between the sides of the blade. Each of the base, blade, and rod is formed of urethane.

3,604,042

PIPE-CLEANING TOOL

Raymond Muir Bremner, Don Mills, Ontario, and James M. Frew, Weston, Ontario, both of, Canada, assignors to Raymond M. Bremner, Ontario, Canada
Filed Oct. 23, 1969, Ser. No. 868,764
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.13 4 Claims

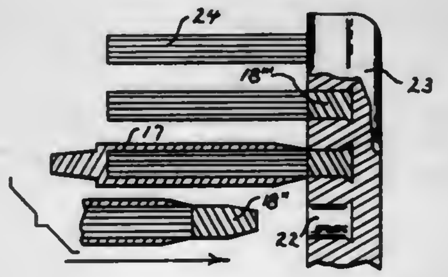


A cleaning device for removing fibrous material from the internal surface of a pipe comprises a rotary head adapted to be driven by a motor and to be towed through the pipe by a cable. The rotary head comprises a frame around which are distributed four scraper assemblies and four flexible combs. Each scraper assembly consists of a series of coaxial, freely rotatable cutting wheels each having a scraping edge and mounted on a shaft extending parallel to and spaced from the axis of the frame; the scraper assemblies are spring-biased away from said axis into engagement with the pipe surface.

3,604,043

BRUSH AND BRUSH CONSTRUCTIONS

John Connell Lewis, Jr., Middlebury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.
Division of Ser. No. 578,840, Sept. 12, 1966, Pat. No. 3,471,202.
Filed Jan. 24, 1969, Ser. No. 800,330
Int. Cl. A46b *3/04*
U.S. Cl. 15—159 6 Claims



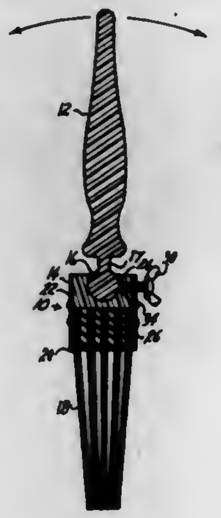
A tufted brush and tufted modular construction are presented comprising synthetic filament tufts fused at the base end and integrally attached to a support means.

3,604,044

BRUSH WITH MOVABLE HEAD

Ronald W. Johnson, 3053 Cheyenne Road, Riverside, Calif.
Filed June 27, 1969, Ser. No. 837,132
Int. Cl. A46b *5/00*; B25g *3/38*
U.S. Cl. 15—172 5 Claims

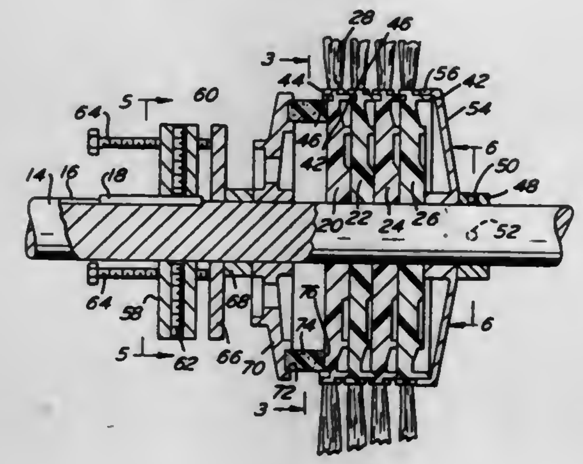
A paint brush having a ball-and-socket connection between its head and handle. The handle has a ball configuration at one end which fits into a socket in the base of the brush head to form the ball-and-socket connection. The base of the head is fitted with a wing nut having a concave forward end designed to fit congruently against the surface of the ball. The wing nut can be moved into and out of tight contact with the ball by hand. This permits universal adjustment of the head, with respect to the handle, and locking of the head in any position of adjustment.



3,604,045

ROTARY BRUSH APPARATUS HAVING CONTROLLED SLIPPAGE

Courtland N. Smith, Jr., Glen Ridge, N.J., assignor to Sherman Car Wash Equipment Co., Palmyra, N.J.
Filed Mar. 10, 1969, Ser. No. 805,488
Int. Cl. A46b *13/00*
U.S. Cl. 15—181 3 Claims



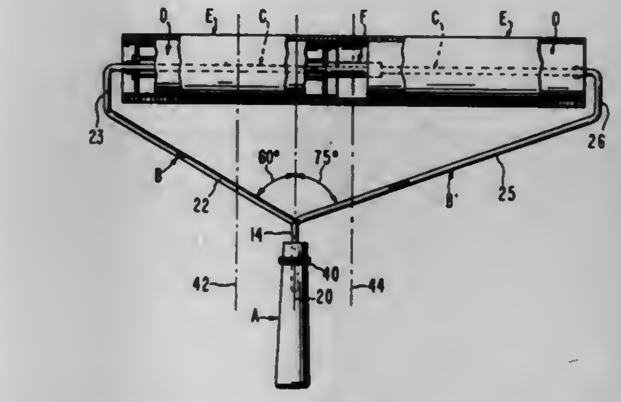
Rotary brush apparatus is disclosed, wherein a brush member is disposed on a shaft to normally rotate therewith, the brush member being coupled to the shaft by torque limiting means, whereby the brush member is adapted to rotate with respect to the shaft when torque between the brush member and shaft exceeds a predetermined amount.

3,604,046

EXPANSIBLE PAINT APPLICATOR

Harold J. Taylor, 113 Serra Vista, Apt. D, Mountain View, Calif.
Filed May 28, 1969, Ser. No. 828,546
Int. Cl. B05c *1/08*; B44d *3/28*
U.S. Cl. 15—230.11 5 Claims

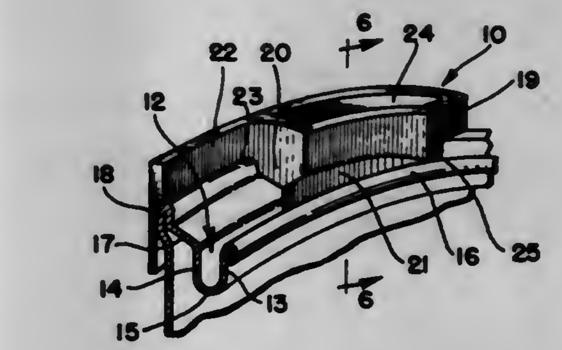
An expansible paint applicator of the roller variety is provided with two frame members. One frame member has attached thereto the applicator handle and a rotatably mounted applicator sleeve. This sleeve when used alone for painting flat surfaces paints a narrow strip in its track. The other frame member likewise has a rotatable applicator sleeve mounted thereto and is adapted for coupling to the first frame member and handle to adjoin both rotatable sleeves in contiguous end-to-end relation. When the rollers are thus conjoined, the applicator paints a wide strip in its track coextensive with the axial length of the conjoined applicator sleeves.



3,604,047

PAINT CAN CLEANING DEVICE

Edward A. Hennigan, 201 N. Wells St., Chicago, Ill.
Filed Dec. 5, 1968, Ser. No. 781,382
Int. Cl. B44d *3/16*; B08b *13/00*
U.S. Cl. 15—236 6 Claims



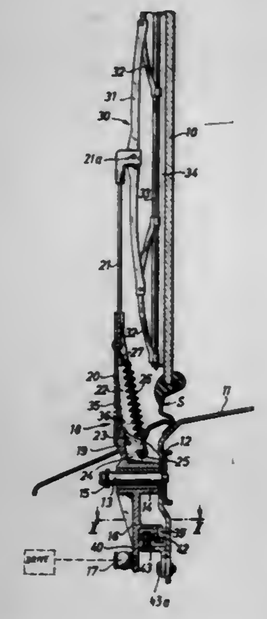
A device for removing liquid paint from the upwardly opening groove around the top of a cylindrical paint can and returning the paint to the interior of the can. Depending from a supporting body engageable with the upper edges of the can is a cleaner blade which extends into the groove and scrapes paint from the groove. A guide also depending from the supporting body engages the outer side of the top of the can to position the device properly with respect to the can and to prevent liquid paint from spilling over such outer side. Between the blade and the guide a scraper engages a top surface of the can to direct paint therefrom toward and into the groove for removal by the cleaner blade.

3,604,048

WINDSHIELD WIPER MECHANISM

Hubert Mainka, Buhlertal, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Apr. 8, 1970, Ser. No. 29,374
Claims priority, application Germany, Apr. 15, 1969, P 19 18 950.5
Int. Cl. B60s *1/34*
U.S. Cl. 15—250.19 10 Claims

A stationary pin is mounted on a motor vehicle adjacent the windshield thereof. A sleeve is journaled for turning movement on the pin and has limited freedom of axial displacement relative to the same. A pair of arms project from this sleeve at opposite radial sides. A windshield wiper assembly is mounted on one of the arms and biassed into engagement with the windshield. Drive means is coupled with the second arm for imparting to the same and thereby to the sleeve an oscillatory movement about the pin which, at the will of an operator, may be varied from effecting displacement of the wiper assembly between two operating positions to effecting displacement of the wiper assembly from one of the operating positions to a rest position. Guide means in form of cooperating cam and follower means is provided for imparting to the sleeve in automatic response to movement of the assembly to its rest position, an axial movement with reference to the pin in a sense exerting upon the wiper assembly a second biassing force counter to the first biassing force so that the same is either partially negated or completely negated, with the wiper assembly in the latter case being lifted off the windshield.



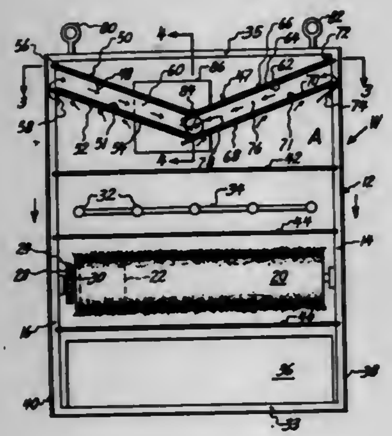
3,604,049
SQUEEGEE VACUUM PICKUP UNIT FOR MOBILE WINDOW WASHER

Frank W. Hetman, Golden Valley, Minn., assignor to Alpana Aluminum Products, Inc., Minneapolis, Minn.

Filed Mar. 17, 1969, Ser. No. 807,621

Int. Cl. A471 *1/00*

U.S. Cl. 15—302 9 Claims



The disclosure relates to a vacuum squeegee pickup for a window washer device including a housing having suction means connected thereto, the housing further having a mouth with first and second spaced flexible elongated means on said mouth, the housing connected to the device and disposed with the flexible elongated means positioned obliquely with respect to the direction of travel of the device.

3,604,050
LONG RETRACTING SOOT BLOWER WITH SHIFTING ROLLER SUPPORTS

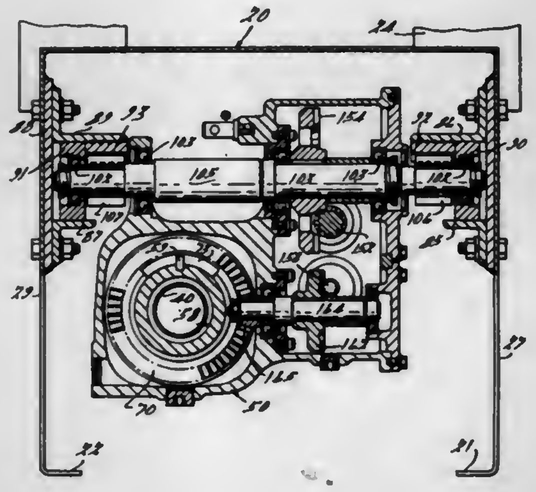
John E. Nelson; John R. Saltz, and Robert E. Chappell, all of Lancaster, Ohio, assignors to Diamond Power Specialty Corporation, Lancaster, Ohio

Division of Ser. No. 486,121, Sept. 9, 1965, Pat. No. 3,439,376. Filed Dec. 3, 1968, Ser. No. 798,835

Int. Cl. F23j *3/02*

U.S. Cl. 15—317 6 Claims

Cylindrical rollers for supporting a lance tube of a soot blower are carried in a frame which is limitedly shiftable longitudinally when the lance tube moves axially. The rollers are journaled on axes tangent to a helix concentric with the lance tube and are carried by subframes which can be turned about radial axes to adjust their journal axes to helices of varying pitch.



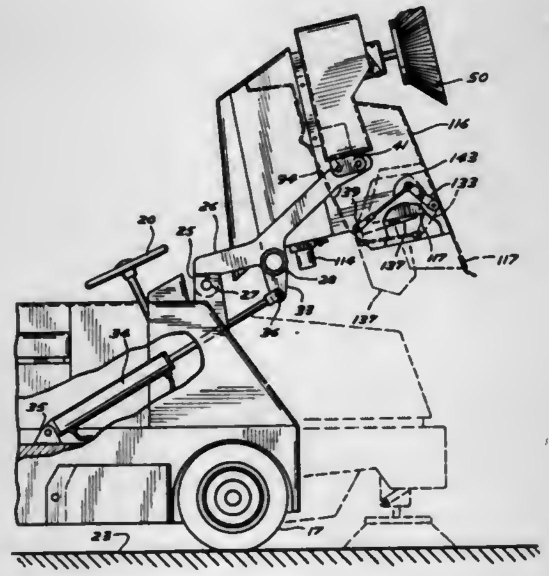
3,604,051
POWERED SWEEPING MACHINE

Adolph H. Wendel, and Richard G. Worwa, both of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed June 27, 1969, Ser. No. 837,168

Int. Cl. E01h *1/04*

U.S. Cl. 15—340 9 Claims



A powered sweeping machine having a sweeping brush and a dust receptacle to receive swept material and including lifting arms to raise the dust receptacle from a working position to position wherein it clears high obstacles for dumping. A forward curb brush is raised with the receptacle so that it is not in the way during the dumping operation. The dust receptacle is divided into an upper filter compartment and a lower compartment. A door arrangement for the dividing wall between compartments is utilized to permit dumping material from the upper compartment into the lower compartment. Clamshell-type doors on the main opening of the receptacle are used to close the opening when the receptacle is raised to its high listed position to prevent material from being discharged until the receptacle is in proper dumping position. The curb-brush mounting to the receptacle includes structure to permit it to move in several different directions and to swing out of the way of obstructions. The sweeping machine is powered through the use of a hydraulic motor with the wheel mounted directly on the shaft for the hydraulic motor to simplify mounting construction.

ERRATUM

For Class 16—35 see:
Patent No. 3,604,212

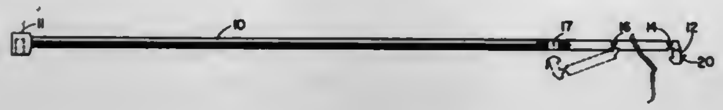
3,604,052
SELF-CAPTIVATING HANDLE

James E. Bringer, Elk Grove, and George P. Whitney, Lombard, both of, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 4, 1969, Ser. No. 855,246

Int. Cl. B25g *1/04*

U.S. Cl. 16—115 9 Claims



A self-captivating retractable handle for a portable television receiver cabinet is molded from an integral piece of polypropylene homopolymer plastic having an enlarged portion at one end. The other end of the handle has a downwardly extending projection hinged at the end with a second hinge located a short distance from the end of the handle. The first hinge permits bending the projection upwardly to enable the passage of the projection and the end of the handle through a pair of spaced slots in the receiver cabinet, and the second hinge is used to bend the projection back to pass it through a corresponding slot in the handle where it is locked to captivate the handle in the receiver cabinet. The resiliency of the material out of which the handle is made causes the handle to lie flat when not in use.

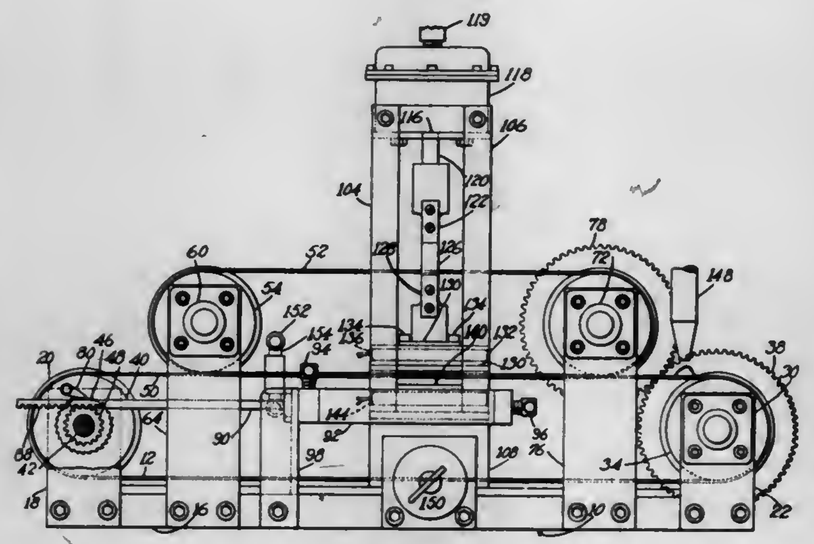
3,604,053
SHAPE-FORMING DEVICES

John C. Zemlin, Reading, and Charles O. Kilham, Beverly, both of, Mass., assignors to USM Corporation, Flemington, N.J. and USM Corporation, Boston, Mass.

Filed Apr. 3, 1969, Ser. No. 813,815

Int. Cl. B29c *3/04*

U.S. Cl. 18—4 B 10 Claims



A machine for the manufacture of relatively thin sheetlike forms from a plastic material. A pair of belts is passed between a pair of mold members while having a charge of plastic material located between the belts to produce a desired form. The molds are brought together with the material and the belts located therebetween, at least one of the belts being employed to carry the material to, and away from, the mold members.

3,604,054
APPARATUS FOR MAKING SHAPED FOAM ARTICLES

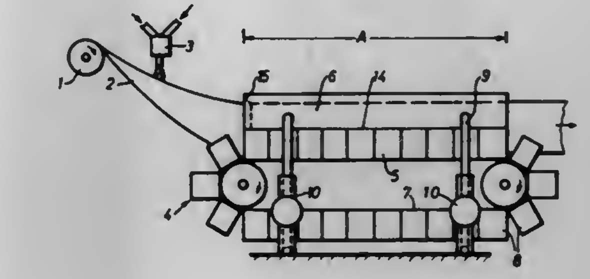
Karl-Heinz Eisenmann, Ferdinand Proska, Bergisch Neukirchen, and Willi Schmitzer, Birlinghoven, all of, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen and Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed Nov. 26, 1969, Ser. No. 880,004

Claims priority, application Germany, Dec. 23, 1968, P 18 16 549.6

Int. Cl. B29d *9/00, 27/04;* **B29c** *5/00*

U.S. Cl. 18—4 B 7 Claims



For the production of foamed rods an endless conveyor belt is used which carries the underpart of the foaming mold, while the upper part of the foaming mold is rigidly fixed above the conveyor belt.

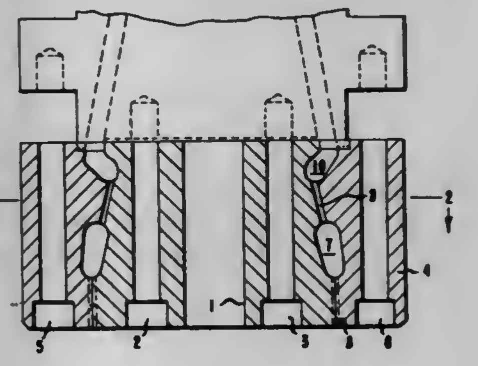
3,604,055
EXTRUSION DIE

John A. McHardy, Ashawa, Ontario, and Thomas Urquhart, Whitby, Ontario, both of, Canada, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1969, Ser. No. 821,617

Int. Cl. B29f *3/00*

U.S. Cl. 18—12 N 1 Claim



Extrusion die for extruding plastic netting and consisting of inner and outer die members rotatable relative to each other and having surfaces defining die orifices wherein the surfaces of the die members having the die orifices are cylindrical and not in contact with each other, the mechanical thrust in the direction of the axis of the die being borne by frustoconical portions of the inner and outer die members.

3,604,056
APPARATUS FOR PREVENTION OF SHAFT SEAL DEGRADATION

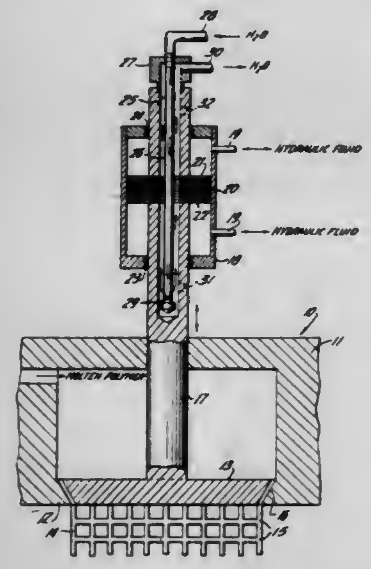
Ronald L. Larsen, Minneapolis, Minn., assignor to Conwed Corporation

Filed June 2, 1969, Ser. No. 829,354

Int. Cl. B29f *3/01;* **F16j** *15/16*

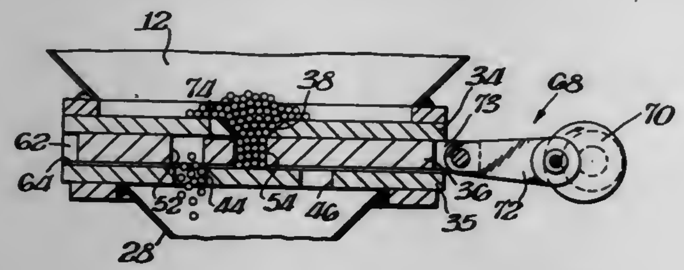
U.S. Cl. 18—12 N 7 Claims

A method and apparatus is provided for circulating a cooling medium through a cored shaft to preserve the life of the seals for the shaft in an extruder of the type used in the production of plastic structures wherein a hot melt is extruded through cooperating die members which are moved relative to one another by means of one or more shafts that tend to heat up and destroy the seals.



3,604,057
MIXING-METERING DEVICE FOR AN INJECTION MOLDING MACHINE

Frank S. Nixdorff, Jr., Baltimore, Md., assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed June 30, 1969, Ser. No. 837,610
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 FH **15 Claims**

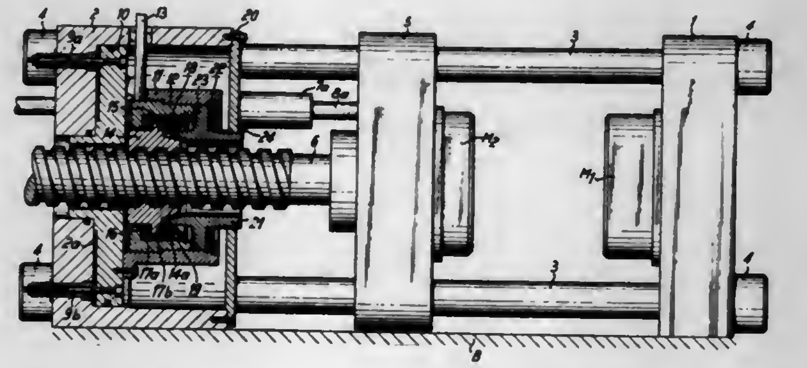


A mixing-metering device includes a pair of hoppers for supplying dissimilar free flowing granule materials through a pair of discharge openings to a collecting chamber. The collecting chamber includes two pairs of spaced filling openings with metering means arranged between the discharge and filling openings for simultaneously receiving metered amounts of the dissimilar materials from the discharge openings while simultaneously discharging metered amounts of the materials into the filling openings.

3,604,058
INJECTION MOLDING APPARATUS

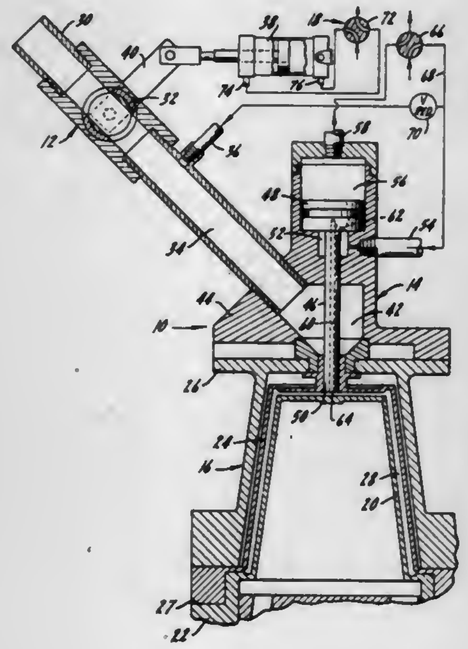
Alfred Fischbach, Runderoth Colozne, AM Scheffert, Germany
Filed Dec. 11, 1968, Ser. No. 782,838
Claims priority, application Germany, Dec. 22, 1967, P 17 29 160.0
Int. Cl. A43d *43/00*
U.S. Cl. 18—30 LA **24 Claims**

An injection molding apparatus wherein the platen which carries the movable mold section receives locking and sealing pressures by way of a spindle which meshes with a spindle nut. The latter is free to rotate during movement of the platen between open and closed positions but is held against rotation during application of locking and sealing pressures furnished by a piston which is reciprocable in a cylinder of the platen or in a cylinder provided in a stationary support. The spindle is rigid with the platen when the piston is mounted in the support or the spindle is rigid with the piston when the latter is mounted in the platen. The spindle nut rotates in response to rotation of the spindle if the threads of the spindle and spindle nut are not of the self-locking type. If such threads are of the self-locking type, the spindle nut is rotated in response to displacement of the platen or by a separate prime mover.



3,604,059
PRESSURE FILL SYSTEM

Stephen Liddell, Fort Worth, and Bill Matheson, Euless, both of, Tex., assignors to Crown Molding Co., Dallas, Tex.
Filed Feb. 6, 1969, Ser. No. 797,179
Int. Cl. B29d *27/04*
U.S. Cl. 18—5 P **4 Claims**

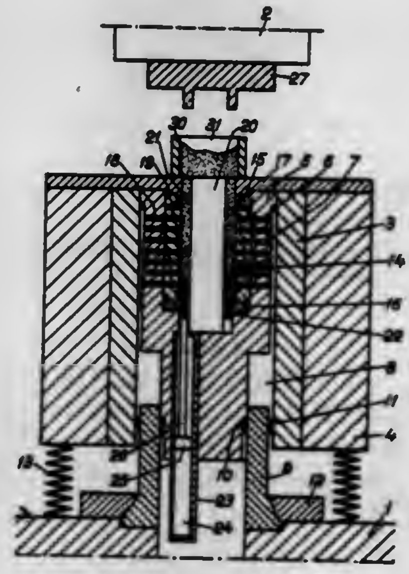


A pressure fill system for a molding machine used for making plastic cups and the like. A pressure chamber in the material supply conduit is provided with a valve which is opened to feed into a filler cavity and closed while the chamber is pressurized and the material conveyed into the mold cavity.

3,604,060
PRESS TOOL FOR MANUFACTURING ROD AND TUBES BY COMPRESSING POWDER

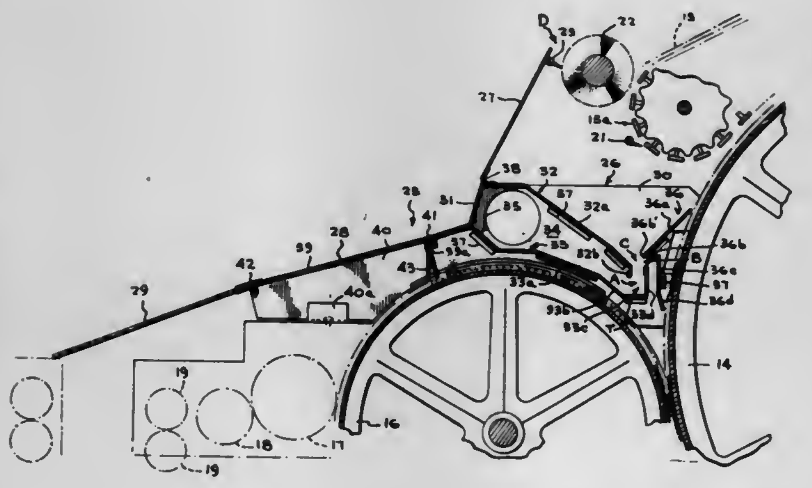
Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebaget, Vasteras, Sweden
Filed Nov. 6, 1969, Ser. No. 874,474
Claims priority, application Sweden, Nov. 14, 1968, 15430/68
Int. Cl. B30b *5/02, 11/00*
U.S. Cl. 18—5 H **3 Claims**

A press tool has an elongated mould cavity for the production of bodies by compression of powder enclosed in the mould cavity. The mould cavity is formed by an elastomeric sheath within a support cylinder arrangement which is mounted in a high pressure cylinder with a space therebetween. The interior of the support cylinder arrangement communicates through lateral openings with such space. The space, which is filled with pressure fluid, has a narrow part opposite the openings and a larger part in which a compression piston is slidable. An ejection mechanism is composed of a cylinder having an eccentric bore turnably mounted beneath the mould cavity with a piston projecting therefrom, the position of which is radially adjustably by turning the cylinder. The device is placed between two relatively movable press parts, one of which carries a member which projects into the mould cavity while the other engages the compression piston.



3,604,061
APPARATUS FOR DELIVERY END CLEANING OF CARDING MACHINES

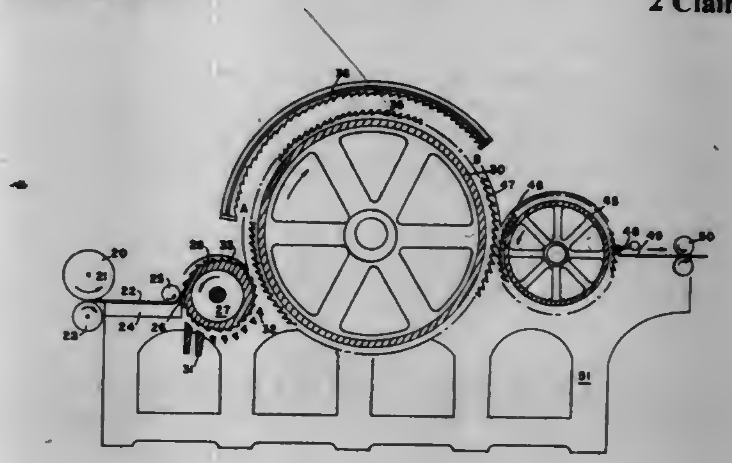
James F. King, Jr., Winston-Salem, N.C., assignor to The Bahnson Company, Winston-Salem, N.C.
Filed Dec. 26, 1968, Ser. No. 787,094
Int. Cl. D01g *15/76*
U.S. Cl. 19—107 **12 Claims**



A suction manifold assembly for pneumatic cleaning of the delivery end section of a carding machine, including a plenum section forming a suction chamber overlying the doffer cylinder in open communication with the latter and with an adjacent portion of the main cylinder, and a hoodlike extension of hinged plural sections form other plenums overlying most of the other card components in the delivery end section. A baffle movable responsive to internal static pressure variations in the plenum section varies the amount of air admitted from the other plenums into the plenum section to maintain substantially constant internal static pressure in the latter. An air intake orifice is formed adjacent the flats chain at the delivery end bight to form air currents which sweep fibers from the flats clothing.

3,604,062
CARDING DEVICE

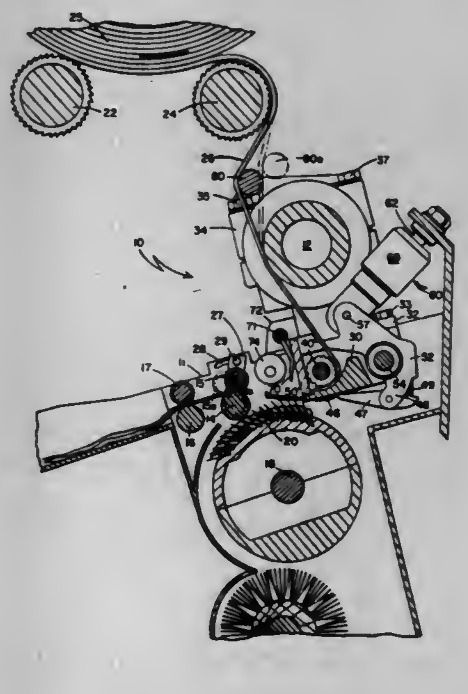
John D. Hollingsworth, P.O. Box 516, Greenville, S.C.
Continuation of application Ser. No. 869,300, Oct. 24, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 793,715, Jan. 24, 1969, now abandoned , which is a continuation-in-part of application Ser. No. 729,068, May 14, 1968, now abandoned. This application Apr. 2, 1971, Ser. No. 130,619
Int. Cl. D01g *15/24*
U.S. Cl. 19—113 **2 Claims**



A device for improved carding having a concave support with a curvature corresponding to the curvature of a main cylinder includes a plurality of segments or bands of wire having a predetermined concave reverse curvature therein, so that sides opposite base portions of the bands face inwardly. A plurality of the reverse curved segments are positioned in adjacent rows in alignment on the support with teeth on the sides of the bands opposite the base portions facing inwardly. The segments are fastened on the support as by clamping. The segments have a curvature corresponding to the curvature of the concave support by virtue of a reverse set prior to being fastened on the support.

3,604,063
TEXTILE COMBER DETACHING ROLL DRIVE

John Clifford Von Kaenel; Gordon Campbell Anderson, and Stephen David Seymore, Jr., all of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.
Division of Ser. No. 586,605, Oct. 10, 1966, Pat. No. 3,479,669.
Filed May 2, 1969, Ser. No. 841,651
Int. Cl. D01g *19/20*
U.S. Cl. 19—231 **8 Claims**



A textile fiber comber of the type having an oscillating nipper shaft for oscillating the nipper mechanism adjacent to a rotary bottom comb, the so-called half-lap and to a top comb, toward and away from a pair of detaching rolls. The nipper head mechanism disclosed, by the oscillating motion of its rock shaft produces all of the motions necessary for operating the nipper itself including its feed roll, the top comb, and the conversion of a uniform unrolling of the lap supply roll to the intermittent lap feed at the feed roll. The nipper cushion plate carrier is rigidly and directly mounted on the oscillating nipper shaft and has pivotally mounted on it the nipper knife carrier for movement of the nipper knife toward and away from the nipper edge. The nipper knife carrier is operated by an adjustable and resilient link connected to the comber frame so that the nipper knife remains in its clamping position for an adjustable portion of its path of travel. Movement of the nipper knife carrier also operates the lap feed roll and also the top comb carrier pivoted on the nipper knife carrier for movement as guided by a roller mounted on the comber frame. Also disclosed are nipper shaft and detaching roll drives each of which provides adjustment of the motion thereof as well as means for dynamically timing the detaching rolls to the rotary comb.

3,604,064

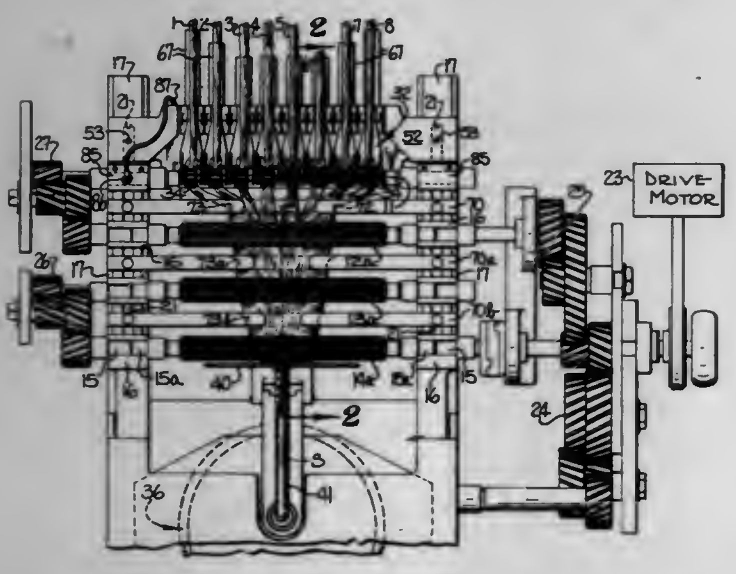
TEXTILE DRAFTING APPARATUS AND METHOD

Joe R. Whitehurst, Bessemer City, N.C., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Oct. 21, 1968, Ser. No. 769,015

Int. Cl. D01h *5/50*

U.S. Cl. 19—282 **8 Claims**



A method of and apparatus for guiding a group of slivers through a drafting unit while progressively reducing the width of the group in its course through successive drafting zones of the unit to ensure that the fibers along the longitudinal side edges of adjacent slivers are intermingled throughout the width of the web to obviate the formation of feather-edge selvages on the individual slivers and to ensure homogeneity and substantial uniformity of the fibers throughout the width of the web being drafted. Also, evener roll means is provided for varying the rate of feed of the respective slivers entering the unit in accordance with, and to compensate for, variations in density of the slivers.

3,604,065

CLIP FOR ATTACHING WIRES

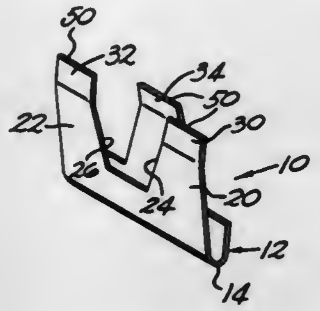
Walter V. Slominski, Lexington, Ky., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed Dec. 23, 1968, Ser. No. 786,036

Int. Cl. B65d *63/06*

U.S. Cl. 24—23 R **6 Claims**

A clip for attaching a pair of wires together, such as the wires used for springs in seating structures, comprising a substantially U-shape body having an arcuate bight and a pair of substantially parallel legs arranged so that when the wires to be attached are disposed between the legs and nested in the bight, the legs can be wrapped in opposite directions about the wires so as to firmly hold the wires in side-by-side relation. At least one of the legs terminates in an inclined portion which extends generally toward the other leg in the direction in which the one leg is wrapped when wrapped about the wires.



3,604,066

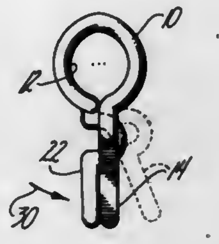
PLASTIC BAG TIE

Edward W. Moon, P.O. Box 24, Pomfret, Conn.

Filed May 22, 1969, Ser. No. 826,959

Int. Cl. B65d *77/10;* **A44b** *21/00*

U.S. Cl. 24—30.5 R **6 Claims**



A one-piece bag tie of resilient thermoplastic material has a portion for encircling the bag, and leg portions which can be easily twisted together for locking inner segments thereof to secure the bag in a closed condition.

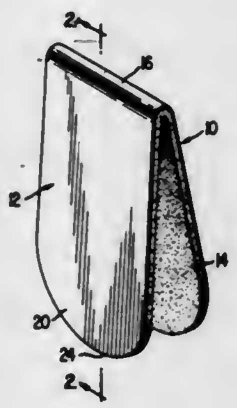
3,604,067

CLIP STRUCTURE

Dwight C. Brown, 414 N. Granada St., Arlington, Va. Continuation-in-part of application Ser. No. 815,101, Apr. 10, 1969, now abandoned. This application Aug. 12, 1969, Ser. No. 849,438

Int. Cl. B42f *1/100*

U.S. Cl. 24—67 R **9 Claims**



A clip structure having a strip of resilient and compressible material secured to one surface of a flat metal strip bent substantially in half. Crimps or corrugations can be made in the metal strip to increase the holding power of the clip structure.

3,604,068

ADJUSTABLE ATTACHMENT

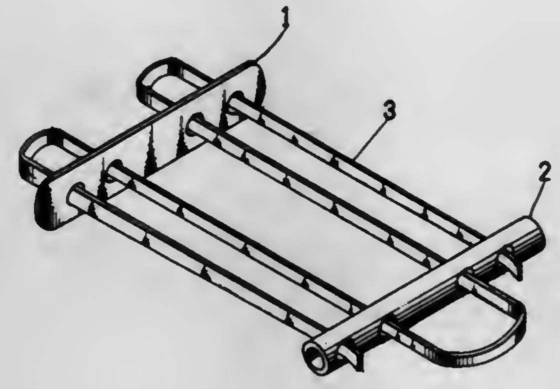
Hazel M. Stammen, 2730 Wood St., Sarasota, Fla.

Filed June 23, 1969, Ser. No. 835,494

Int. Cl. A44b *21/00*

U.S. Cl. 24—73 R **2 Claims**

A wrist attachment comprising an oblong and a tubular button having a plurality of aligned apertures two between two others extending in the direction of the length of the buttons and two apertures are sized to the string in use and the two other apertures are sized a few fractions larger than the string plus a lock-catch opening on the lower button to create a safety feature.



3,604,069

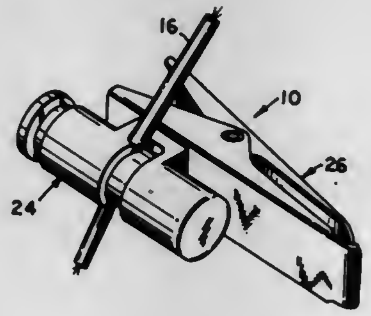
CABLE STRAIN RELIEF DEVICE

Wolfgang W. Jensen, Capitola, Calif., assignor to Pacific Plantronics, Inc., Santa Cruz, Calif.

Filed Apr. 1, 1970, Ser. No. 24,495

Int. Cl. A44b *21/00, 13/02*

U.S. Cl. 24—73 SH **6 Claims**



A strain relief device for supporting a cable used with a communications headset of the type worn on a user's ear. The device provides freedom of movement and relief from strain resulting from the weight of the cable. A transversely bored plunger is slidably mounted in a transversely bored housing with slots provided through these two parts for receiving the cable. The plunger is yieldably urged in a direction to releasably grip the cable in the desired position when the housing is clipped to the user's wearing apparel. The device facilitates rapid adjustment of cable position by either sliding the cable relative to the housing, or pivoting the housing with respect to the clip. Means are provided to prevent unintended separation of the cable from the device during this adjustment.

3,604,070

ZIP-FASTENER

Susanne Vorsteher, Vienna, Austria, assignor to Anba Sportmode Vorsteher K.G., Vienna, Austria

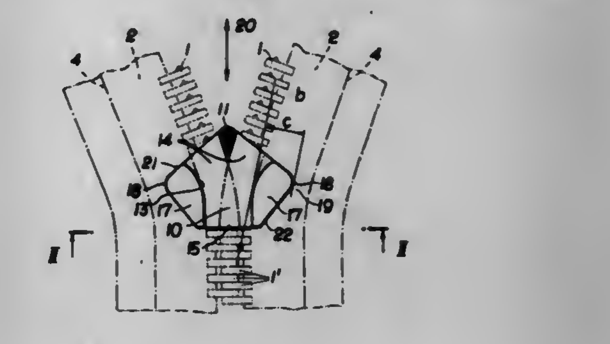
Filed Dec. 3, 1968, Ser. No. 780,853

Claims priority, application Austria, Dec. 14, 1967, A11291/67

Int. Cl. A44b *19/26*

U.S. Cl. 24—205.15 **2 Claims**

A slide fastener for engaging and disengaging two pieces of fabric having attached thereto interlocking fastener elements. The slide fastener has upper and lower cover plates forming guide channels therebetween for engaging and disengaging the fastener elements. A portion of the cover plates extend outwardly on each side of the longitudinal axis of the slider beyond the guide channel ending in curvilinear apexes. The curvilinear apexes are disposed approximately midway between longitudinal ends of the cover plates.



3,604,071

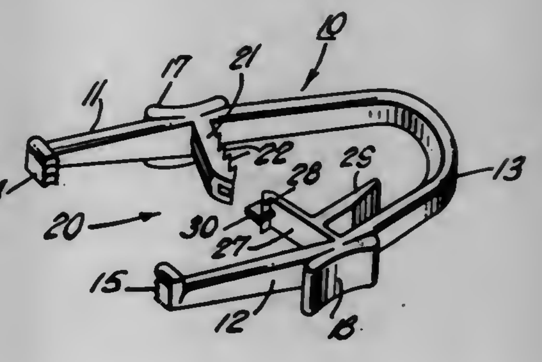
ONE-PIECE PLASTIC TOWEL CLAMP

Harry G. Reimels, Braintree, Mass., assignor to Codman & Shurtleff, Inc.

Filed July 25, 1969, Ser. No. 844,775

Int. Cl. A44b *21/00;* **A61b** *17/00*

U.S. Cl. 24—248 L **4 Claims**



A one-piece molded plastic clamp having coacting jaws laterally offset from the ends of a pair of substantially straight arms that are integral with an arcuately shaped hinge portion. A mechanism comprising a rack and a locking hook is located between the arms for releasably maintaining the jaws in a clamping relationship.

3,604,072

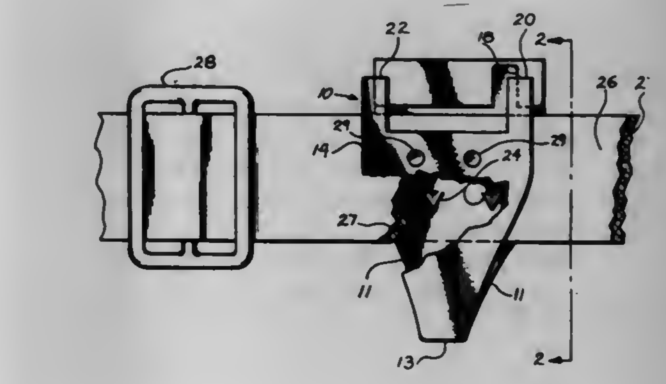
SAFETY CLIP

William L. Posey, 1739 Meadowbrook Road, Altadena, Calif.

Filed July 14, 1969, Ser. No. 841,337

Int. Cl. A44b *21/00*

U.S. Cl. 24—259 A **12 Claims**

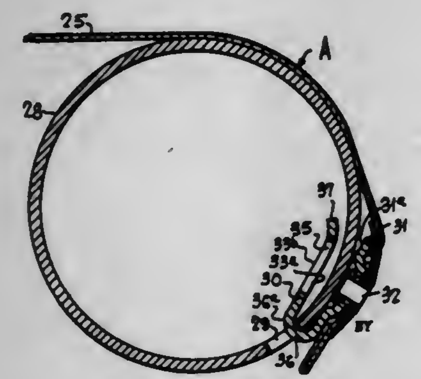


A U-shaped clip clamps straps together by gripping them between opposing walls of the clip.

3,604,073

RELEASABLE FASTENER ASSEMBLY FOR WEBBING MATERIALS

Harold Green, 171 S. Vista St., Los Angeles, Calif.
Filed Apr. 21, 1970, Ser. No. 30,388
Int. Cl. A47c *31/00*
U.S. Cl. 24—265 C **8 Claims**

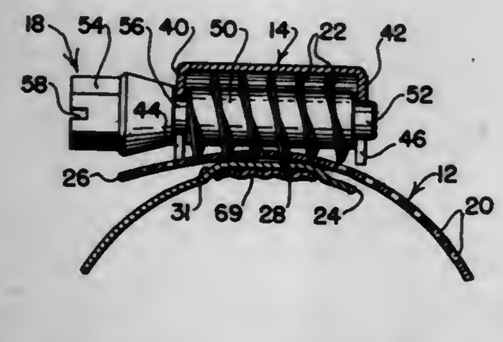


A releasable self-retaining means for fastener assemblies employing a U-shaped spring hook for attaching a webbing material to a slotted or perforated frame. The self-retaining means consists of a three-point frictional contact produced between the hook legs and the frame in response to the spring resiliency and while the hook slides to and from latched position. Cam means at the free end of one of the hook legs initially guides the hook into the three-point contact as the latter moves toward latched position, and a second cam means at the opposite end of the leg initially guides the hook into the three-point contact when the hook moves reversely from latched position.

3,604,074

WORM DRIVE HOSE CLAMP

Irwin J. Bambas, Westchester, Ill., assignor to Du Page Manufacturing Company, Downers Grove, Ill.
Filed July 20, 1970, Ser. No. 56,615
Int. Cl. B65d *63/00*
U.S. Cl. 24—274 R **3 Claims**



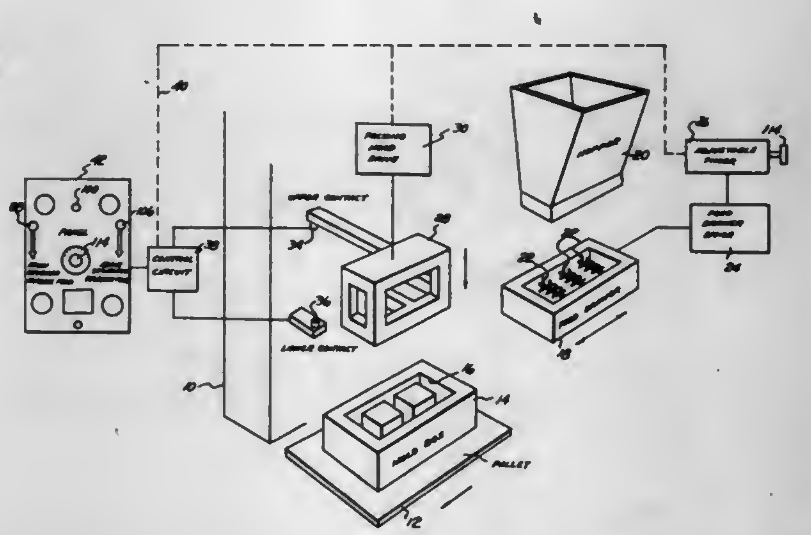
A worm drive hose clamp having a hose-engaging saddle which reinforces the worm housing and also offers frictional characteristics which prevents rotational slippage of the clamp during installation thereof on a hose connection.

3,604,075

DENSITY CONTROL SYSTEM FOR BLOCK-MAKING APPARATUS

Frank K. Locke, Hudson, Mich., and Russell J. Campbell, deceased, late of Detroit, Mich. (by Josephine Campbell, executrix), assignors to Stearns Manufacturing Company, Inc., Flat Rock, Mich.
Filed Jan. 27, 1969, Ser. No. 795,778
Int. Cl. B28b *7/00*
U.S. Cl. 25—41 D **7 Claims**

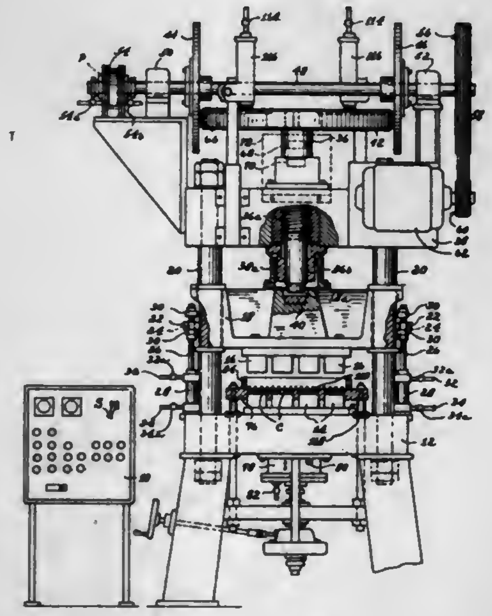
An automatic block-forming apparatus in which the blocks are formed by compressing the block material in a mold box until the material takes the shape of the mold cavity. The compression stroke is automatically timed and compared each cycle to a range of acceptable times that will result in a block having an acceptable density. If the compression time falls outside of the acceptable time range, a control circuit sounds an alarm and indicates whether more or less material must be fed into the mold box to either increase or reduce the density of the compressed blocks.



3,604,076

AUTOMATIC SCREW-OPERATED PRESS

Leonard Brown, and Foster B. Cooley, both of Trenton, N.J., assignors to Crossley Machine Company, Inc.
Filed Dec. 5, 1969, Ser. No. 882,564
Int. Cl. B28b *3/02*
U.S. Cl. 25—42 **7 Claims**



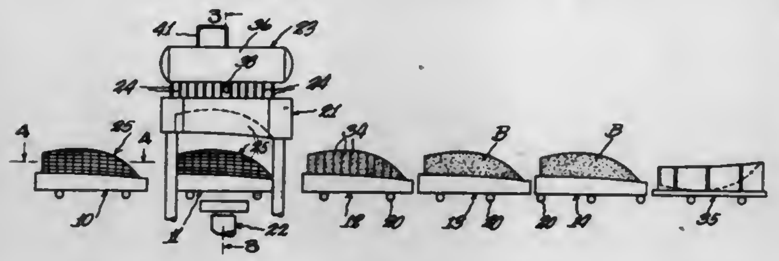
An automatic screw-operated press in which the ram is controlled in a "floating" condition independently of the screw by a pair of hydraulic cylinders, and in which the screw is operated by an air cylinder the piston of which is mounted on the shiftable disk shaft, the reciprocal "bumping" strokes of the screw being controlled by a pair of vertically spaced proximity switches actuated by a magnetic peripheral portion of the friction wheel.

3,604,077

APPARATUS FOR MAKING MOLDED BODIES

Richard L. Rath, Sr., Warren, Ohio, assignor to Sea Ferro, Inc., Fort Lauderdale, Fla.
Filed Dec. 18, 1968, Ser. No. 784,661
Int. Cl. B28b *7/02;* **B63b** *5/16*
U.S. Cl. 25—118 R **12 Claims**

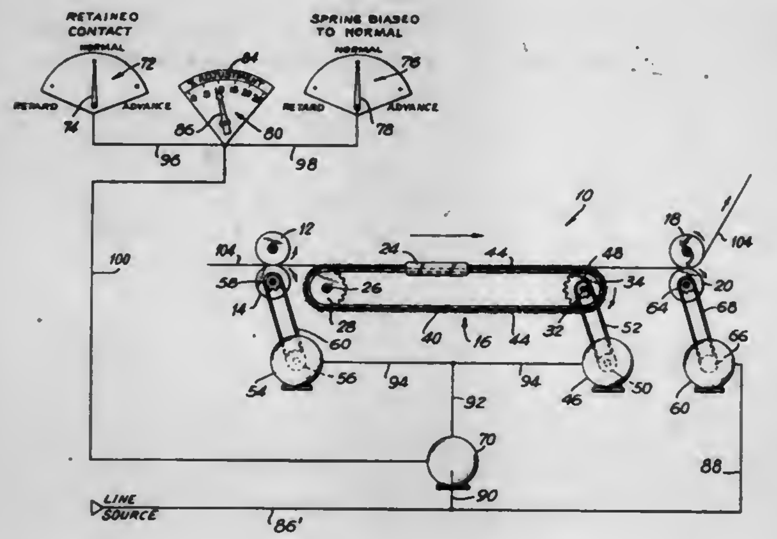
Methods of and apparatus for manufacturing thin-walled, ferrocement bodies such as boat hulls by means of reusable, cooperable molds between which a cementitious mixture is injected by a novel pressurization device.



3,604,078

WEB FEED ADVANCE AND RETARD CONTROL MEANS

Joseph Sciola, 7 Cottage Lane, Upper Saddle River, N.J., and Gabor Nagy, 98 W. 1st St., Clifton, N.J.
Filed June 20, 1969, Ser. No. 842,424
Int. Cl. D06c *3/02;* **D06h** *3/12*
U.S. Cl. 26—51.3 **5 Claims**

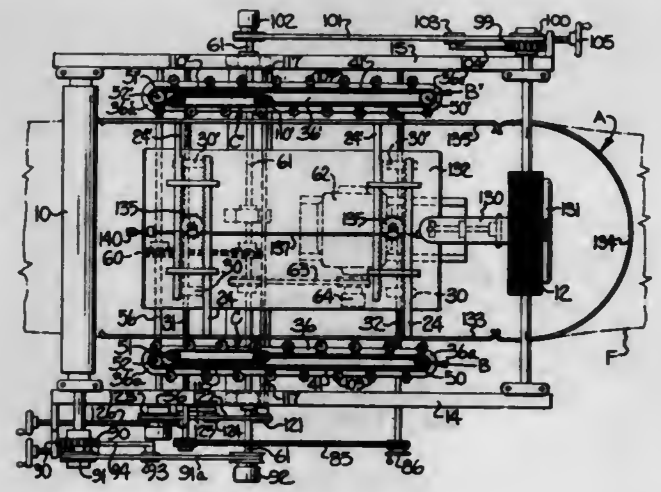


New and improved web feed advance and retard control means are provided and comprise means to retard or advance the feed rate of said web to correct for distortion of the latter, and means to indicate and adjust the extent of said feed rate increase or decrease.

3,604,079

APPARATUS FOR SPREADING AND COMPACTING TUBULAR FABRIC

Willis W. Coates, 1059 3rd St., Spencer, N.C.
Continuation-in-part of application Ser. No. 616,663, Feb. 16, 1967, now Patent No. 3,436,796, which is a continuation-in-part of application Ser. No. 552,058, May 23, 1966, now abandoned. This application Apr. 3, 1969, Ser. No. 813,251
Int. Cl. D06c *5/00, 21/00*
U.S. Cl. 26—55 **8 Claims**

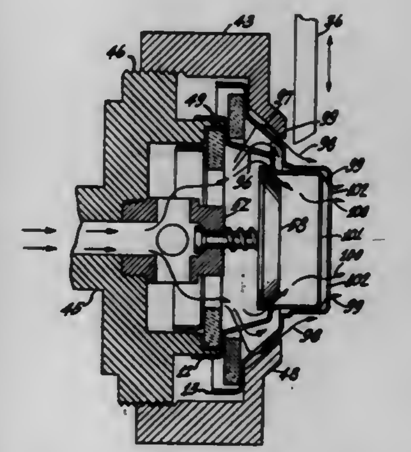


Pinwheels are supported on conveyor chains for movement along opposite sides of a spreader frame to aid in drawing the tubular fabric over the spreading frame with the pinwheels being held in a nonrotating position. Drive means is provided for rotating the pinwheels in a reverse direction from the direction of fabric travel to compact the fabric to the desired degree. Adjusting means is provided for varying the width of the spreader frame and the distance between the opposed sets of pinwheels to thereby permit processing of tubular fabrics of various widths.

3,604,080

METHOD FOR MAKING AN ELECTRON-TUBE GRID ASSEMBLY

Ira Eugene Smith, Lancaster, Pa., assignor to RCA Corporation
Filed Jan. 16, 1970, Ser. No. 3,299
Int. Cl. H01j *9/00*
U.S. Cl. 29—25.14 **5 Claims**

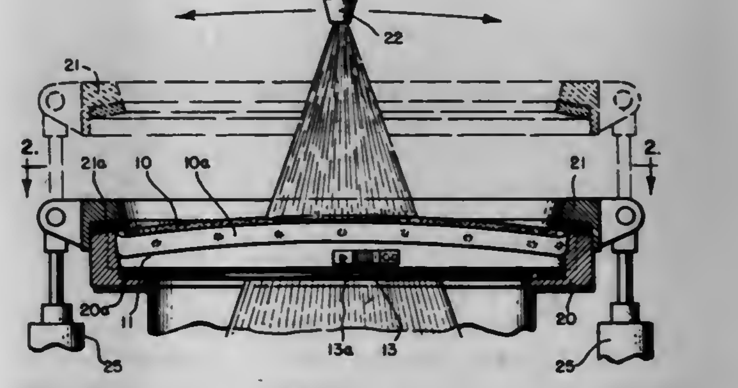


A method for making an electron tube grid assembly comprises mounting in a concentric, radially spaced relationship at least one set of a plurality of thin-walled hollow cylindrical electrode grid blanks, the blanks defining internal chambers therebetween and a central internal chamber. Then, radially aligned apertures are cut in the blanks by electrical discharge machining, whereby small particles of material are produced. The particles are flushed away from the cutting region by a continuous directed stream of fluid through each of the internal chambers and over the external surfaces at least in the cutting region.

3,604,081

SCREENING A COLOR CATHODE-RAY TUBE

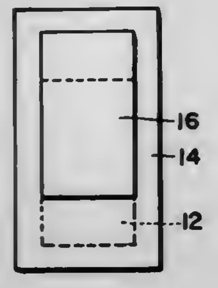
Josef Moegenbier, Morton Grove, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed June 4, 1969, Ser. No. 830,287
Int. Cl. H01j *9/16, 9/44*
U.S. Cl. 29—25.18 **3 Claims**



The mask/frame subassembly of a shadow mask type of color cathode-ray tube, having apertures of proper size for screening and having been oxidized to exhibit the heat-conducting and light-reflecting properties of a black body, is used as an exposure mask in photoprinting the dot triads of a mosaic-type screen for the tube. Thereafter, only the surface of the mask which faces the screen is subjected to a stripping step in which its oxide coating is removed. The mask/frame subassembly is now reetched so that the holes thereof are made larger than the elemental phosphor deposits of the screen, as required in black surround and post-deflection-focus color tubes.

3,604,082
METHOD OF MAKING A CAPACITOR

Robert D. McBrayer; Forrest I. Peters, and Robert D. Smith, all of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.
Filed Oct. 30, 1968, Ser. No. 771,787
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **31 Claims**

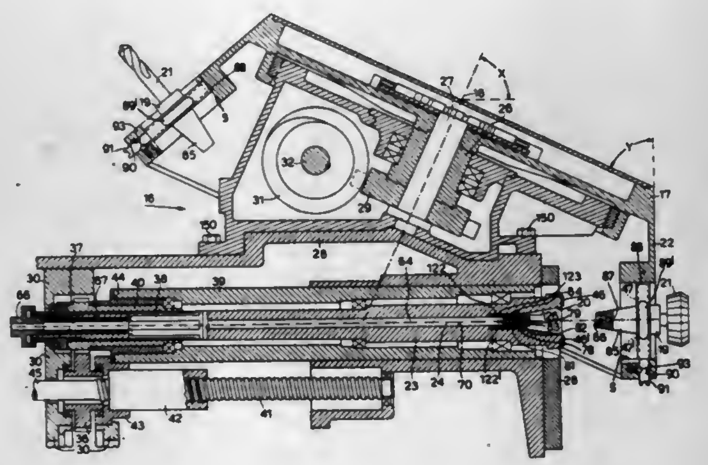


A capacitor produced by providing a plurality of thin dielectric sheets in the green state formed of a crystallizable glass frit in a binder. A film of a slurry or suspension of particulate metal in a vehicle is applied to two green dielectric sheets in a predetermined position to form capacitor electrodes. A green capacitor stack or assembly is formed by disposing one of said green dielectric sheets with said electrode applied thereto over the other so that the electrodes in part overlap each other. A third green dielectric sheet is disposed over the exposed electrode to form a cover for the electrode and the green capacitor assembly. The assembly so formed is placed on a pallet and subjected to a temperature sufficient to volatilize or burn out all of the organic constituents of the assembly. The temperature is then raised to soften the glass and pressure is applied to the assembly to coalesce and compact the glass, seal adjacent members together, and produce a substantially dense, void-free, monolithic structure. The assembly is then heat treated to crystallize the glass and form a glass-ceramic dielectric within which the electrodes are imbedded, after which the temperature and pressure are removed. The edge portions of the capacitor stack or assembly are then removed to expose the nonoverlapping ends of the electrodes which may thereafter be metallized and to which leads are attached. Capacitors may be formed with as many plates as are desired in the above manner, in which case alternate electrodes are in register with one another. In addition, a plurality of discrete capacitor units may be formed simultaneously in the above manner and thereafter separated after the glass is crystallized. Further, an electrode may be first applied to one green dielectric sheet and a second green dielectric sheet disposed thereover substantially in register with the first. A second electrode is then applied to the second sheet in which a shifted position so as to partly overlap the first electrode. As many additional green dielectric sheets and electrodes may be stacked thereon in this manner as are desired and a final green dielectric sheet is disposed over the assembly so formed substantially in register with all of the other sheets to provide a cover for the green assembly. The green assembly is then fired as above.

3,604,083
TOOL CHANGE DEVICE FOR A MACHINE TOOL

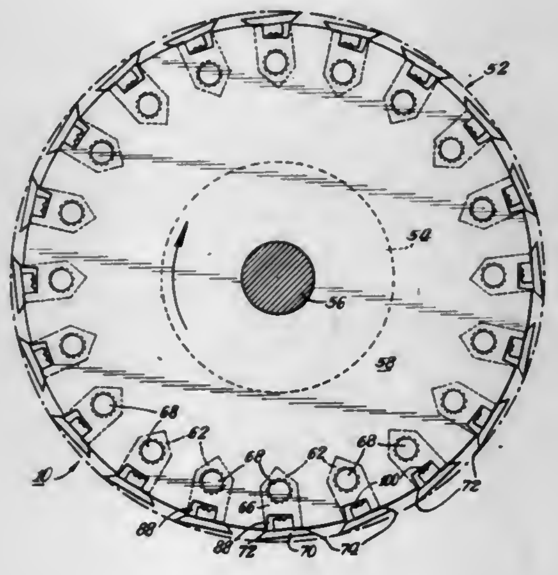
Bruno Antonietto, and Elio Pagella, both of Torino, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy
Filed July 29, 1968, Ser. No. 748,534
Claims priority, application Italy, June 29, 1967, 52600 A/67
Int. Cl. B23b *29/32;* **B23c** *5/26;* **B23q** *3/157*
U.S. Cl. 29—26 **2 Claims**

A machine tool with a device for effecting rapid tool changes comprising a frame carrying a rotatable spindle capable of being coupled to a tool through the intermediary of a toolholder to which the tool is secured. A mechanism for lining up the spindle, from whatever position it is in, to a predetermined angular setting in order to allow engagement of the toolholder with the spindle, and translational locking devices inside the spindle operative to provide a coupling to the toolholder to operate the spindle after the tool has been connected thereto, are provided.



3,604,084
ROTARY DETREADER TOOL

Fred B. Krieger, and Vaughn Rawls, both of Lima, Ohio, assignors to National-Standard Company, Niles, Mich.
Filed Oct. 22, 1969, Ser. No. 868,534
Int. Cl. B23d *71/00;* **B26d** *1/12*
U.S. Cl. 29—78 **7 Claims**

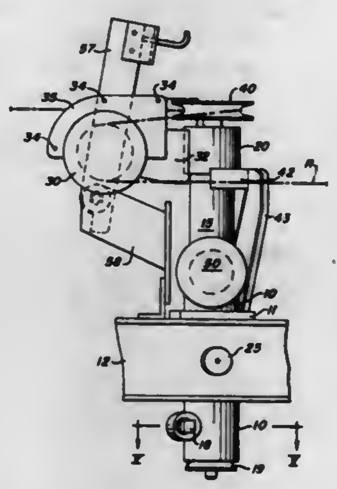


A tire-buffing tool for removing the tread impressions from a tire carcass which is rotatably mounted and has a plurality of equally spaced blade members extending radially from its disk-shaped body. Each blade member is pivotally mounted and has a cutting edge facing either direction of rotation.

3,604,085
APPARATUS FOR BREAKING SCALE FROM ROD

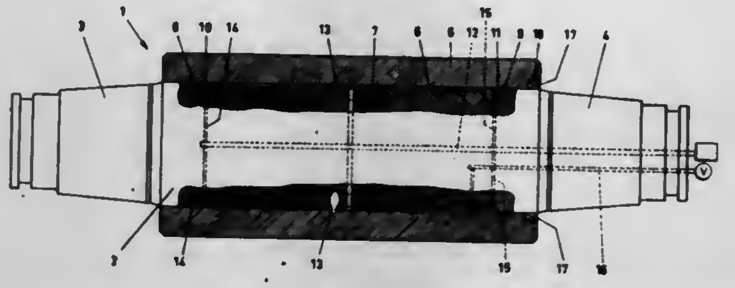
James R. Stoeckel, Shaler Township, Allegheny County, and Charles D. Stricker, Monroeville Borough, both of, Pa., assignors to United States Steel Corporation
Filed Feb. 5, 1969, Ser. No. 796,803
Int. Cl. B21c *43/04*
U.S. Cl. 29—81 **1 Claim**

An apparatus for bending a strand of rod to crack and loosen surface scale having two rotatable breaker sheaves around which the rod is bent. The breaker sheaves are aligned with their planes of rotation at right angles to each other so that the strand is bent in two perpendicular planes to optimize scale cracking and loosening. A lifting mechanism is provided to lift the breaker sheaves away from their normal operating position to facilitate stringup.



3,604,086
METHOD AND APPARATUS FOR COMPENSATING FOR THE DEFLECTION OF STEEL PLATE ROLLING MILL ROLLS

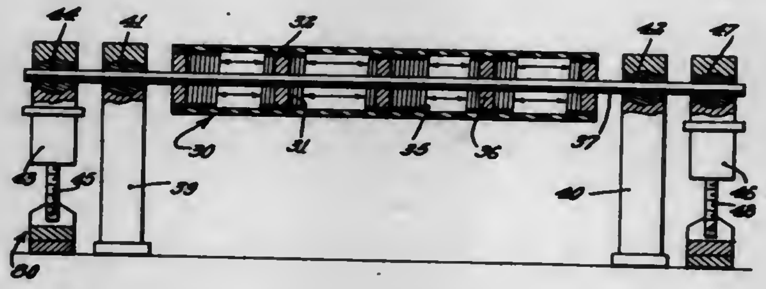
Erich Bretschneider, Buderich, Germany, assignor to Siegener Machinenbau, G.m.b.H.
Filed Sept. 19, 1968, Ser. No. 760,897
Claims priority, application Germany, Sept. 29, 1967, P 16 02 155.9
Int. Cl. B21b *29/00;* **B02c** *4/30*
U.S. Cl. 29—113 **5 Claims**



Disclosed is a crown-controlled roll for use in a rolling mill. The roll is constructed with a sleeve mounted on a mandrel having an axially located bore for transmitting a controlled pressurized fluid medium through radially extending bores into a gap between the mandrel and the sleeve. At each end of the mandrel distinct from the gap, peripheral seals are actuated by fluid transmitted radially from the axial bore. The roll sleeve is constructed with a thickness of approximately 0.15 of the outside diameter of the backup roll. Cams are used to rigidly interconnect the mandrel with the sleeve.

3,604,087
ANTIDEFLECTION ROLL

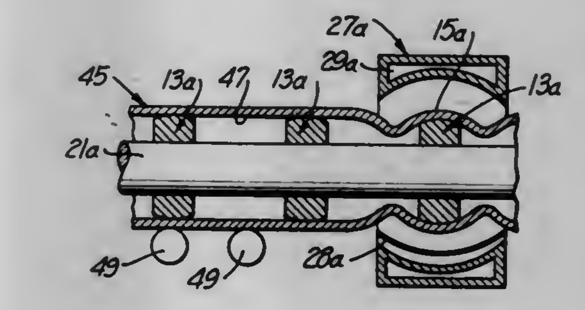
Ralph A. Beck, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Mar. 13, 1970, Ser. No. 19,313
Int. Cl. B21b *31/08*
U.S. Cl. 29—127 **11 Claims**



A roll for supporting a moving web includes a helical spring covered by a flexible outer shell to provide for curvature of the roll which may be preset to compensate for deflections of the roll. The roll has an inner core or shaft construction which includes an elongate shaft extending through a plurality of spaced-apart annular flanges each of which includes a groove at the same lead angle as the lead angle of the helical spring for threadedly engaging the turns of the spring and aiding in fabrication of the roll. The shaft may be supported in an antideflection mode of operation by securing the end thereof for rotation in spherical bearings and providing means at the distal ends of the shaft for imparting a selected deflection to the shaft. The roll may also be configured as a bowed roll by providing a nonrotational fulcrum for the shaft at each end of the roll and by providing means at each distal end of the roll for imparting bowing forces to the roll. In this configuration, the flanges which connect the shaft to the flexible portion of the roll are provided as bearings with the central portions of flanges forming a bearing race to be secured to the shaft and the outer portions of the flange forming an outer bearing race for threaded engagement with the helical spring. As a bowed roll the apparatus is further provided with means for adjusting the supporting apparatus of the roll for varying the plane of deflection.

3,604,088
METHOD AND APPARATUS FOR MAKING BEARINGS

Peter H. Turner, Granada Hills, Calif., assignor to Sargent Industries, Inc., Burbank, Calif.
Filed Dec. 16, 1969, Ser. No. 885,458
Int. Cl. B23p *11/00, 17/00, 19/00*
U.S. Cl. 29—149.5 B **13 Claims**

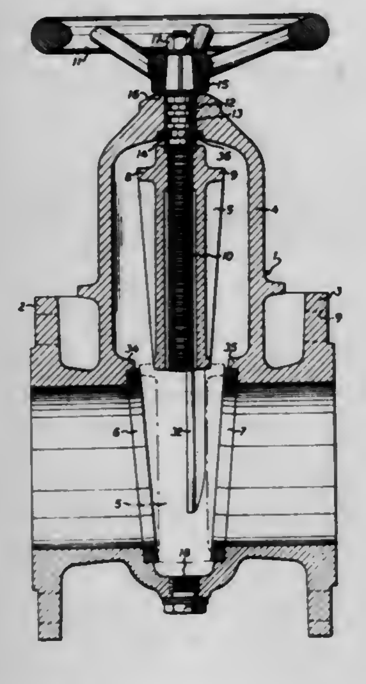


A method of, and apparatus for, making a bearing of the type which includes a ball-like inner member and a race circumscribing the inner member. The race is deformed into cooperative sliding engagement with the ball utilizing the energy from a magnetic field.

3,604,089
METHODS OF MANUFACTURING HOLLOW BODIES WITH SEPARATE ELEMENTS ENCLOSED THEREIN

Frans Harry Karlsson, Lund, Sweden, assignor to Hykon-Patent Aktiebolag, Lund, Sweden
Filed Apr. 1, 1969, Ser. No. 812,160
Claims priority, application Sweden, Apr. 10, 1968, 4825/68
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*
U.S. Cl. 29—157.1 **6 Claims**

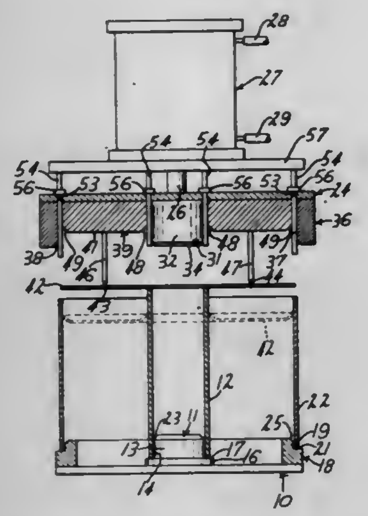
In a method of manufacturing in one piece a hollow body which is to accommodate in a hollow space thereof one or more separate elements which cannot possibly, or only with difficulty, be mounted in the body without division thereof, the separate elements are enclosed in a core and the body is then shaped in one piece on the core by casting or otherwise,



whereupon the core is removed so that the separate means are uncovered in the hollow space in the body.

3,604,090
PROCESS AND APPARATUS FOR PLACING SPACER BETWEEN HUB AND DRUM MEMBERS

Clinton R. Lake, Hartselle, Ala., assignor to Metco, Incorporated
Filed Jan. 22, 1970, Ser. No. 5,003
Int. Cl. B21d *53/26;* **B23p** *19/00*
U.S. Cl. 29—159 R **7 Claims**

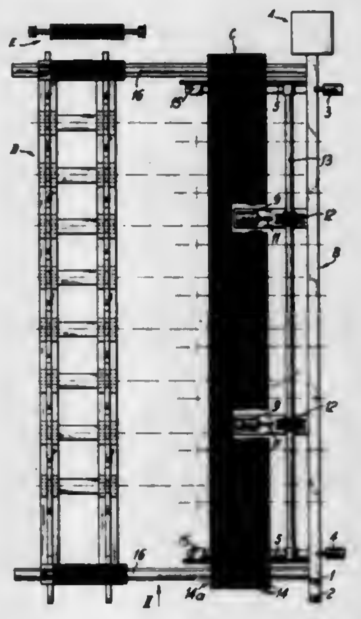


Process and apparatus placing spacer between concentric hub and drum of spool in which one end of hub and drum are supported and retained concentric. Hub rounding and holding die moved into other end of hub and drum rounding and holding die moved into engagement with outer surface of other end of drum retaining outer surface of drum concentric with inner surface of hub while spacer forced inwardly between said other end of hub and said other end of drum.

3,604,091
METHOD AND APPARATUS FOR CHARGING A WELDING MACHINE FOR LIGHT BEAM GRATINGS

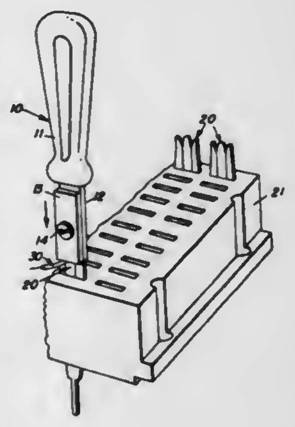
Hans H. Martin, 4424 Westfalen Arfkamp 14, Stadtlohn, Germany
Filed July 10, 1969, Ser. No. 840,791
Int. Cl. B23q *3/00*
U.S. Cl. 29—200 A **19 Claims**

A continuous supporting bar strip is fed through a straightening machine and cut to the proper supporting bar lengths which are fed to a magazine. The number of supporting bars requisite for a selected size grating are lifted from the magazine and the height of the top surfaces of the lifted bars is adjusted to the level of the welding machine. The lifted bars are fed to the welding machine while the spacing of the lifted bars is adjusted. The steps are performed in a continuous repetitive sequence. The apparatus includes a support table with a shear adjoining a known straightening machine, and the strip leaving the straightening machine operates a first limit switch to stop the straightening machine and then operates a second limit switch to activate the shear to cut a bar length. A lifting truck cooperates with the supporting bar magazine to lift the requisite number of strips from the latter, and an adjusting reed is positioned between the lifting truck and a welding and pressing machine to adjust the spacing of the lifted bars as they are fed to the welding and pressing machine.



3,604,092
CONNECTING TOOL

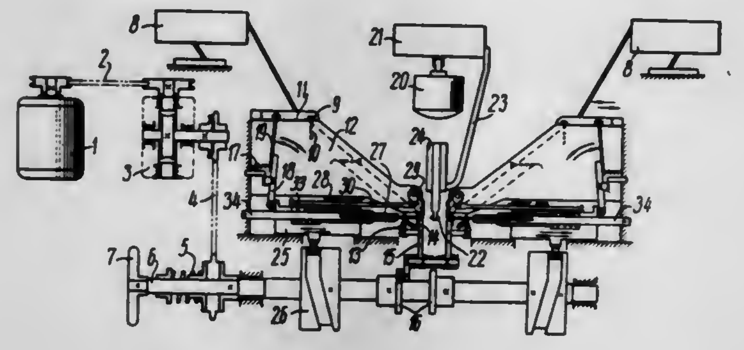
Robert H. Knickerbocker, Cheshire, Conn., assignor to The Dynamic Tool and Manufacturing Company, Inc., Watertown, Conn.
Filed Oct. 27, 1969, Ser. No. 869,730
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 H **1 Claim**



There is disclosed a tool for inserting one or two insulated electrical conductors between one or both slots formed in an electrical connector by three adjacent fingers extending from a base. The tool is adjustable so that cavities of two different widths may be provided, the wider cavity being for insertion of two wires and the narrower cavity being for insertion of one wire. The cavities are of sufficient width that when pushed down over the top of the three adjacent fingers of an electrical conductor, the inner walls of the cavity contact the outer edges of the electrical connector.

3,604,093
DEVICE FOR ASSEMBLING RADIO PARTS WITH AXIALLY EXTENDING WIRE LEADOUTS

Alexel Semenovich Amelchenko, Varshavskaya ulitsa, 58, kv. 37, Lenningrad, U.S.S.R.
Filed Aug. 5, 1969, Ser. No. 847,604
Int. Cl. H01r
U.S. Cl. 29—203 **1 Claim**



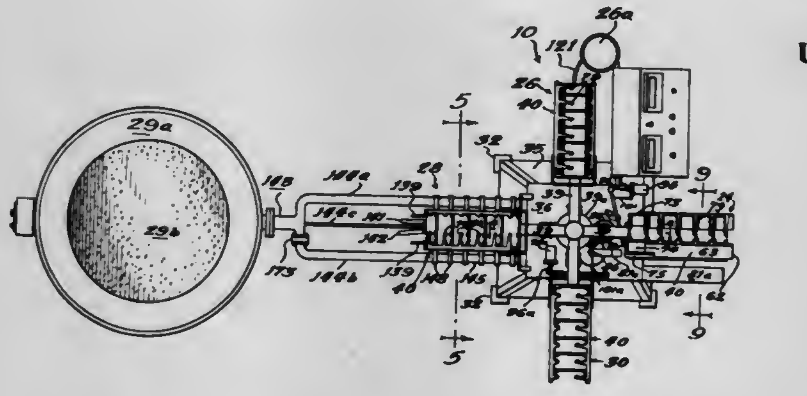
A device for assembling radio parts or similar electronic components having axial wire leadouts, designed mainly for manufacturing miniature radio parts.

The device comprises a distributing shaft, a mechanism adapted for feeding caps with wire leadouts into moveable punches arranged one opposite the other, said punches each having a cylindrical socket and a through opening extending along the punch axis and coaxial with said socket. In order to provide for the setting of one of said caps with wire leadouts into said cylindrical socket, a lock is placed in the path of each punch, said lock being operated from a common driving shaft, and a mechanism adapted for feeding ceramic bases delivers the latter to the place of assembly.

The device facilitates a high-quality assembly of radio parts having small geometric sizes, at a low percentage of rejection.

3,604,094
BATTERY ELEMENT FABRICATING MACHINES

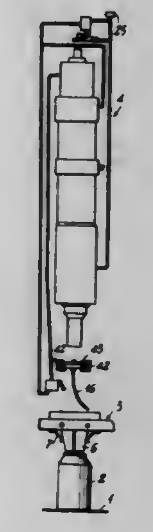
John E. Farmer, Chicago, Ill., assignor to Farmer Mold and Machine Works, Inc.
Division of Ser. No. 650,119, June 29, 1967, Pat. No. 3,504,731.
Filed Mar. 13, 1969, Ser. No. 835,830
Int. Cl. H01m *35/08*
U.S. Cl. 29—204 **8 Claims**



A machine for assembling battery plates and separators into groups by the cast-on method of forming posts and straps on the plates. The machine has a central vertically movable and rotatable column with a plurality of radially outwardly extending plate holding baskets, each of which is rotatably connected to the column and movable therewith between a loading station wherein battery plates are loaded with the basket angularly oriented with respect to horizontal and wherein the plates are loaded with the lugs of the plates projecting upwardly therefrom; a fluxing station; a molding station wherein particular valve means are provided to permit rapid and accurate flow of molten lead into cavities for the formation of battery posts and straps on the lugs of the plate; and an unloading station.

3,604,095
APPARATUS FOR PLACING TUBE STOCK MOUNTED VALVES ON AEROSOL CONTAINERS

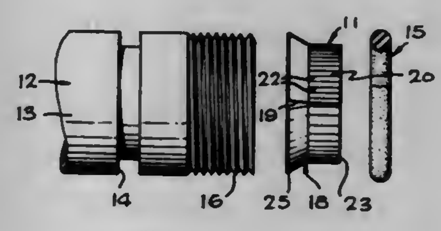
Giancarlo Giuffredi, Milan, Italy, assignor to Coster Technolognle Speciali S.p.A., Milan, Italy
Filed Mar. 3, 1969, Ser. No. 803,577
Claims priority, application Italy, Jan. 2, 1969, 836362
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **9 Claims**



Apparatus for automatically applying tube stock mounted valves on aerosol containers. The apparatus comprises a sucking member gripping and lifting one valve at a time off of a valve feeding device, a tubular body lowering on the valve held by said member overlying its tube stock. A funnel-shaped element, on the major section end of which the lower end of the tubular body rests at the end of its downward stroke, and a rigid platform on which the containers rest with the inlet thereof just below the minor section end of the funnel element. After the tubular body has overlain the valve tube stock, also the valve retaining member lowers on said funnel element causing the tube stock to penetrate into the container and placing the valve on the inlet of said container. Then, said member and said tubular body move up again to rest position. Lowering and lifting movement of said member and said tubular body is pneumatically carried out by compressed air.

3,604,096
SEAL RING APPLICATOR

Yoshiaki Shiroma, 840 W. Maripasa, Santa Maria, Calif.
Filed Apr. 7, 1969, Ser. No. 813,962
Int. Cl. B23p *19/08*
U.S. Cl. 29—235 **1 Claim**

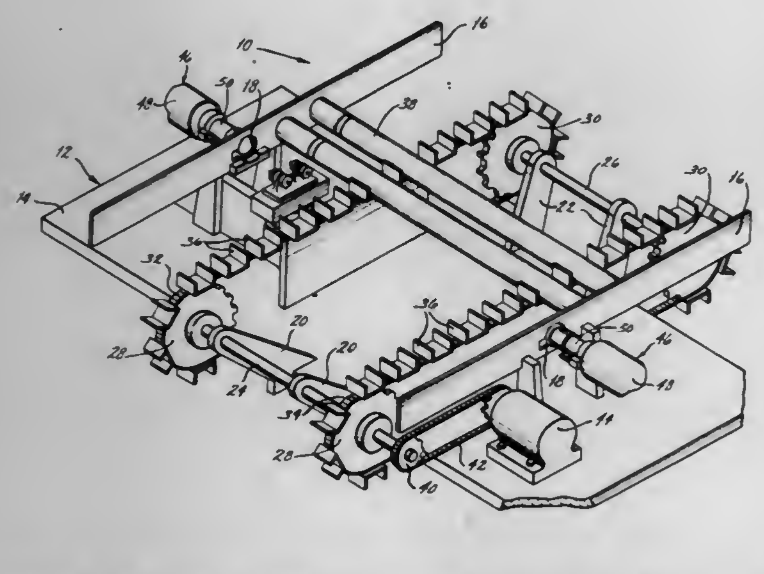


A generally round, axially parted, thin-walled device with a substantially cylindrical section optionally interrupted by axial slits upon which to mount the seal and a flared frustoconical section at one end thereof.

3,604,097
METHOD AND MEANS FOR SHAPING ROCKET LAUNCHER TUBES

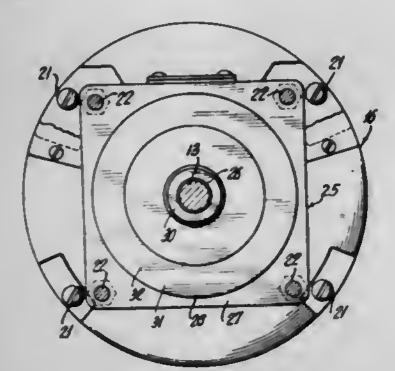
John J. Nash, Ferguson, Mo., assignor to Alsco, Inc., St. Louis, Mo.
Filed Aug. 11, 1969, Ser. No. 849,071
Int. Cl. B23p *17/00, 19/00, 13/04*
U.S. Cl. 29—400 **15 Claims**

A means for shaping rocket launcher tubes includes first and second tool assemblies mounted on a frame and spaced apart from one another and a conveyor adapted to move a cylindrical rocket launcher tube between the tool assemblies. The tool assemblies each include an extensible rotating drum, and an extensible cutting tool. The rotating drums are adapted to extend toward the opposite ends of the tube, and they include feet which are radially extendable to grip the ends of the tube to impart rotational movement thereto. The cutting tools are adapted for moving to engage and cut the outer surface of the tube at its opposite ends while it is rotating. A scoring tool is mounted on the frame and includes at least one roller which is adapted to be pressed against the surface of the tube as it rotates so as to cause an indentation around the circumference of the tube.



3,604,098
METHOD OF SERVICING A PUMP UNIT

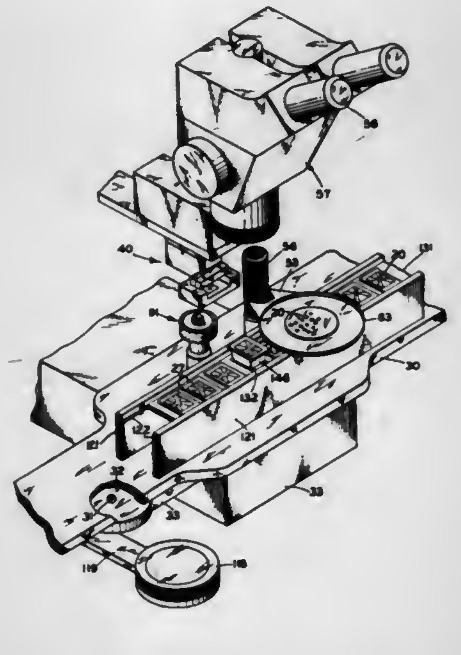
Irwin C. Goldberg, 171 Whitman Drive, Brooklyn, N.Y.
Division of Ser. No. 675,924, Oct. 17, 1967, Pat. No. 3,527,464.
Filed Nov. 25, 1969, Ser. No. 879,868
Int. Cl. B22d *19/10;* **B23p** *7/00*
U.S. Cl. 29—401 **2 Claims**



The disclosure relates to the method of servicing a pump unit and providing a new sealing surface for a bearing bracket of a motor driven impeller shaft of a centrifugal pump which is connected to an open end of a pump body containing an impeller. Separating the pump body from the bearing bracket and removing a rotatable sealing device carried by the shaft and normally engaging with a sealing surface on the end wall of the bearing bracket. Then covering the end wall of the bearing bracket and the sealing surface thereon with a shield plate having an opening through which the impeller shaft extends and an annular section surrounding said opening which defines a sealing surface. Securing the shield plate between the end wall of the bearing bracket and the pump body and installing on the impeller shaft a rotatable sealing device with an annular sealing member thereof seated in the annular section of the shield plate and with an annular surface of the sealing member being in sealing engagement with the sealing surface provided by the shield plate.

3,604,099
METHODS OF AND APPARATUS FOR BONDING LEADED DEVICES TO SUBSTRATES

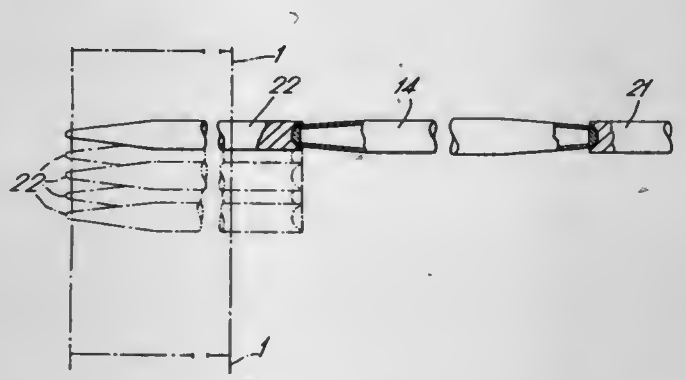
Fred J. Schneider, Catasauqua, Pa., assignor to Western Electric Company, Inc., New York, N.Y.
Division of Ser. No. 724,380, Apr. 26, 1968, Pat. No. 3,477,630.
Filed Aug. 18, 1969, Ser. No. 850,945
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—429 **3 Claims**



Methods of and apparatus for aligning a first article, such as a beam-lead integrated circuit, supported on a pivotally mounted tray with a reference image, and then operating a bonding head to pick up the circuit at an assembled position. The tray and bonding head are moved away from the assembly position and a conveyor is indexed to move a second article, such as a substrate, on a workholder beneath the bonding head. The workholder is lifted out of a nest in the conveyor and elevated to a bonding level where the substrate is aligned with the reference image after which the head is actuated to bond the beam-lead integrated circuit to the substrate.

3,604,100
METHODS OF INSERTING RODS INTO A FRAME

John Basil Tindale, Reading, and James Henry Burgess, Silchester, both of, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Aug. 19, 1968, Ser. No. 753,574
Claims priority, application Great Britain, Sept. 6, 1967, 40820/67
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 **5 Claims**

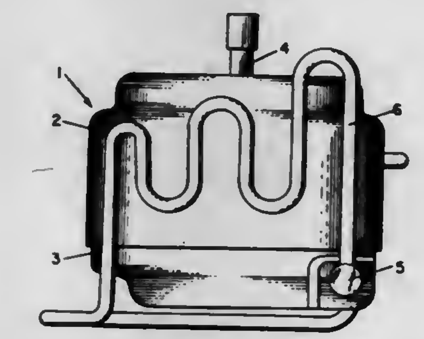


To insert a parallel array of nuclear fuel pins into a wrapper containing transverse grids for locating the pins, the wrapper is first filled with pilot rods of reduced diameter and having tapered leading ends to allow easy passage through the grids. Next the recessed rear ends of the pilot pins are engaged by the front ends of the fuel pins and the latter thrust into the wrapper so that they displace the pilot rods.

Successive rows of fuel pins are thrust into the wrapper by apparatus comprising a plurality of resiliently mounted, grooved roller pairs which locate a row of fuel pins between them, the rear ends of the pins being engaged by a thrusthead which passes between the rollers of each pair.

3,604,101
CONNECTION BETWEEN SHEET-METAL SOUND-ABSORBER AND A PIPE

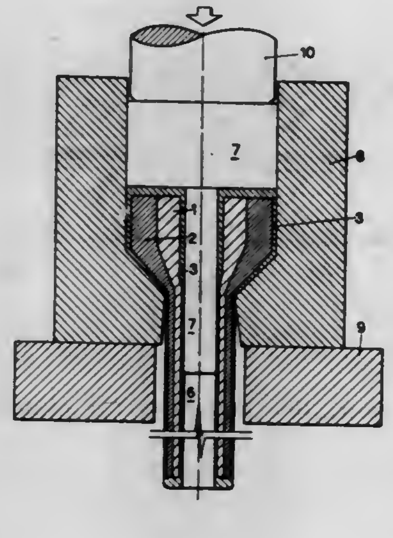
Bent Melchior Karlsen Holme, Humbaek Pr. Skovby, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 10, 1969, Ser. No. 865,249
Claims priority, application Germany, Oct. 10, 1968, P 18 03 794.0
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.7 **5 Claims**



The invention relates to a method for making a connection between a pressure pipe and a sheet metal panel of a refrigeration unit pressure sound-absorber. The connection includes a first annularly shaped part soldered to the sheet metal panel. A second part having intersecting right-angle passages has the pressure pipe soldered thereto in alignment with one of the passages. The two parts are then joined by resistance pressure-welding and the pressure pipe is thereafter bent to a desired shape and welded into position relative to the sound absorber.

3,604,102
PROCESS FOR EFFECTING METALLURGICAL JOINTS BETWEEN TWO DIFFERENT METALS AND THE PRODUCTS OBTAINED THEREBY

Mario Boccalari, Saluggia, Vercelli, Italy; Gianfranco Colombi, Rome, Italy; Mario Gabaglio, Turin, Italy; Aldo Liscia, Turin, Italy, and John M. Siergiej, Wayland, Mass., assignors to Comitato Nazionale Per L'Energia Nucleare, Rome, Italy
Filed Dec. 24, 1968, Ser. No. 786,669
Claims priority, application Italy, Oct. 15, 1968, 827,962
Int. Cl. B21d *31/04*
U.S. Cl. 29—474.3 **14 Claims**



A method of producing tubular joints by a metallurgical bond wherein two tubular masses of different metals are placed one within the other; their facing surfaces are machined to facilitate the bond and then the bond is carried out by extrusion. The composite extruded tube is subjected to a forming operation, and is then machined and finished.

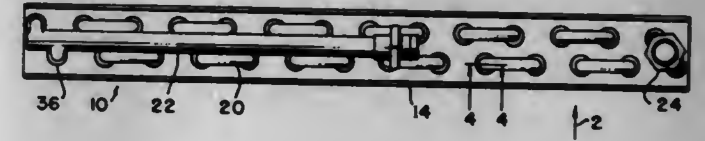
3,604,103
METHOD OF CLADDING METALS AND COMPOSITES THEREOF

John Bonchak, McKees Rocks, Pa., and Leonard M. Bianchi, Cleveland, Ohio, assignors to Cyclops Corporation, Universal Cyclops Specialty Steel Division, Bridgeville, Pa.
Filed Mar. 30, 1966, Ser. No. 538,538
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.3 **10 Claims**

A method of forming an integral metallurgical composite of dissimilar metals one of which is a refractory metal comprising covering the refractory metal with at least one other metal to form a pack, heating the pack and rolling the pack, the heating and rolling being carried out in an essentially inert atmosphere, preferably high purity argon, for a time and at a temperature conducive to achieving a diffusion bond between the metals and the desired combination of mechanical and physical properties of the composite.

3,604,104
METHOD OF PRODUCING ALUMINUM BRAZED COIL

Paul H. Glasgow, 1159 W. Maumee St., Adrian, Mich.
Filed Feb. 26, 1969, Ser. No. 802,433
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 **4 Claims**

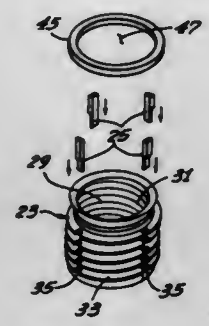


A method of producing an all-aluminum coil is disclosed. In accordance with the method disclosed, hairpin coil tubes and coil fins are assembled with headers, return bends and inlet and outlet tubes. The ends of the hairpin tubes are expanded to receive the return tube portions with a predetermined clearance and the tubes are loaded with a solder ring at the expanded ends thereof. The fins are provided with solder-clad spacing collars around openings therethrough through which the hairpin tubes extend. The hairpin tubes are then expanded to mechanically secure the fin collars to the hairpin tubes. The assembled coil is then placed in a preheat oven and preheated to approximately 1,000° F. to bring the solder to a buttery consistency, after which the preheated coil assembly is immersed in molten Barium chloride salt at approximately 1,100° F. so that the solder rings and cladding on the collars braze the tubes and fins together. The brazed coil assembly is then washed in a hot ammonia bath. Sodium fluoride and lithium chloride fluxes are added to the salt bath to prevent oxidation of the coil components and to control the melting point of the salt bath, respectively.

3,604,105
SEAL ASSEMBLY FOR THREADED PARTS AND METHOD

Ernest Heyworth, Fullerton, Calif., assignor to Fridair Industries, Redondo Beach, Calif.
Filed May 16, 1969, Ser. No. 825,187
Int. Cl. B21d *39/00;* **B23p** *11/00*
U.S. Cl. 29—520 **3 Claims**

This disclosure describes an internally and an externally threaded member with an annular groove in the face of the internally threaded member. A deformable member is positioned in generally confronting relationship with the groove and the two threaded members are threaded together with the deformable member being axially compressed therebetween to cold flow the material thereof into the

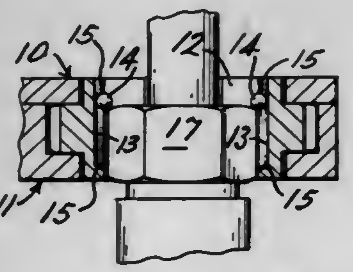


groove. Such cold flow of the deformable material causes a tight seal to be formed between the two members.

3,604,106
FASTENER RETAINER

John A. Borries, Chesterland, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 27, 1970, Ser. No. 23,417
Int. Cl. B25b *13/00, 13/02*
U.S. Cl. 29—526 **5 Claims**

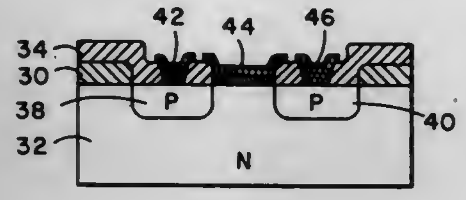


A fastener retainer for positioning open-socketed wrenches and the like upon a fastener. The retainer includes captive grooves extending across the width of the interior surface of a wrench-gripping member. Each groove retains for longitudinal movement between two slide-limit stops a bearing which protrudes from the open face of the groove inwardly from the interior surface of the wrench-gripping member. When a fastener is received axially from either side of the wrench-gripping member, the protruding bearings contact and move ahead of the fastener until forced against a slide-limit stop. The wrench is thereby held in position with a substantial portion of its socket depth in contact with the periphery of the fastener.

3,604,107
DOPED OXIDE FIELD EFFECT TRANSISTORS

John R. Fassett, Irvine, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Apr. 17, 1969, Ser. No. 817,129
Int. Cl. B01j *17/00;* **H01g** *13/00*
U.S. Cl. 29—571 **7 Claims**

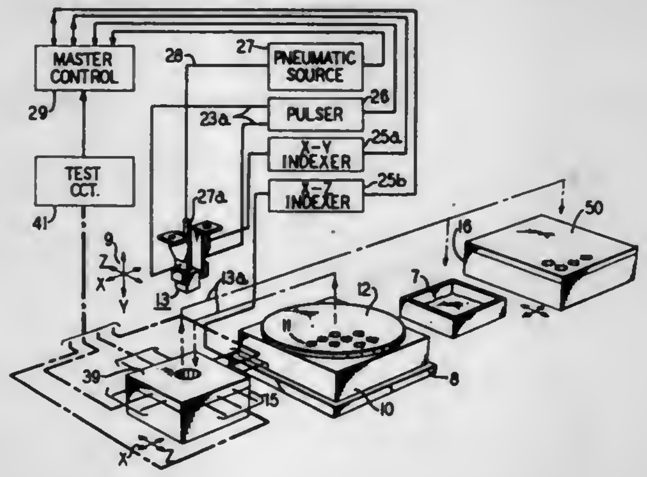


Disclosed is a method of making a field effect transistor with an accurately aligned gate by forming the source and drain regions from a doped layer on the substrate surface. The resulting transistor has reduced internal capacitance and improved speed characteristics.

3,604,108
METHOD FOR HANDLING, TESTING AND BONDING OF BEAM-LEADED DEVICES

Paul Mallery, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 7, 1969, Ser. No. 864,367
Int. Cl. G01r *3/00*
U.S. Cl. 29—593 **6 Claims**

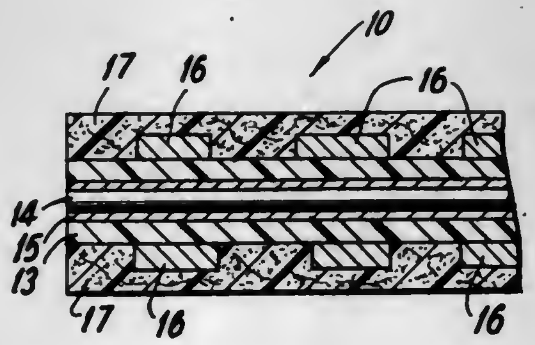


Beam-leaded devices are handles at and after a test stage by a precision movement system requiring only a single pickup of each device from its position as received. A pickup tool is brought in contact with the beam leads of successive devices and pulse-heated to melt the carrier wax and effect a tack bond of the head and leads. Without disturbing the device alignment, the head transfers the device to a prepositioned test station where full dynamic testing occurs. Thereafter, the head moves the device to a carrier, a substrate for bonding or a discard bin.

3,604,109
METHOD OF MAKING HORSESHOE-SHAPED KEEPERED WORD-LINE STRUCTURE FOR MEMORY PLANES

David J. Crimmins, Stockton, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 17, 1969, Ser. No. 877,347
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **6 Claims**

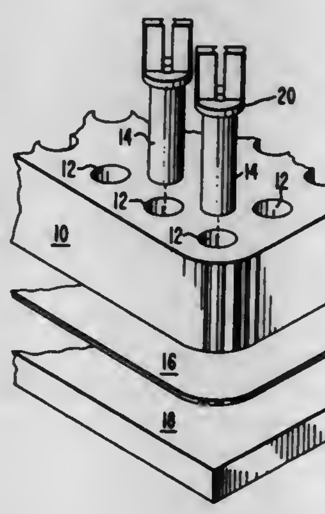


A keepered word-line structure for plated wire and thin film information storage matrices for memories having optimum magnetic field containment properties. Word-lines are formed on a base which has a significantly large amount by weight of a ferrite type material embedded into and covering both sides of a porous, reinforcing, dimensionally stable material, after which the word-lines are "flushed" with a ferrite mixture whereby each word-line is in intimate contact with, and surrounded on three sides by, the keeper material.

3,604,110
METHOD OF MAKING AN ELECTRICAL TERMINAL BOARD ASSEMBLY

Russell E. Jerolamon, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 23, 1969, Ser. No. 793,263
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **5 Claims**

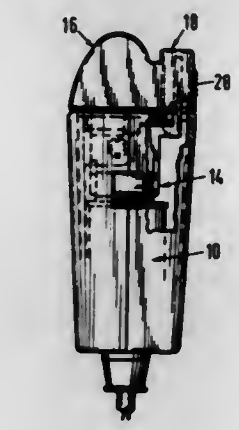


A method of forming a terminal board assembly which comprises the steps of inserting the anchoring parts or pins of electrical accessories or components into holes opening out on one side of an apertured board composed of electrical insulating material and so dimensioned that the inserted ends of the pins are projected beyond the opposite side of the board. Placing a thin imperforate sheet of thermosetting plastic material in juxtaposition to the side of the apertured board from which the pins project. Then applying pressure compressing the plastic sheet against the adjacent side of the board thereby causing the projecting ends of the pins to punch out apertures in the plastic sheet corresponding in size and in registration with the apparatus of the board. Thereafter, subjecting the assembly to a high-temperature environment which first causes the plastic material of the sheet to liquify and flow into the annular spaces between the component pins and the walls of the holes into which they are inserted and then later causes this plastic material to polymerize or harden therein, thereby firmly securing the pins and their associated components to the insulating board.

3,604,111
ELECTRIC SHAVER

Richard Antretter, 8031 Karl Stielerstrasse, Stockdorf, near Munich, Germany

Filed Jan. 17, 1969, Ser. No. 791,962
Claims priority, application Germany, Feb. 1, 1968, P 16 78 178.5
Int. Cl. B26b *19/06, 19/10, 19/38*
U.S. Cl. 30—34.1 **25 Claims**

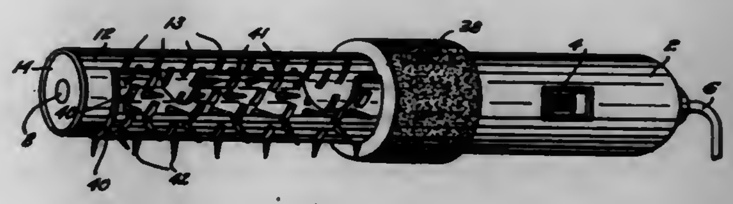


A cutter head housing is detachably secured to a body housing. A shorthair cutter head is covered by said cutter head housing and comprises a part-cylindrical screen, which is carried by said cutter head housing, and a set of knife blades, which conform to and contact said screen and are movable along the axis of the screen. A longhair cutter head is covered by said cutter head housing and disposed laterally beside said shorthair cutter head and comprises an outer comb and a shear comb. which contacts the outer comb and is guided by the latter for movement along the same. The longhair cutter head is detachably connected to said body housing. The arrangement is such that the longhair cutter head is removable as a unit from the cutter head housing when the same is connected to the body housing. Drive means are operable to drive said set of blades and the shear comb and comprise a motor, accommodated in said body housing and having an oscillating armature, and power-transmitting means operatively connecting said armature to the shear comb and arranged to disengage said longhair cutter head as the same is removed from said body housing.

3,604,112
METHOD AND APPARATUS FOR HAIR CUTTING

Krishin H. Bhavnani, 46 Rockland Place, Newton, Mass.

Filed Apr. 29, 1969, Ser. No. 820,159
Int. Cl. B26b *19/20*
U.S. Cl. 30—200 **7 Claims**

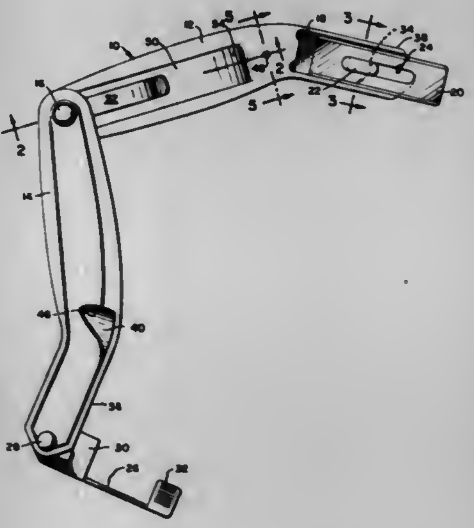


A rotary-blade cutter is combined with an eccentric comb member having rows of teeth, the teeth being made of varying lengths to provide an eccentric effect. The cutter blades when rotated at high speed engage and cut hair ends which are caused to extend through slots in the cutter body. The eccentric comb arrangement operates to provide a variable spacing of the cutting device with respect to the scalp area so that a graduated hair-cutting operation can be efficiently carried out and a desirable trimming effect may be realized.

3,604,113
KNIFE

John F. Cuscovitch, 42 Woodbridge Ave., East Hartford, Conn.

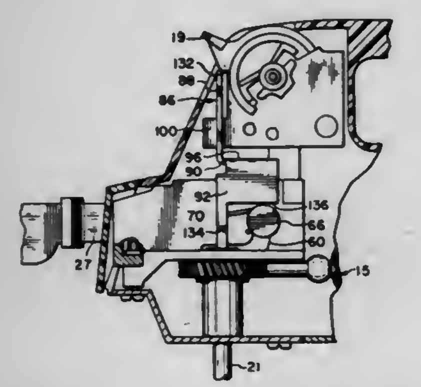
Filed June 4, 1969, Ser. No. 830,309
Int. Cl. B26b *1/02*
U.S. Cl. 30—331 **7 Claims**



A knife is presented having a removable blade housed in a body which is composed of two pivotally mounted segments. A pivot arm with a locking cam element is mounted on one of the body segments, and a removable blade is mounted on a loop on the other of the body segments. In the operating condition of the knife, the cam of the pivot arm engages the loop to simultaneously lock the body segments together and to also secure the blade in a desired position.

3,604,114
ELECTRICAL MIXER-KNIFE

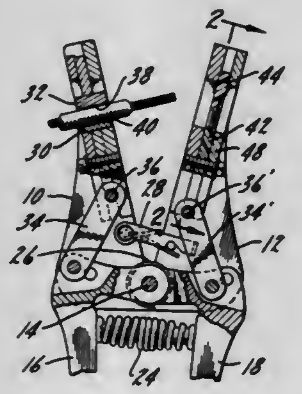
Roy L. Swanke, Newington; Gordon H. Raymond, Southington, and Harvey Levine, Fairfield, all of, Conn., assignors to Dynamics Corporation of America, New York, N.Y.
Filed Dec. 12, 1968, Ser. No. 783,260
Int. Cl. B26b *7/00*
U.S. Cl. 30—272 **8 Claims**



A switch controlled electric hand mixer reciprocates releasable dual knives and rotates releasable dual beaters through a short motor shaft worm gear driving three worm wheels having substantially coplanar axes. The switch can be left in "ON" position when the beaters are present for mixing operations, but it turns "OFF" automatically if the switch is not manually held "ON" when the knives are in operative position. The beaters and knives, both are releasable for gravity withdrawal and cleaning by lost motion action of the switch in its "OFF" position.

3,604,115
PRECISION STRIPPER BLADE

Harrison M. McDonald, De Kalb, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.
Continuation-in-part of application Ser. No. 622,546, Mar. 13, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 584,399, Oct. 5, 1966, now Patent No. 3,416,227. This application Aug. 15, 1969, Ser. No. 854,352
Int. Cl. B26b *17/04*
U.S. Cl. 30—348 **3 Claims**



A stripper blade for use in removing the insulation from one end of an insulated wire and having a cutting knife mounted in an integrally molded supporting structure; the cutting knife has a cutting edge formed with a plurality of notches.

A method of fabricating stripper blades having the steps of forming a cutting knife, inserting the cutting knife in a mold cavity, inserting mold material into the mold cavity, solidifying the mold material, and ejecting the molded stripper blade from the mold cavity.

A mold for use in fabricating stripper blades and having a mold bottom, a mold cover and removable knockout pins adapted to close in registry to form a mold cavity having the contour of the desired molded stripper blade; one removable knockout pin contains molding means and a groove adapted to receive a cutting knife and align the cutting knife in cooperation with registry and alignment pins formed in the mold cover and bottom.

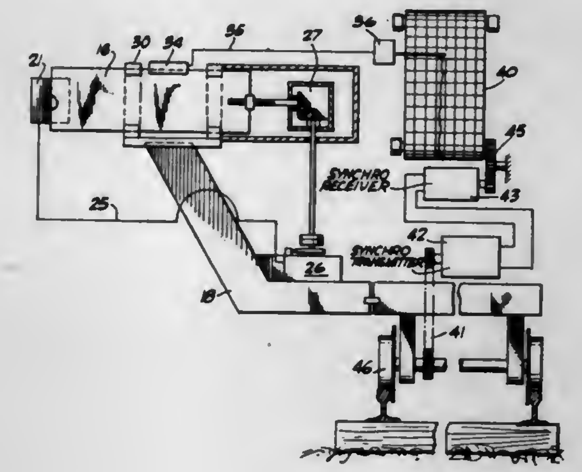
3,604,116
DENTAL IMPRESSION WAFER

Harry Shpuntoff, 40-49 74th St., Jackson Heights, N.Y.
Filed Jan. 8, 1970, Ser. No. 1,545
Int. Cl. A61c *9/00*
U.S. Cl. 32—19 **7 Claims**

A wafer consisting of a plastic carrier foil thinner than 0.020 mm. and of high mechanical strength and a coating of impression wax on one or both faces of the foil can be compressed between teeth of a dentist's patient under high bite pressure without disturbing the normal bite of any tooth in the patient's mouth because of the elastic compressibility of the periodontal membranes. The impressions obtained in the wafer thus are undistorted.

3,604,117
APPARATUS FOR RECORDING TRACK ERRORS

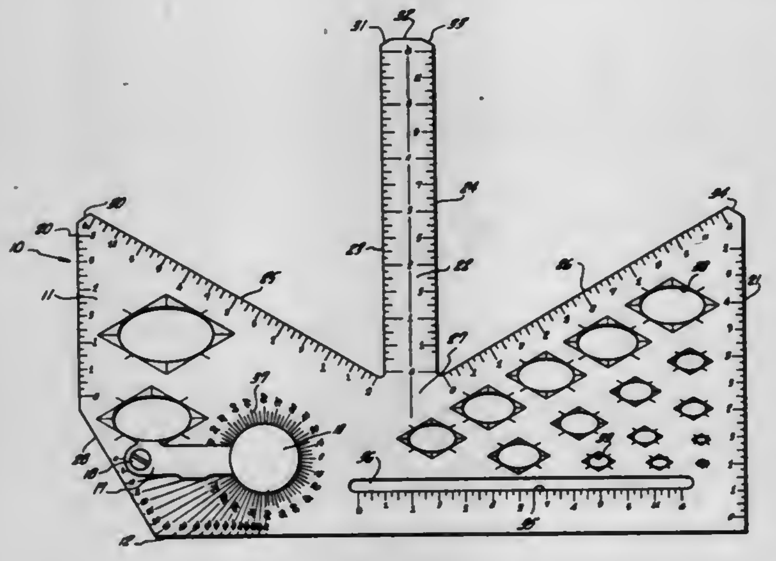
Helmuth Rolf Erich Von Beckmann, Columbia, S.C., assignor to Tamper, Inc., West Columbia, S.C.
Filed Mar. 13, 1969, Ser. No. 807,015
Int. Cl. E01b *29/04*
U.S. Cl. 33—60 **4 Claims**



This invention relates to devices for recording railway track condition, that is to say, surface or alignment condition and has a particular application to alignment condition. A system is provided which comprises a light transmitter mounted on an independent front buggy and which projects an infrared reference beam along the track towards an infrared beam receiver which is mounted on a car for movement along the track. A shadow board is mounted on a frame which may be attached to the car carrying the receiver or which may be mounted on an independent car and positioned between the transmitter and the receiver. The transmitter, receiver and shadow board frame are all referenced to the track. The shadow board is slidably mounted on its frame for outward or inward movement on the frame to hunt about a line of sight drawn between the transmitter and receiver. The hunting motion of the shadow board is controlled from the receiver which acts to drive the shadow board out into the path of the beam when the transmitter is receiving the transmitted beam and to command the shadow board to retract out of the path of the beam when the transmitted light is obscured by the shadow board from the receiver. In this fashion the shadow board is caused to hunt about a deadband datum and to provide with the transmitter and receiver a reference line to which the track condition may be referenced. An electrical or mechanical sensor is provided on the frame to sense the movement of the shadow board relative to the frame and to provide a signal to drive a pen on a moving chart-recording system. The chart is driven from the wheels of the system so that the chart moves along at a speed proportional to the speed of the system movement along the track and the pen traces on the chart a record of the track errors as a function of the shadow board movement from its datum.

3,604,118
DRAFTING INSTRUMENT

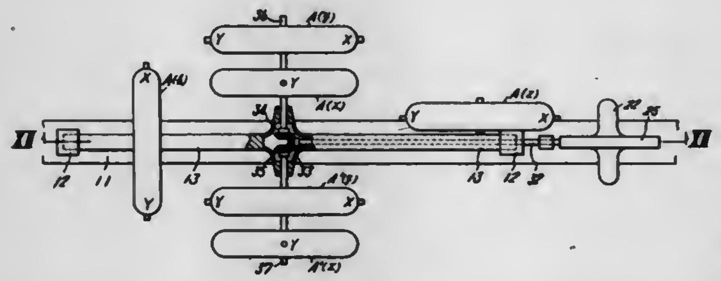
David D. Miller, 259 S. Robertson Blvd., Beverly Hills, Calif.
Filed Jan. 13, 1970, Ser. No. 2,553
Int. Cl. B43l *13/14*
U.S. Cl. 33—104 **2 Claims**



A drafting or drawing instrument is disclosed herein comprising a planar member having a base edge and parallel side edges extending perpendicular from the opposite ends of the base edge. An elongated central portion is integrally formed with the member midway between the side edges so as to cantilever outwardly therefrom. A pair of diverging upper edges extend between the opposite sides edges and the junction of the central portion with the member so as to define a pair of equal angles on either side of the central portion. Proportional scales are provided on all straight edges and a plurality of proportional ellipses are formed in the member. Provision is made for carrying a protractor to allow accurate positioning of the member at any 5° increment angle from 0° to 360° so that a single unitary drafting instrument is produced. Means are provided for detachably coupling the member to the arm of a conventional drafting machine and for assisting manual positioning of the member about the working surface of a drafting board.

3,604,119
AUTOMATIC SURVEYING APPARATUS

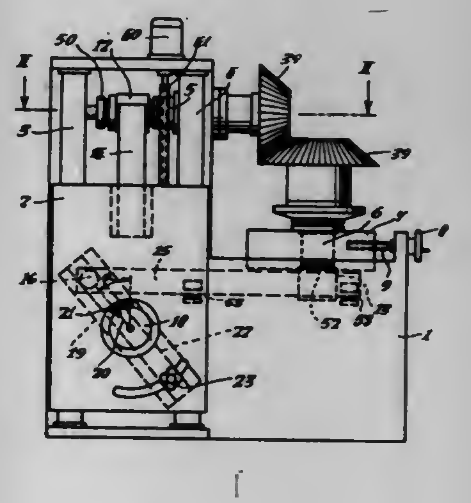
Hiroshi Inoue, 358-2, 1-Chome, Honda Machi, Chiba-ken, Japan
Filed Jan. 9, 1969, Ser. No. 790,075
Int. Cl. G01c *7/04, 9/06*
U.S. Cl. 33—142 **5 Claims**



An automatic surveying apparatus has a controlled shaft mounted along the longitudinal axis of a vehicle for free rotation around its longitudinal axis. An automatic level controller maintains the position of said shaft constant with respect to the horizontal as the vehicle body inclines from side to side. An elevation-measuring level is mounted on the controlled shaft to produce an output with the change in elevation of the vehicle. Two lateral shafts, an adding shaft and a subtracting shaft, are rotatably mounted on said controlled shaft and extend laterally in opposite directions from said controlled shaft perpendicular to the longitudinal axis thereof and horizontally, and a departure-measuring level is mounted on each of said two shafts with the normally level position of each level parallel to the longitudinal axis of said controlled shaft, and a latitude-measuring level is mounted on each of said two shafts with the normally level position of each level perpendicular to the longitudinal axis of said controlled shaft. The adding and subtracting shafts are driven in opposite directions by means for indicating a reference azimuth proportional to the change in direction of said vehicle relative to the reference azimuth, the elevation-measuring level, departure-measuring levels and latitude-measuring levels are liquid levels having liquid-pressure-sensitive electrical resistances therein responsive to changes in the liquid pressure in said levels in proportion to the amount the position of the levels changes, and each of said levels has an electrical circuit coupled thereto in which said resistances are incorporated for producing a current when the level is moved from its normal level. Power supply means provides a power output to the circuits in proportion to the speed of the vehicle. The circuits for the two departure-measuring levels are coupled to each other for producing a current flow in proportion to the departure of the vehicle from a point of origin, and the circuits for the two latitude-measuring levels are coupled to each other for producing a current flow in proportion to the latitude of the vehicle from a point of origin. Integrating means integrates the output of said circuits.

3,604,120
TOOTHED GEARWHEEL SINGLE FLANK TOTAL COMPOSITE ERROR-TESTING APPARATUS

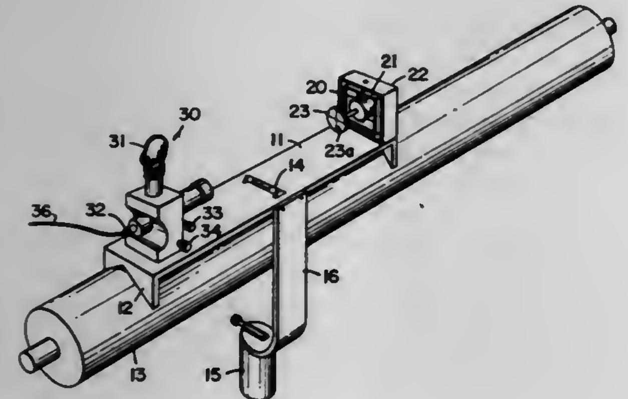
Karl Muller, Zurich, Switzerland, assignor to Maag Gear Wheel & Machine Company, Limited, Zurich, Switzerland
Filed Feb. 25, 1969, Ser. No. 801,973
Claims priority, application Germany, Mar. 15, 1968, P 16 73 86.7
Int. Cl. G01b *5/24*
U.S. Cl. 33—179.5 C **4 Claims**



In apparatus for testing for single-flank total composite error in a bevel gearwheel transmission at a required center spacing and in which the gearwheels to be tested are coupled each to a respective cylindrical measuring disc, and two straight edges roll upon said measuring discs without sliding thereon, one of said straightedges acting upon indicating means, the measuring discs being constructed as base circle discs of constant diameter independently of the transmission ratio of the gearwheels to be tested, and the longitudinal motions of the two straightedges being matched to each other by way of a control bar which is angularly adjustable in accordance with the transmission ratio of the gearwheels, the control bar being mounted on a slide which carries the two straightedges, the other said straightedge having a body rectilinearly guided on said control bar, the axes of the two base circle discs are disposed perpendicularly to each other.

3,604,121
ROLL ALIGNMENT METHOD AND APPARATUS

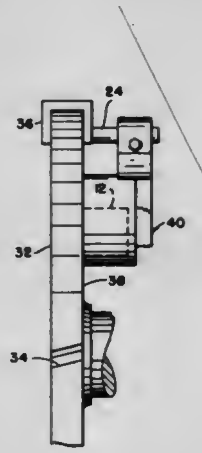
Harold R. Hull, San Leandro, Calif., assignor to Hexcel Corporation, Dublin, Calif.
Filed June 7, 1968, Ser. No. 735,282
Int. Cl. G01b *5/24;* **G01c** *19/24*
U.S. Cl. 33—182 **10 Claims**



A roll alignment method and apparatus having a platform adapted for sequential placement on a plurality of rollers to be made codirectional in which a gyro-controlled optical reflective device is gyro-stabilized on the platform with reference to the first of the rollers so that the platform can be moved to subsequent rollers for alignment of the subsequent rollers with the gyro reference.

3,604,122
MAGNETIC SETUP GAUGE

Hubert Dupuis, Warren, Mich., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Apr. 9, 1969, Ser. No. 814,583
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 **1 Claim**

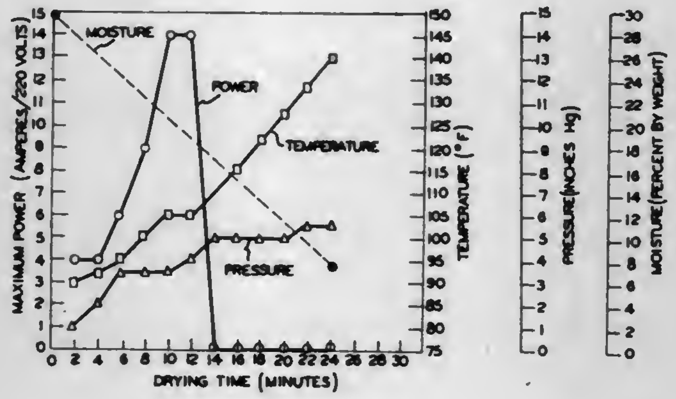


Gauge for setting cutting inserts into a holder comprising a support including magnets for attachment to the holder, and an adjustable gauging abutment on the support.

3,604,123
PROCESS FOR DRYING WET VEGETABLE PROTEIN PRODUCTS

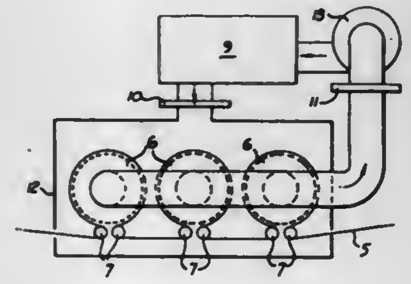
William H. King, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Mar. 31, 1970, Ser. No. 24,312
Int. Cl. F26b *3/00, 7/00*
U.S. Cl. 34—9 **2 Claims**

This invention relates to an improved process for removing water from wet vegetable protein products such as those resulting from absorption of reaction medium during wet processing of the natural vegetable proteinaceous material, which process involves raising the pH of the material within the range 7.0 to 9.0 or alternatively lowering the pH within the range 4.0–5.0.



3,604,124
CONDITIONING OF TEXTILE FABRICS

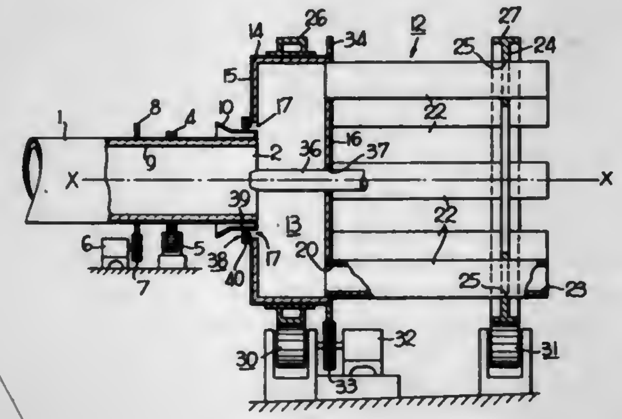
John Albert Medley, Leeds, and Thomas Gerald Cawthray, Ilkley, both of, England, assignors to Wool Industries Research Association, Leeds, England
Filed Dec. 20, 1968, Ser. No. 785,669
Claims priority, application Great Britain, Dec. 23, 1967, 58575/67
Int. Cl. F26b *3/00*
U.S. Cl. 34—23 **6 Claims**



Moisture content of a textile fabric is raised by passing moist air through the fabric. Total moisture content of the air is gaseous, i.e., air is not completely saturated. Fabric is supported during treatment by a movable air-permeable surface, e.g., a drum or conveyor belt, and a fan forces the moist air through the fabric after the air passes through a humidifier.

3,604,125
TUBULAR ROTARY COOLER

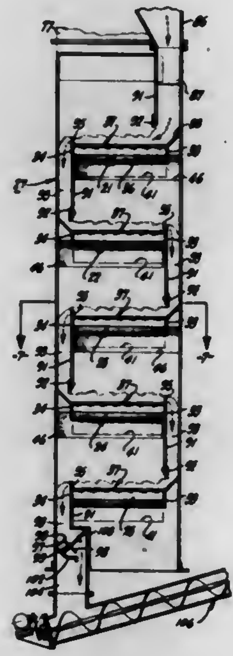
Edward H. Baxa, Genesee Depot, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 19, 1969, Ser. No. 877,889
Int. Cl. F27b *7/38*
U.S. Cl. 34—32 **4 Claims**



A rotary kiln and cooler installation is disclosed, including a generally horizontal rotary kiln, a drive engaging the kiln for turning the kiln about its central axis, and a rotary cooler. The cooler assembly includes a material receiving and distributing drum having a cylindrical shell and first and second end walls. The first end wall is an annular wall defining a central material receiving opening. The second end wall defines a plurality of material discharge ports arcuately spaced from each other and arranged in close proximity to the cylindrical shell. A cluster of material cooling tubes, with one of the tubes being connected to each other of the ports in the second end wall of the drum, are arranged to be parallel to each other and the cylindrical shell of the drum. The tubes each have a discharge opening on an end thereof remote from said drum. Support means engage the assembly for carrying the drum and tubes for rotation about a central axis passing through the drum and cluster of tubes and the assembly is supported with the central axis sloped downwardly from the drum toward the tube discharge openings. Drive means engage the cooler assembly for turning the drum and cluster of tubes around the central axis at a rate independent of the rotation of the kiln and the material is distributed from the drum into the cooling tubes.

3,604,126
GRAIN TREATMENT APPARATUS

John C. Whelan, Woodland, Calif., assignor to Adams & Whelan
Filed Feb. 11, 1970, Ser. No. 10,506
Int. Cl. F26b *17/00*
U.S. Cl. 34—57 C **10 Claims**

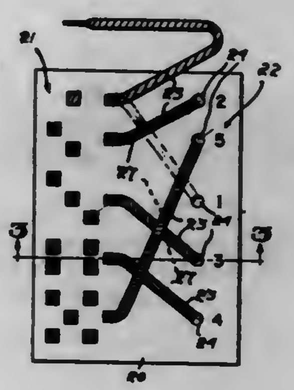


Grain treatment apparatus has a plurality of air boxes arranged one above the other in a column, each box having a perforated upper, horizontal surface constituting a tray. An air circuit includes a manifold for receiving air from spaces between the boxes and leading to an air-grain separator and a source of heat. Grain is fed to the uppermost tray, travels thereover and descends in a zigzag, series path over the other trays to a valve releasing the treated grain at a predetermined rate. There are walls and curtains and weirs within the column to define the air and grain passages.

3,604,127
EDUCATIONAL DEVICES

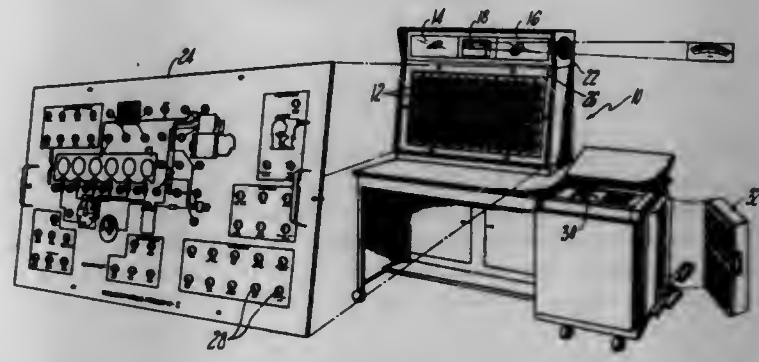
Laurence F. Howatt, 14 Lafayette Terrace, Nahant, Mass., and Charles L. Tilley, 41 Elm St., Saugus, Mass.
Filed July 28, 1969, Ser. No. 848,143
Int. Cl. G09b *3/00*
U.S. Cl. 35—9 R **24 Claims**

Educational devices are disclosed that have stringlike members, each associated with an appropriate unit of a first series and adapted to be passed through any one of a series of holes, each associated with a unit of a second series, thereby to relate appropriate units of the two series together with code means concealed while the members are inserted through the holes and useable while the members are thus attached.



3,604,128
SYSTEM MALFUNCTION ANALYSIS REINFORCEMENT TRAINER

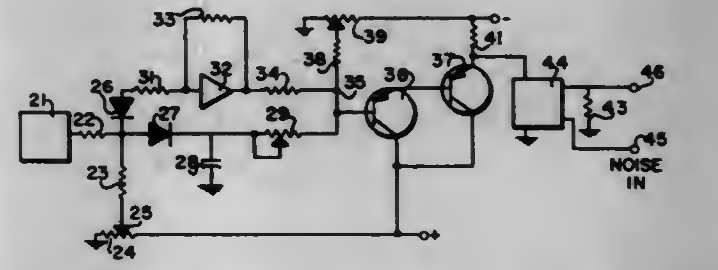
Alfred J. Homann, Cinnaminson, N.J., assignor to EDP-ECC Corporation, Washington, D.C.
Filed Mar. 17, 1969, Ser. No. 807,869
Int. Cl. G09b *25/02*
U.S. Cl. 35—13 **20 Claims**



A teaching machine characterized by visual displays and provision for active student response, the invention including an audio system for simulating sound effects associated with the problem being solved by the student. The invention also comprises a programmable meter which enables simulation of measurements which would be taken by a student on actual equipment under various conditions and a clock circuit which enables dynamic programming of the apparatus.

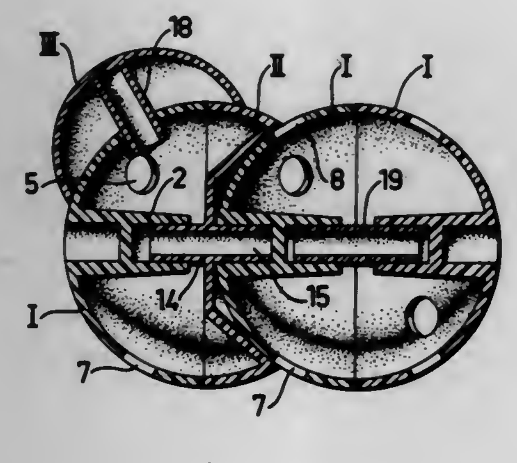
3,604,129
BREATH SOUND GENERATOR

Robert M. Eisenberg, Derwood, Md., assignor to Singer-General Precision Inc., Binghamton, N.Y.
Filed Dec. 4, 1969, Ser. No. 881,965
Int. Cl. G09b *23/28*
U.S. Cl. 35—17 **10 Claims**



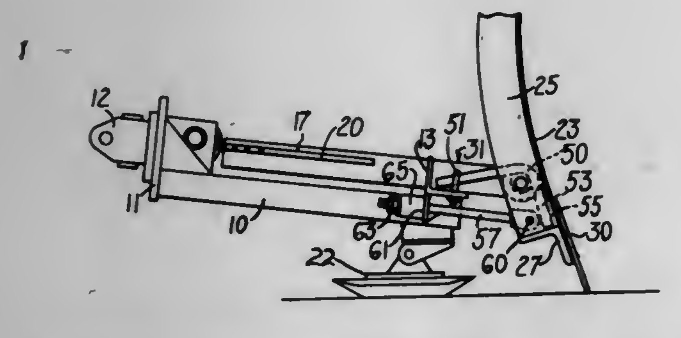
Apparatus is described for generating electrical signals having the same general waveform as the waveform of the sound produced by human breathing. The apparatus comprises a sinusoidal generator, means for adding a DC bias to said sinusoidal wave, means for accepting the two polarities of the sinusoidal wave, means for operating on the two halves separately, and means for combining the two halves into a single waveform and using that waveform to modulate a white noise source.

3,604,130
CONSTRUCTION SERIES FOR MOLECULAR MODELS
Bo Forsstrom, Skalby, Sweden, assignor to Incentive AB, Stockholm, Sweden
Filed June 27, 1969, Ser. No. 837,095
Claims priority, application Sweden, July 5, 1968, Apr. 14, 1969, 9342-1968;5230-1969
Int. Cl. G09b *23/26*
U.S. Cl. 35—18 A **21 Claims**



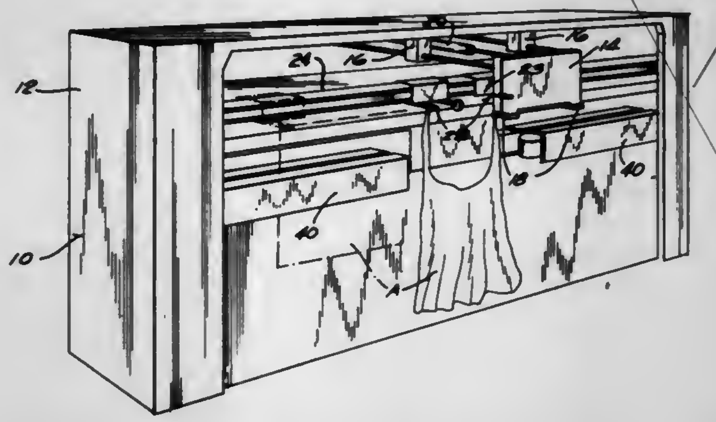
Plural units can be assembled to form models of molecules, and a first unit has the shape of a sphere segment which is larger than a semisphere and has a flat surface formed with a recess and is preferably shell-shaped. A second unit has the shape of a sphere segment which is smaller than a semisphere and has the same radius as the first unit, and the first and second units can be assembled to form a complete sphere. Two of the first units can be assembled so that the spherical surface of one is situated in the recess of the other, thus representing two atoms having their electron clouds intermingled. The units are formed with apertures in their spherical surfaces and with pegs cooperable with the apertures to assemble units to each other.

3,604,131
MOLDBOARD SUPPORTING STRUCTURE
Thomas M. Bogenschutz, Clayton, and Eugene A. Farrell, Evans Mills, both of, N.Y., assignors to Compro-Frink Corporation, Clayton, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,325
Int. Cl. E01h *5/04;* **A01b** *61/04*
U.S. Cl. 37—42 VL **2 Claims**



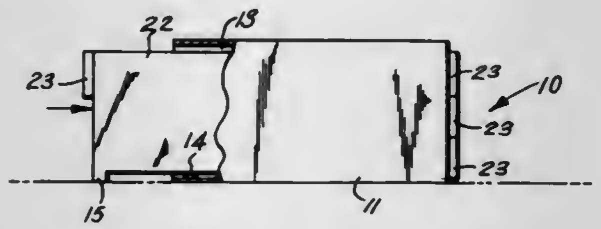
A torsion spring is arranged coaxial with the pivotal mounting of the snowplow moldboard. One end of the spring is fixed to the moldboard supporting frame. The opposite free end of the spring acts against the moldboard assembly below the pivotal mounting thereof to yieldingly restrain movement of the moldboard assembly about its pivot in the event the blade of the moldboard strikes a fixed object.

3,604,132
SPREADER DEVICE FOR FLATWORK
Richard D. Thompson, and Paul W. Frisby, both of Salt Lake City, Utah, assignors to McGraw-Edison Company, Elgin, Ill.
Filed May 18, 1970, Ser. No. 38,097
Int. Cl. D06f *67/04*
U.S. Cl. 38—143 **17 Claims**



Improved device for spreading large articles of flatwork and for feeding same onto a conveyor, and including a beam supported transverse to the conveyor adapted to be reciprocated over the conveyor; where two sleds are mounted on the beam and means reciprocate the sleds, clamps suited to grip the leading edge of the article carried by the sleds and adapted to slide between remote end positions within the sleds whereat detent means hold the clamps until sled separation draws the leading edge tight whereupon the clamps shift to adjacent end positions within the sleds, and a control responsive to the leading edge being drawn tight to stop the sled separation subsequently; where the sled-separating means includes a loop trained over rotatable elements at the beam ends, and a power shaft supported independently of the beam but extended parallel to the beam movement that slides axially within but is keyed to one of the elements; and where the means to reciprocate the beam includes a second loop trained over rotatable elements spaced apart in the direction of conveyor travel and having separate parallel runs, lateral guides for the loop runs and means connecting the loop to the beam.

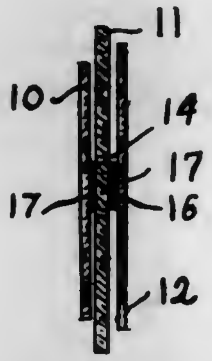
3,604,133
ADVERTISING DISPLAY
Andrea T. Hawa, 441 Oakdale Ave., Chicago, Ill.
Filed Sept. 23, 1969, Ser. No. 860,360
Int. Cl. G09f *11/30*
U.S. Cl. 40—65 **2 Claims**



A device for advertising consisting of a hollow sleeve with an easel support enabling it to remain upright upon a surface. This device includes a plurality of enclosed display cards which may slip out from either end partially depending upon the user's selection.

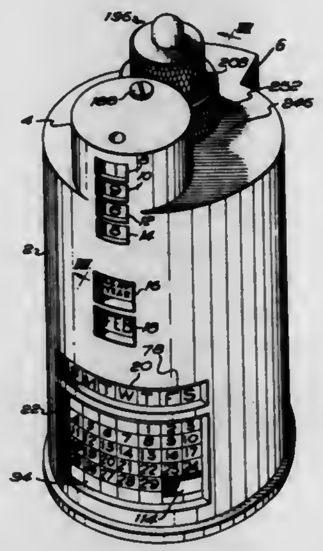
3,604,134
PIVOTS FOR ROTARY SURFACES
Charles F. Clark, 99 Avondale Road, Yonkers, N.Y.
Filed Jan. 30, 1969, Ser. No. 795,305
Int. Cl. G09f *11/04*
U.S. Cl. 40—70 **2 Claims**

Two or three sheets of strong paper, cardboard or any other suitable material are joined so that they can rotate relatively to each other by impressing upon an inner sheet a centrally located circular area and firmly connecting it to a similar area located upon another sheet. Then the circular area of the inner sheet can be separated to form a disc and



the inner sheet can be rotated around that disc. The central area or areas of the outer sheet or sheets can be embossed to form projecting areas firmly connected with the rotary disc of the central sheet.

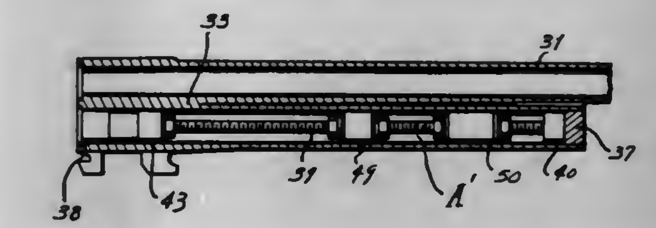
3,604,135
CALENDARS
John Joseph Robinson, 24 Ardee Road, Preston, County of Lancaster, England
Filed Sept. 30, 1969, Ser. No. 862,239
Int. Cl. G09d *3/08*
U.S. Cl. 40—113 **8 Claims**



A mechanical calendar for indicating the day of the week on which a date in any month in a year falls. Symbols for indicating the year numeral, the date numeral, the days of the week and months of the year being arranged on peripheries of annular gears which can be selectively interconnected by gearing mounted in a movable cradle. The cradle is moved so that the gearing selectively engages the year numeral annular gears and the date data annular gear such that when the gearing rotated by a person operating the calendar to change the year numeral to a desired year the date data displayed is simultaneously altered. The cradle is then further moved by the operator to bring the gearing into selective engagement with the months annular gear and the days of the week annular gear so that by further rotation of the gearing to bring the desired month into display the day of the week data displayed is also simultaneously altered.

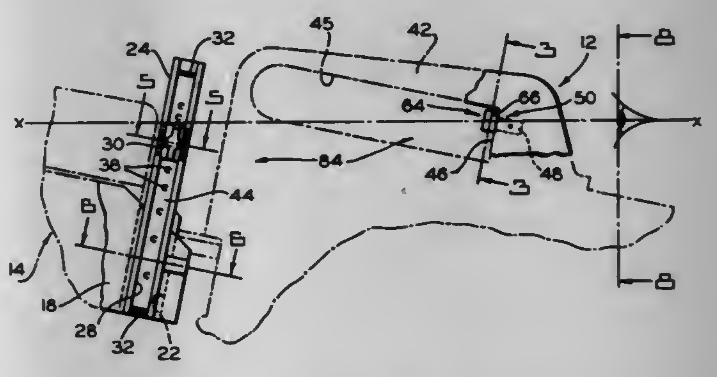
3,604,136
SHOTGUN COUNTERBALANCE
Jesse B. Edwards, 269 Herbert St., Madison, Ill.
Filed Sept. 5, 1968, Ser. No. 758,654
Int. Cl. F41c *27/00*
U.S. Cl. 42—1 R **1 Claim**

A counterbalance for use in shotguns of all types mountable within a compartment below the barrel and having a threaded shaft and at least one weight engaged upon said



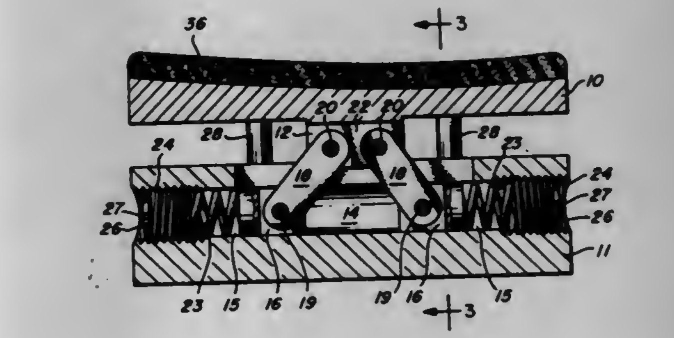
shaft for selected disposition axially thereof so as to compensate for any imbalance.

3,604,137
SIGHTING SYSTEM FOR A FIREARM-CARRIED GRENADE LAUNCHER
Stanley D. Silsby, Granby, Mass., assignor to The United States of America as represented by the Secretary of the Army
Filed June 17, 1969, Ser. No. 834,117
Int. Cl. F41c
U.S. Cl. 42—1 S **5 Claims**



A sighting system for a grenade launcher carried by a shoulder-supported firearm includes a front sight mounted on the launcher for elevational adjustment by means of a track disposed at a predetermined angle relative to the vertical axis thereof to compensate for grenade drift as the front sight is moved along the track for range adjustment. The rear sight is adjustable for windage correction and is pivotally mounted on the firearm so as to be swung thereagainst, out of the way, when not in use.

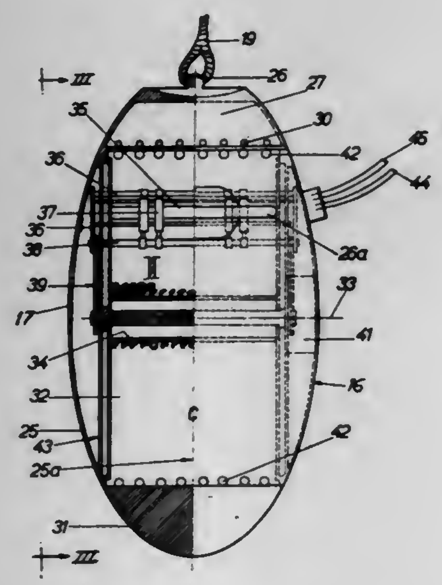
3,604,138
FIREARM RECOIL PAD SHOCK ABSORBER
Jack W. Wilson, 8211 E. Garfield, Phoenix, Ariz.
Filed Sept. 4, 1969, Ser. No. 855,171
Int. Cl. F41c *23/00*
U.S. Cl. 42—74 **7 Claims**



An improved shock absorber, particularly a shock absorber adapted for use as a recoil pad in handheld firearms. A pair of body members are secured in movable relationship to each other. A projection from the first body member extends into a mortise in the second body member. Pistons are disposed in bores in the second body member and contact springs which are also disposed in said bores. The outer portions of the bores are threaded to receive adjusting screws. As the first body member moves toward the second body member, the pistons compress the springs thereby absorbing recoil from the firearm. The individual user can adjust the amount of spring compression by moving the adjusting screws inwardly to increase compression or outwardly to decrease compression of the springs.

3,604,139
APPARATUS FOR SEINE PURSING AND METHOD FOR PURSING A SEINE THEREBY

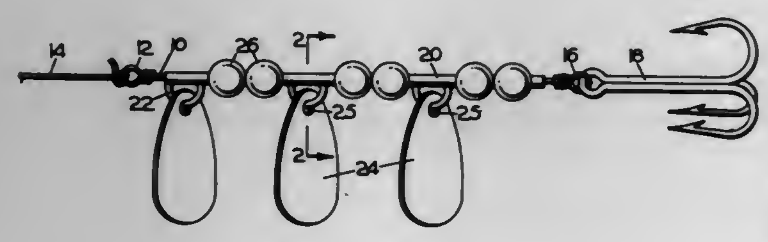
Paul Strom, 5302 Strusshanm, and Erling Allers, Salasen 43,, 5050 Nesttun, both of, Norway
Filed May 9, 1969, Ser. No. 823,373
Int. Cl. A01k *73/12*
U.S. Cl. 43—4.5 **13 Claims**



A submersible winch assembly for pursing a Seine includes a supporting housing, a spool device rotatably supported in the housing, a motor supported in the housing operatively connected to the spool, opening means in the housing for admitting one or both ends of the Seine-pursing line on to the spool device, and suspension means for supporting the winch assembly from a fishing vessel in a suspended submerged position in the vicinity of the bottom level of the Seine, and means for transmitting power from a source on the vessel to the motor, including means for remotely controlling and operating the winch in submerged position from the fishing vessel.

3,604,140
FISH LURE

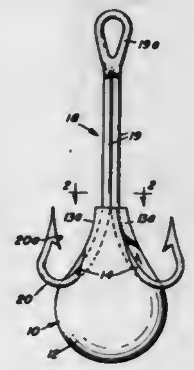
Dudley W. Nelson, Portland, Oreg., assignor to Maxwell Manufacturing Co., Vancouver, Wash.
Filed Feb. 4, 1969, Ser. No. 796,334
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.13 **4 Claims**



A fish lure having supporting shaft portion with an eye at one end for connection to a fishline and an eye at its other end for connection to a hook. Rotatably mounted on the shaft is a sleeve to which are connected multiple flasher blades. All the flasher blades are connected to the sleeve or to the shaft through openings in the sleeve so that as the lure is trolled through the water the said blades and sleeve rotate in unison. In one embodiment, the sleeve comprises a one-piece, full-length member and in another embodiment, the sleeve is segmented to facilitate assembly of the lure.

3,604,141
SNAG-PREVENTIVE SINKER FOR TREBLE FISHHOOKS

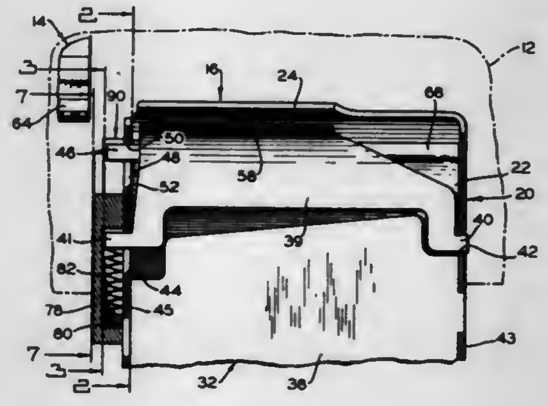
Robert E. Spencer, Rt. 2, Nokesville, Va.
Filed Apr. 11, 1969, Ser. No. 815,378
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.81 **1 Claim**



A lead sinker for a three-pronged fishhook is formed in a mold. The sinker has a hemisphericallike bottom from which there extends upwardly three spaced-apart tongue portions, forming therebetween a void space and their spacing projects as slots into the top of the hemisphericallike bottom. The bottoms of the slots are concave to conform to the curved portion of the fishhook that extends outwardly from its central shank. The shanks and curved portions of the hooks are received in the void space between the tongues and in the slots. Each tongue has an integral formed flap along one respective edge and this flap is bent over the nested shank of the hook thereby forming a smooth closed securement over the shank.

3,604,142
FOUR-STACK CARTRIDGE MAGAZINE

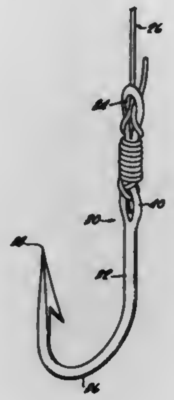
Stanely D. Silsby, Granby, Mass., assignor to The United States of America as represented by the Secretary of the Army
Filed June 30, 1969, Ser. No. 837,452
Int. Cl. F41c *25/02*
U.S. Cl. 42—50 **7 Claims**



A firearm magazine for holding four stacks of cartridges and successively positioning them for removal includes partition-separated primary and secondary chambers each adapted for holding a double-stack in staggered relationship. The partition includes a divider pivotally mounted for vertical displacement to open the chambers for loading cartridges thereinto and rotational displacement to releasably retain the cartridges in the secondary chamber until the primary chamber is depleted. The divider is releasably blocked in the retaining position by a slide actuable by the follower in the primary chamber when depleted, to release the cartridges in the secondary chamber.

3,604,143
DOUBLE-EYE FISHHOOK

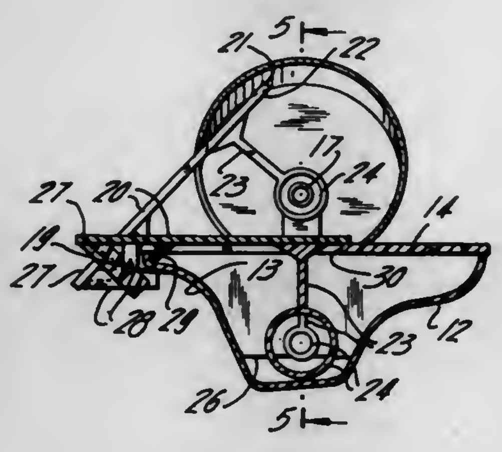
Charles T. Sauers, 412 E. Princeton, Ontario, Calif.
Filed July 2, 1969, Ser. No. 838,555
Int. Cl. A01k *91/04*
U.S. Cl. 43—44.83 **2 Claims**



A fishhook with a shank having a guide at one end and a bight with a barbed point at the other end, and an anchor eye formed on the shank between the guide eye and the bight. The fishhook is secured to the fishing line by passing the line through the guide eye wrapping it around the shank, passing the line through the anchor eye wrapping it around the shank again and passing it back through the guide eye.

3,604,144
BUBBLE-BLOWING TOY

Samuel Span, 93 Belmont Ave., Teaneck, N.J.
Filed July 31, 1968, Ser. No. 749,212
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **6 Claims**

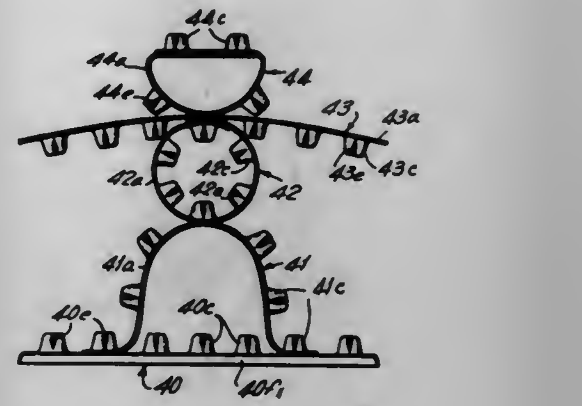


A toy for selectively blowing bubbles of various sizes having a funnellike blowing tube with a mouthpiece on the smallest end of the funnel, a fluid container below the funnel and a plurality of bubble-forming rings dipping into the container. The bubble-forming rings are finger operated by "keys" to tilt them out of the container and into the centerline of the bubble-blowing action of the funnel.

3,604,145
SEVERAL FLEXIBLE STRIP HAVING NESTABLE CUP ELEMENTS THEREON

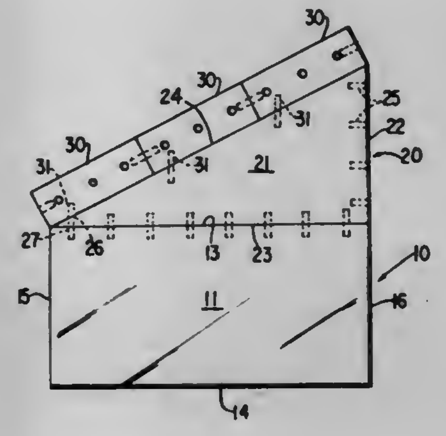
Victor Zimmerman, 64-56 Ellwell Crescent, Rego Park, N.Y.
Filed Sept. 3, 1968, Ser. No. 756,813
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **8 Claims**

An elongate strip of stiff flexible sheet material having formed therein a row of openings and provided with a plurality of bounding walls upstanding from the strip and each extending about a respective opening. The strips may be frictionally connected by nesting the bounding walls of one strip in the opening of another.



3,604,146
RECTANGULAR AND TRIANGULAR BLOCKS WITH MEANS ENABLING ONE PIN TO CONNECT THREE BLOCKS

David A. Winer, 88 Balcort Drive, Princeton, N.J.
Filed Sept. 13, 1968, Ser. No. 759,732
Int. Cl. A63h *33/12*
U.S. Cl. 46—26 **1 Claim**

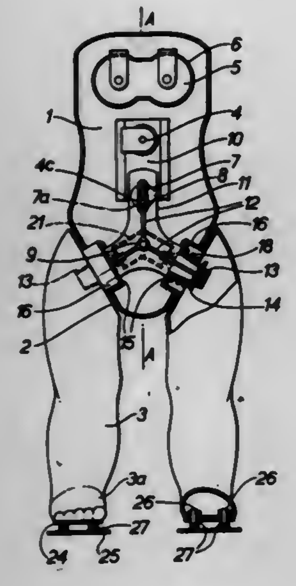


A set of rectangular and triangular building blocks of uniform thickness having holes around their peripheral side faces with the centers of the holes being spaced apart a distance equal to the thickness of the blocks and the centers of the end holes being a distance of about one-half the block thickness from the respective face ends. The holes include some enabling a single straight dowel to connect two rectangular blocks, each parallel to a respective side face of a triangular block lying therebetween.

3,604,147
WALKING DOLL

Enrico Ceccon, Noale, Venezia, Italy
Filed May 28, 1969, Ser. No. 828,630
Claims priority, application Italy, May 28, 1968, Feb. 25, 1969, 60-230-A/68;60-213-A/69
Int. Cl. A63h *11/14*
U.S. Cl. 46—150 **10 Claims**

Self-walking doll having an inner motor-driven mechanism comprising a crank-operated equilateral lever arm system.

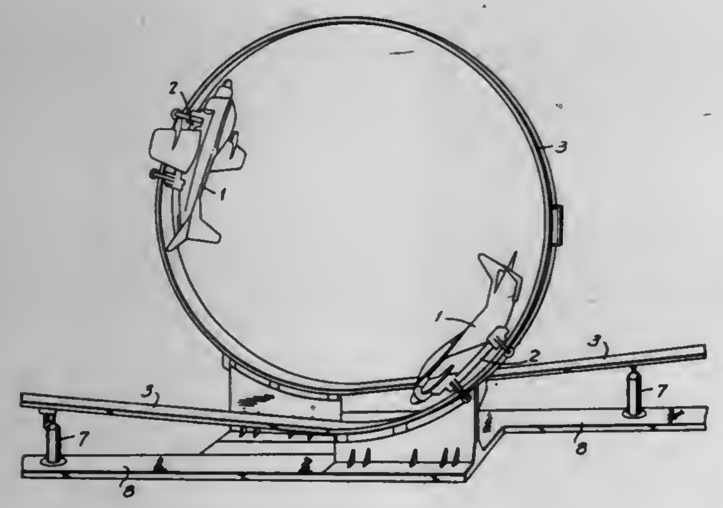


Two arms of the lever arm system are articulatedly jointed to a pair of limbs, such as legs.

3,604,148
TOY LAYOUTS FOR MODEL AIRCRAFT AND OTHER TOYS

Hermann Neuhierl, 8510 Furth (Bayern), Waldstr. 36, Germany

Filed Dec. 27, 1968, Ser. No. 787,533
Claims priority, application Germany, July 29, 1968, P 17 03 914.4
Int. Cl. A63h *19/00*
U.S. Cl. 46—216 **10 Claims**

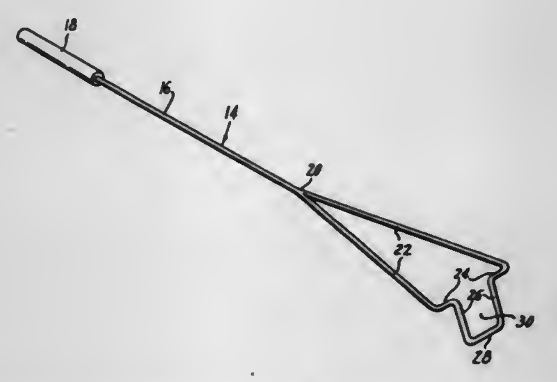


The layout is assembled from a plurality of track sections each comprising a rail length and adapted to be twisted so that the assembled sections define a desired track or path of spatial movement of the aircraft or other toy, the latter having drive mechanism including a support wheel which engages a running face at one side of the track, and including also a guide element adapted to engage a guide face at the opposite side of the track, said guide element cooperating with the associated support wheel to hold the toy on the track during movement therealong.

3,604,149
SPORTING PIECE FOR IMPELLING A HOOP OR WHEEL

Andrew P. Salontai, 2012 Woodstock Way, Sacremento, Calif.

Filed Apr. 28, 1969, Ser. No. 819,784
Int. Cl. A63h *33/02*
U.S. Cl. 46—220 **1 Claim**

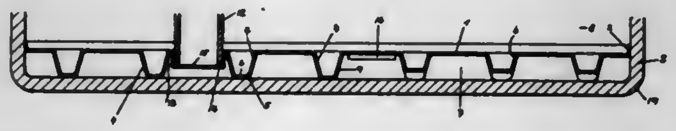


A preferably metal bar is provided at one end with a handle and at its other end with a closed-bottom recess adapted to engage the peripheral portion of a hoop or wheel to move it over a playing surface, the device being particularly intended as a game piece for use in a contest between two or more people rolling hoops or wheels in competition with each other.

3,604,150
INSET TRAY FOR PLANT CONTAINERS

Gerhard Baumann, Bumpliz-Bern, Switzerland, assignor to Interhydro A.G., Berne, Switzerland

Filed Aug. 11, 1969, Ser. No. 848,946
Claims priority, application Switzerland, Aug. 27, 1968, 12834/68
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 **10 Claims**



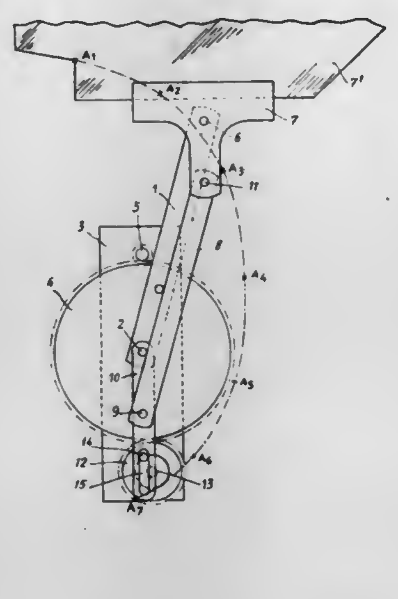
An insert tray for plant containers, including a liquid-filling tube, and a plate-shaped tray for subdividing the plant container into a lower liquid space and an upper plant-cultivating space, said plate-shaped tray having hollow ribs extending downwardly from the surface of the tray and having openings at their bottom, the improvement of providing a removable liquid-filling tube and a unique shape of the ribs permitting attaching of a plurality of trays in a lesser height than previously required.

3,604,151
AUTOMOTIVE WINDOW REGULATORS

Pierre Ventre, and Andre Reilhac, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Oct. 21, 1969, Ser. No. 867,991
Claims priority, application France, Oct. 31, 1968, Aug. 13, 1969, PV 172274;PV 69/27,873
Int. Cl. E05f *11/52*
U.S. Cl. 49—227 **12 Claims**

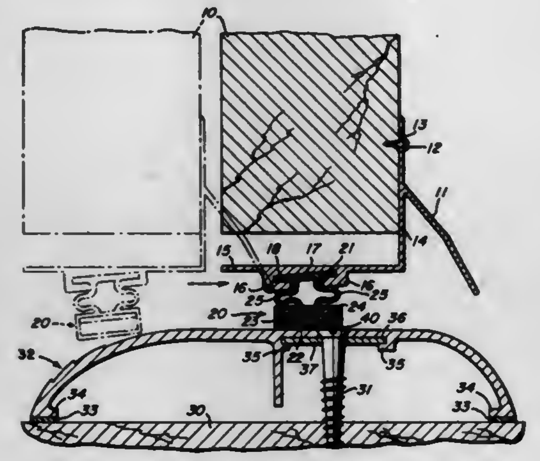
A window regulator notably for automobiles, of the twin-link-type, characterized in that the links pivoted at one end to the glass-supporting bracket are so actuated that they do not move in parallel relationship in order to cause the glass to follow a curved path.



3,604,152
MAGNETIC THRESHOLD CONSTRUCTION

John M. Protzman, Dayton, Ohio, assignor to The Ever-Roll Manufacturing Corporation, Dayton, Ohio

Filed Oct. 20, 1969, Ser. No. 867,485
Int. Cl. E06b *1/70*
U.S. Cl. 49—470 **6 Claims**



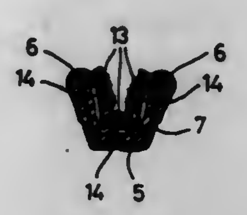
A threshold assembly which includes a stationary lower threshold plate and a resiliently mounted upper sealing member, one of which incorporates a magnet so that the sealing member is brought into sealing engagement with the lower threshold plate by magnetic attraction when the door with which the assembly is associated is closed. A ferrous backing strip may be installed with the magnet to concentrate the magnetic flux field and increase the strength of the magnet and, if the member opposite the magnet is constructed of a nonferrous material, a second strip of ferrous material is mounted in that member.

3,604,153
PROCESS FOR THE PRODUCTION OF A TEXTILE MATERIAL

Karl Hess, Althengstett Kreis. Calw, Germany, assignor to Strahle & Hess, Althengstett, Germany

Filed Oct. 23, 1968, Ser. No. 769,889
Int. Cl. E06b *7/16*
U.S. Cl. 49—441 **5 Claims**

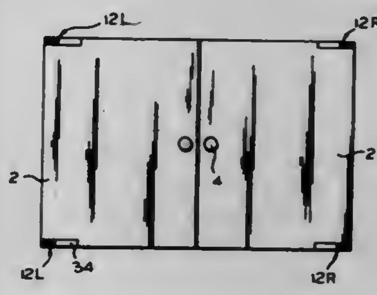
A sealing strip for sliding glass window panes is formed by floating yarns of unshrinkable material on a base material capable of shrinkage, so that when subjected to treatment to produce shrinkage a terry cloth material is produced.



3,604,154
CABINET DOOR CONSTRUCTION

Frank J. Curran, DownersGrove, Ill., assignor to Geneva Industries, Inc.

Filed Feb. 16, 1970, Ser. No. 11,391
Int. Cl. E06b *3/00*
U.S. Cl. 49—501 **10 Claims**

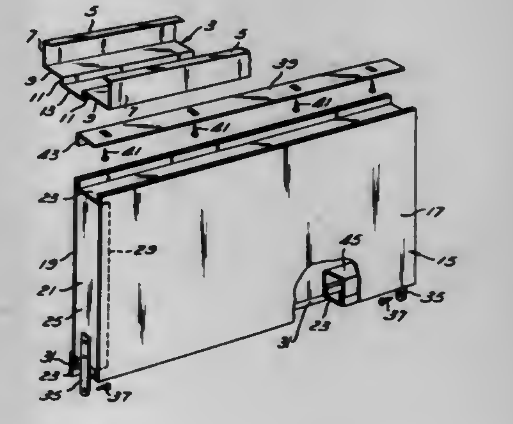


A cabinet construction and means are disclosed which makes it possible for even the most unskilled to properly hang wooden doors on steel kitchen cabinets, for instance, wherein the doors are notched at opposing edges adjacent the edge of the door which is to be hingedly secured by means of a specific hinge and adapter plate assembly wherein easy mounting of doors in a proper fashion is achieved.

3,604,155
TRANSOM PANEL

Arthur S. Brown, Girard, and Edward L. Durch, Warren, both of, Ohio, assignors to The American Welding & Manufacturing Company, Warren, Ohio

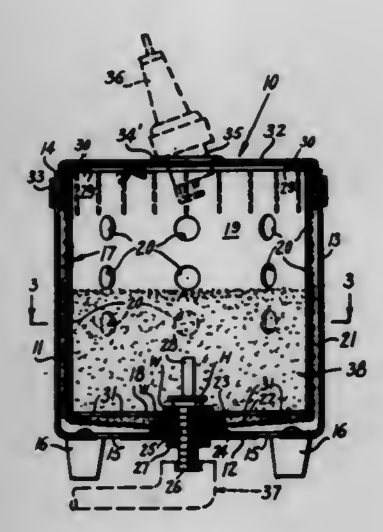
Filed Jan. 29, 1969, Ser. No. 795,014
Int. Cl. E06b *1/18, 7/00*
U.S. Cl. 49—504 **3 Claims**



A hollow sheet metal transom which can be readily made with a minimum of hand labor and can be assembled with, and disassembled from, sheet metal doorjambs by a comparatively unskilled workman using only simple tools.

3,604,156
SMALL PORTABLE UNIVERSAL SPARK PLUG CLEANER

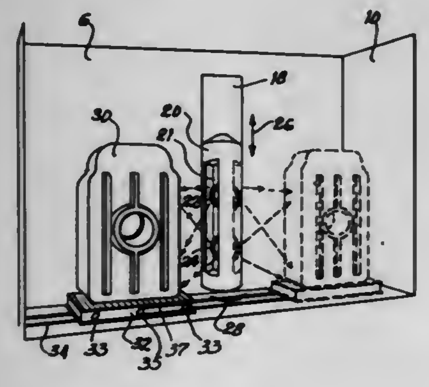
Thomas M. Diggs, 1349 Otis St. N.E., Washington, D.C.
Filed Jan. 10, 1970, Ser. No. 7,073
Int. Cl. B24c *3/06*
U.S. Cl. 51—8 **5 Claims**



A spark plug cleaner is disclosed in which a sealed chamber is provided into which the sparking end of a spark plug is inserted. Sand in the chamber is agitated by air so as to blast against the electrodes of the spark plug and the lower end of the spark plug to clean carbon deposits therefrom. A filter is provided to permit the escape of air from the chamber without permitting the escape of sand therefrom.

3,604,157
BLAST MACHINE WITH AUTOMATIC BLAST WHEEL POSITIONER

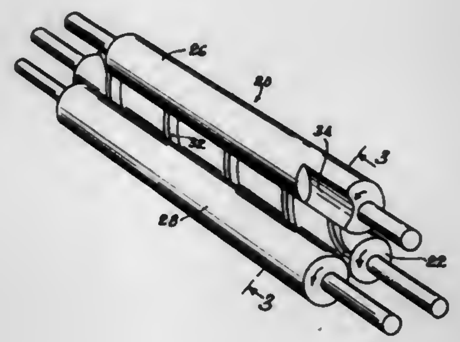
James W. Fogle, Walkerton, Ind., assignor to The wheelabrator Corporation, Mishawaka, Ind.
Filed Apr. 10, 1969, Ser. No. 815,069
Int. Cl. B24c *3/14*
U.S. Cl. 51—9 **12 Claims**



This application discloses a blast machine which includes a turret movable in a vertical plane and rotatable in a horizontal plane. Mounted inside the turret are throwing wheels which are supplied from a source of surface-treating material. The turret is mounted in a wall of a blast chamber so that when a workpiece to be treated is inside the chamber the turret may be moved vertically and rotated horizontally to insure treatment of the entire surface of the workpiece. The workpiece may be mounted on a carriage and moved to different positions within the chamber. The application also discloses an automatic control system so that the motions of the turret and the carriage may be controlled by a program stored on a data storage medium.

3,604,158
APPARATUS FOR TREATING CYLINDRICAL WORKPIECES

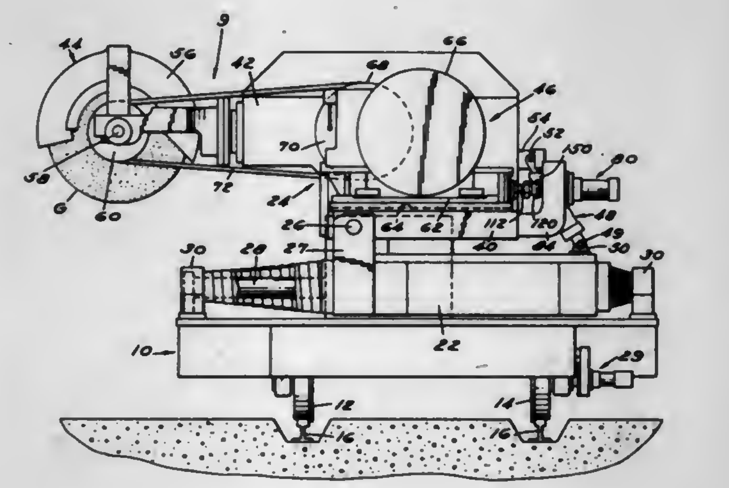
Robert L. Daffron, Mishawaka, Ind., assignor to The Wheelabrator, Mishawaka, Ind.
Filed Feb. 11, 1969, Ser. No. 798,370
Int. Cl. B24c *3/14*
U.S. Cl. 51—15 **8 Claims**



In order to provide for the complete surface treatment of cylindrical workpieces a surface-treating machine is provided with a roll cluster including a feed roll and guide rolls extending through a treatment chamber. The feed roll has a screw flight having a pitch a little greater than the length of a workpiece and workpieces are deposited in one pitch length of the screw flight by a contoured portion in one of the guide rolls.

3,604,159
BELT TIGHTENER FOR GRINDING MACHINES

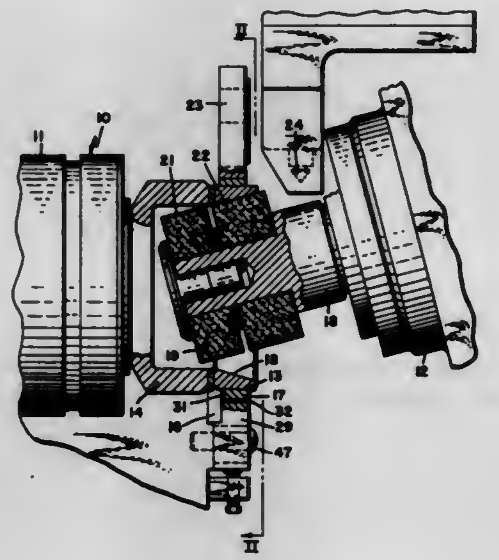
Richard G. Hopkins, Bennington Township, Shiawassee County, Mich., assignor to MWA Company, Owasso, Mich.
Filed Dec. 2, 1969, Ser. No. 881,364
Int. Cl. B24b *7/02;* **F16h** *7/10*
U.S. Cl. 51—35 **11 Claims**



The disclosure relates to a belt tightener for a grinding machine. A drive unit has a belt extending to the grinding wheel, and a power device has a lost-motion connection with the drive unit to retract the drive unit away from the grinding wheel to tension the belt. A latch holds the drive unit retracted. A cam carried by the power device is operative within the limits of the lost-motion connection to release the latch when the power device is reversed to thereby untension the belt.

3,604,160
GRINDING MACHINE

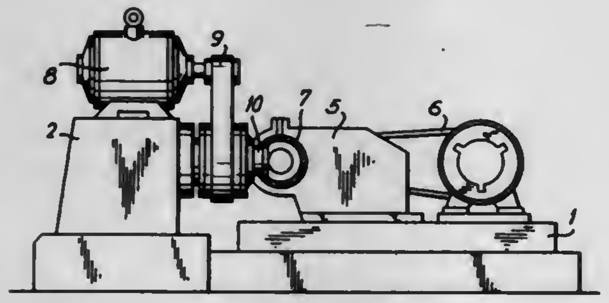
Donald E. Ware, Jr., Westboro, Mass., assignor to The Heald Machine Company, Worcester, Mass.
Filed Apr. 23, 1969, Ser. No. 818,704
Int. Cl. B24b *5/00, 5/18, 41/06*
U.S. Cl. 51—103 R **7 Claims**



A grinding machine having fixed contact elements on which the workpiece is supported, the elements including a hardened metal insert floating on an elastomer bed.

3,604,161
ARRANGEMENT FOR LOCATION AND ROTATION OF WORKPIECES

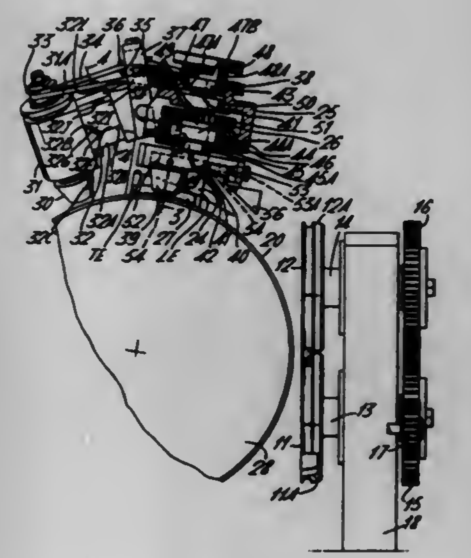
Viktor Fedorovich Khrolenko, Zvezdnaya ul., 18, kv. 110; Askold Ivanovich Nefedov, Kolomyali, 2 Nikitinskaya ul. 8, kv. 5; Iosif Davydovich Gebel, Svetlanovsky prospekt, 35, kv. 54; Arkady Alexandrovich Zykov, prospekt Smirnova, 15, kv. 5.; Jury Viktorovich Kargin, ulitsa Smirnova 10a, kv. 21; Sergei Sergeevich Konovalov, ulitsa Smolyachkova 13 kv. 16, and Viktor Ivanovich Parshikov, prospekt K. Marx 70, kv. 93, all of Leningrad, U.S.S.R.
Filed Sept. 16, 1969, Ser. No. 858,387
Int. Cl. B24b *5/02*
U.S. Cl. 51—237 **10 Claims**



An arrangement to locate and rotate workpieces with a plane location face and a locating surface of rotation, used mainly for the machining of such workpieces and comprising a drive with a workpiece dog, supporting means, and force elements pressing the workpiece against the supporting means and the dog, wherein the supporting means constitute a combination of two stationary radial supports spaced apart to carry the workpiece surface of rotation, and at least one stationary axial abutment determining the position of the workpiece face. The workpiece dog is capable of self-alignment against the workpiece face, and the force elements are arranged so as to press the workpiece face against the axial abutment with a force less than that of the dog pressure against the workpiece.

3,604,162
GRINDERS FOR HELICAL CUTOFF KNIVES

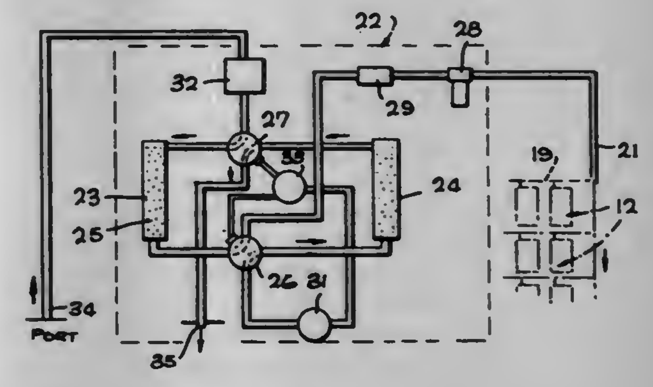
Edward George Preston, and Philip Arthur Maw, both of London, England, assignors to Molins Machine Company Limited, London, England
Filed Dec. 16, 1968, Ser. No. 783,983
Claims priority, application Great Britain, Dec. 15, 1967, 57037/67
Int. Cl. B24b *9/00*
U.S. Cl. 51—247 **5 Claims**



A cutoff, suitable for a continuous rod cigarette-making machine, and having a helical knife. To grind one side of the knife, a stationary grinding wheel inclined at the appropriate angle to grind a bevel edge on the knife is used. To grind the other side of the knife, a grinder wheel is carried by a planetary mechanism to travel in a circular path and so that, as the knife is being ground, the grinder has a motion transverse to the path of the knife.

3,604,163
PRESSURE-COMPENSATING SYSTEM FOR HERMETICALLY SEALED WINDOW UNITS

Richard H. McCurdy, Reseda, and Lawrence W. Connelly, Sherman Oaks, both of, Calif., assignors to Sitelines, Inc., Van Nuys, Calif.
Filed July 23, 1969, Ser. No. 844,024
Int. Cl. E06b *7/12*
U.S. Cl. 52—172 **6 Claims**



In an installation comprising a plurality of hermetically sealed multiple glazed window units, all of the window units are ducted to a common manifold. The manifold is ported to the atmosphere through pressure-compensating apparatus which vents air pressure built up within the system into the atmosphere, and admits filtered, dehumidified air drawn from the atmosphere into the system when ambient atmospheric air pressure exceeds the internal air pressure within the system.

3,604,164
PANEL

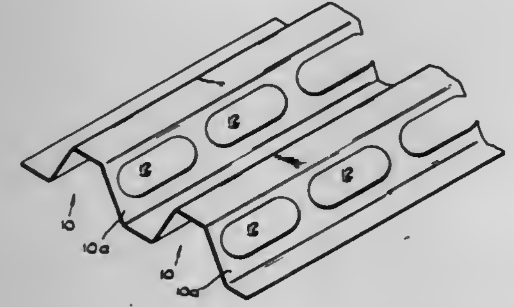
Anthony Frederick Festing Mason, Durban, South Africa, assignor to Festing Developments (Pty) Limited, Durban, Natal Province, South Africa

Filed Jan. 31, 1969, Ser. No. 795,552

Claims priority, application South Africa, Feb. 5, 1968, 68/0735

Int. Cl. E06b *1/12*

U.S. Cl. 52—206 **7 Claims**



The invention provides a panel which is suitable to be used for roofing, side cladding, partitioning, etc., which may be profiled and which is provided with a plurality of apertures dimensioned to permit light to pass through and covered with translucent or transparent material.

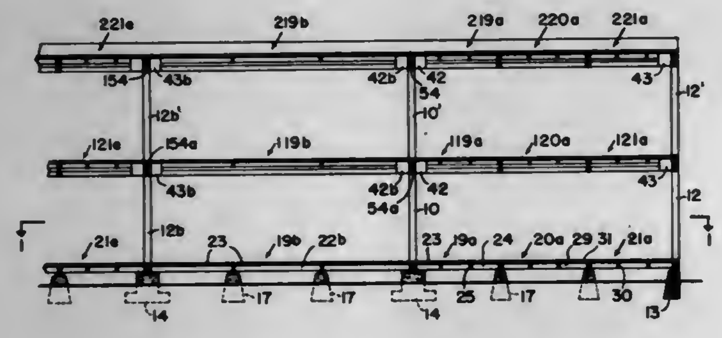
3,604,165
PANELLED DECK CONSTRUCTION FOR BUILDING

Jacob D. Naillon, 17 Diamond Drive, Danville, Calif.

Filed Apr. 25, 1969, Ser. No. 819,187

Int. Cl. E04b *5/43;* **F16m** *11/02*

U.S. Cl. 52—263 **16 Claims**



In a building having posts, a deck (either the ground floor, an elevated floor or the roof) is constructed from rectangular prefabricated panels which are arranged in parallel in each quadrant about a post, the panel orientations being progressively 90° different within successive quadrants, an outside panel of each quadrant having an outer edge radiating from a post and formed with a beam along that edge, and the ends of the panels of an adjoining quadrant being connected to that beam. Each panel may have additional frames for interconnection. The ground floor panels can be supported from the ground, as by a concrete slab or abutment; the other decks are supported from the posts, to which the means are supportedly connected. One form of connection includes an attachment block fast on each post having attachment faces to which the beams are attached, e.g., by bolts, if desired through spacers which are permanently attached to the ends of the beams and strengthen the beam ends.

3,604,166
DEPLOYMENT SYSTEM FOR SHELTER UNITS

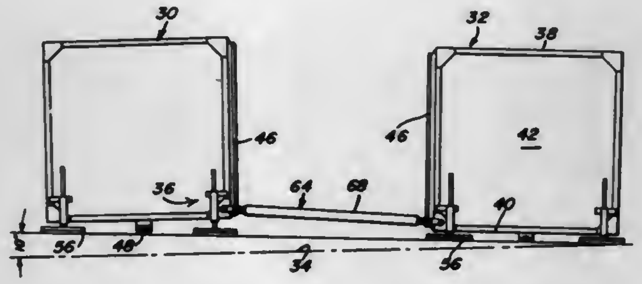
William E. Ciccarelli, York, Pa., and Phillip A. Kaufman, Randallstown, Md., assignors to Gichner Mobile Systems, Inc.

Filed July 23, 1969, Ser. No. 843,939

Int. Cl. E04b *1/348;* **G21f** *7/00*

U.S. Cl. 52—126 **8 Claims**

A system and structural assembly for enabling two shelter units to be deployed in accurate relative relationship to enable the two shelter units to be expanded into an enclosure including levelling jacks with sliding pads at each corner of each shelter unit, an alignment bar for moving the shelter units in relation to each other and accurately aligning the shelter units so that the facing sidewalls of two spaced shelter units may be employed as the roof and floor of the space between the two shelter units and an auxiliary end wall carried by each of the shelter units may be employed for completely enclosing the space between the two spaced shelter units to insure the structural and RF integrity of the complex as well as the safety and reliability necessary for enabling operating personnel to deploy the two shelter units and expand them into an enclosure encompassing the space of three shelter units.



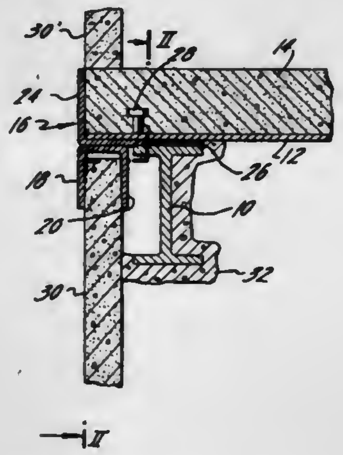
3,604,167
BUILDING CONSTRUCTION

Thomas M. Hays, One Rockledge, P.O. Box 6, Pleasantville, N.Y.

Filed Jan. 28, 1969, Ser. No. 794,571

Int. Cl. E04b *1/16;* **E04c** *3/20*

U.S. Cl. 52—282 **5 Claims**



A building structure having a structural beam carrying a concrete floor is rendered fire resistant by a fire-resistant building wall held against one side of the beam, the bottom and the remaining side of the beam being protected by a fire-resistant coating. The wall-holding means includes an inverted channel that receives the top edge of the wall, plus a lateral extension secured to the structural beam. The holding means has an upstanding flange that serves as a screeding edge for leveling the concrete floor while fluid.

3,604,168
TWO-SECTIONAL PARTITION

Herwald Meineke, Grosshansdorf, Stormarn, Germany, assignor to C. Friese Innenausstattung GmbH, Hamburg, Germany

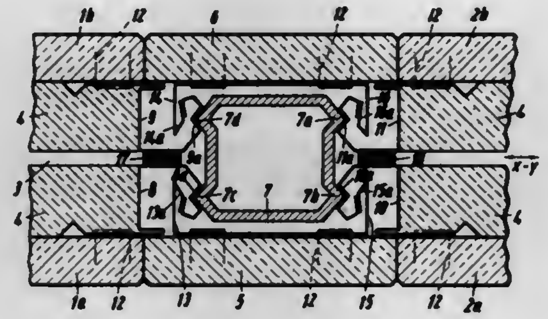
Filed Oct. 24, 1969, Ser. No. 869,277

Claims priority, application Germany, Oct. 24, 1968, P 18 04 935.9

Int. Cl. E04b *1/82, 2/78*

U.S. Cl. 52—393 **13 Claims**

A displaceable partition, especially for business and office buildings and factories, which comprises oppositely located spaced boards with supporting post means therebetween which post means have longitudinally extending profiled portions resiliently and detachably engaged by resilient snap-on means connected to the inside of said board means.



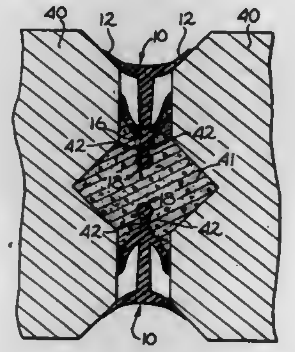
3,604,169
SEALING STRIPS

Robert E. Smith, Lynwood, Calif., assignor to J-D Distributing Company, Bell, Calif.

Filed June 2, 1969, Ser. No. 849,225

Int. Cl. E04b *1/36*

U.S. Cl. 52—396 **5 Claims**



A unitary sealing strip for sealing the openings between the surfaces of laterally spaced wall members. The sealing device is made of a resilient material and is adapted to be forced into the space created by raised, prefabricated wall members, the device sealing the opening. Flanges with associated anchoring ribs prevent inadvertent dislodgement of the sealing strip. A securing member enables the sealing strip to be permanently secured in position when the wall members are joined into an integrated unit.

3,604,170
A SEALING ARRANGEMENT FOR A BUILDING STRUCTURAL ASSEMBLY

Richard Lewis Stoakes, Clouds Northdown Road, Woldingham, Surrey, England

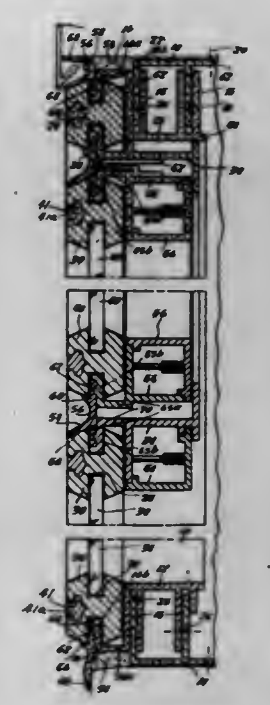
Filed Jan. 15, 1969, Ser. No. 791,426

Int. Cl. E06b *3/62;* **E04f** *1/36*

U.S. Cl. 52—400 **7 Claims**

The sealing arrangements for structural assemblies which comprise one or more frames carrying window lights or opaque infill panels and which require weatherproof sealing with contiguous parts of the structural assembly.

The illustrated arrangements make use of known flexible sealing strips which hold the panes or panels in the frame by securing to such strips a supplementary sealing strip that is also flexible and extends from the frame to seal against an adjacent element of the structural assembly. This supplementary strip can bear freely against said element or it may be positively engaged thereby. The arrangement is equally applicable to sealing the adjoining edges of two adjacent frames or the adjoining edges of a smaller frame, e.g. an opening window light, in a larger frame.



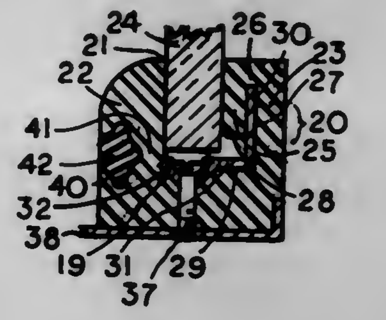
3,604,171
REINFORCED FRAME MEMBER OF ELASTOMERIC MATERIAL

Louis Perilstein, 2416 24th Ave. East, Seattle, Wash.

Filed Sept. 10, 1969, Ser. No. 856,644

Int. Cl. E04b *1/66;* **E06b** *3/62*

U.S. Cl. 52—400 **4 Claims**



An elastomeric strip has a trough-shaped groove extending longitudinally along one side thereof to receive an edge of a panel, such as a sheet of glass and said elastomeric strip has in it a separable reinforcing and stiffening strip of approximately angle shaped cross section. One flange of the reinforcing strip extends across the bottom of the trough-shaped groove and is provided with a V-shaped groove containing cushioning material correctly positioned to receive and serve as a cushion for a panel edge supported within the trough-shaped groove of the elastomeric strip.

3,604,172
GRAVE MARKER PROTECTIVE STRUCTURE

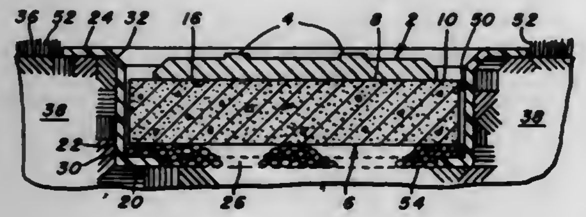
Joseph J. Matvey, 208 Orin St., Pittsburgh, Pa.

Filed Aug. 5, 1969, Ser. No. 847,610

Int. Cl. E04h *13/00*

U.S. Cl. 52—103 **4 Claims**

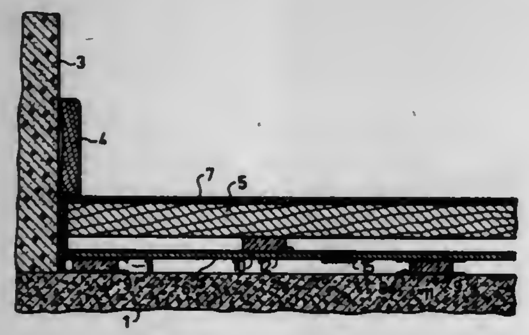
A unitary vegetation-retarding grave-marker-protective structure having a horizontal base portion defining an opening, a vertical transition portion terminating in a horizontally outwardly directed stabilizing ground-engaging flange which resists sinking of the marker assembly into the earth. The transition portion having a lower substantially vertical portion and an upper portion which is upwardly and outwardly directed.



A rectangular rigid marker-supporting base in underlying face-to-face securement with an overlying grave marker. Drainage means between the marker-supporting base and receptacle for conducting water downwardly between the receptacle and marker base and out through an opening in the protective structure. Inwardly directed integral spacer means on the transition wall. Upwardly directed integral spacing means on the base portion.

3,604,173
RESILIENT FLOOR

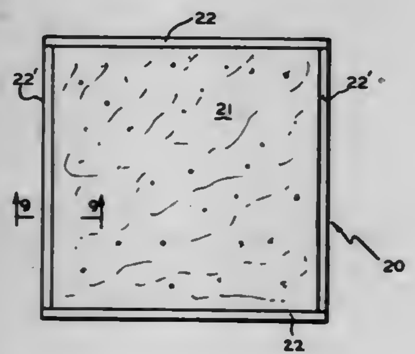
Rune Ingmar Douglas Dahlborg, Ripsavagen 57, Bandhagen, Sweden
Filed Dec. 2, 1968, Ser. No. 780,515
Claims priority, application Sweden, Dec. 7, 1967, 16836/1967
Int. Cl. E04f *15/22*
U.S. Cl. 52—508 **6 Claims**



The invention relates to resilient or elastic floors comprising an upper floor supported on a resilient means lying on a support. Said resilient means is built up from a lower layer of resilient elements positioned on the support, an intermediate floor positioned on said lower layer, and an upper layer of resilient elements positioned on the intermediate floor and supporting said upper floor.

3,604,174
LIGHTWEIGHT STRUCTUAL PANEL

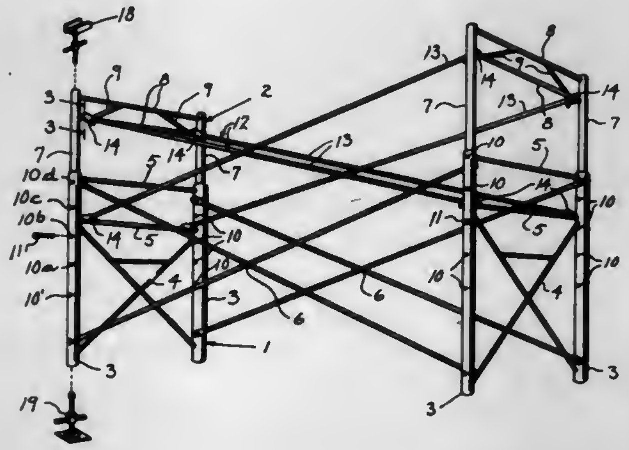
Thomas J. Nelson, Jr., 3472 Griffin Road, Syracuse, N.Y.
Filed Nov. 25, 1968, Ser. No. 778,621
Int. Cl. F04c *2/04, 2/34*
U.S. Cl. 52—601 **3 Claims**



A structural building unit in the form of a panel that is lightweight yet strong and fireproof. The panel is comprised of light aggregate concrete bounded by a structural steel frame that serves initially as a form and subsequently as a connecting device. The unit, which is interiorly reinforced, can be utilized for exterior and interior walls, and for floors, ceilings and roofs.

3,604,175
ADJUSTABLE SHORING SYSTEM OR THE LIKE

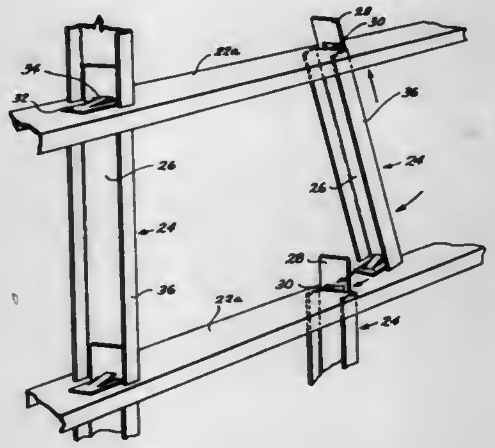
Robert F. Gray, Brookfield, Wis., assignor to A-T-O, Inc., Milwaukee, Wis.
Filed May 22, 1970, Ser. No. 39,628
Int. Cl. E04h *12/08;* **E04g** *1/06*
U.S. Cl. 52—637 **4 Claims**



An adjustable shoring system includes base frames, extension frames which are vertically adjustable with respect to the base frames in a series of incremental steps, and gooser braces extending between headers on the extension frames and on the opposite base frames. The extension and base frames are each provided with two vertically spaced headers; and the headers on the extension frames are spaced apart a distance equal to one step of adjustment while the headers on the base frames are spaced apart a distance equal to two steps, as the result of which gooser braces of the same length can be used for each of a series of four steps of adjustment.

3,604,176
SELF-FASTENING SPACER FOR STRUCTURAL MEMBERS

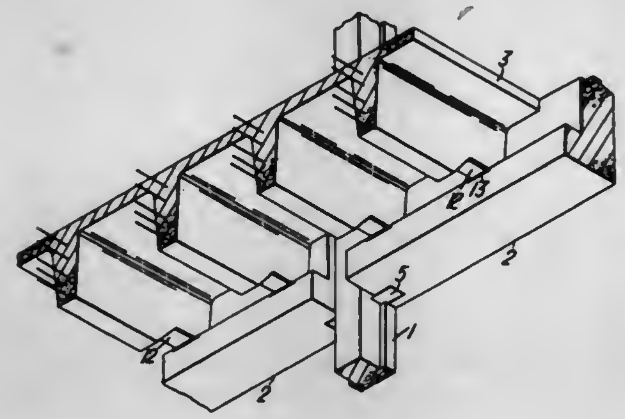
Charles M. Campbell, Caringbah, New South Wales, Australia, assignor to Armco Steel Corporation, Middletown, Ohio
Filed Oct. 24, 1969, Ser. No. 869,138
Int. Cl. E04c *2/42, 3/09*
U.S. Cl. 52—660 **10 Claims**



A self-fastening spacer for intermediate support of structural members, such as purlins and girts, to aid in preventing sagging, twisting and rotation thereof. The spacer is provided with at least a web section having at one end a reduced tongue portion which is provided with an eye, and at the other end with a locking tongue which is substantially normal to the web and is provided with retaining means integral therewith. Accordingly, when the reduced tongue portion of the spacer is fit through a perforation in a structural member, the locking tongue on an adjacent spacer may be driven through the eye such that the retaining means locks therein.

3,604,177
REENFORCED CONCRETE BUILDING FRAME CONSTRUCTION

Hugh Mary Clyne, 25, Sion Road, Glenageary, and Peter Joseph Faherty, Park Avenue, Dalepfort Road, Salthill, Galway, both of, Ireland
Filed Mar. 19, 1969, Ser. No. 808,532
Claims priority, application Ireland, Mar. 22, 1968, 335/68
Int. Cl. E04b *5/04, 5/23*
U.S. Cl. 52—283 **5 Claims**

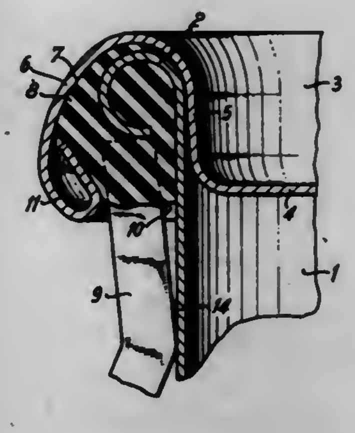


In the reinforced concrete frame for a building consisting essentially of columns assembled with horizontal beams and with floor units extending between adjacent parallel beams, the beams and floor units are precast for assembly on the building site. According to the invention, in order to provide a simple but strong connection between the beams and columns a bracket consisting of a hollow steel joist section embedded in a column and projecting laterally is received within a channel-shaped steel shoe embedded in the end of the beam in interfitting relation on assembly of the beams and columns. To ensure accurate alignment and eliminate possible canting of the beam a second length of channel-shaped steel section is embedded in the column above said bracket and receives a tubular steel section secured to and projecting from the end of the beam upon assembly of the shoe and bracket. A stuff bar pushed through the tubular section may serve to connect two beams similarly supported on opposite sides of a column. The shoe and tubular section are welded to reinforcing bars, while floor units of double T-shaped cross section, the ends of which rest on flanges of the beams, are also secured by welding reinforcing elements thereof to reinforcing bars extending laterally from the beams.

3,604,178
LOCK FOR PRESERVE CANS AND OTHER CONTAINERS AND A METHOD OF MAKING IT

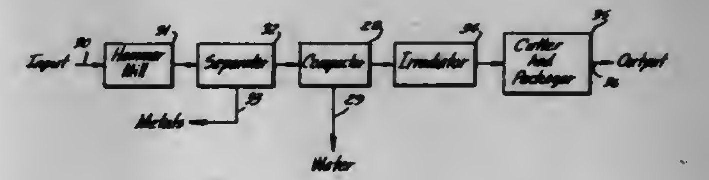
Hans-Joachim Bluhm, Weddel, Germany, assignor to Schmalbach-Lubeca-Werke AG, Brauschweig, Germany
Filed Jan. 30, 1969, Ser. No. 801,226
Claims priority, application Germany, Feb. 15, 1968, P 16 57 161.2
Int. Cl. B65b *7/28*
U.S. Cl. 53—17 **1 Claim**

A lock for package containers, for example, preserve cans and tins, has a closed elastic cordlike ring located between the edge of the container and the edge of the cover and serving simultaneously for sealing and opening. To open the container, the ring is pulled by a strap carried by the ring out of the passage between the cover and the body of the container. The lock is particularly characterized in that this ring is brought into the sealing space formed between the edges of the container and cover in a liquid or plastic state and is hardened on location.



3,604,179
REFUSE DISPOSAL SYSTEM

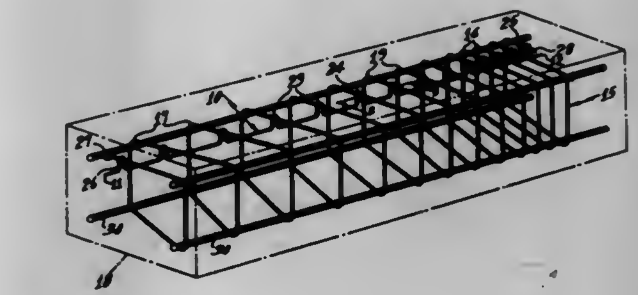
Norman S. Lund, P. O. Box 246, Melbourne, Fla.
Filed Nov. 25, 1968, Ser. No. 778,686
Int. Cl. B65b *55/16, 63/02, 25/00*
U.S. Cl. 53—23 **5 Claims**



A refuse disposal method for disposing of garbage, trash, and similar refuse in which the refuse is ground to reduce its volume, irradiated and compacted, and may include steps for utilizing part or all of the components of the refuse.

3,604,180
SPACER ELEMENT FOR A REINFORCING MEMBER

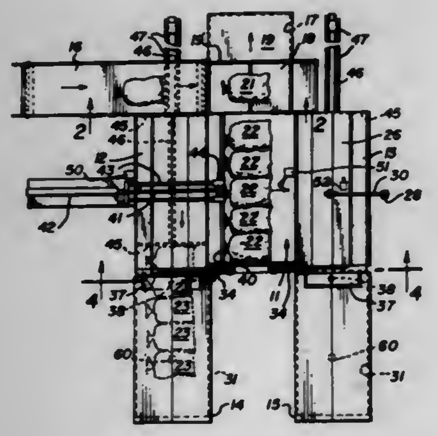
John Wood, Jacksonville, Fla., assignor to Florida Wire and Cable Company, Jacksonville, Fla.
Filed Feb. 9, 1968, Ser. No. 704,468
Int. Cl. E04h *12/10*
U.S. Cl. 52—653 **6 Claims**



An elongated preformed and resilient spacer element having spaced loops wherein each loop includes a socket formed by the inner surface of the closed end of the loop and inwardly directed shoulders of the loop legs. The spacer element is forcibly connected to a coiled reinforcing member having a plurality of turns by passing a portion of each turn between the shoulders of respective loops causing temporary outward deformation thereof and into the sockets thereof resulting in each turn being locked within the loop and spaced from the next.

3,604,181
MASTER-CONTAINER-FILLING MACHINE

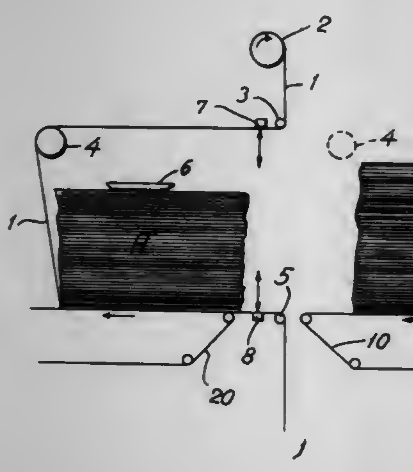
L. D. Adcox, 620 S. Adams St., Monte Vista, Colo.
Filed May 23, 1969, Ser. No. 827,267
Int. Cl. B65b *5/06, 35/40, 39/10*
U.S. Cl. 53—61 **18 Claims**



A machine for filling a master container with a plurality of packages by automatically moving the packages individually from a conveyor to a receiver-pusher device adjacent the conveyor, said device successively receiving, dropping and pushing a package onto an accumulator platform on which a predetermined number of packages are accumulated and from which the accumulated group is moved by a cross ram into a cylinder at one side of the platform, and after accumulation of another predetermined number of packages that group is moved by the same cross ram into a cylinder at the opposite side of the platform. The groups of packages are moved alternately from the cylinders by a plunger into a master container clamped on the discharge end of each cylinder.

3,604,182
APPARATUS FOR THE WRAPPING OF A BUNDLE OF NEWSPAPERS

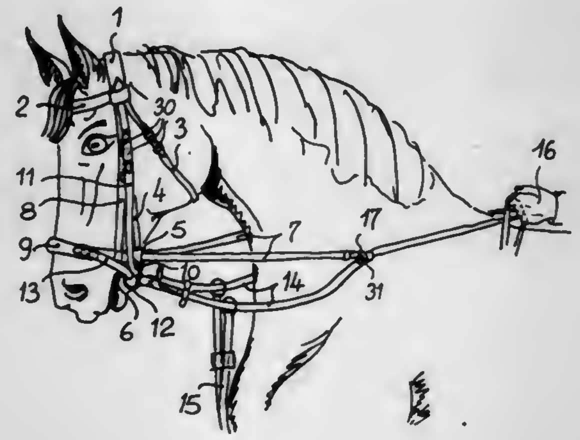
Jens Thomsen Jepsen, Gyvelvey 5, Hjerting, Denmark
Filed Apr. 2, 1969, Ser. No. 812,810
Claims priority, application Denmark, Apr. 4, 1968, 1479/68
Int. Cl. B65b *13/20, 11/10;* **B31b** *1/72*
U.S. Cl. 53—124 C **1 Claim**



The bundle of papers are pressed together under the action of a reciprocally mounted press tongue. The press tongue is pressed onto the bundle as the bundle is enveloped by the plastic sheeting and remains there until the sheeting has cooled. Thereafter, the press tongue is removed to allow the bundle to expand against the plastic sheeting.

3,604,183
BRIDLE

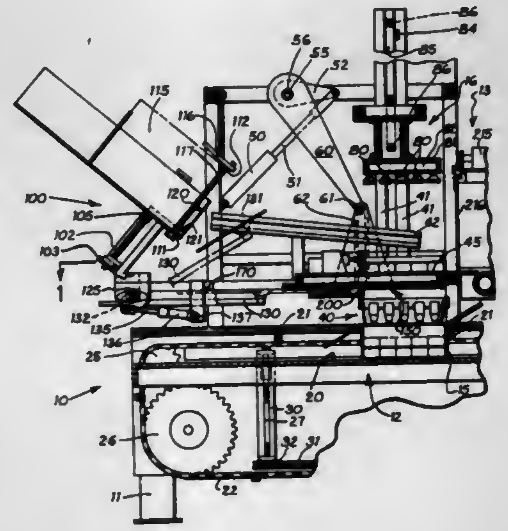
Karl Iseli, Jun, Bei der Relthalle, 8914 Aeugst am Albis/Zurich, Switzerland
Filed Feb. 25, 1970, Ser. No. 14,028
Claims priority, application Switzerland, Feb. 28, 1969, 3295/69
Int. Cl. B68b *01/06*
U.S. Cl. 54—6 **15 Claims**



There is disclosed a horse bridle comprising a headband, throatlatch and headpiece, a mouthpiece bit, and a first rein connected with said mouthpiece bit. Cheekpieces are provided at both sides of the bridle which extend between the headpiece to said mouthpiece bit connected with the first rein. Additionally, there is a noseband and a chinband, and a second rein is connected with this noseband. The bridle also has a martingale, and one of the reins are guided via the martingale and then connected with the other rein, so that when the horse goes in front of the rein, in other words is not being rein-checked the control of the horse at least for the most part occurs via the martingale-guided rein, whereas when the horse is rein-checked the control of the horse at least for the most part occurs via the rein which is not guided via the martingale.

3,604,184
LAYER PAD APPARATUS

James J. Shuttleworth, 10 Commercial Rd., Huntington, Ind.
Filed Apr. 28, 1969, Ser. No. 819,648
Int. Cl. B65b *35/38*
U.S. Cl. 53—157 **7 Claims**



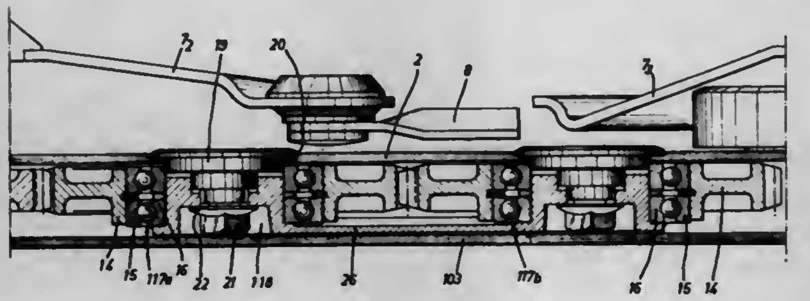
Apparatus for inserting layer pads between the layers of cans in a case being packed by a case-packing machine including a swingable arm with vacuum cups on the distal end thereof. The arm swings back and forth to pick up layer pads from a rack and deposits them in a horizontal position. The case packer includes a can carrying head which lifts the cans off of a platform and deposits them in the case when the platform is moved horizontally from beneath the head. A carriage is secured to the platform and is constructed to pick up layer pads deposited by the vacuum cups in a horizontal position.

ERRATUM

For Class 54—6 see:
Patent No. 3,604,183

3,604,185
MECHANISMS FOR DRIVING THE CUTTER ELEMENTS OF A ROTARY MOWING MACHINE

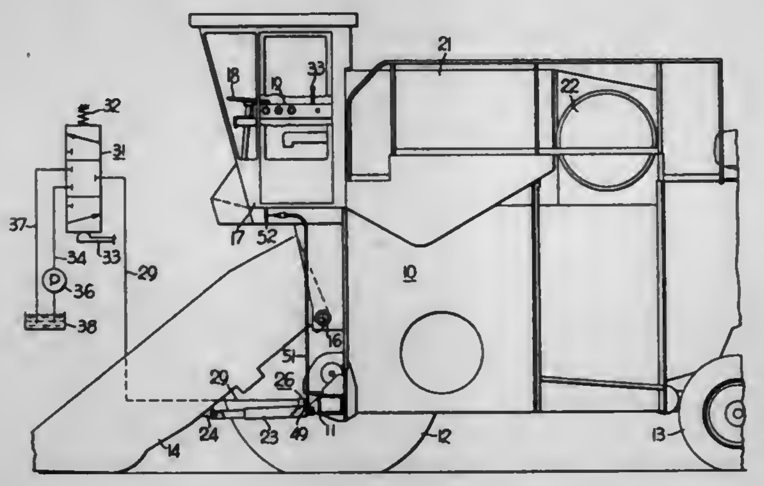
Walter E. Reber; Adrien J. Formery, and Wilhelmus H. Van den Heuvel, all of Saverne, France, assignors to Kuhn Freres & Cie, Paris, France
Filed Nov. 18, 1968, Ser. No. 776,606
Claims priority, application France, Dec. 22, 1967, 133.567
Int. Cl. A01d *35/26*
U.S. Cl. 56—12.7 **7 Claims**



Device for driving the cutter elements of a rotary mowing machine comprising a main bar consisting of a case made of two halves or sections assembled, the upper section having secured thereto the mowing machine driving member and the bearing blocks of the spindles of the pinions driving the discs supporting said cutter elements, and of toothed intermediate wheels of said transmission, characterized in that the bearing blocks or supports of at least two intermediate wheels disposed between two driving pinions are reinforced by a flat bridge piece rigidly secured to, and interconnecting, the lower ends of said bearing blocks, said bridge piece being thus adapted to rigidly assemble the fastening studs of said bearing blocks.

3,604,186
COMBINE HARVESTER

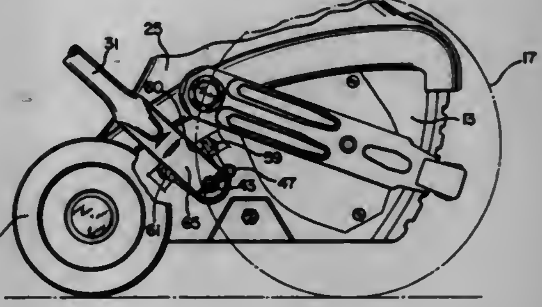
Martin W. Coleman, Independence, Mo., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Jan. 19, 1970, Ser. No. 3,996
Int. Cl. A01d *67/00*
U.S. Cl. 56—208 **6 Claims**



A combine harvester having a pivotally mounted header including a hydraulic ram for raising and lowering the header. A valve mounted on the hydraulic cylinder communicating with the hydraulic system for permitting raising of the header when the hydraulic system is actuated but preventing lowering of the header unless both the hydraulic system is so actuated and a poppet in such valve is moved to a lowering position.

3,604,187
LAWN MOWER HANDLE CONSTRUCTION

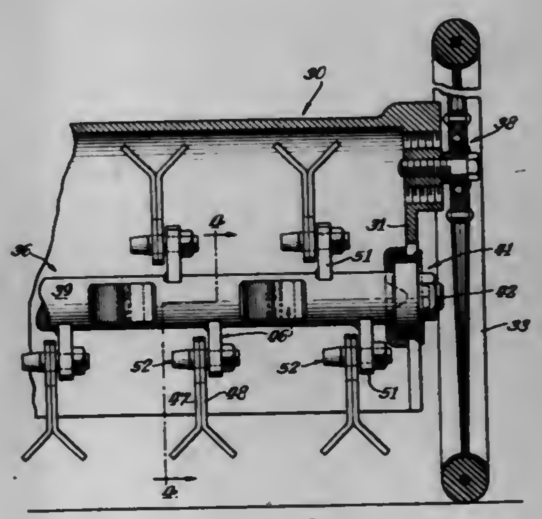
Edwin J. Weber, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Oct. 1, 1969, Ser. No. 862,685
Int. Cl. A01d *55/20*
U.S. Cl. 56—249 **4 Claims**



A lawn mower including a housing supported for movement by ground engaging wheels. A motor driven wheel is rotatably supported upon the housing and cooperates with a bed knife to cut grass. A handle is inclined upwardly from the housing to facilitate manipulation and control of the mower. The handle is adapted to be moved into a generally vertical position relative to the housing and/or to be folded intermediate its length for mower storage.

3,604,188
CUTTING BLADE ATTACHMENT FOR A MOWER

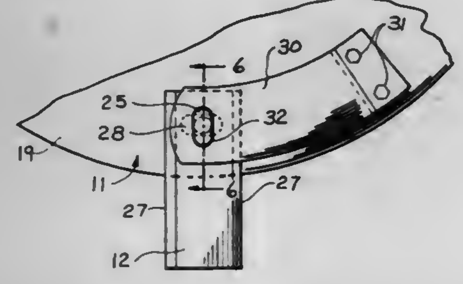
Carl W. Mott, Lake Ozark, Mo., assignor to Mott Corporation, La Grange, Ill.
Filed Oct. 31, 1969, Ser. No. 872,935
Int. Cl. A01d *55/22*
U.S. Cl. 56—294 **21 Claims**



This disclosure deals with a mower including means for removably attaching cutting blades to a rotatable shaft of the mower. The mower includes a generally horizontal rotatable shaft, means for rotating the shaft at a high speed, a plurality of cutting blade supports secured to the shaft, and one or more cutting blades attached to each of the blade supports. The supports are angularly and circumferentially spaced along the length of the shaft so that, upon rotation of the shaft, the blades cut a swath which is substantially continuous over the length of the shaft. Each blade support includes a member which is supported at one end only, a generally circular central portion which carries the blades during mower operation, and a free end portion which includes an offset or protrusion, thus forming an out-of-round cross section. Each blade has a hole formed therein, which is shaped to permit the blade to be slipped over the protrusion of the free end portion when the blade is placed at a certain angle relative to the free end portion. Once past the free end portion, the blade is moved to the central portion of the member, and its swings loosely on the central portion. The protrusion of the free end portion then retards accidental removal of the blade from the member.

3,604,189
KNIFE MOUNTING ON A ROTARY MOWER

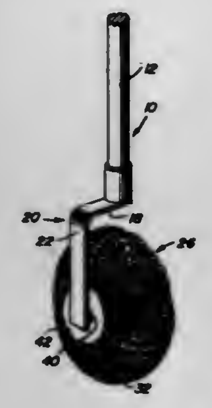
Delmar C. Harer, New Holland; Charles B. Adams, New Holland, Pa., and Nigel W. Meek, Long Crendon, England, assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 18, 1969, Ser. No. 859,100
Int. Cl. A01d *55/18*
U.S. Cl. 56—295 **11 Claims**



A rotary mower has a plurality of supporting discs longitudinally spaced with cutting knives mounted adjacent to the periphery of the supporting disc. The individual knives have elongated slots fitting over elongated heads spaced from and securely fastened to the discs by cylindrical portions of an attaching bolt and interlock with the attaching bolt when the knives extend to radial cutting positions. Resiliently springs are attached to the supporting discs forwardly of the respective knives in the direction of rotation and have openings fitting over the elongated heads to hold the knife on the cylindrical portions of the attaching bolt as it pivots about the attaching bolt.

3,604,190
PECAN PICKER

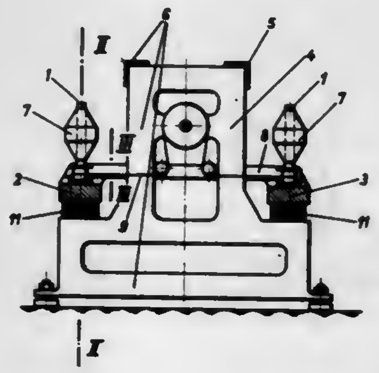
Jimmy B. Wray, Ft. Belknap Rd., Graham, Tex.
Filed Feb. 20, 1970, Ser. No. 13,074
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **8 Claims**



A rotary article pickup assembly for rolling over the ground to collect, pick up and retain small generally round articles lying upon the ground. The assembly includes at least one journaled pickup member for rolling along the ground while being urged downwardly relative to the ground and the pickup member defines a plurality of generally U-shaped members disposed in a circle about the center axis of rotation of the pickup member and the U-shaped members open toward the center axis and are disposed generally in radial planes of the center axis. The U-shaped members are stiff but resiliently supported for relative movement of the radial outermost portions of adjacent U-shaped members toward and away from each other and the normal spacing between the outer ends of adjacent U-shaped members is such that rolling engagement of the pickup member over a small generally round article such as a nut lying upon the ground will cause the outer ends of the adjacent U-shaped members to be spread apart for the passage of the nut therebetween and into the annular area about the center axis bound by the U-shaped members.

3,604,191
TWISTING MACHINE

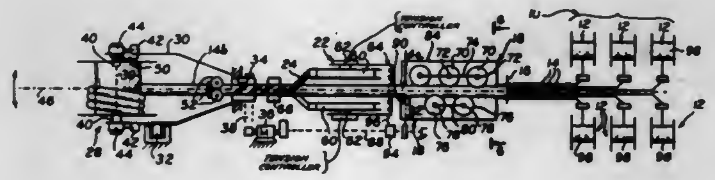
Rudolf Jaeggli, Bern, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed May 12, 1969, Ser. No. 823,803
Claims priority, application Switzerland, May 20, 1968, 7682/68
Int. Cl. D01h *1/14, 7/10*
U.S. Cl. 57—1 **14 Claims**



The spindles of the twisting machine are mounted on spindle rails which are directly or indirectly mounted on the machine frame by omnidirectally acting damping members such as rubber pads. In addition, a cover can be disposed about the spindle rails and spindle drives to damp noise. Finally, a damping element can be secured about the spindle rail to damp noise.

3,604,192
TELEPHONE CABLE ASSEMBLY SYSTEM

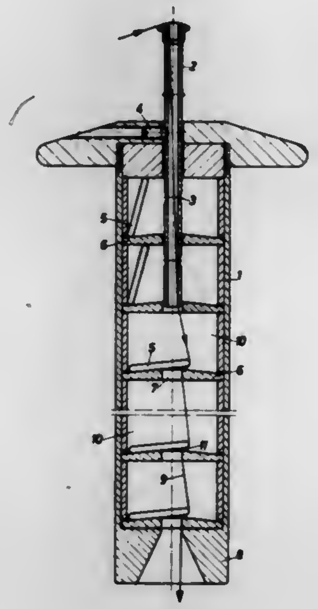
Oscar G. Garner, Riverside, Conn., assignor to General Cable Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 524,243, Feb. 1, 1966. This application July 30, 1969, Ser. No. 846,074
Int. Cl. H01b *13/02, 13/08*
U.S. Cl. 57—3 **7 Claims**



This specification discloses apparatus for winding strand units into a single cable, taping the cable and winding it on a revolving takeup cabler. The strand units pass directly from a spacer or lay plate to a twist compensator which winds the cables to a desired lay and which has wheels gripping the assembled strand units from opposite sides with sufficient force to twist them together but with the wheels on opposite sides of the cable staggered so that the strand units can move with respect to one another as they are twisted into the cable. The takeup cabler spool rotates about its axis to wind the cable and the spool also rotates on an axis about which the strand units are twisted and rotates at the same speed as the twist compensator or at a slightly higher speed. The apparatus is reversible.

3,604,193
YARN BRAKE

Anton Welbers, and Karl Ring, both of Wildtal, near Frieburg im Breisgan, Germany, assignors to Rhodeaceta A.G., Freiburg im Breisgan, Germany
Filed June 30, 1969, Ser. No. 837,860
Claims priority, application Germany, June 29, 1968, P 17 60 769.1
Int. Cl. D01h *7/86, 13/10;* **B65h** *59/20*
U.S. Cl. 57—58.86 **12 Claims**

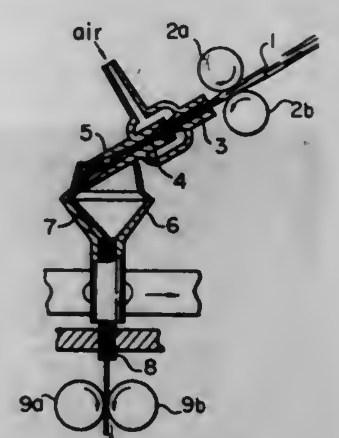


A yarn brake comprises at least one compartment, the bottom wall of which rises towards the center conically, and a small round plate in the compartment capable of resting on the bottom wall. The conduit for the yarn is in the middle of the bottom wall. The diameter of the plate is greater than the height of the compartment and is such, with respect to the width of the brake, that, when the plate rests on the bottom wall, the conduit for the yarn is covered. Preferably more than one compartment is present, and the brake is provided with a tube in the middle, the level of which is adjustable, so that the number of compartments which enter into operation, is controllable.

3,604,194
FIBER SUPPLY METHOD AND APPARATUS IN AN OPEN-END SPINNING SYSTEM UTILIZING AIRFLOW AND CENTRIFUGAL FORCE

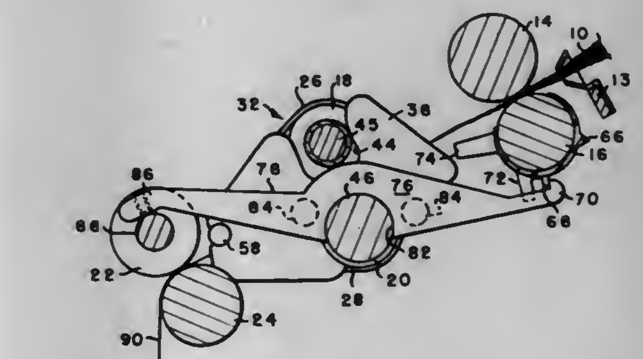
Hiroshi Edagawa, Shiga-ken; Keiichi Minami, Shiga-ken; Kozo Susami, Shiga-ken; Masakazu Hirota, Shiga-ken; Masaaki Tabata, Shiga-ken; Toshimoto Matsubara, Shiga-ken, and Kunio Shinkai, Aichi-ken, all of, Japan, assignors to Toray Industries, Tokyo, Japan and Howa Machinery, Ltd., Aichi-ken, Japan
Filed Jan. 27, 1969, Ser. No. 794,101
Claims priority, application Japan, Jan. 30, 1968, Jan. 30, 1968, Mar. 4, 1968, Mar. 11, 1968, 43/5657;43/5658;43/13610;43/15388
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **6 Claims**

Disclosed herein is a method and apparatus for use with yarn-spinning equipment wherein individual fibers are extracted from a bundle of fibers delivered from a supply source at a position in a fiber supply device where the fluid speed of the airstream for conveying the fibers is maximum, while the bundle of fibers is still gripped by the supply source. In the present invention, a distance between the nip point of the supply source and the above-mentioned position is particularly defined with respect to the staple length of the spinning material. Furthermore, preferable shapes are illustrated for the fiber guide conduit, the fiber-separating passage, and the fiber supply conduit of the fiber supply device for producing a high quality yarn.



3,604,195
DRAFTING APPARATUS

Grady H. Sanders, and Robert M. Ingham, Jr., both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed July 1, 1969, Ser. No. 838,212
Int. Cl. D01h *13/18*
U.S. Cl. 57—87 **5 Claims**

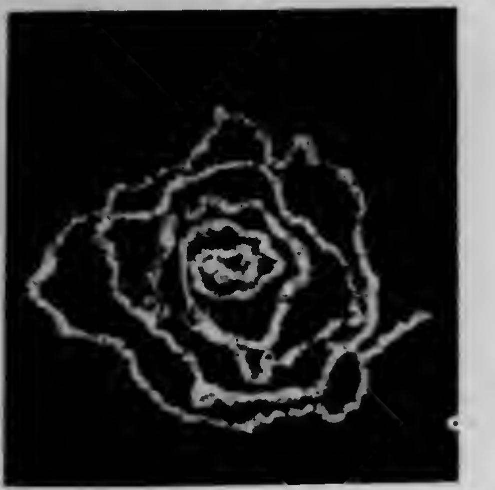


An apparatus to stop the supply of roving to a drafting system when an end breaks to prevent lap damage to the drafting system by physically rotating a stop member into the path of flow of the roving supply.

3,604,196
METHOD OF MAKING LATENTLY CRIMPABLE YARN FROM POLYBLEND AND PRODUCT

Dusan C. Prevorsek, Morristown; George E. R. Lamb, Mendham; Krishnan Thiruvillakkat, Parsippany, and Hendrikus J. Oswald, Morristown, all of, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed July 10, 1969, Ser. No. 840,759
Int. Cl. D02g *1/20, 3/02*
U.S. Cl. 57—140 **6 Claims**

A multifilament fine denier latently crimpable yarn from a polymeric blend of incompatible thermoplastic polymers such as a polycaproamide/polyethylene terephthalate and/or polypropylene blend; and process of producing it. The process involves subjecting a monofil, film or tape of the polymer blend, in semiamorphous state, to a rolling pressure applied progressively down the length against one crosswise dimension, and then applying a transverse force gradient preferably created by impelling the structure in a high velocity gas stream against a deflecting surface. The crimp is preferably developed by exposing the split yarn under low tension to hot gas or vapor.



3,604,197
MULTICOLORED YARNS MADE FROM BLEND OF DIFFERENT DENIER FIBERS

Hideto Sekiguchi, Saidaiji-City; Tomohide Matsumoto, Saidaiji-City; Masanobu Hoten, Saidaiji-City, and Hideo Kawasaki, Nishinomiya, all of, Japan, assignors to American Cyanamid Company, Stamford, Conn.
Filed July 15, 1969, Ser. No. 842,019
Int. Cl. D02g *1/18, 3/02, 3/24*
U.S. Cl. 57—140 BY **10 Claims**

Multicolored yarns comprising a blend of (a) first fibers of first denier and color and (b) second fibers of second denier and color, said second denier being higher than said first denier, said second color being different from said first color, the blend proportions being such that said second fibers do not exceed in quantity the weight of said first fibers in said blend, and the two deniers having a mathematical relationship, one to the other.

3,604,198
PRODUCTION OF WORSTED-SPUN YARNS

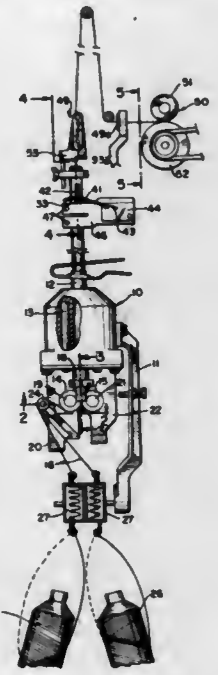
Frank Alfred Greenwood, Burley-in-Wharfedale, England, assignor to T.M.M. (Research) Limited, Lancashire, England
Filed Feb. 28, 1969, Ser. No. 803,419
Int. Cl. D01h *5/00, 5/02;* **D01g** *29/00*
U.S. Cl. 57—156 **12 Claims**

A process for producing worsted-spun yarn by a drawing process including two stages of drawing wherein the last drawing step includes autolevelling and the roving is fed from the last drawing step to a ring-spinning operation.

3,604,199
PLURALITY END CRIMPING

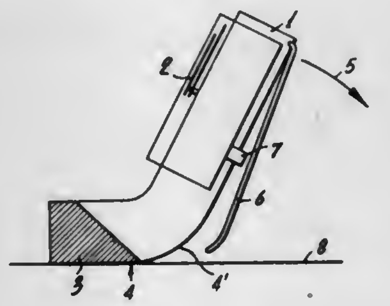
Eugene Torello-Viera, Claymont, and Alexander L. Trifunovic, Wilmington, both of, Del., assignors to Joseph Bancroft & Sons Co., Wilmington, Del.
Filed Apr. 3, 1969, Ser. No. 813,031
Int. Cl. D02q *3/28*
U.S. Cl. 57—157 **3 Claims**

The method of crimping yarn in a stuffer crimper wherein two or more ends are introduced side by side into the crimper chamber to form cores of crimped filaments which are advanced together through the crimper. The crimped ends are extracted from the respective cores at the discharge end of the crimper, and are combined and wound together onto a winding to form a yarn composed of readily identifiable ends.



3,604,200
ALARM-CLOCK HAVING AN ARTIFICIAL CENTER OF GRAVITY

Richard Sapper, Stuttgard Degerioch, Germany, assignor to Italora S.P.A., Milan, Italy
Filed Dec. 30, 1969, Ser. No. 889,084
Claims priority, application Italy, Dec. 31, 1968, 25773 A/68
Int. Cl. G04h *37/12*
U.S. Cl. 58—21.15 **6 Claims**



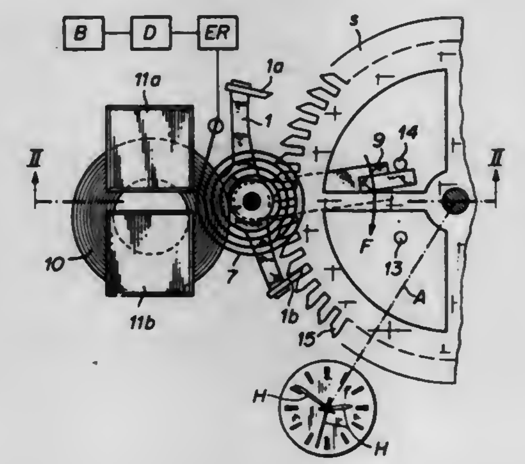
An alarm-clock comprising a supporting member for the clock device and a counterweight adjacent the base of said supporting member, the said base for the supporting member having an end portion upward facing and connected with the upper portion for enabling said member to oscillate as a result of a balance disturbing action between balance and inclined positions. At least one control lever is attached to said supporting member, and is operated by its abutment with the clock bearing plane because of said oscillation, the base shape and counterweight position being such as to cause the clock to move back to and be held at its balance position, when the disturbing action is stopped or removed.

3,604,201
METHOD OF DRIVING THE GEARING OF AN ELECTRONIC TIMEPIECE AND AN ELECTRONIC TIMEPIECE FOR IMPLEMENTING SAID METHOD

Peter Dome, Athenaz/Geneva, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere S. A., Geneva, Switzerland
Filed July 2, 1969, Ser. No. 838,422
Claims priority, application Switzerland, July 9, 1968, 10220/68
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **7 Claims**

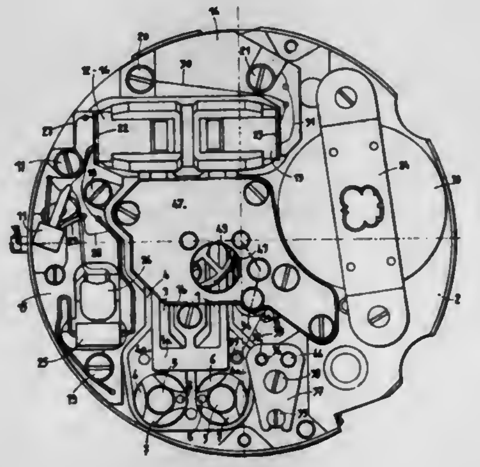
An electronic timepiece comprises a device for indicating the time, which device includes a gear train and a time in-

dicator controlled by said gear train, an electronic circuit which produces periodic signals of a predetermined frequency and an electromechanical transducer for driving said device, which transducer is controlled by the signals produced by the said circuit; the transducer incorporates a member which swings periodically and at the frequency of said signals, between two limiting positions in order, at least once during the course of two successive swings, to strike successively each tooth of a gear in the said gear train; means are provided in order to limit to a predetermined value the angular displacement of the gear as a consequence of each impact.



3,604,202
ELECTRIC TIMEPIECE

Rene Besson, and Remy Chopard, both of Neuchatel, Switzerland, assignors to S Ebouches S. A., Neuchatel, Switzerland
Filed Aug. 14, 1969, Ser. No. 849,987
Claims priority, application Switzerland, Aug. 30, 1968, 13,113/68
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 R **2 Claims**

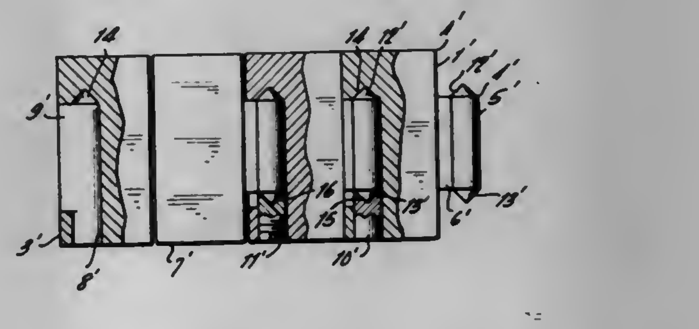


The present invention relates to an electric timepiece with a driving regulator mechanism, the oscillations of which are electrically sustained by means of a transistorized circuit comprising at least two windings, i.e. a pickup winding and a driving winding.

This timepiece is characterized by the fact that it comprises two winding carrying plates on each of which is secured one of these windings, one of the said plates carrying moreover the transistor or transistors as well as at least one part of the other elements of the sustaining circuit.

3,604,203
LINK BRACELET

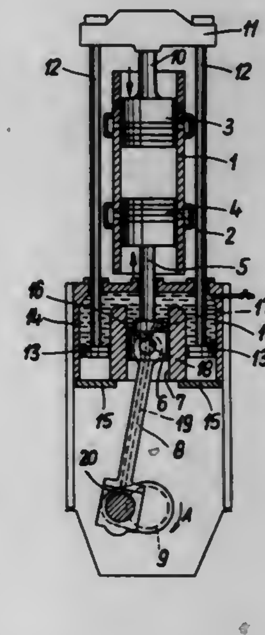
Detlef Hofmann, Kieselbronn, Germany, assignor to Rodi & Wienenberger Aktiengesellschaft, Pforzheim, Germany
Filed Oct. 21, 1968, Ser. No. 769,019
Claims priority, application Germany, Oct. 28, 1967, P 15 57 633.9
Int. Cl. F16g *13/00*
U.S. Cl. 59—80 **10 Claims**



A link bracelet is formed which comprises a plurality of links flexibly connected to one another by connection means which comprises a projection extending from the end of each link and a mating recess disposed near the other end of each link so that the projections can mate with the recesses in adjacent links and means for securing the projection in the recess while permitting flexibility of the bracelet.

3,604,204
COUNTERPISTON MACHINE, ESPECIALLY COUNTERPISTON MOTOR

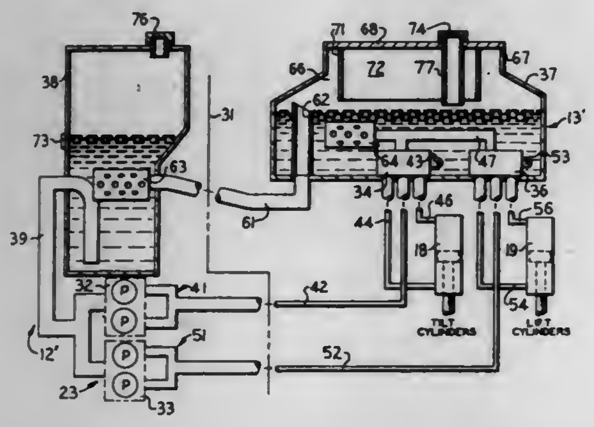
Hans-Joachim Conrad, and Peter Muller, both of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Mar. 18, 1970, Ser. No. 20,738
Claims priority, application Germany, Mar. 22, 1969, P 19 14 717.2
Int. Cl. F02b *41/00*
U.S. Cl. 60—19 **4 Claims**



A counterpiston machine, preferably counterpiston motor, in which at least two displacement pistons are, by pull rods and a transverse yoke, connected with a counterpiston, and in which the liquid columns acted upon by said counterpistons communicate with a chamber in which these columns act upon the annular surface of a piston connected to a piston rod with another counterpiston which latter is formed by a crosshead or is connected thereto.

3,604,205
HYDRAULIC FLUID CIRCUIT

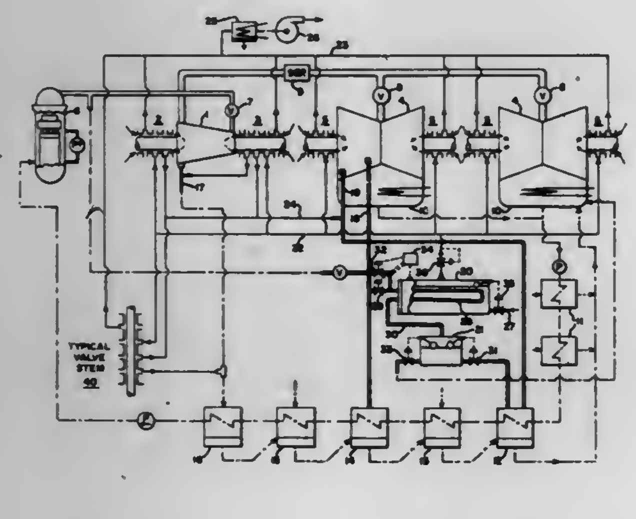
Thomas H. Geselbracht, Joliet, and David S. Vinton, Morton, both of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed June 19, 1969, Ser. No. 834,776
Int. Cl. F15b *15/18, 1/06*
U.S. Cl. 60—52 HE **11 Claims**



A hydraulic circuit having one or more pumps adjacent motor means in a machine with hydraulic motors which are supplied by the circuit being located in a relatively remote location from the pumps. A control valve is associated with each hydraulic motor and includes a return line in communication with a first hydraulic fluid tank. An assembly of one or more pumps for delivering fluid under pressure to the control valves is located adjacent the motor means and is driven by the motor means. A second hydraulic fluid tank is associated with the pump assembly, the second tank providing fluid to the pumps and being in communication with the first tank by a return conduit for delivering fluid from the first tank to the second tank. To prevent rupture of the first tank, a baffle is preferably arranged within that tank to assure a constant air pocket above the fluid.

3,604,206
SHAFT-SEALING SYSTEM FOR NUCLEAR TURBINES

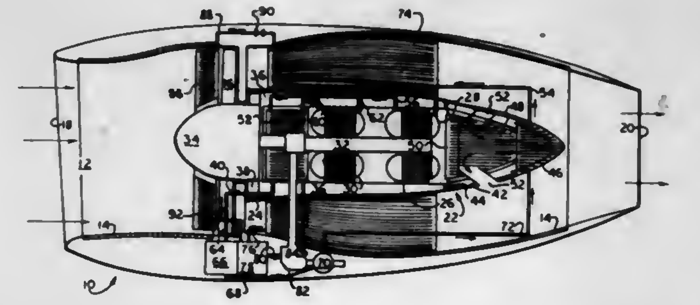
Frederick G. Baily, Ballston Spa, N.Y., assignor to General Electric Company
Filed July 31, 1968, Ser. No. 749,077
Int. Cl. F01d
U.S. Cl. 60—108 **5 Claims**



A nonradioactive source of steam for sealing the shaft packings of turbines operating on steam subject to nuclear contamination is generated by a special steam seal evaporator. The nonradioactive steam is supplied to the high-pressure shaft packing chamber as a buffer between contaminated steam and the atmosphere, and prevents mixing of contaminated steam with air extracted from the packings. The evaporator is heated by steam extracted from the turbine for maximum cycle efficiency. Clean sealing steam is generated at a pressure above atmospheric and eliminates conventional steam seal regulator devices. The system eliminates radioactive contamination of the air drawn from the turbine packings, reducing the size of the station off-gas system.

3,604,207
VAPOR CYCLE PROPULSION SYSTEM

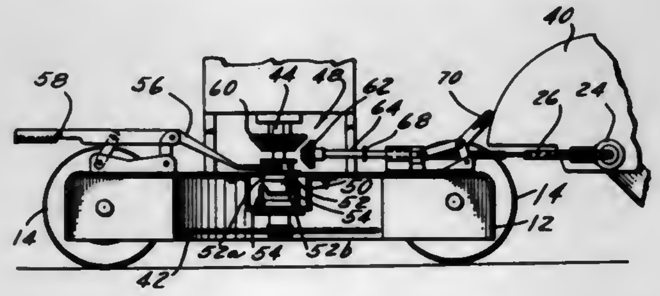
Jack P. Waidelich, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed June 1, 1970, Ser. No. 41,864
Int. Cl. F02k *3/04, 5/00;* **F01k** *23/18*
U.S. Cl. 60—262 **15 Claims**



System comprises duct with entire powerplant within duct. Axial flow compressor driven by multiple vapor turbines produces entire thrust in form of airflow. Combustor uses minor portion of airflow to combine with fuel and burn to produce heat to vaporize highest temperature boiling working fluid, such as mercury. In two turbine system, first fluid operates first turbine and exhaust goes to heat exchanger which condenses mercury vapor and boils second fluid such as water thus producing water vapor. This water vapor operates second turbine which is coupled to first turbine. Exhaust from second turbine goes to condenser in airflow so that all rejected heat is added to airflow within duct to increase its energy. Can use two or more fluids with successively higher boiling points. Combustion gases may also pass from mercury vaporizer to water preheater and superheater and then discharge into airflow to add remaining heat energy. Vaporizer, turbines, and heat exchangers, except water condenser, all within a center body to further conserve heat. Combustion gases mix with air within duct so there is no primary combustion gas jet. High velocity of airflow is still much lower than turbojet, producing considerable noise reduction. All heat rejected or lost goes into airflow to produce maximum efficiency. Relatively low temperature makes possible maximum use of acoustic surfaces inside duct. High cycle efficiency will result in low hydrocarbon exhaust emission.

3,604,208
EDGER ATTACHMENT FOR LAWN MOWERS

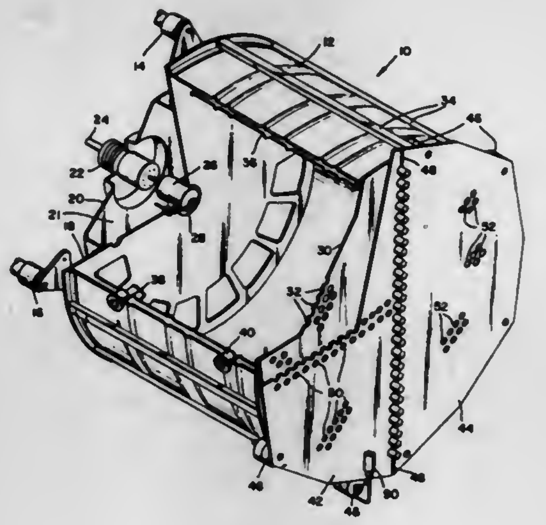
William C. Borunda, 1606 Delvale St., West Covina, Calif.
Filed Apr. 10, 1970, Ser. No. 27,300
Int. Cl. A01d *35/26, 53/14*
U.S. Cl. 56—11.5 **8 Claims**



This disclosure relates to lawn care apparatus, and more particularly to a combination mower/edger. Both units are driven by a single motor and can be operated either singly or in combination. The edger portion is simplified by being driven by a flexible shaft and is adapted to be positioned on either side of the mower, depending upon the convenience of the operator. Moreover, the edger may be tilted relative to the mower for a desired angle of edging, or to compensate for the slope of the ground.

3,604,209
ION BEAM DEFLECTION SYSTEM

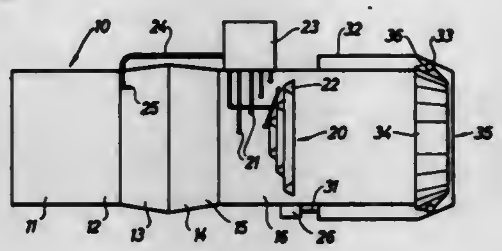
Harry J. King, Woodland Hills, and James W. Ward, Santa Monica, both of, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 23, 1968, Ser. No. 786,300
Int. Cl. F03h *5/00;* **F02k** *1/20*
U.S. Cl. 60—202 **8 Claims**



An ion beam device has a plurality of laterally spaced perforated accelerator electrodes, with the electrodes connected to different negative potentials so that ions discharged out of the perforations along the separating line are deflected. Preferably, these perforations along the separating line are equipped with half-cylindrical tubes to enhance the electrostatic deflection of the beamlets passing through the apertures. Thus, a net deflection of the discharge ion beam is obtained.

3,604,210
GAS TURBINE ENGINE

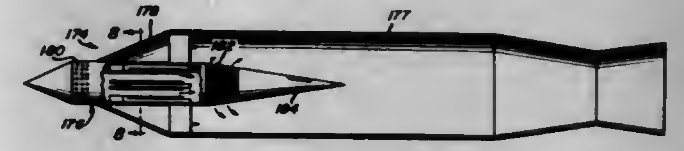
Christopher Linley Johnson, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Filed Aug. 15, 1969, Ser. No. 850,446
Claims priority, application Great Britain, Aug. 30, 1968, 41555/68
Int. Cl. F02k *1/16, 1/18, 3/10*
U.S. Cl. 60—237 **10 Claims**



The invention concerns a gas turbine engine having a jet pipe which is provided with reheat combustion equipment and with a variable area nozzle, a pressure-responsive device which controls the area of the nozzle during reheat operation of the engine and which is adjusted in functional dependence upon the value of the jet pipe pressure, fuel supply control means for controlling the supply of fuel to the reheat combustion equipment, a manually operable member for adjusting the quantity of fuel supplied by the fuel supply control means, and biassing means, operated on adjustment of the manually operable member to select and increase reheat, for biassing the pressure-responsive device so that the latter initially adjusts the area of the nozzle at a rate at least sufficient to prevent an appreciable rise of jet pipe pressure.

3,604,211
COMBINED PULSE JET AND VARIABLE RAM JET ENGINE

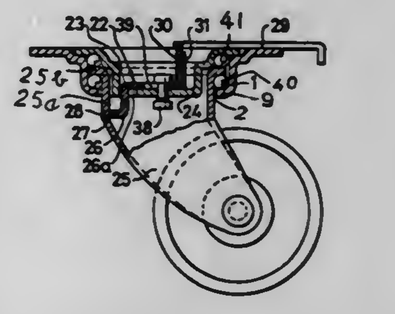
John N. Ghougasian, 666 West 188th St., New York, N.Y.
Continuation-in-part of application Ser. No. 822,980, May 8, 1969, now Patent No. 3,533,239. This application Sept. 12, 1969, Ser. No. 857,497
Int. Cl. F02k *7/06, 7/10*
U.S. Cl. 60—244 **7 Claims**



A reaction thrust engine operating in a pulse jet mode to attain cruising speeds, is converted to ram jet operation by variations in the internal flow controlling geometry and location of the combustion zone. This is accomplished by an axially shiftable center body and a tubular check valve assembly.

3,604,212
CASTER WHEEL ARRANGEMENT WITH LOCKING DEVICE

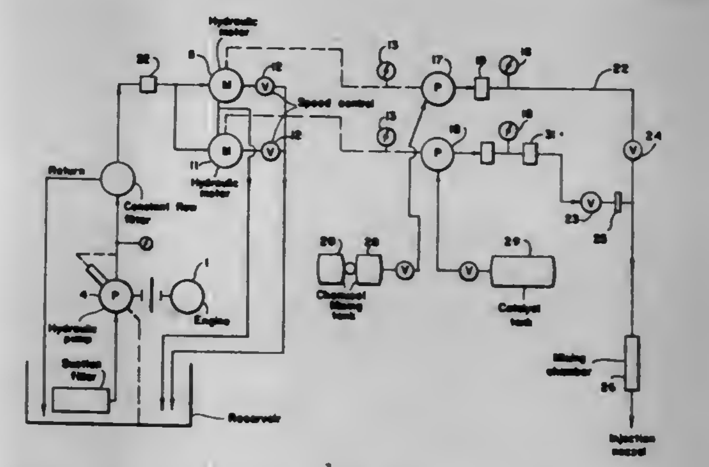
Gunnar Erick Werner Lewin, Viggbyholm, Sweden, assignor to AB Lyckeaborgs Bruk, Torskors, Sweden
Division of Ser. No. 684,160, Nov. 20, 1967
Filed June 2, 1969, Ser. No. 829,250
Int. Cl. B60b *33/00*
U.S. Cl. 16—35 **2 Claims**



A caster wheel arrangement is provided with means for simply and releasably locking the pivotal movement of the wheel fork in any one of a number of positions so as to cause the rolling movement to be in a desired direction.

3,604,213
CHEMICAL GROUTING PROPORTIONING PUMPING METHOD AND APPARATUS

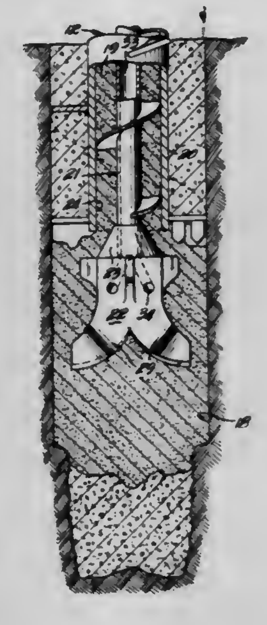
Herbert Leland Parsons, P.O. Box 46, Georges Rd., Franklin Park, N.J.
Continuation of application Ser. No. 651,612, July 6, 1967. This application Jan. 10, 1969, Ser. No. 790,418
Int. Cl. E02d *3/12*
U.S. Cl. 61—36 **7 Claims**



Grouting reactants are mixed from separate supplies before delivery by driving a hydraulic pump and creating a constant flow of hydraulic fluid, dividing the hydraulic flow into two rotary hydraulic motors, controlling the hydraulic exhaust of those motors individually to establish a rotation ratio of the motors, and mechanically coupling each of the motors to a rotary pump for pumping a grouting reactant. Thereby the ratio of grouting reactants is precisely controlled. The speed of the hydraulic motors are controlled according to flow meters adjacent the reactant pumps so that the desired flow ratio of reactants is established. An overpressure switch in one of the reactant pump discharge lines cuts off hydraulic fluid to both hydraulic motors so that the single operator may shut down the reactant pumps simply by shutting off a valve in a discharge line far removed from the pumps.

3,604,214
MEANS AND METHOD OF MAKING COLUMNAR STRUCTURES IN SITU

Lee A. Turzillo, 2078 Glengary Rd., Akron, Ohio
Continuation-in-part of application Ser. No. 441,053, Mar. 19, 1965, now Patent No. 3,426,538, dated Feb. 11, 1969. This application Aug. 16, 1968, Ser. No. 763,047
Int. Cl. E02b *5/34, 15/04*
U.S. Cl. 61—53.64 **31 Claims**

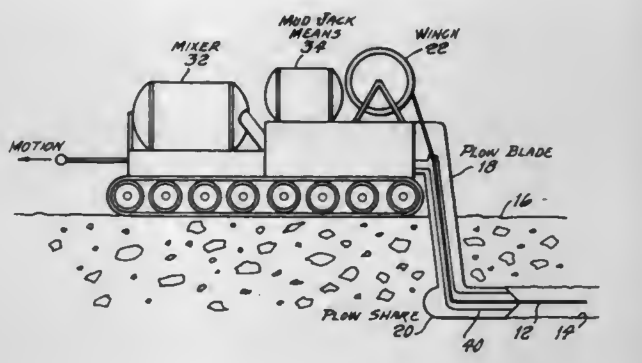


Method and means for providing pile or other structural column in earth situs, includes screwing hollow shafted auger into situs to form bore, and smaller auger is selectively axially shifted in the hollow shaft to move closure carried by smaller auger to selectively adjusted spacing of closure from closed position against inner end of hollow shaft. Larger auger progressively withdrawn from bore while rotating smaller auger in hollow shaft, forcibly to convey bore filling material through hollow shaft, past closure and be dispersed and compacted within the bore. Other means provided, separately supplying fluid material to bore through shaft of smaller auger for combination with materials conveyed into bore by auger flighting. Axially shiftable auger variously operable ahead of larger auger to test soil at different levels and/or to facilitate drilling use of larger auger.

3,604,215
METHOD OF LAYING ELECTRICAL CABLE

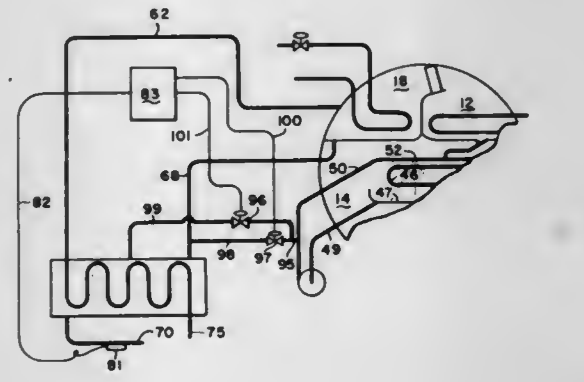
Cletus M. Dunn, Waterford, Conn.
Filed Jan. 20, 1970, Ser. No. 4,250
Int. Cl. E02f *1/00, 5/10*
U.S. Cl. 61—72.2 **2 Claims**

Means for and method of laying electrical cable underground and providing a high-conductivity environment therefor, consisting of a cable plow machine plus means to fill the excavated tube in which the cable is laid with a conductive mortar under hydraulic pressure. The latter means include a mixer for mixing the loose soil with a conductive aggregate, cement, water, moisture-attracting gel and a water reduction admixture and mud jack means for forcing the mortar into the excavated tube under pressure.



3,604,216
CRYSTALLIZATION PREVENTION CONTROL FOR ABSORPTION REFRIGERATION MACHINE

James M. Porter, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed Sept. 9, 1969, Ser. No. 856,274
Int. Cl. F25b *15/06*
U.S. Cl. 62—141 **5 Claims**

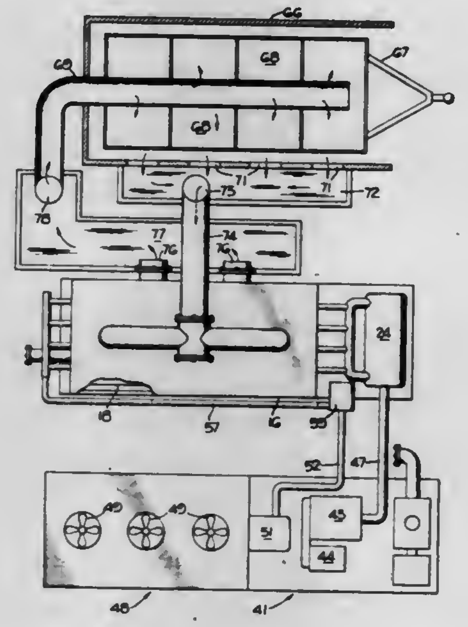


A control switch senses impending crystallization in an absorption refrigeration machine to prevent solidification of absorption solution in critical areas of the machine. A sensing element senses a rise in the temperature of the concentrated absorption solution leaving the solution heat exchanger, which temperature rise is indicative of impending crystallization. This sensor can actuate a plurality of controls which will cause dilution of the concentrated solution in the heat exchanger or other crystallization prone areas. When the temperature of the concentrated solution leaving the solution heat exchanger falls below a predetermined level after decrystallization has occurred, additional automatic controls are actuated to initiate a dilution and shutdown cycle.

3,604,217
PORTABLE REFRIGERATOR FOR VACUUM AND WATER COOLING

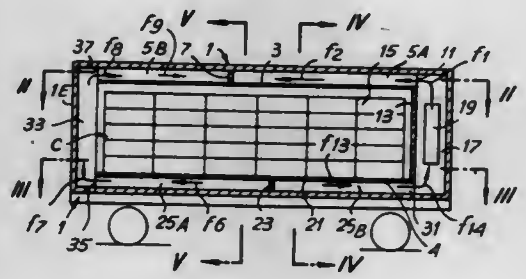
John C. Spear, San Francisco, Calif., assignor to Mobile Products Services, Inc.
Filed Oct. 8, 1969, Ser. No. 864,749
Int. Cl. F25b *19/00*
U.S. Cl. 62—268 **5 Claims**

A refrigerator is mounted on a vehicle and is used for water cooling or for vacuum cooling alternatively. A pressure-resistant enclosure contains refrigerator coils. A pump drawing from auxiliary equipment circulates refrigerant through the refrigerator coils. Air under subatmospheric pressure or water is admitted to the top of the enclosure and is evenly distributed to flow down over the coils. The air is pumped out of the enclosure and the water is drained from the floor of the enclosure. Auxiliary equipment recirculates the drained, cooled water over produce or evacuates the enclosure and any connected chamber.



3,604,218
INSULATED CONTAINERS FOR PERISHABLE GOODS

Piero Cresti, Basel, Switzerland, assignor to Societe Ferroviaire Internationale de Transports Frigorifiques Interfrigo, Societe Cooperative, Bruxeltes, Belgium
Filed Apr. 15, 1970, Ser. No. 28,713
Claims priority, application Belgium, Apr. 21, 1969, 73018
Int. Cl. F25d *17/04*
U.S. Cl. 62—408 **10 Claims**

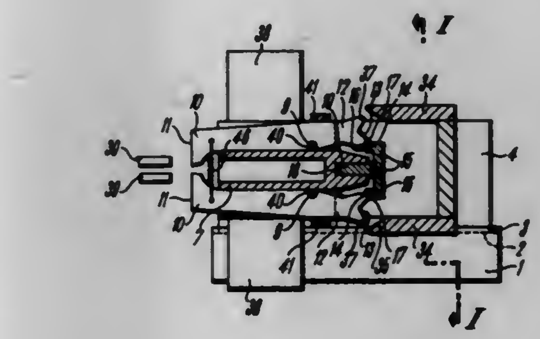


An insulated container for perishable goods comprises a pair of convergent passages defined by the upper wall of the container, a pair of convergent passages defined by the lower wall of the container and sets of channels open to the interior of the container formed in the respective sidewalls of the container, the channels extending between the convergent passages. When the container is filled with a load impervious to air, air is circulated through the passages and channels around the load. When the container is filled with a previous load, air is circulated through the channels and passages and passes through the load directly from one set of passages to the other.

3,604,219
PATTERN-KNITTING MACHINE

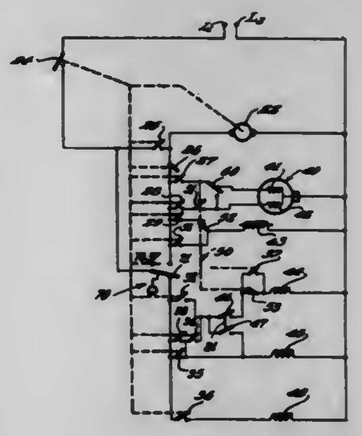
Karl Flad, Hauptrasse 29, Undingen, Germany
Filed Feb. 27, 1969, Ser. No. 802,931
Claims priority, application Germany, Mar. 5, 1968, P 16 35 805.7
Int. Cl. D04b *15/66*
U.S. Cl. 66—154 **27 Claims**

Apparatus for controlling the jacks of a pattern-knitting machine such as a Jacquard machine comprises a displaceable striker bed which is intended to be substituted for the periodically displaced rail which effects displacement of selected jack means in a conventional machine, striker means pivotally mounted on said striker bed, said striker means having striker faces at one end for engagement with said jack means, a detaining device movable into engagement with said striker means at a location remote from said striker faces, means to pivot said striker means for moving said striker faces into a predetermined position prior to said striker bed being moved towards said jack means, said detaining device being arranged to be moved into a striker means locking position when said striker faces are in a selected position relatively to said jacks means prior to said striker faces engaging said jack means, and means for deriving said movement of said striker faces and of said detaining device from said periodic displacement of said striker bed.



3,604,220
CONTROL CIRCUIT FOR AUTOMATIC WASHING MACHINE

Raymond F. Taylor, Stevenville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Mar. 20, 1969, Ser. No. 808,845
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 **6 Claims**



An automatic washer or combination washer-dryer of the coin-operated type provides the operator with selection of a normal washing cycle or a permanent-press washing cycle through the expediency of a single manually operable multiposition switch. A timer establishes operating circuits for the electrically energized washer components on the basis of a single preset program while the multiposition switch prepares these circuits for completion in accordance with the selected washing cycle. In addition, a separate switch is included in the control circuit for selection of motor speed to provide additional flexibility of washing control.

3,604,221

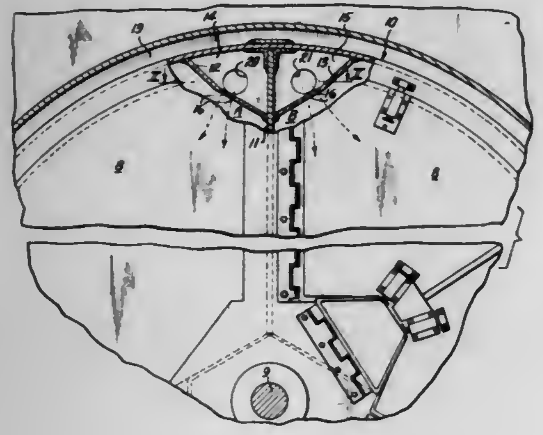
WASHING MACHINE EQUIPPED WITH SPRINKLER FOR USE IN LOADING

Norvin Pellerin, New Orleans, La., assignor to Pellerin Milnor Corporation, Kenner, La.

Filed Aug. 12, 1969, Ser. No. 849,939

Int. Cl. D06f *33/02, 39/08*

U.S. Cl. 68—12 R **8 Claims**



A washing machine with means for sprinkling the clothing being loaded to reduce its bulk.

3,604,222

STATOR ARRANGEMENT

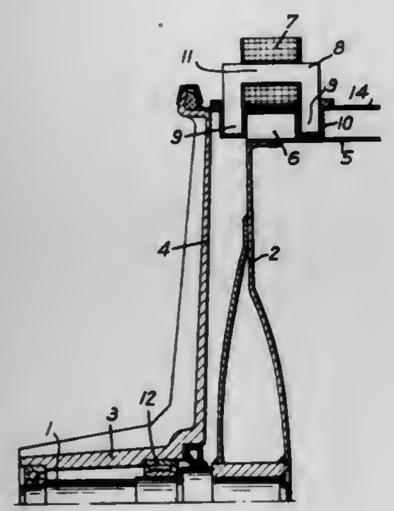
Werner Wutherich, Sandkrug; Edgar Zelle, Rastede, and Heino Gerke, Oldenburg, all of, Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed May 12, 1969, Ser. No. 823,782

Claims priority, application Germany, May 11, 1968, P 17 60 382.6

Int. Cl. H02k *1/24;* **D06f** *37/36*

U.S. Cl. 68—24 **7 Claims**



A drum-type washing machine includes a drum and an electric motor including a rotor which has a diameter approximately equal to that of the drum and a plurality of salient pole pieces made of soft magnetic material positioned at uniformly spaced angular positions about the rotor, and a segmented stator mounted on the support means and facing only a portion of the circumference of the rotor, the stator including a plurality of separate windings. Each of the stator windings is supplied with electric current at intervals in dependence of the position of the rotor in order to exert a reactance torque on the poles.

3,604,223

CENTRIFUGAL WINDING DRUM FOR THE WET AND GAS TREATMENT OF TEXTILE WEB MATERIAL

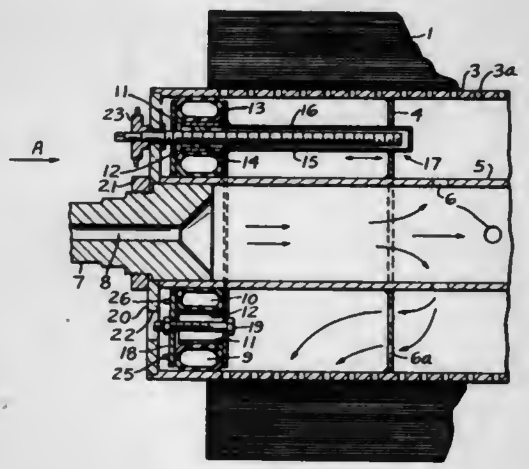
Werner Packschies, Krefeld, and Karl-Peter Lopata, Krefeld-Gartenstadt, both of, Germany, assignors to Joh. Kleinewefers Sohne Maschinenfabrik, Krefeld, Germany

Filed Mar. 17, 1969, Ser. No. 807,510

Claims priority, application Germany, Mar. 15, 1968, P 17 10 474.4

Int. Cl. B05c *8/02*

U.S. Cl. 68—150 **7 Claims**



A centrifugal drum for treating web material by means of a liquid or gaseous substance, in which the marginal areas of a hollow drum with a perforated circumferential drum wall are gas or liquid tight sealed by inflatable hose means arranged within said hollow drum between the latter and a hollow shaft having said drum connected thereto for rotation therewith, said hoses also sealingly engaging said hollow shaft and being adjustable in the axial direction of said shaft.

3,604,224

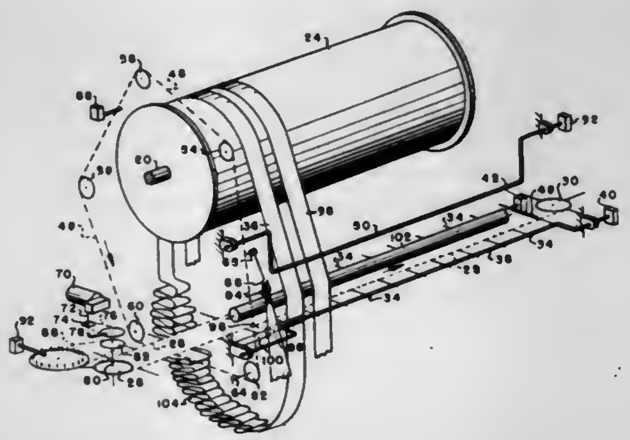
APPARATUS FOR THE FLUID TREATMENT OF FABRICS IN ROPE FORM

Charles L. Beasley, Clemson, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 23, 1970, Ser. No. 21,586

Int. Cl. D06f *43/08;* **G11b** *15/28*

U.S. Cl. 68—176 **12 Claims**



Apparatus to fluid treat a plurality of pieces of fabric sewn together and made into rope form. The rope is caused to follow a helical path in the apparatus by the use of an endless conveyor which is operated intermittently to move the fabric longitudinally of the fluid-treating chamber.

3,604,225

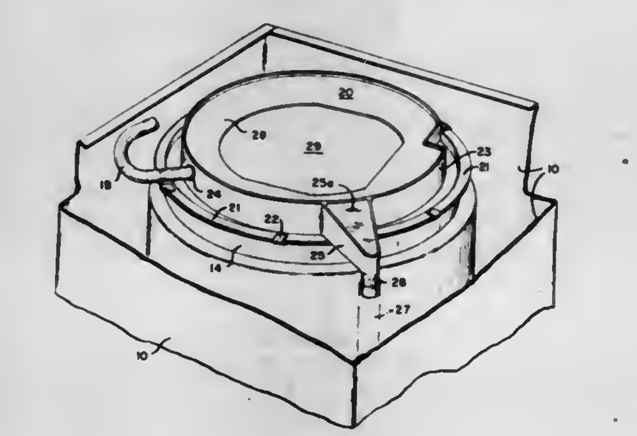
WASHING MACHINE TUB COVERS

Peyton W. Douglas, Bemus Point, N.Y., assignor to Blackstone Corporation

Filed June 20, 1969, Ser. No. 835,012

Int. Cl. D06f *39/00*

U.S. Cl. 68—23.5 **8 Claims**



An annular cover mounted on top of a clothes washer outer tub and extending inwardly over the clothes basket to contain the splashing of water created by the action of the agitator and to safeguard any overflow onto the base of the cabinet created by a defective water level switch or faulty timer or water valve, the cover having an annular rim engaging the outer tub, and a vertical wall terminating in an inwardly extending downwardly sloping annular flange and having an opening in one side leading into a well externally on the tub and a hose securely fastened to this well externally of the tub whereby in a high water condition the trough and hose will create a siphon thereby maintaining a safe water level before it overflows the cover onto the base, the hose fits through a hole in the base or cabinet of the washer.

3,604,226

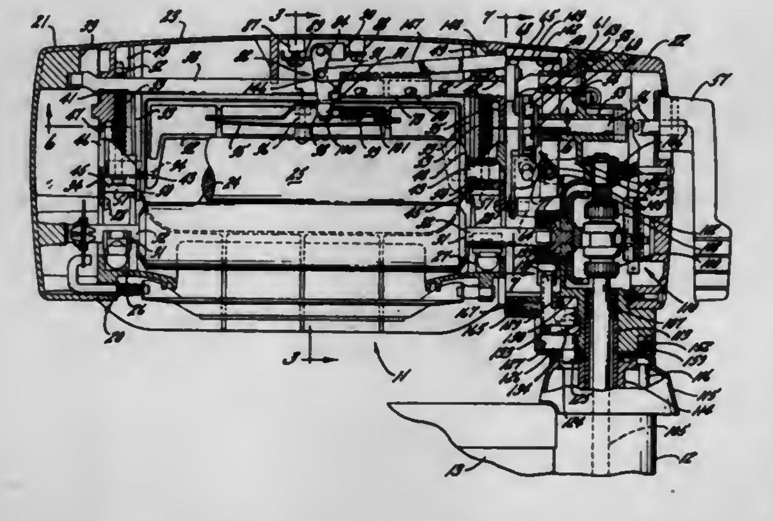
WRINGER RELEASE FOR LAUNDRY MACHINES

Karlis V. Racenis, Ripon, Wis., assignor to McGraw-Edison Company, Ripon, Wis.

Filed June 9, 1969, Ser. No. 831,519

Int. Cl. D06f *45/00*

U.S. Cl. 68—263 **12 Claims**



A laundry machine wringer-releasing mechanism having a one release linkage from a manual pressure bar and a second release linkage operated by an eccentric and cam arrangement for releasing the wringer upon excessive sidewise torque on the wringer head, the two linkages being independently operable.

3,604,227

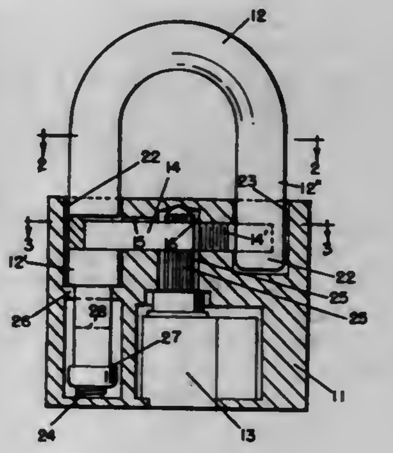
PADLOCKS

Michael Tom Athanason, 13113 Parkland Drive, Rockville, Md.

Filed Aug. 25, 1969, Ser. No. 852,790

Int. Cl. E05b *67/22*

U.S. Cl. 70—38 A **2 Claims**



A padlock having a caselock including a tumbler locking mechanism and keyway in the body thereof, and a spring-pressed shackle longitudinally and rotationally arranged in the body. A key-controlled gear bolt is located in the caselock for rotation with the locking mechanism and engagement with and opposite transverse movement of a pair of spaced parallel toothed locking dogs into and out of locking position with the shackle to lock the latter in both open and closed positions.

3,604,228

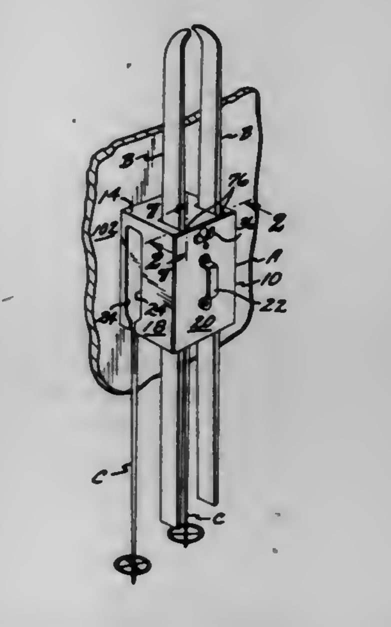
LOCKING DEVICE FOR SKIS AND SKI POLES

John P. Conlon, 3411 Brayton Ave., Long Beach, Calif.

Filed July 10, 1970, Ser. No. 53,826

Int. Cl. E05b *73/00;* **A47f** *7/00*

U.S. Cl. 70—58 **9 Claims**

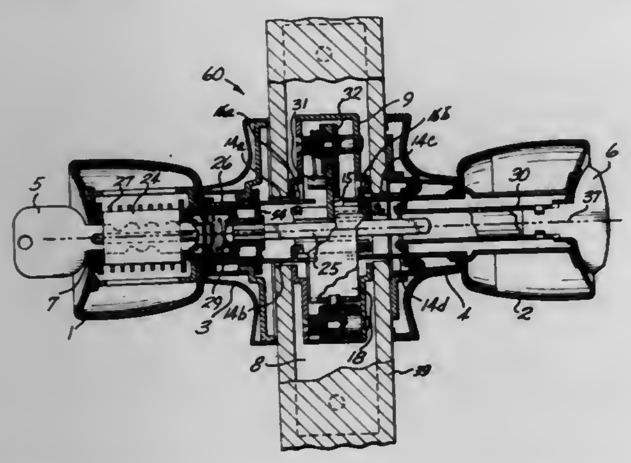


A stationary lockable device for concurrently engaging a pair of skis and ski poles to prevent the unauthorized removal of the same from the device. The lockable device includes a rigid rectangular box that occupies a fixed position, and has a removable door associated therewith. The sides and bottom of the box are slotted to permit the handle portions of a pair of ski poles to be inserted therein, and when so inserted removably gripped by spring-loaded means to prevent a downward movement of the poles relative to the box.

The movable door of the box has ski-engaging means mounted thereon to so support the skis that when the door is in a closed position the bindings of the skis are within the confines of the box. The skis extend upwardly and downwardly relative to the box through slots formed in the top and bottom thereof. The slots are of sufficiently narrow width that the bindings of the skis cannot pass therethrough. The door is provided with a lock to hold it in a closed position relative to the box, and when the door is so closed wall members are moved within the box to close the pole-handle-receiving openings therein. So long as the door of the box remains in a closed and locked position, the ski poles and skis that are partially situated in the confines thereof are held in a nonremovable position relative to the box, and theft or unauthorized removal of the skis and ski poles from the locking device is prevented.

3,604,229
DEAD BOLT AND LATCH DOOR LOCK

Kiyoyasu Wake, Tokyo, Japan, assignor to Tujisash Industries, Ltd., Kanagawa, Japan, a part interest
Filed Jan. 29, 1969, Ser. No. 794,875
Int. Cl. E05b *35/04, 59/02, 3/08;* **E05c** *1/12*
U.S. Cl. 70—107 **27 Claims**

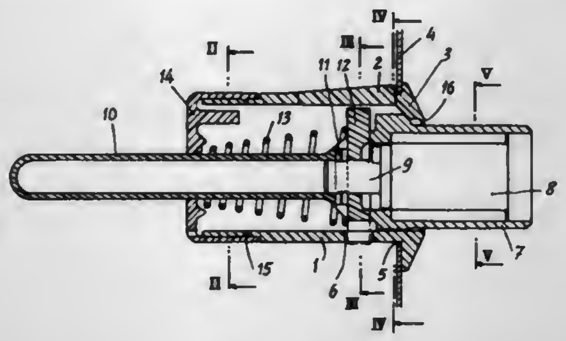


Disclosed is a combination door lock case which includes a latch member and a dead bolt both of which can be selectively projected into a striker plate mounted on a doorjamb. Latch bars extending from doorknobs positioned on each side of the case independently engage individual actuator members within the case, and rotate them about a main axis. Through cam and lever connections, the rotating actuators move the latch member from a temporary latching position, with the latch member projected into the striker plate, to a temporary unlatching position, with the latch member withdrawn into the door. Also in the case is a crank arm which is engageable by a spindle member causing the crank arm to rotate about the main axis as the spindle member is rotated. The end of the crank arm actuates the dead bolt to move it from an extended locking position to a retracted unlocking position with the dead bolt bodily contained within the door. The spindle is attached at one end to a thumb turn member positioned within one of the doorknobs and through a lost motion connector at the other end, the spindle can be actuated by a key cylinder positioned in the other doorknob. Provisions are made for preventing the actuation of the spindle by a picking tool inserted through the keyway of the lock cylinder.

3,604,230
SAFETY CATCH LOCK CONTROL DEVICE

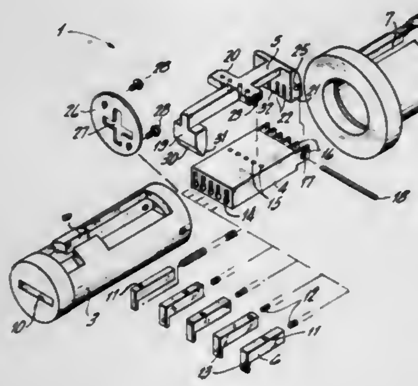
Michel Tixier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France
Filed June 30, 1969, Ser. No. 837,589
Claims priority, application France, July 19, 1968, 159,999
Int. Cl. E05b *9/04, 9/08*
U.S. Cl. 70—181 **3 Claims**

Lock control device with safety catch feature, notably for automobile vehicles, of the type comprising a pushbutton and barrel-type lock incorporating a lock control rod slidably mounted in a body adapted to be secured to the vehicle, this device being characterized in that said body has a polygonal cross-sectional configuration, that the pushbutton and control-rod assembly comprises a multilobed portion having a cross-sectional contour corresponding to the inner polygonal configuration of, and adapted to slide in, said body, and that said body has formed in the side faces of its polygonal section apertures adapted to coact with said lobes when said pushbutton and control-rod assembly is rotated.



3,604,231
PICKPROOF LOCK

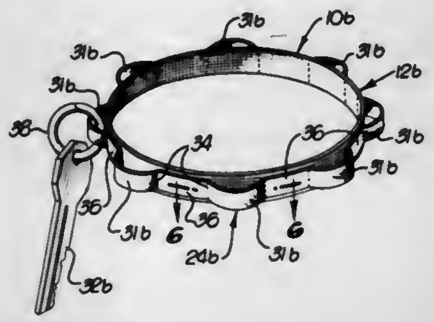
Feliciano P. Buschi, 504 W. 111th St., New York, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,608
Int. Cl. E05b *27/08*
U.S. Cl. 70—363 **9 Claims**



A key-operated lock mechanism has a tumbler support carrying spring-loaded tumblers which may be moved in their keyway passages by the fingers of a key insertable through a keyhole so that depending pins on a pivotal detent are aligned therewith in an unlocked position. When in the locked position, the pins merely contact the upper surfaces of the tumblers. A guard depends from the detent between the keyhole and the keyway so that the key fingers lift the guard and upwardly pivot the detent upon movement of the key towards the keyway. The key has an aperture receiving the guard when the fingers align the tumbler holes with the detent pins to permit the detent to pivot downwardly into the unlocked position.

3,604,232
ELASTIC KEYRING

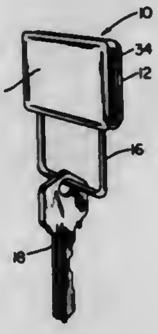
Sylvia J. Mosher, 6633 Berquist, Canoga Park, Calif.
Filed Nov. 21, 1968, Ser. No. 777,703
Int. Cl. A44b *15/00*
U.S. Cl. 70—457 **7 Claims**



A keyring having a body in the form of a wide, flat, continuous loop of cloth-covered elastic material which is circumferentially stretchable,. with individual elastic key attachment loops on the outside of the body loop which are adapted to circumferentially stretch along with the body. The keyring is generally soft and flexible for easy and comfortable carrying in purse or pocket, and is circumferentially stretchable for engagement over the hand and attachment about the wrist for convenient and comfortable carrying of the keyring while shopping, while carrying groceries or other packages, or while engaged in sporting activities.

3,604,233
COMBINATION KEY AND COIN HOLDER

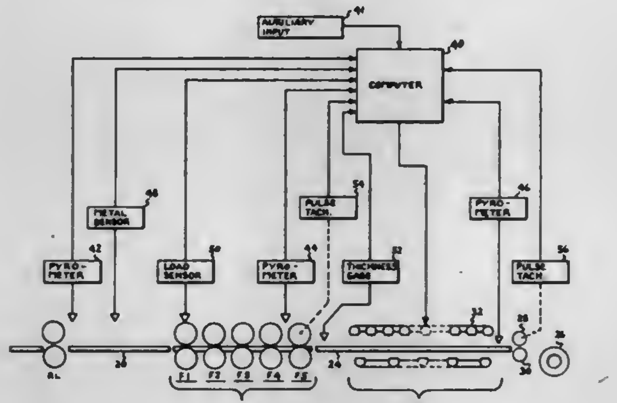
Lowell W. Barrett, 12731 W. Alameda Dr., Denver, Colo.
Filed Dec. 23, 1968, Ser. No. 786,066
Int. Cl. A44b *15/00*
U.S. Cl. 70—459 **8 Claims**



A combination coin and key holder comprised of a body having a key frame slidably attached thereto, the key frame movable to a bottom position in which keys can be inserted in the key frame, a top position in which a coin can be inserted in a hollow section in the bottom of the body, and a middle position in which the key frame is locked in a position where keys cannot be removed from the key frame, and the coin is locked inside the body.

3,604,234
TEMPERATURE CONTROL SYSTEM FOR MILL RUNOUT TABLE

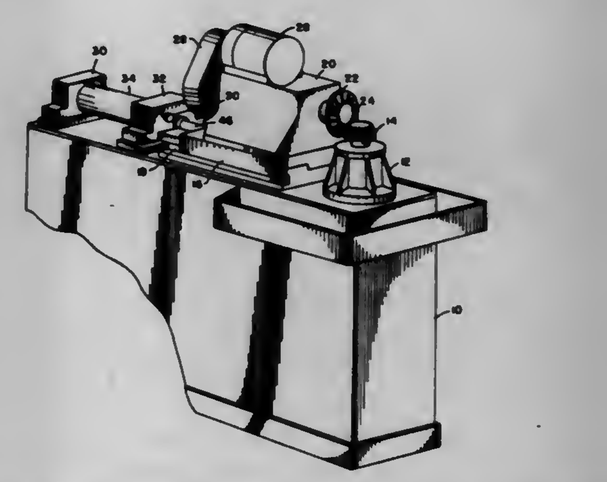
Eric N. Hinrichsen, Schenectady, N.Y., and Eugene R. Turk, Phoenix, Ariz., assignors to General Electric Company
Filed May 16, 1969, Ser. No. 825,280
Int. Cl. B21b *37/10*
U.S. Cl. 72—13 **11 Claims**



Individually controllable water sprays form a strip cooling zone at a runout table between the last stand of a hot strip finishing train and a coiler. The times required for successive sections of the strip to traverse the runout table (designated residence times) are calculated from a predetermined strip velocity-time profile. Using the residence times, the finishing train temperature, and the desired coiling temperature, spray patterns of varying lengths are calculated for successive sections. The spray patterns are changed to coincide with the movement of the sections across the runout table.

3,604,235
ROLLING OF TAPERED GEARS

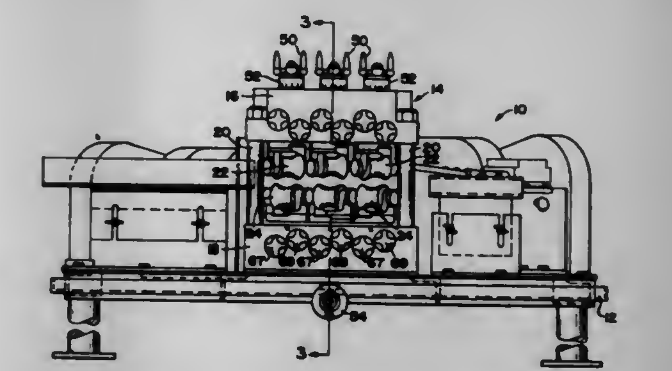
Carl H. Motz, Harper Woods; David W. Daniel, Birmingham, and Raymond S. Kusz, Mount Clemens, all of, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Oct. 30, 1969, Ser. No. 872,692
Int. Cl. B21d *53/28*
U.S. Cl. 72—84 **9 Claims**



A machine for finish-rolling rough-cut tapered gears such as hypoid gears, comprising means for meshing a tool or die in the form of a hypoid ring gear with a hypoid pinion in properly meshed relation, and establishing rolling pressure between the die and pinion by effecting advance of the die or pinion in a direction parallel to its axis.

3,604,236
CROSS ROLL ADJUSTING AND LOCKING MEANS

William Hyams, Bethel Park, Pa., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Filed Aug. 30, 1968, Ser. No. 756,688
Int. Cl. B21b *19/02;* **B21d** *3/04*
U.S. Cl. 72—99 **2 Claims**

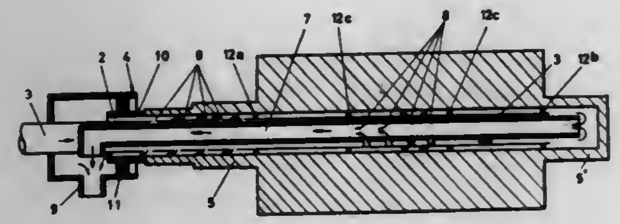


Cross roll carrier frames are rotatably supported in the roll frame housing. A pair of spaced manually operated screws engage each frame on either side of the centerline of the frame with one screw adjusting the frame in one direction and the other screw locking the frame in its adjusted position. The operation of the screws is reversed for adjustment in the other direction.

3,604,237
WORK ROLLS AND COOLING METHOD THEREOF

Takao Kawanami, No. 13, Azakitanoyama, Oaqanawa, Uenocho, Chita-gun; Toyokazu Saito, No. 39, 1-chome, Sakushita-cho Minami-ku, Nagoya-shi, and Hiro Mori, No. 7, Aza-higashiyamada, Oazafukijims, Uenocho, all of Aichi-ken, Japan
Filed Apr. 1, 1968, Ser. No. 717,611
Claims priority, application Japan, Feb. 5, 1968, Apr. 3, 1967, Apr. 3, 1967, 43/7418;42/27669;42/21101
Int. Cl. B21b *27/06, 27/08*
U.S. Cl. 72—201 **5 Claims**

A method of cooling work rolls in a rolling mill is comprised of forming an axially extending passageway through the work roll and disposing a cooling medium within the passageway for limiting the temperature differences along the surface of the work roll. The cooling medium can be a solid member having a higher rate of thermal conductivity than the material of the work roll or a fluid. The flow path of the fluid cooling medium can be arranged for selectively contacting only certain portions of the roll member within the axially extending passageway.



3,604,238
APPARATUS FOR THE PRODUCTION OF STEEL PIPES BY EXTRUSION

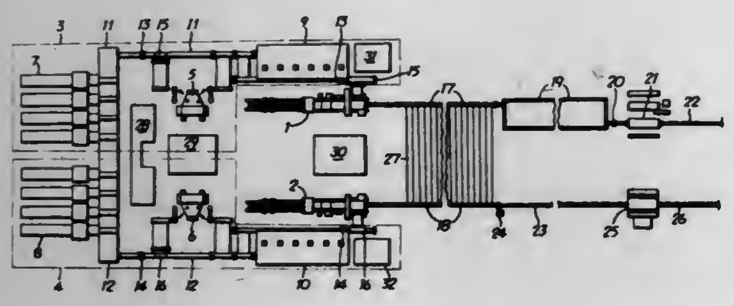
Akira Asari, Osaka, Japan, assignor to Kobe Steel Ltd.

Filed Apr. 1, 1969, Ser. No. 812,145

Claims priority, application Japan, Apr. 3, 1968, Aug. 24, 1968, 43/21932;43/60764

Int. Cl. B21b *15/00;* **B21c** *23/00*

U.S. Cl. 72—206 **2 Claims**



A steel pipe production apparatus has a pipe production portion and a steel pipe treatment portion. The pipe production portion has two or more systems of pipe production lines, one of which is an extruded pipe-producing apparatus and the other of which is an extruded pipe-producing apparatus or a rolled pipe-producing apparatus. The steel pipe treatment portion is downstream of said pipe production portion and has one system which is a hot rolling line and one or more systems which are hot lines. The hot rolling lines include a stretch reducer for reducing steel pipes supplied from the pipe production portion. The hot lines include means for after-treating steel pipes supplied from the pipe production portion. Transfer means are provided between said pipe production portion and said steel pipe treatment portion for enabling steel pipes from the pipe production line to be selectively delivered to any one of the hot rolling line or the hot lines.

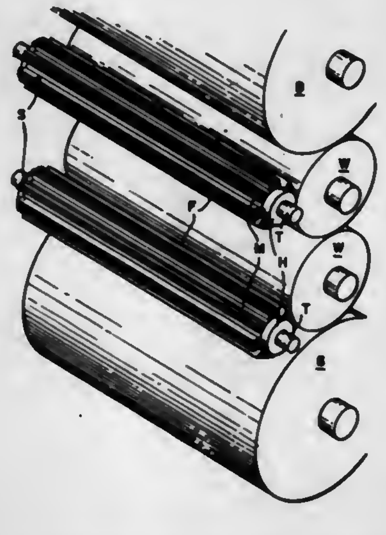
3,604,239
ROLLING MILL AND METHOD OF REMOVING COATING FROM A WORK ROLL OF THE MILL

Arthur L. Moxon, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of application Ser. No. 756,183, Aug. 29, 1968, now abandoned. This application Apr. 1, 1969, Ser. No. 813,807

Int. Cl. B21b *27/04, 27/06*

U.S. Cl. 72—236 **19 Claims**



A method of treating the working surface of a rolling mill roll on which roll coating accumulates during rolling of work in the mill comprising without removing the roll from the mill flailing the working surface of the roll with flexible elements so that portions of the elements adjacent the ends thereof engage such surface of the roll and by such flailing action rubbing abrasive particles over such surface of the roll and thereby removing at least part of the roll coating accumulated on the working surface of the roll. Further, a rolling mill comprising a roll for acting on work passing in contact therewith, which roll picks up matter from the surface of the work being acted on, and means for removing at least part of such matter from the roll, such means comprising flexible elements and means for mounting the flexible elements for flailing action so that portions of the elements adjacent the ends thereof engage the working surface of the roll, and abrasive particles rubbed over such surface of the roll by the flailing action of the flexible elements.

3,604,240
NECK-FORMING APPARATUS FOR CARTRIDGE SHELLS

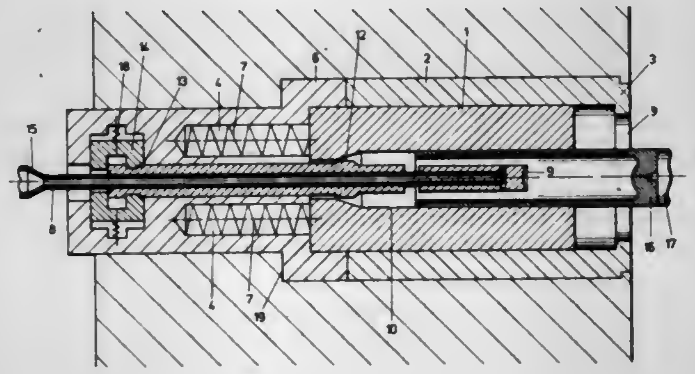
Rolf Weyhmuller, Vaduz, Liechtenstein, and Franz Xander, Gisingen, Austria, assignors to Werkzeugmaschinenfabrik-Oerlikon-Buhrle AG, Zurich, Switzerland

Filed July 8, 1969, Ser. No. 840,010

Claims priority, application Austria, July 12, 1968, A6781/68

Int. Cl. B21d *45/00*

U.S. Cl. 72—345 **8 Claims**



A neck is formed on a cup-shaped cartridge shell blank in an axially movable tubular die whose cavity tapers at one end. A tubular mandrel and an ejector pin slidable in the mandrel enter the cavity through the tapering end, and a driver moves axially into and out of the other end. A lost-motion coupling connects the driven ejector pin with the mandrel. A neck is formed on a blank while the blank is pushed by the driver over the stationary mandrel in the tapering die end. The driver moves with the ejector pin to discharge the finished cartridge shell.

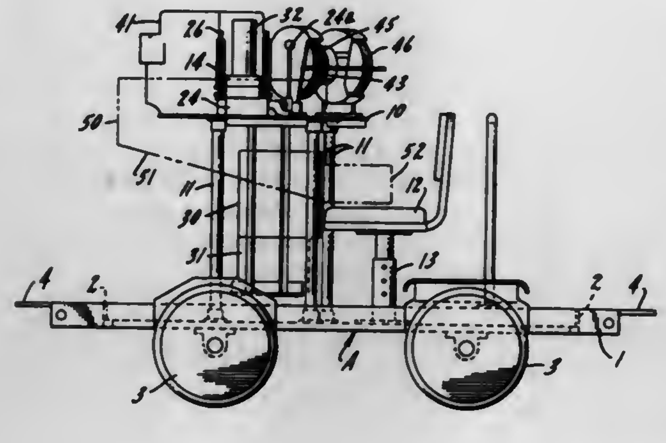
3,604,241
RAILROAD SPIKE STRAIGHTENER

Weltzin B. Blix, Jr., South Milwaukee, Wis., assignor to Nordberg Manufacturing Company, Milwaukee, Wis.

Filed Feb. 6, 1969, Ser. No. 797,034

Int. Cl. B21d *37/10;* **B21j** *7/28*

U.S. Cl. 72—416 **2 Claims**



A spike straightener for straightening spikes used along railroad tracks. On any suitable carrier, for example, a railroad car, a spike-straightening unit is provided which is power driven but is controlled by the operator who has to use at least two handles to actuate it, thereby preventing unintended actuation against a hand of the operator. One power unit is effective to operate a cleaning device and another the straightening device.

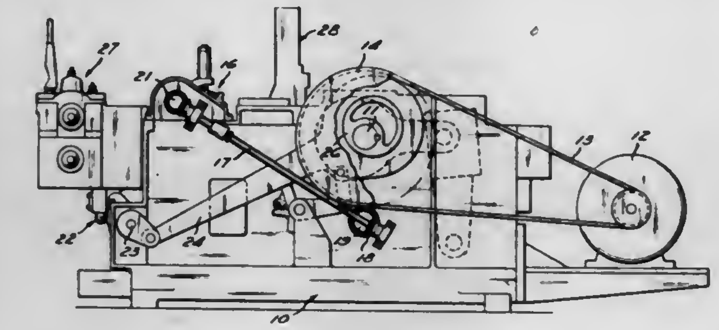
3,604,242
TRANSFER AND EJECTION MECHANISM FOR FORGING MACHINE

Gene E. Allebach, and Richard Edmondson, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed Dec. 18, 1968, Ser. No. 784,806

Int. Cl. B21d *43/02, 45/00, 43/10*

U.S. Cl. 72—421 **26 Claims**



A transfer and ejection mechanism for a forging machine is disclosed. The transfer operates through a closed path including a first portion of arcuate movement in a direction substantially perpendicular to the die face, a second portion of transfer movement in a substantially straight line to a position adjacent to a subsequent die, and a third portion of arcuate movement inwardly toward the die face and substantially perpendicular thereto. The in and out movement eliminates the need for a precise adjustment of the knockout and rearward positioning of subsequent dies with respect to the preceding dies. The final movement back to the initial position is along a curved path wherein the transfer fingers are raised clear of the tool and return movement is commenced before the tool withdraws from the die. This substantially reduces the dwell required at the delivery position. The ejection mechanism causes rapid ejection to a blank-gripping position, slower ejection during gripping, and subsequent fast ejection to complete the blank ejection. This is particularly important when transferring blanks with short shanks since it provides sufficient time to grip a blank without increasing ejection time.

3,604,243
FRAME STRUCTURE AND GUIDE CONSTRUCTION OF AN HYDRAULIC PRESS

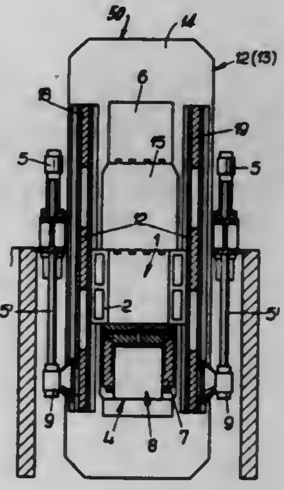
Ernst Muller, Konizsberger Stras Be 18 5458 Bad, Niederbreisig, Rhein, Germany

Filed Jan. 23, 1969, Ser. No. 793,513

Claims priority, application Germany, Jan. 23, 1968, P 16 52 808.8

Int. Cl. B21j *9/02*

U.S. Cl. 72—455 **8 Claims**



A high capacity press includes a fixed foundation and a frame which is movable in respect to the foundation by a fluid pressure operated drive comprising a cylinder and plunger movable in the cylinder. Each frame is made up of a plurality of plates arranged in a stack, the plates being either of a closed frame forming configuration or made up of two oppositely arranged C-shaped plates oriented with their legs abutting to form a closed frame. A guide system for the frames is carried on the foundation and engaged with the frame or guiding the frame during its movement and includes an upper guide of substantially T-shaped configuration which extends transversely between adjacent frame elements and bears against the frame in at least two planes and a lower guide comprising elements which extend radially outwardly from the drive cylinder and engage the frame in at least two separate radial planes.

3,604,244
STRAP-BENDING TOOL

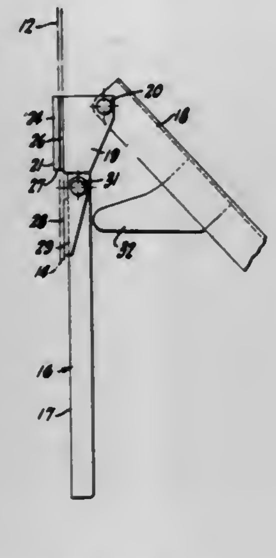
William A. Thomas, 1585 152nd Ave., San Leandro, Calif.

Filed July 7, 1969, Ser. No. 839,171

Int. Cl. B21j *13/08*

U.S. Cl. 72—459 **9 Claims**

A tool for bending metal straps such as those used to support service pipes and conduits intermediate a floor structure and ceiling suspended therebelow of the type separating successive floors in modern multiple-story commercial buildings. The strap-bending tool includes a pair of handles supported for relative pivotal movement between open and closed positions. One such handle is equipped with a strap holder adapted to have a strap inserted thereinto so as to extend downwardly along the holder-equipped handle. Pivotally supported by such one handle below the holder thereon is a strap-bending element which underlies the free end portion of any strap inserted into the holder. A force applicator carried by the other handle is engageable with the strap-bending element to displace the same angularly when the handles are closed and thereby bend the free end portion of such strap about the anvil defined the lower edge of the strap holder.



3,604,245

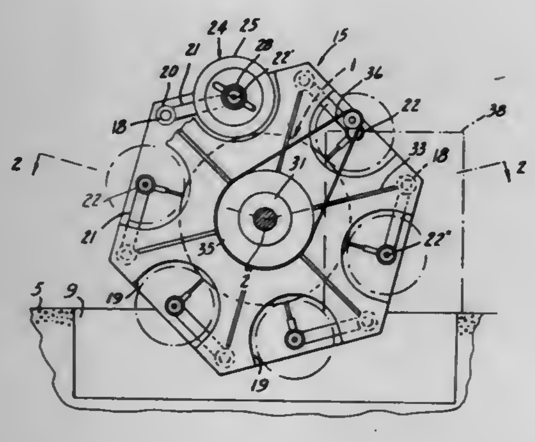
TIRE TESTING APPARATUS

Edmond J. Atelian, San Carlos, Calif., assignor to Western Gear Corporation

Filed Dec. 22, 1969, Ser. No. 886,937

Int. Cl. G01n *3/56*

U.S. Cl. 73—8 **7 Claims**



Tire testing apparatus which includes a relatively large rotating rod drum provided with a plurality of wheel mounts substantially equally spaced around the entire periphery of the road drum and each adapted to rotatably support a wheel on which a tire to be tested is mounted. Means is provided for indexing the mounts about the road drum in order to permit the convenient mounting and removal of wheels with respect to each wheel mount. The apparatus insures that the loading on all tires undergoing tests is equal.

3,604,246

PERMEABILITY TESTING APPARATUS AND METHOD

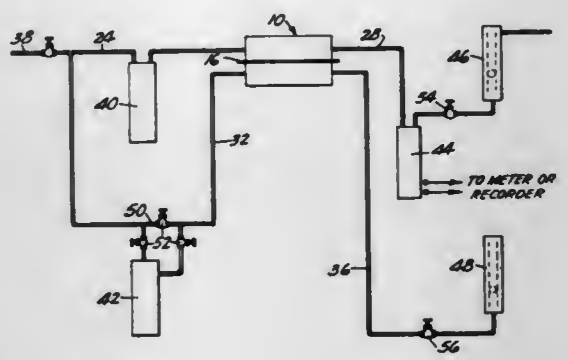
Paul E. Toren, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 14, 1965, Ser. No. 487,256

Int. Cl. G01m *3/16*

U.S. Cl. 73—38 **16 Claims**

Apparatus for measuring the permeability of films by monitoring flowing gas streams contacting surfaces of the film, including a gastight cell consisting of a pair of cuplike sections adapted to clamp a sheet of film material tightly between them to hold it in gastight relationship to both of the sections, to form two compartments separated by the said film, means being provided so that a test gas flows through one of the compartments and sweep gas flows through the other compartment, the sweep gas being conveyed to a detector to determine the amount of test gas which is present because of having passed through the film. Bypass means is provided so that sweep gas can be passed through both chambers in order to establish a base line for improved accuracy in detecting very low rates of permeability.



3,604,247

AUTOMATIC VISCOSITY METER

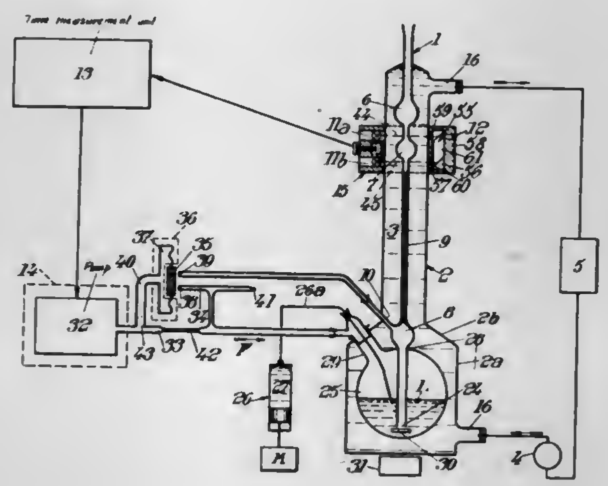
Philippe Gramain, and Roger Libeyre, both of Strasbourg, France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Puteaux, France

Filed July 18, 1969, Ser. No. 843,116

Claims priority, application France, July 19, 1968, Feb. 26, 1969, 159,951;6,904,967

Int. Cl. G01n *11/06*

U.S. Cl. 73—55 **6 Claims**



The automatic viscosity meter comprises a vertical tube in which flows the liquid whose viscosity is to be measured. This tube is maintained at a constant temperature by a thermostatically controlled liquid. The viscosity measurement is obtained by measuring the time taken by a given volume of liquid contained in the tube to flow between two points. The reading of the passage of the meniscus past these two points is made automatically by using luminous sources and only a single-receiving element, with the interposition of a prism or mirrors.

3,604,248

APPARATUS AND METHODS FOR DETERMINING IMBALANCE

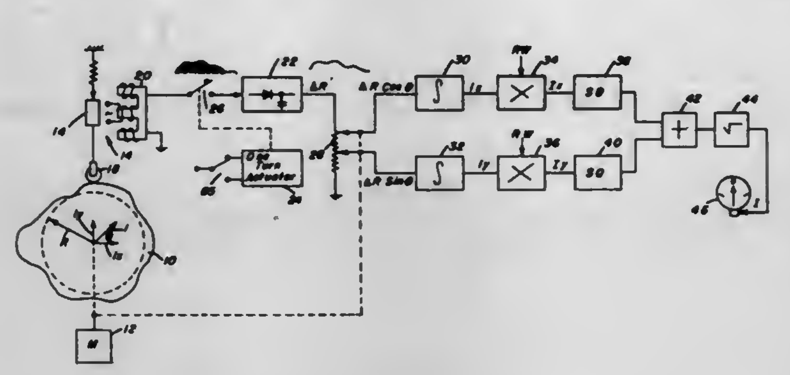
Heinz C. Altmann; Clifford B. Bushnell; Henry L. West, and Thomas O. Lange, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,719

Int. Cl. G01m *1/00, 1/14*

U.S. Cl. 73—66 **9 Claims**

Radial variations about the periphery of an element are the basis for determining the imbalance of such member. Such variations are resolved into vector components; and integrated over a single traversal of such periphery. The technique is used to determine web roll imbalance; and dimensional growth of the roll is accommodated by use of a positional pickoff. Positioning of the pickoff is used to weight the effect of the vector components.



3,604,249

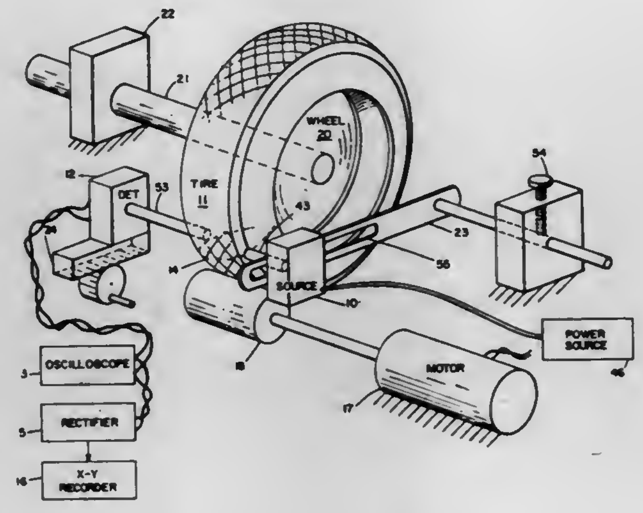
METHOD AND APPARATUS FOR TESTING PNEUMATIC TIRE CASINGS

David G. Wilson, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 21, 1968, Ser. No. 738,926

Int. Cl. G01h *13/00*

U.S. Cl. 73—67.2 **9 Claims**



Apparatus and method for testing pneumatic tire casings while the inflated tire is mounted on a wheel is described. A vibration source in contact with the exterior surface of the tire is caused to vibrate at the natural resonance frequency of the mounted tire. A detector sensitive to the vibration of the tire is in contact with a different region of the exterior surface of the tire. Typically, the vibrator is located on the sidewall of the tire opposite that on which the detector is located and displaced from each other in the circumferential direction. The vibrator and detector positions are maintained constant with respect to one another while they are both moved relative to the tire circumference thereby checking the vibration transmission characteristic of the entire tire. A defect in the tire cord or ply separation of the cord is evidenced by a substantial change in the detected vibration.

3,604,250

COUPLING NETWORK FOR AN ULTRASONIC TESTING SYSTEM

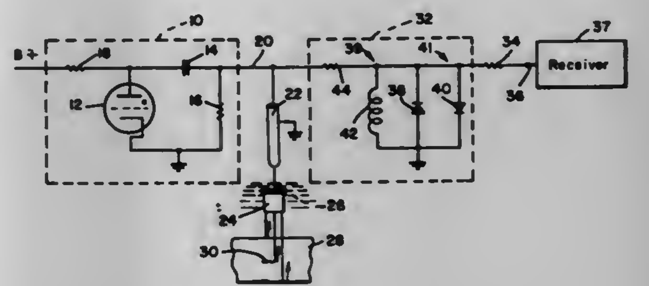
Willem A. Grandia, Charlotte Harbor, Fla., assignor to Air Products and Chemicals, Inc. and North American Rockwell Corporation, part interest to each

Continuation of application Ser. No. 598,018, Nov. 30, 1966, now abandoned. This application Oct. 20, 1969, Ser. No. 867,853

Int. Cl. G01n *24/00*

U.S. Cl. 73—67.5 **4 Claims**

This disclosure relates to an ultrasonic-testing system, and includes circuitry for damping low frequency oscillations in an ultrasonic transmitted pulse signal. A low frequency filter is connected across a limiting circuit to dampen low frequency signals to permit reflected signals from short distances to be detected.



3,604,251

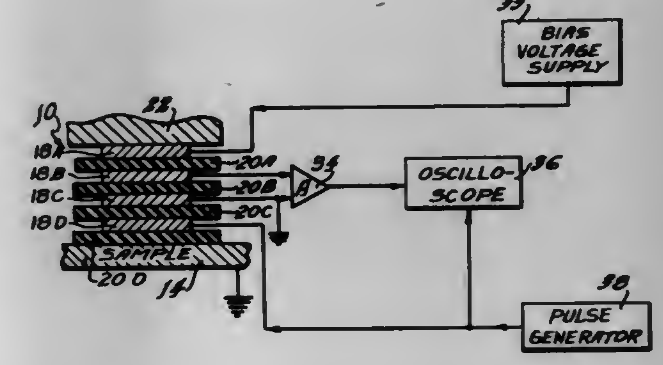
CAPACITIVE ULTRASONIC DEVICE FOR NONDESTRUCTIVELY TESTING A SAMPLE

Norman E. Dixon, Pasco, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 18, 1969, Ser. No. 817,505

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.7 **11 Claims**



In an apparatus for ultrasonically testing a sample, a plurality of electrodes and dielectric members are mounted in alternate layered arrangement in pressure engagement with the sample. The electrodes adjacent the sample are maintained at a reference potential and means apply a bias voltage relative said reference potential to the electrode furthermost of said sample. A plurality of amplifiers combine the output voltages relative said reference potential of the others of said electrodes to provide a measure of ultrasound in the sample.

3,604,252

INTERFEROMETRIC SYSTEM FOR MEASURING PHYSICAL CONDITION OF A MEDIUM

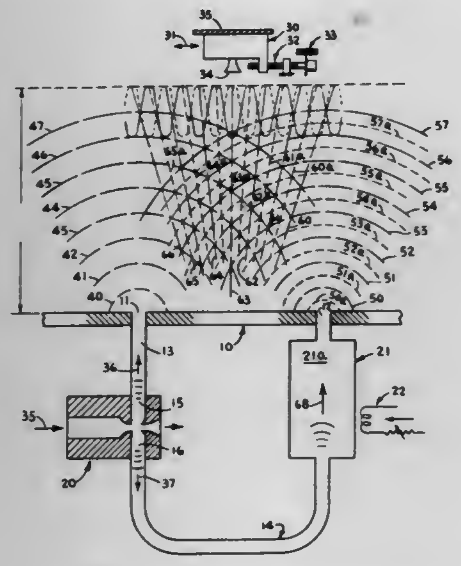
Basil B. Beeken, New Haven, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Feb. 16, 1970, Ser. No. 11,734

Int. Cl. G01n *9/24*

U.S. Cl. 73—69 **4 Claims**

An acoustical interferometric system that includes two effective sources of ultrasonic radiation for establishing a normal pattern of interference fringes, the radiation from one of said sources passing through a fluid medium that is subject to physical changes, such as temperature and/or density changes, whereby such changes can be effectively sensed by detecting means that are sensitive to shifts in the pattern of interference fringes; such shift being caused by variations in the speed at which the acoustical radiation is conducted through said medium, the speed variations resulting from the said physical changes.



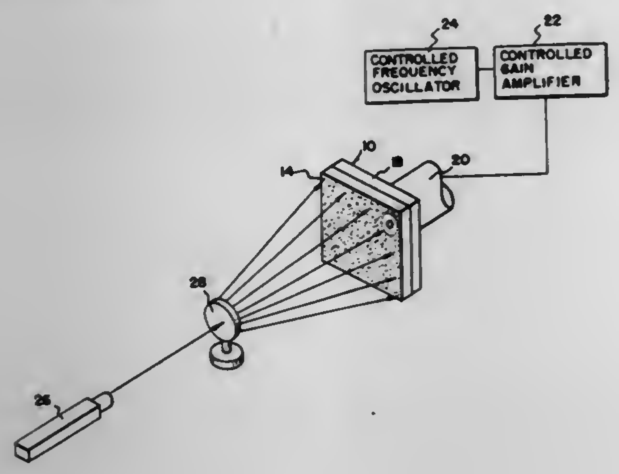
3,604,253
METHOD OF VIBRATION ANALYSIS EMPLOYING COHERENT LIGHT

Leonard A. Kersch, and James Seydel, both of Ann Arbor, Mich., assignors to GCOptronics, Inc., Ann Arbor, Mich.

Filed Aug. 8, 1968, Ser. No. 751,089

Int. Cl. G01h *9/00*

U.S. Cl. 73—67.2 **7 Claims**



To detect physical anomalies in a member such as cracks or subsurface defects, a surface of the member is illuminated with light derived from a laser and vibration is induced in the member. The member will appear to have a speckled or mottled appearance in areas which are not in motion because of the interference at the eye between light reflected from various points on the member. When the member is in motion the speckled pattern disappears and the object appears as if normally illuminated. By varying the frequency and intensity of vibratory motion imparted to the member local regions of the member which contain a defect or flaw are caused to vibrate independently of the balance of the member and these flaws are detected by observing modifications in the mottled pattern.

3,604,254
TEST METHOD AND APPARATUS FOR CHARGE FORMING DEVICES

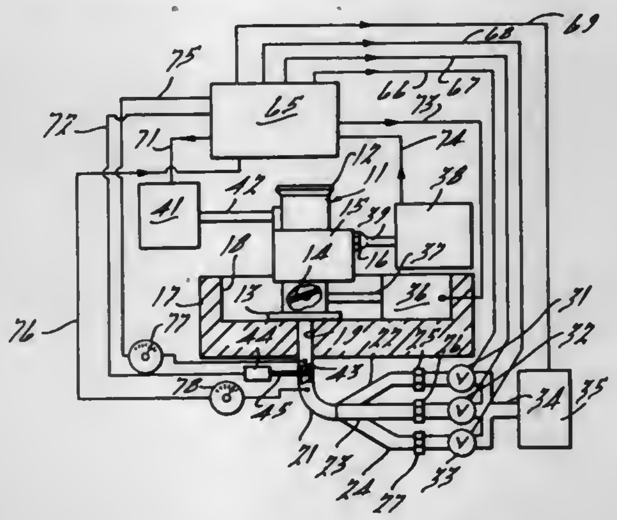
Joseph Sabuda, 14032 Hubbard, Livonia, Mich.

Filed Sept. 17, 1969, Ser. No. 4,788

Int. Cl. G01m *19/00*

U.S. Cl. 73—118 **7 Claims**

A method and apparatus for accurately calibrating and adjusting charge forming devices for internal combustion engines under conditions accurately simulating actual operating conditions. The charge forming device induction passage is placed in a fluid circuit that includes a sonic nozzle with a throttle valve being interposed between the charge forming device induction passage and the sonic nozzle. The sonic nozzle has the characteristic that at pressure differentials greater than a predetermined critical pressure differential the flow velocity through the throat is maintained at the sonic velocity. A pressure differential is established across the sonic nozzle, which pressure differential is greater than this critical pressure and by interrelating the operation of the throttle valve of the charge-forming device and the throttle valve of the test apparatus, the critical pressure ratio is maintained while various engine-operating conditions are simulated. The air and fuel flow through the carburetor can then be accurately measured at these varying conditions.



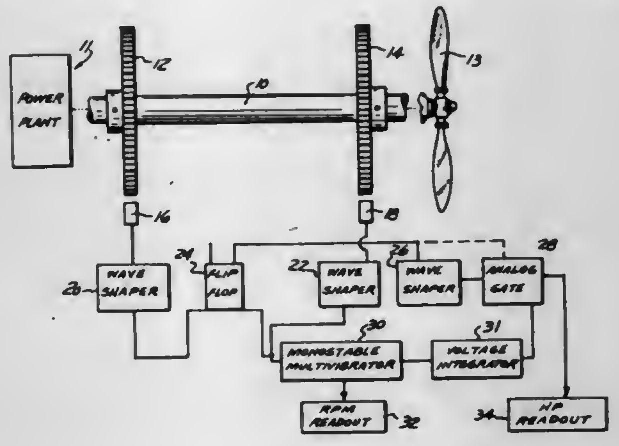
3,604,255
POWER METER FOR ROTATING SHAFTS AND METHOD OF PROVIDING POWER READOUT THEREFOR

Hans U. Bart, Whitehall, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 20, 1970, Ser. No. 13,125

Int. Cl. G01l *3/10*

U.S. Cl. 73—136 A **13 Claims**



A pair of proximity pickups located adjacent a pair of axially spaced gears on a rotating shaft generate alternating current waves in response to movement of the gear teeth, the waves being converted to rectangular waves through wave shapers and transmitted to a flip-flop to yield a rectangular wave the width of which is the lag of one of the input waves behind the other due to torque on the shaft so that the width of the wave is proportional to torque. One of the signals from the flip-flop is directed to a monostable multivibrator the output of which provides an r.p.m. readout for the shaft. The rectangular waves representing torque are transmitted to an analog gate which is opened by the leading vertical edges of tee input waves thereto, the energy entering said analog gate when opened being derived from a voltage integrator which converts voltage pulses from the monostable multivibrator into an integrated voltage value proportional to the rotational speed of the shaft. The result is that the analog gate produces a final, substantially rectangular wave having a width proportional to torque and an amplitude proportional to the rotational speed of the shaft so that the area beneath the wave is proportional to the horsepower delivered by the shaft.

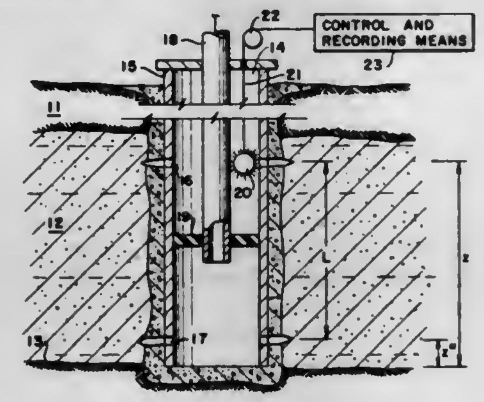
3,604,256
METHOD FOR MEASURING THE AVERAGE VERTICAL PERMEABILITY OF A SUBTERRANEAN EARTH FORMATION

Michael Prats, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Jan. 31, 1969, Ser. No. 795,408

Int. Cl. E21b *47/10*

U.S. Cl. 73—155 **7 Claims**



A method for measuring the average vertical permeability of a subterranean earth formation by extending a well borehole into the earth formation and sealing off the well borehole at least adjacent to the portion of the formation desired to be measured. The sealed-off portion of the well borehole is perforated at least at two vertically spaced points in the well borehole and the well borehole is sealed off between the perforations. Fluid is then flowed at a substantially constant rate through one of the perforations at one of the points while the pressure response in the well borehole is measured at the perforations of the other of the points without flowing fluid through the latter perforation.

3,604,257
METHOD OF TESTING AND SELECTING GLASS CLOTH FOR USE IN POLYIMIDE COMPOSITES

Irving Serlin, 94 Hadley St., Springfield, Mass.

Filed Jan. 31, 1969, Ser. No. 795,734

Int. Cl. G01h *33/36*

U.S. Cl. 73—159 **12 Claims**

A method for the testing and selecting of glass cloth suitable for use in the preparation of polyimide resin impregnated composites. The method comprises determining the extractable polyol content of the glass cloth and then selecting glass cloth having an extractable polyol content of from 0.60 to 0.90 percent by weight based on the weight of the glass cloth for use in the preparation of the polyimide resin impregnated composite.

3,604,258
UNIFORM DESCENT-RATE PROBE

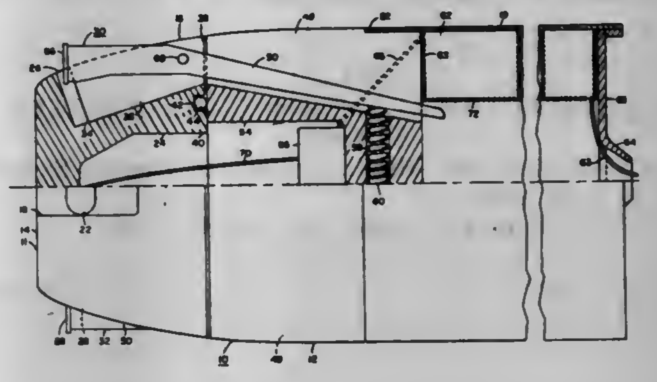
Karl Maiershofer, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 21, 1969, Ser. No. 868,063

Int. Cl. G01d *1/00*

U.S. Cl. 73—170 A **9 Claims**

As a probe descends into the water under the influence of gravity, a wire is paid out to carry to a signal indicator information concerning the properties of the water, such as the temperature thereof, at various depths of the water. Means are provided to keep the rate of descent of the probe constant even though the paying out of the wire lessens the weight of the probe. These means may take the form of variably positionable spoiler vanes that add less and less amounts of resistance of the water to the descent of the probe therethrough as the probe becomes lighter, or means to cause more water to flow through the probe as the weight of the probe becomes less.



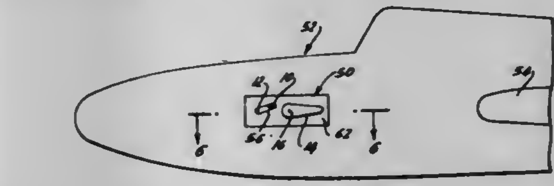
3,604,259
ANGLE OF ATTACK MEASURING DEVICE WITH ADJUSTABLE AIRFOIL

Allan B. Heinsohn, Valley Cottage, and Donald M. Neary, Pearl River, both of, N.Y., assignors to Rosemount Engineering Company, St. Eden, Prairie, Minn.

Filed May 2, 1969, Ser. No. 826,772

Int. Cl. G01c *21/00*

U.S. Cl. 73—180 **25 Claims**



An angle of attack measuring device is mounted on an aircraft in the airflow-deflection path of an airfoil. The airfoil is operatively secured to the aircraft at a location spaced from the wing. The relative angular position of the airfoil is controllably variable to adapt the operation of the angle of attack measuring system to different flight conditions of the aircraft.

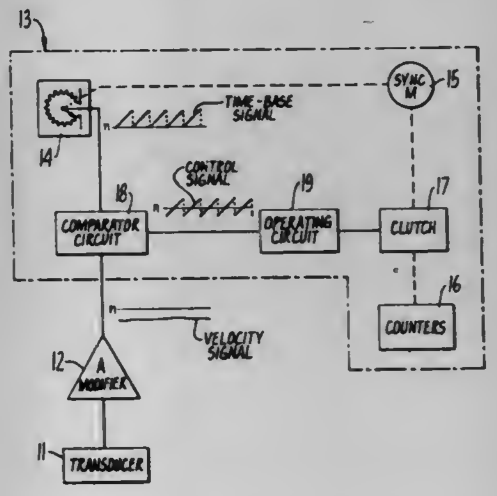
3,604,260
LOGGING APPARATUS FOR VESSELS

Robert D. Ogg, Portland, Maine, assignor to The Eastern Company

Filed Dec. 24, 1969, Ser. No. 887,995

Int. Cl. G01c *21/00*

U.S. Cl. 73—181 **10 Claims**

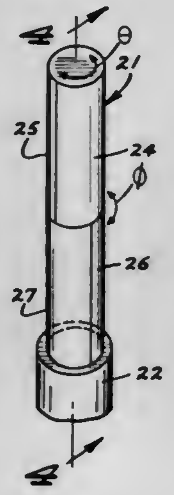


Apparatus for indicating the distance travelled by a vessel comprising a counter that operates cyclically and for periods of time during each cycle which is a linear function of the velocity of the vessel. The counter is operated with a control circuit which is energized in response to an electrical output signal that is substantially proportional and linear to the velocity of a vessel and a second electrical signal that varies linearly with time between two set values.

3,604,261
MULTIDIRECTIONAL THERMAL ANEMOMETER SENSOR

John G. Olin, Roseville, Minn., assignor to Thermo Systems, Inc., St. Paul, Minn.

Filed June 16, 1969, Ser. No. 833,434
Int. Cl. G01p *13/00*
U.S. Cl. 73—189 **21 Claims**

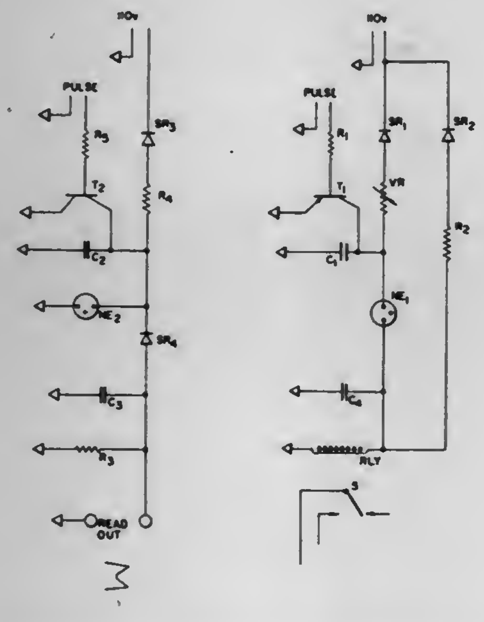


A multidirectional thermal anemometer device to sense the speed and direction of a fluid velocity vector by making qualitative and/or quantitative use of the asymmetry or nonuniformity of the heat flux distribution around a constant-temperature thermal anemometer sensor. The sensor has segmented heat sensing films covering the entire surface of the sensing body. The entire surface of the sensing body is heated with one or more constant-temperature anemometer electronic control systems electrically coupled to each segment of the film. The electrical outputs of the control systems are operated on by either a digital or analog computer to yield quantitative information about the magnitude and direction of the fluid velocity vector.

3,604,262
FLOW RATE AND LOW FLOW INDICATOR

Mike Craddock, P.O. Box 1068, Big Spring, Tex.

Filed Dec. 10, 1968, Ser. No. 783,467
Int. Cl. G01f *1/04;* G08b *21/00*
U.S. Cl. 73—194 R **2 Claims**

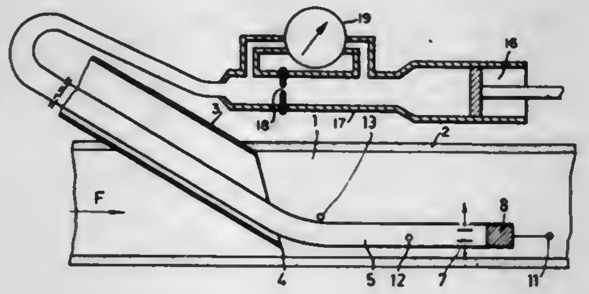


A flow measuring and monitoring system is provided that both measures flow and provides an indication when the flow falls below a predetermined minimum flow rate.

3,604,263
DEVICE FOR MEASURING THE FLOW INTENSITY OF CIRCULATING LIQUID

Michel Joseph Auphan, Neuilly, and Jean Perilhou, Bourg La Reine, both of, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1969, Ser. No. 794,495
Claims priority, application France, Jan. 31, 1968, 138125
Int. Cl. G01p *5/10*
U.S. Cl. 73—204 **9 Claims**

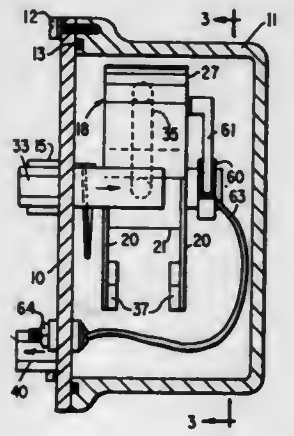


A device for measuring liquid flow in a channel includes a first elongated tube open at one end and insertable through a channel wall. A flexible tube extends through the first tube and out the open end into the channel for supplying an auxiliary liquid thereto at a known flow rate via outlet openings provided near the front end of the tube. First, second and third thermosensitive elements for measuring the temperatures of the channel liquid, the auxiliary liquid and the mixed liquids, respectively, are disposed outside of the flexible tube, within the flexible tube, and near the front end of the flexible tube within the channel, respectively.

3,604,264
FLOW METER

Leon J. Nowak, Oxford Towne Apartments, Gateshead Rd., New Hartford, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,530
Int. Cl. G01f *1/06*
U.S. Cl. 73—228 **3 Claims**

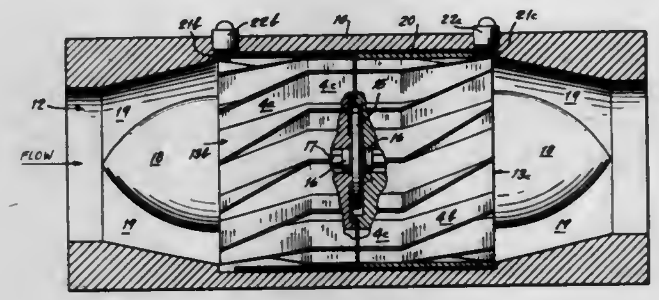


A container is mounted in an enclosure for movement along a fixed path. The enclosure has an outlet connected to a suction line, such as a pump, and an inlet is arranged to discharge liquid into the container. The container is moved along the path by the weight of the liquid accumulating in the container. The container is provided with discharge means which functions automatically to increase the volume of liquid discharged from the container, the arrangement being such that the discharge is equal to the flow of liquid into the container, whereby the container is moved to a position proportional to the volume of the flow of liquid into and out of the container. Position indicating means is actuated by the container to indicate the position thereof at all times, thus indicating the flow of liquid through the meter. The container discharge means is adjustable exteriorly of the enclosure to accurately indicate the flow of liquids of different densities.

3,604,265
FLUID-DRIVEN MASS FLOWMETER

Mason P. Wilson, Jr., Kingston, R.I.; Joseph B. Gordon, Northford, and John B. Duffy, Branford, Conn., assignors to Neptune Meter Company, New York, N.Y.

Filed Mar. 19, 1969, Ser. No. 808,432
Int. Cl. G01f *1/00*
U.S. Cl. 73—231 M **12 Claims**

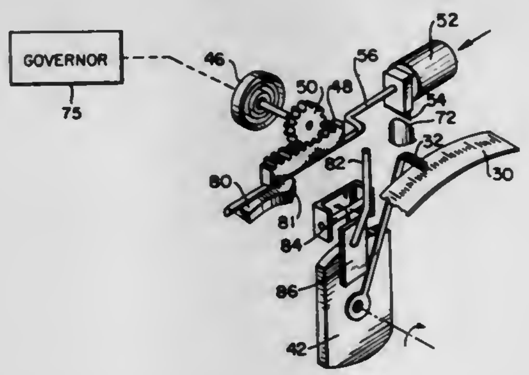


A fluid-driven mass flowmeter comprising two identical impellers or rotors, having the same blade pitch design, arranged in tandem, back to back, and coupled by an intermediate linear torsion spring such that the upstream rotor is driven as a compressor by the downstream rotor which acts as a turbine. Energy input and flow turbulence are minimized and increased torque on the rotors is derived by the use of a compound blade shape and close rotor positioning so that the annular momentum which the upstream or compressor rotor puts into the passing stream, in the form of a swirl, is removed by the downstream or turbine rotor. The differing torques acting on the two rotors cause an angular displacement between them and an indication of the mass flow is obtained by measuring the time displacement of suitable markers on each rotor, which markers are axially aligned at zero angular displacement.

3,604,266
TEMPERATURE MEASURING APPARATUS

George E. Chilton, Haworth, N.J., assignor to Computer Diode Corporation, Fair Lawn, N.J.

Filed June 5, 1969, Ser. No. 830,648
Int. Cl. G01k *7/20, 3/00;* G01d *1/00*
U.S. Cl. 73—362 R **18 Claims**



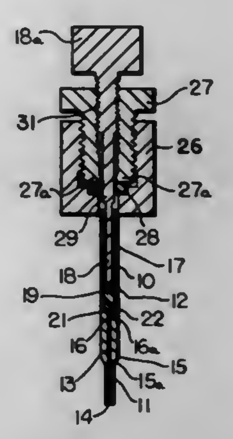
A temperature-measuring system comprising a disposable heat receptor that is adapted to be placed in heat-absorbing relationship with a body or atmosphere whose temperature is to be measured and apparatus for receiving the heat receptor and for measuring its temperature, the temperature measuring apparatus including means for automatically locking the temperature indicator after a predetermined time delay.

3,604,267
SAMPLE INJECTION APPARATUS

Theron Johns, Orange, Calif., assignor to Beckman Instruments Inc.

Filed Jan. 15, 1969, Ser. No. 791,265
Int. Cl. G01n *1/00*
U.S. Cl. 73—422 GC **8 Claims**

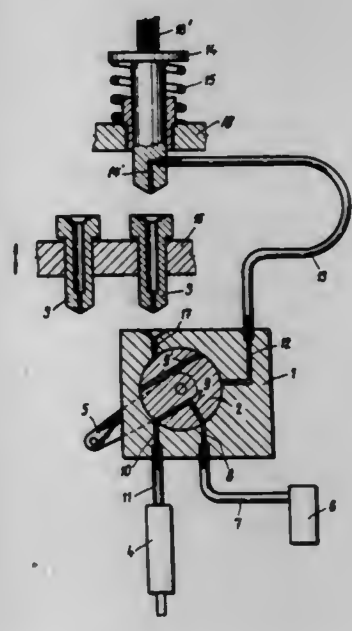
Syringe-type apparatus for injecting a fluid sample into a fluid stream including a plunger section and a needle section enclosing a sample cavity of predetermined volume and diameter. The cavity includes a discharge opening in the front of the needle section and a gas inlet opening adapted to be opened or closed by a reciprocable plunger in the plunger section of the device. The plunger section also includes a gas inlet port through the sidewall thereof communicating with the inlet opening to the needle section when the plunger is in a retracted position. The needle section has a shoulder formed on the outer surface thereof at a position between the discharge opening and the inlet opening to the cavity. The shoulder is constructed to engage an abutment within a sample port thereby obstructing flow of the gas stream through the port and causing the gas stream to flow through the gas inlet port into the sample injector cavity to sweep the sample from the cavity.



3,604,268
METHOD AND DEVICE FOR INTRODUCING SAMPLES INTO CHROMATOGRAPHIC COLUMNS

Jiri Hrdina, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

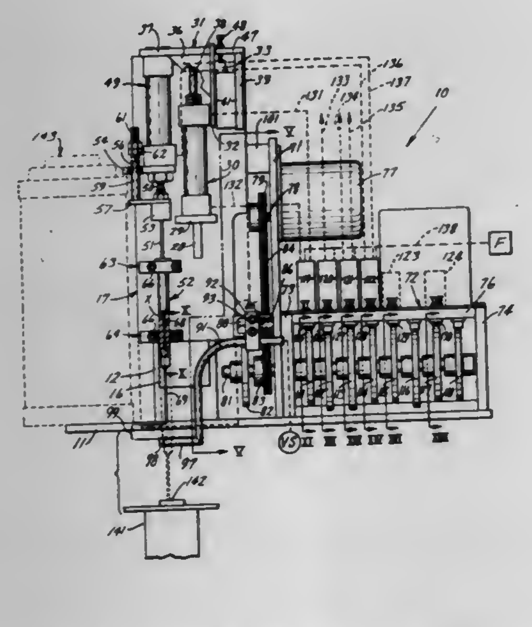
Filed Apr. 8, 1969, Ser. No. 814,290
Claims priority, application Czechoslovakia, Apr. 9, 1968, 2628-68
Int. Cl. G01n *1/00*
U.S. Cl. 73—422 GE **5 Claims**



A method and device for introducing into a chromatographic column a sample held in a cartridge. The cartridge is placed on a carrier which is then placed between a valve casing and a superimposed spring-loaded pressure head. The valve in the casing is adjusted to pass eluate from a pump directly into the chromatographic column thereby bypassing the cartridge. The cartridge is then tightly clamped between the pressure head and the valve which is adjusted to pass eluate from the pump through the pressure head and through the cartridge into a chromatographic column.

3,604,269
AUTOMATIC GAS CHROMATOGRAPHIC SAMPLE INJECTION DEVICE

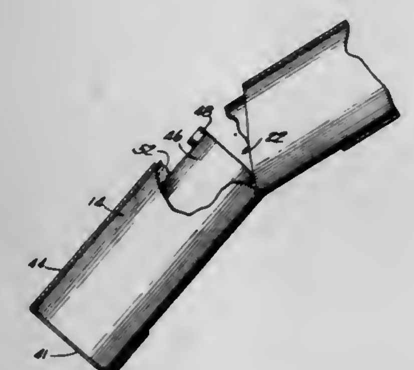
Edwin W. Smith, Climax Township, Kalamazoo County, and Ernest J. Kubiak, Jr., Kalamazoo, both of, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed June 20, 1969, Ser. No. 835,081
Int. Cl. G01n *1/02*
U.S. Cl. 73—422 GC **11 Claims**



An apparatus for periodically injecting samples of fluid into a receptacle. The apparatus includes a movable frame which supports a syringe having a passageway adapted to be moved through an opening in the receptacle. The syringe controls the collection of a predetermined fluid sample and it is flushed after each use. The syringe is moved by the apparatus to inject the predetermined sample through the passageway into the receptacle.

3,604,270
SAMPLING LANCE WITH METAL TUBE

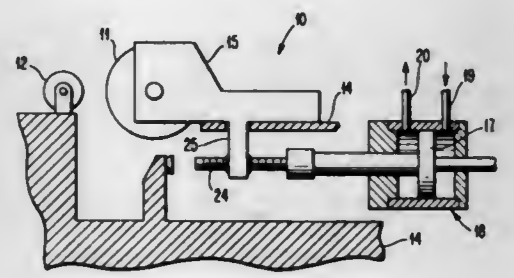
Richard A. Falk, 519 Westminster Dr., Waukesha, Wis.
Filed Jan. 5, 1970, Ser. No. 636
Int. Cl. G01n *1/12*
U.S. Cl. 73—425.4 R **8 Claims**



A sampling lance for a molten metal bath includes an elongated metal tube or sleeve having upper and lower sleeve portions which are partially separated by a notch and interconnected by a narrow web portion which bends under pressure or impact. The notch may be formed by two intersecting cuts in the sleeve. The notch is in registry with the side entry port of a refractory sample cartridge located within the metal sleeve. The metal sleeve protects the refractory cartridge while in the bath and also serves as a carrier for the cartridge. Upon removal of the lance from the metal bath, access to the cartridge is gained by striking the lower sleeve portion against the floor or a bench to shatter the cartridge and bend the web to open the notch. The refractory cartridge and sample can then be removed through the notch.

3,604,271
SENSING DEVICE FOR DETERMINING THE UNBALANCE OF A GRINDING WHEEL

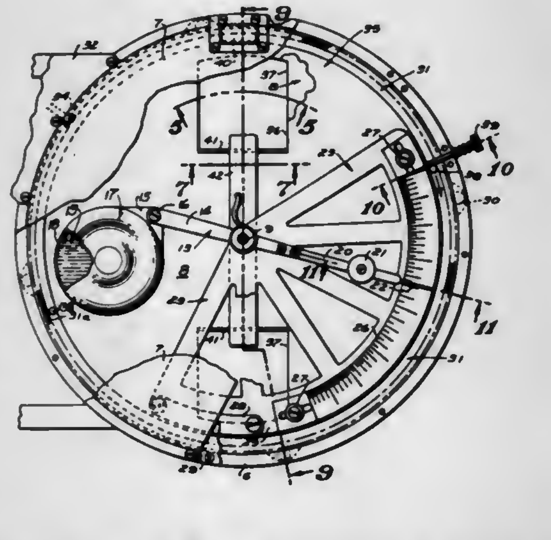
Charles B. Matson, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc.
Filed Sept. 11, 1968, Ser. No. 759,171
Int. Cl. G01m *1/28*
U.S. Cl. 73—458 **8 Claims**



Means, which moves a grinding wheel into and out of engagement with a workpiece, has sensing means mounted thereon for movement therewith. The sensing means senses the magnitude of the force exerted on the moving means whereby the sensing means produces a signal that is indicative of the magnitude of unbalance of the grinding wheel.

3,604,272
SOFT WALL HYDROMETER

Homer S. Youngs, 8718 Dunaway Dr., La Jolla, Calif. Continuation-in-part of application Ser. No. 583,244, Nov. 30, 1966, now abandoned. This application Oct. 22, 1969, Ser. No. 868,564
Int. Cl. G01n *9/08, 9/12*
U.S. Cl. 73—449 **5 Claims**



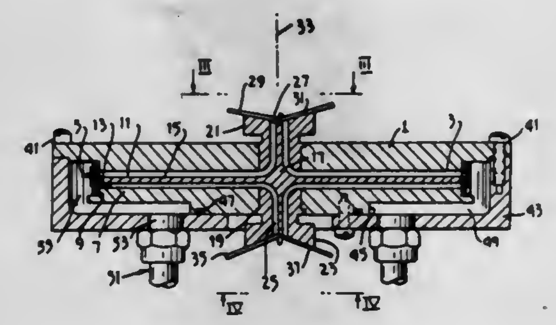
A specific gravity-sensing instrument in which a closed cell having highly compliant walls is completely filled with a reference liquid and immersed in an ambient liquid, and compensation is made for the difference in compression and thermal expansion of the material comprising the cell walls with either the reference liquid or ambient liquid so that when the cell is immersed, it responds equally to changes in density of the reference liquid and ambient liquid, thereby cancelling the effects of pressure and temperature and so as to measure directly the changes in specific gravity.

3,604,273
ANGULAR RATE SENSOR

Clyde Chi Kai Kwok, Montreal, Quebec; Zigmas Juozas Lapinas, Chomedy, Quebec, and Theo Guenter Hellmann, St. Laurent, Quebec, all of, Canada, assignors to Aviation Electric Limited, Montreal PQ, Canada
Filed Nov. 25, 1968, Ser. No. 778,727
Int. Cl. G01p *15/02*
U.S. Cl. 73—505 **12 Claims**

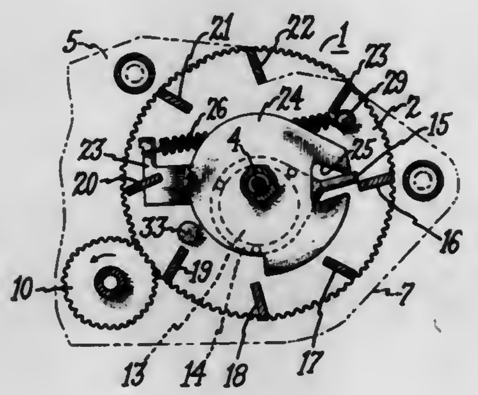
This application discloses an angular rate sensor. The sensor comprises a cylindrical chamber adapted to take part in

the angular movement to be sensed, fluid discharge means in the peripheral wall of the chamber by which fluid is in use discharged into the chamber with a component of velocity relative to the chamber wall and in a direction tangential to the chamber wall which is determined by the velocity of rotation of the cylindrical chamber about the axis of that chamber, an axial outlet from the chamber for the throughflow of fluid entering the chamber through the peripheral wall, and port means associated with the axial outlet and exposed to the fluid flow through that outlet in such a manner that the pressure developed in the port means is indicative of the direction and the magnitude of the tangential component of the velocity of the fluid passing into the axial outlet, the effective axial outlet from the chamber being annular in form and defined by an outer wall and by an inner boundary which extends axially through the chamber.



3,604,274
UNIFORM-TORQUE ESCAPEMENT MECHANISM

Ansell W. Palmer, Hampton, N.H., and Albert J. Leslie, York, Maine, assignors to General Electric Company
Filed Nov. 10, 1969, Ser. No. 875,245
Int. Cl. F16h *27/04*
U.S. Cl. 74—1.5 **14 Claims**

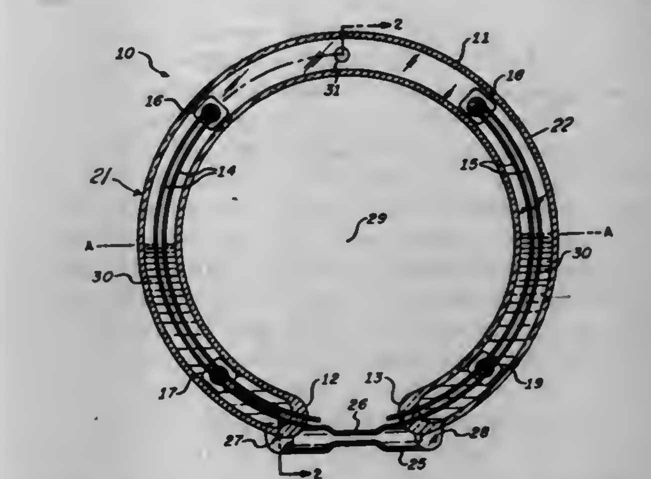


A escapement mechanism for converting continuous rotary motion to a snap-action motion is provided with a drive spring which is placed in tension by rotation of a lever arm that has its effective torque transmitting length shortened as the spring tension increases so that the torque on the input drive means is maintained relatively uniform.

3,604,275
TOROIDAL ELECTROLYTIC SENSOR

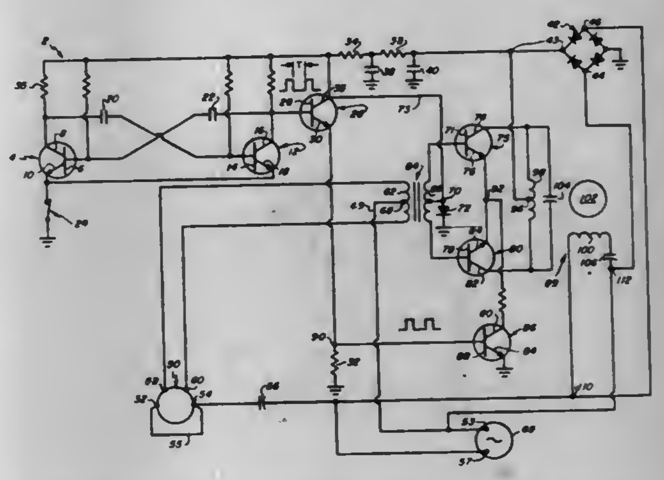
Terrence S. Fox, and Glen W. Driskill, both of Phoenix, Ariz., assignors to Sperry Rand Corporation
Filed Oct. 23, 1968, Ser. No. 769,951
Int. Cl. G01c *19/46, 9/06*
U.S. Cl. 74—5.4 **9 Claims**

A toroidal electrolytic sensor having substantially symmetrical diametrically opposed electrodes for providing an electrical signal in accordance with the relative immersion of the electrodes with respect to each other.



3,604,276
PULSE TORQUER FOR VERTICAL GYRO

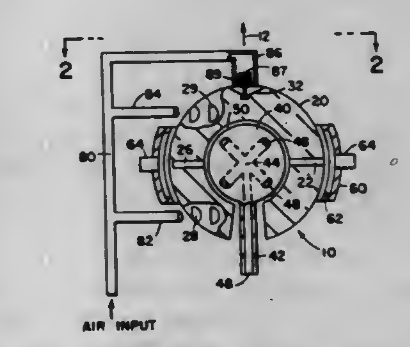
Charles Eliot Hurlburt, River Edge, and Frederic O'Neil, Parsippany, both of, N.J., assignors to The Bendix Corporation
Filed June 19, 1969, Ser. No. 834,721
Int. Cl. G01c *19/48*
U.S. Cl. 74—5.47 **9 Claims**



A pulse torquing erection system for a vertical gyro for improving gyro erection switch life by limiting the current through the erection switch and for improving flight conditions by more effective utilization of erection rates.

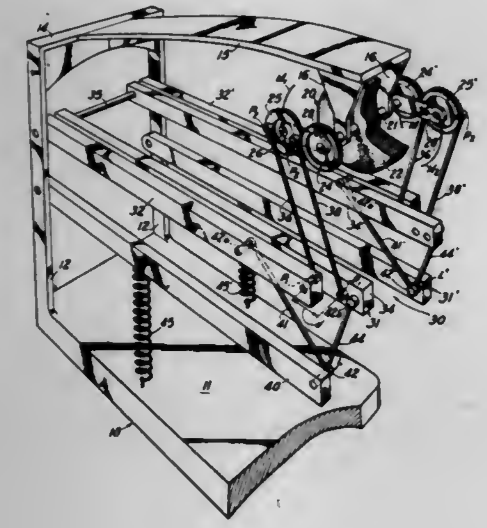
3,604,277
SINGLE JET PNEUMATIC PULSE DURATION MODULATION GYRO

William W. Stripling, and David L. Jones, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Feb. 17, 1970, Ser. No. 11,990
Int. Cl. G01c *19/26, 19/28*
U.S. Cl. 74—5.12 **4 Claims**



A two axis all pneumatic displacement gyroscope that detects a change of position in pitch and jaw of a missile. The spin axis of the gyro rotor is directed along the longitudinal axis of the missile. The rotor utilizes a hydrostatic air bearing and the gyro pickoff responds to the exhaust from the air bearing. A single air jet provides the rotor exhaust for the pickoff collectors. To provide the air bearing, a gas is introduced into a plenum chamber within the stator about which the rotor spins. The gas is uniformly passed through output passages of the plenum chamber, exiting at the spherical surface of the stator. The inner spherical surface of the rotor is supported by the exhausting gas. In exhausting from the air bearing, the gas passes through a single passage in the rotor that terminates on the surface of the rotor. The single output gas stream periodically impinges on pickoff devices arranged around the circumference of the rotor. The relative position of the pickoffs, with respect to the rotating output jet, controls the period that the gas is accepted by the pickoff. When the rotor and stator are changed in reference to each other, as when a missile changes position or direction, the air jet makes a varying path as it passes across the pickoffs. With variations in pitch and jaw, the period that gas impinges on the pickoffs is also varied, thus providing an output signal in response to the direction of change in trajectory.

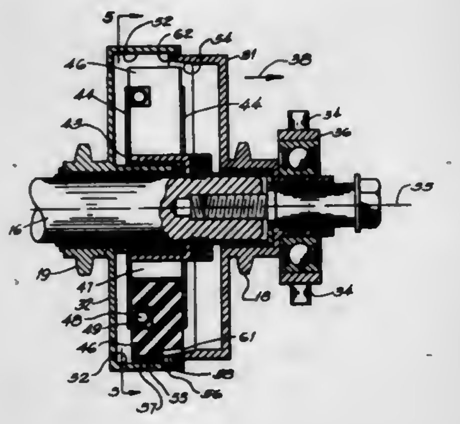
3,604,278
ROTARY MOTION DEVICE
Wriston W. Hartsell, P. O. Box 308, Mary Esther, Fla.
Filed Aug. 27, 1969, Ser. No. 853,347
Int. Cl. F16h *37/12, 21/18*
U.S. Cl. 74—52 **6 Claims**



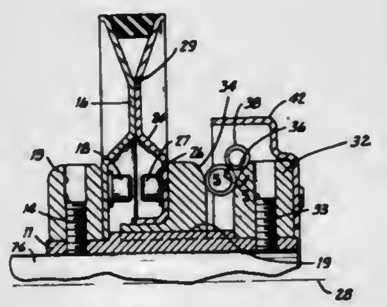
A rotary motion device including a rotatably mounted shaft having a flywheel and two driven sun spur gears mounted thereon. Two driving planetary spur gears are mounted for rotation about the shaft while each is in mesh with one of the driven sun gears. Each of the driving planetary gears is rotated by a pair of driving arms connected to the planetary spur gear by a pair of driving rods and the relative position of each pair of driving arms is maintained by a spring urged positioning linkage.

3,604,279
TWO-SPEED CENTRIFUGAL TRANSMISSION
Marion H. Davis, Hagerstown, Ind., assignor to Ferralog, Inc.
Filed Sept. 2, 1969, Ser. No. 854,463
Int. Cl. F16h *9/100;* **F16d** *23/10*
U.S. Cl. 74—217 B **16 Claims**

An engine output shaft drives the input member of a clutch having a plurality of friction members normally confined around a hub by a garter spring. The clutch has two output drums, each having a sprocket thereon coupled by a chain to a sprocket on a jackshaft which is, in turn coupled through sprockets and a chain to a vehicle drive wheel. The drums have internal surfaces engageable by the friction members due to centrifugal force as the engine speed increases. The drums are of different internal diameter for sequential engagement, and the jackshaft sprockets associated therewith are also of different diameters for a low-speed drive first, and then a high-speed drive.

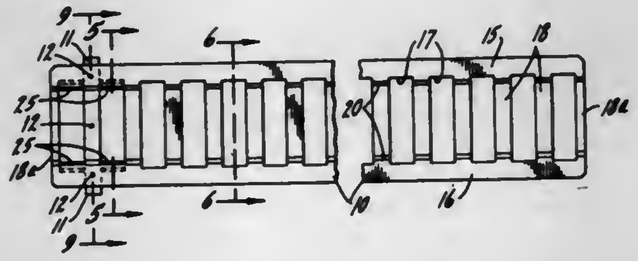


3,604,280
SPRING-CONTROLLED SHIFT SPEED ON DRIVEN VARIABLE PITCH PULLEY
Marion H. Davis, Hagerstown, Ind., assignor to Ferraloy, Inc., Salem, Ind.
Filed Mar. 27, 1970, Ser. No. 23,360
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **12 Claims**



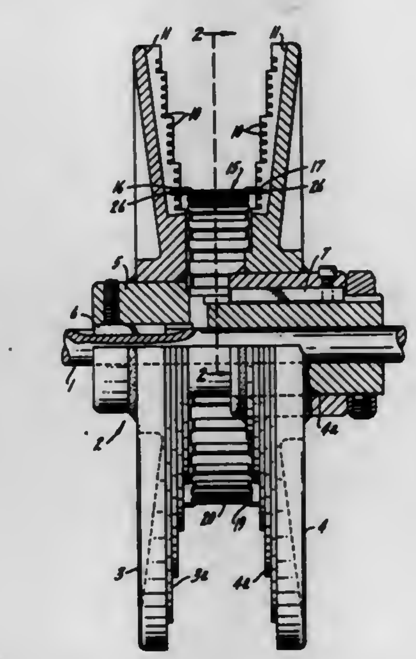
A driven variable pitch pulley, employing a garter spring to change pulley diameter, is provided with an additional garter spring to elevate the speeds required to obtain decreases in pulley diameter.

3,604,281
POSITIVE DRIVE VARIABLE SPEED DEVICE
Howard G. Shambaugh, River Forest, Ill., assignor to Lovejoy, Inc., River Forest, Ill.
Filed Oct. 10, 1969, Ser. No. 865,260
Int. Cl. F16h *55/36*
U.S. Cl. 74—230.5 **15 Claims**



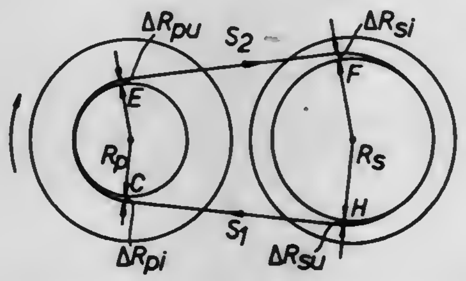
A positive drive, variable speed device in which a belt support is formed of an elongated strip, the strip being coilable to vary its diameter and having longitudinal edge portions and a central slotted portion bendable to match the pitch diameter and pitch dimension of a continuous, toothed drivebelt and a pulley mounting for the belt support.

3,604,282
POSITIVE DRIVE, VARIABLE SPEED STRUCTURE
Howard G. Shambaugh, River Forest, and Henry W. Faulstich, Chicago, both of, Ill., assignors to Lovejoy, Inc., River Forest, Ill.
Filed Oct. 10, 1969, Ser. No. 865,259
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **11 Claims**



A positive drive, variable speed structure including an elongated slotted strip cut to length and looped with abutting ends to form a circular belt support and mounting means for the support, including pulley means having concentrically grooved opposing faces for reception of the strip support.

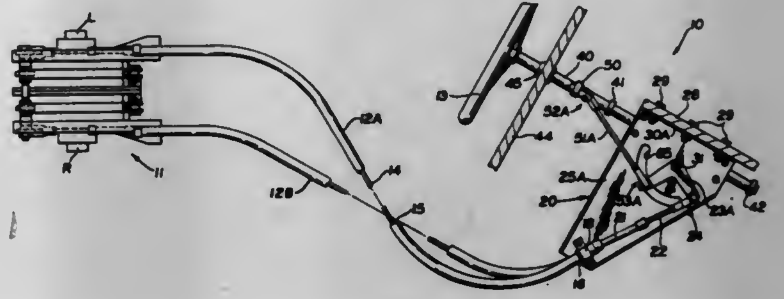
3,604,283
DRIVING MECHANISM
Hubertus Josephus Van Doorne, Stationsstraat 71, Eeurne, Netherlands
Filed Sept. 23, 1969, Ser. No. 860,235
Claims priority, application Netherlands, Sept. 23, 1968, 6,813,649
Int. Cl. F16g *1/00, 1/26*
U.S. Cl. 74—231 M **5 Claims**



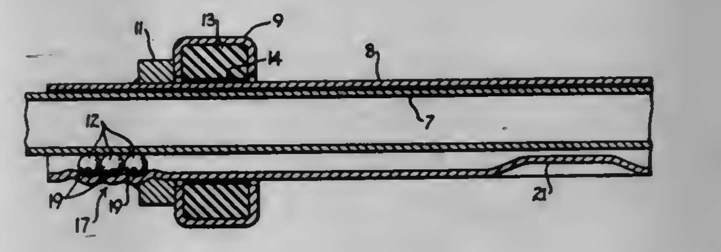
A driving mechanism with a driving pulley having a V-shaped circumferential groove and a driven pulley having a V-shaped circumferential groove. A flexible endless member having chamfered flanks interconnects and spans the pulleys. The diameter of the pulleys can be varied automatically and stepless with regard to each other so that different transmission ratios can be obtained. The flexible endless member consists of one or more layers of steel belts arranged with a mutual play that is greater than 0.3 × the thickness of the belt and smaller than 1.8 × the thickness of the belt.

3,604,284
CONTROL DEVICE FOR APPLYING BALANCED FORCES TO A PAIR OF SERVIENT MECHANISMS
Richard D. Houk, Stow, Ohio, assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed May 25, 1970, Ser. No. 40,320
Int. Cl. G05g *9/00*
U.S. Cl. 74—491 **12 Claims**

A control device for applying balanced forces to a pair of servient mechanisms. The control device has a control shaft mounted for rotation and axial translation in a housing. A pair of force-transmitting devices in the form of a push-pull control cables operatively connect the control device to the corresponding servient mechanisms, which may be located remotely of the control device. The control device has a pair of throw members in the form of bellcranks rotatably mounted on the housing for applying compressive or tensile stresses to the core of each push-pull cable. The control device also has a pair of link arms. One end of each link arm is operatively connected to a corresponding bellcrank by a universal joint spaced radially of the control shaft. The opposite end of each link arm is operatively attached to a lever arm, also by universal joints, and the lever arm is affixed to the control shaft for movement therewith. This second pair of universal joints is preferably also spaced radially of the control shaft in order to preclude interference between the two link arms and the control shaft or the housing, particularly as the latter moves through its rotational range. In any event, the second pair of universal joints may not be located in a common plane with both the control shaft and the first pair of universal joints and at the same time be spaced at the same radial distance from the control shaft as the first pair of universal joints if all the objectives of the present invention are to be achieved.



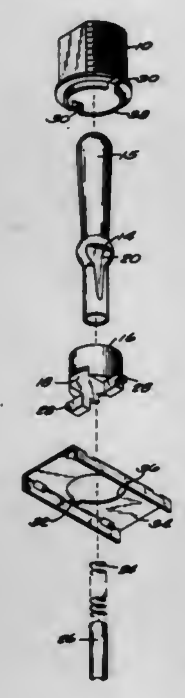
3,604,285
ENERGY-ABSORBING DEVICE AND METHOD OF MAKING THE SAME
John Erland Sixten Olsson, Trollhattan, Sweden, assignor to Saab-Scania Aktiebolag
Filed Apr. 6, 1970, Ser. No. 25,982
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **5 Claims**



The energy-absorbing device comprises telescoped inner and outer members between which hard balls are confined. Its inner member is a tube with a circumferentially undulating wall that defines circumferentially alternating inwardly and outwardly opening bays and is therefore radially elastically deformable. Balls are received at longitudinally spaced intervals in the radially outwardly opening bays. The outer member has a spherical inwardly opening socket for each ball to hold the ball against displacement relative to the outer member. When either member moves lengthwise relative to the other, the balls locally elastically deform the inner member, thus dissipating energy.

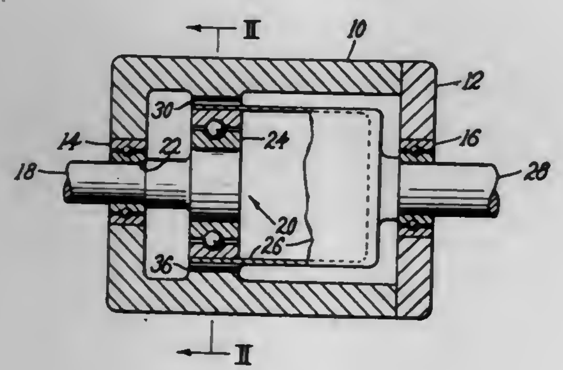
3,604,286
TOGGLE SWITCH LEVER
John B. Foreman, Sharon Hill, Pa., assignor to Controls Company of America, Melrose Park, Ill.
Filed Nov. 3, 1969, Ser. No. 873,182
Int. Cl. G05g *1/04;* **H01h** *21/06*
U.S. Cl. 74—523 **4 Claims**

The toggle switch actuator has a handle having a spherical portion which seats on the seat inside the bushing to provide the pivot action for the handle. The plastic insert in the bushing has a slot in which the handle portion having the opposed flats is guided while handle rotation about its own axis is prevented. The spherical portion of the handle is captured between the seat and the insert. Ears on the insert project through slots in the bushing into slots in the mounting plate to prevent any relative rotation of the bushing, insert or plate. The end of the bushing is rolled over the plate to complete the assembly.



3,604,287
MODIFIED HARMONIC-DRIVE ACTUATORS

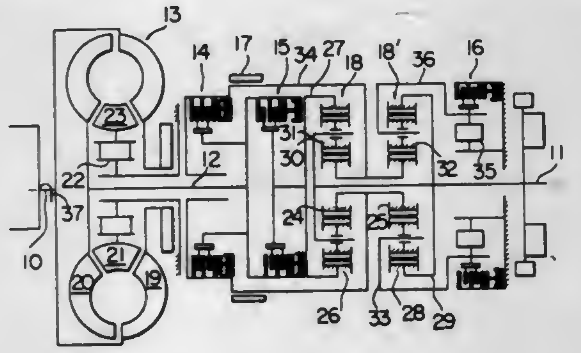
Donald R. Humphreys, Topsfield, Mass., assignor to USM Corporation, Boston, Mass.
Filed Aug. 5, 1969, Ser. No. 847,572
Int. Cl. F16h *37/00, 1/00*
U.S. Cl. 74—640 **8 Claims**



In contrast to providing a rigid circular spline for cooperating with a coaxial flexspline to effect spline-meshing at spaced circumferential localities, in accordance with conventional harmonic-drive actuation, there is provided in coaxial relation in a speed changer a "flexspline" having a rough working surface, and a cooperative "circular spline" elastomer, the latter being of suitable durometer and initially formed with a diameter slightly less than the root diameter of the "flexspline" measured at its major axis whereby, at spaced circumferential localities, the rough surface is impressed in driving relation into the elastomer. An axial deflection version is also disclosed. Alternatively, in either version the deflectable member may be elastomeric and the nondeflected member formed with a nonskid-cooperating surface.

3,604,288
ELECTRONIC CONTROL SYSTEM FOR AUTOMOTIVE AUTOMATIC TRANSMISSION

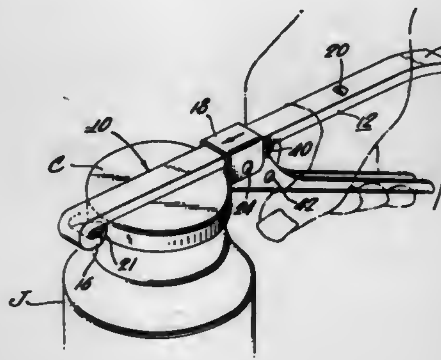
Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Oct. 29, 1969, Ser. No. 872,308
Claims priority, application Japan, Oct. 30, 1968, 43/78831
Int. Cl. B60k *21/08;* **F16h** *5/42*
U.S. Cl. 74—864 **12 Claims**



A system for electronically controlling the line pressure in the hydraulic control circuit of an automatic transmission of an automotive vehicle, which pressure is changed with a voltage proportional to the engine torque or inversely proportional to the speed of the turbine shaft of a torque converter.

3,604,289
KITCHEN TOOL

Samuel Steel, 4902 N. 15th St., Philadelphia, Pa.
Filed Feb. 24, 1969, Ser. No. 801,697
Int. Cl. B67b *7/00*
U.S. Cl. 81—3.42 **6 Claims**



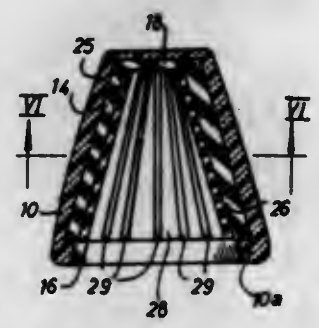
A device comprising an elongated bar member, a gripping member formed at one end of the bar member, a plurality of longitudinally spaced openings in one face of the bar member, a slide member overlying the bar member and adapted for back-and-forth movement relative thereto, a handle pivotally secured to the slide member, a latching member pivotally secured to the handle having a detent engageable in a selected opening in said bar member, and biasing means normally urging said latching member in a predetermined direction relative to said handle, pivotal movement of said handle toward said bar member operable to engage said detent in a selected opening in said bar member and thereby effect longitudinal movement of said slide member along said bar member toward said gripping member.

3,604,290
APPARATUS FOR RELEASING CLOSURE MEMBERS

John L. Waite, Lyndhurst Meols Dr., West Kirby Wirral Cheshire, England
Filed July 9, 1969, Ser. No. 840,277
Claims priority, application Great Britain, July 18, 1968, 34149/68
Int. Cl. B67b *7/18*
U.S. Cl. 81—3.4 **6 Claims**

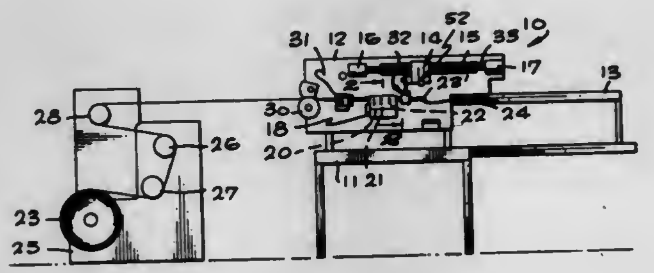
There is disclosed a device for releasing closure members from containers. The device has a frustoconical-shaped body

member of a relatively rigid material which has a frustoconical-shaped recess therein. Within the recess is located a frustoconical-shaped gripping member of a resilient material, which is open ended at its larger end and able to engage a closure member. The body member and gripping member are restrained from relative movement, and by engaging the gripping member on the outside of a closure member, a person may apply torque to the body member and thus to the closure member. Thus by imparting relative angular displacement between the container and its closure member, the closure member may be removed from the container.



3,604,291
WIRE STRIPPING APPARATUS

August Weidner, Los Angeles, Calif., assignor to Thomas Organ Co., a subsidiary of Warwick Electronics Inc., Chicago, Ill.
Filed Jan. 21, 1969, Ser. No. 792,531
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **2 Claims**

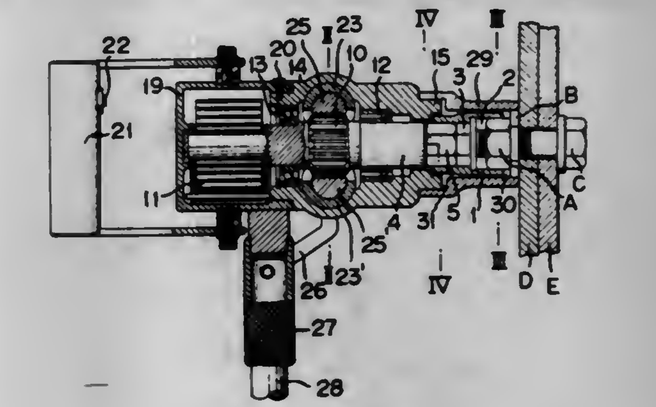


A wire-stripping apparatus is disclosed herein having a cutter adapted to sever insulation from the ends of a pair of separate wires preparatory to removal of the severed insulation from each of the wires. Also, the cutter severs a predetermined length of wire from a coil stored on a reel. The apparatus includes a gripping means having a pair of cooperating grippers adapted to clamp about the insulated wires so that the wires are positively retained during the cutting and stripping procedure. Linkage means, including an eccentric pivot connection, actuates the pair of grippers in response to control means for automatically clamping and releasing the pair of wires simultaneously.

3,604,292
BOLT AND NUT FASTENING DEVICE

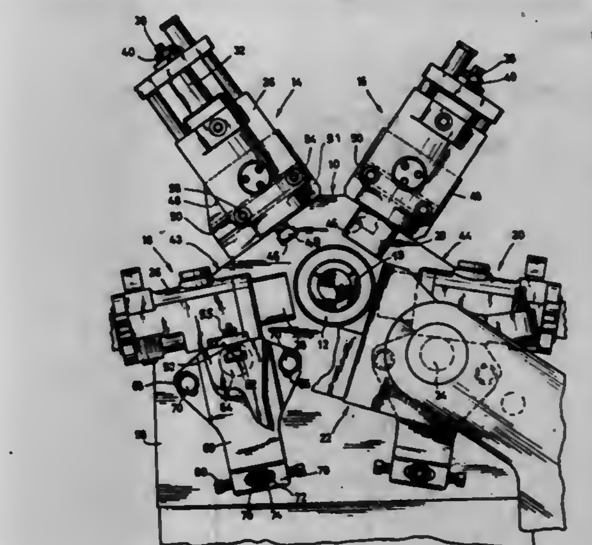
Toyoji Sada, Niigata Prefecture, Japan, assignor to Riken Seiki Kabushiki Kaisha, Niigata-ken, Japan and Riken Kiki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 6, 1969, Ser. No. 789,200
Claims priority, application Japan, Feb. 8, 1968, Feb. 14, 1968, Feb. 15, 1968, Feb. 14, 1968, Feb. 19, 1968, 8027/1968;10624/1968;11149/1968;79629/1968;81376/1968
Int. Cl. B25b *17/00, 21/00*
U.S. Cl. 81—57.11 **4 Claims**

This bolt and nut fastening machine has a structure wherein comprising an outer barrel that includes a nut-engaging spanner to screw up automatically a nut by a suitable driving means and a washer-engaging member fitted at the top end of said barrel to catch and hold a polygonal washer of nut and to be constructed rotative only in one direction.



3,604,293
MACHINE TOOL

Gerhard Foll, and Helmut Link, both of Esslingen, Germany, assignors to Index-Werke K. G. Hahn & Tessky, Esslingen (Nekar) Germany
Filed Sept. 10, 1968, Ser. No. 758,738
Claims priority, application Germany, Sept. 14, 1967, P 16 02 839.0
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 **10 Claims**

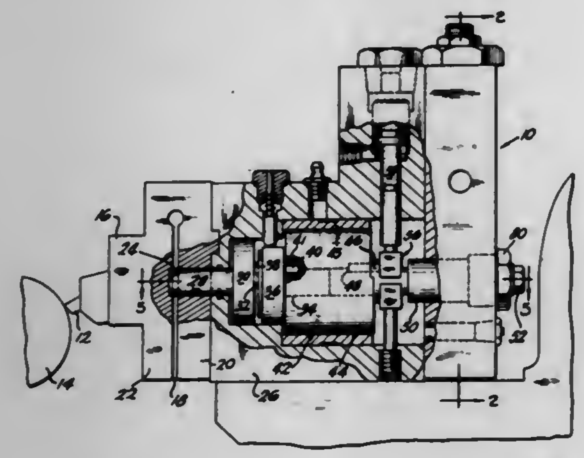


A turning lathe wherein the headstock for the work spindle mounts at least one first support. The first support is reciprocable in parallelism with the axis of the work spindle or is pivotable about an axis which is parallel to the axis of the work spindle. Such first carriage supports a second support which is movable thereon substantially or exactly at right angles to a line extending radially from the work spindle and in the general direction of the second support. A cross-slide is mounted in the second support for movement radially of the work spindle and can be shifted by a piston which is reciprocable in the housing of the second support.

3,604,294
TWO DIRECTIONAL TOOL ADJUSTING APPARATUS

Archibald S. Mitchell, East Detroit, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.
Filed Dec. 3, 1969, Ser. No. 881,729
Int. Cl. B23b *21/00*
U.S. Cl. 82—24 **6 Claims**

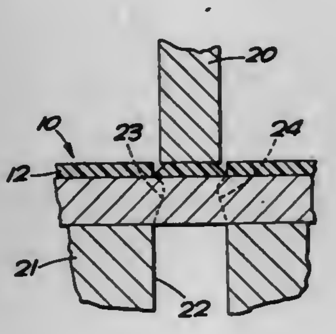
Apparatus for periodically adjusting the position of a machine tool, such as a cutting tool, to compensate for tool wear and changing heat conditions, for example, to enable continuous accurate positioning of the tool. In response to a signal indicating the necessity for adjusting the position of the cutting tool, a cam and cam follower structure are movable in either of two opposite directions to provide for adjustable movement of the tool in either of two directions through a predetermined incremental distance. A clutch and brake assembly are sequentially operable to enable reversible adjustable movement of the tool. In addition, a manually rotatable shaft is operable to reset the cam and cam follower structure to a zero position.



3,604,295

METHOD OF CUTTING LAMINATED STRIP MATERIAL

Martin Ronald Newton Clark, Ickenham; Joseph Henry Hill, Greenford, and Herbert Ernest Preston, Maidenhead, all of, England, assignors to Vandervell Products Limited, London, England
Filed Feb. 2, 1970, Ser. No. 7,697
Claims priority, application Great Britain, Feb. 7, 1969, 6823/69
Int. Cl. B26d *3/00, 11/00*
U.S. Cl. 83—9 **4 Claims**



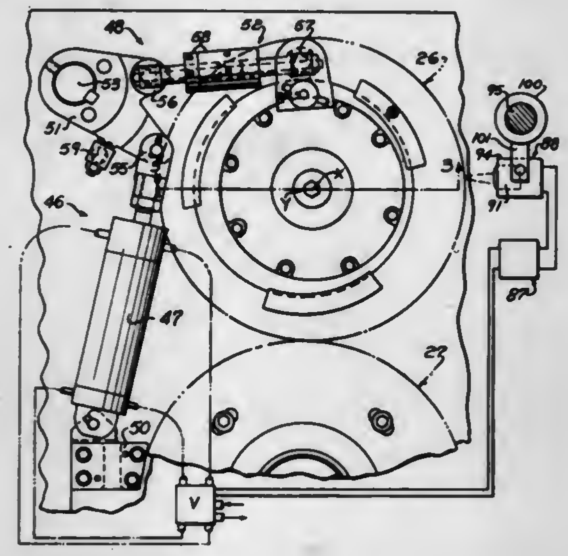
A method of cutting laminated strip material of the type having a hard backing with a soft layer bonded to the backing comprising cutting through the soft layer to the interface with the backing and then shearing through the backing along a line extending to one side of one of the faces formed on the soft layer by the first cutting operation so that the bond between the part of the soft layer on which said one face is formed and the backing is not damaged by the second cutting operation.

3,604,296

MATERIAL CUTTING METHOD AND APPARATUS

Albert J. Sarka, Fairview Park, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Oct. 4, 1968, Ser. No. 765,150
Int. Cl. B23d *25/02;* **B26d** *5/00*
U.S. Cl. 83—37 **9 Claims**

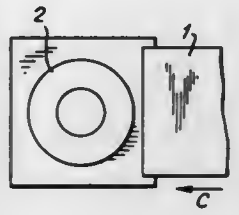
Apparatus for cutting material comprises first and second rotatable members defining a nip through which the material passes and at which cutting is effected by dies carried by the rotatable member. Actuating means operates to shift one of the members away from the other member to render the dies ineffective to cut the material. The actuating means is operated in response to the presence of a previously cut portion of material being carried on a die plate carried by one of the members.



3,604,297

METHOD OF MANUFACTURING TWO CONCENTRIC PARTS THROUGH DIE BLANKING OF STEEL STRIPE

Vitaly Konstantinovich Gilev, 811 proezd, 65, kv. 16; Volf Nakhimovich Evzlin, ulitsa Chapaeva 102, kv. 53; Rafael Tevosovich Sarkisov, ulitsa Aga-Neimatully, 20-a, blok 3, kv. 28, and Ernst Arakelovich Stepanyan, ulitsa Druzhby Molodezhi 2, kv. 36, all of, Baku, U.S.S.R.
Filed Aug. 29, 1969, Ser. No. 854,193
Claims priority, application U.S.S.R., Mar. 6, 1969, 1304654
Int. Cl. B26d *7/18*
U.S. Cl. 83—50 **1 Claim**



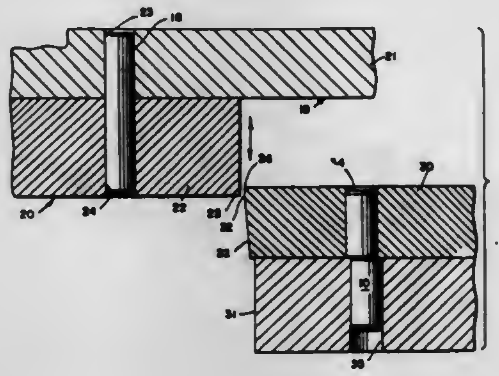
The present disclosure relates to methods of manufacturing two concentric parts through die blanking, according to which a circular part and a central portion which is another part workpiece are simultaneously blanked from a strip in the upper die. During the opening of the upper die, the other part workpiece is separated, transferred downwards and held above the lower die until the latter opens, the strip leftover is removed from the upper die matrix and the strip moved by a blanking pitch, a ready part being picked up from the die punch during the last period of said die opening. When the punches' movement changes to reverse, the other part workpiece is let into the opening lower die and then placed on the die matrix, a ready part blanked during the previous cycle being removed from the punch of said die.

3,604,298

DIE SET FOR PUNCH PRESS HAVING ADJUSTABLE DIE ALIGNING MEANS

Chester Dekiel, 21 W. 185 River Drive, Glen Ellyn, Ill.
Continuation of application Ser. No. 719,050, Apr. 5, 1968, now abandoned. This application July 7, 1969, Ser. No. 845,627
Int. Cl. B26d *1/10;* **F16h** *33/10*
U.S. Cl. 83—694 **2 Claims**

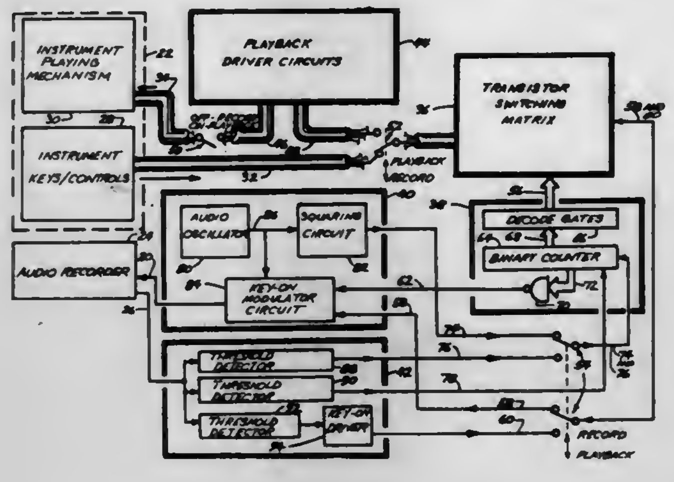
A die set for a punch press including a reciprocable die unit and a stationary die unit having coacting shearing edges spaced apart a desired distance and means for readjusting the desired spacing after one of the shearing edges has been reground comprising a plurality of dowel pins. Each of the dowel pins consists of two axially offset cylindrical segments joined together at their bases to define a pair of crescent-shaped shoulders.



3,604,299

METHOD AND APPARATUS FOR RECREATING A MUSICAL PERFORMANCE

Edward J. Englund, 4631 S. 282 St., Auburn, Wash.
Filed Apr. 22, 1970, Ser. No. 30,638
Int. Cl. G10f *1/00*
U.S. Cl. 84—1.03 **18 Claims**

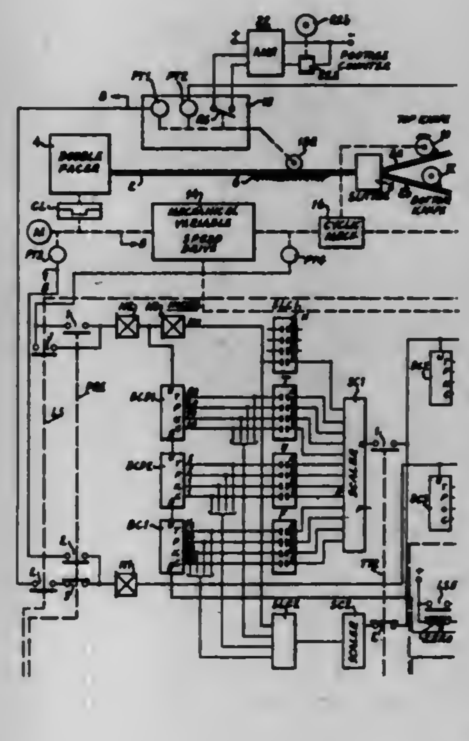


A distinct signal is provided throughout the actuation of each control of an instrument, such as during the depression of each key. The relative time occurrences of these performance signals are determined by assigning to each a separate count in a repeated train of gating pulses. The pulse train is produced by a gating means stepped by clock pulses from an oscillator. When coincidence between a performance signal and a corresponding one of the gating pulses is detected, a matrix provides a "key-on" signal to a modulator which is also supplied with the clock pulses. This modulator develops a composite signal or sinusoidal waveform which includes a sync level once every pulse train, a clocking level for every clock pulse during which there is no key-on signal, and a key-on level for every clock pulse during which there is a key-on signal. The waveform may be recorded for later playback or transmitted to a remote location for immediate playback. In playback, the method described above is simply reversed in which the waveform is demultiplexed to provide a plurality of control signals whose presence corresponds to the desired time occurrences of each instrument. By coupling these signals to appropriate drivers, such as relays, the playing mechanisms of the instrument may be actuated to duplicate the original musical performance. Embodiments of the system for use with an organ and for use with a piano are described, as are specific embodiments of the system elements. Modifications to allow operation of a remote keyboard and to provide keyboard transposition and coupling are shown.

3,604,300

FREQUENCY BASE KNIFE CONTROL SYSTEMS

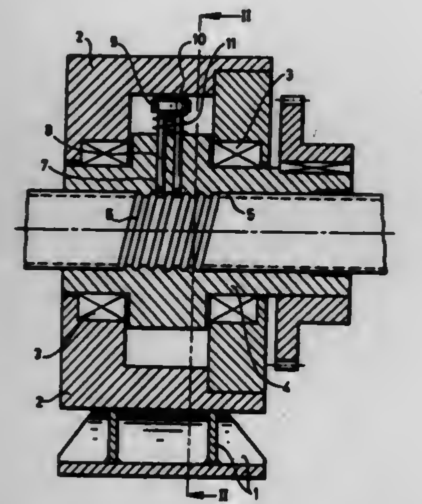
Arthur F. Allison, Richfield, and Siegfried R. Salzbrenner, Milwaukee, both of, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed June 24, 1969, Ser. No. 835,945
Int. Cl. B26d *5/24*
U.S. Cl. 83—76 **19 Claims**



Digital systems for controlling continuously rotating, variable-speed cutoff knives to provide precise control of the lengths of sheets cut from high-speed moving corrugated boards or webs. A main motor acts through a clutch to drive a double-facer that forms and advances a continuous strip of corrugated board. A slitter slits the board at the middle to form two strips. A top knife cuts one of the strips into sheets and a bottom knife cuts the other strip into sheets. The main motor drives a mechanical variable speed (Reeves) drive and a cyclic mechanism for each knife. Each knife is provided with a frequency based control system that acts through an associated correction motor to adjust its Reeves drive closely to control the cutoff length to a selected value. For this purpose, a web rider generates a reference pulse for each one-sixteenth inch of board. A tachometer generator provides 1,600 feedback pulses each revolution of the knife, a portion of which may be preselected at thumb wheel switches to select the desired length of sheets. The frequency based control system responds to the frequency and phase of preselected feedback pulses and the reference pulses to provide a knife speed correction signal and a position or phase correction signal for precise control of the correction motor at any time that there is error. The system is preset by first switching from the web rider pulse generator to a preset pulse generator operated from the main motor to adjust the system close to the desired cutoff length before any board is run to prevent waste. A second set of thumb switches affords presetting of the sheet length for the next order while the system is running preparatory to switchover. A presettable sheet counter automatically displays the number of sheets remaining to be cut and stops the system when the selected number of sheets has been cut or may be used to start operation of an automatic order changer. An add-on counter allows selection of an additional number of sheets to be cut while the system is operating. A sheet length readout displays the actual cut length of alternate sheets within a hundredth of an inch. A footage counter displays the total length of board used on an order in 10 foot increments.

3,604,301
A DEVICE FOR CUTTING APERTURES IN THE WALL OF A PLASTIC TUBE

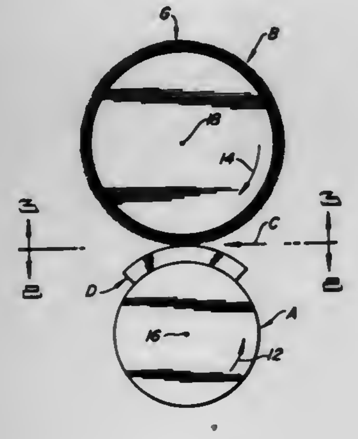
Cornelis Van Zon, Swolle, Netherlands, assignor to Wavin N. V., Zwolle, Netherlands
Filed Aug. 29, 1968, Ser. No. 756,237
Claims priority, application Netherlands, Sept. 1, 1967, 6712017
Int. Cl. B26d *5/16*
U.S. Cl. 83—358 **4 Claims**



A device for stamping apertures in the wall of a corrugated thermoplastic tube comprises a rotatable hollow nut for guiding the outer wall of the tube, and bits for stamping apertures in the tube without supporting the inner wall of the tube during stamping from outside. The bits are depressed in the plastic material by operating cams or by a guiding groove. Preferably the bits are effective in the area just besides the profiled end of the nut.

3,604,302
BRUSH ANVIL

Craig W. Smythe, Muncie, Ind., assignor to Dovey Manufacturing Company, Anderson, Ind.
Filed Feb. 13, 1970, Ser. No. 11,174
Int. Cl. B26d *7/20, 1/56*
U.S. Cl. 83—659 **11 Claims**

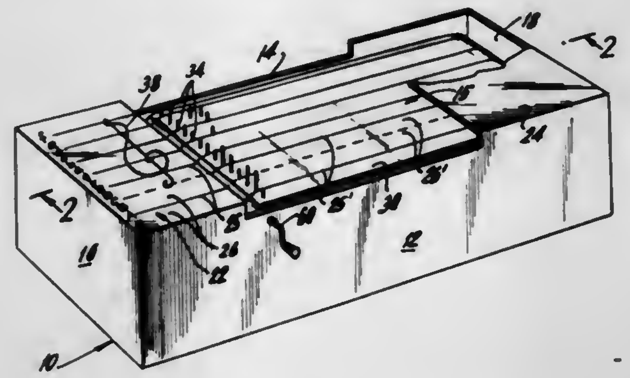


An anvil for a rotary cutting device including a section having brush bristles with terminal ends defining a cylindrical anvil surface against which a cutting knife operates.

3,604,303
MUSICAL COMPOSITION DEVICE

Joseph Williams, 120 East 89th St., New York, N.Y.
Filed June 20, 1969, Ser. No. 835,177
Int. Cl. G10f *1/06*
U.S. Cl. 84—101 **10 Claims**

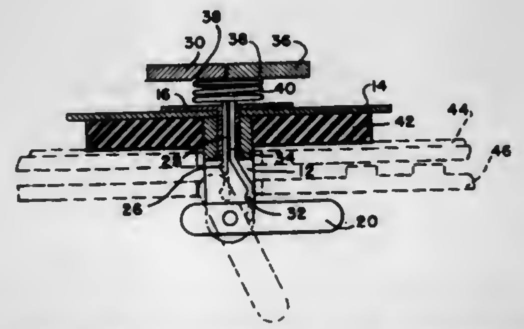
A musical device permits visual and easy song composition and the arrangement of note actuators which may be selected for playing an infinite variety of melodies may be employed as an educational device or as a toy. The device includes a housing having a top plate with a musical staff, notes and similar musical symbols indicated thereon. The housing has an opening at its top which is aligned with the indications and which is provided for the movement of a belt therethrough.



The belt carries a plurality of staff lines which align with the staff lines of the indication on the housing panel and in addition it is provided with a plurality of rows which either contain openings for receiving a note-playing peg or is provided with peg elements which may be extended to position them outwardly in the form of note playing pegs.

3,604,304
DUCT JOINT PIN

Harry A. Botting, Long Beach, Calif., assignor to The United States of America as represented by the Secretary of the Army and/or the Administrator of the Federal Aviation Administration
Filed Oct. 27, 1969, Ser. No. 869,664
Int. Cl. F16b *21/00*
U.S. Cl. 85—3 R **1 Claim**

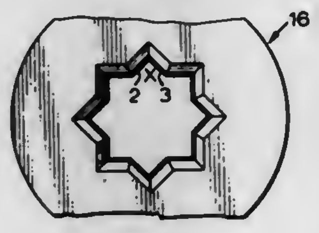


A duct joint pin for joining apertured metal sheets or the like and for sealing the apertures of the metal sheets. The pin has a latch pivotally mounted on one end, a tubular body, and a flange on the end opposite the latch with a depending sealing O-ring. A pair of levers extend from heads located outside the tubular body through the tubular body to ends adapted to engage the latch selectively to position the latch in either substantial alignment with the tubular body for insertion in or removal of the pin from the apertured metal sheets, or in a locking position transverse to the tubular body of the pin. The locking of the latch retains the sealing O-ring depending from the flange of the tubular body in sealing engagement with the apertured metal sheets. A sealing ring is positioned in the tubular body of the pin to surround the levers and seal off the area between the levers and the inside of the tubular body.

3,604,305
RECESSED SCREW

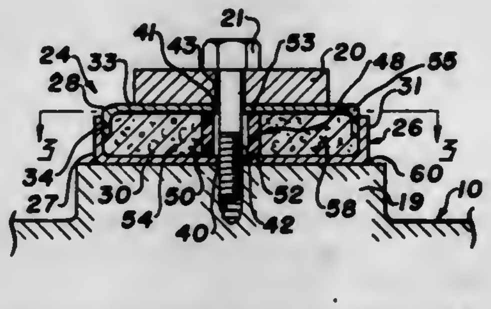
Geoffrey Dreger, Rexdale, Ontario, Canada, assignor to P. L. Robertson Mfg. Co. Limited
Filed June 23, 1969, Ser. No. 835,518
Int. Cl. F16b *23/00*
U.S. Cl. 85—45 **1 Claim**

A screw having a recess formed in the head thereof centered on and symmetrical with respect to the screw axis, the recess presenting in plan 8 symmetrically disposed corners in 45° spaced relation with any four alternate corners proceeding around the recess lying on the corners of a square and defining a recess portion adapted to receive a square cross section driving tool, the remaining four alternate corners of the recess also lying on the corners of a square in 45° angular relation to the first square and also defining a recess portion adapted to receive a square cross section driving tool.



3,604,306
ADJUSTABLE MOUNTING SHIM

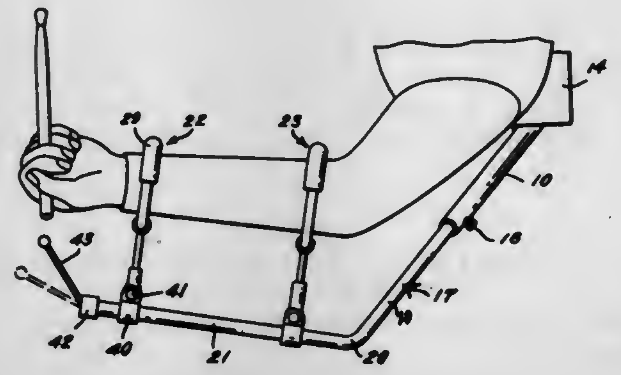
Gordon G. Denholm, 789 W. Pender St., Vancouver, British Columbia, Canada
Filed Aug. 7, 1969, Ser. No. 848,226
Int. Cl. F16b *43/00, 43/02*
U.S. Cl. 85—50 AT **5 Claims**



A shim having a hollow body which initially is given a predetermined thickness by a compressible member separating opposing parts of the body. The hollow body provides a mold cavity which is filled with a castable material after the shim is compressed to a required thickness, the material setting to retain the body permanently at the required thickness.

3,604,307
DRUM TEACHING AID

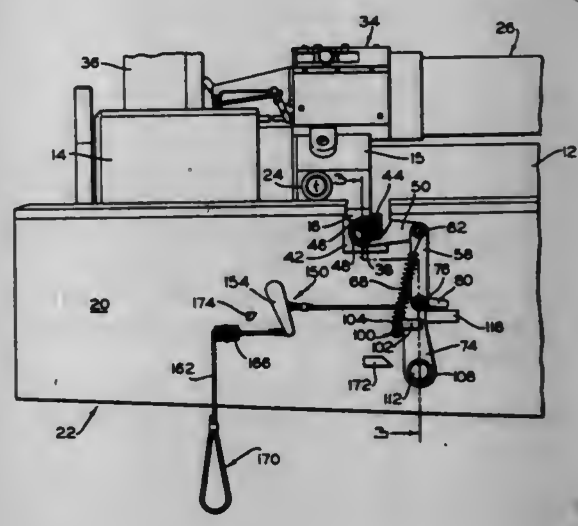
Anthony J. Vono, 115 Parhurst Rd, Warwick, R.I.
Filed June 22, 1970, Ser. No. 48,052
Int. Cl. G09b *15/06*
U.S. Cl. 84—465 **10 Claims**



In teaching a pupil to drum, one of the most difficult things is the correct position of the left arm and hand and the maintaining of this position. The device comprises an elongated support which can be clamped to one leg of the stool or chair on which the pupil sits. The support extends outwardly in the form of a metal tube in spaced parallel relation to the correct position of the arm. Clamped along the tube in adjustable position are a pair of members which form an adjustable opening through which the arm extends loosely. In view of the different sizes of people and the different lengths of their arms, adjustment must be made for the position of the two members and for their size. The bottom portion of each guide member is resiliently closed by a springlike member which permits the arm to be dropped out and to be readily moved upwardly into the guide. The pupil need pay no attention to the position of the arm, but can feel the arm touching the sides of the guides when the arm moves out of correct position.

3,604,308
MEANS FOR RELEASABLY LATCHING A RECOILING MASS AGAINST COUNTERRECOIL MOVEMENT

Robert J. Schulz, Davenport, Iowa; Jimmy H. Williams, Bettendorf, Iowa, and Robert J. Seamands, Moline, Ill., assignors to The United States of America as represented by the Secretary of the Army
Filed July 11, 1969, Ser. No. 841,013
Int. Cl. F41f *19/16*
U.S. Cl. 89—42 B **17 Claims**

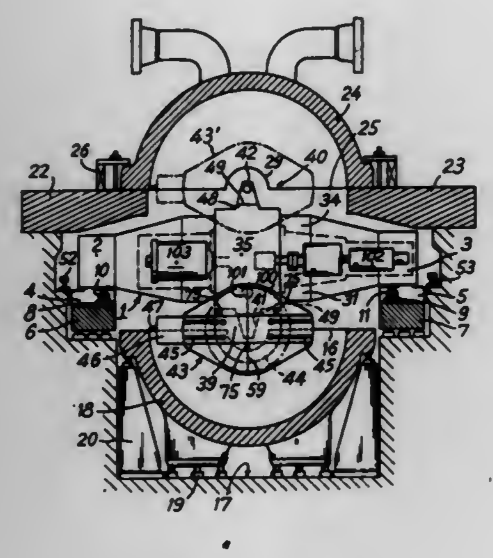


In a large caliber gun of the type in which the firing must be completed during the counterrecoil stroke thereof, the releasable retention of the recoiling parts in a stationary position is accomplished by a latch fixed to one end of each of a pair of linkages pivotally mounted to the respective opposite sides of the stationary cradle in which the recoiling parts are slidably mounted. Each linkage is formed by a plurality of links pivoted end to end and arranged to be pivoted by a cam on the recoiling parts of the gun whereby the latches are lifted into the counterrecoil path of the parts. This pivotal actuation of the linkages is arranged to be halted with a minimum of rebound in a position in which the latches are rigidly supported thereby against the counterrecoil force of the recoiling parts and yet can be rapidly collapsed to release the parts in response to the relatively light pull of a manually operable lanyard.

3,604,309
MACHINE TOOL FOR INTERNAL MACHINING OF A HOLLOW WORKPIECE CONSTITUTED BY TWO HALF SHELLS

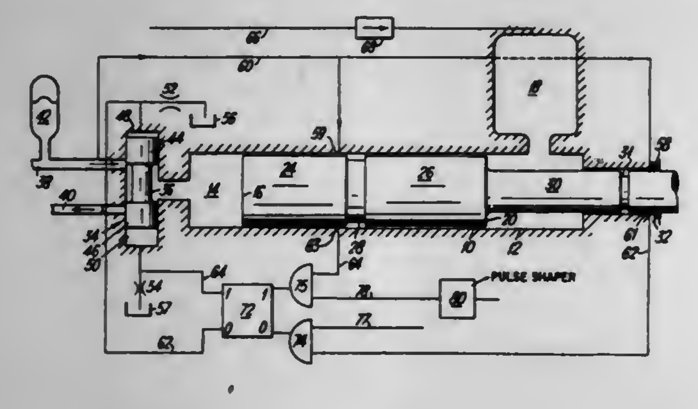
Charles William Berthiez, 5 Avenue Sglantine, Lausanne, Switzerland
Filed Apr. 10, 1969, Ser. No. 815,065
Claims priority, application France, Apr. 11, 1968, P.V. 147,796
Int. Cl. B23c *3/02*
U.S. Cl. 90—15 **12 Claims**

A machine tool for internal machining of a hollow workpiece of large dimensions constituted by two half shells which are to be assembled along joining planes. The machine tool has support means for the two half shells to support the half shells opposite one another at a distance and a movable member and means to move said member between the two half shells in a direction parallel to the joining planes of the half shells. A machining head is mounted on the movable member and machining means are mounted on the machining head.



3,604,310
TRANSDUCER FOR PRODUCING MECHANICAL OSCILLATIONS

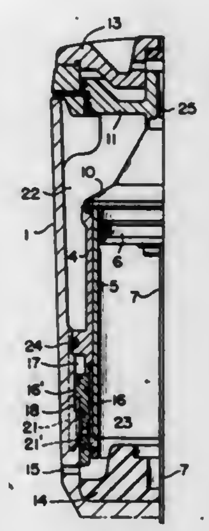
Keith Foster, 112 Hole Lane, Birmingham 31, England, assignor to National Research Development Corporation, London, England
Filed Jan. 15, 1969, Ser. No. 791,250
Claims priority, application Great Britain, Jan. 16, 1968, 2434/68
Int. Cl. F01l *25/06;* **F01b** *7/18*
U.S. Cl. 91—306 **12 Claims**



A transducer adapted to be driven by pressure fluid to produce mechanical oscillations, comprising a piston member and a cylinder member mounted for relative oscillating movement, the piston member having a face bounding a chamber in the cylinder member, valve means for cyclically pressurizing and depressurizing said chamber with pressure fluid to cause said relative oscillating movement, control means adapted to generate a first position signal as the members move relatively through a first relative position, and to generate a second position signal as the members move relatively through a second relative position, means to pass said position signals to control means including a bistable element which is adapted to control the valve means in response to said position signals the control means responding only to those first position signals, generated as the members move relatively in one sense through the first relative position, and only to those second position signals generated as the members move relatively in the opposite sense through the second relative position.

3,604,311
COMPRESSED AIR NAILING MACHINE

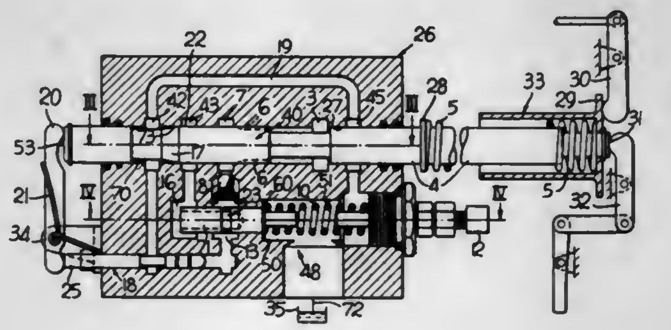
Umberto Monacelli, Via del Parco, Biassono, Italy
Filed July 14, 1969, Ser. No. 841,360
Claims priority, application Italy, July 19, 1968, 19181 A/68
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—404 **2 Claims**



A compressed air nailing machine comprising a flanged ring nut which slides on the terminal part of the cylinder in order to connect the lower opening with either the atmosphere or the compressed air reservoir.

3,604,312
DRAFT CONTROL VALVE

John R. Plate, Milwaukee, Wis., and James R. Mc Burnett, Stillwater, Okla., assignors to Allis Chalmers Manufacturing Co., Milwaukee, Wis.
Filed Oct. 23, 1969, Ser. No. 868,730
Int. Cl. F15b *11/08*
U.S. Cl. 91—433 **10 Claims**

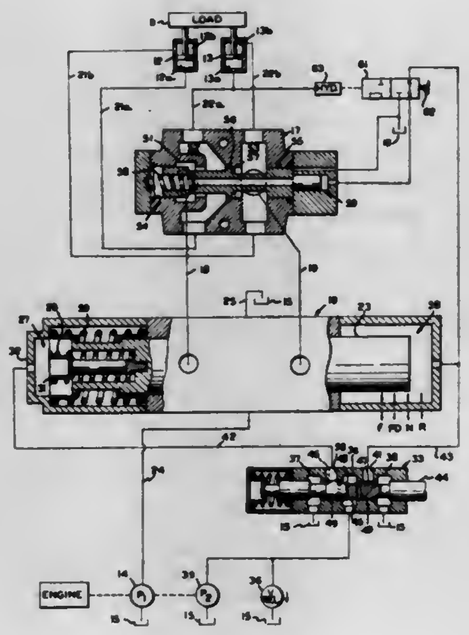


A draft control valve having metering grooves on the control spool to control the flow rate to the fluid actuator and a flow control valve transmitting return fluid flow from the fluid actuator through the control valve to the reservoir at a rate of flow independent of actuator operating pressure.

3,604,313
HYDRAULIC POWER CIRCUIT WITH RAPID LOWERING PROVISIONS

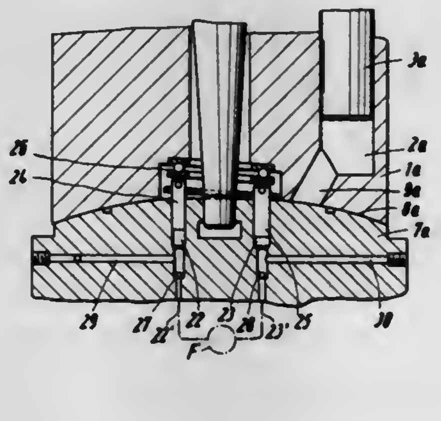
Waldo G. Fruehauf, Kalamazoo, Mich., assignor to General Signal Corp.
Filed May 14, 1970, Ser. No. 37,114
Int. Cl. F15b *11/08, 13/04*
U.S. Cl. 91—438 **5 Claims**

A hydraulic power circuit especially useful as a lift circuit for front-end loaders and including a bypass valve separate from the directional control valve which is adapted to interconnect the contracting and expanding ends of the actuating cylinders and permit rapid lowering of the implement. The circuit is characterized by an actuating scheme for the bypass valve which opens that valve only when the directional control valve is shifted to float position and the load pressure in the contracting ends of the cylinders is below a preselected value. The directional control valve may be shifted by pilot pressures, and in this case the motive force for opening the bypass valve may be developed by the pressure in the pilot circuit.



3,604,314
HYDROSTATIC AXIAL PISTON MACHINE

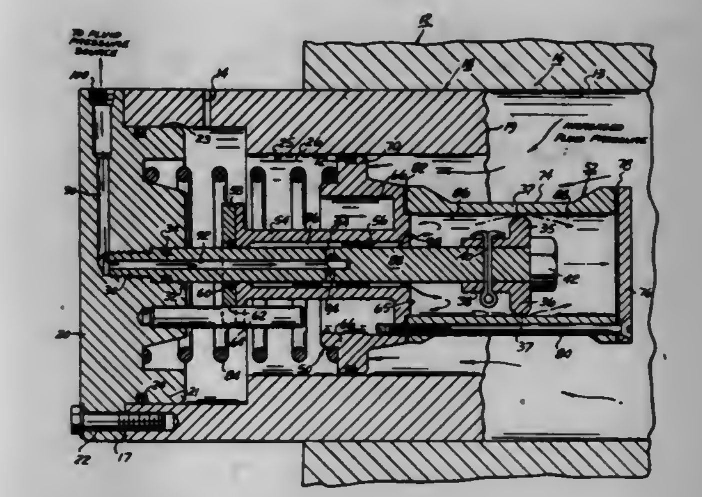
Heinrich Steiner, Monchengladbach, Germany, assignor to Mannesmann-Meer A.G., Monchengladbach, Germany
Filed May 7, 1969, Ser. No. 824,738
Claims priority, application Germany, May 6, 1968, P 17 03 347.5
Int. Cl. F04b *1/02*
U.S. Cl. 91—485 **4 Claims**



A hydrostatic axial piston machine has a control block, a mirror surface thereon, a cylinder drum rotatably supported by said mirror surface, and dosing means assuring a metered supply of lubricating liquid to the mirror surface.

3,604,315
FLUID PRESSURE DEVICE

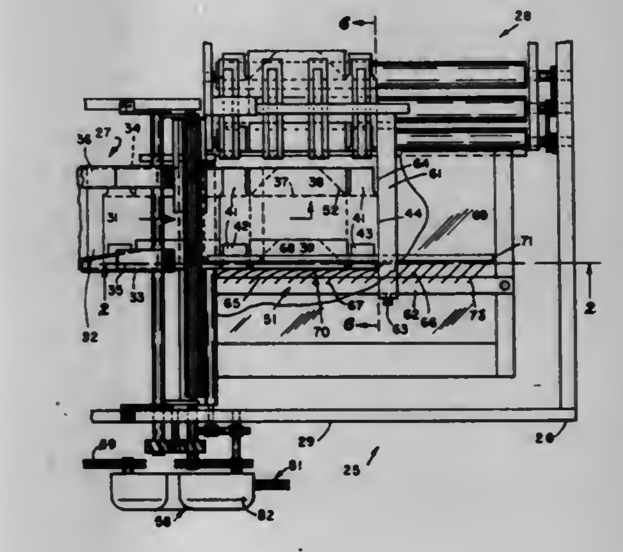
Nils O. Rosaen, Bloomfield Hills, Mich., assignor to Universal Filters Inc., Hazel Park, Mich.
Filed June 5, 1969, Ser. No. 830,630
Int. Cl. F01b *3/00*
U.S. Cl. 92—110 **12 Claims**



A fluid cylinder and piston assembly for use in a fluid filter assembly or the like, which includes a housing and a cover; a spring-biased compound piston and cylinder assembly is reciprocable within the housing on a stationary guide rod attached to the cover of the housing. The compound piston and cylinder assembly defines a pressure chamber having a plunger attached to the end of the guide rod disposed therein and the chamber is in communication in front of the plunger with a fluid inlet in the cover by means of restricted passages to move the compound piston and the cylinder assembly in one direction and the plunger is constructed such as to permit metered amounts of fluid to the plunger within the cylinder at a predetermined fluid pressure to move the compound piston and cylinder assembly in the other direction.

3,604,316
UNTIMED MECHANICAL TRANSFER MEANS FOR RIGHT ANGLE FOLDING MACHINES

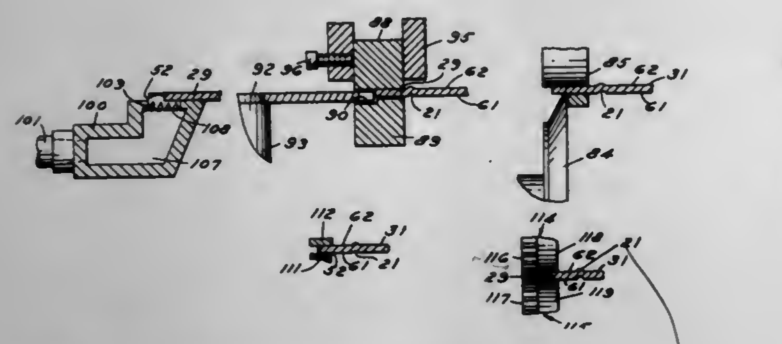
Raymond A. Labombarde, 24 Marlow Rd., Nashua, N.H.
Filed Mar. 2, 1970, Ser. No. 15,562
Int. Cl. B31b *1/26*
U.S. Cl. 93—49 R **13 Claims**



An untimed, mechanical transfer apparatus, for resiliently flicking each successive box blank received from a first flap-folding apparatus laterally at right angles into the control of a second flap-folding section. Rotating nip roll means in a transfer zone retains a grip on each advancing blank while the side edge of the blank successively engages a row of individual spring members, the springs rebounding to flick the blank when the trailing edge of the blank is released from the roll nip.

3,604,317
SKIVING MACHINE DEVICE AND METHOD OF PREPARING A PROTECTED PAPERBOARD SIDE SEAM

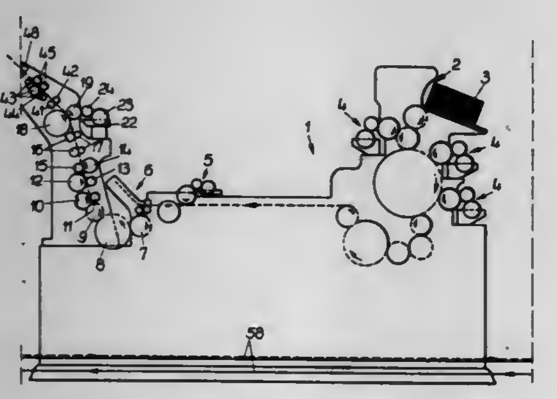
Eric A. Baun, Farmington, Mich., assignor to Ex-Cell-O Corp., Detroit, Mich.
Filed Feb. 3, 1969, Ser. No. 795,791
Int. Cl. B31b *1/14, 1/64;* **B31c** *5/00*
U.S. Cl. 93—58 ST **3 Claims**



An improved skiving machine device and a new method for preparing and forming paperboard side seam blank providing it for a smooth edge which a roughened skived surface can fold around and adhesively secure to its adjacent surface forming a protected edge for the side seam flap of a paperboard container blank with contact being made between the roughened paper surface and the adjacent side seam flap giving good bond characteristics and accuracy.

3,604,318
MACHINE FOR MAKING ENVELOPES WITH MOISTENABLE OR SELF-SEALING CLOSURE FLAPS

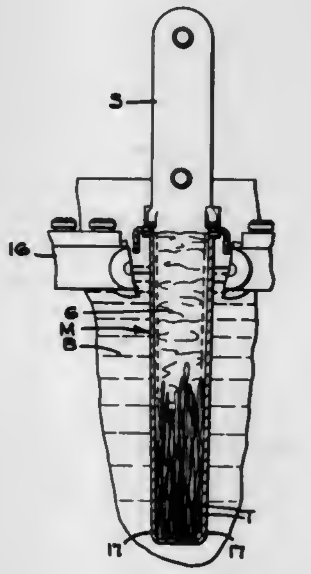
Richard Winkler, Burgermeister-Win k-Strasse, 5455, Rengsdorf, and Kurt Dunnebier, am Burkenhang 5451, Gladbach, both of, Germany
Filed May 2, 1969, Ser. No. 821,293
Claims priority, application Germany, Dec. 28, 1968, P 18 17 297.9
Int. Cl. B31b *21/02, 21/26, 1/62*
U.S. Cl. 93—74 **2 Claims**



Envelopes or flat bags are made with closure flaps which are either gummed with dextrin or a similar substance which becomes adhesive when moistened, or the flaps and their corresponding contact areas of the rear side are both gummed with latex or similar adhesive which sticks in the dry state. These gumming operations are carried out in a single pass through a machine which includes an envelope-folding machine which may have stations for printing and embossing the envelopes or bags and making windows or sticking linings therein and which forms a single structural unit with the following consecutively arranged stations: (a) a station composed preferably of suction discs for receiving individually from the folding machine finished folded envelopes or bags with ungummed closure flaps; (b) a station for reopening the envelopes or bags; (c) a station for applying either dextrin or the like to the closure flap, or applying latex or the like to the closure flap and the corresponding contact area upon the rear side of the envelope or bag, at a distance from the edges thereof; (d) a station for staggering the envelopes or bags to which adhesive has been applied; (e) a station for drying the staggered envelopes or bags; and (f) a station for collecting finished envelopes or flat bags either with closure flaps open or with folded flaps, preferably standing on edge upon a delivery table.

3,604,319
FREEZE MOLDING SLICE MATERIAL

Katsuji Hirahara, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed May 2, 1969, Ser. No. 821,210
Int. Cl. A47j *47/02*
U.S. Cl. 99—269 **3 Claims**

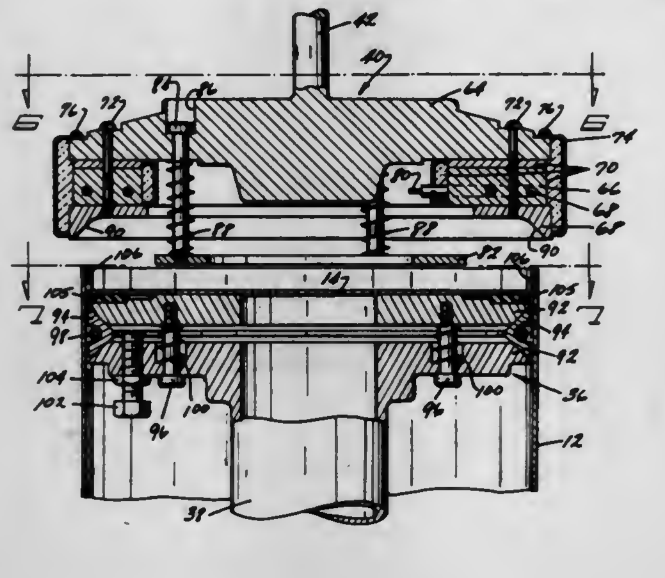


Slice material (e.g. turkey slices) is loaded onto a loading tray backed up by a stripper bar. Both of these elements are projected into an empty horizontal mold, first the tray is retracted and then the stripper bar, leaving the slice material in the mold. The mold is then brought to a vertical position, filled with liquid (e.g. gravy) and the product aggregate is immersion frozen in the mold.

3,604,320
APPARATUS FOR ASSEMBLING TUBE AND END PANEL

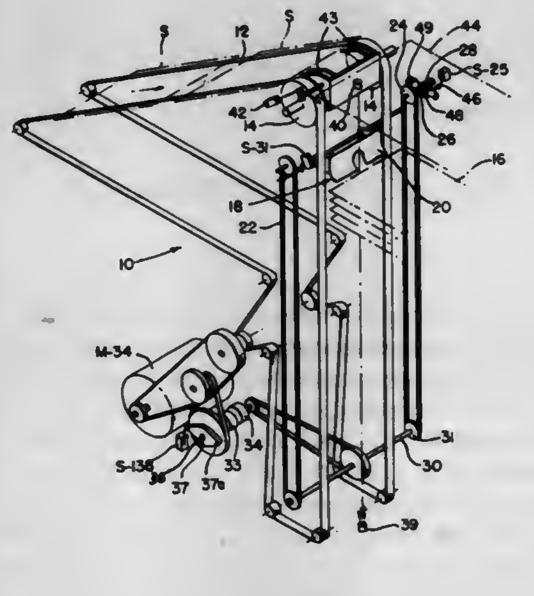
Alvin C. Duvall, 2727 Southwick St., Ida, Mich.; James C. Jones, 3304 River Road; George R. Kramp, 1249 Wildwood, Toledo, Ohio, and James L. Swickard, Jr., 735 Southwood Dr., Uniontown, Ohio
Filed Sept. 17, 1969, Ser. No. 858,605
Int. Cl. B31b *17/00*
U.S. Cl. 93—55.1 R **6 Claims**

Novel assembly means adapted to produce a unique package particularly suited for use in conjunction with asphalt wherein a fiber bottom is sealed to a fiber tube by means of a heat and pressure sensitive adhesive. The assembly means includes three mandrels mounted on a revolving spider and a heated sealing platen. In operation, a cylindrical paper tube is placed over one of the mandrels so that its upper edge extends beyond the upper end of the mandrel. The paper tube includes approximately a one-inch strip of heat and pressure sensitive adhesive which has been coated around the inner periphery of its upper edge. A paper bottom is positioned within the upper end of the paper tube and rests against the upper end of the mandrel. Once loaded, the mandrel is rotated into a sealing position where the heated sealing platen cooperates with the mandrel to crimp the adhesive coated end of the paper tube into sealed engagement with the paper bottom. The mandrel is then revolved to a third position where the sealed package is removed from the assembly means.



3,604,321
PROGRAMMED SHEET DISTRIBUTING DEVICE

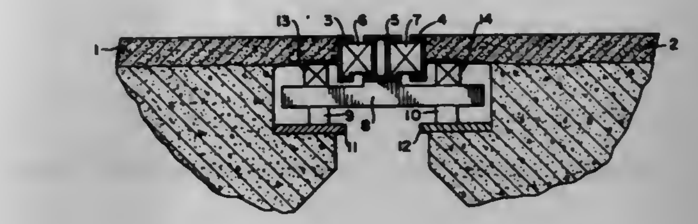
Donald L. Snellman, Seattle; Ernest D. Davis, Richmond Beach, and Dale R. Johnson, Seattle, all of, Wash., assignors to Norfin, Inc., Seattle, Wash.
Filed June 2, 1969, Ser. No. 829,274
Int. Cl. B65h *33/14*
U.S. Cl. 93—93 C **6 Claims**



A deflector of a sheet distributing mechanism is positioned at selected stations in response to the passage of sheets past the deflector. A manually programmed crossbar switch determines the preselected numbers of sheets to be distributed to any one of several stations. A sheet stepping switch and a station stepping switch join the programmed crossbars of the crossbar switch when the programmed number of sheets have been received at the selected station so as to index the deflector to the next station. The number of sheets and the number of stations programmed may be varied, stations may be skipped or the device may operate as a collator by distributing a single station at a time to one or more of the sheets. An anticipating device is employed on the station stepping switch to permit smooth operation of the distributing mechanism when several stations are to be skipped.

3,604,322
BRIDGING OF EXPANSION JOINTS IN ROADWAYS OF BRIDGES, STREETS, RUNWAYS AND THE LIKE

Waldemar Koster, Forsbach, Germany, assignor to Friedrich Sohne Maurer, Stahlbau, Munich, Germany
Filed Aug. 23, 1968, Ser. No. 754,806
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **5 Claims**



The edges of the expansion joint between two roadway sections are terminated with adjoining edge profiles, respectively. One or more longitudinal retaining members pass parallel to said edge profiles and are connected to the latter and to each other by means of flexible sealing members. Each retaining member is fixedly connected with two parallel supporting traverses disposed in the direction of the roadway in a recess below the edge profiles. Each of said traverses slidably rests on two sliders supported on fixed mounting plates. In addition to the system of elastic sealing members, a system of elastic spring members is provided. The latter members act between the traverses and the edges of the expansion joint. By the combined elastic systems, the retaining members (if more than 1) are approximately equally spaced from one another. The retaining members (as a unit) are held approximately in the middle between the edge profiles in any position of the expansion joint.

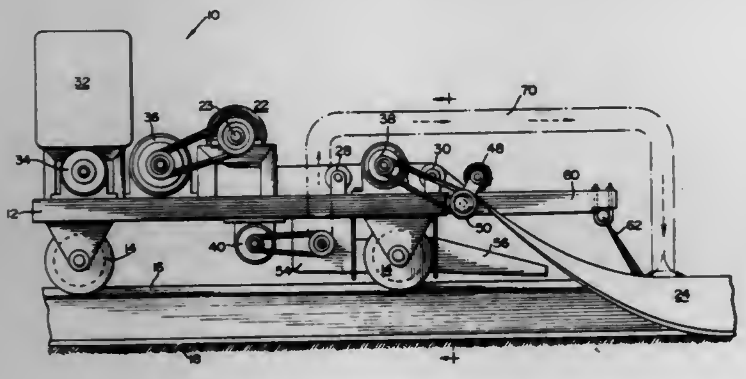
3,604,323
PRODUCT FOR THE PROTECTION OF CONCRETED COVERINGS AND METHOD OF USING SAID PRODUCT

Claude A. Baumann, Strasbourg-Meinau, France, assignor to Huileries Alsaciennes S. A., Strasbourg-Port-du-Rhin (Bas-Rhin), France
Filed Jan. 14, 1969, Ser. No. 791,144
Claims priority, application France, Jan. 17, 1968, 9067
Int. Cl. E01c *21/00*
U.S. Cl. 94—22 **6 Claims**

A product and a method of using same for the protection of concrete coverings against damage due to the use of salts for the removal of slippery ice, in which for the removal of the traces of a liquid membrane curing compound (LMCC) remaining on the roadway, the latter is dissolved into a mixture according to French Patent Specification No. 1526001 (which is formed by a balanced mixture of a blown, oxidized, boiled linseed oil with addition of salts of lead, manganese and cobalt of an aliphatic solvent, which has a density of 0.772, which distils between 168 and 195° C., has a kauri-butanol index of 30, an aniline point of 73, a sulfur content of less than 20 parts per thousand, an aromatic content of less than 5 percent and a flash point lying above 55° C., but by replacing the solvent contained in this product by an aromatic or chlorinated solvent, such as trichloroethylene, xylene, toluene, etc., in such quantity that the mixture including the traces of the after-treatment product LMCC possesses a viscosity which renders its penetration as impregnation products into the concrete possible, the quantity of active product being the same as that in the mixture forming the object of the mentioned patent French specification.

3,604,324
CURING BLANKET AND MACHINE

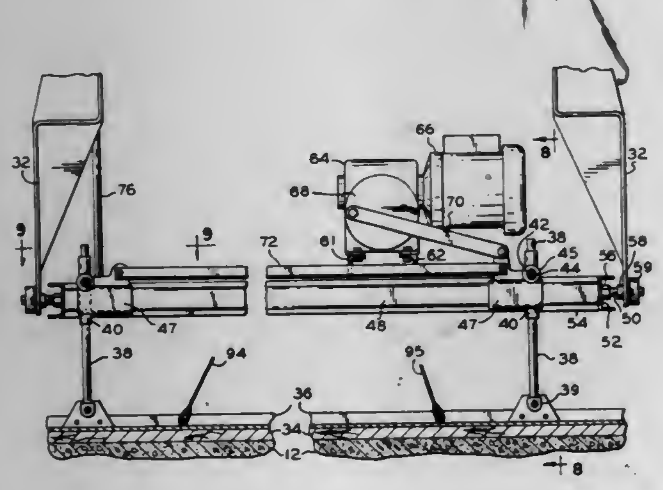
William F. Middlestadt, Rt. 2, Box 330, Baltimore, Md.
Filed Feb. 6, 1969, Ser. No. 796,977
Int. Cl. E01c *23/03*
U.S. Cl. 94—39 **5 Claims**



A flexible concrete curing blanket of indefinite length is provided with tubes along its sides. The tubes are filled with water to weight and thus hold the blanket down. A self-propelled machine lays the blanket down on top of freshly poured concrete, the machine takes the blanket up when the concrete has cured.

3,604,325
MACHINE FOR FINISHING CONCRETE SURFACES

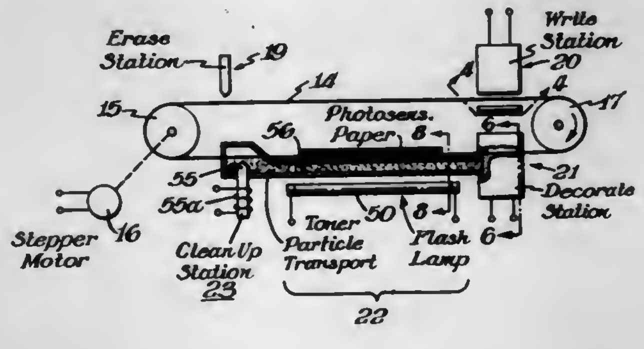
John A. Borges, 601 Duane Avenue, Oregon City, Oreg.
Filed Dec. 9, 1968, Ser. No. 782,147
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 **14 Claims**



A machine for smoothing the surface of newly poured concrete including a float which is moved across the concrete surface by a carriage traveling back and forth on an overhead frame spanning the surface. The float is vertically self-adjusting and reciprocates lengthwise as it moves across the concrete surface. The machine also includes a tilt adjustment, pressure adjustment and skew adjustment for the float and means for lifting and lowering the float to the concrete surface.

3,604,326
METHOD AND APPARATUS FOR MAGNETIC-OPTICAL PRINTING

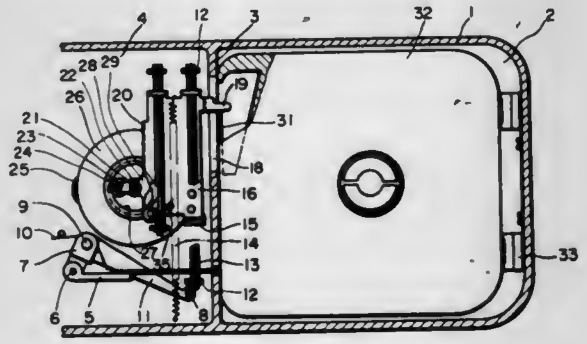
Edward W. James, II, Oxford, Pa., and Eustathios Vassiliou, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 19, 1969, Ser. No. 886,619
Int. Cl. B41b *13/00;* **G03g** *19/00*
U.S. Cl. 95—4.5 **10 Claims**



A method and apparatus for magnetic-optical printing employing a light-transparent uniformly magnetized magnetic medium upon which characters to be printed are first imaged magnetically and then delineated by optical masking using ferromagnetic toner, after which the characters are photographically recorded.

3,604,327
CAMERA LIGHT SENSING SYSTEM

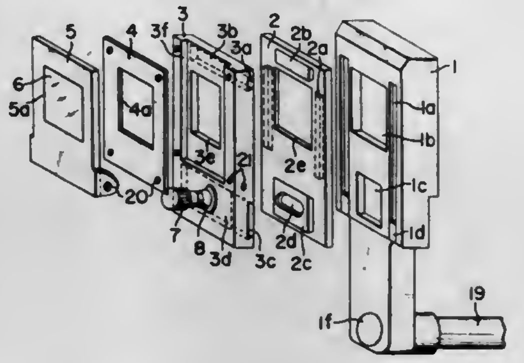
Hiroshi Hirata, Sakai, Japan, assignor to Minolta Camera Kabushiki, Kaisha, Osaka, Japan
Filed June 11, 1969, Ser. No. 832,236
Claims priority, application Japan, June 18, 1968, 42030/68
Int. Cl. G03b *19/04, 19/18*
U.S. Cl. 95—10 C **11 Claims**



A mechanism for automatically adjusting the sensitivity of a camera light measuring system in accordance with the sensitivity of film in a magazine which is provided with a front sensitivity index defining shoulder includes, a variable light attenuator positioned ahead of a photocell, and a magazine compartment with a front wall. A sensing finger projects through the front wall and is spring urged to advance into engagement with the index and controls the light attenuator. A spring loaded return member urges the finger to a retracted position and includes a plunger projecting into the magazine compartment to be pushed by the inserted magazine to advance the return member and actuate the sensing and control operation and thereby adjust the light attenuator in accordance with the film sensitivity.

3,604,328
SLIDE COPYING DEVICE

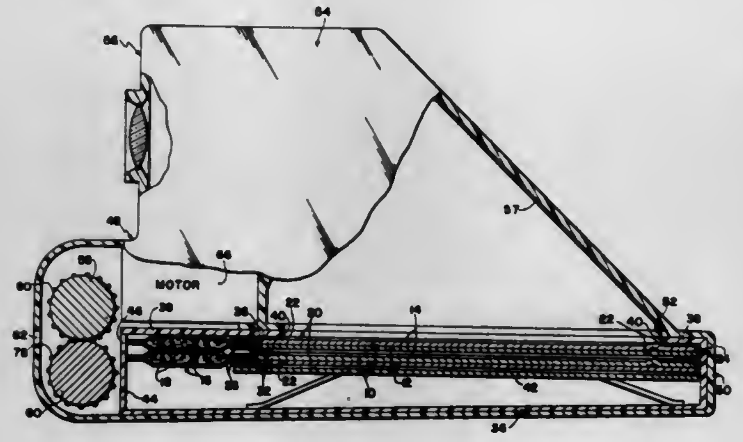
Sadao Nakagawa, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Sept. 19, 1969, Ser. No. 859,398
Claims priority, application Japan, Sept. 28, 1968, 43/84586
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **1 Claim**



A slide copying device is provided which is capable of moving in both horizontal and vertical directions to allow trimming of a slide both horizontally and vertically. The device employs a single dual purpose clamp handle, which also is used as the handle for the trimming operations.

3,604,329
PHOTOGRAPHIC APPARATUS AND PROCESS FOR CONTROLLING THE DEVELOPMENT OF INDIVIDUAL FILM UNITS AS A FUNCTION OF TEMPERATURE

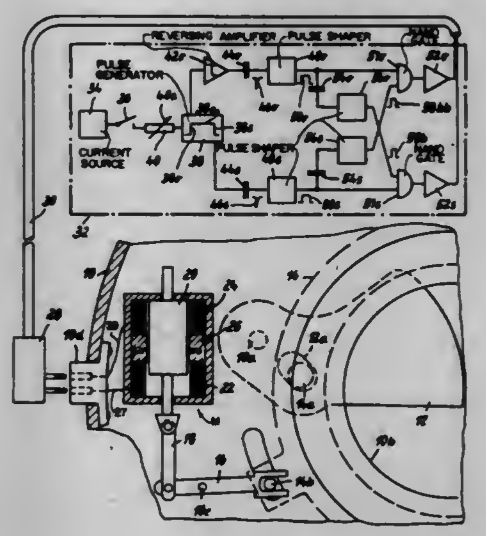
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 20, 1969, Ser. No. 878,337
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **10 Claims**



A camera and a photographic process performed therein in which a viscous photographic processing liquid is distributed in a thin layer between an exposed photosensitive element and another element by moving the elements in superposition through a convergent passage between a pair of juxtaposed pressure-applying members biased toward one another by a substantially constant force. The viscosity of the liquid varies inversely with temperature and the speed of movement of the elements is varied in direct relation to the ambient temperature to insure uniform liquid distribution despite temperature changes. The thickness of the layer of liquid can also be maintained constant despite changes in temperature and viscosity by varying the pressure exerted on the elements by the pressure-applying members, and the camera includes structure for varying the pressure exerted by the pressure-applying members as a function of temperature.

3,604,330
MAGNETICALLY DRIVEN PHOTOGRAPHIC SHUTTER WITH BRAKING

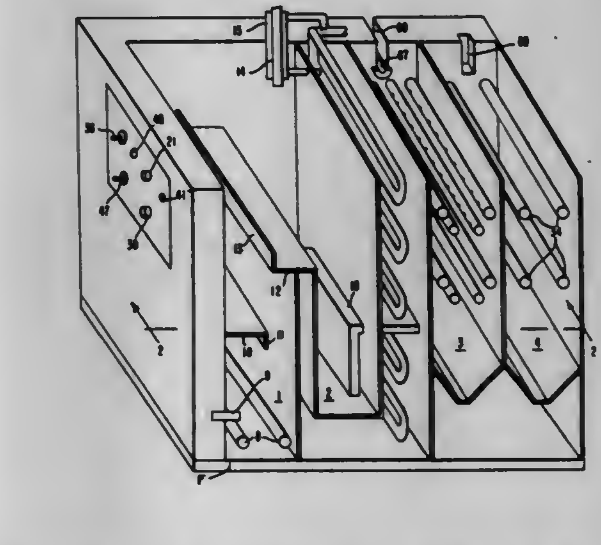
Paul Fahlenberg, Baierbrunn, and Walter Ruppelt, Munich, both of, Germany, assignors to Compur-Werk Gesellschaft mit beschrankter Haftung & Co., Munich, Germany
Filed Sept. 4, 1968, Ser. No. 757,362
Claims priority, application Germany, Sept. 19, 1967, P 15 97 154.7
Int. Cl. G03b *9/62*
U.S. Cl. 95—53 E **5 Claims**



A photographic camera shutter arrangement includes first and second magnetic windings which respectively control the opening and closing movements of the shutter blades. The windings are pulse-energized, the interval between the energization of the first winding by a first control pulse and of the second winding by a second control pulse determining the exposure time of the shutter. A braking pulse applied after a control pulse is applied to a winding other than that to which the control pulse is applied retards movement of the shutter blades in the direction dictated by the control pulse so that "-bouncing" or rebounding of the shutter blades is reduced.

3,604,331
MACHINE FOR DEVELOPING RESIST IMAGES

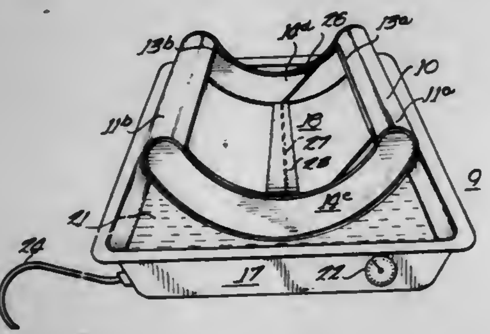
John Barron Carberry, Parlin; Abraham Bernard Cohen, Springfield, and Robert Bernard Heiart, Middletown, all of, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 26, 1967, Ser. No. 656,106
Int. Cl. G03d *3/06*
U.S. Cl. 95—89 R **2 Claims**



A machine for developing resist images having an initial spray chamber where an exposed photosensitive element is suspended, sprays in said chamber adapted to apply developer solution to said element, a final spray chamber where the developed element is suspended, and sprays in said final spray chamber adapted to apply a washing solution to the developed element. The machine has a mechanism for recycling the developer solution and metering device for supplying the washing solution. The machine is useful for developing and washing exposed photopolymerizable plates, e.g., those used for printed circuits.

3,604,332
PHOTOGRAPHIC MATERIAL PROCESSING APPARATUS

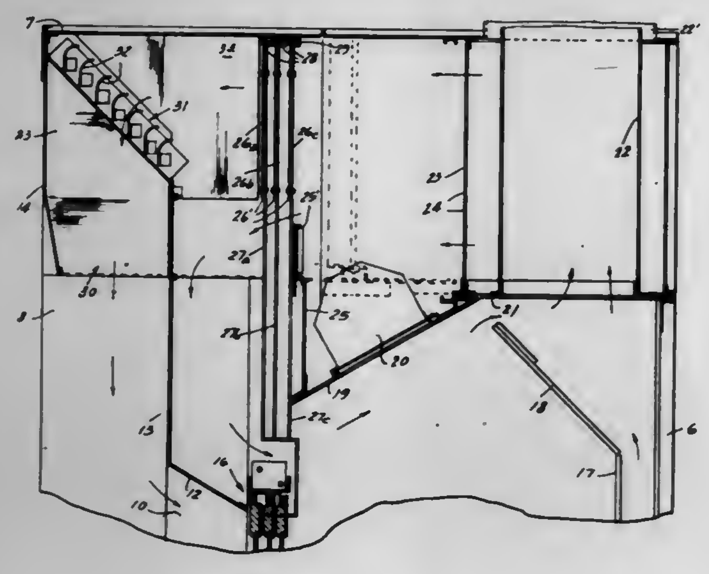
Robert W. Mitchell, 707 Myrtle Rd., Saint Joseph, Mich., assignor to Heath Co., Benton Harbor, Mich.
Filed Nov. 29, 1968, Ser. No. 805,390
Int. Cl. G03d *13/04*
U.S. Cl. 95—95 **23 Claims**



Processing apparatus including a vessel with an arcuate bottom for use in processing sensitized material such as film or photographic paper, the vessel having uniquely curved walls which, when the vessel is agitated, impart to the liquid within the vessel flow patterns particularly effective for the above purpose, the vessel also possessing other unique features which facilitate handling and the pouring of liquids from the vessel and temperature control of chemicals within the tray, and insure more complete chemical contact while conserving the chemicals used, thereby making the vessel particularly useful in a multistep process such as color print processing.

3,604,333
FUME HOOD

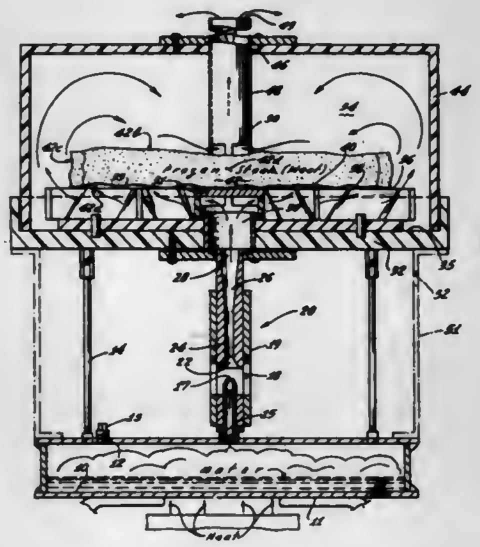
Laurence N. Nelson, Onsted, Mich., assignor to Kewaunee Scientific Equipment Corporation, Adrian, Mich.
Filed Nov. 5, 1969, Ser. No. 874,290
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 LH **12 Claims**



A fume hood structure employing laterally slidable closure means for the access opening thereof, and utilizing an auxiliary air flow through such closure means when the latter is in an open position, in which the amount of such auxiliary air flow is controlled by lateral movement of such closure means, means being provided for directing such air to adjacent the opening in such closure means.

3,604,334
APPARATUS AND METHOD FOR THAWING FROZEN FOOD

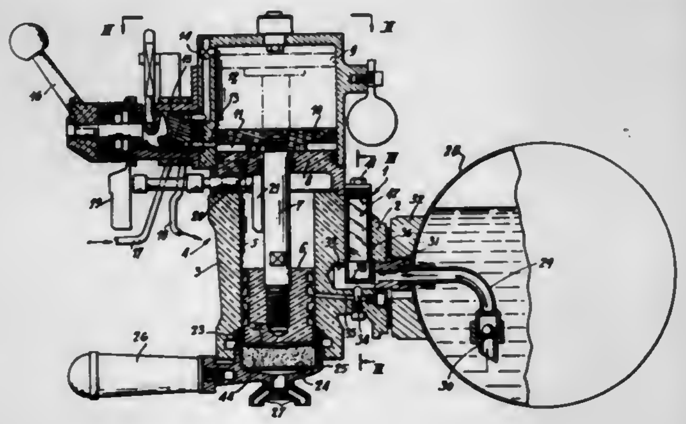
Earle W. Ballentine, 3641 Via Polomino, Palos Verdes Estates, Calif.
Filed May 26, 1966, Ser. No. 553,065
Int. Cl. A23l *1/00*
U.S. Cl. 99—234 **23 Claims**



A device for thawing and heating frozen food, having a chamber with means for supporting frozen food. A mixture of hot gases and water vapor is forced in turbulent flow over the frozen food.

3,604,335
DEVICE FOR REGULATING THE TEMPERATURE OF THE INFUSION WATER IN A MACHINE FOR PREPARING COFFEE AND SIMILAR INFUSIONS

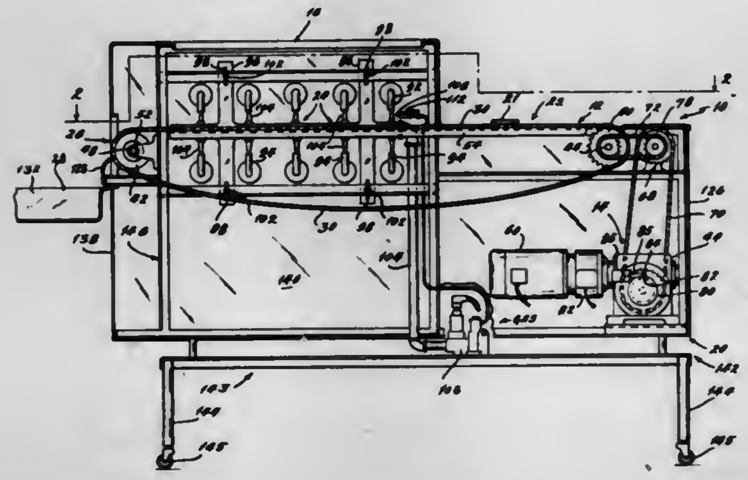
Jacques-Daniel Lafitte, 136 avenue d'Argenteuil, Asnieres, France
Filed Mar. 10, 1970, Ser. No. 18,044
Claims priority, application France, Nov. 6, 1969, 69.38232
Int. Cl. A47j *31/24*
U.S. Cl. 99—302 P **7 Claims**



Device for regulating the temperature of the infusion water in a machine for preparing coffee and similar infusions comprising a tubular body containing a cylinder in which a piston defines two chambers for alternative communication with an inlet and a discharge cold water pipe, the tubular body further comprising a cavity for holding hot infusion water kept in communication with a plunger tube partly interned in a boiler for providing hot water under pressure and with at least one duct made in the tubular body to emerge in the infuser piston cylinder.

3,604,336
COOKING DEVICE AND THE LIKE

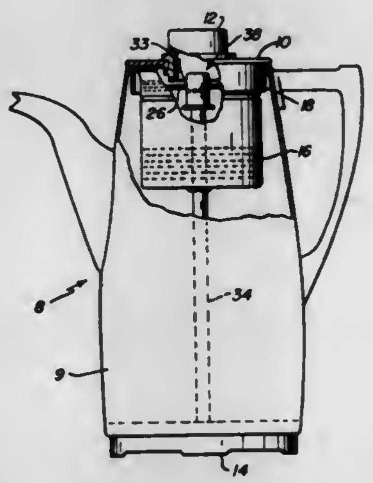
Donald E. Straub, St. Louis; Henry F. Reitz, St. Louis; Albert A. Yanko, St. Louis, and George B. Hoffmann, Lemay, all of, Mo., assignors to Schrybs Investment Company, Incorporated, St. Louis, Mo.
Filed Sept. 16, 1968, Ser. No. 762,277
Int. Cl. A47j *27/62*
U.S. Cl. 99—327 **14 Claims**



A device for quickly and uniformly cooking food products and especially meat patties including those in an initially frozen state without substantial loss of the flavor or juices of the products, said device having opposed burners positioned and oriented to simultaneously apply flame against opposite sides of the products or patties so as to cook them generally from their centers outwardly to their edges, and means for supporting and positioning the products between the opposed burners for a predetermined time to cook the products to a desired final edible condition.

3,604,337
VALVE FITTED COFFEE PERCOLATOR

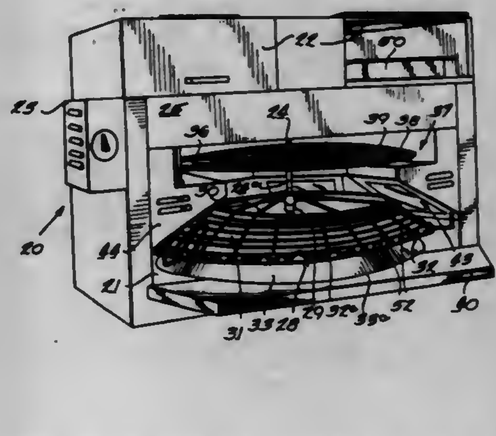
James M. Rago, 12604 S. Michigan Avenue, Chicago, Ill.
Filed June 15, 1970, Ser. No. 46,254
Int. Cl. A47j *31/04*
U.S. Cl. 99—312 **6 Claims**



A percolator coffee pot having a tube through which percolating liquid passes for discharge through the open top, and a valve cap freely resting on the top of said tube. The valve cap seals the open top of the tube in closed position, and the valve cap undergoes limited movement under urgings of percolating liquid to bring spray discharge means in the wall of the valve cap into communication with the percolating liquid moving through the top of the tube.

3,604,338
ELECTRIC BROILER FOR COOKING FOOD

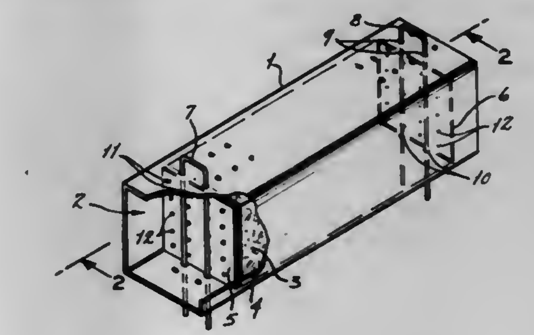
Armin Fiedler, Chicago, Ill., assignor to Tastee Freez Industries, Inc., Chicago, Ill.
Filed Apr. 11, 1969, Ser. No. 815,337
Int. Cl. A47j *37/06*
U.S. Cl. 99—339 **5 Claims**



Electric broiler apparatus for cooking food including a housing having an open front portion. A shaft is vertically mounted for rotational movement in the housing, and a cooking rack having an inclined cooking area is secured to said shaft for rotational movement therewith. A toasting rack is also secured to the shaft for rotational movement therewith and is disposed above the cooking rack. A heat shield of conelike configuration is secured to said shaft and is disposed beneath the cooking rack. The cooking and toasting racks and the heat shield project slightly from the front portion of the broiler apparatus for access by the operator. Heat sources are located in the housing above and below the cooking rack and above the toasting rack and an adjustable drive motor is mounted in the housing and is mechanically connected to said shaft for rotating the same.

3,604,339
APPARATUS FOR MAKING FORMED COOKED MEAT

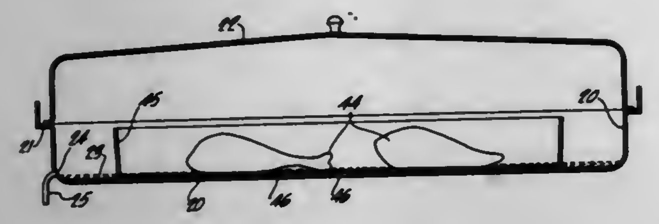
Nicholas R. Beck, and Paul M. Denk, both of University City, Mo., assignors to Food Masters, Inc., University City, Mo.
Filed May 24, 1968, Ser. No. 731,832
Int. Cl. A47j *27/20*
U.S. Cl. 99—349 **6 Claims**



In an apparatus for making formed cooked meat rolls, loaves, or the like, a tubular member, being cylindrical or multisided, is lined with a thermal sensitive and heat shrinkable film, with the raw meat to be formed and cooked being inserted and compacted within said tubular member and liner. Closure members, such as end plates, are applied proximate the ends of the tubular member and contact the ends of the meat disposed therein so as to provide for the formation of the meat into the desired roll or loaf form, and various connecting means, such as threaded engagement, is provided for retaining the end plates positioned against the formed meat.

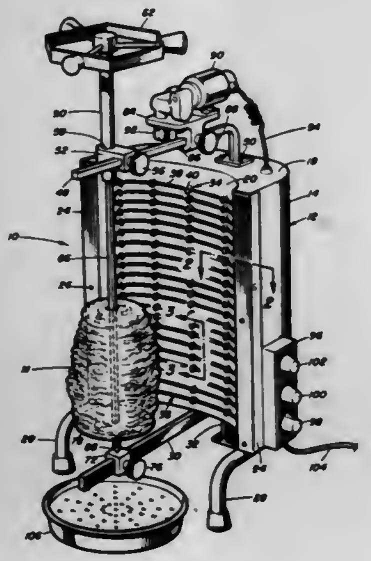
During the cooking process in which the tubular member combination and retained meat are exposed to a cooking medium, the heat shrinkable film closely adheres to the surface of the meat thereby preventing the natural juices of the meat from accumulating proximate this surface, and thereby forcing some juices, if any need to be discharged, to traverse longitudinally of the formed meat and seep past an end plate. The cooked and formed meat and the tightly conforming liner are then easily removed from the tubular member following the cooking process.

3,604,340
PRECOOKING APPARATUS
Stanley J. Simmons, 408 Latone, Monrovia, Calif.
Filed Dec. 4, 1967, Ser. No. 687,881
Int. Cl. A47j *37/00*
U.S. Cl. 99—404 **5 Claims**



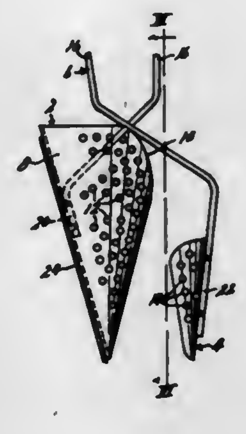
An apparatus for precooking chicken or other food products which are to be reheated by frying prior to consumption. The product is provided with a coating or breading, and is placed in a perforated tray to be conveyed through a tank holding a shallow bath of heated cooking oil. The depth of the bath is controlled so only the lowermost portion of the product makes direct contact with oil, and so the tray or pan has no tendency to float in the bath while being conveyed through the tank. Alternatively, the perforated tray is placed in a solid pan which carries a very shallow layer of cooking oil, and the solid pan is conveyed through the tank. The product is tenderized and the coating is converted to a protective shield by the hot, humid air above the oil and surrounding the product as it is conveyed through the bath. The precooked product and tray are removed from the bath and permitted to drain and cool prior to packaging.

3,604,341
VERTICAL ROTISSERIE
James H. Coroneos, Frederick and Thistle Rds., Baltimore, Md.
Filed Oct. 16, 1969, Ser. No. 866,969
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 V **4 Claims**



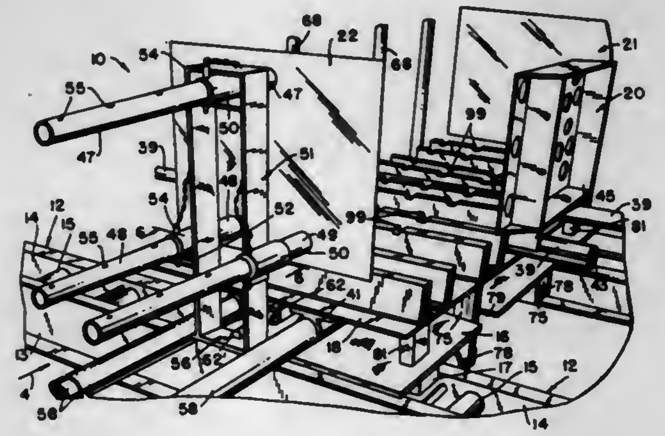
A vertical rotisserie is provided which consists of an electric barbecue arrangement having an arcuate heating element in the general focus of which a rotatable spit is mounted. The axis is vertical so as to protect the heating element from drippings which instead are collected in a drip pan under the end of the spit.

3,604,342
CONE MOLD FOR TORTILLAS
Jess L. Harding, 1834 South 13th Street, Kansas City, Kans.
Filed Feb. 18, 1969, Ser. No. 800,198
Int. Cl. A47j *43/18*
U.S. Cl. 99—426 **7 Claims**



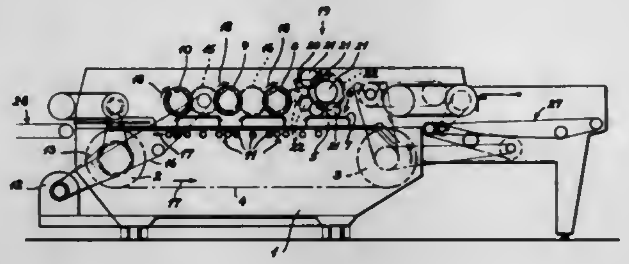
A mold for forming a tortilla in a cone form for better containing tacos or other loose food filling including moisture, said mold consisting of a hollow, perforated metallic conical body about which a tortilla patty may be wrapped in cone form so as to close the cone form at its apex and with opposed edges thereof overlapping, a perforated, semicylindrical clamp adapted to press the overlapping portions of said tortilla patty to hold it in place on the cone body, and means for suspending said mold in a vessel of hot cooking oil to cook said patty, said mold body being compressible to facilitate release of the cooked patty from the mold body.

3,604,343
SHEET STACKING MACHINE
Truman Thornfelt, 445 Ledyard, Detroit, Mich.
Filed Apr. 7, 1969, Ser. No. 813,857
Int. Cl. B65b *13/04*
U.S. Cl. 100—7 **19 Claims**



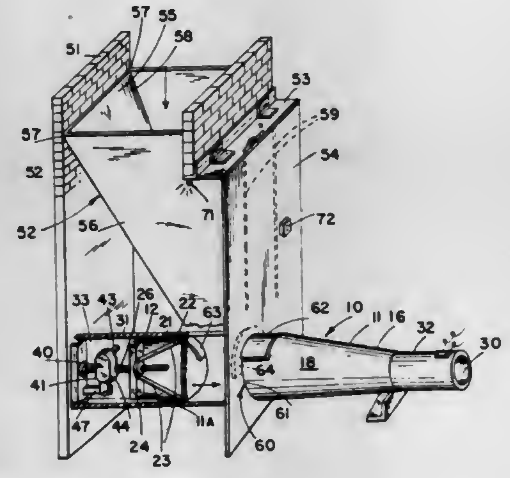
A horizontally flat base reciprocates under hydraulic power between sheet stacking and banding positions, the base supporting a tiltable plate onto which metal sheets are dropped successively from a shear, gravitating into rear engagement with gauging posts. A hydraulically operable, upright front gauge plate moves into engagement with the front of the stack to true the latter; and opposed hydraulically operable gauge plates act similarly upon the stack ends. Ways on the tiltable plate receive flexible steel banding strips beneath the gauged stack when the base has shifted it forwardly from stacking position to a position at which a banding machine operates.

3,604,344
METHOD OF SMOOTHING SURFACES OF BLANKS OF FIBER MASS AND A SMOOTHING MACHINE TO CARRY THE METHOD INTO EFFECT
Preben Einar Roar Orstam, 14, Hostrupsvej, Copenhagen, Denmark
Filed Sept. 16, 1969, Ser. No. 858,299
Claims priority, application Denmark, Sept. 23, 1968, 4567/1968
Int. Cl. B30b *13/00, 15/34*
U.S. Cl. 100—35 **10 Claims**



A method and a machine for smoothing surfaces of blanks of fiber mass by passing the blanks beneath a smoothing roller by means of a conveyor while keeping the smoothing roller at an elevated temperature and driving the roller with a peripheral speed which is different from the advancing speed of the conveyor.

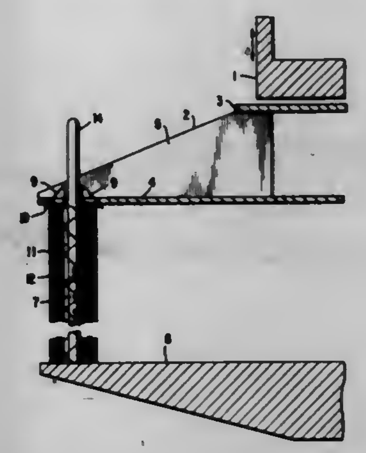
3,604,345
WASTE COMPACTING DEVICE
Daniel Q. Boje, Staten Island, N.Y., assignor to Compactor Corporation, Brooklyn, N.Y.
Continuation of application Ser. No. 588,050, Oct. 20, 1966. This application July 18, 1969, Ser. No. 842,892
Int. Cl. B30b *15/14*
U.S. Cl. 100—48 **13 Claims**



A waste compacting assembly comprising an elongated circular housing, a movable compactor of annular shape slidably mounted therein, said housing being adapted to receive waste to be compacted therein, said housing being partially in the shape of a funnel, and said compactor being forcibly reciprocable toward and away from said funnel to compact waste into said funnel.

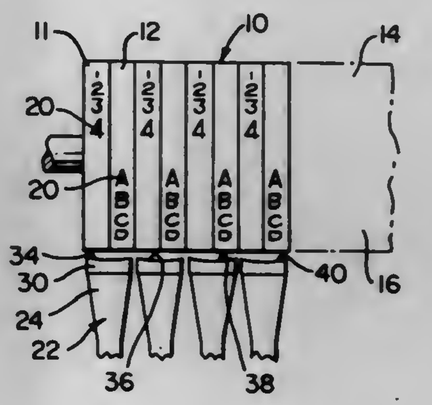
3,604,346
DYEING APPARATUS AND PROCESS
Christian Caire, Tignieu, France, assignor to Moulinage et Retorderie de Chavanoz, Chavanoz, France
Filed Mar. 28, 1969, Ser. No. 811,451
Int. Cl. B30b *15/02*
U.S. Cl. 100—221 **6 Claims**

An improved apparatus for the pressing of piles of textile windings mounted on compressible supports, the supports themselves being mounted on spindles affixed to the material support of a dyeing machine, the improved apparatus including a pressing member and a pressure distributing member composed of two metallic plates, upper and lower respectively, connected by rigid elements, the lower plate being provided with perforations, over each of which is provided a guiding element. Such apparatus can additionally contain



cupping rings on top of the piles of windings and a device to lock each pile in a compressed state. By utilizing such apparatus a process is provided whereby stacks or piles of textile windings are uniformly compressed under the same pressure so that irregular circulation of the dyeing bath through the windings is minimized and a more even dyeing of the textile windings results.

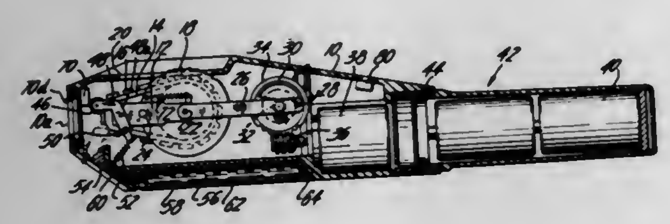
3,604,347
PRINT HAMMER IMPACT TIP
Ronald E. Muterspaw, Fairborn, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Feb. 11, 1969, Ser. No. 798,312
Int. Cl. B41j *9/00*
U.S. Cl. 101—93 **12 Claims**



A centrally supported print hammer having an impact tip adaptable for striking type characters in more than one column on a rotating typedrum, the tip providing a concave surface curvature for engaging with one edge or a portion of a character prior to engaging with another edge or the remaining portion of the same character. The tip is formed with the surface curvature in a direction axially along the drum; that is, the surface is concave in a direction normal to the curvature of the drum, whereupon, at the moment of impact, the uneven force resulting from the tip's striking a character offset from the centralized driving force is compensated by the tip curvature to provide uniform print density.

3,604,348
TYPE BAND MARKING DEVICE HAVING ELECTRICALLY OPERABLE ACTUATING MEANS
Howard Price, Kings Point, and David Berend, New York, both of, N.Y., assignors to International Patents & Development Corp., Kings Point, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,680
Int. Cl. B41j *1/20;* **B41f** *17/00*
U.S. Cl. 101—108 **5 Claims**

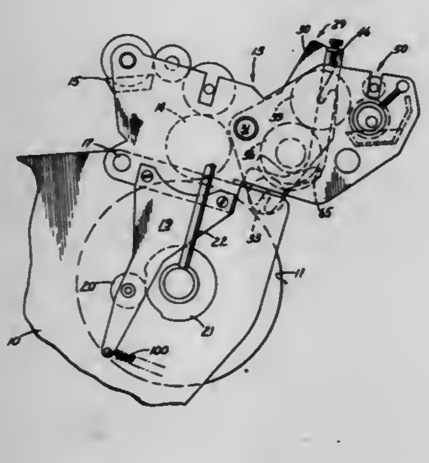
A marking device in which reciprocating motion is applied to a carrier bearing selectable marking indicia. A rotary member grasps one end of the connecting rod to the reciprocating carrier, when retracting the carrier into its housing. The connecting rod is freely released by the rotary member, when the carrier is brought forward into marking



position. Upon release of the connecting rod from the rotary member, a spring, tensioned during retraction of the carrier, forces the carrier forward and against the surfact to be marked.

3,604,349
TWO-SYSTEM MOISTURE APPLICATOR FOR A LITHOGRAPHIC PRESS

Arthur W. Sejeck, Kirkland, and Ronald J. Garcowski, Cleveland, both of, Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio
Filed Dec. 24, 1968, Ser. No. 786,651
Int. Cl. B41f *7/40*
U.S. Cl. 101—148 **6 Claims**

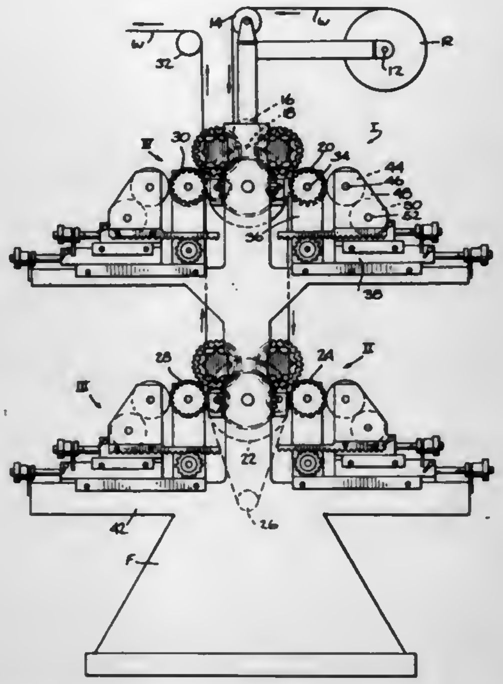


A two-system moisture applicator for masters on a lithographic press. The first system rotates to contact the master, and is retracted by lowering its pivot center to cause a cam and follower to move the system away. The other system is conventional.

3,604,350
FLEXOGRAPHIC PRESSES WITH INTERRUPTER AND CYLINDER REGISTER MECHANISMS

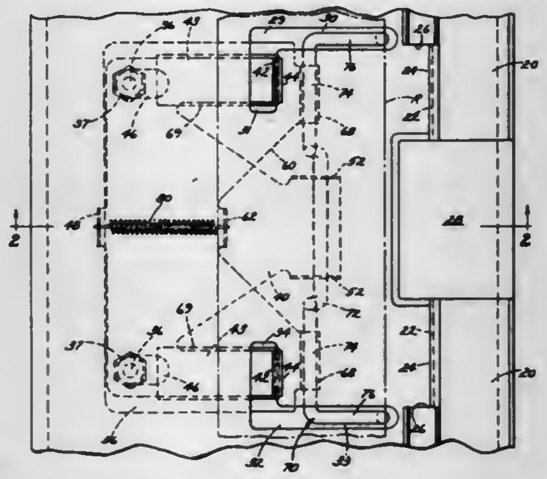
Lawrence Rosenstadt, Rye, N.Y., assignor to Lee Machinery Corporation, New York, N.Y.
Filed Apr. 23, 1969, Ser. No. 818,647
Int. Cl. B41f *5/16, 31/30*
U.S. Cl. 101—181 **8 Claims**

A flexographic press having a plurality of printing stations with each station having an associated impression cylinder, a printing plate cylinder mounted for individual movement back and forth relative to its impression cylinder, and an ink fountain roller mounted for individual movement back and forth relative to its printing plate cylinder, and means for correcting the web registration between stations.



3,604,351
AUTOMATIC RIBBON LIFTING AND LOWERING MECHANISM IN IDENTIFICATION PLATE PRINTERS

Donald T. Mahoney, Willoughby, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Continuation-in-part of application Ser. No. 660,114, Aug. 11, 1967, now abandoned. This application Oct. 17, 1969, Ser. No. 868,977
Int. Cl. B41f *3/04, 1/44;* **B41k** *1/48*
U.S. Cl. 101—274 **6 Claims**

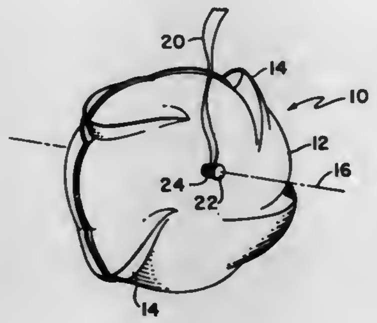


A data recorder which has a movable carriage mounted on a bed includes a roller platen supported on the carriage adapted to imprint a form from an embossed card when the carriage is moved across the bed. A continuous web of carbon paper ribbon is positioned intermediate the embossed card and the form to be imprinted, and a ribbon lifting mechanism is provided for lifting the ribbon sufficiently above the bed to facilitate placement of the card thereunder and, subsequently, lowering the ribbon preparatory to receiving a form to be imprinted and before the carriage and the roller platen are actuated for printing.

3,604,352
SPHERICAL FREE FALL APPARATUS

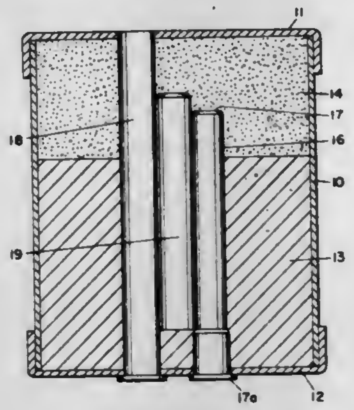
Thomas E. Bench, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed Oct. 27, 1969, Ser. No. 869,479
Int. Cl. F42b *25/16*
U.S. Cl. 102—4 **7 Claims**

A spherical free fall apparatus is disclosed. The free fall apparatus has airfoils thereon to cause spin of the apparatus about an axis of rotation, the spin resulting in the apparatus having a glide path, and one or more flexible means attached at the axis of rotation for the purpose of causing the free fall apparatus to precess in its glide path thereby making it possible to control the flight characteristics and ground impact points of the free fall apparatus.



3,604,353
CAST BOOSTER ASSEMBLY

Philip G. Newman, Kenvil, N.J., assignor to Hercules Incorporated, Wilmington, Del.
Filed Dec. 24, 1968, Ser. No. 786,667
Int. Cl. F42b *1/00*
U.S. Cl. 102—24 **14 Claims**



The invention provides a booster assembly for a main explosive wherein the booster charge is formed from TNT and PETN and/or RDX and contains less RDX and/or PETN than required in comparably performing conventional booster charges of the cyclotol and pentolite types. The booster charge is a layer of a cast explosive of the group of pentolites, cyclotols and mixtures thereof, and a layer of cast TNT contiguous thereto. On a weight ratio basis, preferred pentolites contain PETN/TNT of from 60/40 to 40/60; and preferred cyclotols contain RDX/TNT of from 75/25 to 50/50, including Composition B which is a 60/40 RDX/TNT containing 1 percent of a microcrystalline wax.

3,604,354
EXPLOSIVE BOOSTER FOR RELATIVELY INSENSITIVE EXPLOSIVES

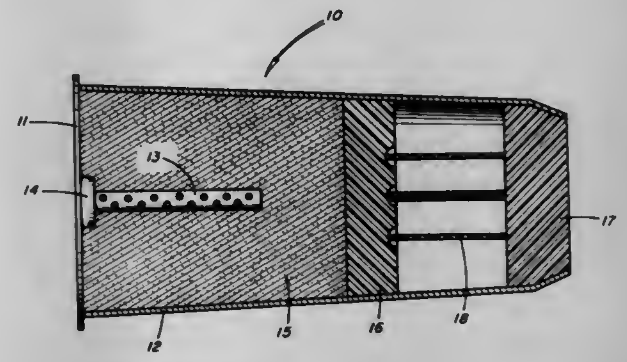
Robert A. Brown, and Emory E. Toops, Jr., both of Terre Haute, Ind., assignors to Commercial Solvents Corporation, New York, N.Y.
Filed Aug. 14, 1969, Ser. No. 850,259
Int. Cl. C06c *1/00*
U.S. Cl. 102—24 R **4 Claims**

An explosive booster for detonating relatively insensitive blasting charges, such as oiled ammonium nitrate and aluminized ammonium nitrate, the booster including a core of detonating cord-sensitive material, such as detonating cord, pentolite and pentaerythritol tetranitrate (PETN), and a sheath of less sensitive explosive material. The sheath contains on a weight basis:

a. 45 percent to 75 percent RDX;
b. 0.6 percent to 3.1 percent Wax;
c. 8.6 percent to 70 percent TNT; and
d. 0.9 percent to 10 percent Aluminum.

3,604,355
PROPELLANT-LOADED CARTRIDGE

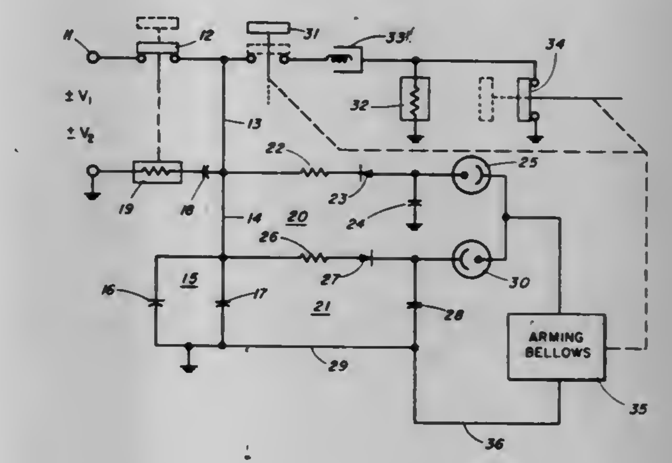
William D. Greenlees, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 5, 1969, Ser. No. 796,671
Int. Cl. F42b *5/20*
U.S. Cl. 102—39 **4 Claims**



A cartridge having a primer disposed at one end therein and assembled by loading with a predetermined amount of charge and packing the charge in place about the primer with a resilient wad secured within the cartridge in predetermined spaced relationship with a closure plug at the other end of the cartridge.

3,604,356
VARIABLE TIME ORDNANCE FUZE CIRCUIT

Charles A. Browning, Jr., Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Mar. 6, 1969, Ser. No. 804,865
Int. Cl. F42c *11/00, 15/40, 15/00*
U.S. Cl. 102—70.2 R **5 Claims**

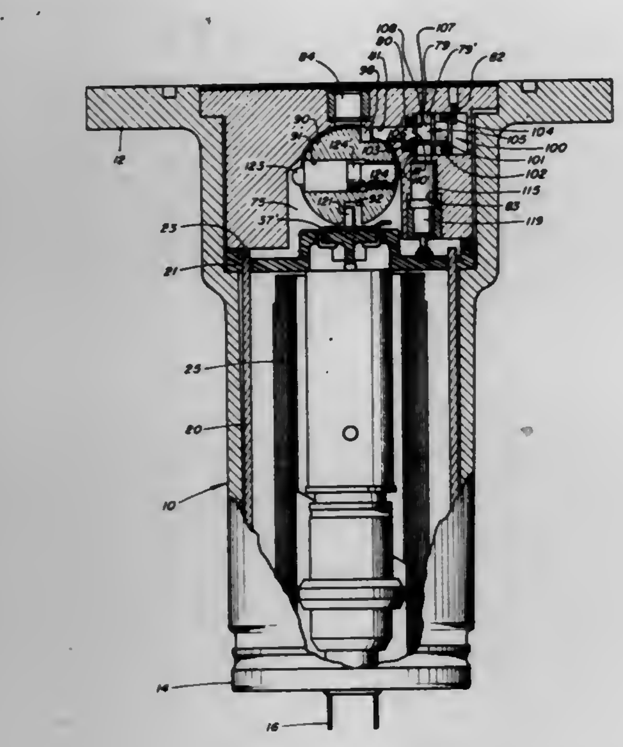


An ordnance fuze circuit having an energy storage device for storing an applied energy signal. A plurality of unidirectionally conducting RC circuits connected to the energy storage device provide time delays corresponding to the magnitude and polarity of the applied signal in firing gas diodes to actuate switches which provide for discharge of the stored energy through a detonator to explode the ordnance device. A switch connected between the energy storage device and the predetermined energy signal source prevents discharge of the energy storage device back to the energy source.

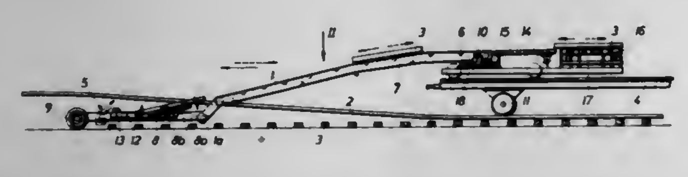
3,604,357
DISCRIMINATING PROXIMITY ORDNANCE FUZE

Cecil L. Duncan, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 2, 1969, Ser. No. 821,174
Int. Cl. F42c *1/14, 13/00, 15/40*
U.S. Cl. 102—81 **10 Claims**

A mechanical fuze for aerial ordnance devices having an extendable probe mounting on its nose and an actuator non-responsive to the presence of foliage and responsive only to target impact. A safety and arming mechanism is provided having a double-locked rotor which rotates to an armed position only after an electrical signal has been delivered to the fuze and after the probe has been extended. A clamp is provided which locks and rigidifies the probe in its extended position.



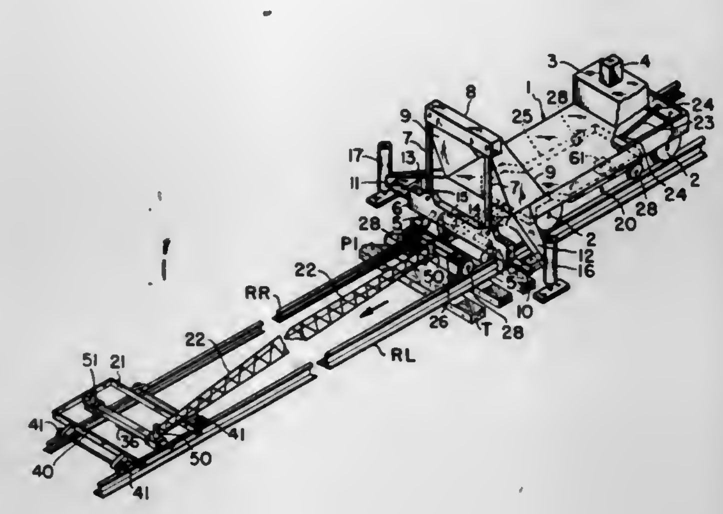
3,604,358
MAINTENANCE APPARATUS
Franz Plasser, and Josef Theurer, both of Johannesgasse 3 1010, Vienna, Austria
Filed Aug. 12, 1969, Ser. No. 849,406
Claims priority, application Austria, Sept. 5, 1968, A8659/68
Int. Cl. E01b *29/10*
U.S. Cl. 104—6 **19 Claims**



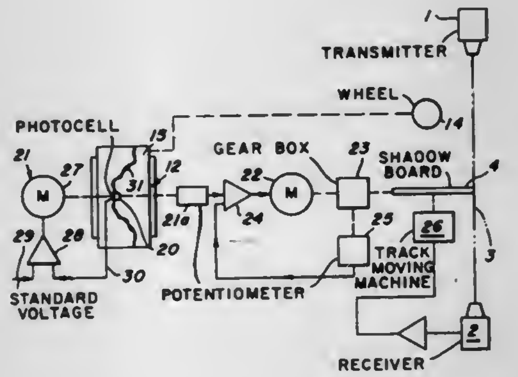
In an apparatus for taking up old ties and/or laying new ties, an elongated conveyor is supported between a tie transport car and a device for moving the ties from a first position extending in the direction of track elongation, in which they are transported on the conveyor, and a second position transverse thereto. The unit is movable partly on the ballast and partly on the track rails.

3,604,359
APPARATUS FOR CORRECTING RAILROAD TRACK
Richard B. Doorley, Brentwood Borough, and Paul S. Settle, Jr., Fox Chapel, both of, Pa., assignors to Railway Maintenance Corporation, Pittsburgh, Pa.
Filed Apr. 4, 1969, Ser. No. 813,532
Int. Cl. E01b *33/02*
U.S. Cl. 104—8 **15 Claims**

Apparatus for use in correcting the position of railroad track including an elongated vehicle carrying means responsive to a variation in electric current, at least one elongated rigid member extending forwardly from the vehicle and pivotally supported thereon and a second vehicle pivotally supporting the other end of the member for movement along the track. At least one variable resistor attached between the member and the elongated vehicle and connected in a bridge circuit with the means responsive to current variation so that angular displacement of the elongated vehicle and the member in at least one plane from a preset relationship varies the resistance of the variable resistor effecting a response by the means responsive to current variation.



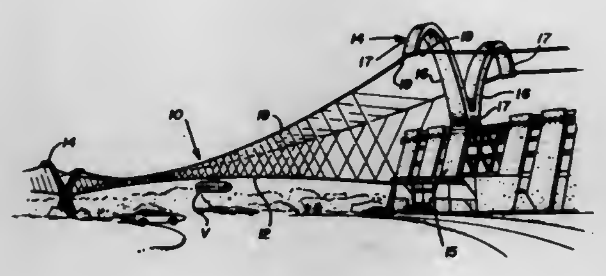
3,604,360
CHORD LINER
John Kenneth Stewart, Columbia, S.C.; William J. Tyler, Valois, Quebec, Canada, and Helmuth Rolf Erich von Beckmann, Columbia, S.C., assignors to Tamper Inc., West Columbia, S.C.
Filed Sept. 4, 1969, Ser. No. 855,102
Int. Cl. E01b *32/02, 35/10*
U.S. Cl. 104—8 **3 Claims**



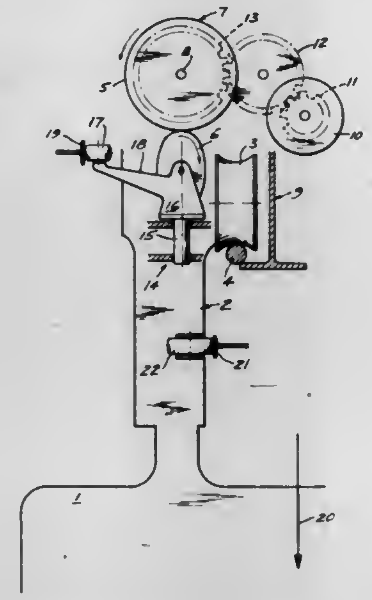
Apparatus for aligning railroad track providing automatic alignment to a visual representation appearing on a recording medium. Generally the invention provides apparatus comprising means mounting said apparatus for movement along a length of track, means for mounting a recording medium carrying a representation of the desired alignment condition of the length of track, means for following sald representation, and means responsive to said following means for moving the track at a point in sald length to correct misaLignment of the track.

3,604,361
AERIAL GUIDEWAY SYSTEM
Arney J. Harbert, Denner, and Robert M. Towner, Boulder, both of, Colo., assignors to Aerial Transit Systems, Inc., Los Angeles, Calif.
Filed Jan. 21, 1969, Ser. No. 798,248
Int. Cl. B61b *3/00;* **E01b** *25/22*
U.S. Cl. 104—123 **23 Claims**

A vehicle transport system has elevated single or double tracks which are suspended by cable and transverse suspender elements in the form of an inverted delta from and between spaced supporting towers. In order to establish uniform flexibility in the track over its entire span, notwithstanding variations in temperature and in static and dynamic loading, the track structure is suspended indirectly from the supporting towers by suspension elements both along straight and curved sections, and a unique combination of takeup and suspension members is incorporated in the system.



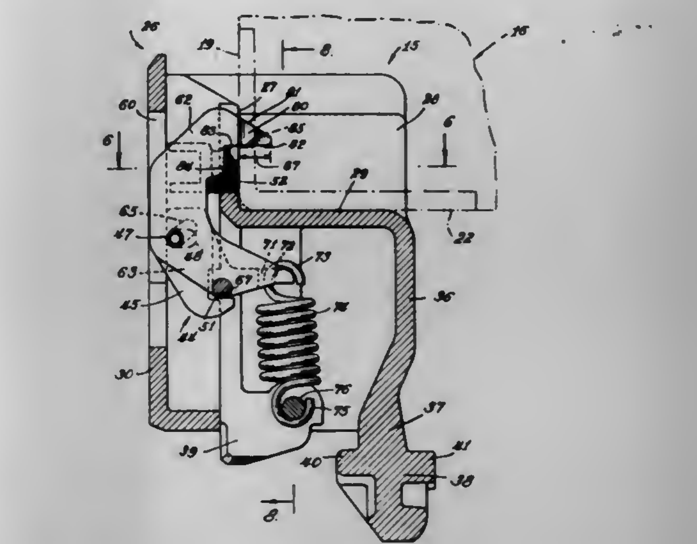
3,604,362
MONORAIL INSTALLATION
Pierre Goirand, Grenoble, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Grenoble, France
Filed Jan. 13, 1970, Ser. No. 2,487
Claims priority, application France, Oct. 14, 1969, 69.35946
Int. Cl. B61b *13/12*
U.S. Cl. 104—166 **8 Claims**



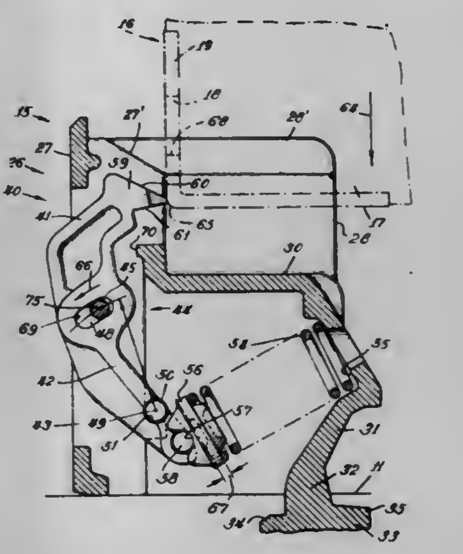
In the monorail installation disclosed herein the vehicle suspended from the rail is driven by a swivel roller provided on an overhead truck and means comprising a controlled surface moving in a closed path and affording a lower generatrix parallel to the direction of the travel of the vehicle on the rail and against which bears the upper generatrix of the swivel roller. The controlled surface has imparted to it a continuous movement in a direction transverse with respect to the direction of the rail, and the center of gravity of the vehicle and the swivel roller are located laterally on opposite sides of the rail so that the swivel roller will automatically bear against the controlled surface with a given pressure.

3,604,363
CONTAINER SECURING MEANS FOR TRANSPORT CARRIER WITH AUTOMATIC LATCH TO ACCOMMODATE VARIOUS CLEARANCES WITH BOTTOM CONTAINER FITTINGS
Edward Payson Smith, Winnetka, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill.
Filed June 1, 1970, Ser. No. 41,944
Int. Cl. B61d *45/00*
U.S. Cl. 105—366 D **10 Claims**

The spring-biased latches on a transport carrier for automatically engaging and disengaging bottom corner container fittings are bodily movable to maintain the same latching engagement within limits for various clearances between the container fittings and the housings secured to the transport carrier on which the latches are mounted.



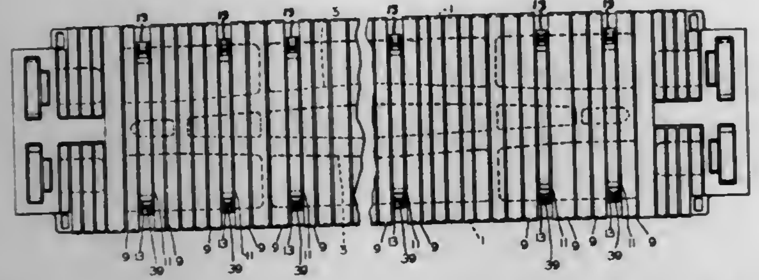
3,604,364
SINGLE SPRING DEVICE FOR AUTOMATICALLY LATCHING AND UNLATCHING A CONTAINER TO AND FROM A RAILWAY CAR OR THE LIKE
Theodore J. Sweger, Naperville, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill.
Filed Dec. 19, 1969, Ser. No. 886,489
Int. Cl. B61d *45/00*
U.S. Cl. 105—366 C **14 Claims**



The fittings at the corners of a container are automatically latched to a railway car when it is lowered thereon and unlatched therefrom when the container is lifted from transport position. Each fitting is received in a housing on the car on which a bellcrank latch is mounted to pivot about a pair of spaced axes under the biasing action of a coil compression spring reacting between the housing and the distal end of one arm of the latch. The distal end of the other arm of the latch has latching engagement with the respective container fitting. The housings are slidable along slots extending lengthwise along opposite sides of the car and can be swung to retracted positions on trunnions extending below the floor or deck of the car. The trunnions are located in spaced relation to the latches to cause them to maintain latching engagement with the container on upward movement of it during transport. The retracted housings are arranged to be bypassed by other housings slidable along the slots.

3,604,365
LADING STRAP ANCHOR WITH FLOORBOARD SUPPORT
Raymond H. Wall, East St. Louis, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.
Filed Apr. 3, 1969, Ser. No. 813,084
Int. Cl. B61d *45/00;* **B60p** *7/08*
U.S. Cl. 105—369 A **2 Claims**

A combined lading strap anchor and short floorboard support device for railway flatcars comprising a plate offset transversely of its thickness intermediate its ends whereby its bottom surface at one end and its top surface at the other end are substantially coplanar, a barlike element extending transversely of said plate intermediate its ends and spaced vertically thereabove, means supporting the ends of said barlike element from said plate, said bottom surface of said plate being adapted to rest on the top surface of a railway car side sill, and said top surface being adapted to underlie the end portion of a railway car floorboard.



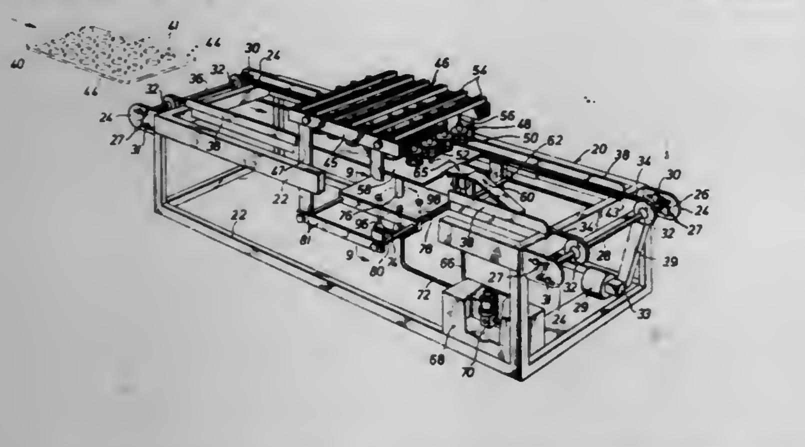
3,604,366
MACHINE FOR FORMING BAKERY PRODUCTS

Earl K. Jarrett, Corpus Christi, Tex., assignor to Clayton Specialties, Inc., Corpus Christi, Tex.

Filed Oct. 30, 1968, Ser. No. 771,744

Int. Cl. A21c *11/12*

U.S. Cl. 107—68 **30 Claims**



In one exemplary form, a machine for forming pan-carried dough pieces to produce bakery products of a desired form and shape. The machine includes an elongated frame structure mounting a conveyor means for transporting the pans carrying the dough pieces, an array of forming dies mounted above the conveyor means, a means of lifting the pan-carried dough pieces out of engagement with the conveyor means and into forming and shaping contact with the array of overhead forming dies and a trigger assembly for actuating the lifting means when the pan-carried dough pieces are properly aligned beneath the array of forming dies.

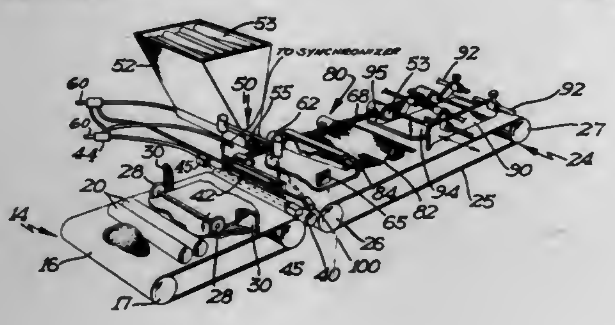
3,604,367
APPARATUS FOR MAKING A FOOD PRODUCT

Frances B. Arries, P.O. Box 63, Pengilly, Minn.

Filed May 12, 1969, Ser. No. 823,842

Int. Cl. A21c *11/10*

U.S. Cl. 107—69 **9 Claims**



A method and apparatus for making a bread type food product which, in its finished form, will have a hole therein. The method includes the step of rolling dough to a flattened form and thereafter rolling the flattened dough on a tubular member with the dough overlapping the tubular member at one end such that it may be sealed to provide a closed extremity to the resultant product. The machine for performing the method includes a structure for placing tubes on the flattened dough and thereafter engaging the dough and causing it to roll upon itself and the tube in a spiral manner to provide a generally cylindrical rolled dough mass which will thereafter be suitably cooked or baked.

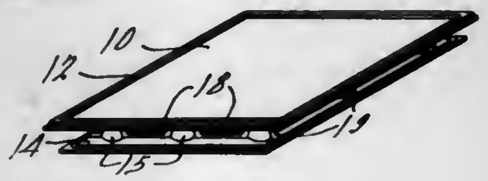
3,604,368
PALLET AND METHOD OF MANUFACTURE

Jack E. Baxter, Cincinnati, Ohio, assignor to The Baxter Company

Filed Apr. 14, 1969, Ser. No. 815,755

Int. Cl. B65d *19/18*

U.S. Cl. 108—57 **3 Claims**



A four-way entry pallet is vacuum formed from two spaced parallel preheated sheets of thermoplastic comprising a top sheet which is flat except for a rim flange and a bottom sheet formed over a plurality of embossing and fusing posts to define supporting pillars integral with the bottom sheet and fused to the top sheet.

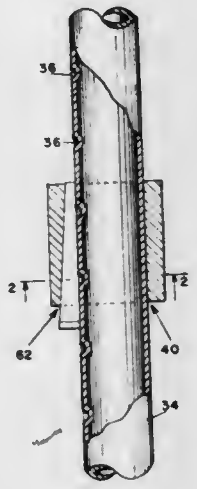
3,604,369
SHELVING

Louis Maslow, Huntsville Road, Dallas, Pa.

Filed Feb. 10, 1969, Ser. No. 798,048

Int. Cl. A47b *9/08*

U.S. Cl. 108—144 **12 Claims**



Adjustable shelving comprising a flat shelf member having corner supports secured thereto at each corner of said shelf member, said corner supports being adapted to receive and securely hold corner posts provided with graduate indents spaced at predetermined increments along their vertical dimension, said corner supports being provided with locking post supports for holding said corner supports and corner posts in secured relation, said post supports each further comprising a unitary collar associated with means for locking the collar to said post. The spacing of the shelving is adjusted by varying the position of the locking post supports along the height of the corner posts.

3,604,370
SUPPORT STRUCTURE FOR CONVERTIBLE TABLES

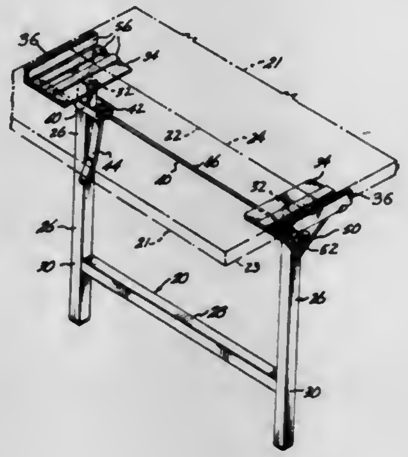
John C. Sherwood, 4932 La Crescenta Ave., La Crescenta, Calif.

Filed Feb. 7, 1969, Ser. No. 797,608

Int. Cl. A47b *5/00*

U.S. Cl. 108—153 **2 Claims**

A removable clamp-on dual leg unit is provided to be used with others to firmly support one or more table tops. The clamping is effected by drawing together paired angles whose respective flanges contact the opposite table top edges and their adjacent undersurfaces, or like formed cutouts in under structures of table tops. Final movement of the clamping angles, each supported on a respective leg top, occurs as the leg tops are pulled together upon torque being hand applied to a lever. The lever turns an eccentric mechanism that is eccentrically rotatably supported on one leg top and is in turn rotatably connected to the end of a cross pull and brace or tie rod which is threadably secured to the opposite leg top.



Preceding the final eccentric take up, in reference to table of different widths, starting adjustments are undertaken at the outset to substantially match the particular width of a table top or places of securement thereto, by adjusting the respective threaded connection of the pull, brace, or tie rod to the opposite leg top. The latter adjustment, made only once in reference to a table top of a specific width, is only limited by the thread length and by the deflectability or bending limitations of the upper leg portions as the bottom portions of the legs remain secured together, preferably at a fixed distance apart.

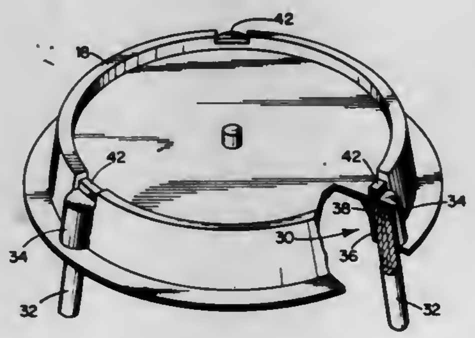
3,604,371
STACKABLE TRANSIT PLATFORM

Ralph Cavalucci, Boston, Mass., assignor to American Science and Engineering, Cambridge, Mass.

Filed May 7, 1970, Ser. No. 35,467

Int. Cl. A47b *3/06*

U.S. Cl. 108—156 **8 Claims**



This disclosure relates to transit platforms suited for simplified educational or demonstrative use. The platforms are formed from a pair of dishlike, molded plastic sheets which are secured together in a nested configuration so that their rims are generally concentric. The concentric rims are molded to define a number of downwardly opening sockets which are spaced circumferentially about the platforms and which receive removable legs. The upper surface of the platform has a central upstanding peg which engages the transit. The periphery of the top of the platform is surrounded by a rim which holds the transit in place and which may be marked in degrees. The rim includes a number of circumferentially spaced depressions which are intended to receive projections formed at the underside of other platforms thus facilitating the stacking of the platforms one atop the other.

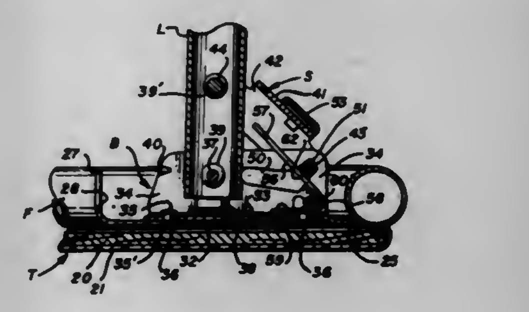
3,604,372
CONNECTOR FOR FOLDING TABLE LEG

Oscar C. Hewett, Coal Creek Canyon, Colo., and Tim M. Uyeda, South San Gabriel, Calif., assignors to Samsonite Corporation, Denver, Colo.

Filed Sept. 30, 1968, Ser. No. 763,582

Int. Cl. A47b *3/091*

U.S. Cl. 108—160 **2 Claims**



A connector for a folding table leg having a base attached to the frame of a table underneath the top, a bracket secured to the underside of the base and having a table leg pivotally connected thereto and a stabilizing strut having one end pivotally secured to the leg below the bracket connection and the other end having a lock bar slidably carried in a slot in the bracket. The slot in the bracket includes an offset socket whereinto the lock bar wedgingly fits when the table leg is extended, to tightly hold the table leg in extended position. A spring biases the lock bar into the socket, but the lock bar may be removed therefrom by finger pressure against the face of the strut, to cause the table leg to be folded to a retracted position on the underside of the table.

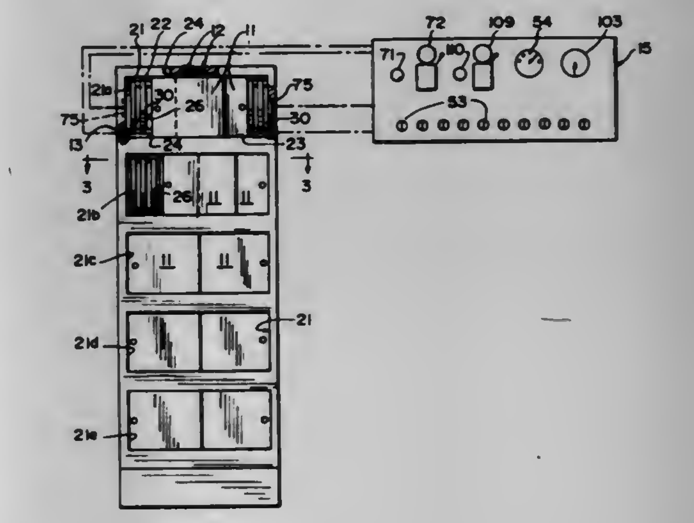
3,604,373
SECURITY STORAGE APPARATUS

Duane E. Crowley, 3949 Elm Court, Flossmoor, Ill.; Roy M. Hoffman, 60 Judith Lane, Chicago Heights, Ill., and Evan D. Roberts, 818 Elm Street, Flossmoor, Ill.

Filed May 4, 1970, Ser. No. 34,385

Int. Cl. E05g *3/00*

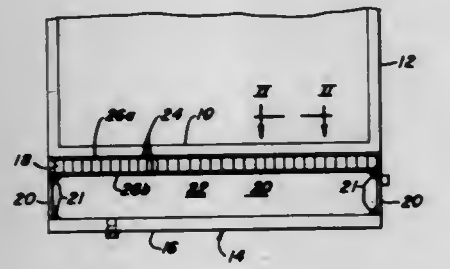
U.S. Cl. 109—38 **18 Claims**



Disclosed herein is a storage enclosure cabinet of magnetic shielding material for storing magnetic tapes, magnetic disks and similar articles; sliding closure doors for sealing accesses in the storage enclosures; restrictors, such as plunger actuated solenoids for limiting operation of the closure doors; actuator means for operating the restrictor means to disengage same from the closures restrictor control apparatus operable to prevent the operation of the restrictor apparatus; magnetic field detector and alarm apparatus coupled with the restrictor and the restrictor control.

3,604,374
COMPOSITE BLAST-ABSORBING STRUCTURE

Harold E. Matson, Peters Township, Washington County, and William J. Riffe, Carnegie Borough, both of, Pa., assignors to United States Steel Corporation
Filed Aug. 18, 1969, Ser. No. 850,851
Int. Cl. F41h *5/04*; **B32b** *3/12*
U.S. Cl. 109—81 **7 Claims**



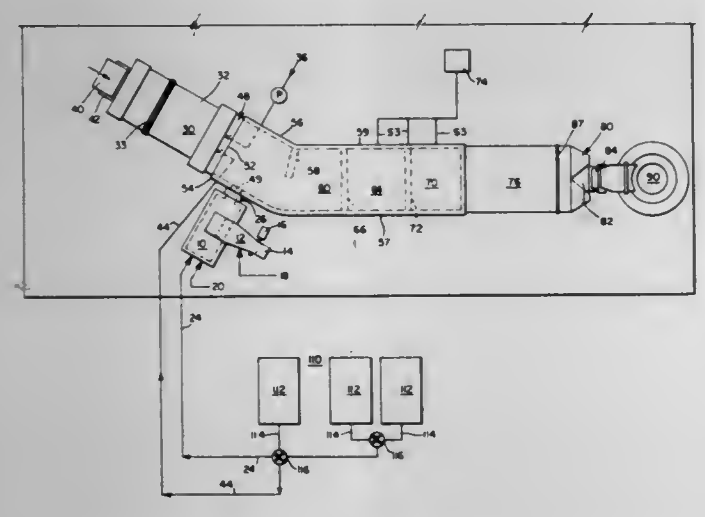
This invention relates to a protective panel for the blast protection of a structure.

The protective panel has an impact member, a honeycomb member disposed opposite the impact member, distendible side members defining with the impact member and the honeycomb member a cavity, and a fluid hermetically sealed in the cavity. The honeycomb member is secured to the panel. The impact member is operable when a localized high-intensity force of an explosion contacts the impact member to transmit the localized high-intensity force of the explosion to the fluid. The fluid is operable to convert the localized high-intensity force to a uniform low-intensity force on the honeycomb member and the side members. The honeycomb member is subjected to accordion-type crushing, and the sidewalls deflect outwardly in bending and fracturing, thus allowing the impact member to contact and deform the honeycomb member and minimally deform the panel.

Alternatively, a second honeycomb member or a multiplicity of honeycomb members is substituted for the cavity.

3,604,375
INCINERATION PROCESS AND UNFIRED AFTERBURNER APPARATUS

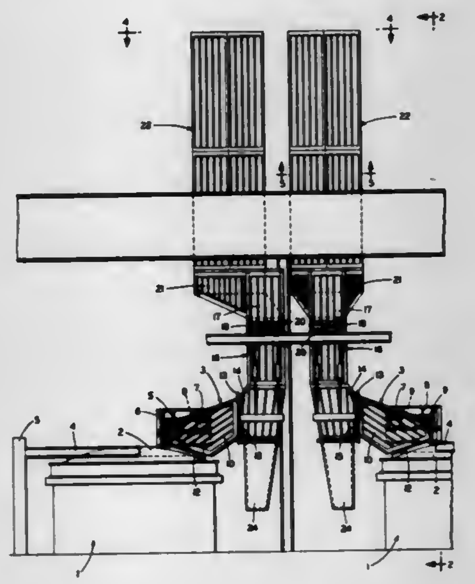
Robert B. Bruns, Princeton, N.J.; Donald J. Frey, North Canton; Emil J. Huyghebaert, Collinsville, Conn., and Albert B. Mindler, Princeton, N.J., assignors to International Hydronics Corporation, Monmouth, N.J., by said Bruns and said Mindler and Combustion Engineering, Inc., Windsor, Conn., by said Frey and said Huyghebaert
Filed Mar. 31, 1970, Ser. No. 24,087
Int. Cl. F23g *5/06*
U.S. Cl. 110—7 R **36 Claims**



Process for achieving complete and relatively inexpensive combustion of solid, semiliquid, and liquid combustible waste materials, and combinations thereof, having low heat value, by incompletely burning a combination of such materials in a first furnace to produce a combustible gaseous exhaust stream, achieving complete combustion in a second furnace of combustible high heat value waste materials to produce a noncombustible gaseous stream, intimately admixing the two streams in an unfired afterburner, without the addition of heat from an auxiliary heat source, while maintaining a minimum admixture temperature above the temperature required for autoignition of the combustibles in the first stream, whereby the heat produced by combustion of the high heat value waste materials is utilized for the spontaneous ignition and complete combustion of the incompletely burned materials. Liquid wastes of high heat value and of low heat value are separately stored, and are variously blended for feed to the first furnace and the second furnace in accordance with the heat requirements of the system to achieve complete combustion of all wastes being burned. The apparatus particularly adapted to perform the process comprises a pair of furnaces, a refractory-lined afterburner chamber having no auxiliary heat source, duct means interconnecting said afterburner chamber and each of said furnaces, and exhaust means defined by said afterburner for permitting exhaust of the burned gas stream after combustion is completed. The apparatus preferably includes appropriate draft handling, gas cooling, and particle removal means to render the gaseous atmospheric discharge relatively pollution-free.

3,604,376
ELECTRIC FURNACE VENTILATION AND GAS COOLING CLEANING SYSTEM

Henry L. Meyer, Cleveland Heights, and Robert B. Stofko, Kirtland, both of, Ohio, assignors to Sticker Industrial Supply Corporation, Willoughby, Ohio
Filed Dec. 16, 1969, Ser. No. 885,449
Int. Cl. F23j *11/00*
U.S. Cl. 110—184 **3 Claims**



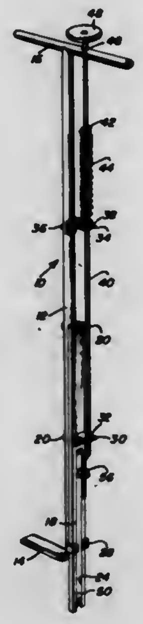
An electric furnace ventilation and gas cooling and cleaning system including a duct system for combusting, cooling and vertically venting dry waste gases from the furnace. There is a lower pivoted cooling duct and an upper fixed cooling duct horizontally and vertically offset to the furnace and the lower pivoted duct. A horizontally disposed duct interconnects the upper fixed duct and lower pivoted duct. A vertically movable duct is located between the furnace and the vertically pivoted duct and the rate of air intake to the vertically movable duct is varied at each end thereof. Each of the ducts is formed of four water-cooled panels joined together at their edges.

3,604,377
SEEDLING PLANTING TOOL

Merlin B. Smith, P.O. Box 494, West Monroe, La.
Filed Dec. 15, 1969, Ser. No. 884,940
Int. Cl. A01g *23/02*
U.S. Cl. 111—4 **7 Claims**

An upstanding staff including a laterally outwardly projecting footrest above its lower end. The staff is designed to be

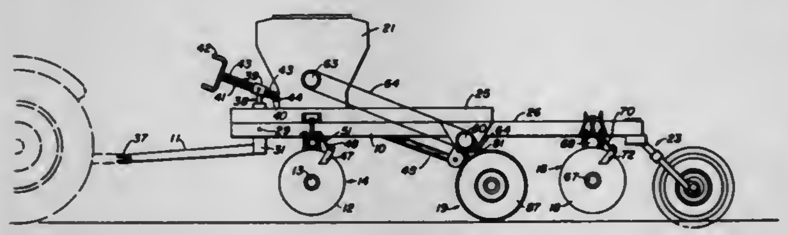
forced down into soft ground by foot pressure applied to the foot rest with the undersurface of the foot rest limiting downward penetration of the lower end of the staff into the ground. The lower end of the staff is formed to engage the root end of a seedling disposed horizontally on the ground prior to downward penetration of the staff into the ground,



whereby the staff will carry the seedling root end down into the ground as it penetrates the latter. Also, the lower end of the staff includes a shrouded vertically reciprocal cutting member which may be downwardly projected below the lower end of the staff after penetration of the latter in the ground for cutting the root end of the seedling prior to upward withdrawal of the staff from the ground.

3,604,378
GRASSLAND PLANTER

Wilbur F. McDaniel, Jr., 1704 Acoma St., Ponca City, Okla. Continuation-in-part of application Ser. No. 804,812, Mar. 6, 1969, now abandoned. This application Mar. 13, 1970, Ser. No. 019,433
Int. Cl. A01c *5/06*; **A01b** *63/16, 25/00*
U.S. Cl. 111—85 **12 Claims**

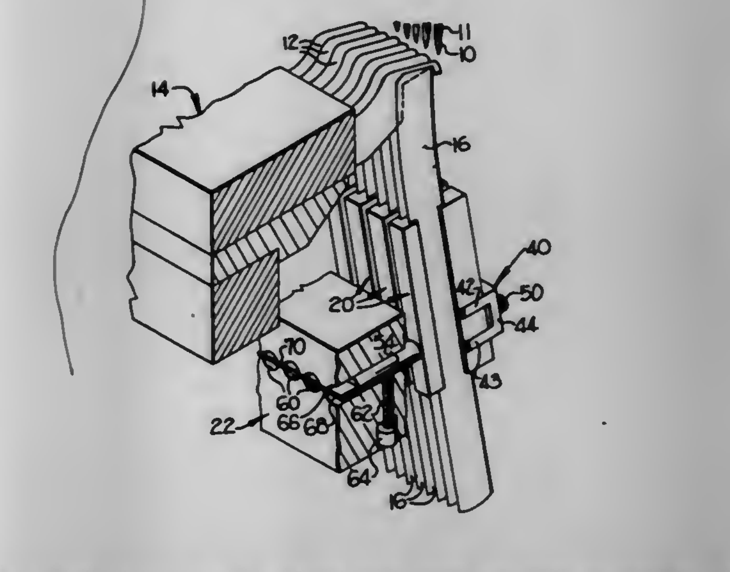


The present invention is generally useful in supplying fluent materials to the surface of the earth and has primary utility for planting grains, such as wheat, over grassland to provide winter pasture for livestock. In one form, apparatus embodying certain features of this invention may include a rectangular frame having a longitudinal axis and a front and a rear end. A plurality of earth-cutting means, such as disks, may be mounted underneath the frame adjacent the front end thereof with each of the disks aligned along an axis mounted at an angle to the longitudinal axis of the frame. A reservoir, such as a seed and fertilizer box, may be provided, preferably above and adjustable longitudinally with respect to the front gang of disks, and a plurality of channel means, such as seed and fertilizer tubes, may be provided extending from the lower portion of the seed box to a position near and above the lower edge of the disks. Means for pressing the seeded furrows may be provided adjacent the rear end of the frame; and in a preferred embodiment such furrow-pressing means may comprise a plurality of aligned disks, each of which is offset in its relationship to a corresponding disk in the front disk gang. Ground support means, such as a plurality of fluid filled tires, depend from the frame at an intermediate position on the frame between the front disk gang and the furrow-closing disks.

Means are provided to adjust the relative vertical position of the front disk gang and the furrow closing disks around the ground support mean. In addition, as an optional feature of this invention there may also be provided an outrigger assembly extending from the rear end of the frame for minimizing side drift of the apparatus.

3,604,379
KNIFE BLOCK FOR CUT PILE TUFTING MACHINE

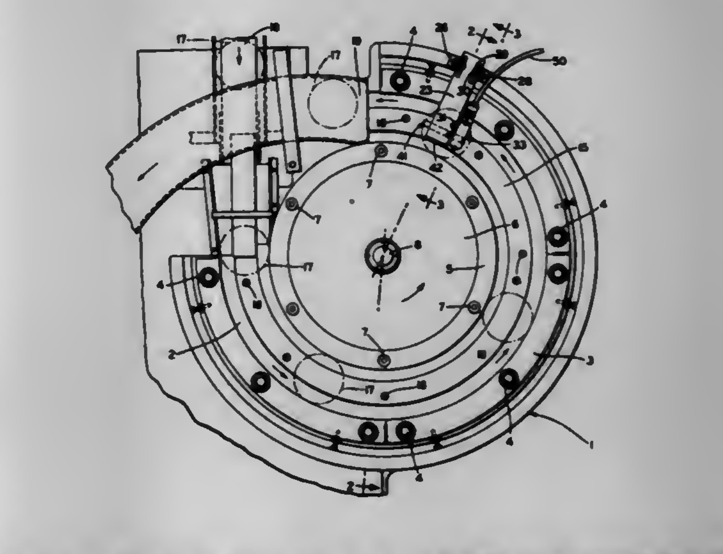
James T. Cobble, Dalton, Ga., assignor to B & J Machinery Co. Inc., Dalton, Ga.
Filed June 12, 1970, Ser. No. 45,693
Int. Cl. D05c *15/24*
U.S. Cl. 112—79 R **8 Claims**



A knife block for a tufting machine having provision for securely retaining a pair of aligned cutting knives therein and having spaced lateral slots therein permitting a clamping bracket to engage one of the edges of each knife at spaced points. Also, provision is made for easily aligning and securing the block to an oscillating knife bar of a tufting machine by a structure which includes a cylindrical shaft connected to the block and having a slot positioned in the end thereof at a predetermined angle, an opening in the bar for receiving the shaft, and a key secured to the bar and adapted to enter the slot in the cylindrical shaft to maintain a predetermined alignment.

3,604,380
DOUBLE-END DETECTOR FOR CAN END CURLER

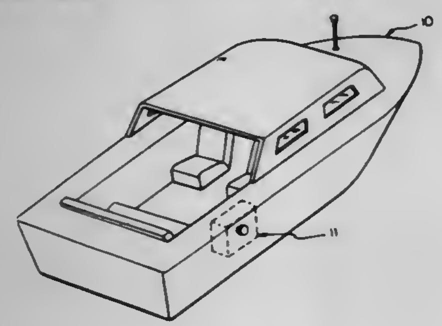
Paul F. Schmeltzer, Morrisville, Pa., assignor to Janetta Corporation, Glenside, Pa.
Filed Aug. 7, 1969, Ser. No. 848,180
Int. Cl. B21d *43/00*
U.S. Cl. 113—1 F **6 Claims**



A device for attachment to a curler for can ends for detecting the delivery of two telescoped can ends from a press to the curler. A limit switch controlling the circuit to the motor means driving the curler and the press is operatively associated with a cam located in the path of the cAn ends as they are delivered to the curler from the press. The limit switch and cam are so adjusted that when two telescoped can ends contact the cam the switch will be opened stopping operation of the press and the curler.

3,604,381
POWER CABLE HANDLING DEVICE

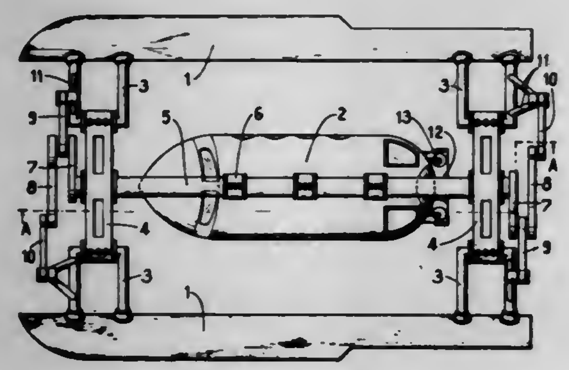
Lawrence L. Neidenberg, Claridge Drive, Verona, N.J.
Filed June 11, 1969, Ser. No. 832,149
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 **2 Claims**



Device for handling heavy-duty electrical power cable for enabling storage of the cable in a storage compartment and the connection of the cable to a power source, and including a storage compartment into which the cable is stored in free form and out of which the cable is driven for connection to a power source. The cable drive means includes a power driven drive roller and suitable coacting rollers for maintaining the cable in driving engagement with the drive roller, and a reversible motor for powering the drive roller.

3,604,382
GLIDING BOAT

Angelo Sorrenti, Corso Moncalieri 466/6, Turin, Italy
Filed June 18, 1969, Ser. No. 834,373
Claims priority, application Italy, Mar. 13, 1969, 50961-A/69
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 **6 Claims**

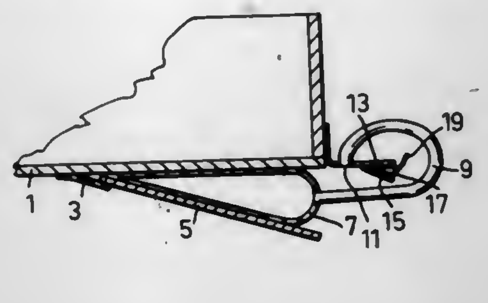


A gliding boat comprising a central hull pivotally suspended between two self-stabilizing lateral floats so that the central hull will maintain its vertical position independently of the raising or lowering of the lateral floats.

3,604,383
TRIM ATTACHMENT FOR POWER BOATS

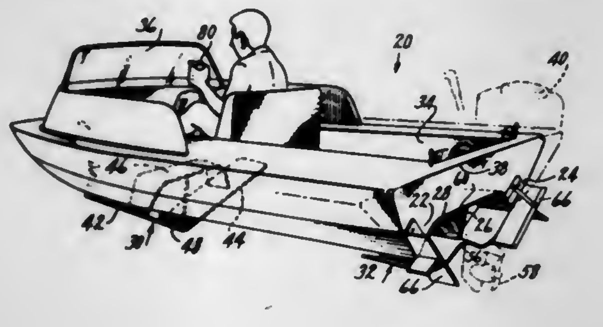
Alf Martin Magnus Ingelman-Sundberg, Stockholm, Sweden, assignor to Hesselman Bil-Aero AB, Stockholm, Sweden
Filed Dec. 23, 1968, Ser. No. 786,195
Claims priority, application Sweden, Dec. 29, 1967, 17,958/67
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 **9 Claims**

A trim plane or other control surface for a water vessel is operated by a pressure space such as a flexible bag between the trim plane and the hull or an extension thereof. The bag is inflated by water under pressure through a conduit leading from an opening in a surface subjected to the flow of water around the boat. The pressure may be changed by changing the surface geometry in the proximity of the opening. This may be accomplished by an auxiliary flap behind the opening which flap is operated by the pilot through remote control.



3,604,384
BOATS

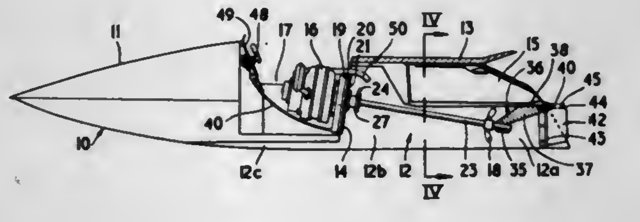
Charles F. Coles, 24 Main St., Wenham,, Mass.
Filed Feb. 24, 1969, Ser. No. 801,324
Int. Cl. B63b *1/26*
U.S. Cl. 114—66.5 **3 Claims**



The present invention relates to a boat including a hull having an inboard tunnel and foils with dihedral surfaces coacting with the tunnel at both the bow and stern.

3,604,385
HIGH SPEED WATER CRAFT

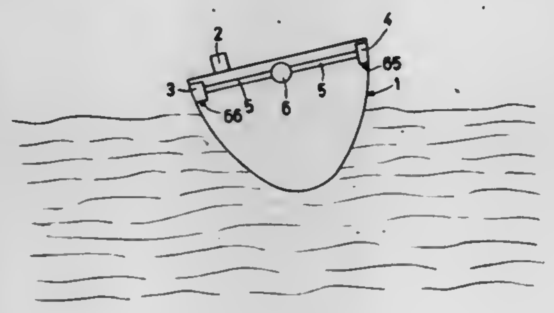
Alan Reider, Mickleover, England, assignor to Dynamic Developments Limited, Leeds, England
Filed May 22, 1969, Ser. No. 826,813
Claims priority, application Great Britain, May 25, 1968, 25132/68
Int. Cl. B63b *1/20*
U.S. Cl. 114—66.5 **15 Claims**



A power-driven high speed planing water craft has a screw propeller disposed in a longitudinally extending tunnel opening downwardly along the underside of the hull, the tunnel having a vent opening adapted to admit air, in advance of the propeller, above the water level when the craft is in operation, and preferably having also an abrupt step formation towards the front end. The hull can be moulded as a lightweight unitary structure in glass fiber reinforced plastics and may completely shield the propeller in the tunnel. The craft also preferably has a rudder system comprising a pair of interconnected angularly moveable parallel rudder plates which form a rear extension of the tunnel.

3,604,386
AUTOMATIC INSTALLATION FOR THE TRANSVERSAL BALANCING OF A SHIP

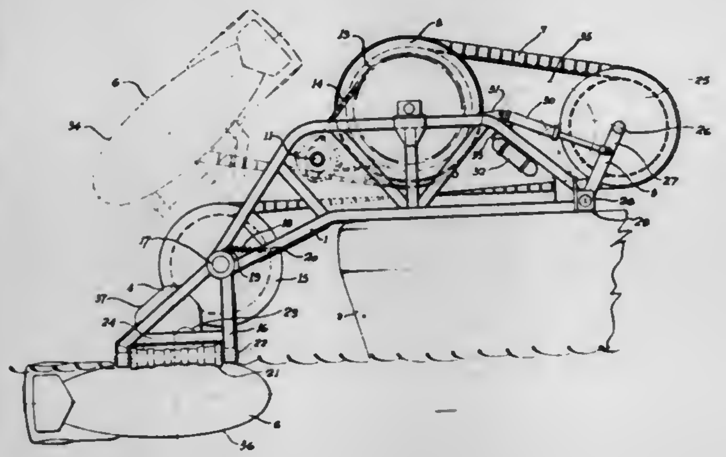
Edmondo Turci, Cornaredo, Italy, assignor to Filotecnica Salmoiraghi, S.p.A., Milan, Italy
Filed Dec. 19, 1969, Ser. No. 886,433
Claims priority, application Italy, Dec. 30, 1968, 25725A/68
Int. Cl. B63b *43/06, 39/00*
U.S. Cl. 114—125 **7 Claims**



In an automatic installation for balancing a ship by means of the so-called "balanced tanks" method, the actual rate of flow of the liquid being transferred from either tank to the other is measured through the pressure differential between the two tanks. The differential between the "ordered" rate of flow and the actual rate of flow is computed by a comparison circuit. The instantaneous value of the differential rate of flow is used for adjusting the rate of flow of the variable delivery pump which is inserted in a conduit connecting the two tanks serially.

3,604,387
MEANS FOR LAUNCHING, TOWING AND RECOVERING AN OCEANOGRAPHIC TOWED BODY IN A SEAWAY

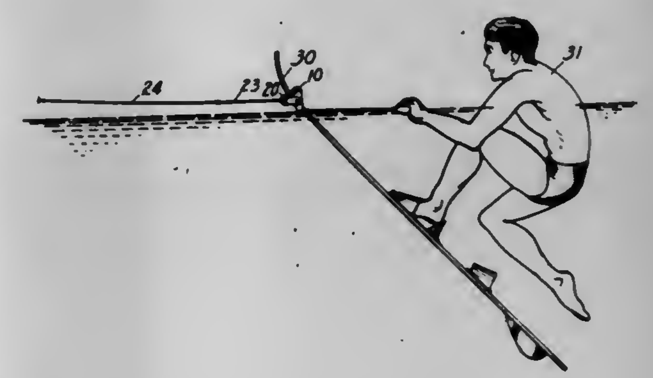
Neville E. Hale, Port Credit, Ontario, and Kenneth Gardner, Mimico, Ontario, both of, Canada, assignors to Fathom Oceanology Limited, Port Credit, Ontario, Canada
Filed Aug. 4, 1969, Ser. No. 847,129
Claims priority, application Great Britain, Sept. 3, 1968, 41748/68
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **8 Claims.**



A cable wound around a winch on a vessel has an acoustic towed body attached to the free end of the cable which also passes over a sheave mounted outward of the vessel; a saddle assembly is pivoted on the sheave, the assembly supporting the acoustic body and lifting it out of the water for storage; inward of the winch is a cable-tensioning device which consists of another sheave carried on a pivotable arm which is moved towards and away from the winch by a piston and cylinder connected to an accumulator which maintains constant pressure on the arm and thereby moves it in response to the increase and decrease in the tension of the cable when the acoustic body is towed.

3,604,388
RELEASABLE WATER SKI TOWING DEVICE

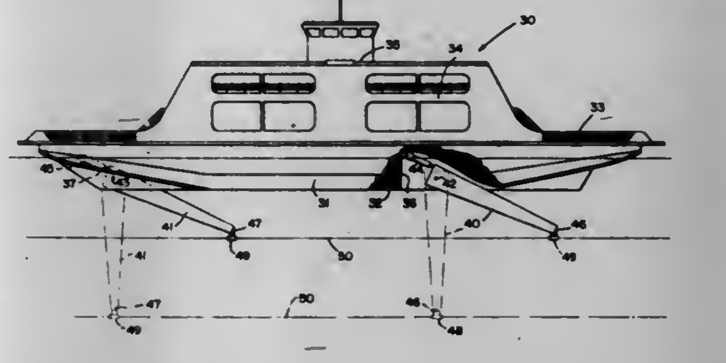
Russell A. Brown, 715 Yale Place, S.W., Atlanta, Ga., and Paul W. Brown, 1831 Forrest Street, Memphis, Tenn.
Filed Sept. 17, 1969, Ser. No. 858,685
Int. Cl. B63b *21/00*
U.S. Cl. 115—6.1 **17 Claims**



A towing device for towing water skis in which the ski or skis are removably clamped, the device being retained in place when the ski or skis are in a static condition, by pressure exerted by a pair of spring mechanisms, clamping the device to the ski or skis. Further clamping force is applied by pressure on the handle of the towing device when the skis are initially towed, the device being releasable when the pressure is released from the handle momentarily, for a sufficient length of time to permit the towing force applied to the towrope to overcome the pressure exerted by the spring mechanisms on the device and thereby allowing the towrope to strip the towing device off the end of the ski or skis. The device is made of buoyant material and floats on the surface of the water.

3,604,389
WATER TRANSPORTATION SYSTEM WITH SHORE-BASED PROPULSION

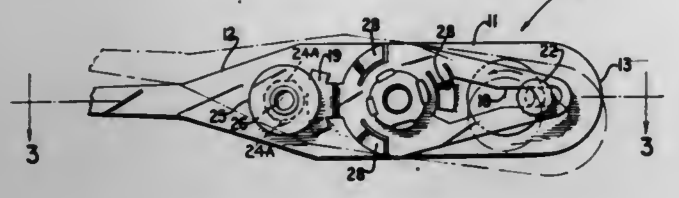
George G. Roberts, Woodside; David J. Seymour, San Francisco; Wilburt H. Reich, Novato, and Charles A. Black, Woodside, all of, Calif., assignors to Cable Ferry Systems, Woodside, Calif.
Filed Jan. 27, 1969, Ser. No. 794,319
Int. Cl. B63b *21/56*
U.S. Cl. 115—7 **50 Claims**



A ferry water transportation system wherein a freely floating vessel is propelled across the water by an underwater cable. The cable is moved by a winch driven from a power source, and both the winch and power source are located on shore, or on a floating terminal at shoreside. The vessel is guided and kept on course by the cable system, and its speed and direction are controlled from the vessel or from shore, as desired. The vessel thus has no onboard propulsion machinery; so the internal hull volume may be filled with foamed material to make the vessel unsinkable.

3,604,390
ECCENTRIC MICROADJUSTABLE POINTER

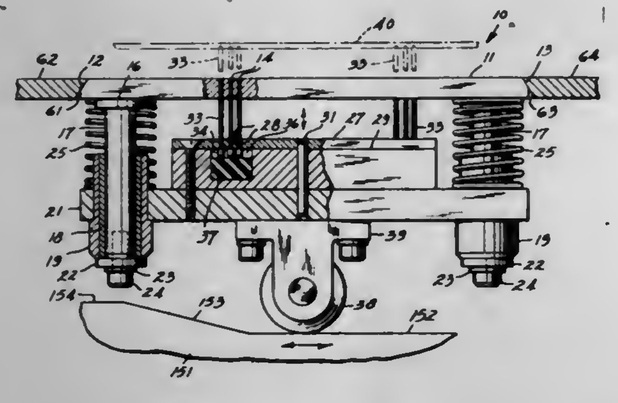
Earl Donald Zuck, Quakertown, Pa., assignor to Ametek, Inc., New York, N.Y.
Filed July 9, 1970, Ser. No. 53,496
Int. Cl. G01d *13/22*
U.S. Cl. 116—136.5 **4 Claims**



An indicator pointer has an adjusting mechanism including a spring plate fixedly mounted around a central bushing about which the pointer pivots. An eccentric adjusting member positioned on one side of the bushing is connected to the spring plate which is locked in its adjusted position by a locking member rotatably mounted in the pointer on the other side of the bushing.

3,604,391
APPARATUS FOR APPLYING INK TO HOLES

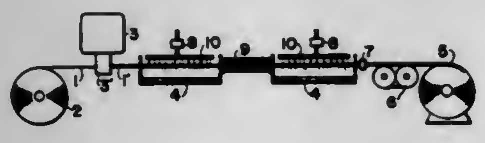
Joseph C. Mallia, Colonia, and John C. Walz, Bloomfield, both of, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed May 16, 1969, Ser. No. 825,281
Int. Cl. B05c *1/02*
U.S. Cl. 118—50 **6 Claims**



Material is applied to holes in a workpiece by transfer pins. The material is first introduced into holes in a template arranged in a pattern corresponding to the holes in the workpiece. Free ends of the transfer pins are then moved through the holes in the template to transfer the material to the holes in the workpiece. The material may then be pulled through the holes by a vacuum.

3,604,392
APPARATUS FOR MANUFACTURING A PLASTIC INSULATED WIRE

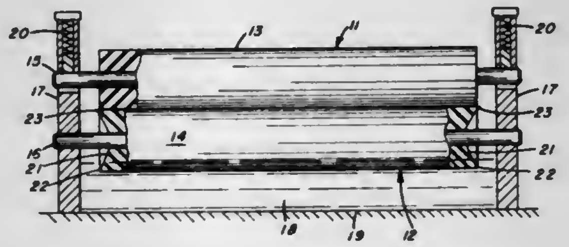
Chisato Kawazoe, Tokyo; Terumichi Ichiba, Kanagawa; Hiroyuki Kumamaru, Kanagawa, and Toshio Motegi, Kanagawa, all of, Japan, assignors to Sumitomo Electric Industries Ltd., Kitahama, Higashi-ku, Osaka, Japan
Filed Jan. 9, 1969, Ser. No. 790,140
Claims priority, application Japan, Jan. 1, 1968, 43/694
Int. Cl. B05c *11/00*
U.S. Cl. 118—67 **3 Claims**



A water spray and water-filled means are positioned in tandem intermediate of a melted plastic insulation extruder which concentrically coats a moving conductor and the coated wire takeup means. A liquid bath or wet sponge contacts the cooled plastic insulated wire to suppress lateral vibration.

3,604,393
SQUEEGEE ROLLER ARRANGEMENT

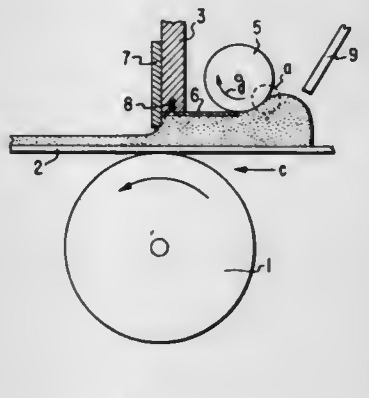
Anthony Earle, Stevenage, England, assignor to Eastman Kodak Co., Rochester, N.Y.
Filed July 8, 1969, Ser. No. 839,962
Int. Cl. B05c *1/00*
U.S. Cl. 118—249 **4 Claims**



In an arrangement of a vertical pair of rollers for transporting a sheet therebetween while applying a liquid to the lower surface of the sheet, providing the ends of the lower roller with a concave configuration to prevent wetting the upper roller and the upper surface of the sheet.

3,604,394
COATING APPARATUS

Naoyoshi Ohno; Goro Akashi; Tokuaki Miyake, and Masaaki Fujiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 10, 1969, Ser. No. 805,555
Claims priority, application Japan, Mar. 9, 1968, 43/15276
Int. Cl. B05c *3/00*
U.S. Cl. 118—415 **4 Claims**

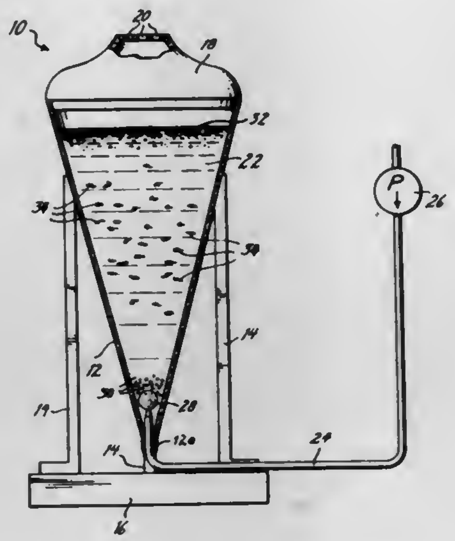


In a web-coating apparatus, a scraper extends rearwardly, parallel to the web being coated, from the doctor blade to, and in peripheral contact with, a roller disposed in the coating material accumulated behind the doctor blade.

3,604,395
HATCHERY FOR BRINE SHRIMP EGGS OR THE LIKE

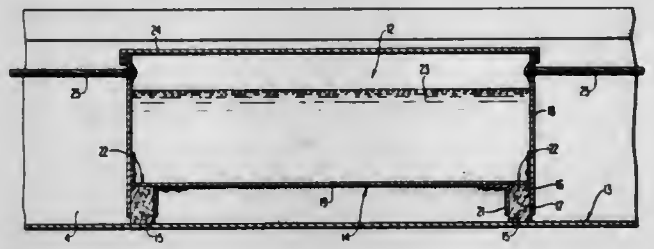
Stanley C. Huslin, 1503 Foulkrod St., Philadelphia, Pa.
Filed June 10, 1969, Ser. No. 831,839
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 **2 Claims**

Apparatus is disclosed for hatching the eggs of aquatic animals such as brine shrimp or the like. In a presently preferred form, the apparatus comprises a water impervious vessel having the shape of an inverted cone, means for supporting the vessel with its apex disposed downwardly, air outlet means disposed in the vessel adjacent its apex, and conduit means in fluid communication with the air outlet for supplying air to the diffuser and the interior of the vessel.



3,604,396
APPARATUS FOR HOUSING ANIMALS

Kurt Radach, Kuchen, Wurttenberg, Germany, assignor to Alfred Heinkel & Co., KG, Metallwarenfabrik, Hellmuth-Hirth-Strasse, Germany
Filed Oct. 25, 1968, Ser. No. 770,753
Int. Cl. A01k *31/00*
U.S. Cl. 119—22 **12 Claims**

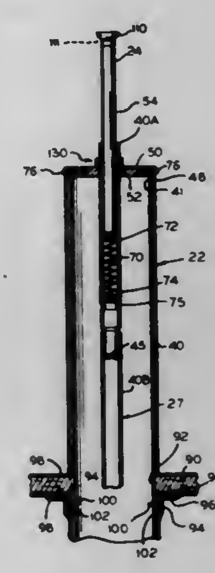


Apparatus for collecting and discharging excrements from animal cages, particularly cages for housing animals for experimental purposes, which cages are disposed in side-by-side relationship in one or more rows, including permeable floors in the animal cages, a collecting and discharging trough extending beneath the floors of a row of cages, and a slide member adapted for reciprocating motion within the collecting and discharging trough, said slide member incorporating at least one pusher plate extending in a plane at substantially right angles to the longitudinal extension of the trough, the surface area of which pusher plate corresponds substantially to the cross-sectional area of the trough. The slide member, in accordance with the present invention, may be constructed in the form of a tank for dispensing a disinfectant as the slide member traverses the surface of the collecting and discharging trough.

3,604,397
CAT PERCH AND EXERCISE POLE

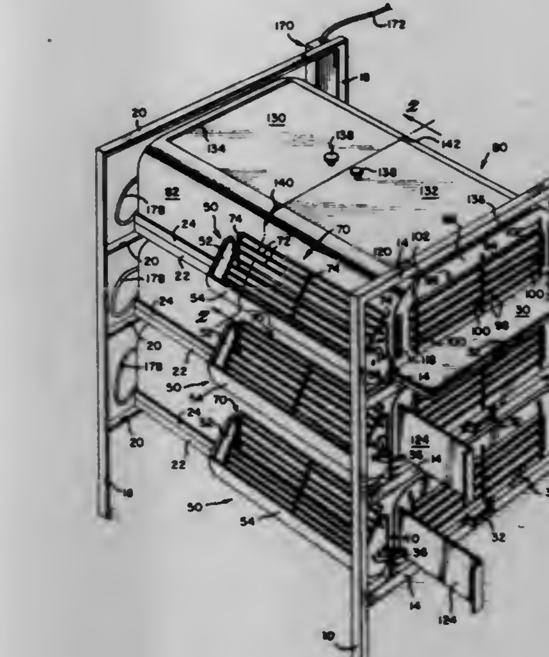
Joseph M Salerno, 50 W. Elmwood Parkway, Elmwood Park, Ill.
Filed July 7, 1969, Ser. No. 839,185
Int. Cl. A01k *01/00;* **A63b** *09/00*
U.S. Cl. 119—29 **4 Claims**

The disclosure relates to a cat exercise device in the form of a post structure that is applied between the ceiling and the floor of a room, comprising a body portion that is proportioned to extend a substantial portion of the height of the room and a leg projecting from either end of the body portion to engage the room ceiling and floor, respectively, one of the legs being resiliently telescopingly mounted to accommodate varying ceiling heights and provide a biasing action to secure the post structure in its operating position. The post structure body portion intermediate its ends carries a shelf that is applied about same at an elevated position on the post structure and is interrupted to provide an access opening or gateway to the shelf. The shelf and the post structure body portion are covered with carpeting to provide a cat scratching post and elevated perch arrangement.



3,604,398
BROODER APPARATUS

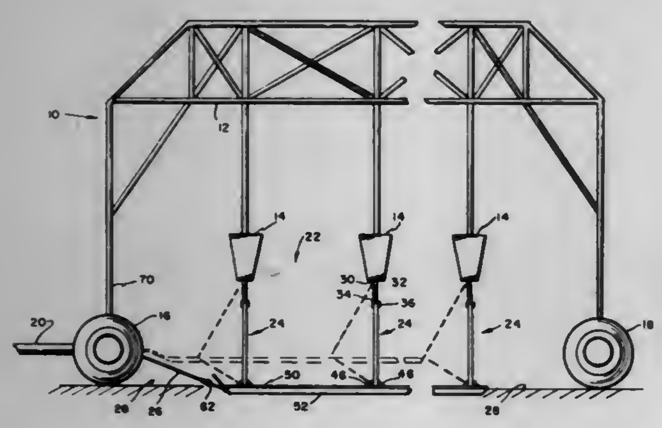
David Lee Peardon, Reading, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed May 14, 1969, Ser. No. 824,531
Int. Cl. A01k *31/18*
U.S. Cl. 119—33 **10 Claims**



A support framework is adapted to slidably receive a plurality of brooders in overlying relationship to one another. The support means is provided with support members for supporting a plurality of feeders and waterers and for also slidably supporting a plurality of dropping pans. The brooder is provided with removable closure members in the upper part thereof and has a slot therein for receiving a divider. Holes are formed in the side of the brooder to be aligned with the feeders and waterers on the support means. Removable panels are provided for selectively closing off the holes in the side of the brooder. The brooder is provided with a heater at one end thereof and an opening at the opposite end thereof. Plug means is provided for selectively connecting a source of electrical current to the heater of the brooder.

3,604,399
ANIMAL RACE STARTING APPARATUS

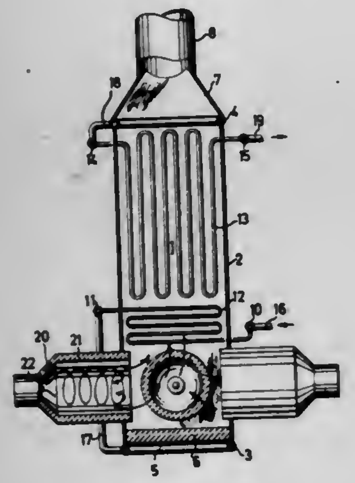
William R. Mills, 2808 Warren Way, Arcadia, Calif.
Continuation-in-part of application Ser. No. 741,583, July 1, 1968, now abandoned. This application Jan. 15, 1969, Ser. No. 814,480
Int. Cl. A63k *13/00, 03/02*
U.S. Cl. 119—15.5 10 Claims



A starting gate apparatus for racing horses which includes a flexible, tread-producing, nonslip mat upon which the horses stand at the time of their initial forward thrust or takeoff. The system shown includes mechanisms for automatically and quickly lifting the traction mat covering the stall area over the track off the ground when it is desired to move the starting gate away from the starting location.

3,604,400
STEAM GENERATOR AND OTHER HEATED HEAT TRANSMITTERS

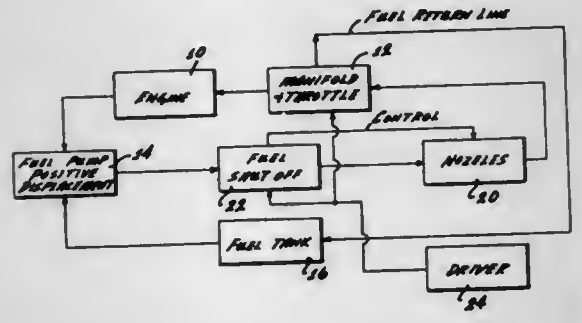
Harendra Nath Sharan, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Nov. 12, 1969, Ser. No. 875,857
Claims priority, application Switzerland, Sept. 26, 1969, 14542/69
Int. Cl. F22b *21/22*
U.S. Cl. 122—235 R 9 Claims



The steam generator is provided with a whirling combustion chamber capable of generating at least 10^7 kcal./cubic meter hour ata. The whirling combustion chamber is connected directly to a combustion gas flue containing heating tubes or surfaces therein. The walls of the combustion chamber do not require cooling means as such are lined with ceramic oxide material.

3,604,401
FUEL INJECTOR FOR INTERNAL COMBUSTION ENGINES

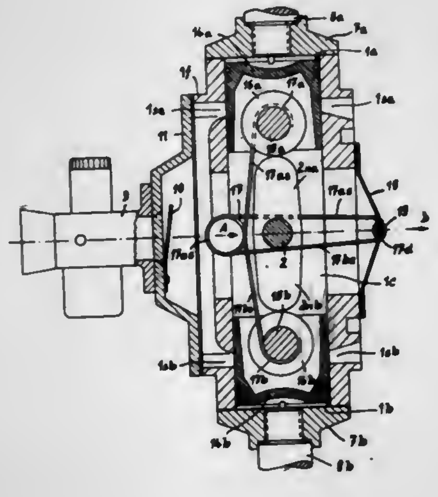
John F. Cogger, Los Angeles, and Happy H, Unfried, Northridge, both of, Calif., assignors to Kent H. Enderle, Seal Beach, Calif.
Filed Apr. 9, 1969, Ser. No. 822,831
Int. Cl. F02m *63/02*
U.S. Cl. 123—32 JV 11 Claims



The device is a fuel injector for internal combustion engines which matches fuel supplied to the engine's requirements over its operating range while maintaining an optimum fuel/air ratio in the supply to the engine. The fuel is supplied to a vortex valve or vortex generator which discharges a controlled conical spray of fluid into a manifold conduit leading to a cylinder. Opposite the spray is provided a pickup tube which picks up part of the sprayed fuel and returns it to the fuel tank. The pickup tube has orifices in its end, the shape of which is mathematically derived so as to match the quantity of fuel actually supplied to the cylinder to the cylinder's requirements over the operating range of the engine. The orifice shapes are derived from the characteristic curve of a positive displacement pump which delivers the fuel, that is, speed *v.* pressure, and the characteristic curve of the vortex valve or generator, that is, the pressure *v.* spray angle of the fuel sprayed through the discharge jet of the vortex valve. The engine speed and power are controlled by throttling the supply of air to the intake manifold. In a modified form of the invention the control jet of the vortex valve is regulated in response to exhaust temperature to maintain the fuel/air ratio.

3,604,402
PISTON MECHANISM

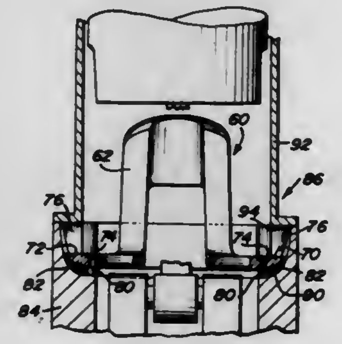
Ernst Hatz, Ruhstorf, Germany, assignor to Motorenfabrik Hatz KG, Ruhstorf, Germany
Filed Aug. 21, 1969, Ser. No. 851,944
Claims priority, application Germany, Sept. 12, 1968, P 17 76 054.2
Int. Cl. F02b *75/24, 75/32*
U.S. Cl. 123—56 C 9 Claims



A piston mechanism having preferably one or two pairs of opposed cylinders with reciprocating pistons therein. A shaft located between the pistons includes diametrically opposed cams thereon for directly and drivingly engaging the pistons. Springs urge the pistons against the cam parts and the spring can also operate a scavage air feeder. Valves can be operated by further cams mounted on the shaft.

3,604,403
TWO-STROKE ENGINE PISTON STUFFER

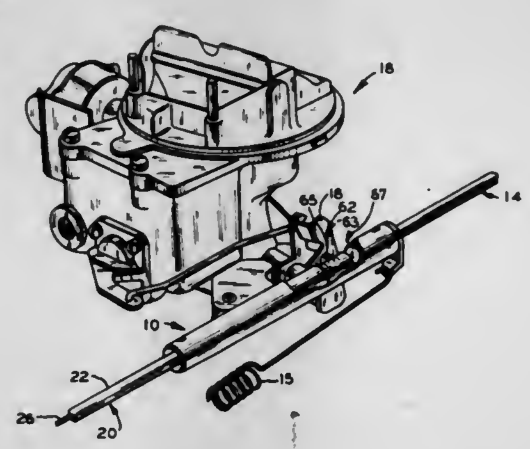
Marvin P. Larson, Rte. #5, Brainerd, Minn.
Filed Nov. 18, 1969, Ser. No. 877,656
Int. Cl. F02b *33/04*
U.S. Cl. 123—73 13 Claims



A crankcase mounted body projecting upwardly into the cylinder bore of a two-cycle internal combustion engine of the type utilizing crankcase air and fuel induction and bypass passages for ducting the air and fuel mixture from the crankcase into the cylinder above the piston therein as the piston approaches its lowermost position in the cylinder. The body is specifically shaped to have the piston telescoped downwardly thereover as the piston approaches its lower limit in the cylinder and the body, by its volume, reduces the total volume of the associated crankcase and lower cylinder bore whereby crankcase back pressure on the downstroke of the piston is increased for a greater discharge of air and fuel mixture into the cylinder above the piston. In addition, the body includes portions thereof which project substantially upwardly into the associated piston when the latter is at its lowermost position and which therefore serve to pump normally static air and fuel mixtures from within the piston each time the latter is telescoped downwardly over the body to thereby facilitate internal cooling of the piston.

3,604,404
ANTI-OVERRIDE MECHANISM

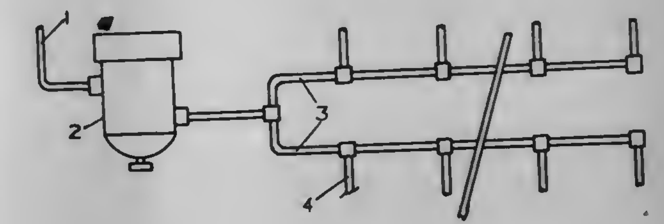
Dean L. Pitchford, New Castle, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Apr. 30, 1969, Ser. No. 820,418
Int. Cl. F02d *11/10;* **B60k** *31/00;* **G05q** *1/00*
U.S. Cl. 123—102 2 Claims



A structurally encapsulated assembly is disclosed which provides override for a speed control unit so that throttle advance by the vehicle operator, once set speed is reached, has no effect on the setting provided for the engine by the speed control unit. The encapsulated assembly is attached, at its one end to a cable connecting means extending to the speed control unit, at its other end to the pedal operated linkage and, therefore, is in series between them.

3,604,405
FUEL INJECTORS

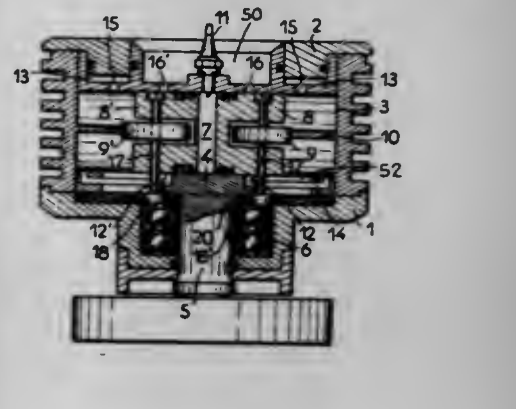
William A. Maher, 9 Winters St., Vallejo, Calif.
Filed May 7, 1969, Ser. No. 824,027
Int. Cl. F02m *49/00*
U.S. Cl. 123—139 AJ 2 Claims



An apparatus for the delivery of metered charges of pressurized fuel to the cylinders of an internal-combustion engine at timed intervals; by employing the alternating gaseous pressures developed within the combustion chambers of the engine. The pneumatically operated injector pumps, which are conjoined to the individual cylinders of the engine and the primary fuel supply system, replace the conventional mechanical or electrically driven components. Fuel to air ratio is controlled by the variable pressure applied to the diaphragms of the injector pumps and by the calibration of the fuel-flow metering discs of the injector nozzles.

3,604,406
ROTATING CYLINDER ENGINE

Michel Hottelet, 52 Ave. de Senateur, Girard 59, Valenciennes, France
Filed May 15, 1969, Ser. No. 824,976
Claims priority, application France, May 17, 1968, 19,103
Int. Cl. F02b *57/06*
U.S. Cl. 123—44 D 4 Claims

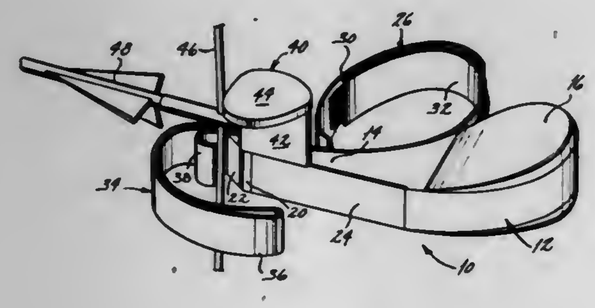


A rotary internal combustion engine having a rotor assembly provided with an inner cylinder containing a pair of opposed pistons having rollers at their outer ends bearing on an ovoid stationary surface for turning the rotor assembly.

3,604,407
BOWSTRING PULLING AND RELEASING DEVICE

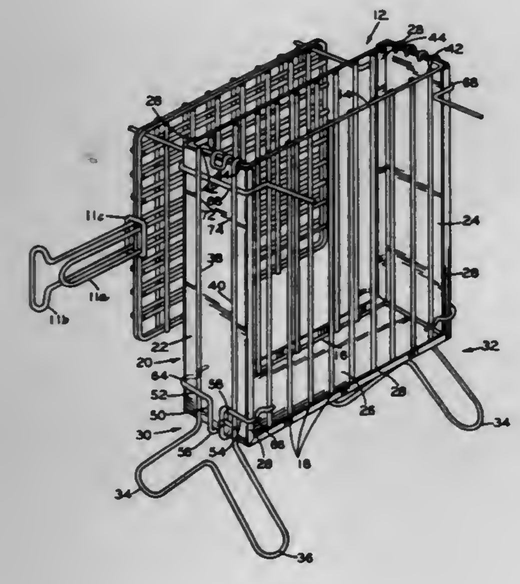
Jack K. Wilson; Norman E. Wilson, and Robert S. Wilson, Rte 8 Box 33-H, all of Springfield, Mo.
Filed Mar. 28, 1969, Ser. No. 811,503
Int. Cl. F41c *19/00, 27/00*
U.S. Cl. 124—35 11 Claims

A bowstring-pulling device for facilitating pulling back and releasing a bowstring comprised of a handle which fits within an archer's hand and securing means on the handle for releasably securing the bowstring to the handle. The securing means is a strap adapted to be wrapped around the bowstring and folded back against one side of the handle where it is releasably held by the hand of the archer. A chin rest may be provided on the handle for aiding the archer in positioning his head properly. The chin rest may be adapted for attachment to archer's tabs, gloves, and other bowstring-pulling devices.



3,604,408
BARBECUE GRILL APPARATUS

John C. Tescula, 22810 Westwood Rd., Fairview Park, Ohio
Filed Aug. 28, 1969, Ser. No. 853,674
Int. Cl. A47j *37/00;* **F24b** *3/00;* **F24c** *1/16*
U.S. Cl. 126—25 R 6 Claims

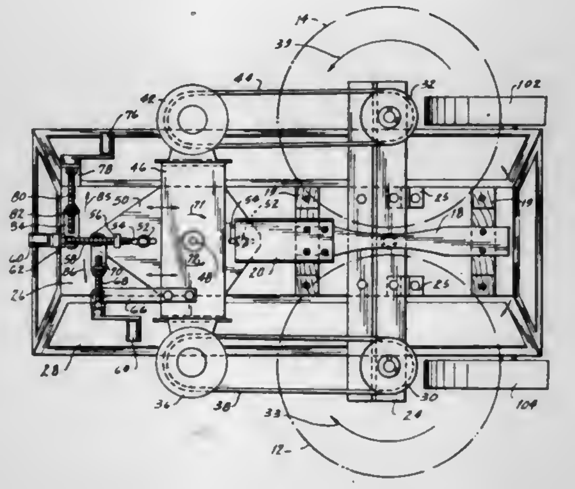


A vertical-type barbecue grill comprised of a wire basket enclosed on the bottom and two vertical sides by a U-shaped sheet metal housing member. The basket and the housing are releasably connected by clip members formed on independent wire legs arranged to support the unit in the proper orientation for cooking. Supported wires extend outwardly from the legs for adjustably supporting food holders adjacent the open sides of the basket.

3,604,409
BALL PROJECTING MACHINE WITH DIRECTION CONTROL MECHANISM

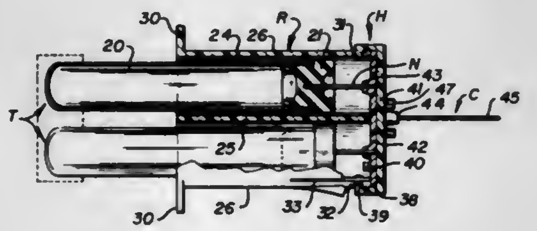
Ralph W. Doeg, Saint Petersburg, Fla., assignor to Strokemaster Corporation, St. Petersburg, Fla.
Filed Jan. 30, 1969, Ser. No. 795,220
Int. Cl. F41b *15/00*
U.S. Cl. 124—1 9 Claims

A baseball-pitching machine having two horizontal, oppositely rotating wheels for engaging a baseball and pitching it to a batter. The wheels are driven through variable drive pulleys, and to curve the ball, the pulleys are adjusted to rotate one wheel faster than the other. To vary the speed of the ball being pitched the motor bracket is adjustable to be shifted toward or away from the wheels. The direction of throw, both horizontal and vertical, are controlled by manually operated levers connected to pivotally mounted platforms. The machine is mounted on a portable stand which is exceptionally stable.



3,604,410
MULTITUBE BLOOD SAMPLER

Gary L. Whitacre, P.O. Box 130 610 Highway 86, Castle Rock, Colo.
Filed Sept. 11, 1968, Ser. No. 759,002
Int. Cl. A61b *5/10;* **A61m** *1/00*
U.S. Cl. 128—2 13 Claims

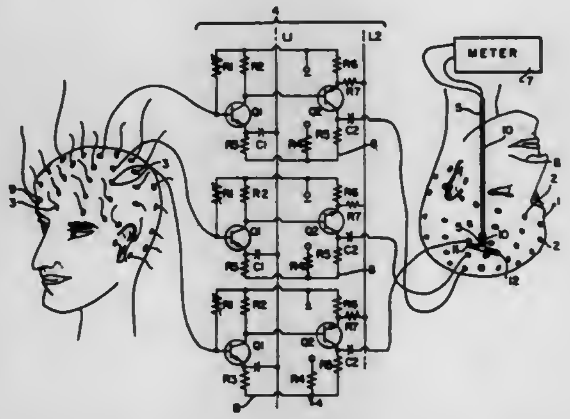


A multitube blood sampler of a type which uses two, three or more evacuated sample tubes of the type which are closed by rubber stoppers. The sampler combines a retainer which holds the sample tubes and a head fastened onto the front of the retainer which carries a forwardly projecting cannula and rearwardly projecting insert needles. The insert needles, within the retainer, pierce the rubber stoppers of the tubes. The unit is completed by a branched passageway within the head which connects the cannula to the insert needles so that when the cannula is inserted into the vein of a patient and the insert needles inserted into the several tubes, all of the tubes will be filled with a blood sample. The head carrying the cannula and insert needles is separable from the retainer and preferably, is provided as a throwaway unit once it has been used.

3,604,411
ELECTROENCEPHALOGRAPH HAVING METER PROBE MOVABLE IN A CALVARIUM-SHAPED LIQUID FILLED TANK AND METHOD OF USE

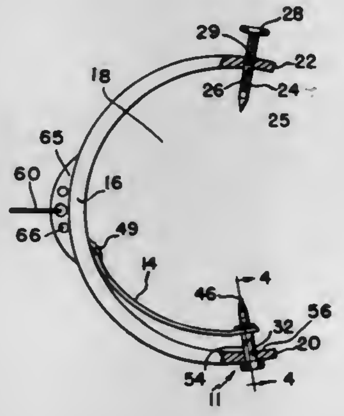
Graham Travers Schuler, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed June 16, 1969, Ser. No. 833,420
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 B 4 Claims

An electroencephalograph wherein movable electrodes are attached to positions on a scalp corresponding to the positions of fixed electrodes on an inverted, calvarium-shaped hollow member of electrical insulating material, for example, methyl methacrylate. Differences between electrical potentials in each of the movable electrodes are amplified and passed to the corresponding fixed electrode, so that by moving a probe around in a saline solution in the hollow member an indication of the distribution of electrical potential of the brain may be obtained.



3,604,412
THERAPEUTIC DEVICE

William J. Gardner, 13700 Shaker Blvd., Cleveland, Ohio
Filed Sept. 16, 1968, Ser. No. 759,941
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 7 Claims



A thereapeutic device for applying clamping and traction force components to selective portions of an animate body including a yokelike frame having opposed abutment mechanisms disposed adjacent the ends of the frame. The abutment mechanisms include a resiliently responsive pin assembly and a selectively adjustable pin assembly with a calibration device associated with one of the pin assemblies and the frame for automatically applying a predetermined pressure on the body upon actuation of one of the pin assemblies. A traction mechanism is mounted on the frame for applying a traction force to the frame and to the body via the pin assemblies.

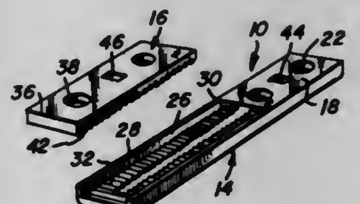
3,604,413
PROCESS FOR THE PREPARATION OF STIFF SUPPORTING BANDAGES CONTAINING A THERMOPLASTIC MOULDING COMPOSITION

Karlheinz Burg, Hofheim-Taunus; Harald Cherdron, Wiesbaden, and Johannes Brandrup, Neu-Isenburg, all of, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Filed May 15, 1969, Ser. No. 825,075
Claims priority, application Germany, May 24, 1968, P 17 67 564.8
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 2 Claims

Copolymers of trioxane with determined cyclic formals are used for making stiff supporting bandages. The thermoplastic-moulding compositions are applied in the plasticized state without a carrier material or together with a fabric to the part of the body to be treated and then allowed to solidify.

3,604,414
BONE SETTING DEVICE

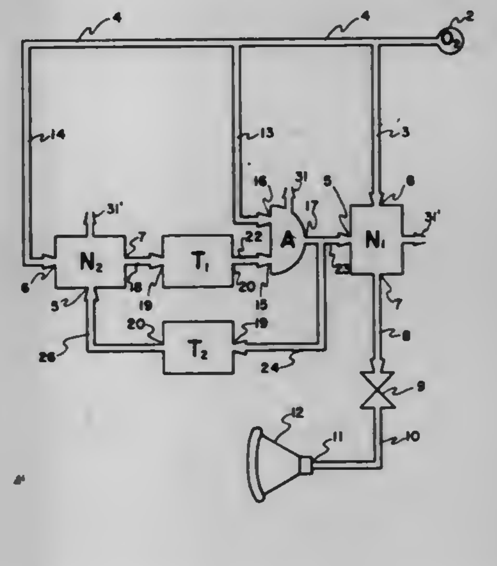
Nicomedes Borges, Cable 13-A Colinas de Vista Alegre, Caracas, Venezuela
Filed Aug. 29, 1968, Ser. No. 756,206
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 D 1 Claim



An osteosynthesis plate of two-piece construction having a toothed rack system to enable sliding movement of the two pieces in a direction to move the plate pieces in a direction to achieve the greatest approximation of a fractured bone to facilitate joining the fracture in the bone. The plates are secured to the fragments of the bone by screw members and a tool for moving the plates toward each other is provided to facilitate engagement with the plates after they have been attached to the fragments of the fractured bone.

3,604,415
PATIENT VENTILATOR

Richard J. Hoenig, Seaford, N.Y., assignor to The Foregger Company, Inc., Smithtown, L. I., N.Y.
Filed Apr. 14, 1969, Ser. No. 815,696
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 5 Claims

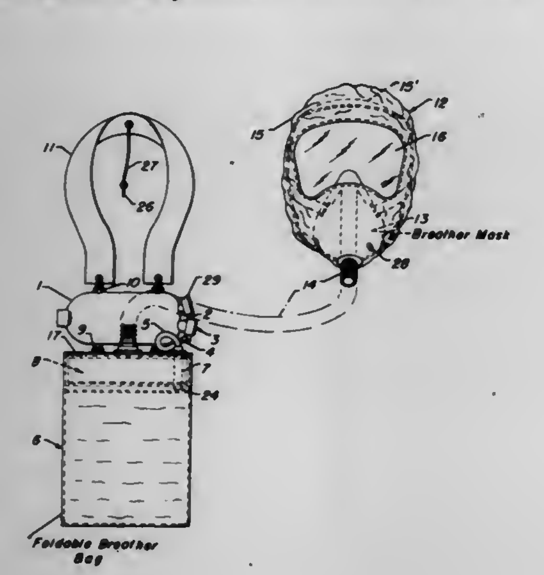


A ventilator for artificial respiration is automatically controlled by a fluid logic circuit comprising three pneumatic logic cells, all fed directly with ventilating gas under pressure, and two delay cells for separately adjusting gas flow to the periods of inhalation and exhalation of a patient.

3,604,416
EMERGENCY OXYGEN SYSTEM

Joseph A. Petrahai, Fairfield; James E. Bellemare, Madison, and August J. Hildenbrandt, Jr., Fairfield, all of, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Apr. 28, 1969, Ser. No. 822,853
Int. Cl. A62b *25/00*
U.S. Cl. 128—142.3 7 Claims

A lightweight, portable oxygen supply system embodying a face-breathing mask and eye protection hood, a foldable breather bag, flexible tubing for connecting the mask and breather bag, flexible tubing for connecting the mask and breather bag, a gaseous oxygen supply pressure container (with special adsorbent therein to increase oxygen storage capacity) which connects through special valve-regulator means to the breather bag, and a gas permeable bed of carbon dioxide absorbent provided between the mask and the breather bag, but preferably adjaCent or partially within the latter, so as to preclude carbon dioxide buildup in the system.

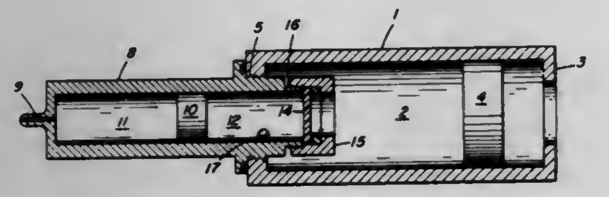


3,604,417
OSMOTIC FLUID RESERVOIR FOR OSMOTICALLY ACTIVATED LONG-TERM CONTINUOUS INJECTOR DEVICE

Sidney Joseph Stolzenberg, Yardley, assignor to Wayne Henry Linkenheimer, Upper Makefield Township, Bucks County, both of, Pa. and American Cyanamid Company, Stamford, Conn.

Filed Mar. 31, 1970, Ser. No. 24,136
Int. Cl. A61m *05/00*

U.S. Cl. 128—213 **2 Claims**



An improved osmotic pressure actuated injection device for long term continuous injection which has a chamber filled with the medicament to be injected and a suitable injection orifice, with a piston or similar device, the other side of he piston being a concentrated solution, such as a saturated solution, caPped with a semipermeable membrane and exposed to a second chamber having the solvent for the solution, and a freely movable piston exposed on its other side to atmospheric pressure or similar source so that the solvent moves through the semipermeable membrane increasing the osmotic pressure and so forcing the piston in the first chamber to discharge a small amount of medicament. The pressure in the solvent chamber is maintained constant, thus preventing formation of air pockets therein.

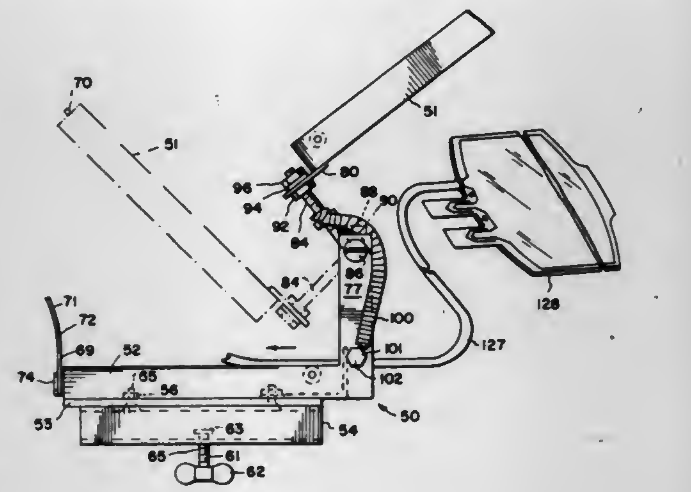
3,604,418
APPARATUS FOR STRIPPING FLUID FROM FLEXIBLE PLASTIC TUBING

Young C. Jones, c/o Graham and Graham, Attorneys at Law, Anderson Building, Gulfport, Miss. 39501

Continuation in part of Ser. No. 585,127, Oct. 7, 1966. This application filed Mar. 10, 1969, Ser. No. 805,530
Filed Mar. 10, 1969, Ser. No. 805,530
Int. Cl. A61m *1/02;* **B65d** *35/28*

U.S. Cl. 128—214 **4 Claims**

A pair of frame members are hingedly connected together and have cooperating rollers secured thereto for receiving therebetween a fluid-filled plastic tubing. The space between the rollers is adjustable to receive different sizes of tubing. A tubing guide is provided adjacent the rollers and is adjustable transversely thereto.

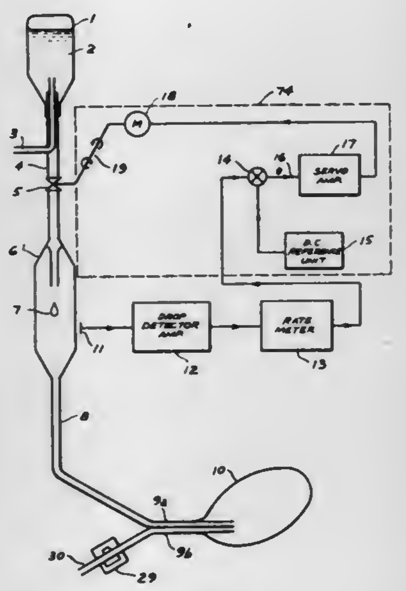


3,604,419
APPARATUS FOR URINARY BLADDER TREATMENT

Mordechai Haim Diskin, Haifa; Amnon David, Tel Aviv, and Alexander Vilensky, Haifa, all of, Israel, assignors to Technion Research & Development Foundation, Ltd.

Continuation-in-part of application Ser. No. 588,643, Oct. 5, 1966, now Patent No. 3,481,334. This application Sept. 19, 1968, Ser. No. 760,887
Int. Cl. A61m *3/00*

U.S. Cl. 128—227 **1 Claim**



A device for maintaining a constant flow of irrigating fluid through the bladder comprising a flow detector which generates an output signal as a function of the flow rate, a rate meter with its input connected to the output of the detector and which produces an electrical signal whose magnitude is proportional to the flow rate, a servomechanism with its input connected to the output of the rate meter, the mechanism producing output corresponding to the signal at its input, and a flow regulator in the hydraulic line supplying fluid to the detector which is controlled by the output of the mechanism.

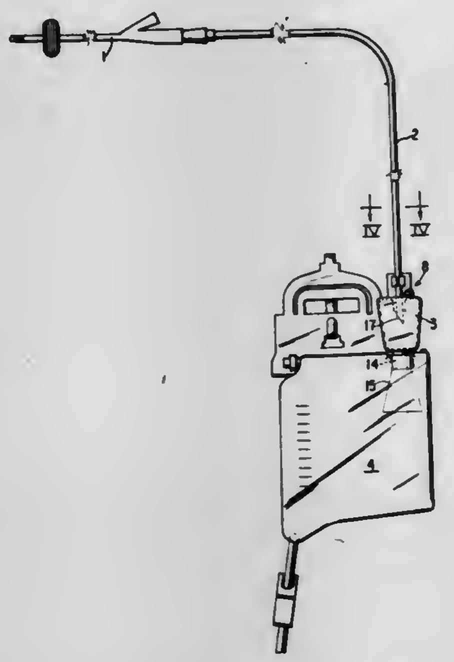
3,604,420
CLOSED SYSTEM DRAINAGE DESIGN

Vincent L. Vaillancourt, Livingston, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jan. 21, 1969, Ser. No. 792,565
Int. Cl. A61f *5/44*

U.S. Cl. 128—275 **7 Claims**

Means for eliminating the negative pressure problem in a closed urinary (or other) drainage system by shaping or conditioning the interior surface of the drainage tube to overcome differentially the surface tension of the liquid in the tube, permitting air to enter and release the column of liquid, such means comprising making the lumen of the tube noncircular (ridged or grooved), and, where needed. providing a slanting cut opening at the lower end of the tube.

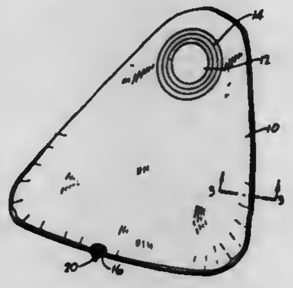


3,604,421
DISPOSABLE BAG FOR MEDICAL USE SANILOK BAG

Raymond R. Pizzella, 301 Elm St., Cranford, N.J.

Filed Apr. 23, 1969, Ser. No. 818,705
Int. Cl. A61f *5/44*

U.S. Cl. 128—283 **1 Claim**



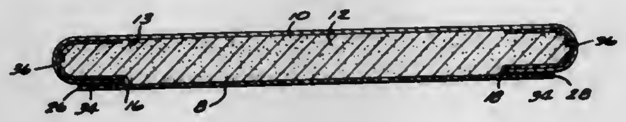
A plastic disposable sealed hollow bag for use in draining bodily fluids, and collection excretions, or as an ice bag or the like having a sealable integral drain valve and a drain opening of variable size.

3,604,422
DIAPER WITH SOFT EDGES AND NONLEAKING SIDE SEAL

Reinhardt N. Sabee, 728 South Summit St., Appleton, Wis.

Filed Oct. 16, 1968, Ser. No. 767,940
Int. Cl. A61f *13/16*

U.S. Cl. 128—287 **13 Claims**



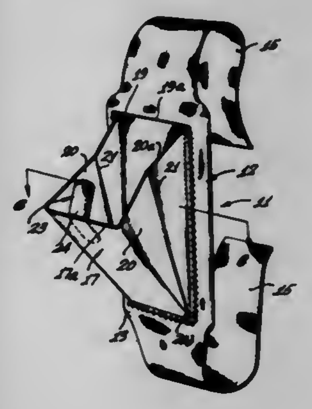
In several alternative embodiments, soft flexible edge-sealing film extending about the sides of an absorbent pad is shown fastened to the bottom ply and also fastened to the exterior or interior surface of the facing ply, joined integrally with the facing ply or extrusion bonded to the facing ply. The edge seal strips are optionally flocked or faced with tissue for further softness. The separately fabricated edge-sealing strips may have properties or qualities differing from those of the backing, examples being softness, pliability, pin strength, and cost.

3,604,423
ABSORBENT PAD WITH DISPOSAL WRAPPER

Elisabeth Fraser, 1533 North Martel Ave., Hollywood, Calif.

Filed June 27, 1969, Ser. No. 837,138
Int. Cl. A61f *13/16*

U.S. Cl. 128—290 **9 Claims**



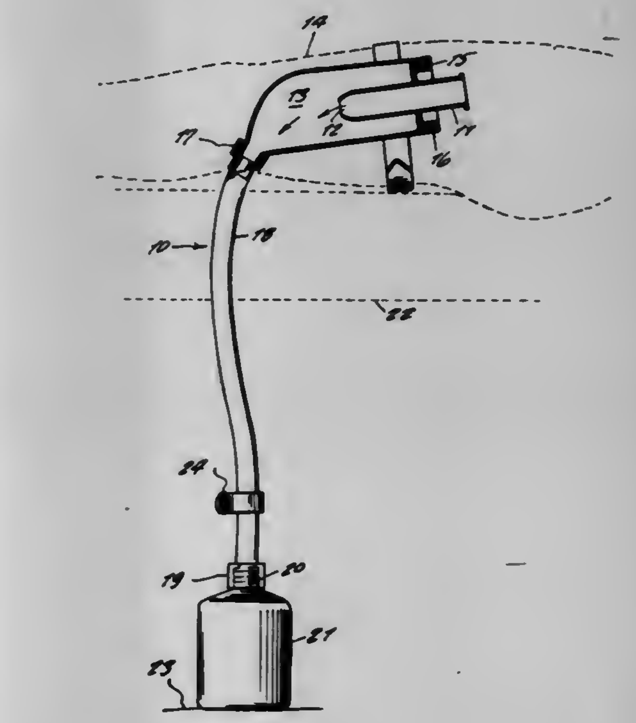
A sanitary napkin of the usual type having an elongated pad, with a folded disposable wrapper secured to outer side of the pad. The wrapper is in the form of a bag having rectangular inner and outer sheets marginally connected by triangular side sheets, one end of the outer sheet being releasably connected to the pad. After use of the pad, the opposite end portions of the soiled side are folded together, and the releasable end of the outer sheet is released and pulled around the folded pad to the opposite side, turning the bag inside out around the pad. An adhesive tab seals the package for disposal.

3,604,424
BLADDER RELEASE TUBE

Martin L. Windom, 496 Lawton St., S.W., Atlanta, Ga.

Filed June 12, 1969, Ser. No. 832,578
Int. Cl. A61f *5/44*

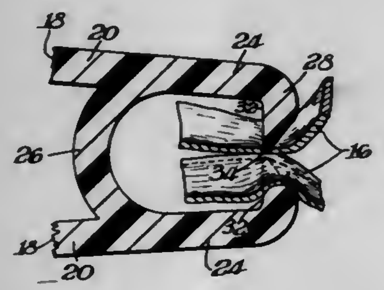
U.S. Cl. 128—295 **4 Claims**



An appliance for collecting urine from a male patient, the appliance comprising a rubber tube fitted over the penis of a male patient, the tube being connected to a receiving container at the upper end of the outlet tube secured by straps to the person's body, and the lower end of the outlet tube being connected to a collection container which can be periodically emptied.

3,604,425
HEMOSTATIC CLIP

Pierre L. Le Roy, Wilmington, Del., assignor to New Research and Development Laboratories, Inc.
Continuation-in-part of application Ser. No. 473,055, July 19, 1965, now Patent No. 3,446,212. This application Apr. 11, 1969, Ser. No. 815,395
Int. Cl. A61b *17/08, 17/12*
U.S. Cl. 128—325 **6 Claims**



A hemostatic clip is in the form of a tubular body member having a longitudinal slit extending completely across the body for receiving a wound flap when the body is distended from its original shape. A pair of projections are on the body member joined to the body member along a longitudinal line disposed about 90° from the slit to act as convenient means for distending the body from its original shape when external force is aPplied to the projections.

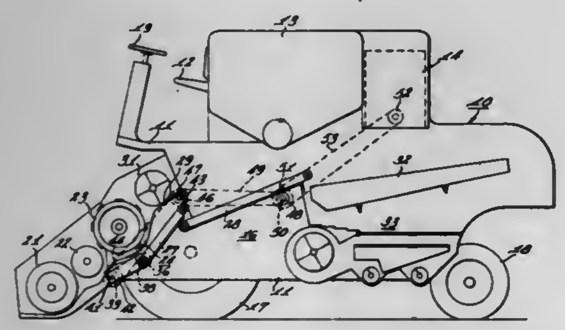
3,604,426
METHOD OF APPLYING SEMISOLID BACTERIOSTATIC PADS TO URINARY

Richard E. Erickson, Keene, N.H., assignor to Elliot Laboratories, Inc., Fitzwilliam, N.H.
Filed May 6, 1969, Ser. No. 822,292
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R **4 Claims**

Wrapping around the shaft of a body catheter a bacteriostatic pad made of a nonwoven fabric impregnated with a bacteriostatic agent incorporated in a semisolid base to form a protective bacteria barrier around the catheter shaft at its entry into the urinary meatus. The semisolid base holes the bacteriostatic agent in intimate contact with the catheter shaft and the meatus surrounding the catheter shaft to provide an effective bacteriatight seal against entry of bacteria between the shaft and the meatus. Thus, it prevents the migration of bacteria along the catheter shaft into the body.

3,604,427
COMBINE HARVESTER

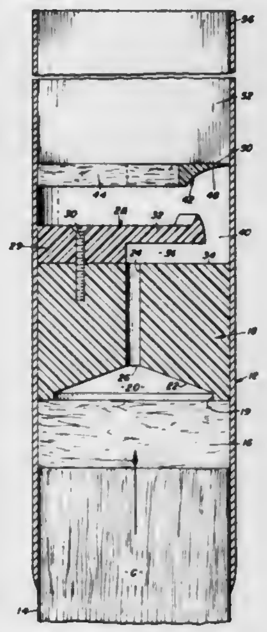
Jerry C. Boone, and Edgar S. Miller, both of Independence, Mo., assignors to Allis-Chalmers Manufacturing Co., Milwaukee, Wis.
Filed Jan. 26, 1970, Ser. No. 5,700
Int. Cl. A01f *7/00*
U.S. Cl. 130—27 K **3 Claims**



A combine harvester is provided with a threshing cylinder, an underlying coacting open concave and a conveyor underlying the concave for moving threshed material passing through the open concave to a cleaning shoe. The method of changing the open concave to a closed concave by disconnecting the conveyor drive and permitting the threshed material to fill the space between the conveyor and the upper surface of the concave.

3,604,428
CIGARETTE FILTER

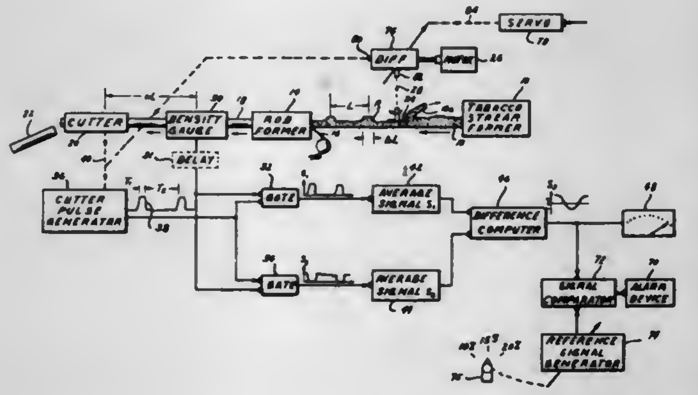
A. K. Moukaddem, Abu-Samra St., Lufti Rabbara Building, Tripoli, Lebanon
Filed June 9, 1969, Ser. No. 833,889
Int. Cl. A24d *01/04;* **A24f** *01/08, 01/16*
U.S. Cl. 131—10.5 **9 Claims**



A combination tar-and-nicotine removal device which accelerates tobacco smoke and impinges same against a barrier in which each side of the accelerating device is enclosed by built-in plugs.

3,604,429
CIGARETTE-DENSE-END-MEASURING METHOD AND APPARATUS

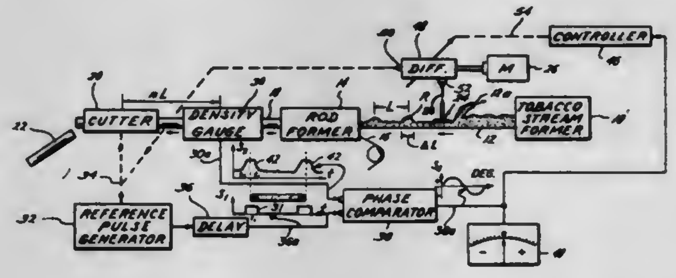
John E. De Witt, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Continuation of application Ser. No. 544,000, Apr. 20, 1966. This application Oct. 3, 1969, Ser. No. 864,292
Int. Cl. A24c *5/18, 5/28*
U.S. Cl. 131—21 **19 Claims**



The location of dense tobacco regions relative to the ends of cut cigarettes is determined by a density gauge positioned adjacent to a moving tobacco rod prior to cutting in a cigarette making machine and located therein by means of a signal from the density gauge which is divided by an electronic gating circuit into two components, one representative of the density of that portion of the rod that will provide the ends of the cut cigarettes and the other representative of that portion of the rod that will lie intermediate the ends. The signal components are averaged and an output signal proportional to their difference is obtained to indicate correct synchronization of the cigarette cutter with the dense end device. Pulses from the cutter may be presented simultaneously on a dual channel oscilloscope with the density signal to visually indicate an out-of-phase condition. Alternately, an out-of-phase condition may be indicated on a meter arranged in parallel with an alarm.

3,604,430
CIGARETTE DENSE END MEASURING AND CONTROLLING APPARATUS

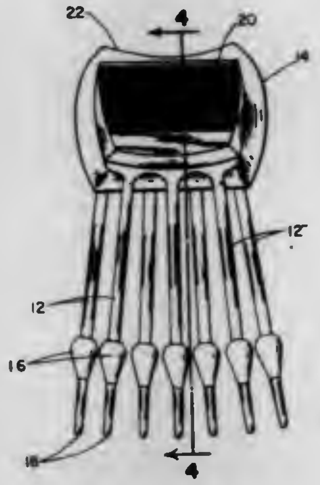
Alan Norwich, and John E. De Witt, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation
Continuation of application Ser. No. 543,916, Apr. 20, 1966, now abandoned. This application Nov. 7, 1969, Ser. No. 871,549
Int. Cl. A24c *5/32*
U.S. Cl. 131—21 B **16 Claims**



A dense end controller is provided for a cigarette machine having means for making a continuous cigarette rod having dense tobacco regions spaced along the length thereof and a cutter. A density gauge provides a first signal proportional to the density of the tobacco rod. A phase comparator, such as a synchronous detector, continuously compares the phase of the periodic variations in the first signal relative to the phase of pulses in a second signal from the cutter to provide a control signal directly proportional to any deviation of said dense tobacco regions from the ends of cut cigarettes.

3,604,431
HAIR STYLER

Harold E. Pearson, West Hollywood, Fla., and Eugene Francis Lutz, Oak Lawn, Ill., assignors to The Gillette Company, Boston, Mass.
Filed Feb. 28, 1969, Ser. No. 803,346
Int. Cl. A45d *24/04*
U.S. Cl. 132—137 **3 Claims**

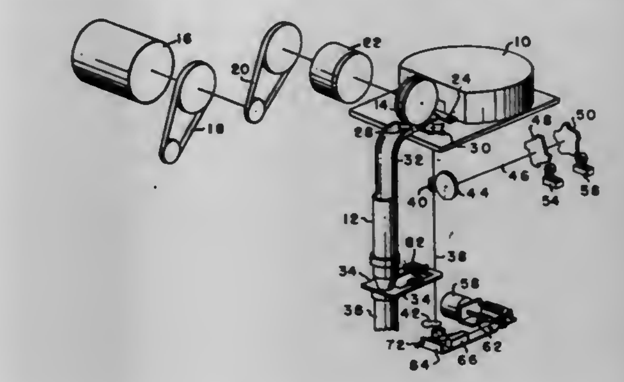


A hair-styling aid comprising a base member, a plurality of prongs each extending outwardly from an attachment location on said base member and terminating in a tip, each prong having a bulb portion intermediate the tip and the attachment location, the attachment locations being disposed in a plurality of tiers.

3,604,432
COIN COUNTER

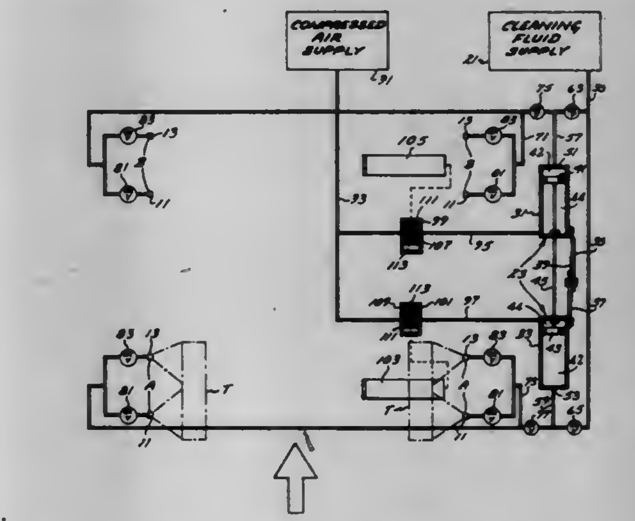
John K. McCollough, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed July 14, 1969, Ser. No. 841,487
Int. Cl. G07d *9/00*
U.S. Cl. 133—8 R **4 Claims**

Method and apparatus to electrically control a coin counter which is supplying a predetermined number of coins to a coin-wrapping station. The method includes a means to stop the action of the coin impeller upon the detection of passage of the preselected number of coins.



3,604,433
WHEEL WASHING APPARATUS

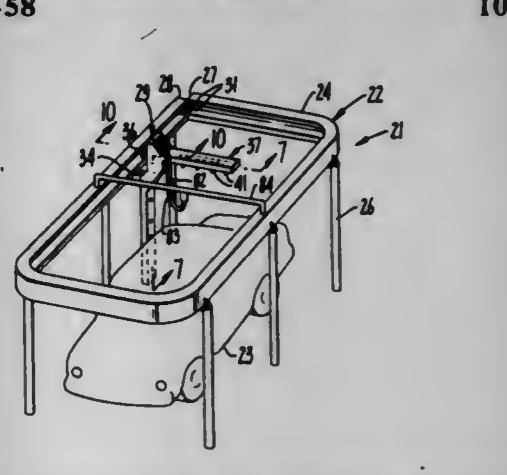
Ernst F. Notthoff, Canoga Park, Calif., assignor to California Car Wash, Sun Valley, Calif.
Filed Jan. 27, 1969, Ser. No. 794,246
Int. Cl. B08b *3/04*
U.S. Cl. 134—45 **10 Claims**



Wheel washing apparatus comprising first and second nozzle means disposed in sequence, adjacent the path of an automobile for washing a tire thereof. Cylinder means is provided for delivering pressurized cleaning fluid to the first nozzle means when the tire is disposed there in front of for washing one-half the outer wall of such tire and subsequently providing pressurized cleaning fluid to the second nozzle means when such tire is disposed there in front of for washing the second half of such outer wall.

3,604,434
AUTOMATIC CARWASH APPARATUS

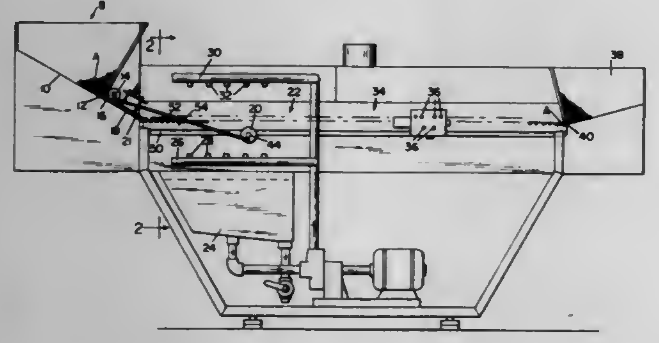
Mowatt M. Hurst, Menlo Park, Calif., assignor to Malsbary Manufacturing Company, Oakland, Calif.
Filed Mar. 21, 1969, Ser. No. 809,182
Int. Cl. B60s *3/04*
U.S. Cl. 134—58 **10 Claims**



An automatic carwash apparatus having a carriage moving along a track mounted in spaced relation to the car. Positive stops halt the carriage at the ends of the track and limit switches reverse the movement of the carriage at the ends of the track. A spray head is attached to the carriage and equipped with spray nozzles in an L-shaped pattern oriented to spray the sides, ends and upper surfaces of the car as the carriage moves along the track. Alternate forms are shown with the track at ground level and with the track above the roof level of the car. Two of the forms shown have a single track, and two forms have a pair of tracks each surrounding half the circumference of the car.

3,604,435
AUTOMATIC WASHING AND DRYING MACHINE FOR AMPOULES

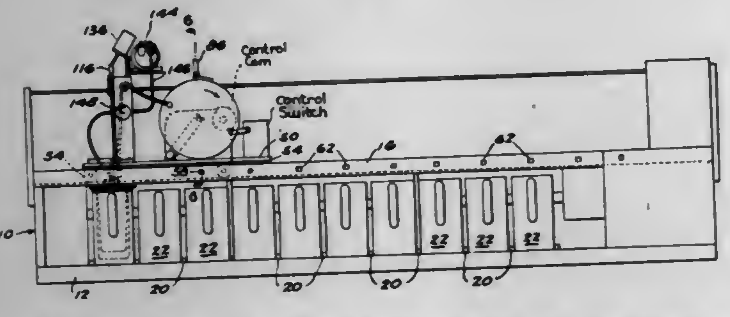
Raymond A. Day, Jr., Nassau; Sherwin Epstein, Albany, and Robert F. Pulfer, New Scotland, all of, N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Filed Apr. 18, 1969, Ser. No. 817,393
Int. Cl. B08b *3/02*
U.S. Cl. 134—61 **3 Claims**



Automatic machinery feeding ampoules one by one from a magazine, rotating the ampoules while advancing them through a spray mist water wash, through a compressed air drying area, and into an ampoule accumulator having a bottom feed.

3,604,436
AUTOMATIC TISSUE PROCESSOR

Julius Lipshaw, 744 Central Ave., Detroit, Mich.
Filed Apr. 7, 1969, Ser. No. 814,123
Int. Cl. B08b *3/00*
U.S. Cl. 134—76 **10 Claims**

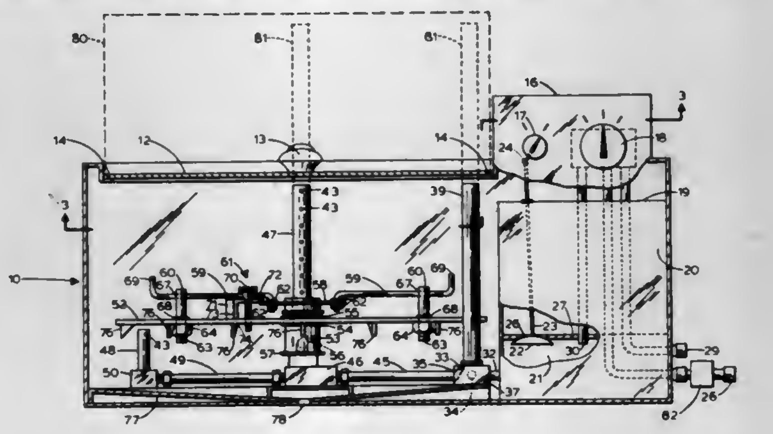


A mechanism for processing tissue for biological study which includes a container to be transferred to a series of treating stations where it is immersed in liquid and subject to a reduced pressure atmosphere including a sealing plate which closes the respective receptacles, and a mechanism for exerting pressure upon such closure during the immersion period to seal the receptacle during the vacuum period.

3,604,437
PORTABLE AIR FILTER CLEANER

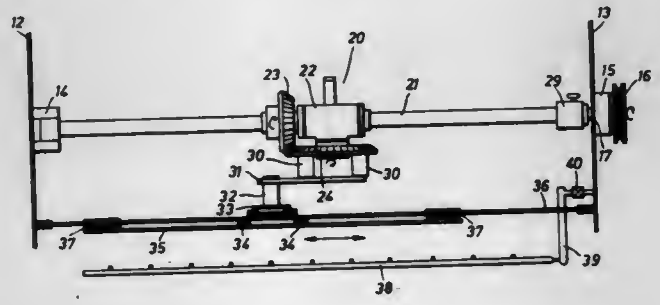
William T. Tappan, Jr., Albuquerque, N. Mex., assignor to Tamonite, Inc., Albuquerque, N. Mex.
Filed May 26, 1969, Ser. No. 827,734
Int. Cl. B08b *3/02, 5/02*
U.S. Cl. 134—102 **4 Claims**

The present invention relates to a portable air filter cleaner, and comprises a two or three stage washing and drying system, and process wherein alternatively air or liquid cleaning solvent may be sprayed onto the inside and outside of an air filter simultaneously while it is being rotated for dry cleaning or wet cleaning and air drying the filter. The system is constructed so as to be portable so that it may be moved from one place to another, occupying a minimum of space, and it may be connected into any convenient water and air outlet for ready use. The device is adaptable for use with any size air filter.



3,604,438
MACHINE FOR ETCHING AND RINSING PRINTING PLATES

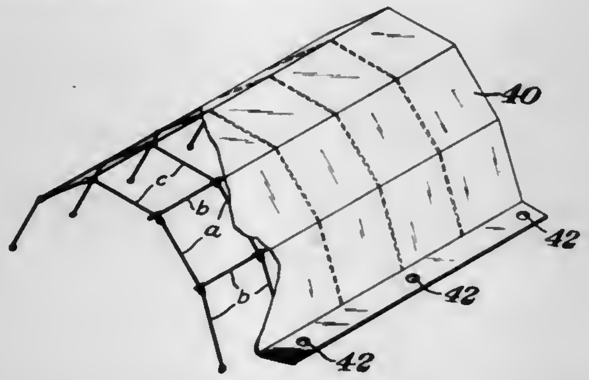
Kurt Fries, Markgroninger Strasse 64, Stuttgart-Zuffenhausen, Germany
Filed Aug. 13, 1969, Ser. No. 849,725
Claims priority, application Germany, Aug. 24, 1968, P 17 97 173.2
Int. Cl. B08b *3/02*
U.S. Cl. 134—148 **6 Claims**



A machine for etching and washing both cylindrical and flat printing plates of metal or of photopolymerizable material which comprises a treatment tank and two different interchangeable mounting supports which can be fitted selectively in the tank. One mounting support is arranged for supporting cylindrical plates and the other for supporting flat plates. The tank is provided with a drive and the two supports have couplings by which either can be coupled to the drive when it is fitted in the tank so that the support is moved by the drive to agitate the printing plate in liquid in the tank to either etch or wash the plate.

3,604,439
SUPPORT STRUCTURE

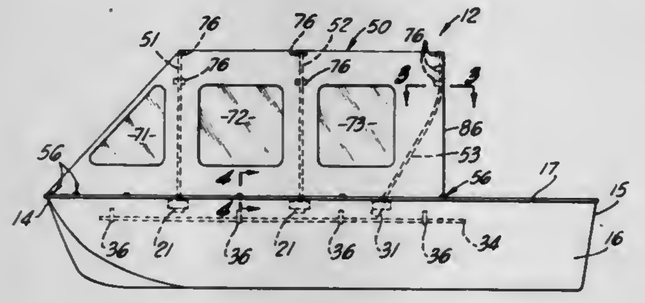
Laddie M. Thomka, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 26, 1970, Ser. No. 5,568
Int. Cl. A45f *1/16*
U.S. Cl. 135—4 **9 Claims**



A structural framework for tarpaulins, camouflage netting or other such covers. The framework comprises adjustable interchangeable lightweight struts, the adjustment being provided by a joint mechanism which comprises mating rotatable heads on the ends of the struts. The joint mechanism permits locking the structure's struts at desired angles to form, as an example, arches. Such arches can be connected with other like arches to form the framework. Part of such interconnection is facilitated by transverse flanges extending from certain ends of said struts. When not in use or for transport, the joint mechanism of the struts permits folding of the struts compactly together.

3,604,440
BOAT CANOPY

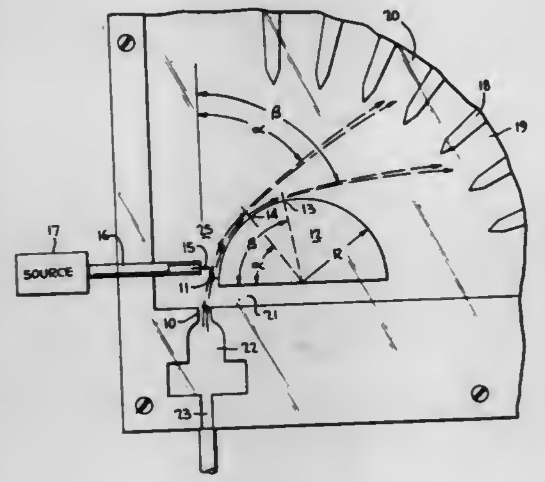
Benjiman L. Wilson, 1827 Los Robles Boulevard, Sacramento, Calif.
Filed Aug. 4, 1969, Ser. No. 847,066
Int. Cl. B63b *17/02*
U.S. Cl. 135—6 **4 Claims**



Mounted along the gunwales of a boat are opposite pairs of socket members each pair being arranged to receive, in clamping relation, the two ends of a flexible rod arched into an inverted U-shape. A plurality of such arches supports a windowed canopy provided with fasteners removably securing the canopy to the gunwales and the arches, thereby affording shelter to the occupants.

3,604,441
PROPORTIONAL ACOUSTIC TRANSDUCER

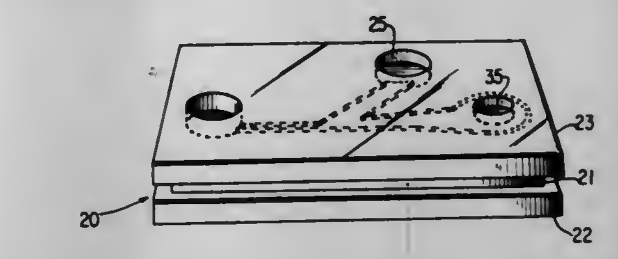
Donald O. Rockwell, Jr., Bethesda, and Kenji Toda, Rockville, both of, Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 15, 1969, Ser. No. 866,675
Int. Cl. F15c *1/08*
U.S. Cl. 137—13 **10 Claims**



A proportional acoustic transducer and fluid demodulator. Proportionality of fluid output to acoustic input is achieved by causing a power jet to attach to a semicircular sidewall and directing acoustic signals at the power jet. The angle of deflection of the power jet provides a measure of the amplitude of frequency of the acoustic signal. Sensitivity of the system is greatest when the frequency of the acoustic input is close to the fundamental frequency of the settling chamber from which the power jet is derived.

3,604,442
FLUIDIC DIODE

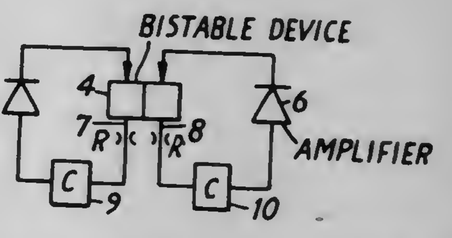
Henry G. Tucker, Norwalk, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Aug. 15, 1968, Ser. No. 752,865
Int. Cl. F15c *4/00*
U.S. Cl. 137—81.5 **7 Claims**



A fluidic diode wherein the forward direction input conduit angularly intersects a second conduit, the area of the second conduit from its intersection point to the forward direction output being smaller than the area of the second conduit from the intersection to the reverse direction output or vent. The wall of the second conduit toward the reverse direction output can be offset relative to the wall closest to the forward direction input conduit. The vent can be in the form of a vortex-producing chamber.

3,604,443
FLUIDIC OSCILLATORS

John Christopher Hammond Davis, Taplow, England, assignor to Plessey BTR Limited, Taplow, England
Filed Oct. 23, 1969, Ser. No. 868,803
Claims priority, application Great Britain, Nov. 28, 1968, 56,620/68
Int. Cl. F15c *1/08*
U.S. Cl. 137—81.5 **7 Claims**

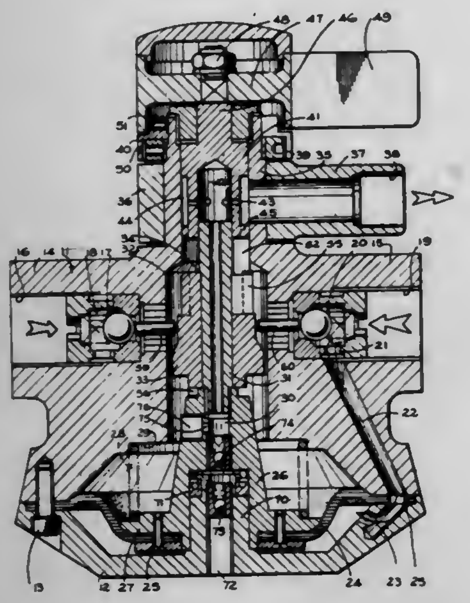


In a pure fluid oscillator of the RC type having a long time constant, only the reference pressure is used and the arrangement is such that the pressure in the capacitor or capacitors of the oscillator decays to this pressure. The oscillator comprising a fluidic bistable device, one output of which is connected via a fluidic RC circuit to the input of a fluidic amplifier. The output of this amplifier is so connected to an input of the bistable device that the bistable device changes from a first state to a second state when the input to the amplifier reaches a predetermined pressure. The invention is applicable to monostable circuits as well as to free-running oscillators.

3,604,444
DEVICE FOR MIXING HOT AND COLD FLUIDS

Percy G. Tacchi, Bridgnorth, England, assignor to Well's Asbestos and Engineering Limited, Slough, Buckingham, England
Filed Nov. 19, 1969, Ser. No. 877,944
Int. Cl. F16k *19/00*
U.S. Cl. 137—111 **10 Claims**

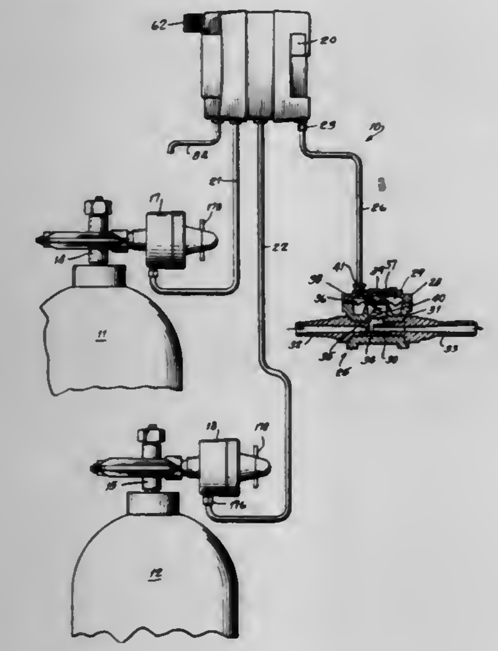
A device for mixing steam and cold water to provide a supply of substantially constant temperature hot water, comprising a body having inlet valves for the steam and water, each inlet valve being opened, against spring pressure, by a slidably mounted control rod with the free ends of the two control rods being both engaged by a control member movable in a chamber with the interior of the body in which the steam and water mix. A flexible diaphragm extends across the interior of the body with one side of the diaphragm exposed to the pressure in the mixing chamber and the other side exposed to the pressure of the cold water on the upstream side of the cold water control valve by means of a bypass passage leading from the cold water inlet. Connected to the diaphragm, on the mixing chamber side thereof, is a member which engages directly with one end of said control member. The control member has two discreet cam profiles on its exterior, one for each of the two control rods, and as the diaphragm moves, due to the differential pressure across it, the control member is moved so that the cam profiles engage the control rods to move these and open the cold water and steam inlet valves. The cam profiles are arranged so that the cold water inlet valve opens before the steam inlet valve and the steam inlet valve closes first.



3,604,445
SYSTEM FOR SUPPLYING GASEOUS MATERIAL TO A FLOW OF LIQUID

Richard W. Jordan, West Caldwell, and William C. Conkling, Essex Falls, both of, N.J., assignors to Pennwalt Corporation

Filed Apr. 2, 1969, Ser. No. 812,641
Int. Cl. G05d ***11/00***
U.S. Cl. 137—113 **16 Claims**

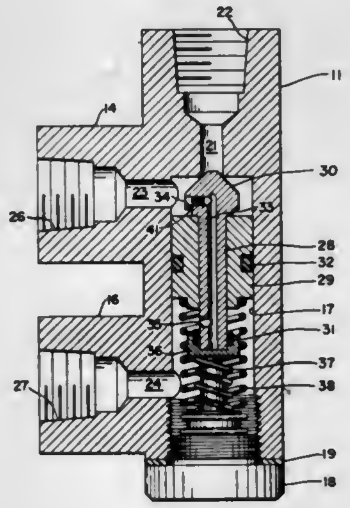


A chlorinating system wherein chlorine gas is supplied successively from a pair of cylinders to a flow of water. The system includes, in addition to means for injecting chlorine into the water flow and means for controlling the rate of delivery of chlorine to the injecting means, a pair of pressure-reducing valve units respectively mounted on the valve outlets of the two cylinders and connected through conduits to a common gas passage upstream of the controlling means. Each valve unit includes a valve for discharging chlorine, from the cylinder on which it is mounted, into the system at a reduced pressure; a pressure-responsive diaphragm for moving the valve between closed and open positions; and a latch for holding the diaphragm in a position at which the valve is closed. When one valve is open, discharging chlorine into the system from its associated cylinder, the other valve is closed. Depletion of chlorine in the first cylinder causes a decrease in system pressure which, communicated to the second valve unit, releases the diaphragm of the second valve unit from its latch to open the valve of this second unit, thus initiating discharge of chlorine into the system from the second cylinder as the first cylinder becomes exhausted.

3,604,446
VALVE

Brooks, Glenn R., Fallbrook, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed May 26, 1969, Ser. No. 827,745
Int. Cl. F16k ***17/10***
U.S. Cl. 137—115 **4 Claims**

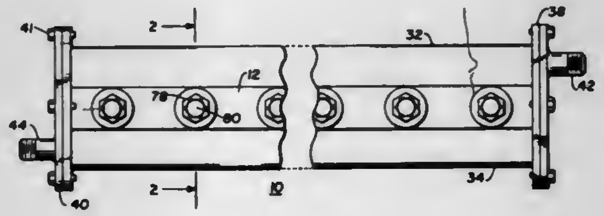


A fluid valve having an internal bypass orifice and a spring biased piston to which the fluid pressure is applied. When the pressure is above a given value, the piston moves compressing the spring, first cutting off the flow through the bypass orifice and afterwards opening the valve port to channel the fluid to a place of use.

3,604,447
FLUID SPRAYING APPARATUS

John H. Holland, Norman, Okla., assignor to J. H. Holland Company, Norman, Okla.

Filed Apr. 25, 1969, Ser. No. 841,648
Int. Cl. F16k ***11/00***
U.S. Cl. 137—119 **6 Claims**

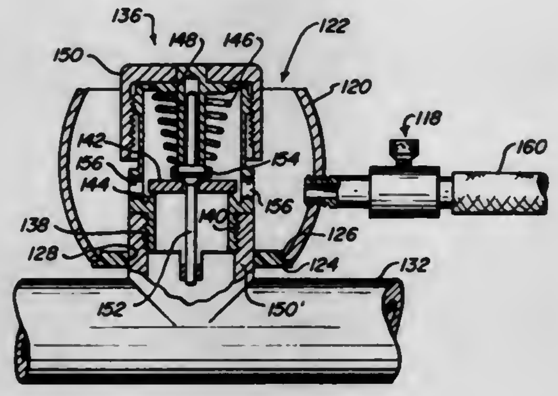


A spraybar for applying a coat of liquid asphalt or the like on the ground having a linearly spaced array of spray nozzles each in fluid communication with a "shoot" manifold through a separate fluid actuated valve. When asphalt is pumped into the shoot manifold, each valve is opened by the pressure of the asphalt and asphalt is sprayed from the nozzles. When asphalt is pumped through a bypass manifold, the pressure of the asphalt closes the valves to the respective nozzles and opens a fluid bypass to the "shoot" manifold to maintain circulation. The valves may be either reciprocating or rotating, and any selected valve can be locked in the closed position.

3,604,448
CLOSED EXHAUST DISCHARGE SYSTEM FOR ANESTHESIA MACHINES

Rocco Anthony Marrese, 1024 Belleforte Ave., Oak Park, and William T. O'Sullivan, 1323 Ashland, River Forest, both of, Ill.

Continuation-in-part of application Ser. No. 790,372, Jan. 10, 1969. This application Nov. 5, 1969, Ser. No. 874,217
Int. Cl. A61m ***17/00;*** **F16k** ***45/00***
U.S. Cl. 137—312 **2 Claims**

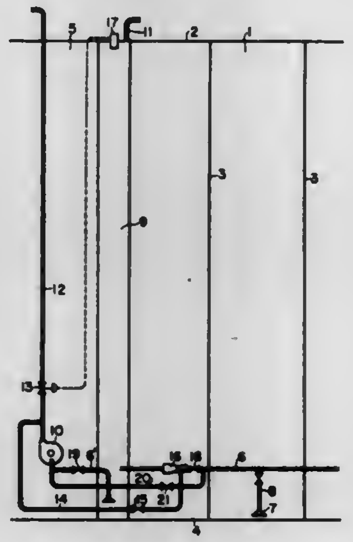


A relief valve for anesthetic gasline which is spring loaded to conventionally discharge overloading anesthetic gas into the surrounding atmosphere, and which further is provided with a valve assembly for connection to a closed system so that the overloading anesthetic gas is retained with the closed system and is not discharged to the surrounding atmosphere. The open system of the valve is maintained by making the spring-loaded valve operational, and the closed system is effected by opening the valve assembly so that overloading anesthetic gas is directed through the valve assembly into the closed system, preferably a surgical room vacuum line.

3,604,449
APPARATUS FOR UNLOADING LIQUID STORAGE TANKS

Shinpei Miyamoto, and Kohji Sato, both of Nagasaki-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 17, 1969, Ser. No. 858,655
Claims priority, application Japan, Sept. 25, 1968, 43/69281
Int. Cl. F16k ***31/18;*** **B67d** ***5/52***
U.S. Cl. 137—398 **6 Claims**

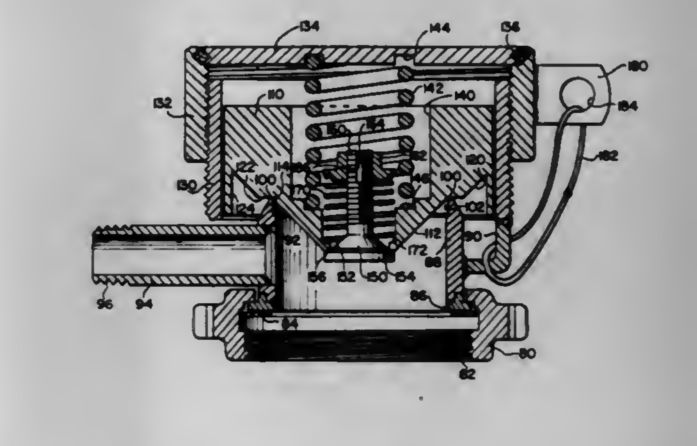


In unloading liquid from a plurality of storage tanks, such as in an oil tanker, a separation tank is positioned between an unloading pump and the storage tanks and a suction unit is used for supplying the liquid into the separation tank when the level in the storage tanks drops below a certain point. During ordinary unloading operations, the liquid is bypassed around the separation tank to the unloading pump. When in use, the liquid level in the separation tank is checked for regulating the flow from the unloading pump so that a flow of liquid is maintained through the unloading pump and supplied to the suction unit for maintaining the pumping operation regardless of the level to which the liquid drops in the tanks being unloaded.

3,604,450
VALVE CONSTRUCTION

Lawrence A. Botkin, Omaha, Nebr., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Jan. 21, 1969, Ser. No. 792,294
Int. Cl. F16k ***17/18***
U.S. Cl. 137—493.4 **8 Claims**

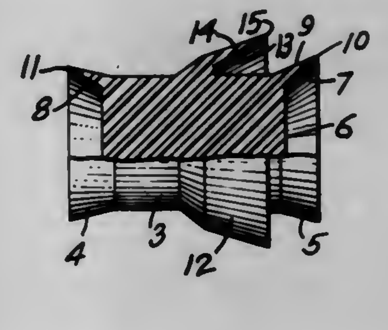


A valve seat means defines an opening for receiving a valve means and has a seating surface formed thereon. A chamfer is formed on the valve seat means between the opening and seating surface thereof. A valve means includes a sealing surface for engaging the seating surface of the valve means, and a spring means engages the valve means to urge the surfaces into sealing engagement. The valve means includes a poppet portion having a tapered surface which is in communication with a substantially straight cylindrical shoulder. This shoulder fits relatively closely within the opening in the valve seat means and is disposed adjacent the chamfer on the valve seat means. The shoulder on the valve means has a greater dimension in a direction extending substantially parallel with the direction of movement of the valve means than does the chamfer on the valve seat means.

3,604,451
PRESSURE-REDUCING VALVE

William B. Delamater, 9114 Valley View, Whittier, Calif.

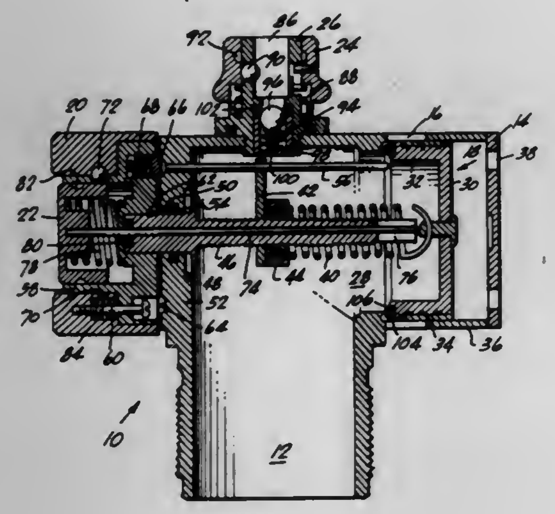
Filed Nov. 12, 1969, Ser. No. 870,428
Int. Cl. F16k ***15/14***
U.S. Cl. 137—512.15 **3 Claims**



A pressure-reducing valve is interposed between a source of liquid such as water and a discharge valve such as a nozzle for the water. When the discharge valve is opened the pressure-reducing valve allows full volume pressure flow of the liquid from its source to the discharge valve and when the liquid discharge valve is closed the pressure-reducing valve automatically closes passage of liquid therethrough from its source. An opening of the discharge valve automatically opens the pressure reducing valve to again allow liquid under full volume and without pressure drop to flow through the pressure-reducing valve and outwardly of the discharge valve.

3,604,452
PRESSURE CONTROL DEVICE

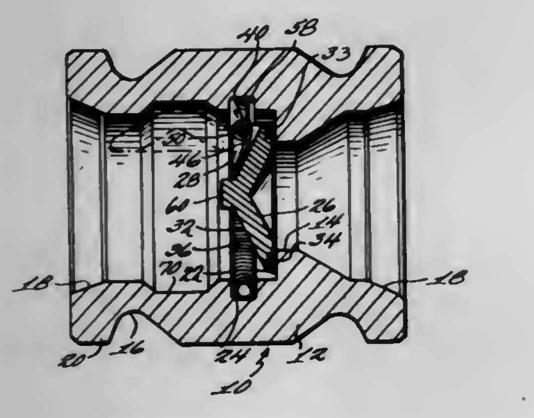
Robert A. Daniels, 1103 West J7; Norman B. Foster, 1500 Kildare St., and Robert P. Yeomans, 43715 North Harwood, all of Lancaster, Calif.
Filed Feb. 5, 1968, Ser. No. 703,071
Int. Cl. F16k *15/18*
U.S. Cl. 137—523 **3 Claims**



A device for regulating fluid pressure in a container. Gross changes in flow through the container can be made with a minimum fluctuation in pressure. For example, the rate of flow may be increased four times with an increase in pressure of only one-sixteenth the original pressure.

3,604,453
CHECK VALVE

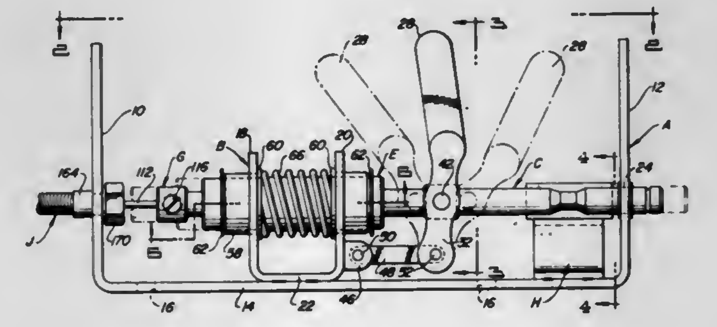
Boyd Boltnott, Houston, Tex., assignor to Gray Tool Company, Houston, Tex.
Filed Oct. 24, 1969, Ser. No. 869,160
Int. Cl. F16k *15/03*
U.S. Cl. 137—527 **9 Claims**



A radially directed annular shoulder in the housing through passageway seats a flapper having opposed trunnions nearer one edge. The trunnions are received in a circumferential groove which is axially longer than the thickness of the trunnions to allow movement of the trunnions away from the seat. A spring received in the groove mounts the flapper; another urges the trunnions toward the seat and presses the flapper toward the seat. The flapper is thus free to move angularly of the housing to even out seat wear. The cross-sectional area of the housing passageway at the immediately downstream of the flapper trunnions remains circular, but is larger in area to accommodate the fluid flow plus the volume of the flapper when the valve is open. As flow is directed against the flapper from the upstream side, the second spring compresses and the flapper moves off the seat. At the same time, the flow tends to rotate the flapper about the axis of the trunnions which are acting against the springs. When fully open, only a small portion of the edge of the flapper is exposed to the flowing media; hence, a low pressure drop is experienced.

3,604,454
HYDRAULIC AND ELECTRIC CONTROL DEVICE

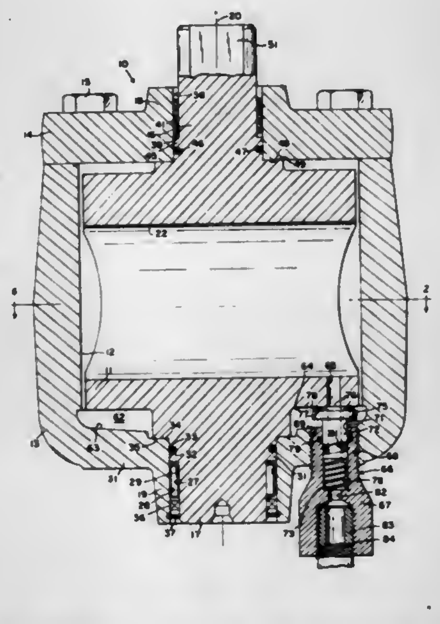
John K. Tomko, Euclid, and William W. King, Cleveland Heights, both of, Ohio, assignors to Meyer Products, Inc., Cleveland, Ohio
Filed Oct. 27, 1969, Ser. No. 869,685
Int. Cl. F15b *15/18*
U.S. Cl. 137—565 **9 Claims**



A hydraulic and electric control device for selectively opening and closing a hydraulic valve includes an actuating device for energizing an electric motor which drives a pump to send liquid through the valve. The control device is provided with a lost motion connection between the valve and the valve actuating device so that the electric motor will not be energized to operate the pump until the valve is in its maximum open position.

3,604,455
PLUG VALVE ASSEMBLY

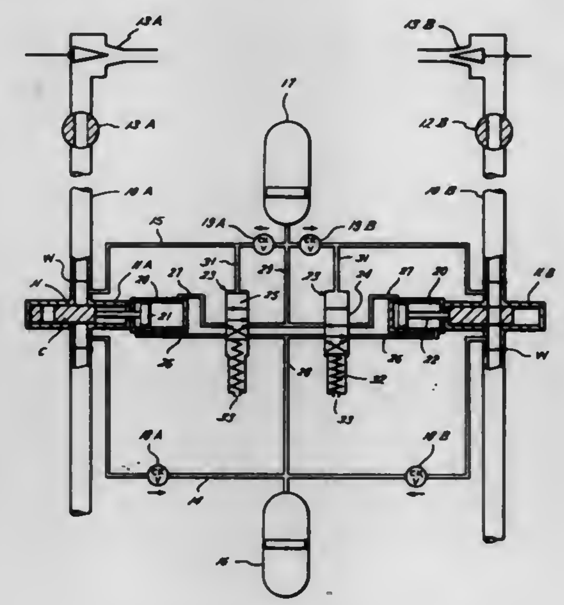
David H. Therneau, Sulphur Spring, Tex., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Jan. 30, 1969, Ser. No. 795,159
Int. Cl. F16k *45/00*
U.S. Cl. 137—583 **7 Claims**



A plug valve assembly wherein the chamber enclosing the rotatable plug is automatically vented to atmosphere when the valve is closed by a vent valve arrangement connecting the plug port to a passage terminating outside the body when the valve is closed.

3,604,456
OPERATOR FOR VALVES OR THE LIKE

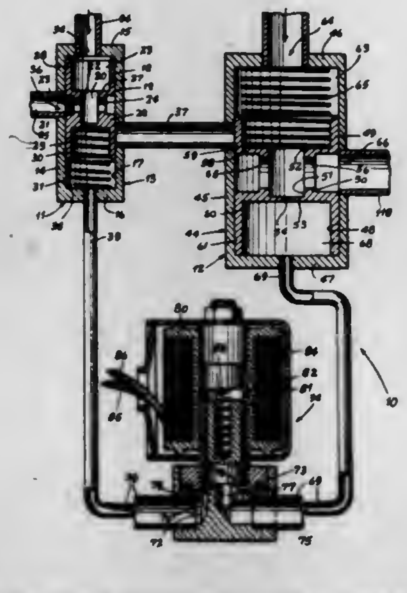
Marvin R. Jones, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed June 4, 1970, Ser. No. 43,456
Int. Cl. F16k *31/12*
U.S. Cl. 137—594 **23 Claims**



There is disclosed an operator for a flowline valve wherein the energy for actuating the operator is derived at least in part from fluid pressure variations in the flowline. and in which signals for such operation may be derived from such variations.

3,604,457
PILOT-OPERATED FOUR-WAY VALVE SYSTEM

Bradley C. Douglas, Kirkwood, Mo., assignor to Emerson Electric Co.
Filed Aug. 20, 1969, Ser. No. 851,538
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.16 **6 Claims**

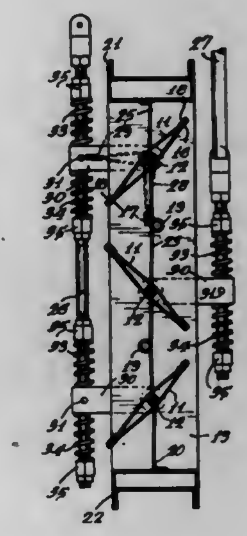


A pilot-operated four-way valve system. Two separate valves, one a high-pressure valve and the other a low-pressure valve are interconnected through a pilot valve. The high pressure and low-pressure valves each have a piston or slide the positions of which determine the direction of flow through alternate outlets from the valves. Opening or closing of the pilot valve establishes pressure conditions between the two valves to control the positions of the pistons therein.

In a heating and cooling system, the four-way valve system alternately converts the system to cooling or heating. Conversion is initiated by energization or deenergization of the pilot valve. The pistons are spring-biased to positions for circulating refrigerant in a cooling cycle. When the pilot valve is reversed, the pistons are subjected to changed pressure conditions causing them to slide and change the porting for the flow of fluid through a heating cycle.

3,604,458
TEMPERATURE COMPENSATING DAMPER STRUCTURE

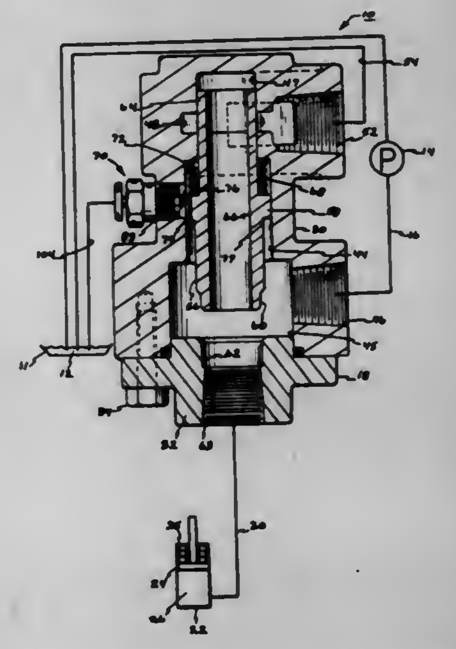
Harry J. Silvey, Hudson, Ill., assignor to Modine Manufacturing Company
Filed Feb. 13, 1969, Ser. No. 798,910
Int. Cl. F23l *13/08*; **F24f** *13/08*
U.S. Cl. 137—601 **3 Claims**



A temperature compensating damper structure adapted to be used to control flow of fluid and subject to extreme temperature changes in which the structure comprises a fluid control damper means such as a plurality of dampers mounted in a frame and movable between open and closed position, stop means against which the damper means bear when in the closed position and yieldable operating means such as springs for moving the damper means to this closed position, the yieldable operating means having a path of travel extending beyond the corresponding closed position of the damper structure against the stop means regardless of expansion and contraction of the damper structure parts during temperature changes therein.

3,604,459
CARTRIDGE VALVE

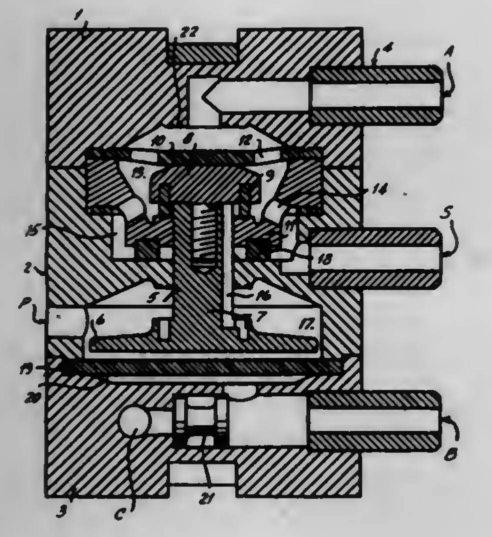
Nils O. Rosaen, 3774 Quarton Rd., Bloomfield Hills, Mich.
Filed Feb. 24, 1970, Ser. No. 13,500
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.6 **11 Claims**



A fluid valve having a sleeve portion and a pilot portion; the sleeve portion being actuated by the pilot portion to move between a first position in which fluid under pressure is detected to a fluid user and a second position in which fluid is exhausted from the fluid user through the fluid valve to a reservoir.

3,604,460
PNEUMATIC CONVERTIBLE RELAY CAPABLE OF PERFORMING LOGIC FUNCTIONS

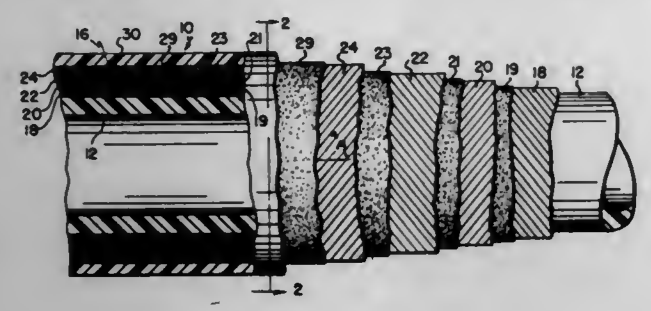
Gerard C. C. J. Delrue, Pontarlier, France, assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Feb. 14, 1969, Ser. No. 799,305
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.66 7 Claims



A pneumatic convertible relay capable of performing logic functions has a relay body that includes a control mechanism for moving a valve member. The valve member includes a slideable stem with a foot on one end and a head on the other end. For a normally open construction the head carries an angular valve head seal and in normally closed construction the foot also carries a seal for controlling flow between a mating seat and a passage along the slidable stem. The valve body is in three sections and includes an inlet, an outlet, an exhaust, and two control openings. The control mechanism includes a diaphragm positioned to act on the foot of the valve member under control of pressure applied to either of the control openings. A slideable shuttle provides alternative operation. The valve is convertible from a normally open construction to a normally closed construction by changing the position of a passage in a valve seat to connect either the inlet to the outlet or the exhaust to the outlet and the position of the annular valve seal, while the other components remain the same.

3,604,461
COMPOSITE TUBING

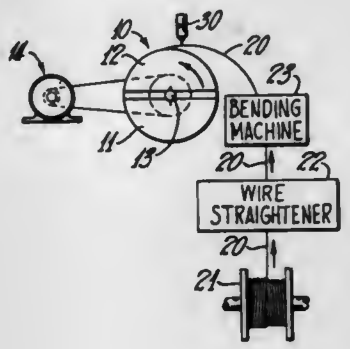
Richard A. Matthews, Chagrin Falls, Ohio, assignor to Samuel Moore and Company, Mantua, Ohio
Continuation of application Ser. No. 639,040, Aug. 30, 1970, now abandoned , which is a continuation of application Ser. No. 509,514, Aug. 24, 1965, now abandoned , which is a continuation of application Ser. No. 509,530, Aug. 24, 1965, now abandoned. This application Apr. 20, 1970, Ser. No. 30,265
Int. Cl. F16l *11/04, 11/08*
U.S. Cl. 138—137 11 Claims



A composite tubing product for high-pressure fluid transmission having an inner core tube made from a flexible polymeric material, a flexible reinforcement member disposed around the core tube and including a plurality of coplanar layers of fibrous strands disposed helically with respect to the core tube, and a flexible outer polymeric sheath disposed around the reinforcement member and providing a protective cover therefor.

3,604,462
FLEXIBLE TUBING AND METHOD OF MAKING SAME

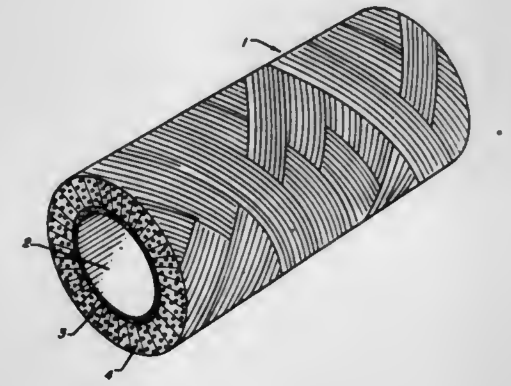
William C. Dreher, San Jose, and Duncan B. Ross, Santa Clara, both of, Calif., assignors to Owens-Corning Fiberglas Corporation
Filed Sept. 14, 1966, Ser. No. 579,380
Int. Cl. F16l *11/08*
U.S. Cl. 138—139 8 Claims



A dimensionally stable helical coil is nested in an unstressed state inside a thick tubular wall of insulating material. The convolutions of the coil are spaced apart a distance in the range of two-thirds to 1½ of the thickness of the wall. The wall preferably is formed by depositing a layer of glass fibers and binder adjacent a glass fiber fabric and curing the binder to integrate the fibers into a mat and to adhere the fabric to the mat to form an inner facing for the wall.

3,604,463
WEAR-RESISTANT TUBE

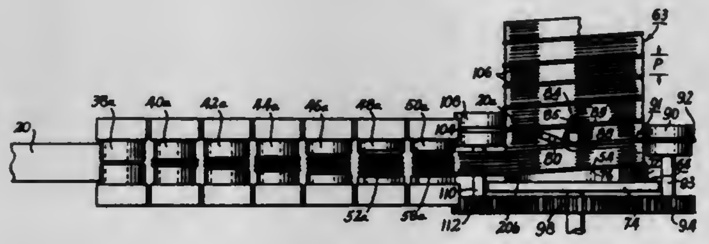
Jack Lowrie McLarty, Millwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed July 29, 1969, Ser. No. 845,880
Int. Cl. F16l *9/12*
U.S. Cl. 138—144 6 Claims



A wear-resistant tube and the method of manufacture thereof. A tube is produced having an interior gel coat layer containing a first thermosetting resin system within which particles of mica are dispersed. Fiberglass filaments coated within a second thermosetting resin system are overwound about this interior layer to form an exterior layer. The interior and exterior layers are bounded to each other and together form a wear-resistant tube.

3,604,464
BENDABLE METAL DUCT

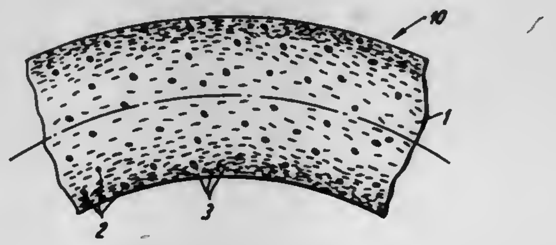
Richard B. Pelley, East Kingston, N.H., and Norman Peltier, Amesbury, Mass., assignors to Callahan Mining Corporation, New York, N.Y.
Filed Nov. 4, 1968, Ser. No. 773,061
Int. Cl. F16l *9/16;* **B21c** *37/12;* **B21f** *35/02*
U.S. Cl. 138—154 4 Claims



The disclosed bendable metal duct is capable of being formed into sharp bends without rupture of the duct seams. Metal strip, which has been corrugated substantially in the direction of its longitudinal axis to provide flexibility in the finished duct, is helically wound into tubular shape. The duct convolutions are joined by a lock seam which is secured by crimps disposed along the length of the seam at an acute angle to the longitudinal axis thereof. Each crimp carries through the layers of the seam to form a series of detents engaging between said layers to prevent slippage and seam rupture upon the application of bending stresses to the duct. The apparatus for automatically and continuously forming the bendable metal duct includes rollers for corrugating the strip, and a forming head on which the strip is helically wound. It also includes means for forming the lock seam comprising a crimping wheel having gearlike teeth for crimping the seam, and a press wheel to insure that the crimped seam lies flat and that the detents thereof properly engage.

3,604,465
PIPE CONSTRUCTION

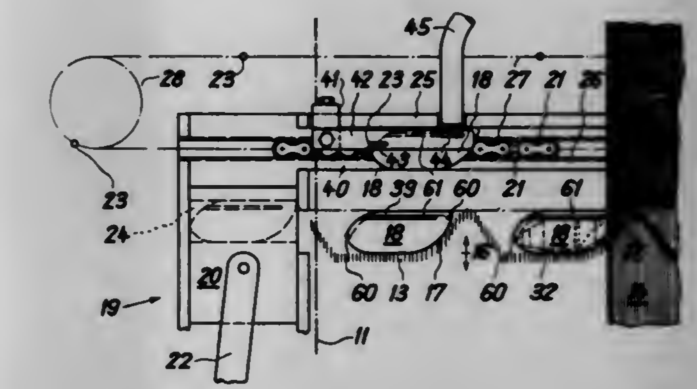
Rudolf Schetty, Basel, Switzerland, assignor to Basler Stuckfarberei AG, Badenstrasse, Basel, Switzerland
Filed Mar. 6, 1968, Ser. No. 710,850
Claims priority, application Switzerland, Mar. 22, 1967, 4329/67
Int. Cl. F16l *9/12*
U.S. Cl. 138—177 8 Claims



A pipe construction includes a plastic bonded filling material wherein at least one constituent of the filling material is varied in amount in a radial direction over at least a part of the pipe wall thickness. The pipe is made by supplying a filling material to a rotating mold in successive strokes along the mold axis in addition to a plastic material which is supplied continuously to the mold; and varying at least one constituent of the filling material during at least some of successive strokes as the wall thickness of the pipe is being formed.

3,604,466
APPARATUS AND METHOD FOR CLEANING A SHUTTLE ON A LOOM

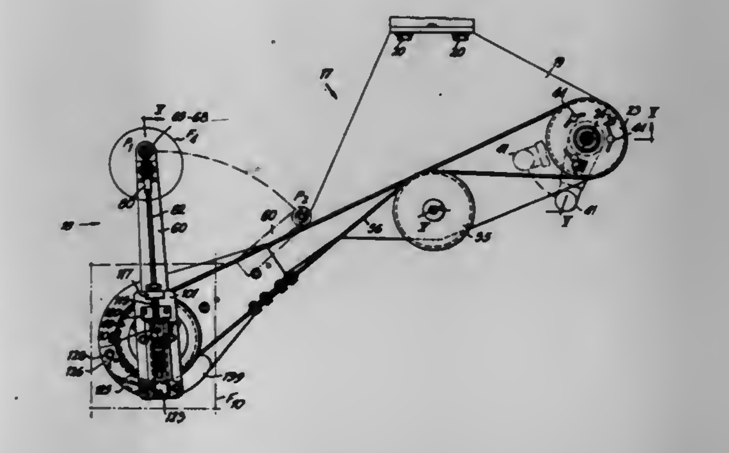
Edgar H. Strauss, Ruti/ZH, and Gerd Hugo Rabe, Tann-Ruti/ZH, both of, Switzerland, assignors to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Ruti, Switzerland
Filed Sept. 4, 1969, Ser. No. 855,097
Claims priority, application Switzerland, Sept. 20, 1968, 14153/68
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 17 Claims



An apparatus for cleaning a shuttle on a loom wherein the shuttle moves along a path to successively insert individual weft threads into the sheds formed during the weaving operation, which comprises cleaning means located at a point along the path of the shuttle for effecting periodic cleaning of a zone of the shuttle that requires cleaning, each time the shuttle is at this location. A method of cleaning the shuttle is also disclosed.

3,604,467
WEFT NIPPER FOR CIRCULAR LOOM

Armand Malchair, Herstal, Belgium, assignor to Peltzer & Fils S.A. societe anonyme, Verviers, Belgium
Filed May 26, 1969, Ser. No. 827,588
Claims priority, application Belgium, May 30, 1968, 715850
Int. Cl. D03d *37/00*
U.S. Cl. 139—13 5 Claims



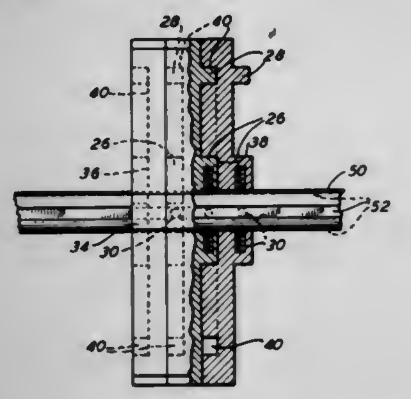
Weft nipper for a circular loom comprising an oscillating arm overhanging the path of the weft-drawing devices, said oscillating arm carrying, at its end, a gripping means actuated through a scissors device carried by said oscillating arm, by a rod fixed to a slide contacting an oscillating cam pivoted on a fixed support.

3,604,468
SHEDDING DEVICE FOR WEAVING MACHINE

Geza J. Sajo, and Agnes Sajo, both of Montreal, Quebec, Canada, assignors to The Sajo Corporation, Montreal, Quebec, Canada

Filed Dec. 18, 1968, Ser. No. 784,602
Int. Cl. D03c *13/00*

U.S. Cl. 139—55 **1 Claim**



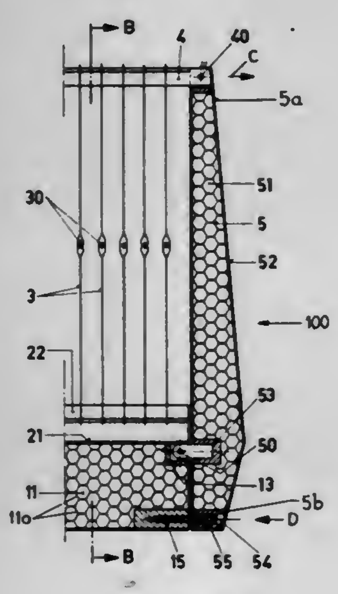
The invention relates to a shedding device for a weaving machine which consists of a rotatably operable cylindrical member formed of a series of parallel spaced-apart disclike sections; each section is adapted for rotational movement about a longitudinal axis and is provided with warp lifting portions extending for a predetermined arc about the axis. The disclike sections may be assembled on the axle in a variety of combinations in order to produce a great variety of patterns.

3,604,469
LOOM HARNESS

Hanspeter Schneiter, Kloten, and Karl Kotachka, Zurich, both of, Switzerland, assignors to Contraves AG, Zurich, Switzerland

Filed Nov. 4, 1968, Ser. No. 773,021
Claims priority, application Switzerland, Nov. 17, 1967, Sept. 17, 1968, 16127/67;13899/68
Int. Cl. D03c *9/06*

U.S. Cl. 139—91 **1 Claim**



There is disclosed a new and improved loom harness construction comprising a harness frame incorporating a harness beam and a pair of side struts. According to one aspect of the invention the harness beam and, if desired, also the side struts are constructed as respective substantially lightweight composite body members with cellular core and therewith substantially flushly connected shell means. Furthermore there is provided a pair of substantially parallel and spaced heddle support rails carried by the harness frame. The aforesaid pair of side struts extend substantially perpendicular to the ends of the harness beam. One of the heddle support rails is detachably mounted between the free ends of the side struts, and the invention further contemplates the provision of means for applying a lengthwise directed tensional force to the one detachably mounted heddle support rail. The other heddle support rail is inserted at the harness frame near to the bottom or lower region of the side struts.

3,604,470
DURABLE-PRESS STRETCH FABRIC AND METHOD OF OBTAINING SAME

Paul Zindwer, New York, N.Y., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 7, 1969, Ser. No. 805,368
Int. Cl. D03d *15/08*

U.S. Cl. 139—421 **7 Claims**

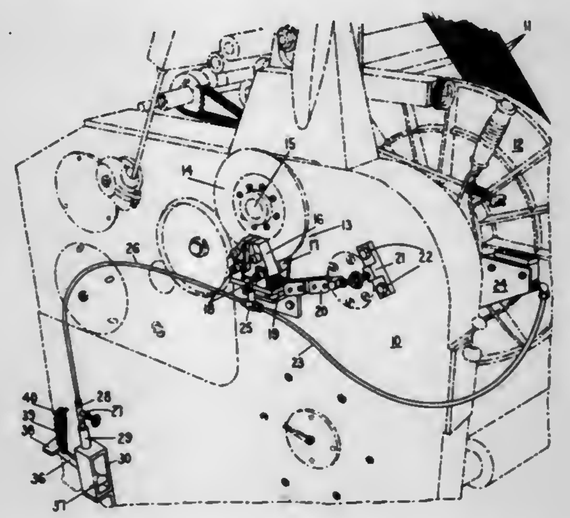
A durable press woven stretch fabric including a durable pressure finish and comprising, as the filling, a plied yarn composed of multiple ends of a textured yarn plied with at least one end of cellulosic yarn.

3,604,471
LETOFF RELEASE MECHANISM

John H. Nydam, Whitnsville, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 27, 1969, Ser. No. 837,076
Int. Cl. D03c *49/06*

U.S. Cl. 139—100 **4 Claims**



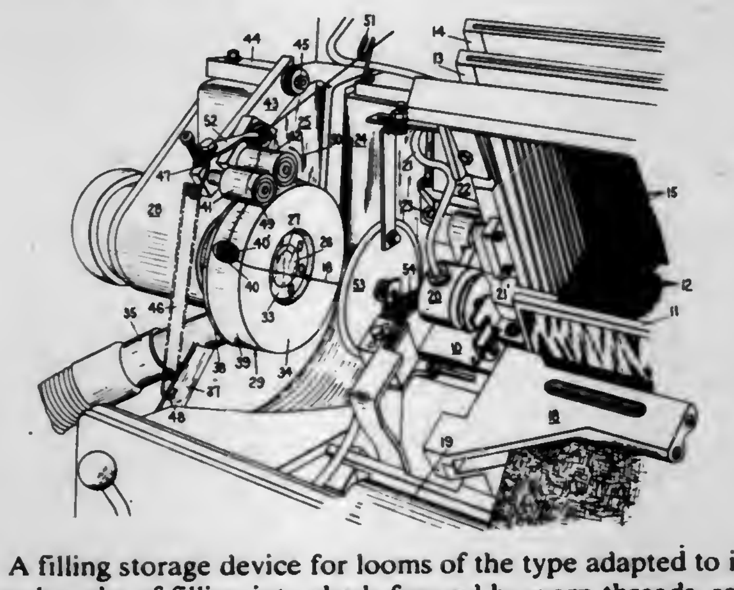
A selective release mechanism for the braking device of a loom letoff for relieving the restraining forces normally applied to the yarn beam while drawing the warp yarns therefrom.

3,604,472
FILLING STORAGE DEVICE FOR LOOMS

John H. Nydam, Whitinsville, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1969, Ser. No. 1,902
Int. Cl. D03d *47/34*

U.S. Cl. 139—122 R **5 Claims**



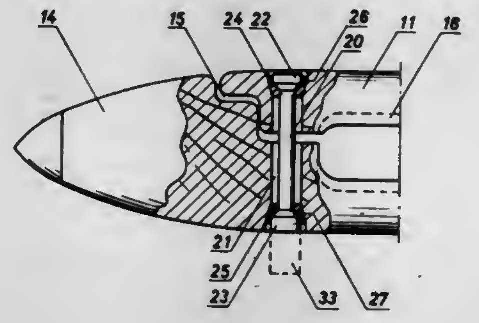
A filling storage device for looms of the type adapted to insert lengths of filling into sheds formed by warp threads, said device having a rotating drum member on which a premeasured length of filling is to be wound and held in contact therewith by a vacuum prior to its insertion into a warp shed.

3,604,473
WEAVING SHUTTLE

Johann Heinrich Butikofer, Tann-Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Caspar Honegger, Ruti, Switzerland

Filed Oct. 1, 1969, Ser. No. 862,808
Claims priority, application Switzerland, Oct. 23, 1968, 015807/68
Int. Cl. D03j *5/16*

U.S. Cl. 139—207 **10 Claims**



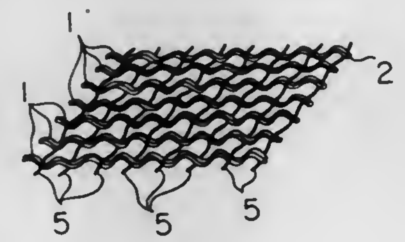
A weaving shuttle comprising an elongated body having two sidewalls interconnected at one end and separated at the other end of the shuttle and having an opening extending through the sidewalls separated at the other end, a bobbin located within the body between said sidewalls, retaining means for retaining the head of the bobbin being carried by the separated sidewalls, and an elastic strip extending under tension through the opening. The opening has widened portions at its outer ends and the elastic strip has thickened portions at each end. The thickened portions bear against the widened portions of said opening so that the sidewalls are biased towards each other by the tensioned strip.

3,604,474
SCRUBBING BATH TOWEL

Haruo Kamei, 1-161 Sakasai Edogawaku, Tokyo, Japan

Filed Apr. 22, 1969, Ser. No. 818,213
Int. Cl. D03d *15/00, 27/108;* **D06c** *1/00*

U.S. Cl. 139—420 **2 Claims**



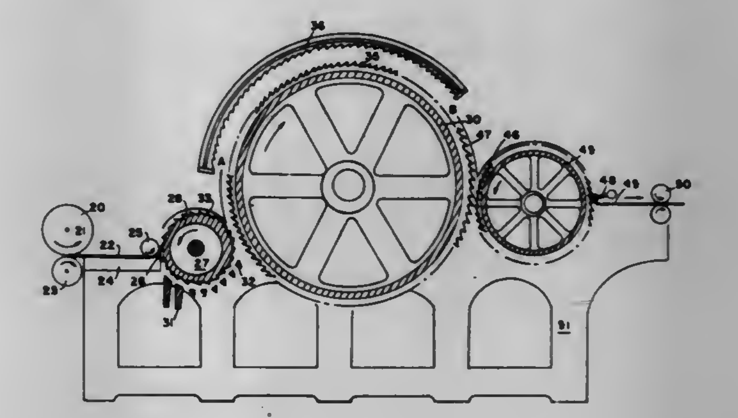
A bath towel suitable for scrubbing and cleaning the human body made of weftwisely creped fabric comprising thermoplastic crimped multifilament yarn as a weft and thermoplastic filament yarn as a warp, and method of making the same comprising a treatment in a hot water bath in which the fabric of the towel is given agitation through the hot water by a means to agitate.

3,604,475
METHOD OF APPLYING CARD CLOTHING AND THE LIKE TO A CONCAVE

John D. Hollingsworth, P.O. Box 516, Greenville, S.C.

Division of Ser. No. 869,300, Oct. 24, 1969, abandoned, which is a continuation-in-part of application Ser. No. 793,715, Jan. 24, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 729,068, May 14, 1969, now abandoned. Divided and this application Apr. 2, 1971, Ser. No. 130,648
Int. Cl. B21f *45/10*

U.S. Cl. 140—97 **12 Claims**



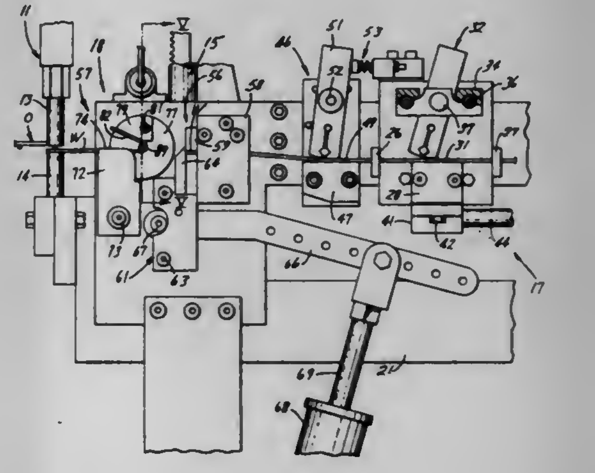
A concave metallic surface suitable for carding and the like is applied to a concave support by placing a predetermined concave reverse set curvature in a band of wire so that teeth on a side of the band opposite a base of the band face inwardly, cutting a plurality of concave segments from said band, positioning the concave segments in adjacent rows in alignment on the concave support with the teeth facing inwardly away from the support, and fastening the segments on the support as by clamping.

3,604,476
HOOK APPLYING MACHINE

John W. Black, Prairieville Township, Barry County, Mich., assignor to Pemco Wheel Company, Kalamazoo, Mich.

Filed Nov. 3, 1969, Ser. No. 873,209
Int. Cl. B21f *15/08, 27/14*

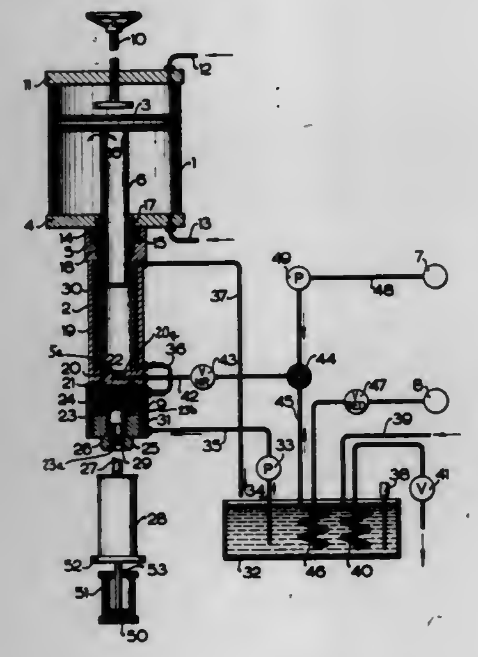
U.S. Cl. 140—112 **6 Claims**



A pair of elongated, spaced wires are simultaneously advanced into positions where the free ends of the wires are disposed respectively between two pairs of welding electrodes. Both wires are severed at points spaced from the free ends thereof and the wires are bent to form hooks. An object, such as one edge of a wire rack, is also positioned between the pairs of welding electrodes, after which the electrodes are driven into engagement with the object and the free ends of the wire hooks to weld them to the object.

3,604,477
APPARATUS FOR FILING AEROSOL PACKAGES

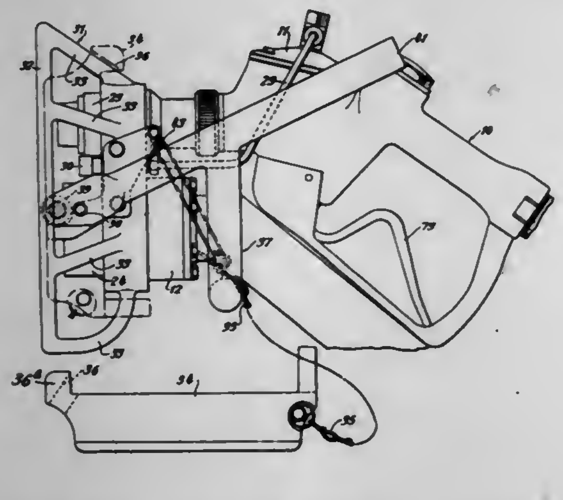
Hans Grothoff, Am Krabben 7, 58911 Valbert, Germany
Filed Feb. 13, 1969, Ser. No. 798,884
Claims priority, application Germany, Feb. 13, 1968, P 16 01 260.5
Int. Cl. B65b *31/06*
U.S. Cl. 141—20 **21 Claims**



The metering cylinder of an apparatus for admitting gaseous or liquefied propellant into aerosol packages accommodates a reciprocable plunger which is hollow and is connected to the piston of a pneumatic cylinder. The metering cylinder is separably connected with a filling head and is provided with an internal annular space for lubricant which surrounds a portion of the plunger. The filling head and the metering cylinder are provided with jackets for circulating conditioning fluid which withdraws heat developing on compression of gaseous propellant. The space for lubricant is flanked by two annular seals which are respectively installed in the metering cylinder and in the pneumatic cylinder. The inlet of the metering cylinder can receive gaseous or liquefied propellant, depending on the setting of a three-way valve which is installed in a conduit containing a pump for liquefied propellant and a valve which regulates the pressure of gaseous propellant.

3,604,478
FUEL-TANK-FILLING DEVICES

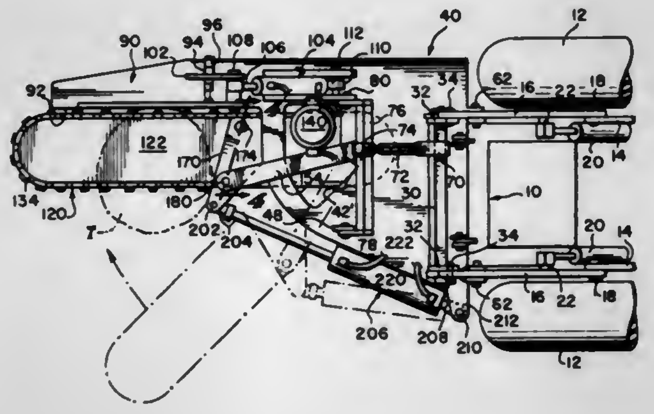
Frank Gowens, Wareham, England, assignor to Flight Refuelling Limited, London, England
Filed May 20, 1969, Ser. No. 826,132
Int. Cl. B67d *5/371*
U.S. Cl. 141—59 **15 Claims**



A fuel-tank-filling device including a coupling element comprising a hosecock **10** connected to a fuel supply hose and to a vent hose **16**, a manually opened and spring closed valve in the hosecock **10** to shut off the supply of fuel, a head member **12** for coupling with a receiving unit mounted on the vehicle, passages **13, 14** in the head member **12** communicating with the hoses, spring-loaded valves closing the passages **13, 14** and arranged for automatic opening simultaneously with the operation of a spring-released manually operated latch **37** which is held manually against the action of the spring release to hold the head member **12** in engagement with the receiving unit, corresponding spring-loaded valves which close corresponding passages in the receiving unit also being opened by the action of coupling the coupling element with the receiving unit.

3,604,479
CHAIN SAW TREE-FELLING APPARATUS

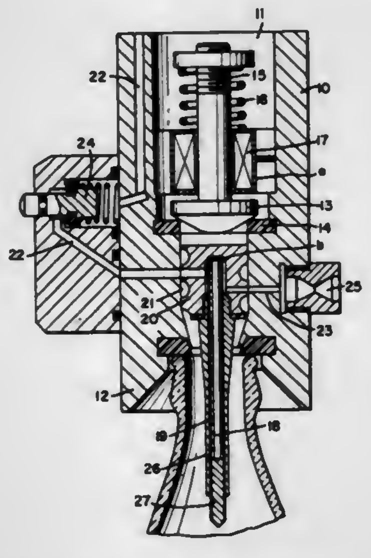
Bertram L. Jordan, Lewiston, N.C., assignor to Harrington Manufacturing Company, Inc.
Filed Apr. 25, 1969, Ser. No. 819,237
Int. Cl. B27b *17/02;* **A01g** *23/08*
U.S. Cl. 143—32 **1 Claim**



The present invention pertains to a tree-felling device that is adapted to be mounted on the front of a vehicle and that incorporates a pivotally mounted chain saw. The chain saw is associated with means for assisting the directional felling of the tree.

3,604,480
FILLING ELEMENT FOR COUNTERPRESSURE FILLING MACHINES

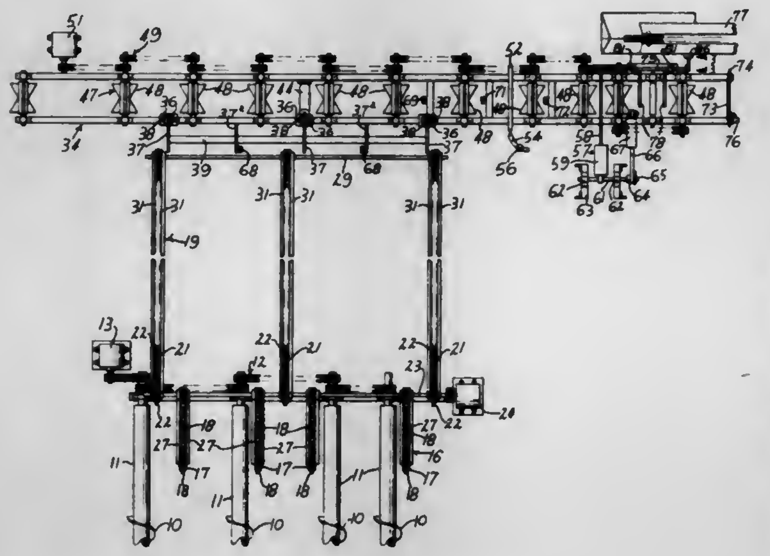
Hans Reichert, Rehborn, and Alfred Rentel, Winzenheim, both of, Germany, assignors to Seitz-Werke G.m.b.H, Bad Kreuznach, Rineland, Germany
Filed July 15, 1968, Ser. No. 744,882
Claims priority, application Germany, July 22, 1967, S110959 III/64b
Int. Cl. B67c *3/06*
U.S. Cl. 141—39 **9 Claims**



A filling unit for counterpressure container-filling machines with loading and return gas conveying tube means and with an electromagnetically controllable liquid control valve, in which the liquid control valve has a shaft surrounded by electromagnetic means, and in which the tube means comprises two coaxially arranged tubular members electrically insulated from each other and respectively provided with contact members adapted to be interconnected by liquid in the container being filled at the end of the filling operation to thereby close the energizing circuit for the electromagnetic means to cause the latter to stop further supply of filling liquid to the container.

3,604,481
LOG SLASHER

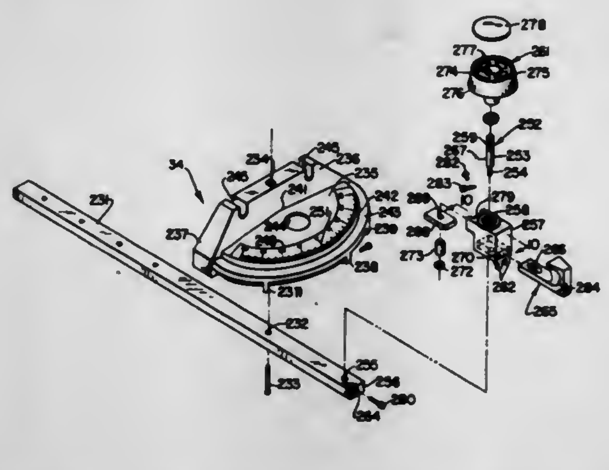
Marvin C. Dobbs, Fayette, Ala., assignor to The Dobbs Co. and Alco Machine Shops, Incorporated, part interest to each
Filed Aug. 6, 1969, Ser. No. 847,887
Int. Cl. B27b *25/00, 31/00*
U.S. Cl. 143—32 **1 Claim**



A log slasher having first conveyor delivering logs transversely of lengths to second conveyor which moves logs longitudinally of lengths. Transfer unit moves logs sequentially from first conveyor to second conveyor in response to predetermined movement of each preceding log. Washer and cutter assembly actuated in response to movement of each log to wash and then cut logs into predetermined lengths whereupon cut lengths then removed from second conveyor.

3,604,482
SAW TABLE GAGE

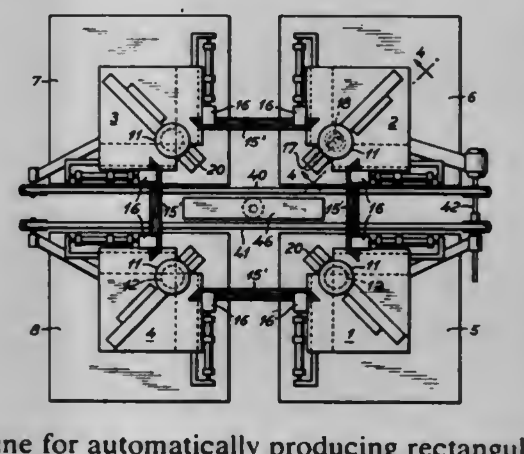
Edward C. Warrick, Pittsburgh, Pa., and Emerson Berends, Tupelo, Miss., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.
Division of Ser. No. 684,437, Nov. 20, 1967, Pat. No. 3,538,964
Filed Nov. 21, 1969, Ser. No. 871,365
Int. Cl. B27b *27/06*
U.S. Cl. 143—169 **4 Claims**



A tilting arbor table saw angle or mitre gage with adjustment controls and angle scale grouped and arranged for operation and viewing by an operator standing in operating position at the front of the saw.

3,604,483
MACHINE FOR AUTOMATICALLY PRODUCING FRAMELIKE STRUCTURES

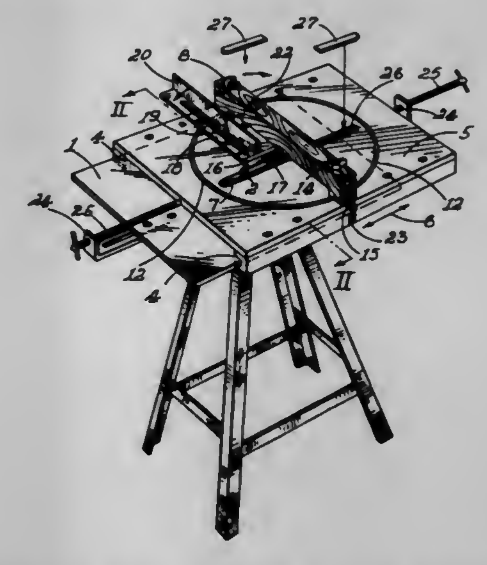
Richard Bent Nissen, 8870 Langa, Denmark
Filed May 2, 1969, Ser. No. 821,286
Claims priority, application Denmark, May 3, 1968, May 3, 1968, 2054/68;2055/68
Int. Cl. B27m *3/00*
U.S. Cl. 144—3 **9 Claims**



A machine for automatically producing rectangular frames or the like from previously cut to size frame components. The machine includes a number of adjustably positioned units corresponding in number to the number of frame components, and each unit carries a pair of slideably mounted clamping members disposed at an angle with each other and adapted to engage the ends of adjacent frame components. A finger cutter is also carried on each unit and is slideably mounted to move in a path which bisects the paths of the two clamping members. A hydraulic system is provided for selectively displacing the clamping members and finger cutter such that interengaging fingers are cut in the adjacent component ends as the components are displaced toward each other to form the completed frame. Means may also be provided for positioning a panel such as a glass windowpane intermediate the components such that the panel may be mounted in precut grooves in the components during the assembly operation.

3,604,484
WOOD-WORKING MACHINES WITH VERTICAL SPINDLE

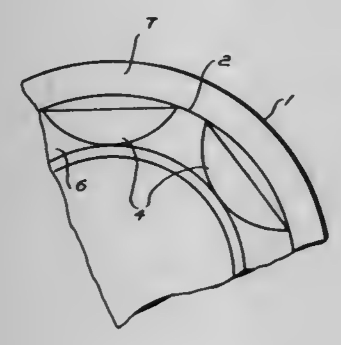
Cornelius J. Viljoen, Alberton, Transvaal, Republic of South Africa, assignor to Reliance Export Company (Proprietary) Limited
Filed Apr. 24, 1969, Ser. No. 818,950
Claims priority, application South Africa, Apr. 29, 1969, Oct. 11, 1969, 68/6585;68/2709
Int. Cl. B27f *1/04;* **B27c** *5/00*
U.S. Cl. 144—133 **3 Claims**



A woodworking machine which is more adaptable for different operations on the workpiece. A tool bit extends vertically through the table and turns about an axis substantially vertical to the table plane. To facilitate operations on the workpiece the table consists of two plates, the top plate being slidable in reciprocating fashion over the bottom plate, and mounted on the top plate are two fences which are adjustable relative to each other and the tool bit.

3,604,485
TIRE-HOLDING DEVICE

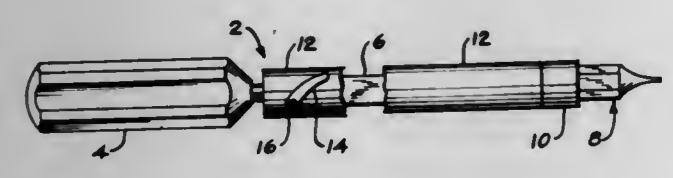
Wilheim Schelkmann, Witten (Ruhr), Germany, assignor to Vakuum Vulk Holdings Ltd., Nassau, Bahamas
Filed Aug. 26, 1968, Ser. No. 755,150
Claims priority, application Germany, Sept. 1, 1967, Sch 41 248
Int. Cl. B29b *17/00*
U.S. Cl. 144—288 A **5 Claims**



A device for holding vehicle tires having a bead. The device includes a disc-shaped mounting member on which the tire is to be mounted, and this mounting member is provided with a substantially frustoconical projecting portion over which the tire bead is to be placed. The projecting portion has an external circumferential frustoconically tapering surface against which the bead is to abut and this surface is provided with a plurality of circumferentially distributed facets.

3,604,486
SCREWDRIVER

Roger D. Henry, Miami, Fla., assignor to Eugene F. Malin, Fort Lauderdale, Fla., a part interest
Filed Mar. 13, 1969, Ser. No. 806,794
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 **7 Claims**

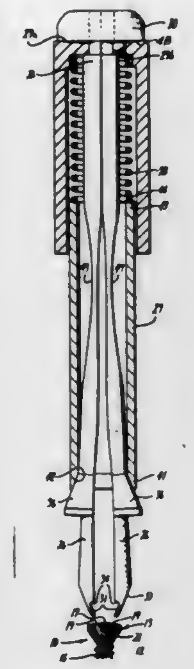


A screwdriver providing a rigid torsional connection between the handle and bit including means for varying the relative positions of the main centerline of the screwdriver and the centerline of the bit. The screwdriver includes a handle, a central shaft, a movable member, a universal connecting means, a bit-receiving chuck, and a bit.

3,604,487
ORTHOPEDIC SCREW DRIVING MEANS

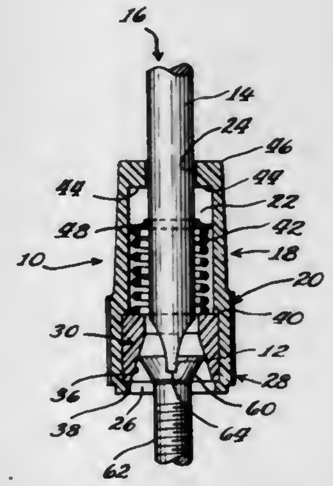
Richard S. Gilbert, 170 B Sotoyome St., Santa Rosa, Calif.
Filed Mar. 10, 1969, Ser. No. 805,572
Int. Cl. B25b *15/02;* **F16b** *23/00*
U.S. Cl. 145—50 D **4 Claims**

A combination of an orthopedic screw and driving means which enables the screw to be started and driven in a single continuous operation with one hand. The screwhead has multiple slots, and the driving means has multiple pinching blades for engaging the slots to provide a rigid grip of the screw.



3,604,488
SCREWDRIVER ATTACHMENT

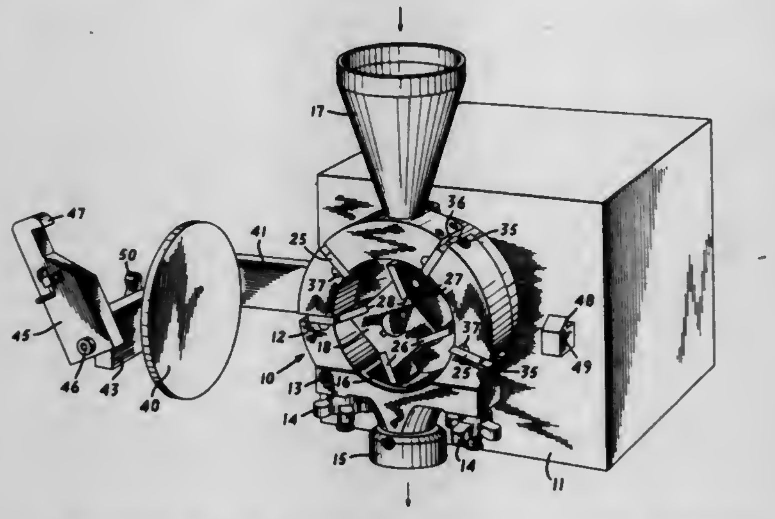
James L. Wishart, and Paul R. Blondin, both of Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.
Filed Nov. 19, 1969, Ser. No. 877,894
Int. Cl. B25b *23/08*
U.S. Cl. 145—51 **4 Claims**



A screwdriver attachment which can be quickly mounted on and removed from the driving end of a screwdriver shank comprising a tubular structure having openings at its opposite ends. The opening at the forward end is tapered inwardly so that it can be seated about and centered on the head of a screw, and the circular opening at the rearward end fits loosely about the shank of a screwdriver bit. A spring is disposed in the bore of the structure and is held between its two ends. A clutch member having a ring configuration is placed between the inward end of the cylindrical structure and the spring and has a plurality of resilient fingers extending from its inner surface towards the rearward end to provide a slip clutch engagement with the shank of the screwdriver bit.

3,604,489
GRINDING MILL

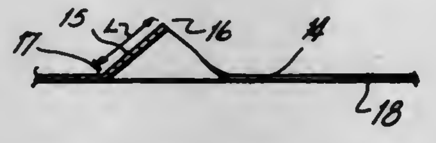
Tibor S. Laszlo, Richmond, Va., and Henry M. Stahr, Ames, Iowa, assignors to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,489
Int. Cl. A24b *3/00*
U.S. Cl. 146—123 **8 Claims**



A grinding mill of a type adapted for grinding vegetable material such as samples of tobacco for analysis having the internal operating parts coated with a thin layer of a high temperature refractory metal compound highly resistant to abrasion and to adherence of the material thereto the compound being applied to the parts by cathodic sputtering.

3,604,490
SHREDDER PLATE

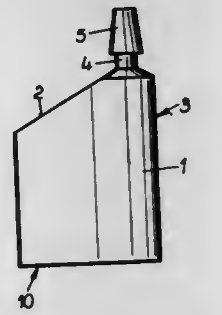
Melvin E. Bricker, 2723 Saddleback Drive, Cincinnati, Ohio
Filed Nov. 12, 1969, Ser. No. 875,806
Int. Cl. B02c *19/20*
U.S. Cl. 146—177 **3 Claims**



A shredder plate for use with high-speed rotary vegetable cutter drives. The shredder plate includes a plurality of cutter openings and adjacent cutter flanges. Each cutter flange is arcuate and terminates in a cutting edge forming a continuation of the periphery of the adjacent opening. The flanges taper from a maximum width at the cutting edge to an apex. The length of the flange along the centerline is approximately equal to one-half of the diameter of the opening and the centerline of the flange makes an angle of approximately 40° with the plate.

3,604,491
FLEXIBLE DRINKING CONTAINER OR BAG

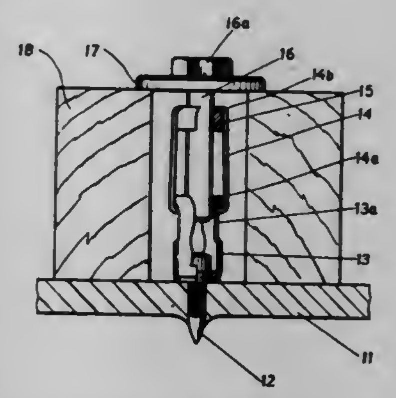
Dieter Spiess, Kleinkarlbach, Germany, assignor to Thimonnier & Cie, Lyon, France
Filed Dec. 9, 1968, Ser. No. 872,368
Int. Cl. B65d *31/16*
U.S. Cl. 150—8 **14 Claims**



A flexible drinking container or bag which comprises a tubular wall member with a top portion converging toward a capped dispensing opening and a bottom portion suitably shaped to support a filled container in an upright standing position.

3,604,492
FASTENING ELEMENT

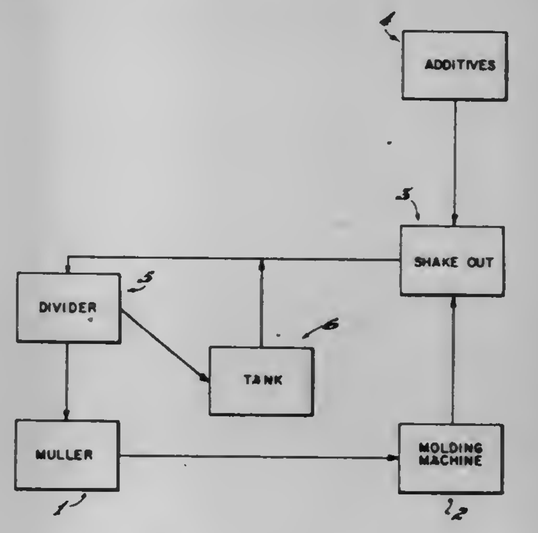
Wolfgang Bayer, Eschen, Pons, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Furstentum, Liechtenstein
Filed May 22, 1969, Ser. No. 826,906
Claims priority, application Germany, June 14, 1968, H62999
Int. Cl. E04b *1/38;* **F16b** *39/00*
U.S. Cl. 151—41.73 **6 Claims**



A fastening element for the flexible fastening of a part to a base includes an anchoring element such as a nail which is adapted to be power driven into the base and a coupling part having detents at one end which engage around coupling detents of the nailhead and an opposite end which is secured to a nut. The nut provides a threaded receptacle for a threaded bolt which is adapted to bear either directly or through a washer upon the part to be fastened.

3,604,493
METHOD FOR HANDLING AND COOLING FOUNDRY SAND

Joseph S. Schumacher, 7256 Concord Ridge Drive, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 714,339, Mar. 19, 1968, now Patent No. 3,461,941. This application July 7, 1969, Ser. No. 839,339
Int. Cl. B22c *5/16*
U.S. Cl. 164—5 **3 Claims**



The invention disclosed herein relates to a novel method of handling and cooling foundry sand. The method includes the steps of preparing a quantity of the foundry sand, conveying a portion of the sand to a molding machine and forming molds therefrom, casting a metal into the molds, breaking up the molds, and mixing the unused sand with the used sand. Only a portion of the used-unused sand mixture is subsequently mulled, the remainder being retained in a storage tank for subsequent cooling. By using this method, the temperature of the foundry sand can be controlled and the use of costly cooling apparatus can be eliminated.

3,604,494
PROCESS FOR THE PRODUCTION OF COMPOSITE INGOTS OF MAGNESIUM CONTAINING PREALLOYS

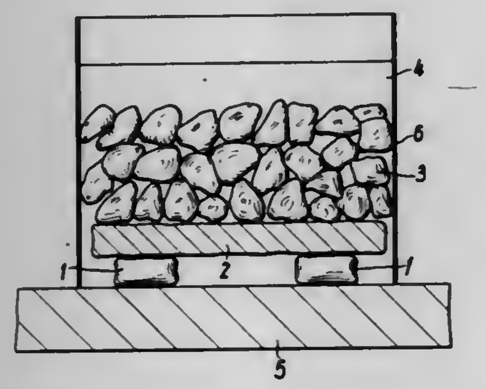
Heiner Trager, Neu Isenburg; Albert Kaune, Frankfurt; Horst Muhlberger, Frankfurt; Karl Josef Reifferscheid, Petterweil; Ludwig Grimm, Hart (Alz); Gerhard Wagner, Unterneukirchen-Hart, and Heinrich Haslinger, Garching (Alz), all of, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt/Main 1,, Germany and Suddeutsche Kalkstick-stopfwerke A.G., Trostbert, Germany

Filed Oct. 2, 1967, Ser. No. 672,163

Claims priority, application Germany, Oct. 4, 1966, Sept. 15, 1967, M 71156;M 75554

Int. Cl. B22d *19/00;* **C22c** *23/00*

U.S. Cl. 164—97 **8 Claims**



Compact, magnesium containing prealloy ingots are produced by casting a molten magnesium containing prealloy around prefabricated solid pieces of a prealloy having the same or similar composition as that of the molten prealloy. The resulting compact prealloy ingots are used in the production of cast iron with spheroidal graphite.

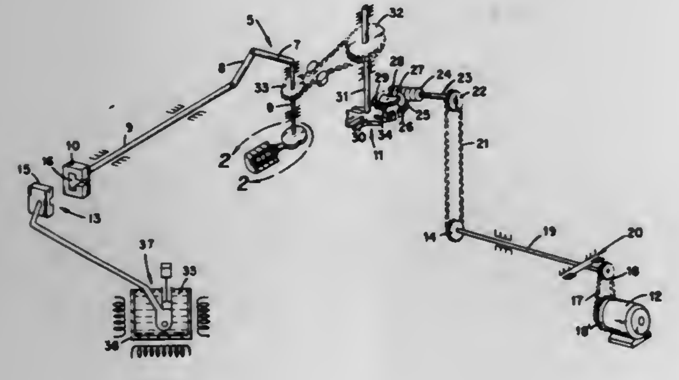
3,604,495
METHOD OF MAINTAINING DIECASTING RECIPROCATION APPARATUS IN FORCE-BALANCED STATE

Franck M. Picker, Oak Ridge, Tenn., assignor to Pic-Air Inc., Oak Ridge, Tenn.

Filed Dec. 4, 1969, Ser. No. 882,020

Int. Cl. B22d *27/10*

U.S. Cl. 164—113 **1 Claim**



In a method for diecasting molten metal employing a split die, one platen of which is fixed and one platen of which is reciprocatable between open and closed positions, the improved step of maintaining the platen reciprocation apparatus in a force-balanced state during a major part of such reciprocation cycle.

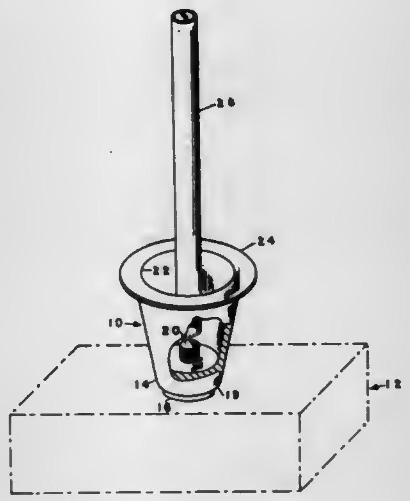
3,604,496
SPRUE FORMING PATTERN

Milton O. Grosjean, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 28, 1969, Ser. No. 812,581

Int. Cl. B22c *7/00*

U.S. Cl. 164—244 **2 Claims**



A reusable cup-shaped sprue forming pattern to support a disposable investment casting pattern or pattern assembly.

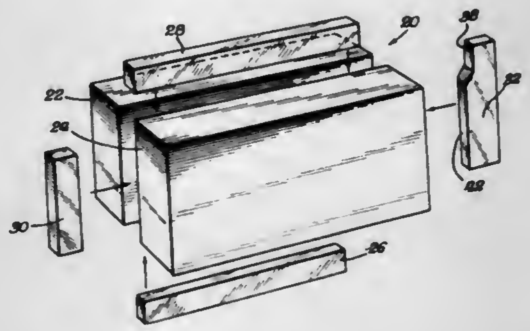
3,604,497
MOLD APPARATUS FOR CASTING MOLTEN METAL

Edmund Q. Sylvester, c/o Sylvester Enterprises, Inc. 850 Hanna Bldg., Cleveland, Ohio

Filed Feb. 16, 1966, Ser. No. 527,699

Int. Cl. B22d *47/00, 33/04*

U.S. Cl. 164—269 **25 Claims**



A series of molds, each having a casting cavity defined by a plurality of movable mold blocks, are positionable to be successively filled with molten metal from a movable ladle. After the metal in each mold solidifies, the mold blocks are moved and the enclosed casting is transported to another location for processing. Cleaning and coating apparatuses are provided to recondition the mold blocks after each pour. The reconditioned blocks are then repositioned to define a casting cavity and moved into a pouring location to be again filled with molten metal.

3,604,498
CONTINUOUS CASTING MOLD WITH CORRUGATED SURFACE MANDREL

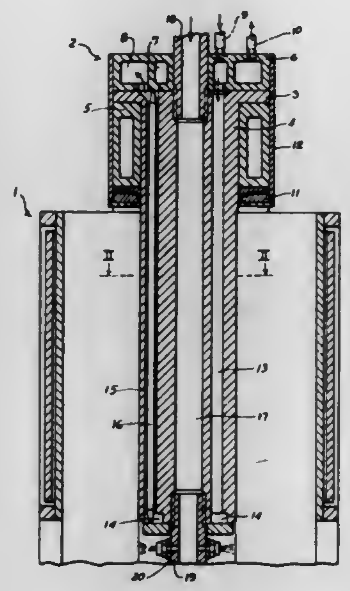
Georg Bollig, Buederich, Germany, assignor to Schloemann Aktiengesellschaft, Duesseldorf, Germany

Filed Jan. 14, 1970, Ser. No. 2,879

Int. Cl. B22d *11/02*

U.S. Cl. 164—283 **6 Claims**

Apparatus for continuously casting tubes consists of a cooled mandrel extending into a continuous casting mold. The portion of the surface of the mandrel extending into the mold has longitudinal depressions therein substantially parallel to the longitudinal axis of the mandrel. In a preferred form, the depressions are spaced around the mandrel forming a corrugated surface with regular and equally curved ridges and hollows. Cooling channels are preferably provided in the ridges between the depressions. Jets are preferably provided at the end of the mandrel for applying coolant to the interior of a tube formed by the mandrel. The mandrel may also be conical in the direction of tube travel.



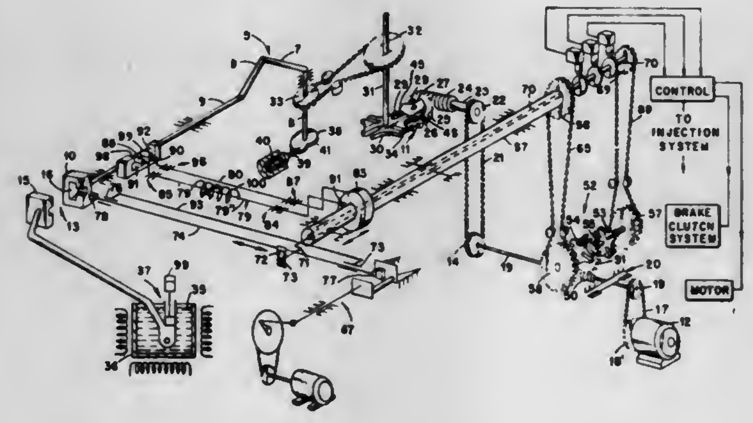
3,604,499
DIECASTING MACHINE WITH FORCE-BALANCED RECIPROCATION APPARATUS AND TRANSFERRING MEANS

Franck M. Picker, Oak Ridge, Tenn., assignor to Pic-Air Inc., Oak Ridge, Tenn.

Filed Dec. 4, 1969, Ser. No. 882,021

Int. Cl. B22d *17/00, 17/24, 33/04*

U.S. Cl. 164—303 **9 Claims**



A fast-acting diecasting machine including in combination, a die having at least one die platen which is reciprocatable between open and closed positions, a prime mover, reciprocation means disposed between said movable die platen and said prime mover for selectively and intermittently reciprocating said movable die platen between open and closed positions, transfer means for moving castings from said die cooperatively connected to said reciprocation means, means selectively and intermittently connecting said transfer means to said prime mover, means maintaining said reciprocation apparatus in a substantially force-balanced state during at least a major part of a platen reciprocation cycle, and means for injecting liquid matter into the die when it is closed. There is also disclosed a novel method for die casting.

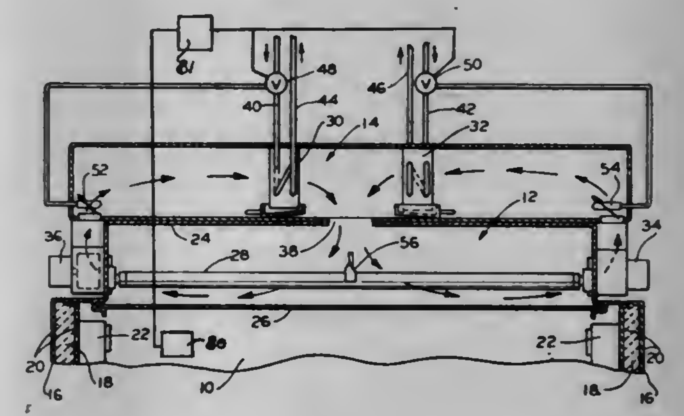
3,604,500
METHOD OF CONTROLLING FLUORESCENT LAMP OUTPUT

Noel Davis, c/o Integrated Dev. and Manufacturing Co., 510 East Washington St., Chagin Falls, Ohio, assignor to Integrated Development and Manufacturing Co., Chagrin Falls, Ohio

Filed Apr. 7, 1970, Ser. No. 26,357

Int. Cl. F28

U.S. Cl. 165—1 **8 Claims**



A method and apparatus for controlling the output of the fluorescent lamps in an environmental growth chamber to produce uniform or predetermined light levels within chambers of the type including means for conducting cooling air across the lamps. A temperature for the air is selected which is different than the temperature at which maximum light output occurs from the lamps and which corresponds to a desired light output. At at least periodic intervals thereafter, the light output from the lamps is measured and if by light sensitive means the output is above or below that desired, the cooling air temperature is manually or automatically adjusted to bring the output to the desired level.

3,604,501
HEAT EXCHANGER

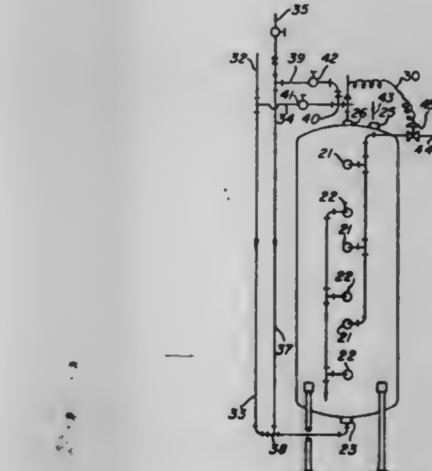
Henry Brants, 444 Sanford Ave., St. Lambert, Quebec, Canada

Filed Oct. 28, 1969, Ser. No. 871,928

Claims priority, application Canada, Dec. 18, 1968, 038,193

Int. Cl. G05d *23/00;* **B60h** *1/00;* **F28f** *13/06*

U.S. Cl. 165—1 **6 Claims**

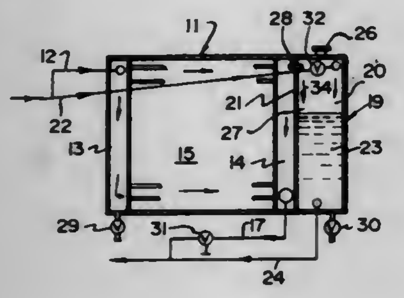


A heat exchanger which is used to reheat a recirculated heating fluid in which most of the recycled fluid and most of the makeup fluid is mixed outside of the heat exchanger and fed to the heat exchanger via a bottom inlet. A small proportion of the recycled fluid and a small proportion of the makeup fluid is mixed outside of the heat exchanger and fed to an inlet at the top of the heat exchanger. This second flow of fluid passes through a control chamber mounted inside the heat exchanger to permit the temperature of this flow to be sensed by a temperature controller, which regulates the heat input to the heat exchanger.

3,604,502

COOLANT DEAERATION SYSTEM FOR INTERNAL COMBUSTION ENGINE COOLED BY CROSSFLOW RADIATOR

James D. Morse, and Robert C. Verhaeghe, both of Racine, Wis., assignors to Modine Manufacturing Company
Filed Sept. 4, 1969, Ser. No. 855,151
Int. Cl. F01p *11/02*
U.S. Cl. 165—51 **6 Claims**

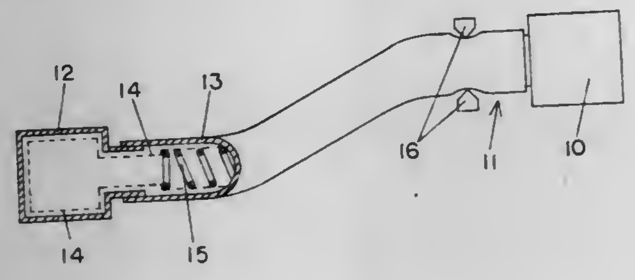


A radiator apparatus as a part of the cooling system for an engine in which the apparatus comprises spaced vertical inlet and outlet tanks with a core having coolant tubes extending horizontally between the tanks (such radiator being termed a "crossflow radiator"), a first coolant conduit from the engine to a first of the tanks, a second coolant conduit from the second of the tanks to the engine so that the coolant flows from the engine to one tank or header and through the tubes to the other tank or header and then back to the engine, a coolant reserve and deaerating third vertical tank having a coolant liquid level when in use intermediate the top and bottom of this third tank, an inlet line for the coolant and entrapped gases from the engine to this third tank, a coolant outlet line for coolant substantially free of entrapped gases from the third tank to the engine and a check valve in the coolant inlet line permitting fluid flow only toward the third tank.

3,604,503

HEAT PIPES

Karl T. Feldman, Jr., and John D. Kusianovich, both of Bernalillo, N. Mex., assignors to Energy Conversion Systems, Inc., Albuquerque, N. Mex.
Filed Aug. 2, 1968, Ser. No. 749,697
Int. Cl. F28f *27/00;* **F28d** *15/00*
U.S. Cl. 165—96 **1 Claim**



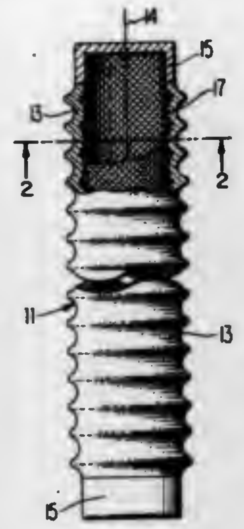
An improved heat pipe having an evaporator and a condenser connected together by a flexible heat transfer tube lined with a wick, with a clamping means connected to the outer circumference of the flexible heat transfer pipe for reducing the circumference thereof to thereby restrict the transfer of vaporized heat transfer fluid from the evaporator to the condenser.

3,604,504

FLEXIBLE HEAT PIPE

Sebastian William Kessler, Jr., and James Lee Hess, both of Lancaster, Pa., assignors to RCA Corporation
Filed May 13, 1970, Ser. No. 36,972
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **10 Claims**

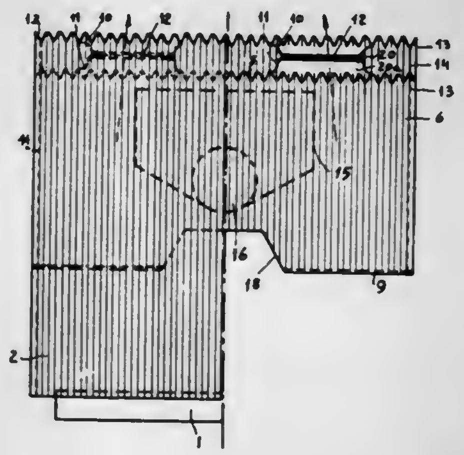
A heat pipe comprising a flexible sealed envelope and an internal wick structure comprising two sets of cross-members in transverse relation to each other, the cross-members being transverse to the flexible axis of the envelope. The wick structure may be a cylindrical mesh screen consisting of orthogonal metal wires disposed within a cylindrical metal bellows such that each of the cross wires is at an angle with respect to the flexible axis of the bellows.



3,604,505

HEAT EXCHANGERS, MORE PARTICULARLY FOR AN AIR-HEATING DEVICE

Arnold Van der Goot, Voorbroek, Netherlands, assignor to Metaalwarenfabrick Joh. Th. Benraad N.V., Terborg, Netherlands
Filed Apr. 8, 1969, Ser. No. 814,403
Int. Cl. F28f *3/02*
U.S. Cl. 165—131 **3 Claims**



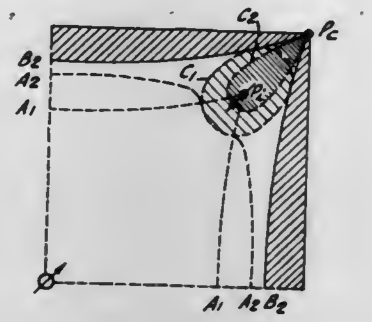
The invention relates to a heat exchanger, more particularly for an air-heating device, which is mainly formed by two reversed U-shaped bent sheet metal wall parts, the upper portions of which are flat and lie at a relatively small distance from one another and are provided with one or more apertures with opposite upstanding peripheral walls along the rims of which they are interconnected, while the two portions extending downwardly at the front of the device enclose a combustion space and the two wall portions extending downwardly at the rear enclose a space connected to the flue gas outlet with a downdraft diverter.

3,604,506

INTERFACE ADVANCE CONTROL IN SECONDARY RECOVERY PROGRAM BY USE OF DYNAMIC GRADIENT BARRIER AND BY RETARDING CUSP FORMATION

Donald L. Hoyt, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 786,568, Dec. 24, 1968. This application June 30, 1969, Ser. No. 837,782
Int. Cl. E21b *43/22*
U.S. Cl. 166—245 **15 Claims**

The advance of the interface between driving and driven fluids in a secondary recovery operation toward a production well is delayed by the imposition of a gradient barrier of produced hydrocarbon fluids injected into the formation via a control well in line between an injection well and a production well, the recirculation of the formation hydrocarbon fluids providing a dynamic barrier, and by retarding cusp formation via wells controlling the advance of flow gradients to spread the interface.



3,604,507

SINGLE WELL BACKFLOW IN SITU COMBUSTION PROCESS

Rosswell W. Thomas, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Apr. 3, 1969, Ser. No. 813,276
Int. Cl. E21b *43/24*
U.S. Cl. 166—259 **5 Claims**

A method is disclosed for producing petroleum by igniting a reservoir containing a pressurized combustion-supporting gas previously placed in said reservoir by introduction through a production well and recovering petroleum from the well. Also a method is disclosed for repeating the production method by self-ignition of the reservoir through the subsequent introduction of an additional quantity of combustion-supporting gas.

3,604,508

USE OF OIL-EXTERNAL MICELLAR DISPERSIONS AS PLUGGING AGENTS IN SUBTERRANEAN FORMATIONS

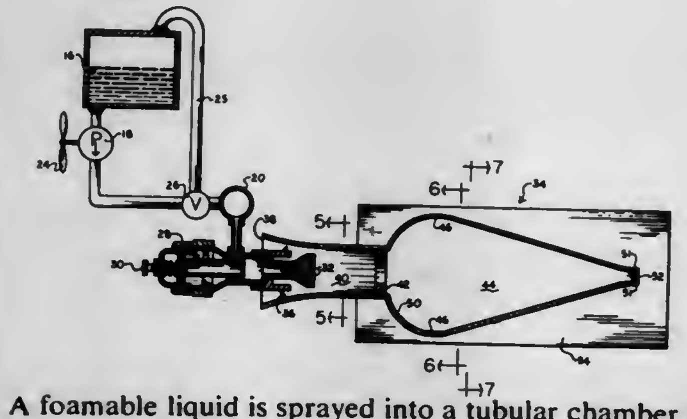
Marion O. Son, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Continuation-in-part of application Ser. No. 781,593, Dec. 5, 1968, now abandoned. This application Mar. 16, 1970, Ser. No. 20,101
Int. Cl. E21b *33/138*
U.S. Cl. 166—294 **23 Claims**

Highly permeable subterranean formations are effectively blocked, e.g. against water intrusion, by injecting into the formation a micellar dispersion comprised of hydrocarbon, surfactant and aqueous medium having a viscosity of at least about 50 cp. at ambient temperature. Cosurfactants and electrolytes are also useful in the micellar dispersion to obtain desired viscosity characteristics.

3,604,509

AIRPLANE FOAM GENERATOR

Norman H. Sachnik, 1035 Columbia, Houston, Tex.
Filed May 15, 1969, Ser. No. 824,868
Int. Cl. A62c *35/00*
U.S. Cl. 169—15 **3 Claims**

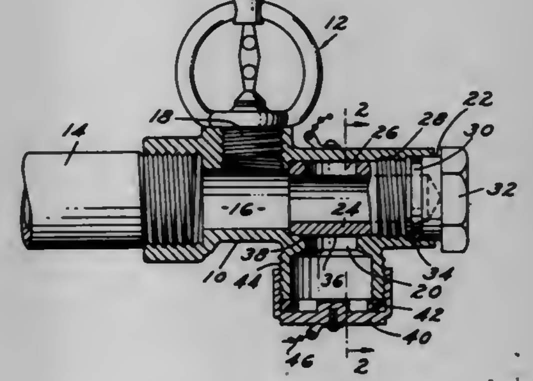


A foamable liquid is sprayed into a tubular chamber where it is thoroughly mixed into an airstream and thus foamed. From there the foam is forced into a larger chamber where it is dispersed to fall upon agricultural crops. The trailing edge of the second chamber from which the foam is discharged is readily adjustable so that the size of the globules of foam discharged is readily adjustable.

3,604,510

FLUSH HEAD FOR FIRE PROTECTION SPRINKLER SYSTEM

Peter C. Tainsh, 4461 W. Jefferson, Detroit, Mich.
Filed Nov. 30, 1967, Ser. No. 687,019
Int. Cl. A62c *35/00*
U.S. Cl. 169—16 **4 Claims**

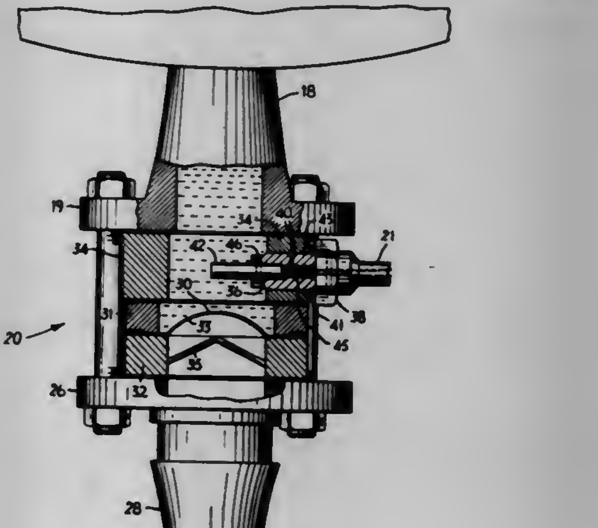


This invention relates to flushing devices for fire protection sprinkler systems and more particularly to improvements in a flush head to be utilized with each sprinkler head at the end of main or branch lines. In this device the fluid inlet passageway is positioned at substantially a right angle to the sprinkler supply passageway to provide improved flushing characteristics for the system. A rotatably actuable valve allows the system to be flushed while maintaining fluid pressure on the sprinkler head.

3,604,511

METHOD AND APPARATUS FOR QUENCHING FIRES AND SUPPRESSING EXPLOSIONS

George L. Griffith, Coopersburg; Dominic J. Riotto, Barnesville, and William C. Altrichter, Allentown, all of, Pa., assignors to Commercial Solvents Corporation, Terre Haute, Ind.
Filed Jan. 16, 1969, Ser. No. 791,648
Int. Cl. A62c *35/08*
U.S. Cl. 169—28 **13 Claims**

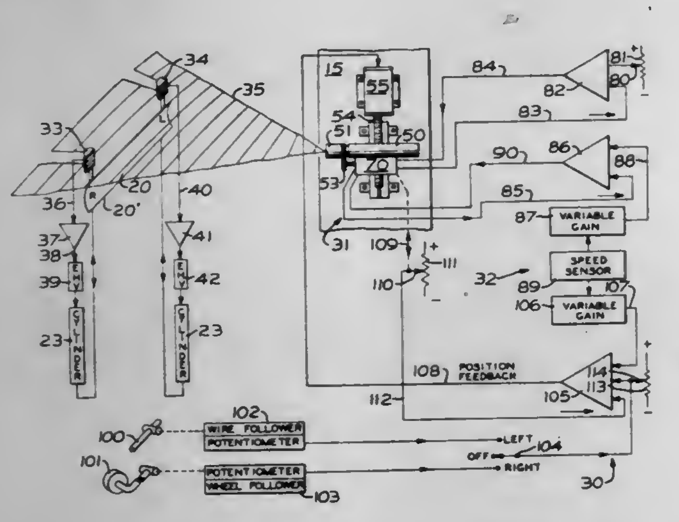


A method and apparatus for quenching fires and suppressing explosions is provided in which a deluge of fluid is released all at once onto the fire or combustion associated with the early stages of an explosion. A sensing device detects the fire or combustion and detonates a blasting cap, which detonation creates a shock wave which travels through the fluid in the vessel, to actuate a valve and release the fluid.

3,604,512
ELECTROOPTICAL CONTROL SYSTEM FOR VEHICLES

John W. Carter; James C. Barton, and Rolland D. Scholl, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 16, 1969, Ser. No. 858,432
Int. Cl. E02f *3/76*
U.S. Cl. 172—4.5 **13 Claims**

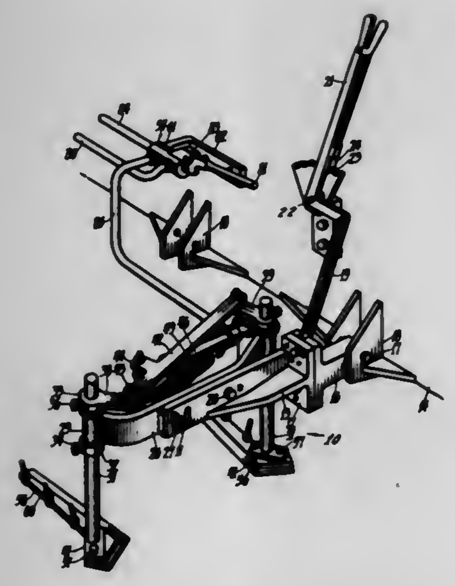


A laser or similar electromagnetic radiation with a lens system for converting the beam into a flat reference plane fanning outwardly from its source includes a vertical reference and control circuits drivingly connected to the lens system whereby the beam path can be maintained in the flat reference plane and at a preselected angle relative to true vertical as its supporting vehicle varies in attitude. The radiation source and lens system are mounted upon an earthmoving vehicle having an earthworking blade or similar tool which includes spaced apart optical sensors secured thereon which are connected to control circuits adjusting such blade or tool. These control circuits continuously adjust such blade or tool to a predetermined relationship relative to the flat reference plane of radiation, notwithstanding deflections or distortion in the machine frame. By mounting the radiation source and lens system along with its controls so that they are vertically adjustable on the vehicle, the height of the reference plane of radiation can be adjusted relative to an external reference thereby providing automatic control for a blade or tool in both slope and grade.

3,604,513
CULTIVATING IMPLEMENT HYDRAULIC CONTROL MEANS

Frank Tassone, Box 10, Gol Gol 2739, New South Wales, Australia

Filed Sept. 30, 1969, Ser. No. 862,387
Int. Cl. A01b *13/06, 65/00*
U.S. Cl. 172—5 **5 Claims**

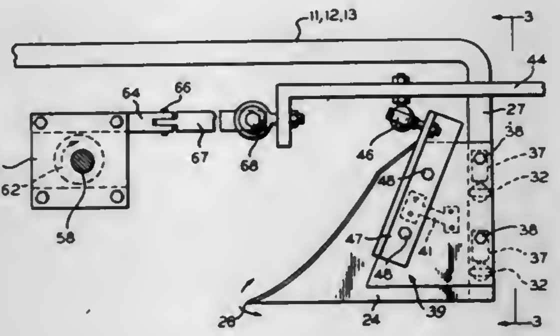


A tractor-mounted soil-cultivating implement of the type in which a cultivating element is movable from a retracted or nonworking position to a working position by operation of an hydraulic ram. The ram is supplied with hydraulic fluid from hydraulic system of the tractor via free flow control valve. In order to pressurize ram, the control valve must be held closed against pressure of hydraulic fluid so that operator feels increases in pressure due to obstacles struck by cultivating element.

3,604,514
PLOW WITH STRUCTURE FOR OSCILLATING PLOW SHARE AND MOULD BOARD

Archie R. Gagne, R.R. 1, Box 146A, Saint Charles, Ill.

Continuation of application Ser. No. 624,071, Mar. 17, 1967, now abandoned. This application Oct. 6, 1969, Ser. No. 868,967
Int. Cl. A01b *11/00*
U.S. Cl. 172—40 **1 Claim**

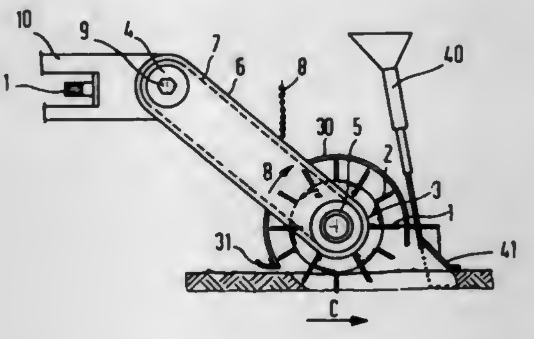


A plow for reducing the tractive effort required to move same through the soil by providing oscillating movement to the plow share and mould board.

3,604,515
DEVICE FOR CUTTING FURROWS IN THE GROUND

Konrad Kipping, Breslauer Strasse 34a, 8910 Landsberg/Lech, Germany

Filed Mar. 4, 1969, Ser. No. 804,218
Claims priority, application Germany, Mar. 5, 1968, P 16 32 772.3
Int. Cl. A01b *33/00, 35/20*
U.S. Cl. 172—60 **5 Claims**



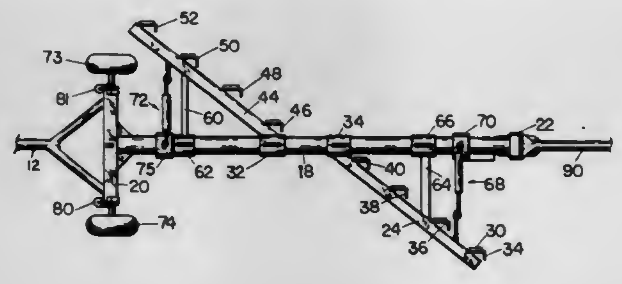
A device for cutting furrows in the ground having a wheel rotating about a horizontal axis, and two axially spaced groups of circumferentially spaced shovels are mounted on the wheel in such a manner that radially elongated digging portions of the shovels project beyond the wheel circumference. Each digging portion has two digging edges which converge at an acute angle in a radially outward direction to form a point obliquely directed toward the plane of rotation of the wheel which is arranged between the two groups.

3,604,516
ROLLOVER PLOW

Merwin J. Maxwell, Garden Grove, Calif., assignor to Tower Manufacturing Company, Santa Ana, Calif.

Filed Sept. 2, 1969, Ser. No. 854,455
Int. Cl. A01b *3/34*
U.S. Cl. 172—223 **13 Claims**

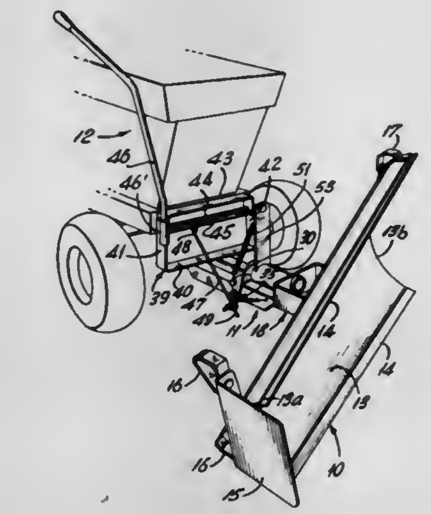
A rollover plow whose frame includes an elongate, central, common support member held horizontally substantially in alignment with the direction of plow action by front and rear wheeled carriages. The frame is completed by a pair of plow frame members which have pivotal connection to the support frame on a common axis in the midregion of its length and which extend obliquely, one forwardly and one rearwardly, on opposite sides of the central support frame in a substantially horizontal plane. Hydraulic actuators permit rotation of those arms over the top of the center frame to a position in the horizontal plane on the opposite side. Each of the obliquely extending plow frame members supports a series of plow pairs so that one plow of each pair extends downwardly and the other plow of each pair extends upwardly.



3,604,517
PLOW AND MEANS FOR ATTACHMENT TO A MOTOR-DRIVEN VEHICLE

Herbert B. Clifford, Michigan City, Ind., assignor to Poloron Products of Indiana, Inc., New Rochelle, N.Y.

Filed May 15, 1969, Ser. No. 824,894
Int. Cl. A01b *3/40;* **E02f** *3/76;* **E01h** *5/04*
U.S. Cl. 172—225 **10 Claims**



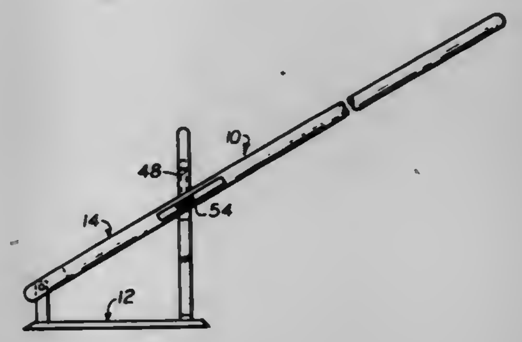
A plow for a motor-driven vehicle which is inclined relative to the vehicle and pivotally secured thereto, the plow and the attaching means being arranged so that when the plow is in a lowered or operating position it is automatically latched in position and upon raising the plow through a predetermined angle the latch will be automatically disengaged and the plow will rotate automatically through an angle greater than 90° so that when it is lowered it will assume the reverse position and latch in that position. The plow essentially forms a section of a cone with the smaller end leading the larger end and the smaller end of the plow is provided with a plate overlying the end and extending forwardly thereof.

3,604,518
PUSH-PULL GARDEN HOE

Leonard F. Buchanan, 350 Redwood Highway, Grants Pass, Oreg.

Filed June 2, 1967, Ser. No. 643,138
Int. Cl. A01b *1/08*
U.S. Cl. 172—372 **1 Claim**

A push-pull garden hoe is provided which has a blade in the form of a hollow triangle, with the inner and outer edges of each of the three triangle legs sharpened. The handle is rigidly anchored to the blade near the leading corner and near the middle of the trailing leg, with capacity for adjusting the slope of the handle relative to the blade.

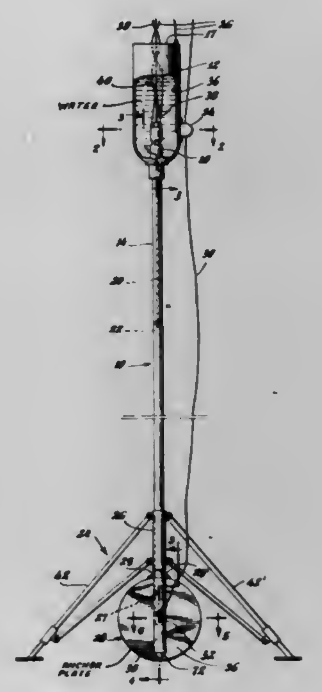


The blade-anchoring means is located at substantial distances inward from the rear corners of the blade so that the rear corners are completely clear for precision hoeing immediately adjacent to a row of plants, and this without any substantial tendency to pile earth on the plants.

3,604,519
METHOD OF CREATING UNDERWATER THRUSTS TO DRIVE A MEMBER INTO THE EARTH

Stephen V. Chelminski, Valley Rd., RFD 1, West Redding, Conn.

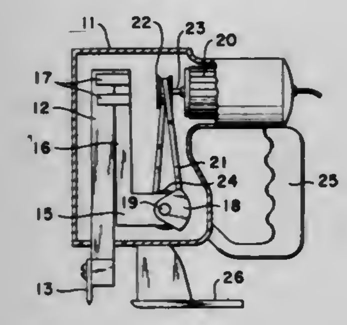
Filed Feb. 14, 1969, Ser. No. 799,449
Int. Cl. E02d *7/06*
U.S. Cl. 173—1 **3 Claims**



A novel thruster method and apparatus generating a sequence of powerful thrusts suitable for driving an anchor, a pile, or the like into the earth. A novel anchor, anchor placing apparatus and pile driver are described. An acoustic impulse repeater device is located within a reaction barrel to rapidly upwardly impel water therefrom. In the case of the anchor placing apparatus, the reaction of the barrel rams an anchor and the anchor chain attached to it into sediment below a body of water. In the pile driver embodiment, the pile has taken the shape of the reaction barrel into which water is placed. Various embodiments are described.

3,604,520
SONICALLY DRIVEN PAINT SCRAPER

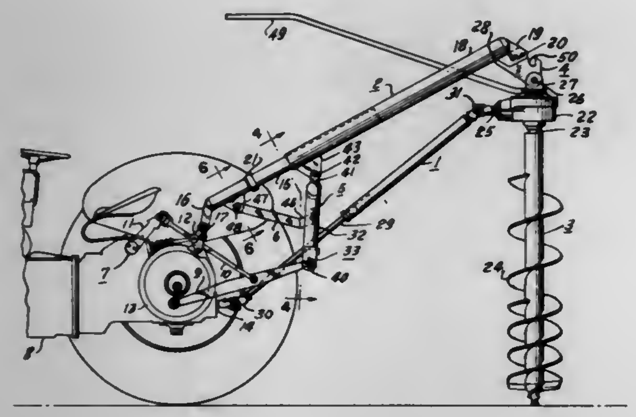
Howard L. Shatto, Jr., 5890 La Jolla Corona Dr., La Jolla, Calif.
Continuation-in-part of application Ser. No. 695,745, Jan. 4, 1968, now abandoned. This application Sept. 11, 1969, Ser. No. 857,020
Int. Cl. B26b *7/00*
U.S. Cl. 173—31 **8 Claims**



An oscillator is coupled to a scraping blade by means of nonlinear resonant transmission means which is effective to convert sinusoidal oscillations from the oscillator into substantially unidirectional impulses at the scraper blade.

3,604,521
EARTH BORING APPARATUS

Johnnie C. Collins, Dallas, Tex., assignor to Servis Equipment Company, Dallas, Tex.
Filed Mar. 27, 1970, Ser. No. 24,668
Int. Cl. E21c *1/14, 11/02*
U.S. Cl. 173—38 **9 Claims**

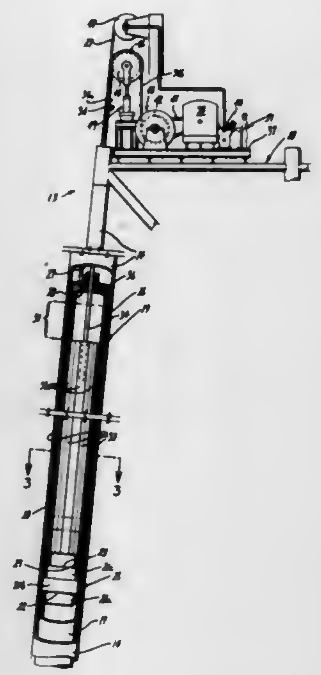


An earth boring apparatus for attachment to a tractor rear lift mechanism and power take off (P.T.O.) and having a telescoping boom for pivotally supporting an auger in vertical position throughout the arcuate swinging of the boom about a horizontal arc in coaction with a lifting bail and a stabilizer control link, the driven gear of the auger being connected to P.T.O. by a telescoping drive shaft.

3,604,522
PILE-DRIVING SYSTEM AND APPARATUS

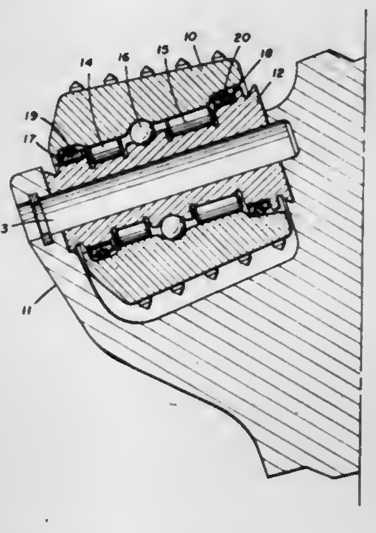
Samuel Clifford Doughty, Burlingame, Calif., assignor to Santa Fe International Corporation, Santa Fe Springs, Calif.
Filed Aug. 30, 1968, Ser. No. 756,685
Int. Cl. E02d *7/00*
U.S. Cl. 173—88 **3 Claims**

A system for driving piles by a succession of blows struck from above by a hammer element wherein a driving head assembly transfers the blow to the upper end of a hollow elongated pile. The driving head comprises an anvil element to engage the upper end of a pile and includes an elongated hollow case extension portion containing the reciprocable hammer element. A cable connected to the hammer element extends upwardly to an outdoor work platform for hoisting and lowering the driving head assembly. A pulley driven by hydraulic actuator means provides reciprocating movement to the hammer element.



3,604,523
SILICON CARBIDE SEAL FOR AN EARTH BORING BIT

Carl L. Lichte, Dallas County, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed June 1, 1970, Ser. No. 42,178
Int. Cl. E21b *9/08;* **F16c** *19/00*
U.S. Cl. 175—372 **13 Claims**

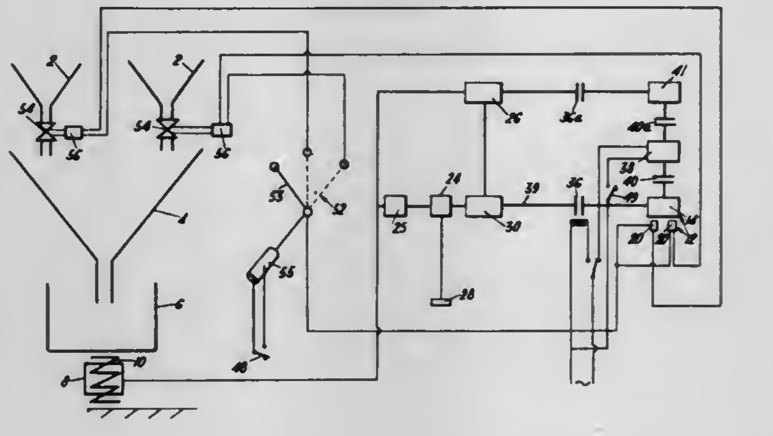


A seal for containing lubricant in the bearings of an earth-boring bit wherein the bit is used in a highly abrasive environment. At least one seal element encircles the shaft of the bit and retains lubricant in the bearings of the bit. The surface of the seal is silicon carbide and the seal will withstand a highly abrasive and corrosive environment.

3,604,524
ELECTRICAL WEIGHING APPARATUS OF THE POTENTIOMETRIC BALANCE TYPE

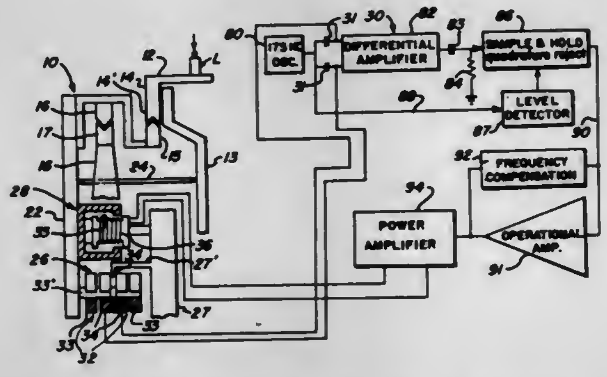
Campbell Dean Boadle, Pentwyn, Ponthir Rd., Caerleon, Monmouthshire, Wales
Continuation of application Ser. No. 599,869, Dec. 7, 1966, now abandoned. This application Mar. 24, 1969, Ser. No. 810,918
Int. Cl. G01g *19/22*
U.S. Cl. 177—70 **4 Claims**

A weighing apparatus of the potentiometric balance type comprising a weighing container, one or more electrical transducers arranged beneath the container, a self-balancing potentiometer for measuring the output signal of the transducers, a servomotor driving potentiometer shaft and energized by a difference signal produced by the transducers and the potentiometer and representative of the weight on the said container, control and indicating means driven by the said servomotor, means for disconnecting the indicating and control means from the servomotor, and means for automatically returning the control and indicating means to zero after the said disconnection has taken place.



3,604,525
AUTOMATIC TOP-LOADING WEIGH APPARATUS WITH ELECTRONIC MEASURING AND RECORDING CIRCUIT

Charles B. Blethen, Green Mountain, and James E. Smith, Longmont, both of, Colo., assignors to Wm. Ainsworth, Inc., Denver, Colo.
Filed Aug. 15, 1969, Ser. No. 850,397
Int. Cl. G01g *3/14*
U.S. Cl. 177—210 **10 Claims**

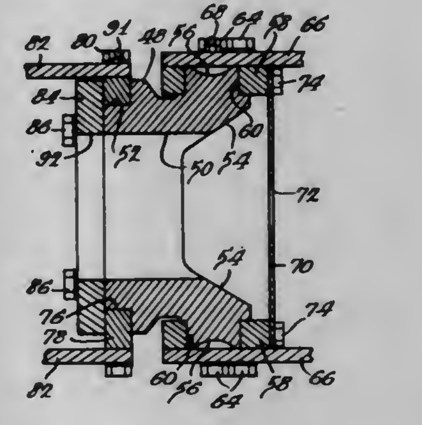


A top-loading weigh apparatus has a stabilized balance beam mechanism with the load being vertically applied through a horizontal balance arm on a pair of spaced pivots, and a differential capacitance is developed by sensing the horizontal displacement of a stabilized beam isolated from the weighing area. The capacitance developed in response to beam displacement is converted into a variable current output and applied as a restoring force proportional to but in opposition to the unbalancing force in order to quickly and accurately return the beam mechanism to its null position. A voltage is developed in direct proportion to the variable current output required to restore the beam to its null position and which is translated for recording and visual display of the applied weight.

3,604,526
ARTICULATED VEHICLE

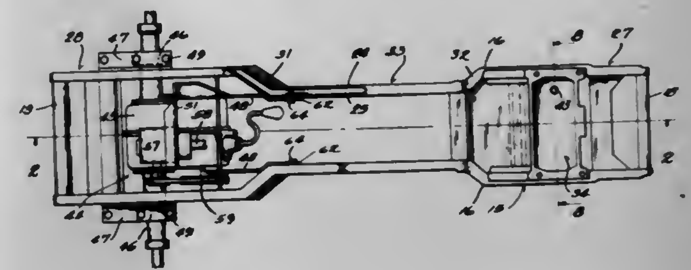
Marion E. Hutchison, Omaha, Nebr., assignor to Omsteel Industries, Inc.
Filed July 8, 1969, Ser. No. 839,877
Int. Cl. B60k *17/34;* **B62d** *53/02*
U.S. Cl. 180—51 **4 Claims**

A connecting means for interconnecting independent, wheeled frames of an articulated vehicle. Connecting means include a casting having a pair of vertically projecting stub shafts which are pivotally secured to one of the frames and a horizontally projecting stub shaft which is pivotally retained in the other of the frames so that a vertically projecting stub shaft provides for movement of one frame relative to the other about a vertical axis while the horizontally arranged stub shaft provides for relative movement about a horizontal axis. Further, in one embodiment, the casting is provided with a hollow center so that drive means for, for example, a four-wheel drive vehicle may extend through the joint between frames.



3,604,527
TRACTOR SUBASSEMBLY

Warren H. Price, Sheboygan, Wis., assignor to Gilson Bros. Co., Plymouth, Wis.
Continuation of application Ser. No. 672,095, Oct. 2, 1967, now abandoned. This application Dec. 10, 1969, Ser. No. 880,479
Int. Cl. B60k *5/02*
U.S. Cl. 180—64 **7 Claims**

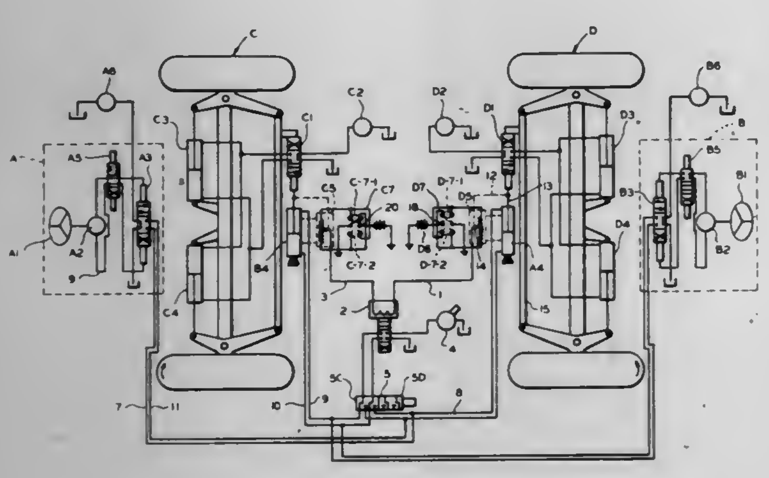


A subassembly for a tractor, including a frame, engine base and rear drive unit. The drive unit is removably mounted on a rear raised section of the frame and consists of a removable package including a transaxle and mounting subframe. The engine base is integrated with a forward dropped section of the frame.

3,604,528
STEERING CONTROL

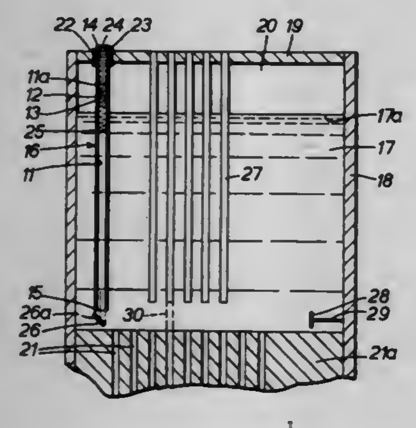
William A. Williamson, Niles, Mich., assignor to Clark Equipment Company
Filed June 2, 1969, Ser. No. 829,545
Int. Cl. B62d *5/04*
U.S. Cl. 180—79.2 R **7 Claims**

Electrohydraulic servosystem providing for multiple modes of steering for a vehicle having spaced wheel steering assemblies preferably adjacent ends of the vehicle. Spaced operator's control positions are provided one adjacent each wheel assembly, either of which may be selectively controlled by an operator positioned therein, for modes of steering such as crab steering and radiarc steering. The wheel steering assembly assuming the new mode of steering, in transition from one mode to the other, bears the same relationship to the vehicle driver (operator) position regardless of the end of the vehicle from which steering is controlled.



3,604,529
APPARATUS FOR ULTRASONIC WAVE TRANSMISSION

John Roderick Fothergill, Culcheth, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed May 2, 1969, Ser. No. 821,391
Claims priority, application Great Britain, May 10, 1968, 22350/68
Int. Cl. G01s *9/66;* **H04b** *11/00*
U.S. Cl. 181—0.5 13 Claims

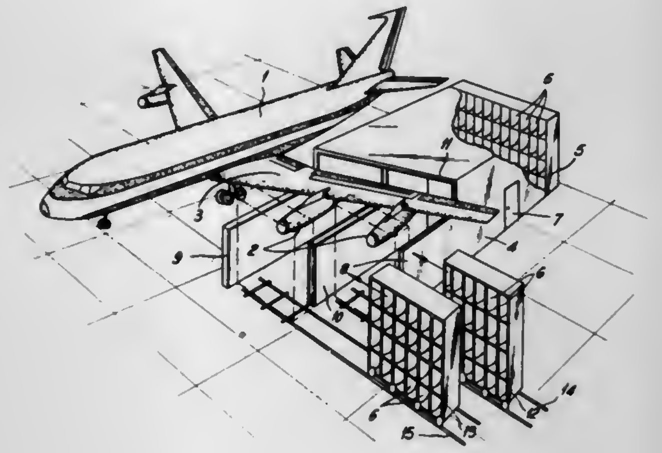


A waveguide for the transmission of ultrasonic waves adapted to operate immersed in a liquid consists of a duct capable of transmitting ultrasonic waves produced by a generator at the end of the duct. The duct has an outer jacket defining a closed volume about the duct preventing access of liquid, in which the waveguide is immersed, to the outer surface of the duct. By this means energy loss due to wave scatter at the outer surface of the duct is minimized.

3,604,530
SILENCER DEVICE FOR JET AIRCRAFTS

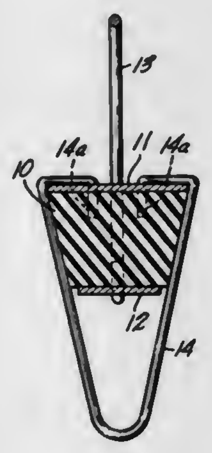
Louis Duthion, Paris; Pierre Bonnet, Paris, and Paul A. L. Coudray, Villepreux, all of, France, assignors to Bertin & Cié, Plaisir, Yvelines, France
Filed June 10, 1969, Ser. No. 831,923
Claims priority, application France, June 12, 1968, 154,702
Int. Cl. E04h ; F01n *1/00;* **B64f** *1/26*
U.S. Cl. 181—33 HE 9 Claims

A fixed silencing system for jet aircraft in particular, comprising essentially a chamber or enclosure formed by a structure so cut away at the front part as to accommodate that portion of the aircraft which bears the or each jet engine requiring to be silenced, the rear end of the structure being closed by at least one soundproofing partition, and one or more movable soundproofing panels being provided to close the front part in front of the or each jet engine.



3,604,531
NOISE AND VIBRATION-ATTENUATING HANGER

Jack Harris, Forest Hills, N.Y., assignor to Korfund Dynamics Corporation, Westbury, N.Y.
Filed July 23, 1970, Ser. No. 57,546
Int. Cl. E04b *1/86*
U.S. Cl. 181—33 GD 6 Claims

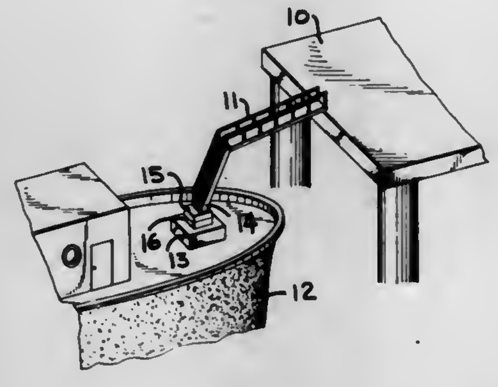


A noise and vibration-attenuating hanger which includes a resilient element intermediate upper and lower rigid plates, an overhead hanger engaging the lower plate and extending upwardly adjacent two opposite sidewalls of the resilient element and a depending hanger engaging the upper plate and extending downwardly adjacent two other opposite sidewalls of the resilient element, the said sidewalls of the resilient element tending to bulge outwardly under compression to push adjacent portions of the hangers outwardly and prevent the overhead hanger from engaging an edge of the lower plate and the depending hanger from engaging an edge of the upper plate which engagement would bridge the resilient element and nullify the effect thereof.

3,604,532
QUICK RELEASE PERSONNEL TRANSFER DEVICE BETWEEN BOAT AND PLATFORM

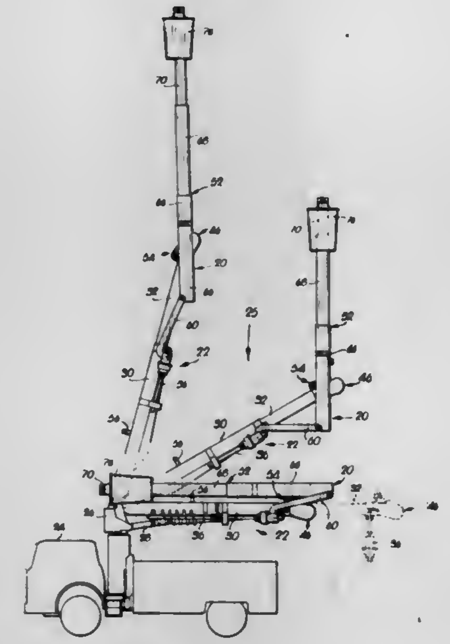
Douglas W. Moore, Metairie, La., assignor to Compressors Automation Controls, Inc., Marrero, La.
Filed Mar. 2, 1970, Ser. No. 15,729
Int. Cl. E06c *5/24*
U.S. Cl. 182—93 3 Claims

This disclosure is directed to a quick release device between a personnel boat and an offshore rig employing a magnetic coupling of the permanent type which resists axial separation but permits shear or slide separation.



3,604,533
COMBINATION TELESCOPIC AND ARTICULATED AERIAL BUCKET DEVICE

George H. Eckels, Prairie Village, and Wade A. Eskridge, Overland Park, both of, Kans., assignors to A. B. Chance Company, Centralia, Mo.
Filed Sept. 10, 1969, Ser. No. 856,706
Int. Cl. B66f *11/04*
U.S. Cl. 182—46 18 Claims

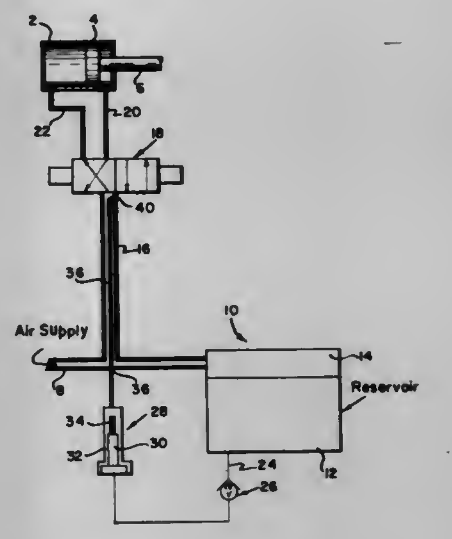


A combination telescopic and articulated aerial bucket device has a boom assembly including a swingable member pivotally mounted on one telescopic section and pivotally connected through linkage structure to a second telescopic section. Relative hydraulic shifting of the two sections causes the linkage structure to effect swinging of the member to elevate an aerial bucket at the outer end thereof. Four species of the device embody alternative linkage structure and corresponding mounting arrangements for the swingable member.

3,604,534
AUTOMATIC METERED, PULSING LUBRICATION SYSTEM

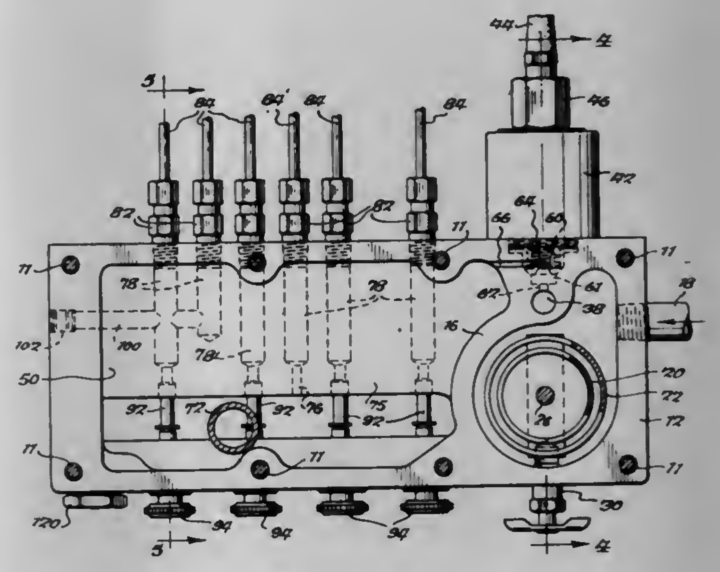
Jack L. Whitaker, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Sept. 26, 1969, Ser. No. 861,360
Int. Cl. F16n *7/00*
U.S. Cl. 184—7 R 7 Claims

An automatic metered, pulsing lubrication system for a pneumatic piston and cylinder device including an adjustable metering valve operative in response to momentary pressure changes in the air lines to inject a metered quantity of lubricant in the air line, the lubricant being carried to the cylinder by the airstream through the air line. The system may be utilized to lubricate the piston and cylinder on each stroke of the piston, or on every other stroke of the piston.



3,604,535
AUTOMATIC OILING SYSTEM

Jack L. Whitaker, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Apr. 23, 1969, Ser. No. 818,543
Int. Cl. F16n *7/30*
U.S. Cl. 184—7 R 11 Claims

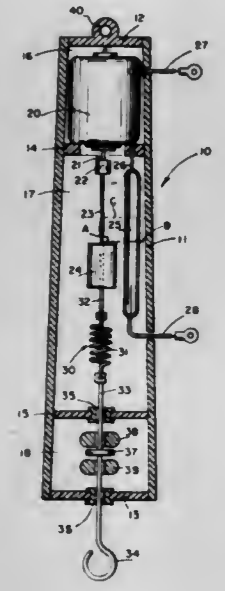


An oiling system in which oil is supplied to various parts of a machine by air pressure acting on the top of the oil reservoir while oil is fed from the lower part of the oil reservoir through ducts each having metering units to control the oil fed to various parts of the machine, some of the oil ducts being arranged within the air lines.

3,604,536
LOW WATTAGE DISPLAY ENERGIZER

Albert J. Dinnerstein, 1416 Granada Place, Far Rockaway, N.Y.
Continuation-in-part of application Ser. No. 841,707, July 15, 1969, now Patent No. 3,533,489, which is a continuation-in-part of application Ser. No. 659,161, Aug. 8, 1967, now Patent No. 3,456,762. This application June 29, 1970, Ser. No. 50,566
Int. Cl. F03g *1/08;* **G09f** *11/10*
U.S. Cl. 185—40 R 15 Claims

A device, which consumes little power while producing a variable slow rate of continuous rotation of a display, having a self-regulating intermittently operating higher speed electric motor, an electric circuit connecting the motor to a power supply, a switch assembly connected to the electric circuit in series with the power supply and the motor for starting and stopping the operation of the motor, and a mechanism operatively associated with the motor and the



display. The mechanism permits continuous rotation of a light or heavy weight display in any plane and is provided with a first member for storing rotating energy and a second member for controlling the opening and closing of the switch assembly upon the storing of a predetermined amount of rotating energy by the first member.

3,604,537

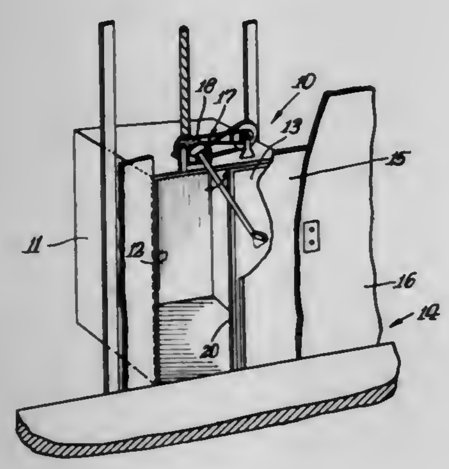
ELEVATOR DOOR OPERATOR WITH DIFFERENTIAL TORQUE MOTOR SYSTEM

Henry J. Holuba, Moline, Ill., assignor to Montgomery Elevator Company

Filed Jan. 27, 1969, Ser. No. 794,100

Int. Cl. B66b *13/00*

U.S. Cl. 187—52 **8 Claims**



Elevator door operator using a differential torque motor system which is particularly advantageous in opening and closing the doors of passenger and freight elevators. The motor system provides a first torque in moving the door to the open position and a second, lower torque in moving the door to the closed position. The force moving the door to the closed position is so limited as to be within the range of present safety regulations which limit the force necessary to prevent closing of such elevator doors from rest to no more than 30 pounds. The differential motor control is obtained by utilizing series and shunt field windings which are selectively cumulatively compounded for opening and differentially compounded for closing.

3,604,538

RAILWAY VEHICLE BRAKES

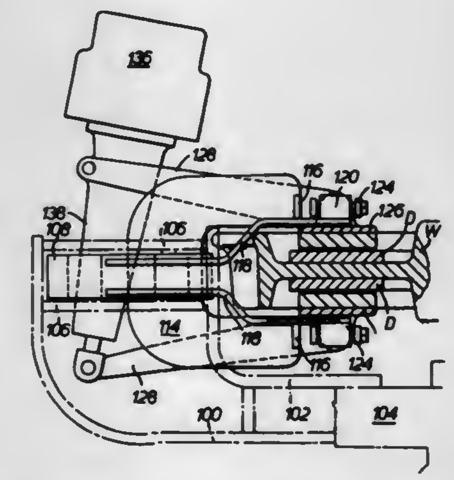
John B. Tompkin, Tyseley, England, assignor to Girling Limited, Birmingham, England

Filed Apr. 3, 1969, Ser. No. 813,122

Claims priority, application Great Britain, Apr. 11, 1968, Oct. 30, 1968, 17,716/68;51,449/68

Int. Cl. B61h *5/00*

U.S. Cl. 188—59 **2 Claims**



A railway vehicle disc brake which comprises a yoke, a pair of opposed caliper levers pivotally mounted on the yoke, a pair of brakeshoes one pivotally mounted at the inner end of each lever, an actuating motor for separating the outer ends of the levers to move the shoes towards each other, whereby in use the said shoes can be applied to opposite sides of a brake rotor which comprises a disc or discs mounted for rotation with a wheel of the vehicle, and a suspension link for each shoe, each link being pivotally connected at one end to its shoe and at its other end to a rigid support structure and serving in use to resist pivotal movement of the shoe about its pivotal connection with the caliper lever, relative to the brake rotor, wherein the rigid support structure is fast with the yoke and resilient suspension means are provided for mounting the yoke on a railway vehicle frame in a manner accommodating some misalignment between the vehicle frame and the brake rotor without any substantial corresponding reaction being transmitted back to the vehicle frame during braking.

3,604,539

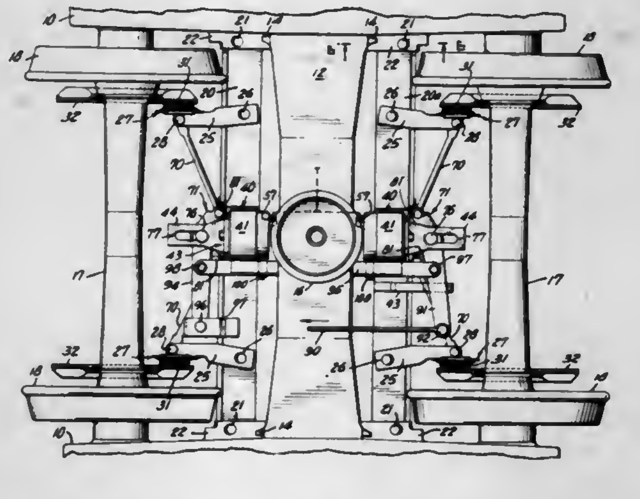
RAILWAY CAR BRAKE MECHANISM

Edward G. Goods, Snyder, N.Y., assignor to Buffalo Brake Beam Company

Continuation-in-part of application Ser. No. 724,787, May 9, 1968, now abandoned , which is a continuation of application Ser. No. 611,860, Jan. 26, 1967, now Patent No. 3,422,131, which is a continuation-in-part of application Ser. No. 417,658, Dec. 11, 1964, now Patent No. 3,307,659. This application Mar. 2, 1970, Ser. No. 15,628

Int. Cl. F16d *55/32*

U.S. Cl. 188—59 **8 Claims**



Railway brake device having brake discs rigid with car wheels, and brake means in the form of toggle joint

mechanisms with rods movable into alignment for braking actions against these discs by the relative movement of air pressure cylinder and piston devices having articulated connections between adjoining ends of such rods and the piston rod. A spring in this cylinder acts progressively to decrease the input force exerted on the toggle to the extent that the resultant output braking force resulting from the progressively increasing mechanical advantage of the toggle acting on said progressively decreasing input force, is substantially uniform over a major portion of the brake applying movement of the cylinder and piston mechanism.

3,604,540

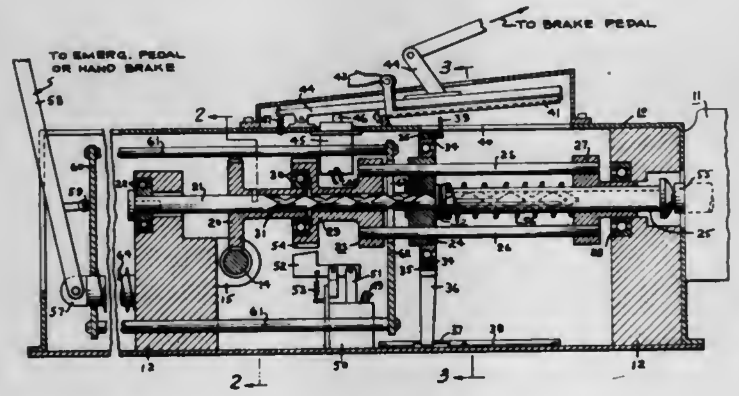
BRAKE ACTUATOR

Ottavio Falcone, 2421 S. 15th St., Philadelphia, Pa.

Filed June 23, 1969, Ser. No. 835,436

Int. Cl. F16d *65/34*

U.S. Cl. 188—106 R **8 Claims**



A brake actuator mechanism including an axiaLly shiftable plunger engaged with the piston of the master cylinder of a hydraulically operated automotive brake system to provide a power braking system. Axial movement of the plunger is accomplished by a shaft internally rotatable within the plunger in screw-threaded relationship with a follower nut carried thereon which moves the plunger. Rotation of the shaft in brake-applying direction is caused by electrical energization of an electric motor coupled to the shaft through a worm gear and pinion drive. Operation of the motor results from depression of the vehicle brake pedal which energizes the motor through a movable switch contact, the switch contact being physically shifted with the follower nut as the latter moves the plunger axially for engaging the master cylinder piston. A solenoid is also provided to lock the follower nut against rotation while it is being driven axially for engaging the brake. The solenoid lock is released when the brake pedal is undepressed, and a spring mechanism returns the follower nut and plunger to their retracted positions.

3,604,541

ELECTROMAGNETICALLY ACTUATED BRAKE

Ernst Menzi, Widnau, Switzerland, assignor to Ernst Menzi A.G., Widnau, Switzerland

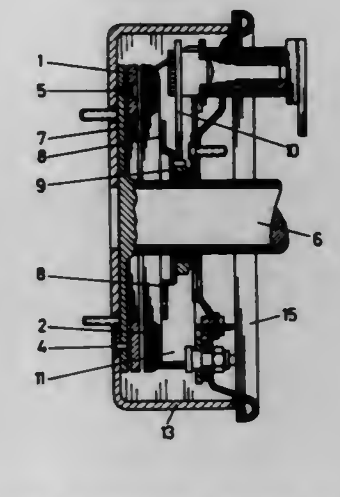
Filed July 2, 1969, Ser. No. 838,525

Claims priority, application Austria, July 5, 1968, A6510/68

Int. Cl. F16d *65/34*

U.S. Cl. 188—164 **6 Claims**

A brake in which a cam expands brakeshoes into engagement with a rotating brake drum when the cam is turned by a motion-transmitting train connected to an annular electromagnet freely movable on the shaft which carries the drum. The magnet stands still when not energized and is axially attracted toward an armature disc on the shaft and angularly displaced by the rotating disc when energized. Full frictional engagement between the annular pole face of the magnet and the opposite face of the armature disc could block the brake and is prevented by a setscrew on the brake drum



which deflects a small abutment portion of the disc axially toward the pole face.

3,604,542

VEHICLE BRAKE ACTUATOR MOUNTING

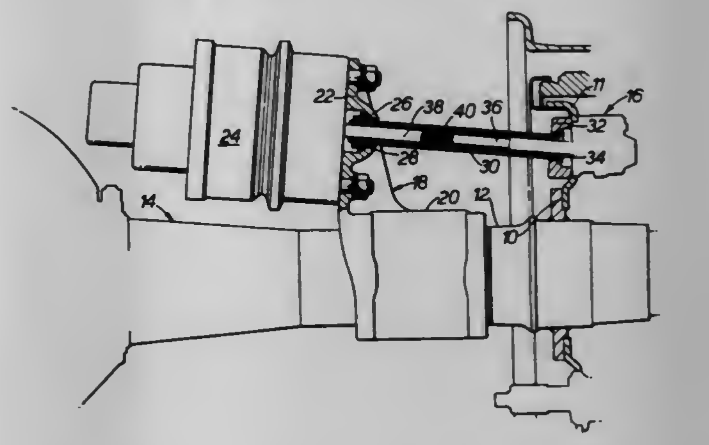
John Leslie Cullen, Langley, England, assignor to Girling Limited, Birmingham, England

Filed Dec. 8, 1969, Ser. No. 883,130

Claims priority, application Great Britain, Dec. 30, 1968, 61593/68

Int. Cl. B60t *11/10;* **F16d** *65/32*

U.S. Cl. 188—368 **9 Claims**



In a fluid-operated vehicle brake assembly of the type wherein space considerations prevent the brake actuator from being assembled directly on to the brake torque plate and therefore require the brake actuator to be mounted on some form of extension arm or equivalent member which enables it to be positioned remotely from the torque plate, the invention provides a brake actuator mounting on a bracket rigidly connected to a vehicle axle assembly and a self-aligning tubular member acting between the bracket and the torque plate to contain the forces acting between them during a braking operation, the tubular member also acting as a housing for an actuator rod extending from the actuator and for a brake expander rod extending from a brake expander mounted on the torque plate the two rods being coupled together within the tubular member for enabling brake-actuating forces to be transmitted from the brake actuator to the brake expander.

3,604,543

THROTTLE STOP RESPONSIVE TO BRAKE FAILURE

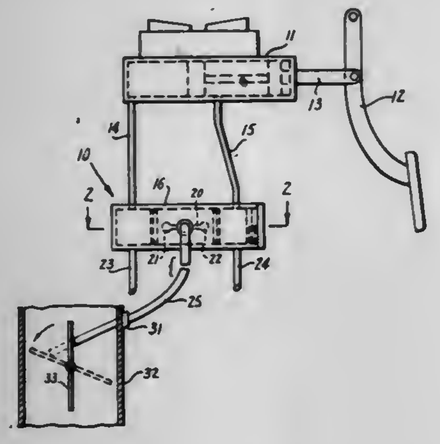
Charles A. Glaspell, Pleasant Valley Rd., Fairmont, W. Va.

Filed Feb. 17, 1970, Ser. No. 12,045

Int. Cl. F16d *67/00*

U.S. Cl. 192—3 R **5 Claims**

A safety system for dual brakes of a type having dual master cylinders for operation of the front and rear brakes independently. A compensating cylinder connects the front and rear brake lines so that upon normal operation of the brakes the piston thereof is centered. When either brake system fails the piston moves to the end of the compensating cylinder due to the lack of pressure at that end and a stop member is released by the piston to stop the throttle valve from opening beyond a point at which relatively low speed of the vehicle will be attained.



3,604,544

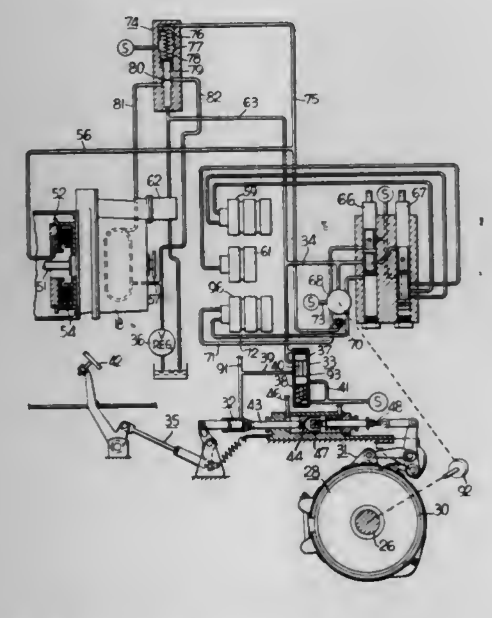
FORWARD-REVERSE TRANSMISSION AND BRAKE CONTROL FOR TRACTORS

Roy C. Ross, Springfield, Ill., and Martin W. Coleman, Independence, Mo., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Apr. 15, 1970, Ser. No. 28,598

Int. Cl. F16h *57/10*

U.S. Cl. 192—4 C **5 Claims**



The vehicle brakes are automatically applied when the transmission is shifted to neutral in response to a decrease in pressure in the fluid supply for the fluid-operated forward and reverse clutches of the transmission.

3,604,545

SELF-ALIGNING CLUTCH BEARINGS WITH VIBRATION DAMPER

Claude Raymond Bourgeois, Annecy, France, assignor to Societe Nouville De Roulements, Annecy (Haute Savoie), France

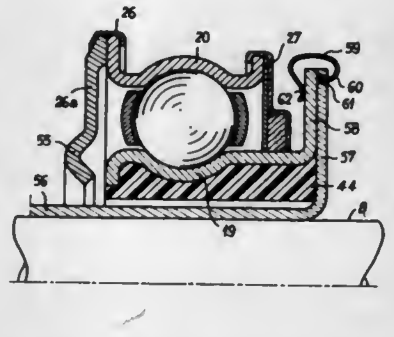
Filed Sept. 2, 1969, Ser. No. 854,576

Claims priority, application France, Sept. 5, 1968, 165,174

Int. Cl. F16d *23/00*

U.S. Cl. 192—98 **7 Claims**

The present invention is concerned with improved ball bearings for clutch mechanism, wherein the bearing races engaged by the balls are impressed in annular members consisting of rolled steel sheet to which a suitable contour is given, members being provided for incorporating the bearings in the clutch mechanism and possibly imparting a self-centering characteristic thereto, means being also provided for making said bearing self-lubricating and noiseless in actual service.



3,604,546

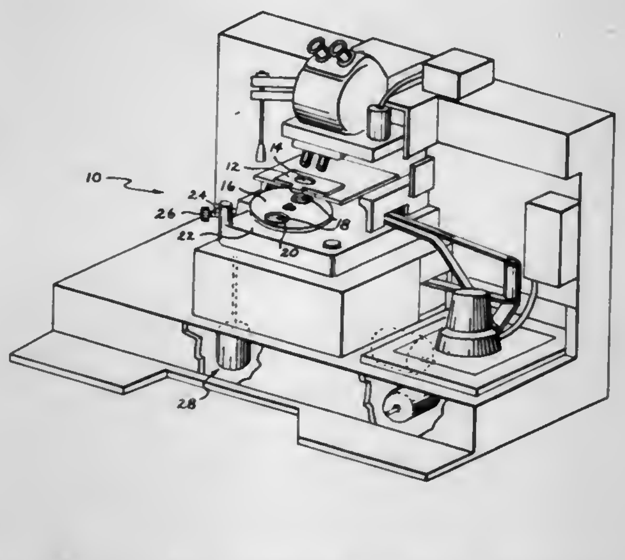
ANGULAR REGISTRATION ASSEMBLY AND DRIVING APPARATUS THEREFOR

Gordon Willis, Cambridge, Mass., assignor to Computervision Corporation, Walthom, Mass.

Filed Aug. 18, 1969, Ser. No. 850,786

Int. Cl. F16d *71/04*

U.S. Cl. 192—142 R **4 Claims**



An apparatus for establishing angular registration between a movable object and another object has photoelectric means for generating off-register signals relative to the θ axis. The off-register signals are coupled to a θ motor, which motor drives a driven gear mounted for free rotation on a rotatable shaft mechanically coupled to the movable object. A slip clutch assembly including a friction surface on one side of the driven gear and a compressed spring on the other frictionally engages the motor and the shaft, and a knob or handle is secured to the outer end of the shaft to give a manual adjusting capability to the driving apparatus. Means are preferably provided for adjusting the spring's compression and for preventing the spring from winding up during manual operation.

3,604,547

MERCHANDISE-VENDING MACHINE

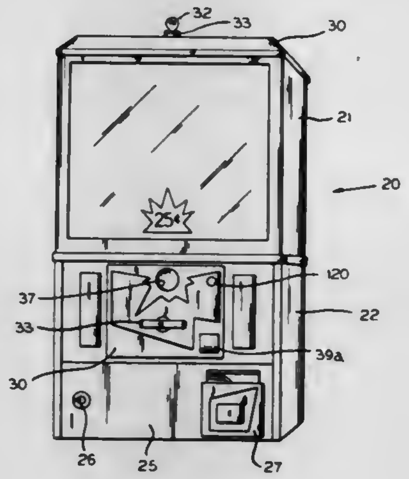
Richard K. Bolen, Morris, Ill., assignor to The Northwestern Corporation, Morris, Ill.

Filed Aug. 22, 1969, Ser. No. 852,185

Int. Cl. G07f *11/00*

U.S. Cl. 194—2 **2 Claims**

A bulk merchandise-vending machine with a base supporting a merchandise storage member, a mechanism plate positioned to form a closure member for at least a part of the base and removable therefrom by a pivotal movement without removing the storage member, a slug rejector mechanism on the base for distinguishing between coins and slugs, a coin wheel on the base and rotatable to operate a merchandise-dispensing mechanism when a coin is deposited in the machine and passes through the slug rejector mechanism, a slug chute on the plate for carrying slugs from the slug rejector mechanism out of the merchandise-vending machine, a latch to prevent rotation of the coin wheel when a coin has not been deposited in the coin wheel, and means defining a compartment for housing the latch to prevent access thereto via the slug chute.



3,604,548

RECORDING ARRANGEMENT FOR TYPING AND PUNCHING THE SAME INFORMATION

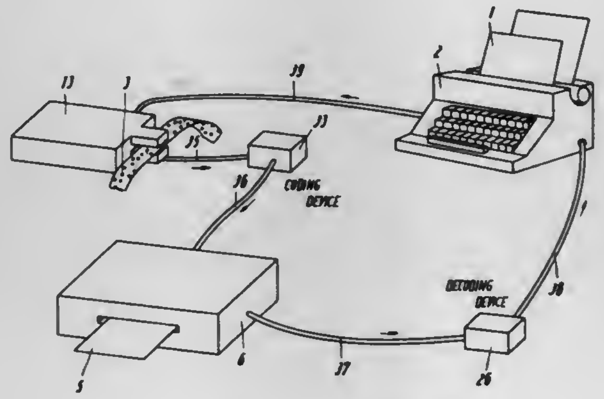
Gerhard Ritzerfeld, Schorlemer Allee 14, Berlin 33 (Dahlem), Germany

Filed June 5, 1968, Ser. No. 734,615

Claims priority, application Germany, June 7, 1967, R 46201

Int. Cl. B41j *5/36*

U.S. Cl. 197—20 **3 Claims**



The arrangement comprises a punching device and a printing device in the form of a typewriter having a series of type actions. One of the devices, for example the punching device, is controlled by a readout device reading out information recorded on a record carrier, and corresponding punching operations are carried out in a card. Output means of the punching device are connected by control means to the type actions of the typewriter so that the same types the identical information on a copy sheet, which is punched into the card. The arrangement can be reversed, but in any event, the punching device and the typewriter are directly connected.

3,604,549

DUAL FEED RATE RIBBON MECHANISM AND SUPPLY CARTRIDGE THEREFOR

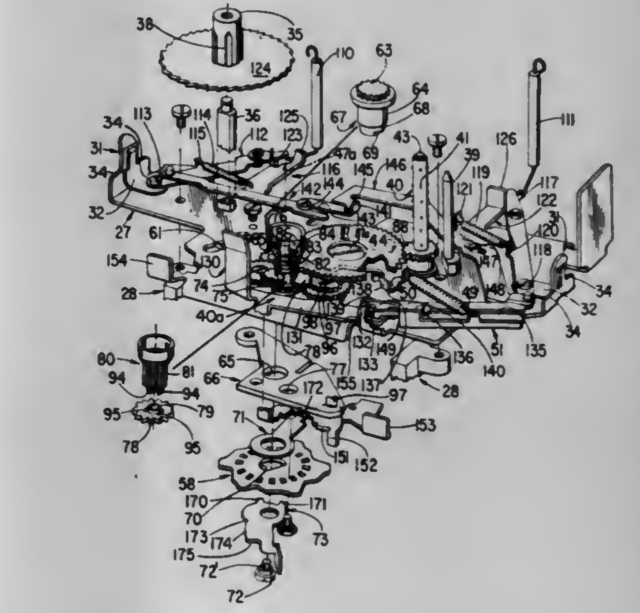
Allison H. Caudill, and Willie Goff, Jr., both of Lexington, Ky., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation-in-part of application Ser. No. 609,136, Jan. 13, 1967, now abandoned. This application July 16, 1968, Ser. No. 752,096

Int. Cl. B41j *33/14*

U.S. Cl. 197—151 **8 Claims**

A ribbon feed mechanism for feeding a substantially constant linear or longitudinal amount of single pass ribbon past a printing position during each ribbon feed cycle. A cartridge, which is removably mounted on a baseplate, has a supply spool and a takeup spool rotatably mounted therein with the ends of the single pass ribbon attached thereto. The bottom wall of the cartridge has a curved slot to receive a resiliently biased drive roller, which is rotatably mounted on a pivotal arm on the baseplate and has pointed projections thereon for penetrating the inked ribbon on the takeup spool to linearly advance the ribbon past its printing position. The drive roller is rotated by a gear train during each actuation of a character key on the typewriter. Means change the gear ratio of the gear train to cause a smaller amount of rotation of the drive roller during each actuation of a character key to advance the ribbon a smaller linear amount. The cartridge has a cylindrical recess to receive a portion of the gear train. When the ribbon is a solvent coated plastic transfer matrix whereby overstriking is desired, then resiliently biased means is disposed within the recess in the cartridge to render the change means operative to reduce the amount of rotation of the drive roller. If a total release ribbon is used wherein no overstriking is desired, then the recess in the cartridge is empty and the larger amount of rotation of the drive roller occurs because the change means is not rendered operative.



3,604,550

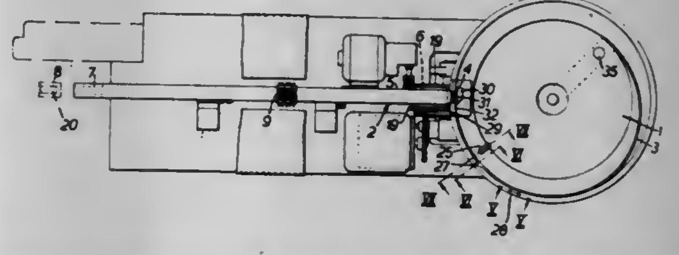
ARTICLE DELIVERY APPARATUS

Peter Martin Zollman, Weybridge; Julian Pascoe Grenfell, Weybridge, and David John Brown, New Malden, all of, England, assignors to Badalex Limited, Weybridge, Surrey, England

Filed Aug. 22, 1969, Ser. No. 852,394

Int. Cl. B65g *37/00, 47/42*

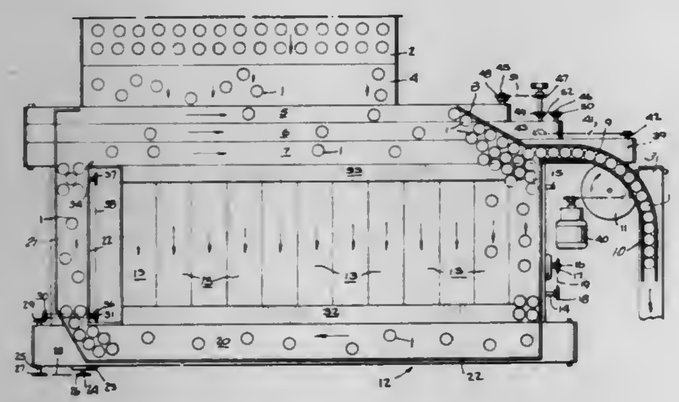
U.S. Cl. 198—21 **8 Claims**



A delivery apparatus for delivering articles in a timed relation at a delivery station from a supply station to which the articles are delivered at random time interval, the apparatus including a conveyor for carriers, a loading control to randomly release loaded carriers for movement by the conveyor, and delivery device for receiving the conveyors and delivering the articles therein at predetermined intervals.

3,604,551
ARTICLE CONVEYOR FLOW CONTROL AND UNSCRAMBLING APPARATUS

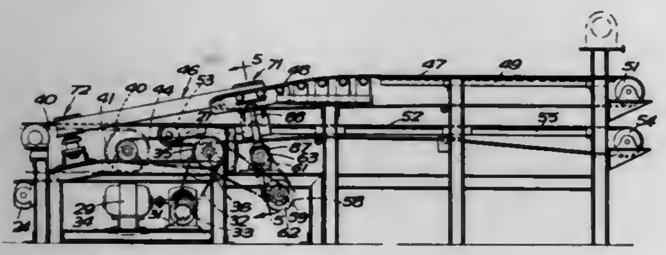
Roger H. Fink, Asheville, N.C., assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Oct. 13, 1969, Ser. No. 865,589
Int. Cl. B65g *47/26*
U.S. Cl. 198—30 6 Claims



An apparatus for controlling the flow or movement of articles such as containers on a conveyor system and particularly for handling a change from one mode of conveyance to another such as a change from rows of containers on a broad conveyor belt to a single file of containers on a narrow conveyor belt. The rows of containers move from the end of the broad belt across a transfer means such as a vibrating plate onto an unscrambling means comprising several moving conveyors run at right angles across the end of the broad belt. The containers are funneled by a guide means from the unscrambler conveyors into a single-file arrangement on a removal conveyor. An accumulator table is positioned along the edge of the outermost of the three unscrambler conveyors to receive excess containers which cannot be accepted on the removal conveyor and which temporarily stores these containers until they move onto the removal conveyor. The accumulator table comprises a large number of short parallel conveyor belts running at right angles to the unscrambler conveyors and which carry the excess containers away from the unscrambler conveyors towards an L-shaped conveyor return system which returns the containers to the unscrambler conveyors.

3,604,552
CONVEYING APPARATUS FOR SPLITTING A SINGLE STREAM OF ROOFING TILES ON PALLETS INTO TWO STREAMS

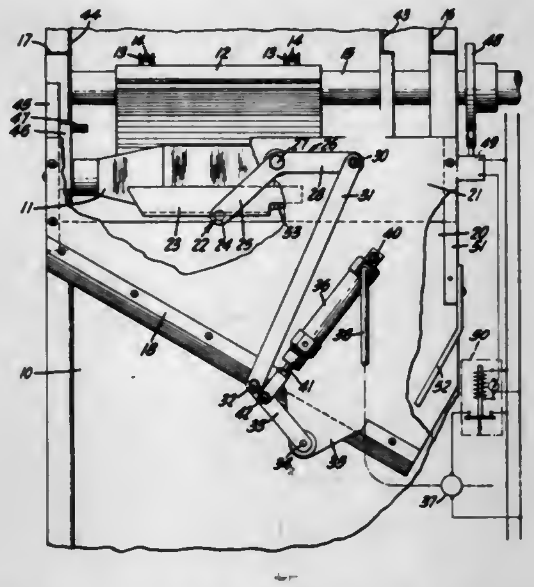
Leslie James Marshall, Reigate, England, assignor to Redland Tiles Limited, Reigate, Surrey, England
Filed Aug. 26, 1969, Ser. No. 853,109
Claims priority, application Great Britain, Sept. 9, 1968, 42,883/68
Int. Cl. B65g *47/30*
U.S. Cl. 198—31 7 Claims



A tile manufacturing plant includes apparatus for dividing a stream of freshly moulded tiles on pallets into two streams, comprising a first conveyor which carries the pallets at regular intervals and a second conveyor, synchronized with the first, which removes selected pallets from the first conveyor to form a second stream. The second conveyor comprises two parallel chains, situated one on each side of the first conveyor and diverging upwardly from the path thereof, the chains having at intervals along their lengths lifter sections to engage under and lift pallets on the first conveyor. The plant also includes apparatus for loading the streams of pallets into racks for curing the tiles, and for unloading the racks.

3,604,553
BOBBIN-ORIENTING APPARATUS

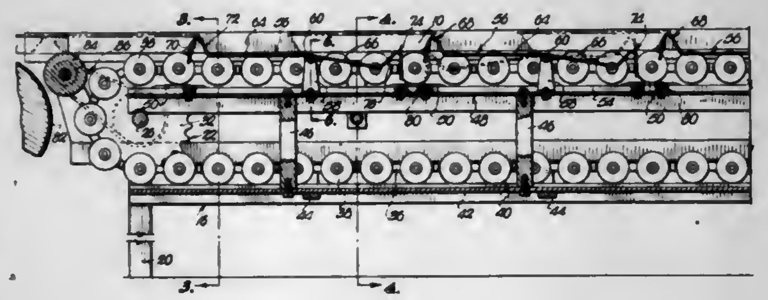
Rudolf Herbert Haehnel, West Lawn, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Mar. 12, 1970, Ser. No. 18,874
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AD 7 Claims



Apparatus for rearranging bobbins as the bobbins are received from a spinning machine in a disoriented mass and delivering them to a bobbin preparatory unit or the like with their enlarged base ends first. The apparatus includes a tiltable tray to which the bobbins are delivered with their base ends pointed in either direction longitudinally of the tray but with one end of the bobbin projecting beyond one end of the tray, means for tilting the tray to elevate said one end thereof to a position in which a bobbin resting on the tray would slide therefrom, and a pair of pins positioned in the path of movement of the projecting end of the bobbin during the tilting of the tray the pins being so spaced that a tip end of a bobbin would pass between them but a base end would not. In operation if the tip end is the projecting end the bobbin is carried by the tray until the tray reaches its tilted position and the bobbin slides therefrom with its base end downwardly. On the other hand if the projecting end is the base end, as the tray tilts the base end contacts the pins and is held thereby and the bobbin is flipped from the tray to fall again with its base end downwardly.

3,604,554
TRAY-SPACING CONVEYOR

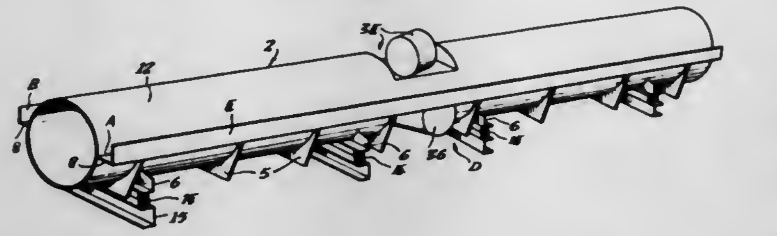
Robert L. Martz, Grandview, Mo., assignor to Gordon Johnson Company, Kansas City, Mo.
Filed Jan. 22, 1970, Ser. No. 4,869
Int. Cl. B65g *39/20*
U.S. Cl. 198—183 18 Claims



An article transfer apparatus has a conveyor provided with rotatable, article-supporting rollers. Movable article-spacing devices used in conjunction with the conveyor have stops, normally held down by gravity, and depressors, which are lowered and held down by an article resting thereon to raise the corresponding stops into the path of the articles. Accelerator pad means engaged by the rollers rotate the latter to augment advancement by the articles.

3,604,555
VIBRATORY CONVEYOR

Gerald Cowper, 65, Holmrock Rd., Carlisle, England
Filed July 8, 1969, Ser. No. 839,952
Claims priority, application Great Britain, July 15, 1968, 33,566/68
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 DB 14 Claims

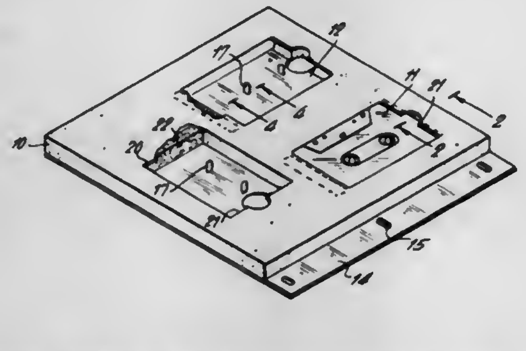


A conveyor for particular materials such as chemicals, minerals and foodstuffs, is made form one or more units which extend longitudinally with a conveying surface disposed to one or both sides of a structural member in a direction substantially parallel to the longitudinal direction of the member.

Means are provided to convey a helical reciprocating movement to the units about an axis lying in the longitudinal direction of the structural member and this may effectively be provided by means of vibrator motors with out-of-balance loading. Conveyors with two conveying surfaces can thus be used to convey materials in two directions as the movement on one surface will be in a forwards direction and that on the other surface will be in a backwards direction.

3,604,556
TAPE CASSETTE HOLDER

Louis E. Schwartz, New York Law School, 57 Worth St., New York, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,843
Int. Cl. B65d *25/00*
U.S. Cl. 206—1 R 7 Claims

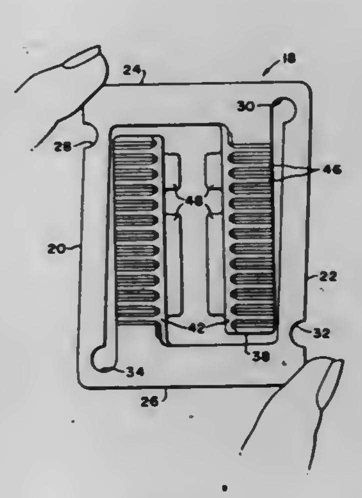


Recesses within a thickened support member receive tape cassettes. A resilient member at one end of each recess permits the cassette to be inserted and removed from beneath opposed cassette-retaining flanges. Information on each side of the cassettes may be read without removing the cassettes from the support members.

3,604,557
CARRIER

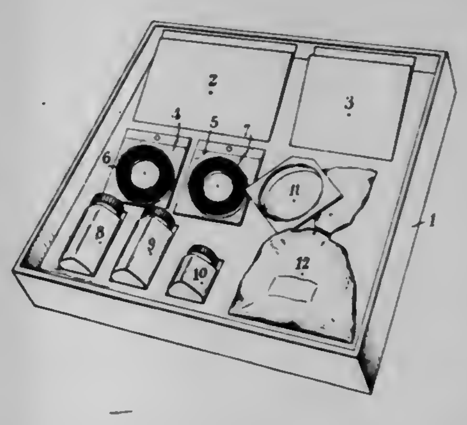
Nicholas J. Cedrone, 40 Bear Hill Rd., Waltham, Mass.
Filed July 24, 1969, Ser. No. 844,390
Int. Cl. A45c *11/00;* **B65d** *85/00*
U.S. Cl. 206—1 R 3 Claims

A carrier for small objects comprises a four-sided member forming a distortable parallelogram. Brackets extending from two opposed arms remain substantially parallel during this distortion, whereby they may be moved apart for receiving or releasing an object, and resiliently urged together to hold the object.



3,604,558
EDUCATIONAL GAMES

Roger Frerebeau, Paris, France, assignor to Societe d'Edition et de Diffusion de Publication Sedip-Inter, Paris, France
Filed Mar. 20, 1969, Ser. No. 808,820
Int. Cl. B44d *3/00, 3/22, 5/00*
U.S. Cl. 206—1.7 3 Claims

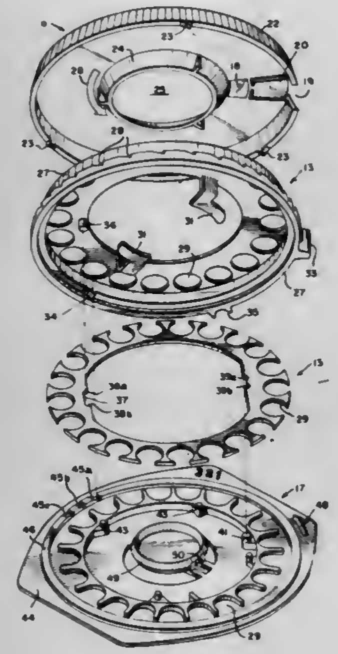


An educational game characterized in that it consists of a box in which are disposed, in compartments or locations provided to this end, support means such as sheets of cardboard, wood or other suitable porous material, which may have different colors, books of separate sheets on which outline drawings are printed to constitute models or suggestions for other designs, patterns or imaginary compositions, preferably with reference data concerning the colors to be adapted for coloring each area bounded by a line, one or a plurality of lengths of a thin strip of flexible and malleable plastic or metallic material, for example alumetized aluminum, a bottle filled with a glue for causing sections of said strips cut to the desired lengths to adhere edgewise to the selected support, and possibly for filling in the coloisonne structure thus obtained and diluting the decoration gouache, and a bottle of special cold-enamelling varnish adapted to coat the finished work and impart thereto a brightness comparable to that of enamel.

3,604,559
MULTILAYER DISPENSER FOR PILLS

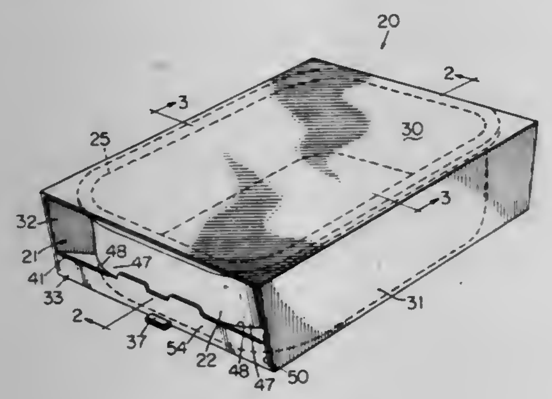
Calvin W. McCall, Roanoke, and Robert C. McDonald, Vinton, both of, Va., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Oct. 15, 1969, Ser. No. 866,450
Int. Cl. B65d *83/04*
U.S. Cl. 206—42 4 Claims

The invention relates to a pill dispenser having a plurality of pill compartments arranged in layers. The layers are relatively rotatable on a common axis and are provided with multiple position clutch means for aligning the compartments of preceding layers on repeated advancement of the top layer relative to the bottom layer as the pills are dispensed in sequence.



3,604,560
TAMPERPROOF CARTON AND BLANK FOR MAKING SAME

Melville T. Farquhar, Bon Air, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Dec. 29, 1969, Ser. No. 888,503
Int. Cl. B65d *85/00*
U.S. Cl. 206—46 FD **20 Claims**

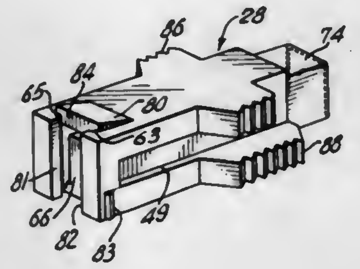


A tubular carton is provided which has substantially open ends and a bottom wall provided with extension flaps extending from its opposite ends. Each extension flap has a plurality of parallel fold lines defined therein which enable folding thereof to define an end stop used to stop or hold an article carried within the carton against outward movement and each extension flap has a locking tab which locks it in its folded position so that with an article within the carton it is impossible to unfasten either locking tab without damaging its associated extension flap or tearing the carton to thereby define a tamperproof carton.

3,604,561
MULTIPLE STAPLER CARTRIDGE

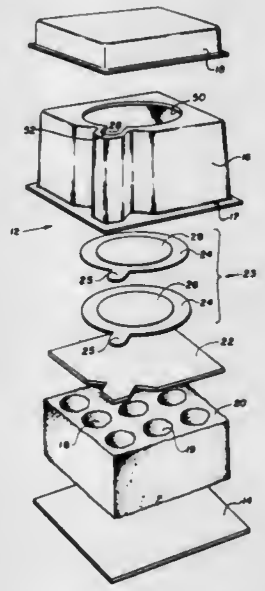
Rudolph F. Mallina, Hastings-on-Hudson, N.Y., and Harry G. Reimels, Braintree, Mass., assignors to Codman & Shurtleff, Inc.
Division of Ser. No. 626,445, Mar. 28, 1967, Pat. No. 3,489,330
Filed Aug. 7, 1969, Ser. No. 848,243
Int. Cl. B65d *83/00*
U.S. Cl. 206—46 DF **5 Claims**

A miniature stapler useful in the surgical repair of tissue fastens at each actuation a single miniature staple and is constructed with two movable arms, the free ends of which function as a driver and anvil. A cartridge containing a series of staples is removably mounted between the two movable arms in such a position that the first staple in the series is pushed out of the cartridge by the driver and clinched against the anvil when the two arms are moved toward one another. After application of the staple, when the two arms move away from each other, a pusher within the cartridge operates to move the series of staples forward so that the next successive staple in the series will be in position to be applied when the movable arms again approach one another.



3,604,562
DISPENSING PACKAGE

Herbert H. Loeffler, Arlington, Mass., assignor to Amicon Corporation, Lexington, Mass.
Continuation-in-part of application Ser. No. 767,211, Oct. 14, 1968, now abandoned. This application June 24, 1969, Ser. No. 836,104
Int. Cl. B65d *83/00*
U.S. Cl. 206—56 AC **5 Claims**

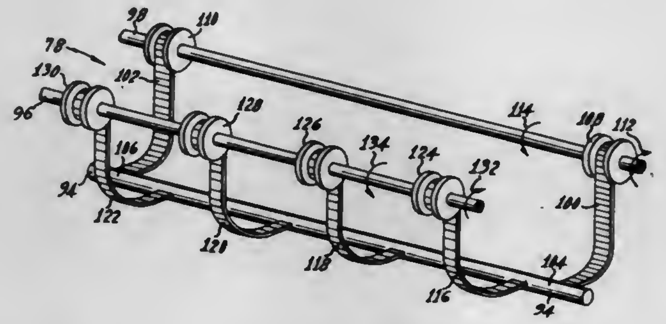


In a dispensing container for use in dispensing packaged articles wherein a biasing means is used to push the packaged articles towards an outlet therefrom, the particular improvement whereby a compressed polymeric foam is used as a biasing means, thereby providing a biasing force that remains more uniform with time as the package is emptied of articles and also avoids locally high pressures bearing on the packaged articles.

3,604,563
LUMBER SORTER

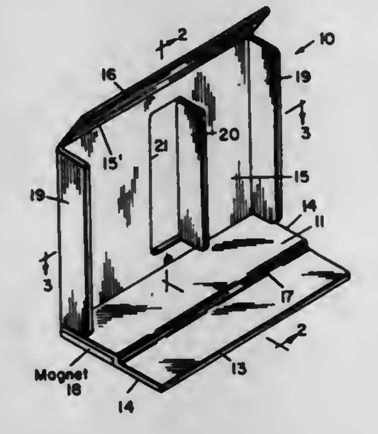
Michael P. Ronan, Jr., Citrus Heights, Calif., assignor to Moore Dry Kiln Company, Jacksonville, Fla.
Filed Jan. 28, 1970, Ser. No. 6,336
Int. Cl. B07c *5/38*
U.S. Cl. 209—74 **12 Claims**

A drop sorter for lumber having a frame and plurality of lumber delivery bays and an unloading lumber accumulation sling assembly positioned within each delivery bay. Each sling assembly includes an elongated rigid element having opposite end portions and opposite side portions, a pair of flexible chains respectively supportingly connected to the opposite end portions of the element on one of its side portions with means including a pair of drums connected to the frame for reeling in and paying out each of the pair of chains. Each assembly further includes a plurality of spaced flexible chains each having one of their end portions respectively supportingly connected to the element on its other side portion with means including a plurality of drums connected to the frame for reeling in and paying out each of the plurality of chains. The spacing distance between adjacent ones of the plurality of chains is less than the length of the boards being delivered to the bay whereby the boards are supported on the plurality of chains between the element and the means for reeling the plurality of chains. The distance between the pair of chains is greater than the length of the boards being delivered to the bay whereby an accumulated load of boards are automatically unloaded from the plurality of chains through and between the pair of chains upon paying out of the pair of chains by their respective means for reeling and simultaneously lowering the element.



3,604,564
BOOK ENDS

Charles E. Weyll, Jr., P.O. Box 62, Glen Cove, N.Y.
Filed July 8, 1969, Ser. No. 839,849
Int. Cl. A47b *65/00*
U.S. Cl. 211—43 **1 Claim**

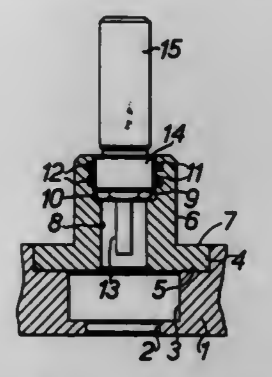


One piece of sheet material formed to provide a horizontal base with a vertical book-supporting panel at one edge of the base. An inclined ledge is provided at the upper edge of the panel and the side edges of the panel are formed with a pair of side flanges. A central flange is struck out from the panel midway between and parallel to the side flanges, and either of the side flanges may coact with the central flange to afford a pair of finger pieces for handling the book end. The base of the book end is equipped with a magnet for holding the same on metal shelving.

3,604,565
TOOL-HOLDING DEVICES

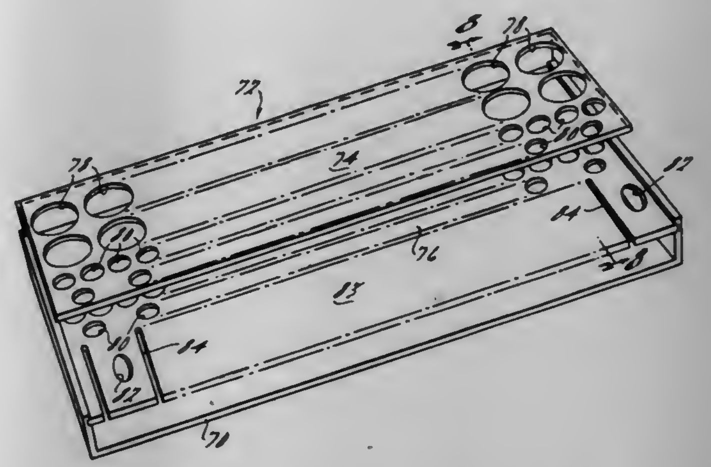
Richard T. Freeman, London, England, assignor to Molins Machine Company Limited, London, England
Filed Nov. 13, 1968, Ser. No. 775,478
Claims priority, application Great Britain, Nov. 15, 1967, 51,886/67
Int. Cl. B23q *3/155*
U.S. Cl. 211—60 **1 Claim**

A form of toolholder for holding a cutting tool in a tool magazine. The toolholder is internally and externally cylindrical and contains gripping means to grip a holdable portion of the tool. There is also disclosed a tool magazine having a plurality of stepped cylindrical holes of the same size each to receive a toolholder. The internal diameter of each toolholder being appropriate for the diameter of the holdable portion of the cutting tool carried therein.



3,604,566
TEST TUBE HOLDER

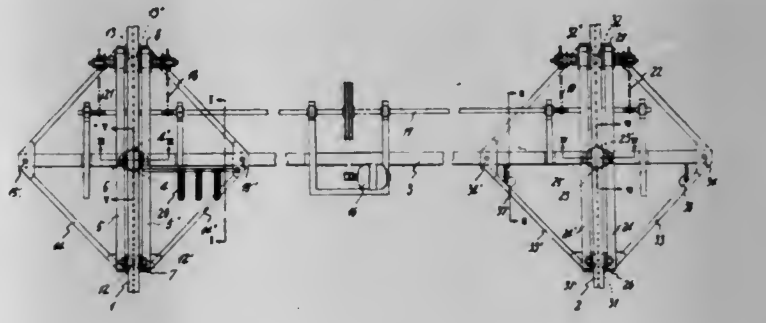
Douglas J. Rem, 20525 Derby, Detroit, Mich., and David H. Smith, 18492 Alcoy, Detroit, Mich.
Filed May 1, 1969, Ser. No. 820,795
Int. Cl. A47b *73/00*
U.S. Cl. 211—74 **10 Claims**



There is herein disclosed a tube-carrying rack comprising an elongated, color-coded, U-shaped base with at least two upstanding sidewalls, track means disposed along the inner surface of the sidewalls, a tube-carrying support member, a plurality of apertures disposed within the support member and locking means associated with the base member and the support member to releasably retain the support member in a desired assembled relationship with the base member.

3,604,567
OVERHEAD TRAVELLING CRANE

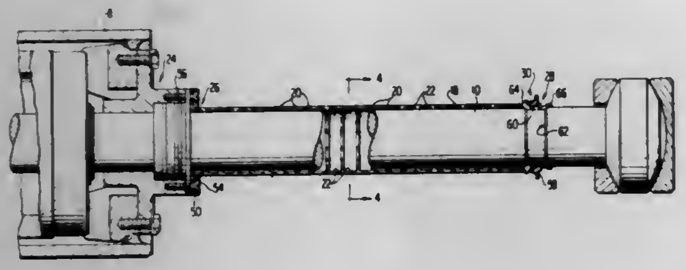
Tatsumi Tanaka, 225-4, Zaimoku Chou, Saga, Saga Prefecture, Japan
Filed July 3, 1969, Ser. No. 838,879
Int. Cl. B66c *17/00*
U.S. Cl. 212—18 **5 Claims**



An overhead travelling crane comprises a hoist suspended from a girder which travels on two parallel I-rails which are perpendicular to the girder. The girder is suspended from each rail by a carriage which consists of a pair of parallel bars, parallel to, below, and on opposite sides of the rails. These bars are connected at their centers by a shaft and at each end by links pivotally connected to each bar so as to permit limited relative motion between the bars. Each bar supports at each end a roller which rides on the lower flange of the rail. The bars form part of triangular frames which can swing slightly in a horizontal plane relative to the girder. The object of the arrangement is to permit the suspension system for the girder to accommodate itself to unevennesses of the rails.

3,604,568
LUBRICANT FILLED BELLOWS FOR SHAFTS

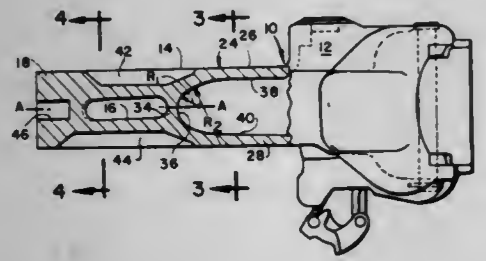
Joe W. Dobkins, Fort Worth, Tex., and Halliburton Company, Duncan, Okla.
Continuation-in-part of application Ser. No. 751,608, Aug. 9, 1968. This application Sept. 1, 1970, Ser. No. 68,596
Int. Cl. B61g *9/08*
U.S. Cl. 213—43 **26 Claims**



An extensible and contractable bellows adapted to be mounted about a shaft. The bellows includes a hollow body portion that is substantially cylindrical and unstressed when extended, and also includes a plurality of internal ribs adapted to engage the shaft and form lubricating chambers therebetween. The chambers are filled with a suitable fluid such as oil or air, for lubricating the shaft. A plurality of notched passageways or nibs, formed with the ribs, permits and controls flow of the lubricant between the chambers.

3,604,569
RAILWAY COUPLER SHANK HAVING A KEY SLOT

Frederick C. Kulieke, Tallmadge, Ohio, assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Aug. 20, 1969, Ser. No. 851,632
Int. Cl. B61g *9/00*
U.S. Cl. 213—62 **10 Claims**

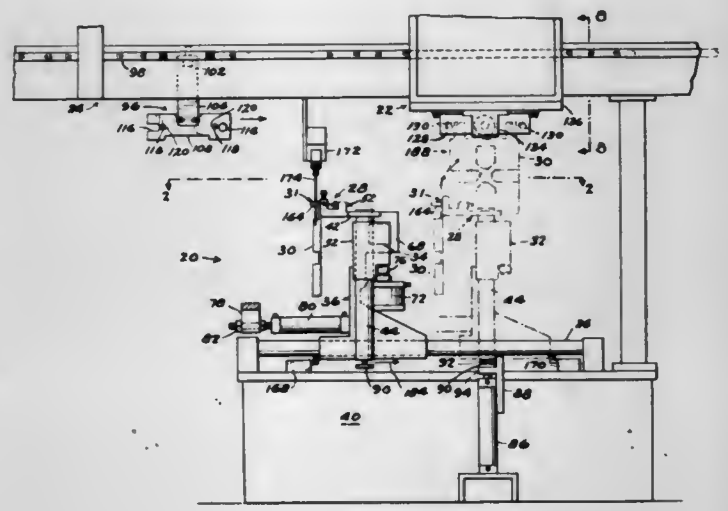


The shank of a railway coupler is improved by better distribution of the metal surrounding the key slot. Forces due to buff and draft are distributed laterally across the shank to the butt and evenly to the top and bottom walls of the shank. The forces are then transmitted to the sidewalls proximate the leading surface of the key slot. Breakage and shortening of the shank proximate the butt is reduced.

3,604,570
APPARATUS FOR HANDLING DIE CASTING SHOTS

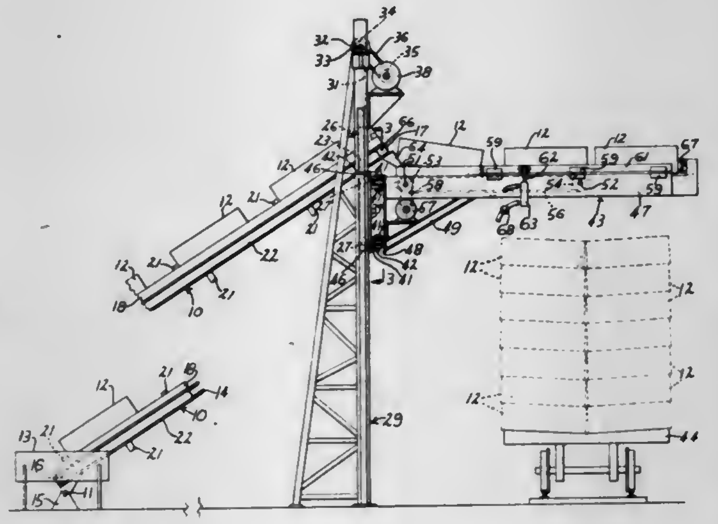
Herman M. Canner, Detroit, Mich., assignor to Sterling Detroit Company, Detroit, Mich.
Filed Apr. 16, 1969, Ser. No. 816,532
Int. Cl. B66c *1/66*
U.S. Cl. 214—1 BB **25 Claims**

Apparatus for removing a shot from a die casting machine and transferring it to a carrier. The shot is cast with studs extending in opposed directions from the shot and a pickup is placed between the open dies to receive and hold the studs on one side when the shot is ejected from the movable die. The pickup is removed from between the dies and rotated and extended vertically upward to present the shot for transfer to the carrier by moving the studs axially so that the studs on one side of the shot are received and held by the carrier while the opposed studs are disengaged from the pickup.



3,604,571
APPARATUS FOR TRANSFERRING LOGS TO CARRIER THEREFOR

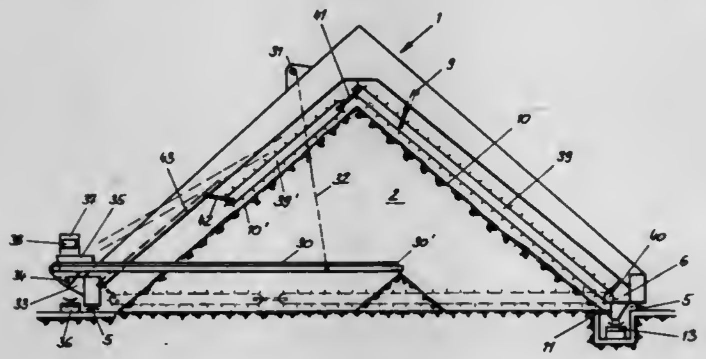
Marvin C. Dobbs, Fayette, Ala., assignor to The Dobbs Co. and Alco Machine Shops, Incorporated, part interest to each
Filed Aug. 27, 1969, Ser. No. 853,300
Int. Cl. B65g *57/112*
U.S. Cl. 214—6 G **1 Claim**



Log transfer apparatus having pivoted chute delivering logs sequentially to the receiving end of a conveyor extending transversely over and adapted for vertical adjustment relative to a subjacent supporting carrier. Relative horizontal movement between the carrier and the conveyor positions carrier for receiving logs along the length of the carrier. The logs are released onto the carrier by upstanding, pivoted plates in response to movement of logs a predetermined distance along conveyor.

3,604,572
COMBINED EQUIPMENTS FOR BUILDING UP AND CLEARING DUMPS OF BULK MATERIALS

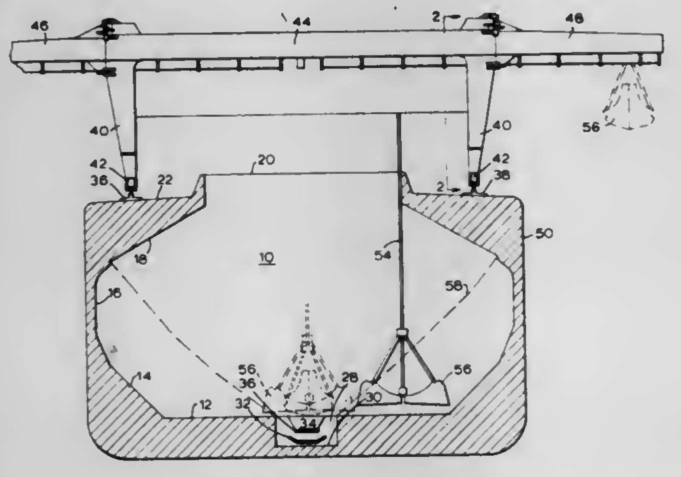
Gunter Strocker, Holzwickede, and Gerhard Fischer, Dortmund-Kirchhorde, both of, Germany, assignors to Gustav Schade Maschinenfabrik
Filed Feb. 3, 1969, Ser. No. 795,873
Claims priority, application Germany, Feb. 12, 1968, Sch 44248
Int. Cl. B65g *65/28*
U.S. Cl. 214—10 **6 Claims**



A device for piling and unpiling bulk material includes a frame having spaced-apart base portions and legs extending upwardly toward one another from said base portions, a feeder conveyor is mounted on the frame for piling material in the space spanned by the base portions. The device includes a scraper boom for removing piled material from the area spanned by the base portions. An additional conveyor may be provided for receiving material from the scraper boom and for supplying material to the feeder conveyor by means of a trolley.

3,604,573
SYSTEM AND APPARATUS FOR UNLOADING BULK MATERIAL FROM A STORAGE ENCLOSURE

John Daniel Leitch, Toronto, Ontario, Canada, assignor to Upper Lakes Shipping Ltd.
Filed July 7, 1969, Ser. No. 839,247
Int. Cl. B63b *27/12*
U.S. Cl. 214—15 C **4 Claims**

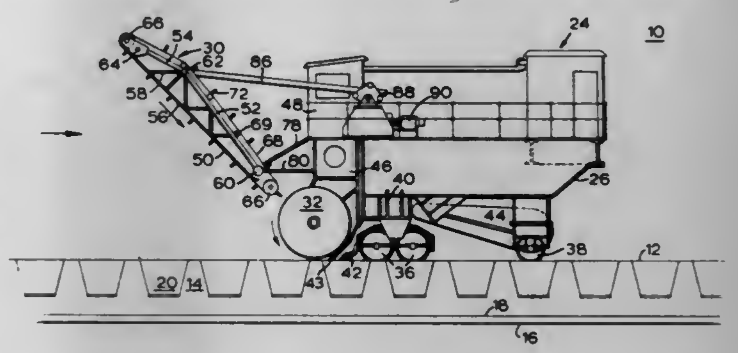


A system for unloading a bulk carrier has a flat-bottomed hold with a series of gates thereon to gravity-feed material on to a longitudinal conveyor positioned below the flat bottom; the unloading of the remaining material unaffected by gravity is completed by a deck-supported sling which moves across and along the hold.

3,604,574
APPARATUS FOR UNLOADING BULK MATERIAL FROM A STORAGE ENCLOSURE

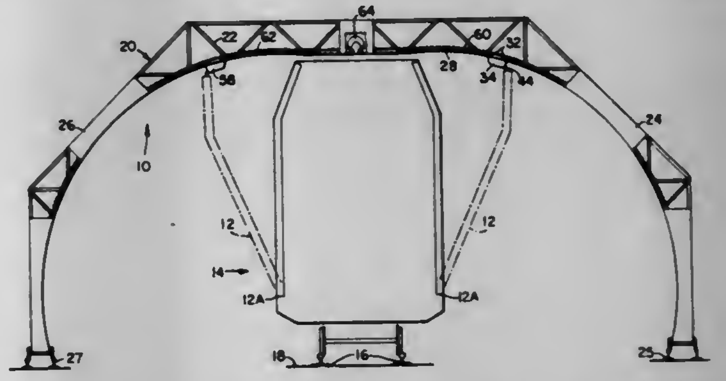
John Daniel Leitch, Toronto, Ontario, Canada, assignor to Upper Lakes Shipping Ltd., Toronto, Ontario, Canada
Filed July 7, 1969, Ser. No. 839,354
Int. Cl. B63b *27/22*
U.S. Cl. 214—15 E **2 Claims**

A wheeled reclaimer for dislodging material in the hold of a ship consisting of a frame which carries chain driven horizontally disposed spaced apart bars, the latter having outwardly disposed prongs which dig into the material on activation of the chains.



3,604,575
DOOR RAISING AND LOWERING MEANS FOR RAILWAY CARS

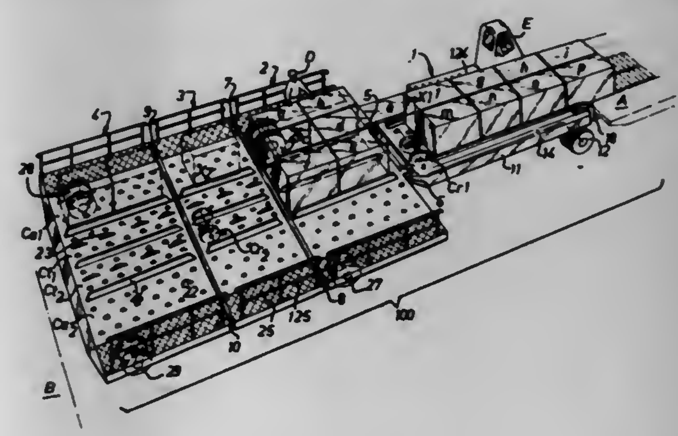
William M. Jaekle, 18 Tarry Lane, Orinda, Calif.; Paul V. Garin, 1836 Lake St., San Francisco, Calif.; William E. Thomford, 1176 Glenwood Drive, Millbrae, Calif.; Wallace M. Greb, 1139 Oakes Ave., San Leandro, Calif.; Nicholas N. Udaloff, 141-16th Ave., San Francisco, Calif., and Donald W. Bulloch, 1036 Central Ave., Alameda, Calif.
Filed Aug. 14, 1969, Ser. No. 850,174
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 R **5 Claims**



In conjunction with a railway car having doors on either side which pivot downward to an open position and upward to a closed position, carriages which run upward or downward along an arch over the car, the carriages being adapted to cooperate with top edge portions of doors to raise and lower them.

3,604,576
SELF-PROPELLED HANDLING TRUCK

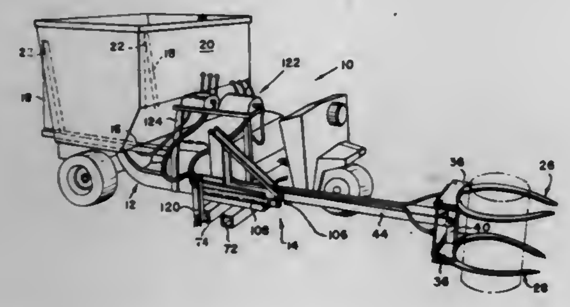
Jacques Poccard, La Varenne, France, assignor to Nord-Aviation Societe Nationale de Constructions Aeronautiques, Paris, France
Filed Oct. 7, 1969, Ser. No. 864,489
Claims priority, application France, Oct. 8, 1968, 169.160
Int. Cl. B60p *1/52*
U.S. Cl. 214—38 D **8 Claims**



A self-propelled truck comprising a control cabin permitting the distribution of loads between waiting zones and transfer zones, comprising at least two elements coupled to each other by articulated coupling joints and provided with displacement devices permitting at will lateral or turning movement in situ, a skewing plate and retractable guides.

3,604,577
CAN-LIFTING APPARATUS

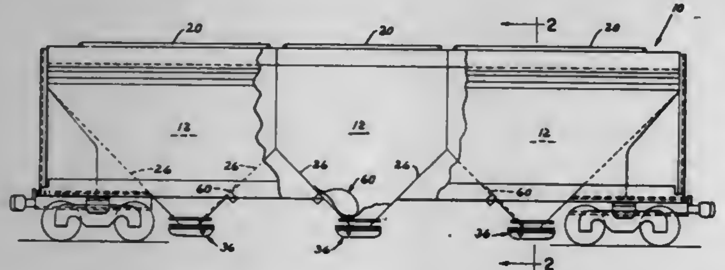
Ludwig Otto Heilmeier, Rte. #1 Box 66, Waldorf, Md.
Filed Mar. 14, 1969, Ser. No. 807,181
Int. Cl. B65f *3/04*
U.S. Cl. 214—314 **3 Claims**



Material handling vehicle for lifting barrels, cans, as such, including a readily detachable lift mechanism unit having a boom and associated lift claws capable of universal movement.

3,604,578
UNLOADING ASSIST FOR COVERED HOPPER CARS

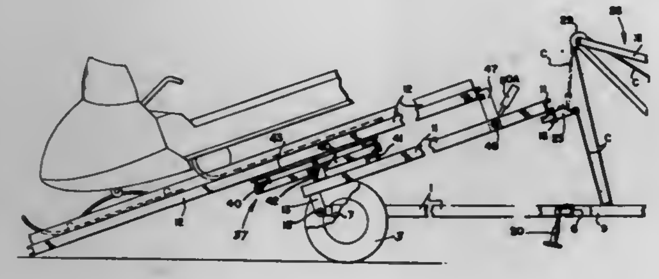
Garth R. Smith, Maryland Heights, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Dec. 22, 1969, Ser. No. 886,815
Int. Cl. B60p *1/00, 1/56*
U.S. Cl. 214—500 **6 Claims**



A gas inflatable bag is mounted on the slope sheet of a covered hopper car adjacent the bottom discharge outlet. The bag is secured along its upper marginal portion to the slope sheet and upon inflation bulges outwardly into the hopper. Upon deflation of the bag when a bulk commodity, such as potatoes, is carried by the hopper, the space previously occupied by the inflated bag is reoccupied by the bulk commodity thereby to aid in discharging any of the bulk commodity tending to bridge over the discharge opening.

3,604,579
TRAILER FOR SNOW VEHICLES

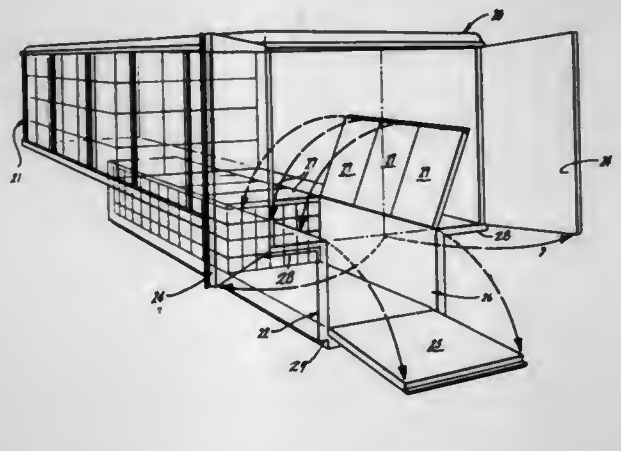
Roy A. Jenkins, 165 N. 28th St., Springfield, Oreg.
Filed Nov. 10, 1969, Ser. No. 875,320
Int. Cl. B60p *1/28*
U.S. Cl. 214—505 **10 Claims**



A trailer having a tiltable and rotatable bed for convenient loading and discharge of a load which for example may be snowmobiles as shown. A turntable supports the bed with the turntable being mounted particulate a tiltable framework movable relative to the trailer frame. A winch arrangement moves the trailer bed and tilting framework into and out of an inclined position incident to loading of the trailer. Bed retention means locks the bed to the trailer framework for travel means locks the bed to the tiltable for travel of the loaded trailer.

3,604,580
TRAILER WITH PORTABLE CONTAINERS

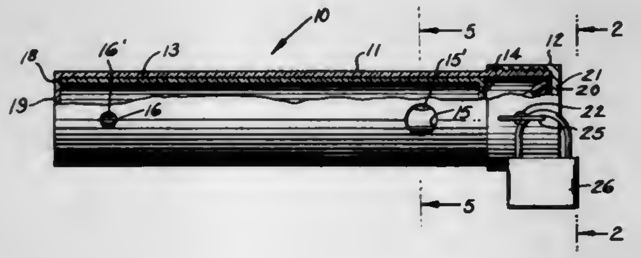
Harold R. Geister, 511 Francisco Blvd., San Rafael, Calif.
Filed Dec. 18, 1969, Ser. No. 886,074
Int. Cl. B60p *1/64, 3/10*
U.S. Cl. 214—515 **4 Claims**



A portable cargo container in combination with a generally U-shaped horizontal body frame of a trailer having two spaced parallel longitudinal frame members; the upper section of the container is wider than the space between said longitudinal frame members, and the lower container section is narrower than the space between said longitudinal frame members and is higher than the distance of said longitudinal frame members from the ground level so as to permit the longitudinal frame members to be backed under said upper section for loading; said lower section being adapted to serve as a base to support the container on the ground thereby to eliminate the need for multiplicity of trailers.

3,604,581
PILL DISPENSER HAVING SAFETY LOCK

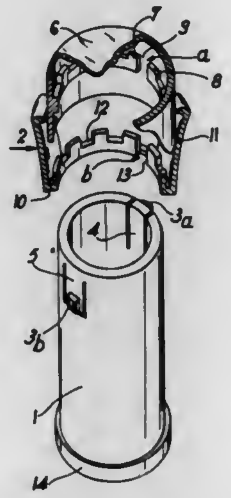
Burt Van Iperen, Rte. #1, Hartley, Iowa
Filed Jan. 2, 1970, Ser. No. 5,386
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **4 Claims**



A device for dispensing pills, having an outer container with a screwcap and an inner sleeve. The container and the inner sleeve portion contain apertures which when rotated to alignment with each other allow passage of the pill from the interior of the device. The cap portion of the device also includes a method of locking the device closed in order to prevent access to the pills by children.

3,604,582
CONTAINERS FOR PROTECTING CHILDREN AGAINST DANGEROUS PRODUCTS

Pierre Boudin, 18 Rue St. Lazare, 75-9 eme, Paris; Maurice Liesse, Cite Diderot 94, Champigny-Sur-Marne, and Jean De Larebeyrette, 27 Rue St. Georges 75-9 eme, Paris, all of, France
Filed July 25, 1969, Ser. No. 844,832
Claims priority, application France, Dec. 5, 1968, July 29, 1968, 160,974; 176,742
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **18 Claims**

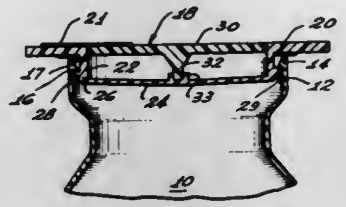


The invention concerns method and containers for protecting children from dangerous products by enclosing said products in opaque container which can be opened only by a combination of at least two movements according to a nonobvious program counteracting the normal reflexes but is closed by simply translating movement, using normal instinctive reflexes.

Container comprises moreover an independent auxiliary compartment provided with an easily removed closure and an element, sweet, fill, point etc.... which is unpleasant to at least one of the child's senses is disposed in it.

3,604,583
CONTAINER AND CLOSURE CAP THEREFOR

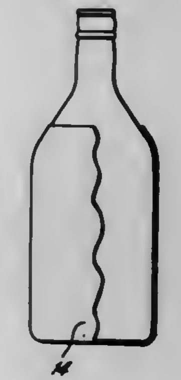
Robert P. Linkletter, 9372 Wilshire Blvd., Beverly Hills, Calif.
Filed Aug. 11, 1969, Ser. No. 848,833
Int. Cl. A61j *1/00;* **B65d** *55/02, 43/10*
U.S. Cl. 215—9 **9 Claims**



A container having an inwardly directed shoulder forming a lower radial surface, and a closure cap therefor wherein the closure cap is provided with a depending flange portion adapted to fit within the mouth of the container and having a radial projection forming an upper radial surface adapted to cooperate with the lower radial surface carried by the container to thereby lock the closure cap to the container. Means are provided for flexing the closure cap to move the radial projection carried thereby out of engagement with the radial surface of the container to thereby release the closure cap. In an additional embodiment, a second depending flange is provided on the closure cap to prevent the cap from becoming contaminated when removed from the container, and in another embodiment, additional means are provided for maintaining the depending flange and radial projection carried by the closure cap in engagement with the corresponding radial surface carried by the container.

3,604,584
METHOD FOR PROTECTING GLASSWARE AND THE ARTICLE PRODUCED THEREBY

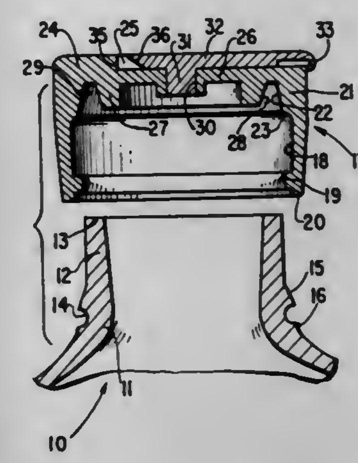
Herbert C. Shank, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed June 10, 1969, Ser. No. 831,939
Int. Cl. B65d *23/08*
U.S. Cl. 215—12 R **9 Claims**



A method for protecting glass articles such as jars and drink bottles from abrasion. Broadly the method comprises heat shrinking a thermoplastic material around a portion of the glass article. The portion includes the sidewall-bottom wall region.

3,604,585
CONTAINER AND SAFETY CLOSURE SEAL THEREFOR

Edward J. Towns, 53 Mounthaven Drive, Livingston, N.J.
Filed May 7, 1969, Ser. No. 822,662
Int. Cl. B65d *23/00, 53/00*
U.S. Cl. 215—40 **6 Claims**



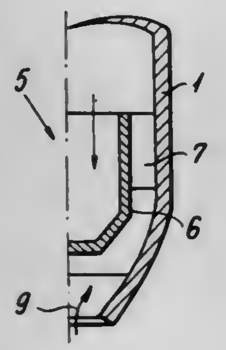
A squeeze-type or glass container and a safety closure therefor wherein the container and closure have portions that are interengageable in sealing relationship when the closure is mounted on the container neck to make the closure difficult to remove especially by children and the closure having a flush-fitted flap integral with it and resting in a recess in the top of the closure and on a partition at the bottom of the recess provided with at least one dispensing opening. The flap has an integral plug or bung or covering element to seal the opening in flush flap position. The flap may be swung from its flush position on the closure to an open position by a proper user to lift the plug or covering element and uncover the dispensing opening in the partition of the closure, the sealing fit of the closure or the container and the normally flush position of said flap making it very difficult it not impossible for children to lift the flap of the closure from its flush position or to remove the closure from the container, thus providing safe storage for dangerous container contents and preventing unauthorized access thereto.

3,604,586

CARTRIDGES CONTAINING CARBON-DIOXIDE FOR HOUSEHOLD PURPOSES

Lajos Baldauf, Bazakerettye; Imre Radnai, Repcelak; Janos Vasvari, Budapest, and Jozsef Wolf, Repcelak, all of, Hungary, assignors to Orszagos Koolaj Es Gazipari Troszt, Budapest, Hungary

Filed Apr. 1, 1968, Ser. No. 717,591
Claims priority, application Hungary, Apr. 14, 1967, OA-341
Int. Cl. B65d *17/00*
U.S. Cl. 220—3 **2 Claims**



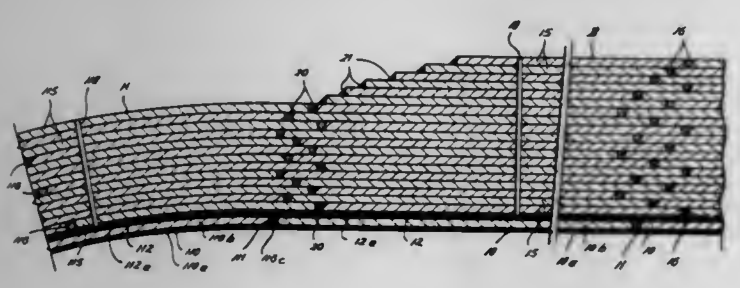
The cartridges used for making soda water in the household are made, according to the invention, by a cold extrusion process in such a way that they have a pierceable diaphragm which is made in one-piece with the cartridge and is perfectly gastight at any climatic conditions. For filling the cartridges from the rear, their bottom part is closed by an elastic plug pressed by the inner pressure to an inwardly flanged part of the bottom of the cartridge.

3,604,587

MULTILAYER PRESSURE VESSEL

Raymond E. Pechacek, Houston, Tex., assignor to Hahn & Clay

Filed Apr. 7, 1969, Ser. No. 814,126
Int. Cl. F17c *1/00;* **B65d** *7/42*
U.S. Cl. 220—3 **5 Claims**



A multilayer pressure vessel and method of making same wherein the vessel has both a multilayer cylindrical body and at least one multilayer head, with an inner shell being formed of stainless steel or other metal resistant to hydrogen embrittlement and with the multilayer body and multilayer head being provided with means for relieving hydrogen pressure in the layers externally of the inner shell, whereby the outer layers may be ordinary carbon steel for both the body and the head without danger of hydrogen embrittlement.

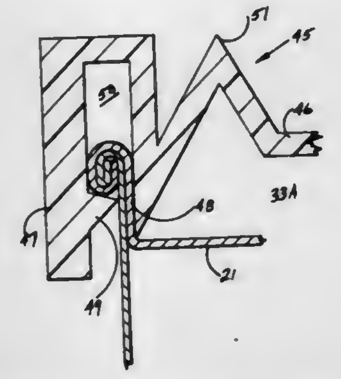
3,604,588

CAN COVER AND SEALER

Herman Winnick, 921 Valley Road, Bridgeport, Conn.

Filed Mar. 6, 1969, Ser. No. 804,913
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 A **8 Claims**

This disclosure is directed to a cover and sealing member primarily for use on cans adapted to contain carbonated beverages or drinks which will go flat once the can has been opened. The cover and sealer comprises a member having spaced apart depending skirt portions to define a circumferentially extending channel with means for frictionally receiving therein the projecting lip portion of the can in sealing relationship therebetween. The cover member is specifically formed to prohibit loss of gas when placed over an opened can wherein the pressure of the gas is utilized to enhance the sealing characteristics of the cover.

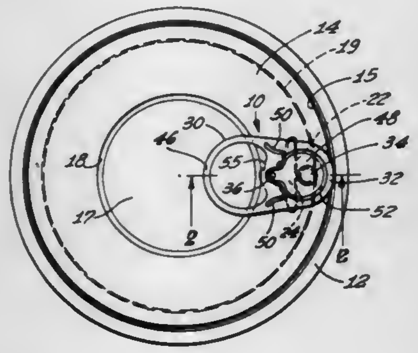


3,604,589

ANTIFRACTURE COIN FOR PANELLED CAN ENDS

Ermal C. Fraze, 355 W. Stroop Road, Dayton, Ohio

Filed June 27, 1969, Ser. No. 837,222
Int. Cl. B65d *17/24, 51/16*
U.S. Cl. 220—54 **20 Claims**



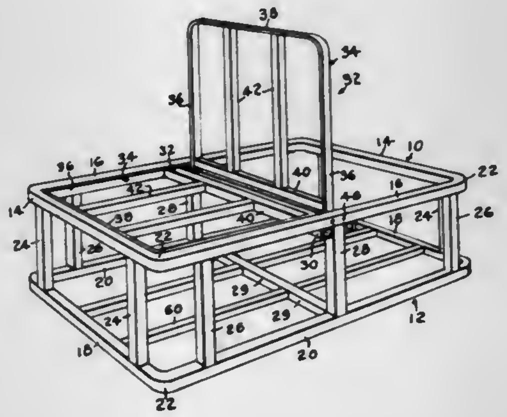
An easy opening can end having a relatively large tear panel defined by a first rupturable score is weakened by a second inner nonrupturable score that takes part of the flexure of the can end that is caused by impacts of the contents of the can during shipment. In addition, the pull tab creates a large vent opening in the can end well before it initiates severance along the first score.

3,604,590

STACKABLE FRAME CHICKEN COOP WITH SLIDABLE BOTTOM MEMBER

Joe H. Jenkins, Horseshoe Bend, Franklin, Ark.

Filed Mar. 18, 1969, Ser. No. 808,157
Int. Cl. B65d *7/16*
U.S. Cl. 220—84 **7 Claims**



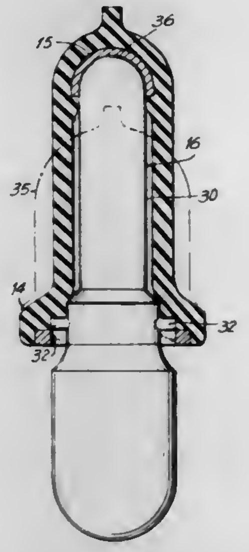
A chicken coop, particularly for shipping chickens and other fowl, is provided with a fabricated frame preferably formed of aluminum, the component parts of which are preferably welded together. The bottom of the coop is formed by endwise slidable elements, and the top of the frame is made up of two doors or lids pivoted at their adjacent edges centrally of the length of the coop to swing upwardly. The body of the coop, when fabrication is complete, the bottom elements, and the door or cover units are dipped into a thermoplastic in liquid form. This plastic flows into crevices and corners and seals the construction against the entrance of dirt and bacteria to permit the coop to be steam-cleaned and sterilized without damage and with very little labor.

3,604,591

QUICK ACTION PLUGGING DEVICE

Harry Seltzer, East Meadow, N.Y., assignor to D & S Plug Corporation, North Bellmore, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,597
Int. Cl. B65d *39/12;* **F161** *55/12*
U.S. Cl. 220—24.5 **11 Claims**



In a plugging device, for example, a plugging device in which an expandible stopper is adapted to be engaged by an expander movable along the longitudinal axis of the stopper to expand the stopper axially, the stopper has a bearing portion at the closed end thereof against which the expander bears as the expander is moved along the longitudinal axis of the stopper and the stopper is expanded, and a washerlike member is disposed substantially perpendicular to the longitudinal axis of the stopper adjacent the open end thereof; the washerlike member has an inner and an outer periphery and includes a slotted portion arranged along the inner periphery thereof, the slotted portion directly communicating with the outside of the stopper at the open end and being mateable with the expander and adapted for rapid insertion and removal of the expander in cooperation with the slotted portion to rapidly expand and contract the stopper; and said washerlike member further includes a lockable portion for locking the stopper in the axially expanded position, whereby the expander inserted through the mateable portion expanding the stopper longitudinally can be retained in the stopper in the rapidly expanded position. The expander includes an axially extending portion adapted at one end to expand the plug by axial insertion within the plug, and the axially extending portion includes at the other end a portion having circumferentially arranged protrusions extending therefrom in a direction transverse to the axis of insertion, the protrusions being adapted to pass through the slotted portion of the washerlike member and to be positioned so as to retain the expander within the plug in the inserted and expanded position.

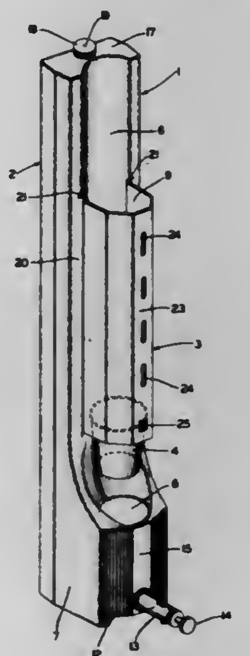
3,604,592

COMBINATION CUP AND LIQUID DISPENSER

Louis E. Bacon, North Canton, and Siegfried Garbe, Canton, both of, Ohio, assignors to Spartan International Corporation, Glendale, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,821
Int. Cl. A47f *1/00*
U.S. Cl. 221—96 **9 Claims**

A combination cup and liquid dispenser with a tank body made of translucent preferably plastic material for dispensing a variety of liquids. The tank body has a service cap closing an access opening permitting easy cleaning and maintenance. A metal clip is removably mounted on the tank body forming



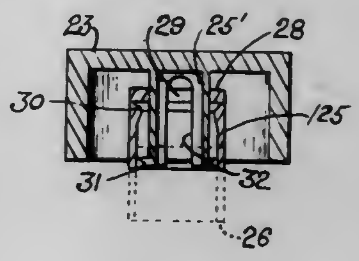
a cup holder and dispenser in cooperation with the tank body. The tank body and clip may be mounted inside a cabinet for normal use by a metal-retaining clip and may be removed easily for refilling and cleaning.

3,604,593

SAFETY CLOSURE EFFECTIVE BOTH IN THE CAPPED AND UNCAPPED STATE OF THE CONTAINER

Alfred Curci, 183 London Dr., Hamden, Conn.

Filed Jan. 27, 1969, Ser. No. 794,074
Int. Cl. G07f *11/00*
U.S. Cl. 221—288 **2 Claims**



A dispenser, having a supply chamber, an outlet, and a discharge passage leading from the chamber to the outlet is provided in the passage with a normally closed trap which is resiliently distortable to open the passage for discharge of substance from the chamber. A cap has a formation projecting into the passage and distorting the trap when the cap is closed on the outlet.

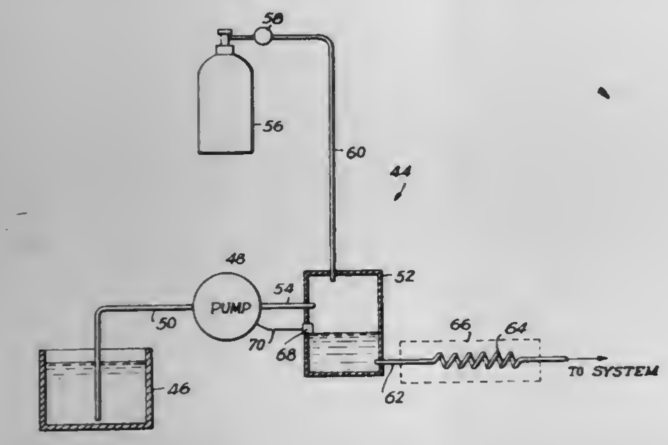
3,604,594

PRESSURE PUMPING SYSTEM WITH SEALED PRESSURE CONTAINER

Jack Isreeli, Mamaroneck, and Aaron Kassel, Brooklyn, both of, N.Y., assignors to Technicon Corporation, Tarrytown, N.Y.

Filed June 4, 1969, Ser. No. 830,289
Int. Cl. B67d *5/08*
U.S. Cl. 222—64 **8 Claims**

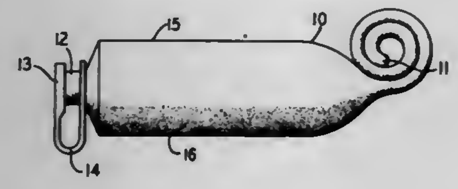
New and improved pressure pumping system with sealed pressure container is provided and comprises means to supply the fluid to be pumped to said sealed pressure container from a substantially open, nonpressurized source thereof, and means to pressurize said sealed pressure container to pump said fluid therefrom. Means are additionally provided to maintain the level of said fluid within said sealed



pressurized container substantially within a predetermined range.

3,604,595
SELF-COLLAPSING CONTAINER

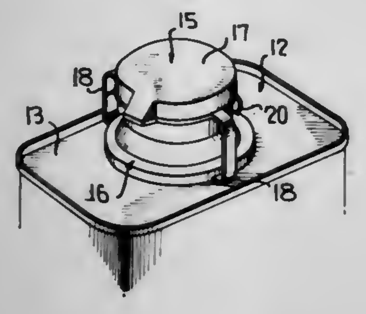
John A. Wiedeman, 332 W. 37th St., New York, N.Y.
Division of Ser. No. 736,515, May 12, 1968, Pat. No. 3,478,480 which is a division of application Ser. No. 587,511, Oct. 18, 1966, now Patent No. 3,401,837
Filed Nov. 24, 1969, Ser. No. 879,242
Int. Cl. B65d *35/32*
U.S. Cl. 222—99 **7 Claims**



A self-collapsing thermoplastic container is constructed in such a manner that the walls thereof exert an internal pressure upon the contents in such a manner that upon opening of the discharge outlet the content material may be dispensed.

3,604,596
TAMPER-INDICATING CLOSURES

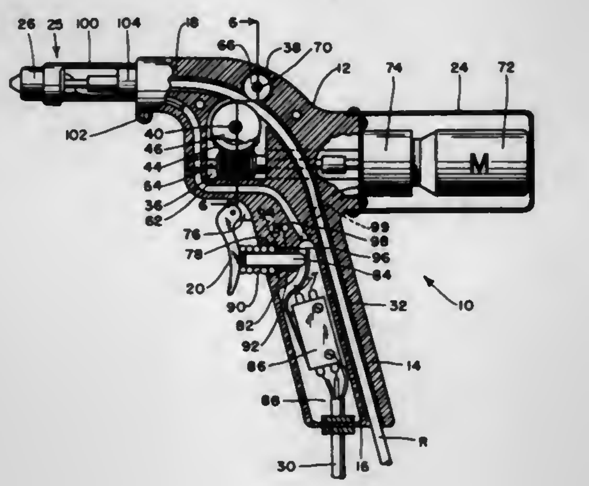
Nick S. Khoury, Worth, and Gareth J. Duggan, Crestwood, both of, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 17, 1969, Ser. No. 792,024
Int. Cl. B65d *41/32;* **B67d** *5/32*
U.S. Cl. 222—153 **5 Claims**



This disclosure relates to tamper-indicating closures of the type which include a nozzle and a closure cap. In order that tampering may be readily apparent, the closure cap is provided with one or more straps which have their opposite ends permanently secured to the nozzle in any desired manner. The straps are of a length so that when the closure cap is removed from the nozzle, rupture of the straps is required. The straps may be suitably weakened to facilitate the rupture thereof.

3,604,597
PLASTIC EXTRUSION DEVICE

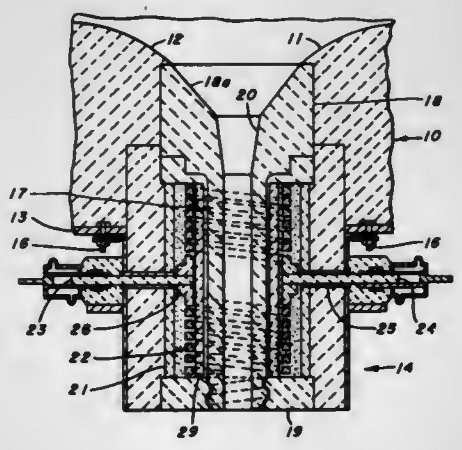
Harold E. Pohl, Kankakee, Ill., and Kenneth M. Grout, Wakefield, Mass., assignors to General Mills, Inc.
Filed May 9, 1969, Ser. No. 823,365
Int. Cl. B67d *5/62*
U.S. Cl. 222—14 HE **14 Claims**



A dispensing gun for melting and extruding a thermoplastic rod material in a molten state. The gun includes a heated endpiece in which the material is melted, which is detachably connected to the discharge end of the gun, and a unique drive mechanism for advancing the rod material into the endpiece. The endpiece is readily removable for cleaning purposes, or for replacing it with a similar endpiece.

3,604,598
OUTLET PASSAGE CONSTRUCTION FOR TEEMING VESSELS

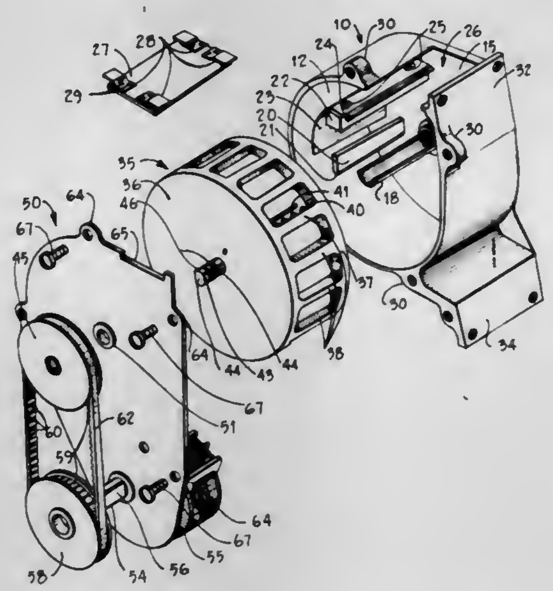
Keith K. Kappmeyer, Franklin Township, Westmoreland County, and James T. Shapland, Wilkins, Township, Allegheny County, both of, Pa., assignors to United States Steel Corporation
Continuation-in-part of application Ser. No. 698,514, Jan. 17, 1968, now abandoned. This application July 9, 1969, Ser. No. 840,215
Int. Cl. B65d *5/62*
U.S. Cl. 222—146 **5 Claims**



A bottom pour-teeming vessel in which the walls of the outlet passage are equipped with an electric-heating coil. The passage walls may be formed of a zirconia or 90 percent alumina liner and a sleeve surrounding the liner but spaced radially therefrom. The heating coil winds about the liner in the space between it and the sleeve and the remainder of the space is filled with alumina powder. A layer of thermal insulation encloses the sleeve. The sleeve is supported on a refractory nut threaded on the lower end of the liner.

3,604,599
APPARATUS FOR DISPENSING FLOWABLE MATERIAL

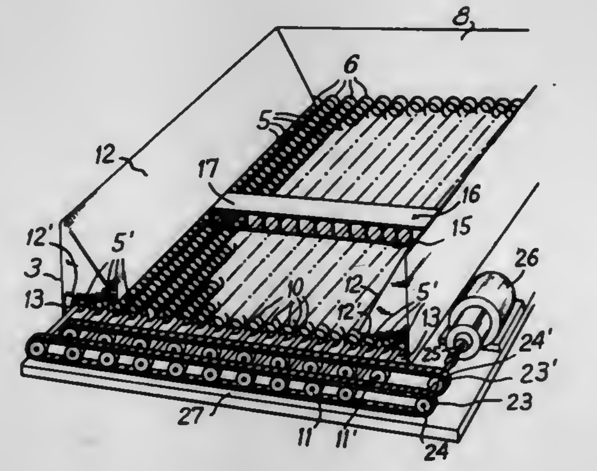
Ray S. Richmond, Placitas, N. Mex., assignor to The Singer Company, New York, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,556
Int. Cl. G01f *13/00*
U.S. Cl. 222—252 **10 Claims**



A squirrel cage dispenser for metering precise amounts of flowable material, such as toner powder used in electrostatic copiers. A cylindrical cage is mounted in a housing for rotation about an axis and has a concentrically mounted auger received by a split tube having an exit portion external to the housing. As the cage rotates, the material is elevated to the top of the housing interior by circumferential vanes, is allowed to cascade down onto the split tube, and is augered to the exit portion at a rate proportional to the rotational speed of the cage and auger.

3,604,600
PARTICULATE MATERIAL DISCHARGE FROM CONTAINERS

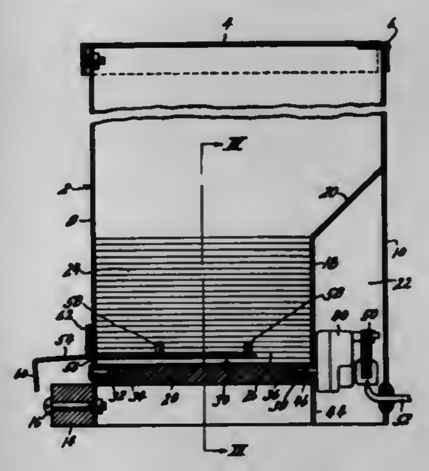
Andre Taupin, Nievre, France, assignor to Jean-Paul Taupin, Le Vivier, Urzy, Nievre, France
Filed Mar. 24, 1969, Ser. No. 811,687
Claims priority, application France, Mar. 27, 1968, 145,719
Int. Cl. B65g *33/10;* **F16h** *7/18*
U.S. Cl. 222—271 **10 Claims**



A device for the discharge of a particulate material from the bottom of a silo of the kind including a plurality of rotary helical members, for example springs, juxtaposed laterally at the bottom of the silo and leading to a discharge opening. In order to prevent any tendency to block lateral flow of the material, the bottom is flat and the space between adjacent helical members is less than the small thickness of a wall of powdered material which might support an arch of material thereabove.

3,604,601
FISH FEEDING APPARATUS

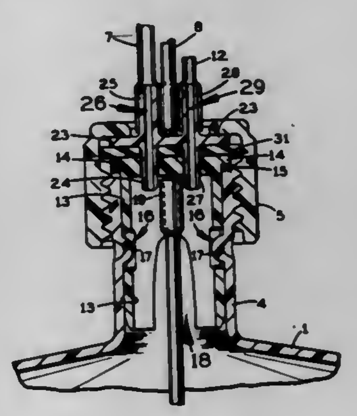
Gerald G. Boling, 816 Sixth Ave., Leavenworth, Kans.
Filed Sept. 23, 1969, Ser. No. 861,270
Int. Cl. A01k *61/02*
U.S. Cl. 222—305 **6 Claims**



A fish-feeding apparatus consisting of a hopper for containing a feed material for fish and having a restricted bottom opening disposed above the water level, a rotatable cylindrical dispenser member disposed horizontally in and obstructing said hopper opening, but having a groove formed longitudinally therein for receiving said feed material therein, means for rotating said dispenser cylinder, and a regulating shutter member disposed above said dispenser cylinder and movable longitudinally thereof to expose greater or lesser lengths of said groove to said hopper.

3,604,602
LIQUID SUPPLY CONTAINER FOR AN ATOMIZING SPRAY GUN

Aaron Lee, Miami Beach, Fla., assignor to Chemair Corporation of America, Hialeah, Fla.
Filed Feb. 26, 1969, Ser. No. 802,505
Int. Cl. B65d *83/14*
U.S. Cl. 272—400.7 **3 Claims**

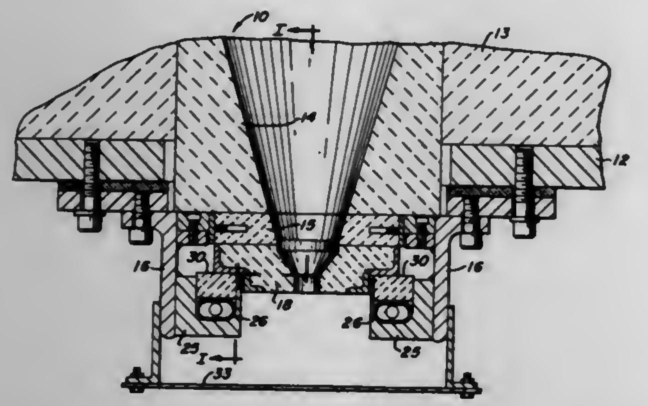


A substantially nonrefillable liquid container for an atomizing spray gun having a nonremovable closure for retaining a supply of liquid under the pressure of a remote supply of a gas propellant connected to the container with a closure insert detachably secured to the closure for removably connecting flexible tubes to the source of pressurized propellant conducting the liquid and propellant to the spray gun.

3,604,603
SUPPORTING MECHANISM FOR SLIDABLE GATE CLOSURES USED ON BOTTOM-POUR VESSELS

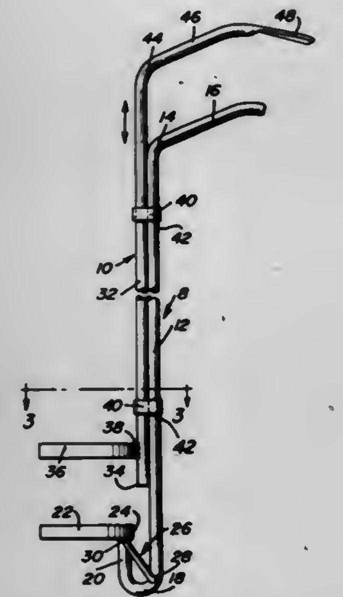
John A. Grosko, West Mifflin Borough, and James T. Shapland, Wilkins Township, Allegheny County, both of, Pa., assignors to United States Steel Corporation
Filed Sept. 24, 1969, Ser. No. 860,693
Int. Cl. B65d *47/14*
U.S. Cl. 222—561 **3 Claims**

A supporting mechanism for a slidable gate used as a closure for the nozzle of a bottom-pour vessel, such as a ladle or tundish. The mechanism includes a pair of flexible tubes of oval cross section mounted along opposite sides of the nozzle, and pillow-shaped blocks placed on the tubes between the tubes and gate. Internal pressure is applied to the tubes to bulge them and thus force the gate against the bottom of the vessel. The tubes yield to permit nonuniform thermal expansion and contraction.



3,604,604
INVALID'S SOCK-HOLDING APPLIANCE

Albert D. Ahn, 244 Shoreview Dr., Pacifica, Calif.
Filed Feb. 24, 1970, Ser. No. 13,648
Int. Cl. A47j *51/06*
U.S. Cl. 223—111 4 Claims

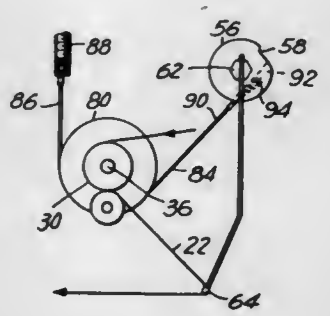


For self-serving use by an invalid or a handicapped person, a manually grippable remote-controlled mechanical appliance which functions to releasably catch hold of a sock, align it with the foot and ankle and pull it to a ready-to-wear position. It comprises a pair of side-by-side reach members slidingly strapped together and implemented with squeezable handgrips and sock encompassing U-shaped jaws. Rigidifying braces and a shoehorn are provided to enhance the overall utility of the appliance.

3,604,605
TAPE-PUNCHING APPARATUS INCLUDING A BRAKING DEVICE

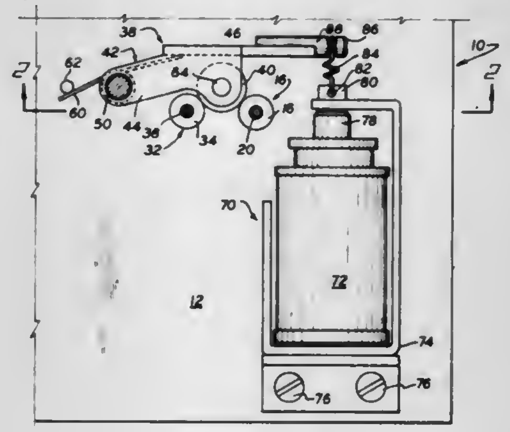
Howard Satterlee, Madeira Beach, Fla., assignor to New England Merchants National Bank, Boston, Mass.
Filed Apr. 17, 1969, Ser. No. 816,972
Int. Cl. B65h *23/18*
U.S. Cl. 226—25 7 Claims

A tape-punching apparatus including a source of tape, a punching mechanism, a drive to draw tape from the source and make the same available in a loop to the punching apparatus, a further drive to transport the thusly looped tape from the loop through the punching device, and detection means which senses the tension in the loop from which tape is driven by the second drive through the punching device. The detection means is effective to actuate the first-mentioned drive to replenish the loop when required. A brake is provided which is responsive to the detection means to apply a braking force to the first-mentioned drive to avoid coasting of the same and thus to avoid an oversupply of tape to the loop.



3,604,606
DRIVE MECHANISM EMPLOYING REACTION FORCES

Francis C. Marino, Huntington; Werner Flieg, Great Neck, and Herman Simon, Plainview, all of, N.Y., assignors to Digitronics Corporation, Albertson, N.Y.
Filed July 9, 1969, Ser. No. 840,320
Int. Cl. B65h *17/22*
U.S. Cl. 226—188 5 Claims

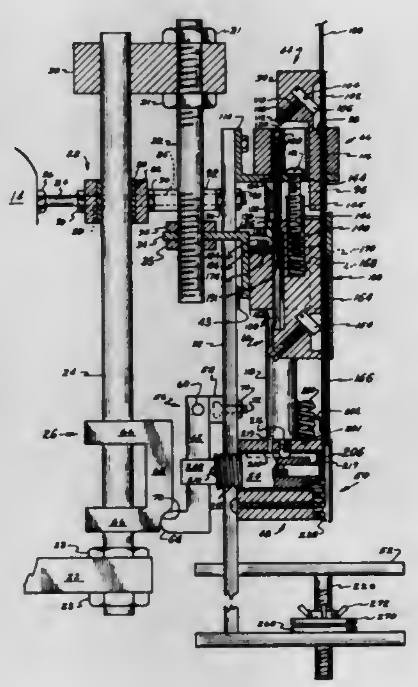


A drive mechanism for a tape deck and the like comprising a drive cylinder connected with driving means. A rotatable load cylinder is spaced from the drive cylinder and is adapted to be rotated in the same direction as the drive cylinder. A movable bracket rotatably supports a clutch cylinder which is adapted to be moved into contact with both the drive and load cylinders by the bracket whereby the reaction forces between the cylinders drive the clutch cylinder into further intimate contact with the drive and load cylinders. Moving means is provided to effect movement of the bracket.

3,604,607
CLEATING ATTACHMENT

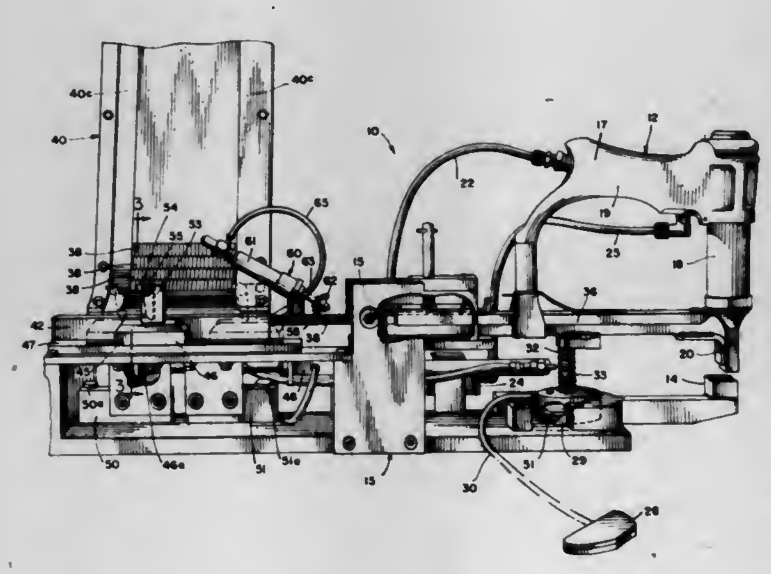
Luther B. Jones, 1621 Green St., Columbus, S.C.
Filed June 3, 1969, Ser. No. 837,988
Int. Cl. B27f *7/02*
U.S. Cl. 227—97 7 Claims

An attachment having a driver block connected directly with the conventional punching machine. A check block and check-block holder are mounted at the top of upright supports which also support a foundation block and a punch that operates through the foundation block by an operator arm operated by a cam on the structure connecting the driver block to the punching machine. A feeder block is slidingly mounted in the driver block and connected with the check block to feed the stock material the proper distance for the punch to cut a cleat of the desired length and the driver to force the cleat into any desired member.



3,604,608
FASTENER DRIVING APPARATUS

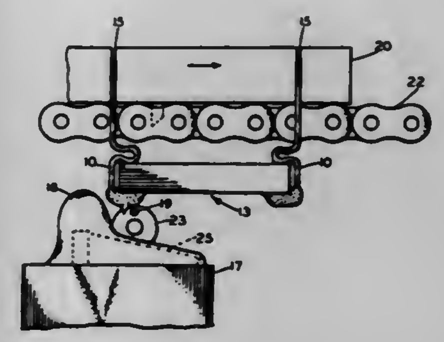
Frank W. Mullaney, Streamwood, and Glenn Hrdlicka, Des Plaines, both of, Ill., assignors to Fastener Corporation, Franklin Park, Ill.
Filed July 7, 1969, Ser. No. 839,192
Int. Cl. B25c *5/16*
U.S. Cl. 227—120 6 Claims



There is provided an improved automatic fastener driving apparatus having a fastener-feed construction for positively and rapidly providing fasteners to the fastener-driving apparatus. The fastener-feed construction includes a magazine feed wherein strips of detachable, connected fasteners are provided in side-by-side relation to a track feeding a fastener-driving tool. A first pusher is provided for pushing the strips of fasteners from a bin along the track, and movable through a return stroke to pick up another strip. A second pusher is provided engageable with a strip in the track during the return of the first pusher so that fasteners are continuously biased into the fastener-driving tool. Advantageously the fastener-driving tool is pivotally supported so as to be driven upon actuation into contact with a workpiece on an anvil, and the tool will automatically fire upon such actuation.

3,604,609
APPARATUS FOR ELIMINATING ICICLELIKE FORMATIONS ON WAVE-SOLDERED CONNECTIONS ON CIRCUIT SUBSTRATES

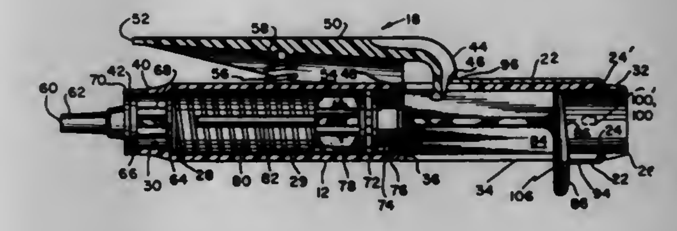
Edgar H. Walls, Allentown, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 621,701, Mar. 8, 1967, Pat. No. 3,465,415
Filed Dec. 2, 1968, Ser. No. 832,871
Int. Cl. B23k *1/00, 5/00*
U.S. Cl. 228—19 10 Claims



Iciclelike formations of solder which occur when a circuit substrate and associated conductive leads pass over a wave-soldering machine are reduced in size by passing the substrate over a fine stretched wire so positioned that a small space exists between the surface of the wire and the highest projection on the circuit substrate, breaking the surface tension of the formations.

3,604,610
DESOLDERING IMPLEMENT

William S. Fortune, 14250 Dearborn St., Panorama City, Calif.
Filed Feb. 16, 1970, Ser. No. 11,583
Int. Cl. B23 *1/00, 5/22*
U.S. Cl. 228—20 11 Claims

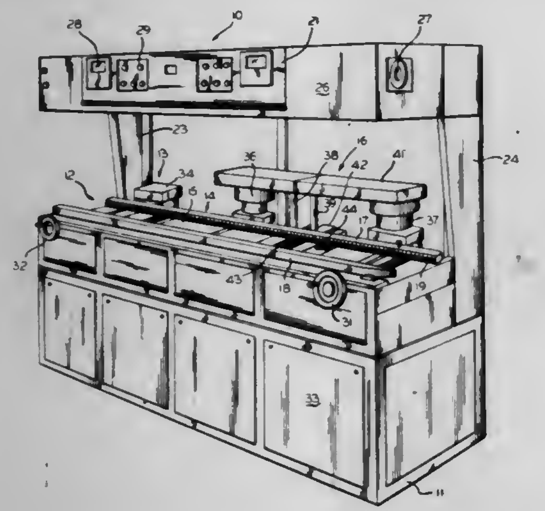


A small, hand-held desoldering tool having a spring-loaded piston carried within a cylindrical body member having a removable nozzle element at one end and being substantially open at the other. The piston has a finger-engaging cocking portion which extends radially outwardly through an elongate slot in the cylindrical body member and which permits axial motion of the piston for cocking and flyback. When in the cocked position, a trigger lever carried externally of the body member holds the piston in its forward position. Moving the trigger lever in one direction releases the piston for its flyback stroke and moving it in the opposite sense forces the piston further forward to eject the nozzle element from the body for cleaning or replacement. A rod member carried by the piston extends forwardly through the nozzle element to clean its bore with each cocking cycle. A reading of the complete specification is recommended for a full understanding of the principles and features of the disclosed tool.

3,604,611
SOLDERING APPARATUS

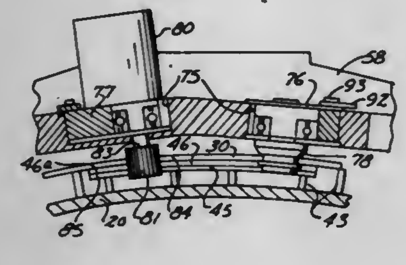
John Lamberty, Des Plaines, Ill., assignor to Dee Electric Company, Chicago, Ill.
Filed Jan. 7, 1969, Ser. No. 789,562
Int. Cl. B23k *1/08*
U.S. Cl. 228—36 12 Claims

Automatic soldering apparatus that can be used for soldering printed circuit boards, or the like, of various sizes without using pallets for transporting the boards between stations on the machine. Means are provided for varying the distance between the conveyor means used in transporting the boards between processing stations of the apparatus. Further means integral with the stations are provided for protecting the conveyors from solder and solder flux. The machine also provides means for energizing only those sections of the stations that are in use as determined by the size of the boards being processed. The improved apparatus further includes unique preheating arrangements.



3,604,612
ORBITAL TRACK-TRAVELING CARRIAGE MECHANISM FOR PERFORMING WELDING AND OTHER PHYSICAL OPERATIONS

Ford S. Miller, and Jerome W. Nelson, both of Houston, Tex., assignors to CRC-Crose International, Inc., Houston, Tex.
Filed Oct. 1, 1968, Ser. No. 764,191
Int. Cl. B23k *37/02*
U.S. Cl. 228—45 13 Claims

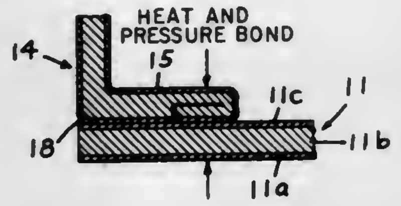


A traveling carriage adapted to support and guide a welding head or analogous tool is supported and guided on a flexible track arranged for securing in tension to and conforming with a supporting workpiece, such as a pipeline girth joint. The carriage has two widely spaced guide rolls on one side and a traction roll and closely positioned guide roll on the other. Multiple carriages, each carrying an arc-welder or equivalent, can be supported on a single track which, in turn, can be mounted on flat or other surfaces as well as cylindrical ones.

3,604,613
SIDE-SEAM-SEALED CONTAINER

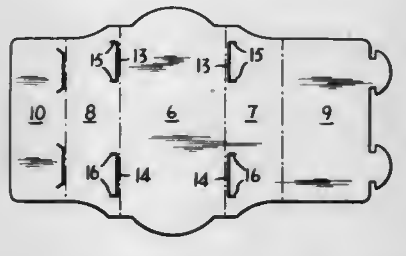
Henry J. Haas, Scarsdale, N.Y., and Leon W. La Bombard, Nashua, N.H., assignors to International Paper Company, New York, N.Y.
Division of Ser. No. 628,709, Apr. 5, 1967, Pat. No. 3,495,507
Filed June 25, 1969, Ser. No. 862,098
Int. Cl. B65d *5/40*
U.S. Cl. 229—37 R 4 Claims

A container for packaging fluids is made from a scored folded blank of coated paperboard. The container is made resistant to leakage by preventing the uncoated edge of a side-sealing panel from taking up fluid. This edge is protected by skiving a strip adjacent to the edge of the sealing panel, scoring the center of the skived strip and folding it on the scoring so that the skived faces are in intimate contact with each other. The container is folded from the prepared blank and seam sealed.



3,604,614
SLEEVE BLANK

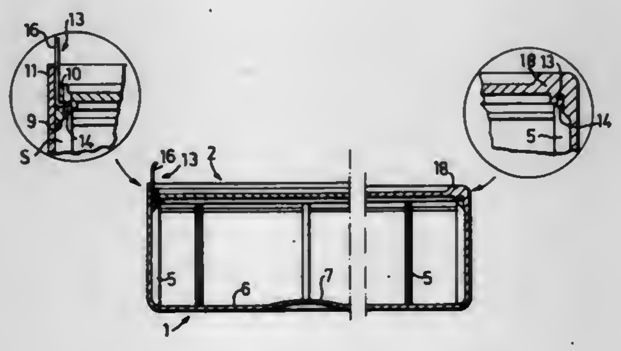
Kenneth Michael Sternfeld, Hackensack, N.J., assignor to Lever Brothers Company, New York, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,696
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 7 Claims



A sleeve blank for holding at least one container of the type having a closure portion which protrudes outwardly beyond the external surface of the body thereof. The sleeve blank includes a top panel, two opposing downwardly foldable side panels extending from the top panel, a bottom panel extending from one of the side panels and an inwardly foldable locking panel extending from the other side panel for locking engagement with the bottom panel. According to the present invention, the two side panels are each provided with at least one first die cut arranged adjacent and extending parallel to at least one of the folded edges thereof. The side panels also have at least one second die cut arranged to terminate at and extending perpendicular to the first die cut. The die cuts on the two side panels are arranged in opposing relationship on the sleeve blank so as to permit the panels to expand at the points surrounding the closure portion of a container.

3,604,615
SEALED PACKAGING UNIT WITH TEAR STRING

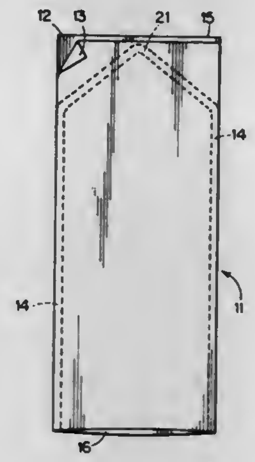
Gustav Sigord Barreman, Mogard, Finspang, Sweden, assignor to Forvaltnings Aktienbolaget Acta, Bromma, Sweden
Filed Nov. 27, 1968, Ser. No. 779,547
Claims priority, application Sweden, Dec. 6, 1967, 16758/1967
Int. Cl. B65d *17/14;* **B65b** *7/28, 51/14*
U.S. Cl. 229—51 S 2 Claims



A packaging unit made of thermoplastic material or paper, cardboard, etc. coated with such material and which includes a container having an opening and a lid covering said opening. The lid, having peripheral drainage holes therethrough is placed in the opening on one or more support surfaces on the container walls. The container rim encircling the opening is folded over and fused into consolidation with the peripheral portion of the lid to form a hermetical seal. A tear string may be provided about the periphery of the lid.

3,604,616
PEELABLE ENVELOPE FOR STERILE ARTICLES

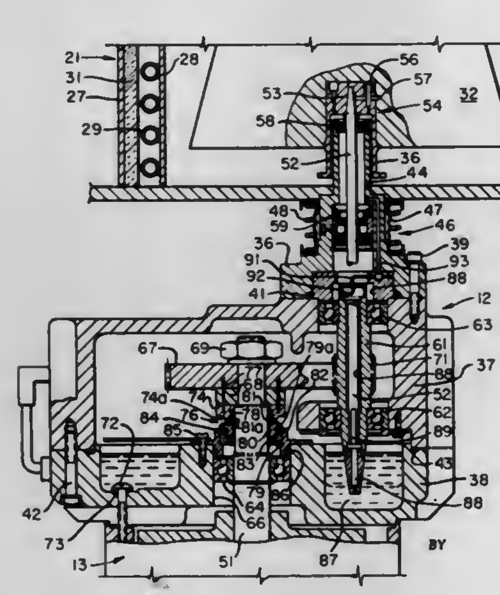
Edward E. Greif, Philadelphia, Pa., assignor to Edward Weck & Company, Inc., Long Island, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,164
Int. Cl. B65d *33/02;* **A61b** *19/02*
U.S. Cl. 229—55 11 Claims



A sterilizable envelope for retaining articles before, during and after sterilization and for maintaining sterility of the contents for extended periods of time. One wall of the envelope is made of an opaque material, such as paper, and the other wall is a transparent material, such as a plastic film, these materials being sealed together around the periphery of the envelope. A portion of the periphery of the envelope is left open for receiving the article to be stored, whereupon the seal may be completed for subsequent sterilization and storage. Another portion of the periphery of the envelope is configured for easy opening by separating a portion of the two walls to expose the enclosed sterile article.

3,604,617
ULTRACENTRIFUGE TRANSMISSION ASSEMBLY

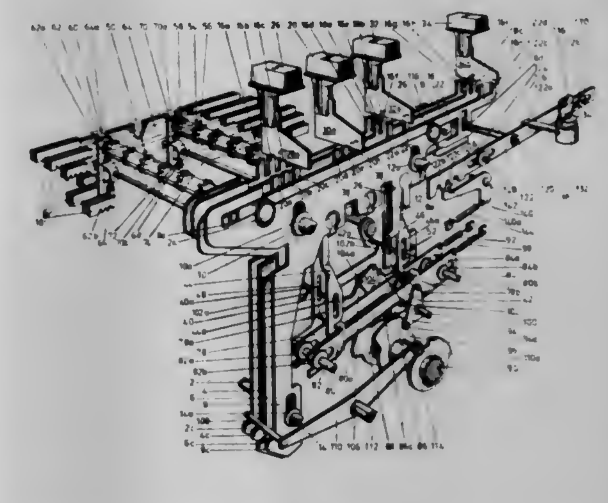
Williams G. Patterson, Palo Alto, Calif., assignor to Beckman Instruments, Inc.
Filed Apr. 9, 1969, Ser. No. 814,555
Int. Cl. B04b *3/00*
U.S. Cl. 233—23 7 Claims



A transmission assembly for a high-speed centrifuge wherein the interior of the transmission is maintained under the same vacuum as the vacuum chamber of the centrifuge, with the dynamic vacuum seal being provided around the relatively slowly turning transmission input shaft.

3,604,618
TOTALIZER CONTROL APPARATUS

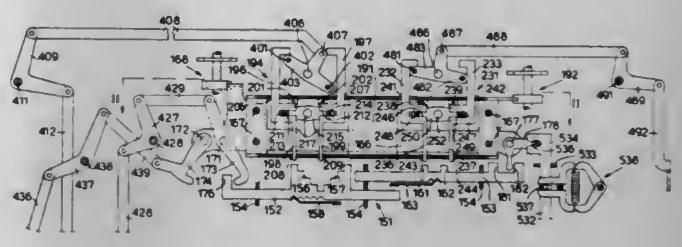
Gosta Roland Englund, Stockholm, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden
Filed Dec. 22, 1969, Ser. No. 886,869
Int. Cl. G06c *21/00*
U.S. Cl. 235—60 MT 9 Claims



A totalizer control device for a cash register including coupling plates which control totalizers to be moved into engagement with totalizer racks during different points of time of a machine cycle. On each coupling plate there is slidably mounted a program slide with a pattern of parts turned against the totalizer selecting keys on the keyboard of the cash register. When depressing any of these keys one or several parts are affected to that one or several coupling plates control the movement of the totalizers. A lockable key is coupled to all slides and can relocate the slides so that a different pattern of parts will be turned against the totalizer selecting keys thereby permitting the totalizers to be controlled during other points of time of the machine cycle.

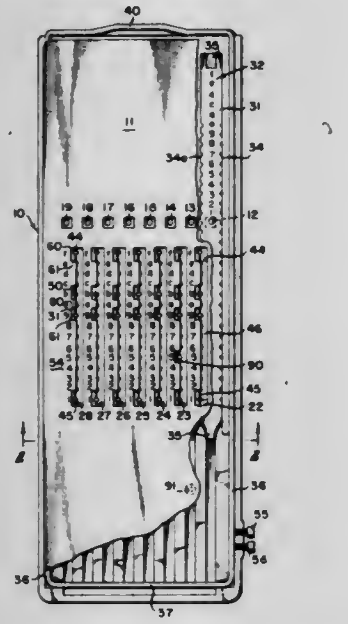
3,604,619
BIQUINARY CALCULATING MACHINE

Ettore Abbiati, Ivrea (Torino), Italy, assignor to Ing. C. Olivetti & C. S.p.A., (Torino), Italy
Filed Oct. 25, 1968, Ser. No. 770,555
Claims priority, application Italy, Oct. 30, 1967, 53546-A/67
Int. Cl. G06c *13/00, 17/00;* **G06f** *5/02*
U.S. Cl. 235—61 PA 35 Claims



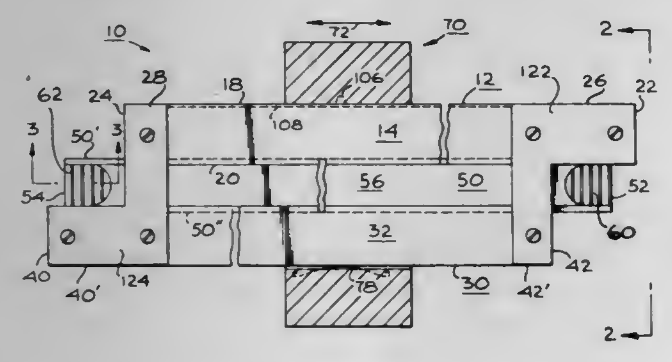
A biquinary calculating machine which includes a plurality of first code members, each settable selectively into two different positions to store the binary code digit of an order of a number and a corresponding plurality of second code members, each settable selectively into five different positions to store the quinary code digit of said order. The code members are arranged into a setting store and a totalization store. A tabular calculating device is provided for totalizing the numbers in the two stores and transferring the total back to the total store.

3,604,620
CALCULATOR FOR DIFFERENT NUMERICAL BASES
Rodney S. Rakes, 6918 Westhampton Drive, Alexandria, Va.
Filed Apr. 23, 1969, Ser. No. 818,744
Int. Cl. G06c *17/00, 27/00*
U.S. Cl. 235—69 **9 Claims**



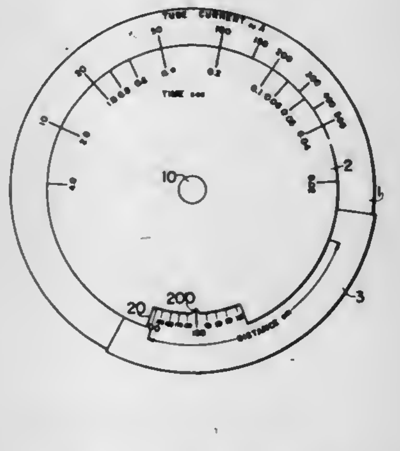
A calculating device for adding and subtracting quantities in at least two different base numerical systems of a type which has a plurality of sliding members for registering quantities which can be manually moved back and forth in grooves in the calculator housing. Digits inscribed on the sliding members register through sight openings in the face plate of the housing. Movement of the slide members is accomplished by inserting a pointed member through slots in the faceplate into selected notches provided in both sides of each sliding member. By moving the pointed member laterally in the groove, the sliding members likewise are moved. The carrying operation is accomplished through widened ends in each slot which limit the addition or subtraction in the next order of digits on the adjacent sliding member to one unit at a time. The numerical base system of the device is changed either by providing, in effect, different length slots, or by modifying the length of each slot—downwardly in both cases of the highest base number. Restrictive means are also provided to limit the movement of the sliding members so that only numbers of the base system involved can be displayed through the sight openings.

3,604,621
IMPROVED SLIDE RULE ARRANGEMENT
Walter S. Drummond, Jr., 4536 Santa Ana Street, Cudahy, Calif.
Filed Feb. 2, 1970, Ser. No. 7,602
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 R **6 Claims**



An improved slide rule arrangement having greater accuracy in reading the slide rule and information storage capability on the cursor of the slide rule as well as means for improving the ease with which the slide rule may be operated and adjusted is provided. The slide rule is of the type in which there is a top member coupled in spaced-apart relationship to a bottom member with a slide means slideably mounted intermediate the top member and bottom member and slideably moveable relative thereto. A cursor is mounted on the rule for sliding along the elongated length thereof and the cursor may have a magnifying indicator means on each face thereof and at least one extended planar surface extending therefrom upon which information such as formulas, tables of equivalents or the like may be imprinted or temporarily recorded. The planar surface may be permanently or detachably coupled to the cursor. The ends of the slide means, as well as portions of the cursor, may be provided with digit-engaging grooves and/or ridges to allow better gripping during movement thereof and also removable screws will be provided on cursor and body ends for possible readjustments. A permanent magnet may be included in the cursor and a strip of magnetic material for a cursor-runner may be provided on the top member or bottom member to obtain a preselected small restraining force for the cursor set in any position along the elongated length. There will also be the addition of a coating on the metal strip used to prevent or lessen static drag. The magnetic restraining force prevents small jarring forces from inadvertently moving the cursor and destroying the reading at a particular location. The different scales on the slide rule may be variably colored to aid in their reading and at least one linear scale is preferably included in which the divisions thereof are closely and equally spaced and the length of the division marks vary throughout the elongated length in a sinusoidal patter. The ends of the top member and bottom member may be oppositely offset from each other in the elongated length for more convenient handling.

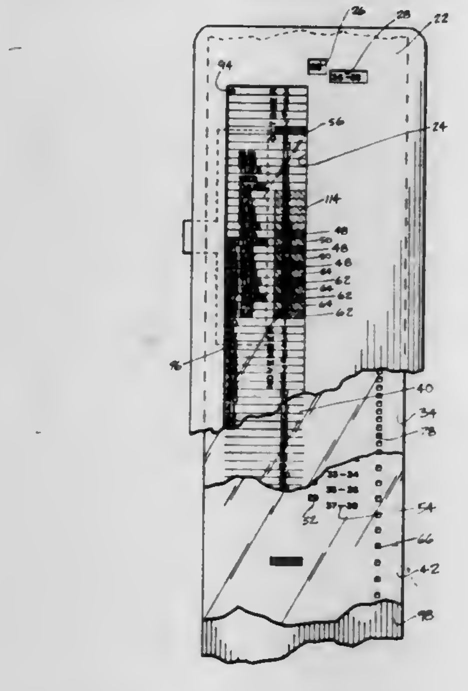
3,604,622
ROENTGENOGRAM-TAKING CONDITION CONVERSION SCALE
Yoshihiko Yamada, 2-3-6 Ginza, Chuo ku, Tokyo, Japan
Filed Jan. 15, 1970, Ser. No. 3,150
Claims priority, application Japan, Jan. 22, 1969, 44/5609
Int. Cl. G06c *27/00*
U.S. Cl. 235—78 **3 Claims**



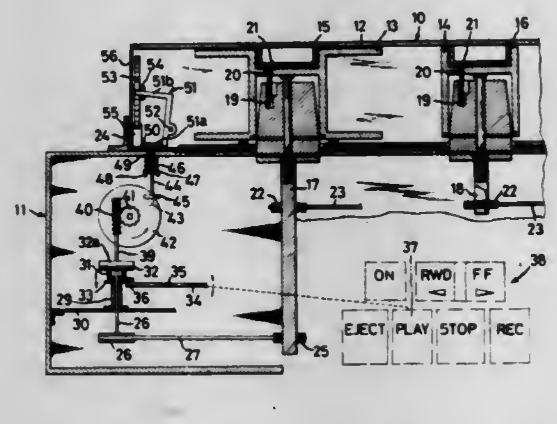
A condition conversion scale assembly for selecting proper exposure conditions for Roentgenograms is constructed of three coaxial disc scales, one of tube current, one of exposure time, and a third scale of exposure distance and combined together for conversion. By relatively turning the three scales about in common axis, proper conditions for taking a Roentgenogram is selected or converted.

3,604,623
COITAL TIMING DEVICE
Lawrence M. Sherman, Westport, and James E. Richardson, Weston, both of, Conn., assignors to Cambridge Research and Development Group, Westport, Conn.
Filed Nov. 21, 1969, Ser. No. 878,623
Int. Cl. G06c *3/00*
U.S. Cl. 235—85 FC **22 Claims**

A coital timing device for determining the days in which coitus should occur in order to maximize the chances for conception. The timing device calculates the woman's fertile period based upon her past menstrual cycle history and then indicates a coital timing period within which are displayed days for coitus and coitus abstention. A monthly calendar scale is provided to relate the coitus and coitus abstention days to the actual days of the week and month. With appropriate marking of the coital timing period, the timing device can be used to minimize the chances for conception.



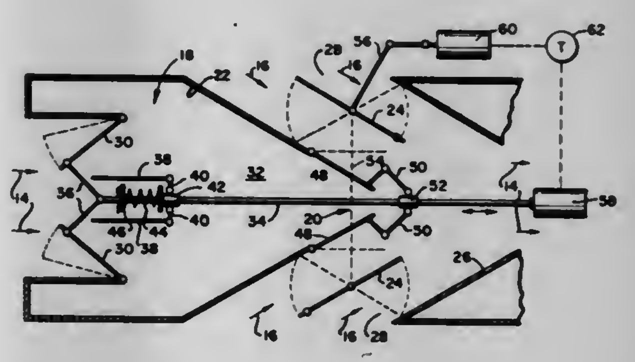
3,604,624
COUNTER FOR A TAPE RECORD-PLAYBACK MECHANISM
Yotaro Miura, and Yoshiharu Matsumoto, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed June 18, 1970, Ser. No. 47,195
Claims priority, application Japan, June 30, 1969, 44/62186
Int. Cl. G04b *37/00*
U.S. Cl. 235—103 **10 Claims**



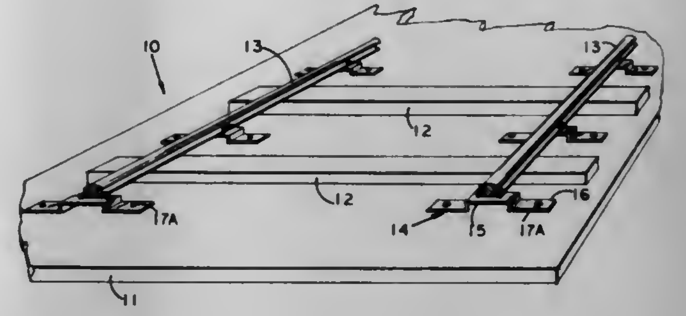
A counter for use with a video tape recorder to indicate visually the amount of time the magnetic tape in a cassette has been used. After a predetermined number of revolutions of a wheel, a lever is tripped which rotates a gear having indicia thereon indicating the amount of time elapsed during which the magnetic tape was played.

3,604,625
AIRFLOW MIXING DEVICE FOR AIR CONDITIONING SYSTEMS
William J. Waeldner, Waverly, Pa., assignor to Dynamics Corporation of America, New York, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,524
Int. Cl. G05d *23/08*
U.S. Cl. 236—13 **12 Claims**

An airflow mixing device for "air reheat" air-conditioning systems comprising a primary air conduit with an airflow regulator having a pair of swingable variable-flow vanes and a pair of swingable constant-flow vanes. A variable area jet orifice is provided downstream of the regulator with an additional pair of swingable vanes and opposing induction air inlets are provided adjacent the orifice. All vanes are operated by one or more air motors under thermostatic control simultaneously to increase primary airflow and decrease induction airflow and when the latter is reduced to a minimum, valves in the induction inlets are closed to terminate completely the induction flow.



3,604,626
TOY TRACK CONSTRUCTION
Donald Marand, 542 Warcester Ave., Southbridge, Mass.
Filed Aug. 22, 1969, Ser. No. 852,241
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E **9 Claims**



This disclosure is directed to a toy track construction and method of making the same comprising a base member to which a plurality of tie members are connected. A length of rail supported on these tie members is held in place by a plurality of rail clips spaced along the rail length so as to secure it to the base member in the spacing defined between adjacent pairs of tie members. The arrangement is such that the rail length is maintained in positive compressive relationship against the tie members. Means are also provided whereby the spacing or gauging of the tie members can be positively set and maintained during construction of the trackage.

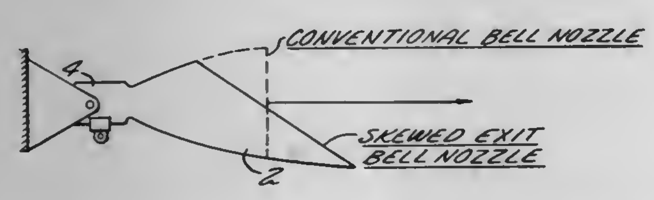
3,604,627
MONITOR BOOM INCORPORATING TWIN-JET NOZZLE APPARATUS
John A. Miscovich, Flat, Alaska, and Leondras A. Warren, Whittier, Calif., assignors to Stang Hydronics Inc., Orange, Calif.
Filed Feb. 24, 1970, Ser. No. 13,349
Int. Cl. B05b *15/08*
U.S. Cl. 239—166 **11 Claims**

A remotely controlled twin-jet monitor apparatus is mounted on the end of an articulated water-conducting boom or arm, and is so constructed that the two jets emanating therefrom never create any resultant torque about the vertical axis through the mast for the boom. Accordingly, the boom may be made extremely large yet light in weight, and may be manipulated by small and low-power motor means.

Means are provided to effect simultaneous rotation of both jets, and to change the angles of the jets relative to a predetermined plane, but without creating the indicated resultant torque.

3,604,628
SKEWED EXIT PLANE NOZZLE SYSTEM FOR OPTIMUM THRUST

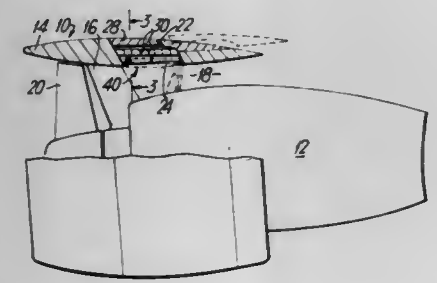
William D. Haynie, Jr., Lake Park, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 1, 1969, Ser. No. 846,772
Int. Cl. B64c *15/02*
U.S. Cl. 239—265.25 **8 Claims**



A nozzle arrangement formed by mounting a plurality of nozzles at the rear of a vehicle. Each nozzle being mounted for pivotal movement in a radial plane. Each nozzle is truncated at an angle other than 90° to the flow direction at the nozzle exit, whereby a skewed exit plane is formed. Control means are provided to rotate the nozzles about their mounting axes to obtain maximum performance for the ambient pressure the nozzle is operating in.

3,604,629
THRUST REVERSING MECHANISM

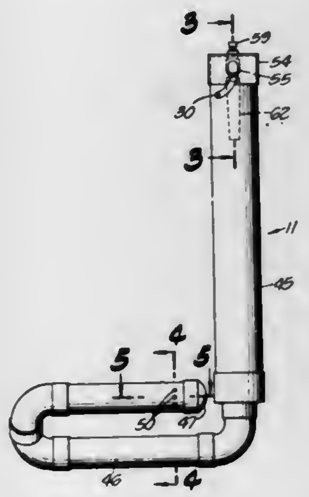
Francis J. Colville, Notts, England, assignor to Rolls Royce Limited, Derby, England
Filed Jan. 5, 1970, Ser. No. 1,071
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.31 **14 Claims**



A ducted fan gas turbine jet propulsion engine has thrust reverser equipment in the fan cowl structure. Blocker doors or flaps are mounted peripherally of the fan cowl inner wall, and between adjacent blocker flaps there are fillet flaps also mounted so as to provide an uninterrupted surface in the fan cowl inner wall. The fillet flaps are pivotable on an axis generally parallel to the axis of the engine so that when the flaps are pivoted they lie edge on to fan air flowing through the reverser equipment. Each fillet flap has at least one side aerodynamically shaped so as to create a pressure differential on opposite sides thereof when the blocker flaps are in blocking position, and thus reduce or prevent "positional hunting" of the fillet flaps in the airflow.

3,604,630
AUTOMATIC LATHER GENERATOR AND DISPENSER

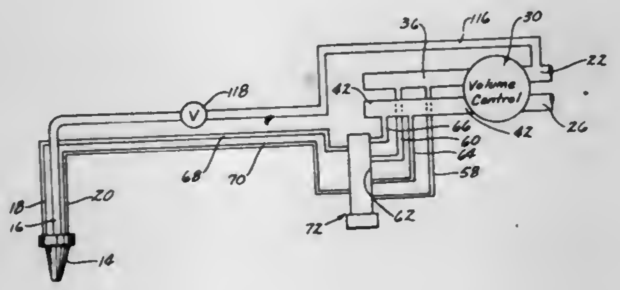
Nick Conti, 1954 N. Holliston Ave., Pasadena, Calif.
Filed Mar. 23, 1970, Ser. No. 21,772
Int. Cl. B05b *7/26*
U.S. Cl. 239—316 **24 Claims**



An automatic lather generator and dispenser for objects undergoing laundering, as motor vehicles, and including means for preparing and maintaining a nonpressurized supply of concentrated aqueous detergent solution. The solution is pressurized and intimately mixed with pressurized air before release and expansion as a thick stable lather into a closed storage chamber. The storage chamber is maintained full of fresh lather so that the formation of fresh lather displaces other lather through flow restrictor means onto the object undergoing laundering. Lather generation and dispensing is initiated automatically as the object advances and actuates control means governing the supply of pressurized air and detergent solution and terminates as the object passes.

3,604,631
WELDING AND CUTTING TORCH

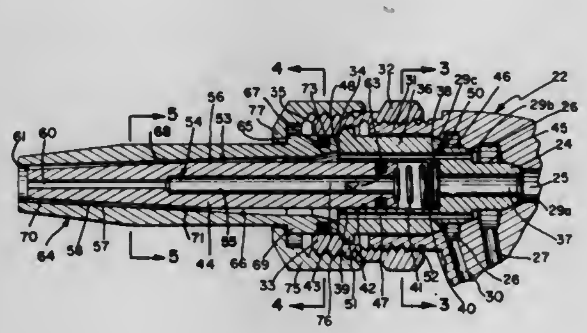
Berwyn E. Etter, Box 11965, St. Petersburg, Fla.
Filed Jan. 12, 1970, Ser. No. 2,048
Int. Cl. F23d *13/38*
U.S. Cl. 239—414 **11 Claims**



A welding and cutting torch comprising a handle portion having a volume control valve rotatably mounted therein which is in communication with sources of industrial gas and oxygen. The volume control valve includes two valve portions which control the flow of gas and oxygen therethrough respectively. The two valve portions are coordinated with each other so that the operator can rotate the volume control valve to select the proper gas-oxygen mixture. The two valve portions are in communication with a master valve which permits preselected amounts of the gas-oxygen mixture to flow therethrough for lighting and heating operations. The master valve may also be moved to an "off" position to prevent the flow of gas-oxygen mixture therethrough. The master valve is connected to the torch nozzle or tip. The torch also includes an oxygen line which bypasses the volume control valve so that additional oxygen can be supplied to the nozzle or tip when cutting operations are to be performed.

3,604,632
FLAME CUTTING TIP

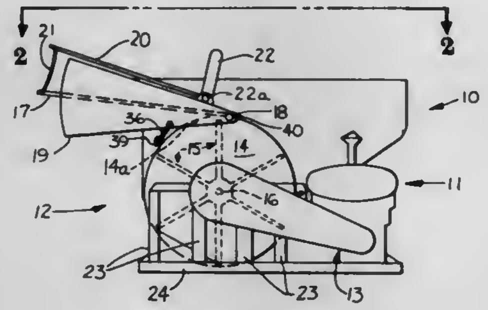
Francis J. Eichelman, La Grange Park, Ill., assignor to The Golconda Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 775,397, Nov. 13, 1968, now abandoned. This application Nov. 12, 1969, Ser. No. 875,744
Int. Cl. F23d *11/16*
U.S. Cl. 239—419.3 **19 Claims**



A flame cutting tip having its externally tapered core held resiliently in contact with an internally tapered sleeve to provide an improved heat exchange and sealing relationship in a radial direction between the parts which is readily released and assembled manually without tools for quick interchangeability of tips and parts along with the tactual feeling of terminal tightness during the last appreciable distance of relative movement.

3,604,633
ONE-WAY SPREADER

Donald C. Estes, Rte. 4, Winchester, Ky.
Continuation-in-part of application Ser. No. 824,544, May 14, 1969, now abandoned. This application Jan. 7, 1970, Ser. No. 1,235
Int. Cl. B05b *1/26*
U.S. Cl. 239—513 **9 Claims**



Apparatus for distributing particulate material from a moving vehicle comprising a cylindrical housing, a plurality of impeller blades mounted for rotation in a vertical plane within the housing, means for feeding material into the lower part of the housing, an arcuate opening in the upper part of the housing, an elongated extension pivotally mounted to the housing at the upstream edge of the arcuate opening, the extension being movable about the pivotal mounting in a vertical plane, and a hood surrounding the extension at least on the top and two sides thereof.

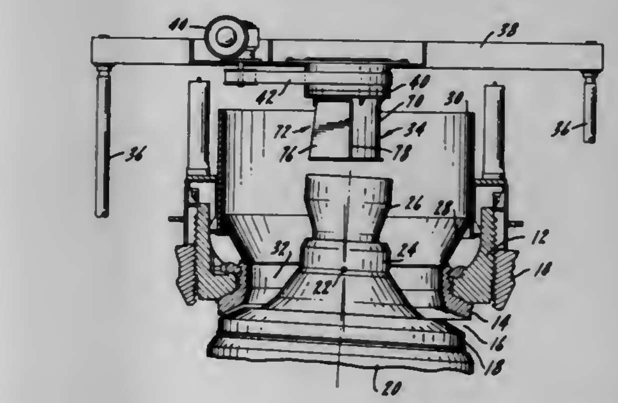
3,604,634
COMMINUTION OF SOLID MATERIALS

William Windle, Saint Austell, Cornwall, England, assignor to English Clays Lovering Pochin & Company, Limited, Cornwall, England
Continuation-in-part of application Ser. No. 603,447, Dec. 21, 1966, now abandoned. This application Oct. 28, 1969, Ser. No. 871,963
Int. Cl. B02c *17/00, 23/06*
U.S. Cl. 241—16 **13 Claims**

A method of grinding calcium carbonate minerals, e.g. chalk, calcite and marble, in order to obtain a pigment suitable for use in paper coating compositions. The mineral is ground in aqueous suspension using a particulate grinding material, and the amount of mineral in the aqueous suspension, the size of the particulate grinding material, the relative proportions of the mineral, the aqueous suspension and the grinding material, and the duration of the grinding are adjusted to be within specified ranges in order to ensure that a pigment have the desired properties is obtained.

3,604,635
DISTRIBUTOR FOR CONE CRUSHERS AND METHOD

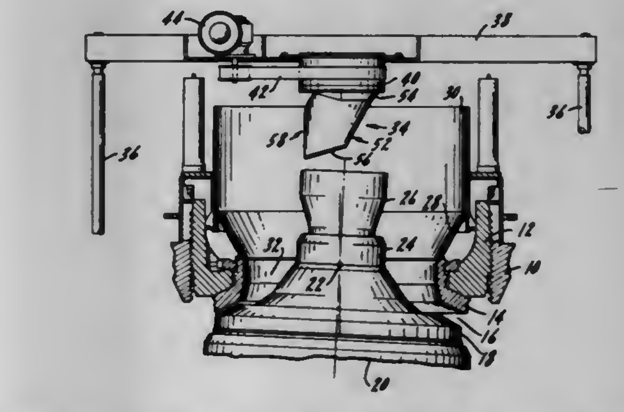
Rudolph J. Gasparac, West Milwaukee, and Arnold P. Szaj, Hales Corners, both of, Wis., assignors to Nordberg Manufacturing Company, Milwaukee, Wis.
Filed Apr. 14, 1969, Ser. No. 815,783
Int. Cl. B02c *2/04*
U.S. Cl. 241—30 **9 Claims**



A rotary feed distributor of such construction as to allow material to accumulate in the bottom portion thereof, but of such depth as to enable free and uncongested movement of the material to a gyratory crusher spaced therebelow. The distributor is a vertically arranged cylindrical chamber with an axial upper inlet and a lower, radially outwardly spaced outlet at least as large as the inlet. Accumulated material acts to protect the bottom surface of the distributor from wear. Additionally, wear plates are included on each side of the outlet.

3,604,636
CONE CRUSHER FEED DISTRIBUTOR AND METHOD

Rudolph J. Gasparac, West Milwaukee, and Arnold P. Szaj, Hales Corners, both of, Wis., assignors to Nordberg Manufacturing Company, Milwaukee, Wis.
Filed Apr. 14, 1969, Ser. No. 815,948
Int. Cl. B02c *2/04*
U.S. Cl. 241—30 **10 Claims**

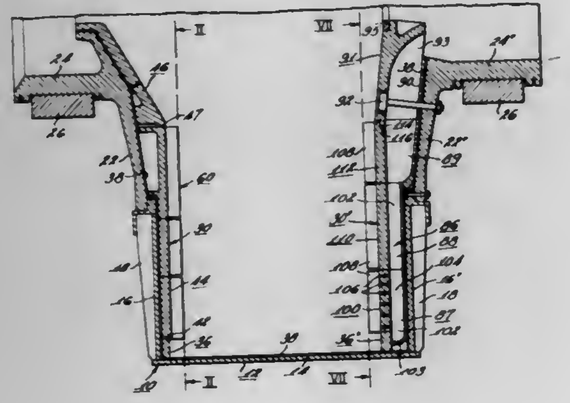


A rotary feed distributor for gyratory crushers which is designed to retain a dead bed of material therein. The bed of material prevents abrasion of the distributor without restricting flow of material between the upper intake opening and the lower, radially outwardly spaced outlet thereof. The bottom of the distributor has bars affixed thereto to retain some feed material such that the wear-preventing dead bed is formed.

3,604,637

END LINER ASSEMBLY FOR ROTARY MILL OR THE LIKE

Richard E. Sabaski, Hales Corners, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 29, 1969, Ser. No. 872,294
Int. Cl. B02c *17/22*
U.S. Cl. 241—70 **17 Claims**



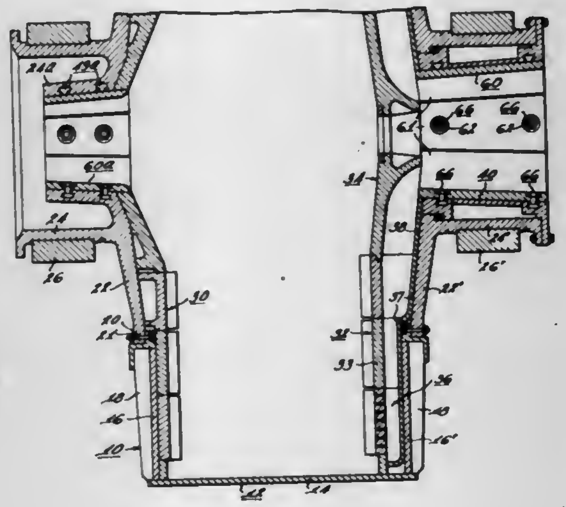
An end liner assembly for a rotary mill or the like in which the wear plates or liner members at the feed end, or the grates and wear plates at the discharge end, are assembled in a plurality of radially compressed pyramided tiers in stacked relation to each other. The radially outer end of the pyramided tiers is supported on the shell plate of the mill or on a filler ring supported thereby. The radially inner end of the pyramided tiers is engaged by a grinding pad(s) carried by a "pinned" liner member(s) or carried by another member(s) fixed with respect to the rotary mill, such as the discharge cone at the discharge end of the mill. The grinding pads are precisely dimensioned to provide the proper radial compression on the pyramided tiers of liner members. A supplemental clamping action on the liner assembly is provided by the lifter bars which are positioned between contiguous circumferentially spaced liner members in partially overlying clamping relation thereto. As an alternative to the use of grinding pads on the pinned liner of other stationary member, a wedge may be inserted in the clearance space between the radially inner end of the pyramided tiers of liner members and the contiguous radially outer edge of the pinned liner or other stationary member.

3,604,638

TRUNNION LINER ASSEMBLY FOR ROTARY GRINDING MILL OR THE LIKE

Richard E. Sabaski, Hales Corners, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Mar. 2, 1970, Ser. No. 15,566
Int. Cl. B02c *17/22*
U.S. Cl. 241—182 **15 Claims**

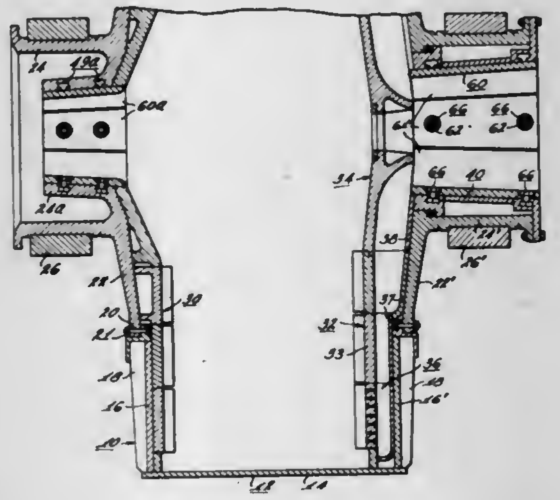
In a rotary grinding mill or the like the inlet and discharge trunnions of the mill are respectively provided with a liner assembly comprising a radially outer or primary liner and a radially inner or secondary liner. The primary liner normally remains permanently installed and is provided with a pair of axially spaced track slots of T-shaped cross section. The secondary liner is adapted for easy installation or removal and is secured to the primary liner by boltlike fastening means which are received in the T-shaped track slots of the primary liner. Instead of using a primary liner having track slots therein, the track slots may be formed directly in the trunnion, and the liner is secured by fasteners to the track slots.



3,604,639

TRUNNION LINER ASSEMBLY FOR ROTARY GRINDING MILL OR THE LIKE

Raymond C. Jenness, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Apr. 1, 1970, Ser. No. 24,501
Int. Cl. B02c *17/22*
U.S. Cl. 241—182 **14 Claims**

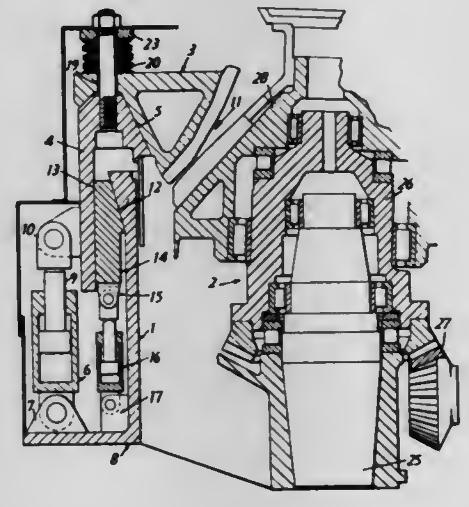


In a rotary grinding mill or the like the inlet and discharge trunnions of the mill are respectively provided with a liner assembly comprising a radially outer or primary liner and a radially inner or secondary liner. The primary liner normally remains permanently installed and is provided with a pair of axially spaced tract slots of T-shaped cross section. The secondary liner is adapted for easy installation or removal and is secured to the primary liner by boltlike fastening means which are received in the T-shaped track slots of the primary liner. Each track slot is provided with an access opening which permits initial engagement of the fastening means with the track slot. Instead of using a primary liner having track slots therein, the track slots may be formed directly in the trunnion, and the liner is secured by fasteners to the track slots of the trunnion.

3,604,640

HYDRAULIC CONTROL FOR GYRATORY CRUSHER

Roy Webster, Glenfield, England, assignor to Pegson Limited, Coalville, Liecestershire, England
Filed Mar. 4, 1969, Ser. No. 804,100
Claims priority, application Great Britain, Mar. 8, 1968, 11322/68
Int. Cl. B02c *2/04*
U.S. Cl. 241—215 **6 Claims**

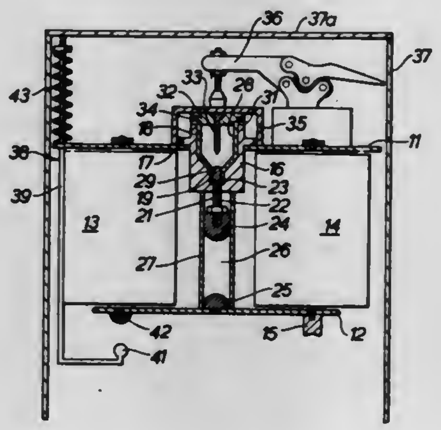


A gyratory crushing machine is equipped with hydraulic appliances for lifting and lowering the upper concave bowl relatively to the gyratory head, and thereby adjust the size of the crushing chamber, and for locking and centralizing the bowl in its adjusted position.

3,604,641

APPARATUS FOR HYDRAULIC CRUSHING

Joseph Dodman Wilson, Oxford; Bertram Reginald Donoghue, Didcot, and John Lester Waddingham, Abingdon, all of, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Feb. 2, 1970, Ser. No. 7,853
Claims priority, application Great Britain, Feb. 10, 1969, 7168/69
Int. Cl. B02c *19/18*
U.S. Cl. 241—301 **8 Claims**



The apparatus is for crushing samples in preparation for analysis. A support vessel receives and supports a comparatively thin walled sample container, which may be filled and sealed separately from the crushing apparatus. A clamp clamps the sample container in the support vessel and effects electrical connection between electrodes molded in situ in the sample container and plates connected across capacitors for providing high-voltage pulses. The thin walled sample container is disposable so that cross-contamination is avoided by using a new sample container for each sample to be crushed.

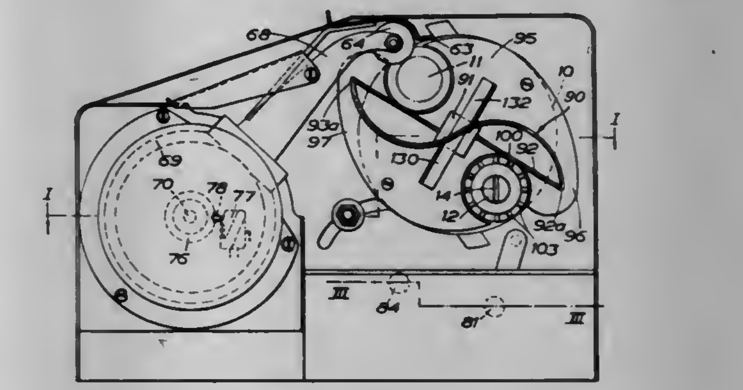
ERRATUM

For Class 241—37 see:
Patent Nos. 3,604,645, 3,604,646

3,604,642

TEXTILE THREAD-WINDING APPARATUS

George Hirst, Dewsburh, and Brian Whiteley, Halifax, both of, England, assignors to Fairbairn Lawson Limited, Yorkshire, England
Filed May 1, 1969, Ser. No. 820,842
Claims priority, application Great Britain, May 3, 1968, 20996/68
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 A **31 Claims**

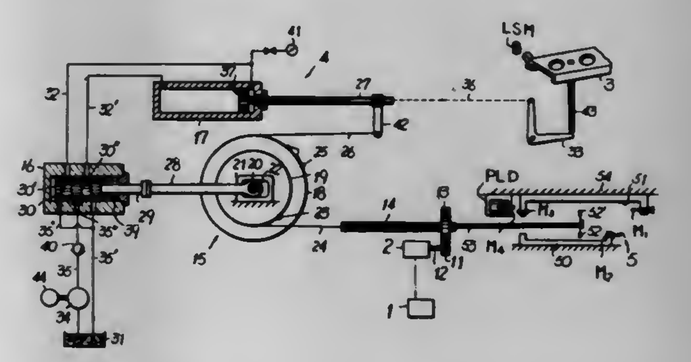


A textile thread-winding apparatus has a turret with two spindles each adapted to receive a thread carrier. The turret can turn to bring either of the spindles into the winding on station, and in so doing, it pushes a deflector into the path of the thread. The deflector guides the thread onto a catcher on the spindle at the winding on station, so that the latter begins to pick up the thread. The full package continues to rotate even at the reserve station until the trailing thread to the catcher is severed.

3,604,643

RING RAIL LIFTING METHOD AND EQUIPMENT FOR SPINNING MACHINERY

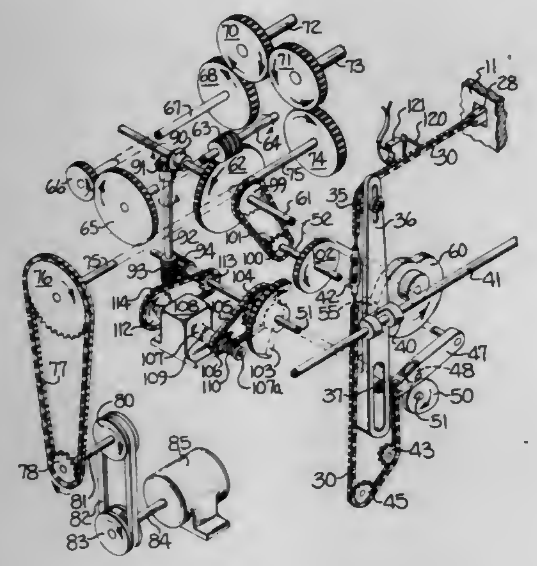
Tsuneo Kimura, Kusatsu-shi; Moriguchi, Tooru, Amagasaki-shi; Shigeaki Takahashi, Amagasaki-shi, and Katsumasa Nerio, Itami-shi, all of, Japan, assignors to Nihon Spindle Seizo Kabushiki Kaisha
Filed Aug. 11, 1969, Ser. No. 848,806
Claims priority, application Japan, Aug. 14, 1968, 57819
Int. Cl. B65h *54/36*
U.S. Cl. 242—26.4 **11 Claims**



A ring rail lifting method and equipment for spinning machinery, comprising a pulse-generating device for generating pulses according to the rotation speed of a frame motor of a spinning machine or the like without receiving power from the frame, and a pulse motor operated by the pulse supplied from said pulse-generating device; and, said ring rail lifting method and equipment for spinning machinery characterized in that an interlocking mechanism operated by said pulse motor is arranged so as to give vertical motion to the ring rail, and this motion is controlled according to the counted number of the pulses transmitted from said pulse generating device.

3,604,644
WINDING CONTROL MEANS

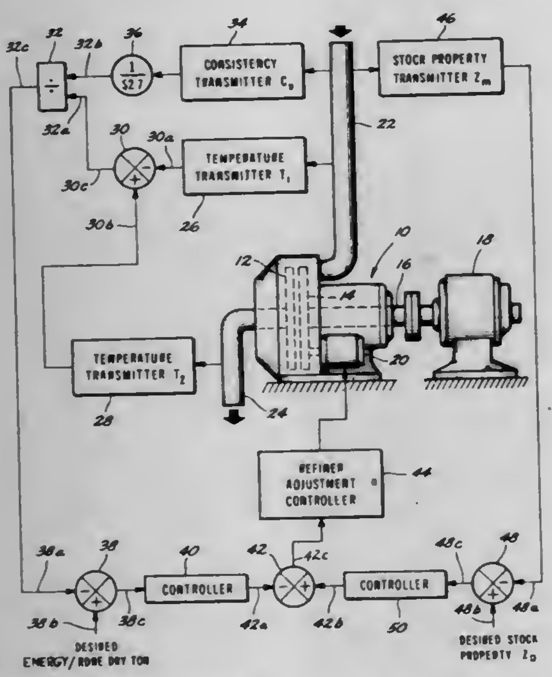
Bobby R. Fain, Burlington, N.C., assignor to Alamance Industries, Inc., Burlington, N.C.
Filed Sept. 22, 1969, Ser. No. 859,636
Int. Cl. B65h *54/14*
U.S. Cl. 242—32 **6 Claims**



The present control means is associated with a high speed winding machine and operates to gradually move the center of the traverse stroke in one direction along the takeup packages so that the successive coils or layers of yarn form a filling-type wind. A speed reduction drive rotates a traverse control cam through one-half revolution during the winding of the packages, and a half gear repositions the traverse control cam upon completion of the winding of one set of yarn packages.

3,604,645
INFERENTIAL MASS RATE CONTROL SYSTEM FOR PAPER REFINERS

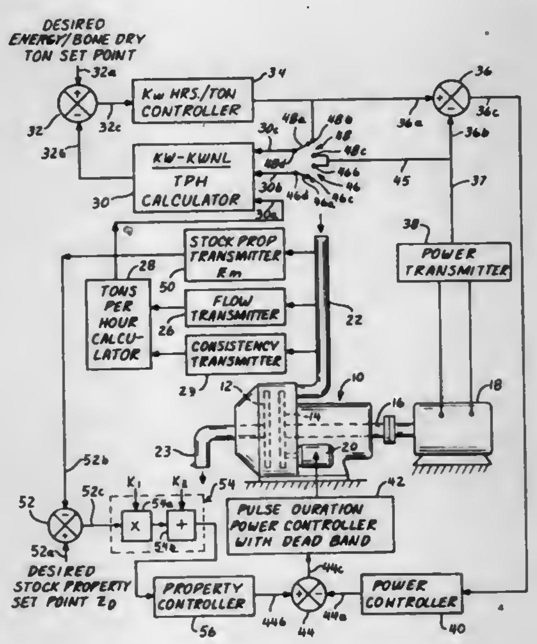
Marion A. Keyes, IV, South Beloit, Ill., assignor to Beloit Corporation, Beloit, Wis.
Filed Dec. 10, 1969, Ser. No. 883,758
Int. Cl. B02c *7/14*
U.S. Cl. 241—37 **8 Claims**


CONSISTENCY TRANSMITTER C_0
STOCK PROPERTY TRANSMITTER Z_m
TEMPERATURE TRANSMITTER T_1
TEMPERATURE TRANSMITTER T_2
REFINER ADJUSTMENT CONTROLLER
CONTROLLER
CONTROLLER
DESIRED ENERGY/BONE DRY TON
DESIRED STOCK PROPERTY Z_D

An inferentially derived kilowatt-hour-per-ton signal is provided by the measurement of differential temperature and consistency of the fluid stock flowing through the refiner. This signal is used to the motor that relatively positions the beater elements of the refiner to maintain a substantially uniform power consumption. Also, provision is made for modifying the action of the control motor in accordance with a given stock property of the stock flowing through the refiner to make prompt adjustment for changes in the particular stock property.

3,604,646
MASS RATE CONTROL SYSTEM FOR PAPER STOCK REFINERS

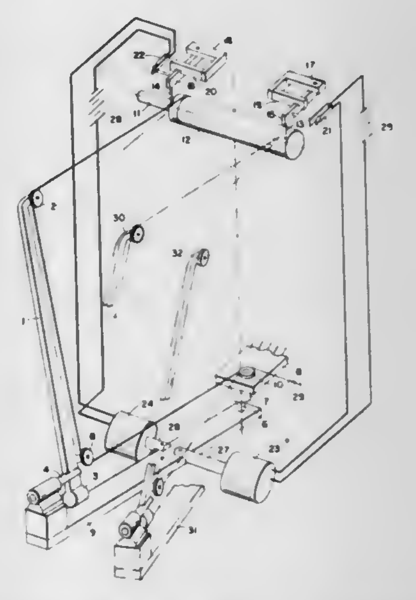
Marion A. Keyes, IV, South Beloit, Ill., and John A. Gudaz, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.
Filed Dec. 10, 1969, Ser. No. 883,910
Int. Cl. B02c *7/14*
U.S. Cl. 241—37 **14 Claims**



From consistency and flow data a signal is provided which is representative of the kilowatt hours per ton required to process the fluid paper stock passing through a refiner. This signal is compared with a desired set point and any difference is utilized as the set point for a power control loop. The function of the power control loop is to adjust the spacing of a longitudinally movable beater element contained in the refiner with respect to its stationary beater element. In this way, the power required by the drive motor that rotates the longitudinally movable beater element is maintained substantially uniform. The above action involves feedforward and feedback techniques. Additional feedforward correction is made for deviations in a preselected property, such as freeness, average fiber length and the like, of the incoming stock.

3,604,647
MACHINE FOR WINDING BOBBINS

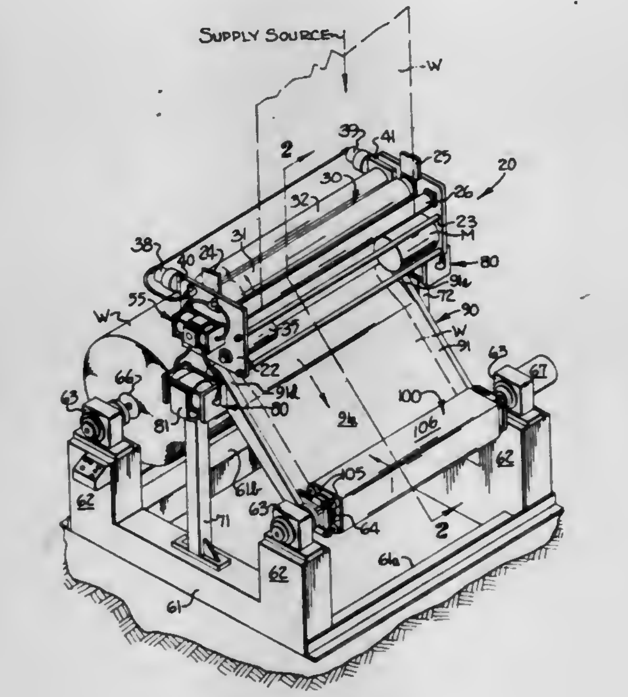
George W. Le Compte, Rockville, Md., and Charles R. Seeger, Tucson, Ariz.
Filed Dec. 30, 1969, Ser. No. 889,114
Int. Cl. B65h *54/02, 54/28*
U.S. Cl. 242—25 **3 Claims**



A machine for winding a bobbin with contiguous layers having contiguous turns of wire including a freely pivoted oscillating arm for delivering the wire to the bobbin. A pivot shaft on said arm connects the arm to a reversing plate which in turn is connected to a pivot shaft on a frame of the machine. The arm and the frame each carry a wire guide pulley and the pitch circumferences of the guide pulleys are tangent to the axis of the pivot shaft on the arm. The axis of the pivot shaft on the frame is located in a manner that its axis intersects the axis of the bobbin.

3,604,648
CONTINUOUS WEB HANDLING AND WINDING APPARATUS

William L. Schmidt, Gastonia, N.C., assignor to Colman-Cocker Company, Gastonia, N.C.
Filed Feb. 18, 1970, Ser. No. 12,320
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 R **9 Claims**

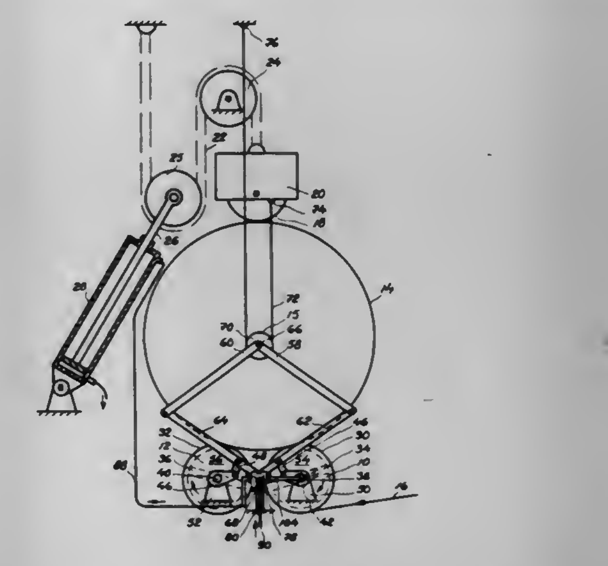


An apparatus for selectively feeding, guiding, starting and winding a continuous web at a plurality of winding stations, including means for selectively feeding the web, means for severing the web to create a new leading end thereof, and at least a pair of spaced-apart mandrels for receiving and winding the web thereon. Guide means selectively guide a newly created leading end of the web toward a selected one of the mandrels and starting means responsive to the guide means selectively start the winding of the newly created leading end of the web around the selected one of the mandrels.

3,604,649
METHOD AND APPARATUS FOR WINDING UP TRAVELING WEBS

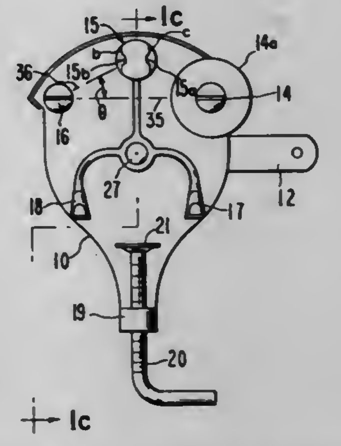
Gerhard Walter Dorfel, Riittulanmaki, Varkaus, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed May 14, 1969, Ser. No. 824,590
Claims priority, application Finland, May 15, 1968, June 26, 1968, 1363/68;1808/68
Int. Cl. B65h *17/08*
U.S. Cl. 242—66 **13 Claims**

This invention relates to a method and apparatus for winding a traveling web to form a cylindrical wound roll having a uniform winding tightness along the web width and between adjacent layers of the wound roll. A winding member is in pressure engagement with the generated surface of the wound roll along a meridian line thereof and is operable to produce the aforesaid uniform winding tightness. Positioned approximately diametrically opposite the aforesaid winding member is a loading roller operable to apply a variable force to the wound roll corresponding to the increasing weight of the wound roll such that the contact pressure between the wound roll and the winding member is maintained constant or varies in a predetermined manner in the winding operation.



3,604,650
UNIVERSAL TAPE WINDER

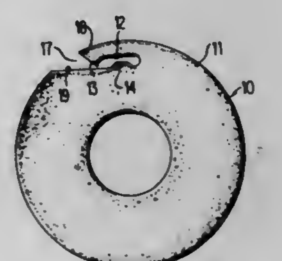
Gunnar Wennerberg, 1641 Poppy Way, and Paul Westin, 1523 Daphne Drive, both of San Jose, Calif.
Filed Oct. 23, 1969, Ser. No. 868,674
Int. Cl. B65h *17/06, 75/28*
U.S. Cl. 242—67.1 **3 Claims**



A device for winding tapes contains a plurality of spindles protruding from one face of the device housing. The end of a tape to be wound or rewound is drawn around one or more of the spindles and attached to another of the spindles. Rotating a handle protruding from the device housing rotates the spindle to which the tape is attached, thereby winding the tape on this spindle.

3,604,651
FILM TAKEUP CORE

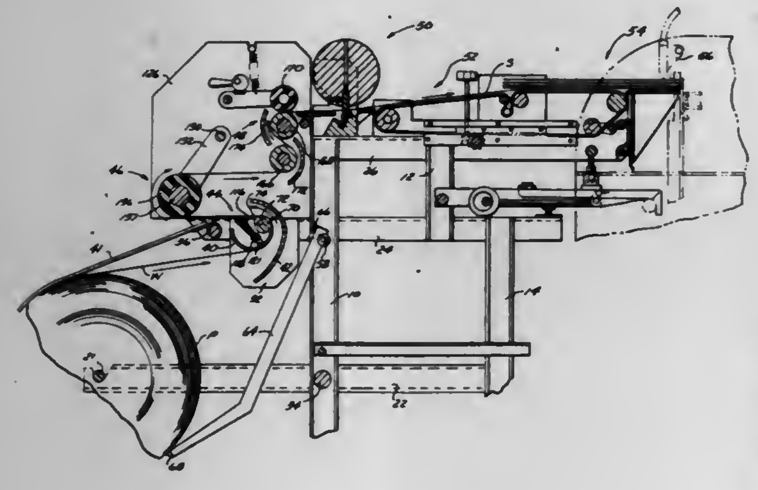
Tadao Ohno, and Michiaki Wada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan
Filed Nov. 25, 1968, Ser. No. 778,522
Claims priority, application Japan, Dec. 7, 1967, 42/102964
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 **3 Claims**



A film takeup core for a film magazine has a film end engaging groove on the periphery of the cylindrical body portion thereof. The groove has a protrusion on one inner surface for making a firm engagement with the film.

3,604,652
ROLL SHEETER FOR PRINTING MACHINE

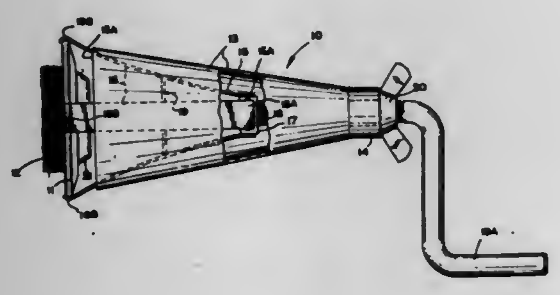
Donald W. Sleeper, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Division of Ser. No. 579,134, Sept. 13, 1966, Pat. No. 3,482,477
Filed July 2, 1969, Ser. No. 861,521
Int. Cl. B65h *23/06, 23/10*
U.S. Cl. 242—75.2 **5 Claims**



A web-decurling device for use with a roll sheeter attachment includes a rotatable bar having a sharp edge projecting into engagement with the outer surface of the web as it is unwound from a supply roll. The decurling device is self-adjusting in operation and comprises means for sensing the periphery of the supply roll and, in response to reduction in its diameter, continuously rotating the bar so as to change the attitude of the sharp edge to present an ever increasing amount of uniform decurling pressure to the web as the supply roll is depleted. Also provided is a tension control for maintaining the web taut and in effective contact with the sharp edge during operation, and for preventing web breakage and lateral runout of the web as it is unwound from the supply roll.

3,604,653
LINE-WINDING DEVICE FOR SPINNING REELS

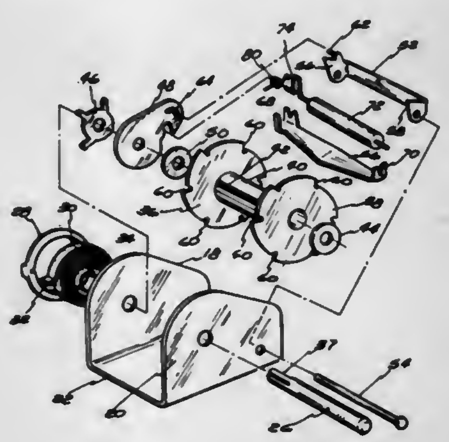
George Anthony Sargent, P.O. Box 26, Veneta, Oreg.
Filed Mar. 17, 1970, Ser. No. 20,291
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.2 R **4 Claims**



A device for attachment to the spool of a spinning reel is disclosed as having a plurality of diverging fingers for gripping the spool at circumferentially spaced-apart points. Additional means functions to secure the fingers on the spool for subsequent spool rotation for the winding of line onto the freely rotating spool while the reel bail remains stationary whereby twisting of the line is avoided.

3,604,654
AUTOMATIC SEATBELT RETRACTOR WITH SLIP CLUTCH

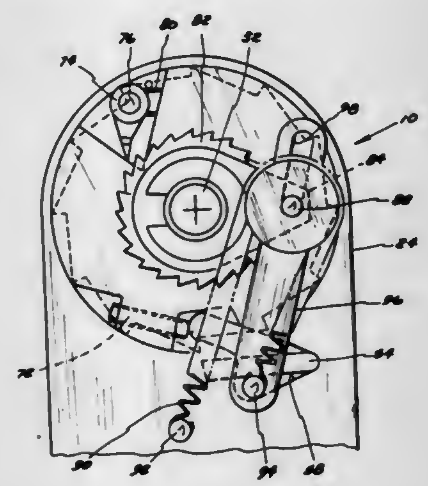
Robert W. Stoffel, Ferndale, Mich., assignor to Jim Robbins Seat Belt Co., Troy, Mich.
Filed Sept. 19, 1968, Ser. No. 760,918
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **10 Claims**



An automatic seatbelt retracting device is disclosed having a slip clutch connecting the belt windup reel and a locking mechanism in an arrangement that allows a selected quantity of the belt to be extended from its fully retracted position, and then, in response to a partial retraction of the belt sets a locking pawl to restrict further rotation of the reel in its unwinding direction. A roller, mounted adjacent the reel, senses the belt as it is unwound from the reel from its fully retracted position and prevents the clutch from moving the pawl into locking engagement with the reel until a predetermined quantity of the belt has been extended from the reel.

3,604,655
INERTIA RETRACTOR

David P. Jones, Detroit, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed June 11, 1969, Ser. No. 832,353
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **4 Claims**

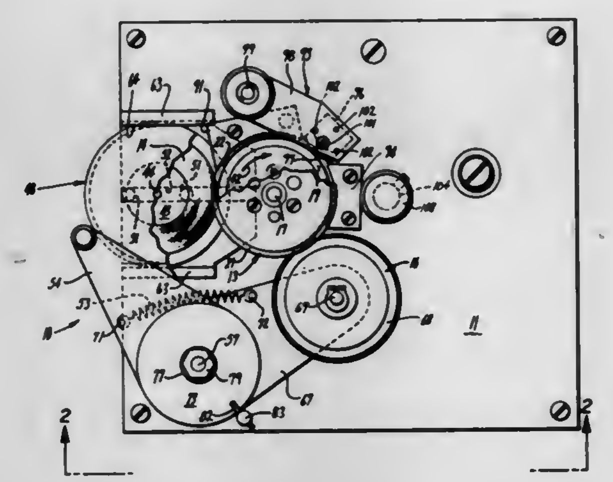


A safety seatbelt retractor having an actuator which releases a spring-biased pawl to lock the retractor reel in response to certain belt motions.

3,604,656
TAPE TRANSPORT APPARATUS AND CIRCULAR CARTRIDGE THEREFOR

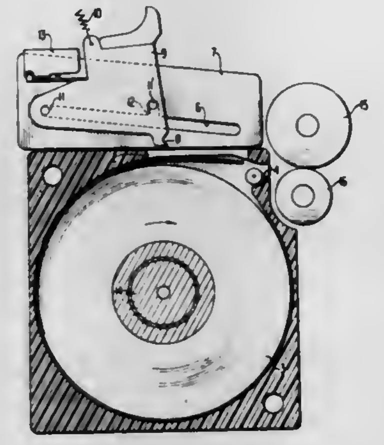
Ashley J. Hollingsworth, 48 Maganite Rd., Atherton, Calif.
Continuation-in-part of application Ser. No. 773,843, Nov. 6, 1968, now abandoned. This application Oct. 27, 1969, Ser. No. 869,801
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—192 **14 Claims**

Using a cartridge containing a roll of pliable recording tape wrapped upon a single hub and formed with a window at one side of the cartridge, a tape transport apparatus feeds the cartridge into the loading slot of a tape player for movement progressively into the slot during playing of the tape. Rewinding the tape causes the cartridge to emerge progressively outwardly from the slot of the tape player. A multiple tape deck machine employs a number of readily removable tape deck units, each of which is disposed upon an associated one of a number of drive elements.



3,604,657
FILM END WITHDRAWING DEVICE

Shunkichi Igarashi, Tokyo, and Takeshi Okano, Hyogo, both of, Japan, assignors to Fuji Photo Film Co., Ltd.,, Ashigara-Kamigun, Kanagawa, Japan
Filed Nov. 18, 1968, Ser. No. 776,455
Claims priority, application Japan, Dec. 6, 1967, 42/78350
Int. Cl. G11b *15/66, 23/10*
U.S. Cl. 242—195 **6 Claims**

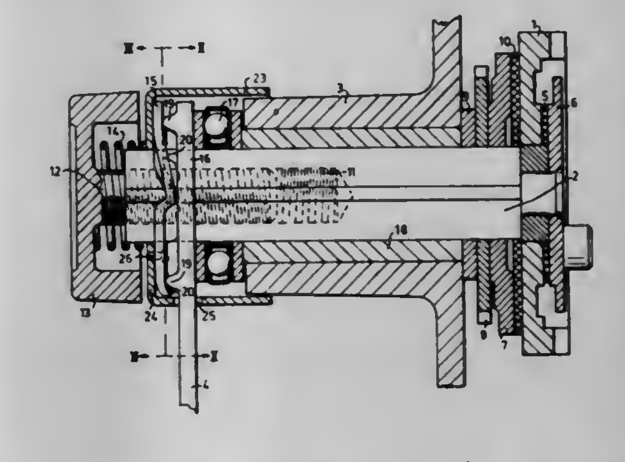


A pivotable, reciprocating plate having a hooked projection which enters a film magazine slot and is received within an aperture at the end of the film to forcibly withdraw the film end through an adjoining cartridge slot positioned in the path of the moving film strip end.

3,604,658
FISHING REEL DRIVE MEANS

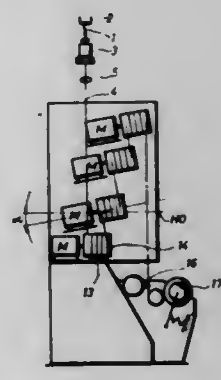
Karl Nurmse, and Hugo Ragnvald Svensson, both of Svangsta, Sweden, assignors to ABU Aktiebolag, Svangsta, Sweden
Filed June 11, 1969, Ser. No. 832,056
Claims priority, application Sweden, June 17, 1968, 8187/68
Int. Cl. A01k *89/00*
U.S. Cl. 242—218 **5 Claims**

A fishing reel drive means includes a friction coupling having a regulatable slip action in which the drag can be reduced by backward rotation of a drive crank in a direction opposite to that in which the crank is turned to wind a line onto a pickup drum. The drive means includes a crankshaft which is connected behind the inner end of a crankshaft hub formed on the mechanism housing with a driving gearwheel over a known friction clutch, the slipping action or drag force of which can be adjusted by varying the force of a spring which is mounted between the outer ends of the crankshaft and a sleeve surrounding said shaft and which provides for inward movement of the crankshaft and outward movement of the sleeve. The crankshaft supports on its portion projecting beyond the outer end of the sleeve, when viewed outwardly from said sleeve, firstly an axial ball bearing abutting the outer end of the sleeve, secondly a crank hub abutting the outer side of the axial ball bearing and having restricted rotary movement and guided for axial movement on the crankshaft, thirdly axial cam projections disposed on the outer face of the crank hub and arranged in uniform, spaced relationship around the shaft, fourthly a cam plate with axial cam surfaces and mounted on the end of the crankshaft for guided movement longitudinally but locked against rotary movement, said cam surfaces when turning the crank hub in the winding direction relative to the hub shaft and the cam plate cooperating with the cam projections to divorce the cam plate from the crank hub. The spring consists of an axial pressure spring which at its inner end bears against the outside of the cam plate and at its outer end bears against the head of an adjuster screw which is screwed into the outer end of the crankshaft.



3,604,659
METHOD OF DRAWING AND WINDING A THREAD OF ENDLESS FILAMENT AND APPARATUS FOR IMPLEMENTING SAME

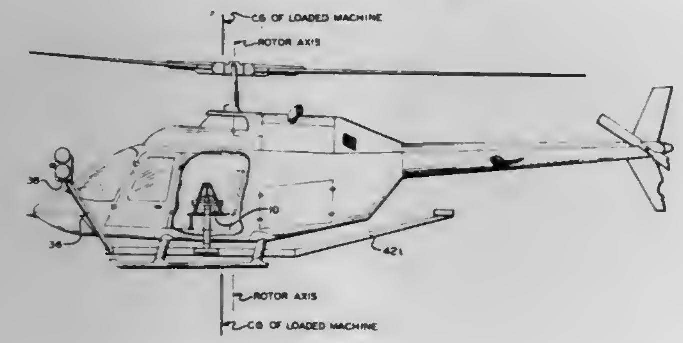
Rudolf Jaeggli, Bern, and Olivier Wust, Winterthur, both of, Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland
Filed Apr. 23, 1969, Ser. No. 827,449
Claims priority, application Switzerland, Apr. 24, 1968, 6383/68
Int. Cl. B65h *54/02, 51/26*
U.S. Cl. 242—35.5 R **22 Claims**



A method and apparatus are disclosed for high speed drawing and winding of endless filament threads wherein the threads are passed over a plurality of pairs of draw rollers, each pair being vertically and axially offset with respect to the preceding and following pairs. In addition, each pair of rollers with the exception of the first and lowest pair has its axis inclined with respect to the horizontal to reduce the overall dimensions of the apparatus. After passing from the final pair of rollers, the thread is traversed at a distance from the final pair of at least six times the width of traversal, and is wound upon a suitable roller. Two or more parallel threads may be simultaneously processed by the draw rollers and then individually traversed and wound.

3,604,660
HELICOPTER SENSOR PLATFORM ASSEMBLY

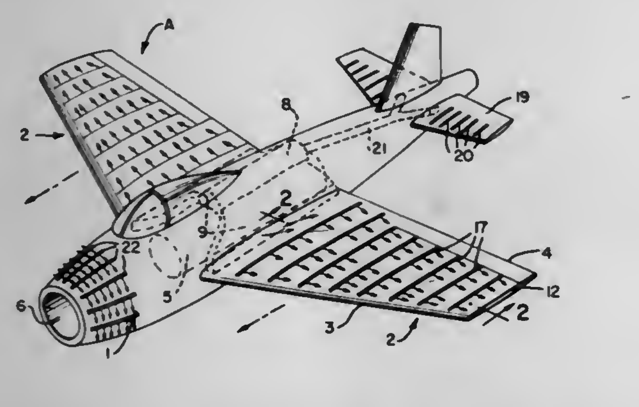
Eugene I. Marley, Kirkwood, N.Y., assignor to Rotorcraft Gyro Support System, Inc., Callicoon, N.Y.
Filed Dec. 4, 1969, Ser. No. 882,014
Int. Cl. B64c *27/00*
U.S. Cl. 244—17.11 18 Claims



A plurality of load platforms which may carry sensing devices or counterbalance weight are carried externally of the cabin of a helicopter on a rigid frame which extends inside the helicopter fuselage and is carried on a gyrostabilized gimballed suspension with the gimbal axes near the helicopter center of gravity.

3,604,661
BOUNDARY LAYER CONTROL MEANS

Robert Alfred Mayer, Jr., 7727 Miller Fall Road, Rockville, Md.
Filed Sept. 25, 1969, Ser. No. 861,042
Int. Cl. B64c *21/04*
U.S. Cl. 244—42 6 Claims

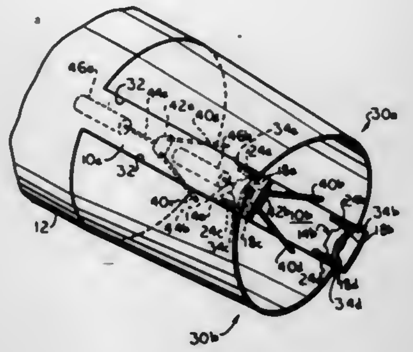


A vehicle movable through a fluid supporting medium includes an active system for controlling the layer of said fluid over at least a portion of the vehicle exterior surface. Parallel slots through the surface permit fluid under pressure to issue over the surface to reduce drag and improve lift and/or propulsion.

3,604,662
THRUST-REVERSING APPARATUS FOR JET-PROPELLED AIRCRAFT

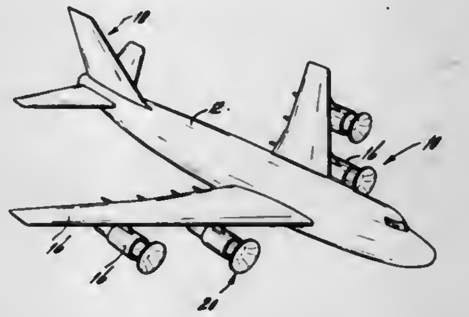
Harold E. Nelson, Jr., Chula Vista, and Ralph O. Brannon, La Mesa, both of, Calif., assignors to Rohr Corporation, Chula Vesta, Calif.
Filed Jan. 19, 1970, Ser. No. 3,727
Int. Cl. B64c *15/06*
U.S. Cl. 244—53 R 4 Claims

Each of a pair of thrust-reversing doors is connected to an aircraft jet-engine housing by six links, two of which pivot about a first axis disposed transverse to the longitudinal axis of the housing, two of which pivot about an axis disposed laterally of said first axis and parallel therewith, and two of which are connected with drive means associated with the housing.



3,604,663
JET ENGINE THRUST ENHANCER

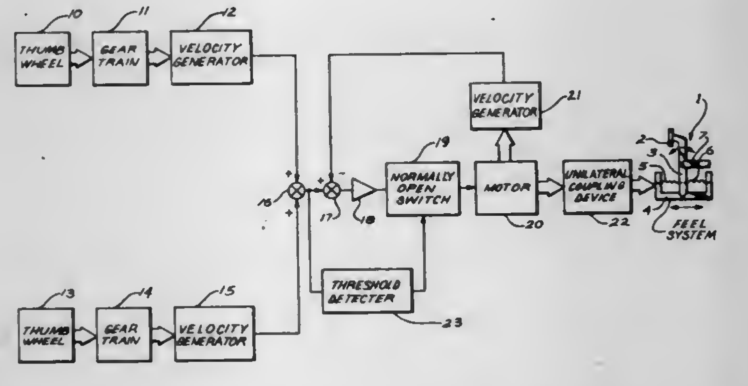
Willard R. Custer, Hagerstown, Md., assignor to Custer Channel Wing Corporation, Hagerstown, Md.
Filed July 15, 1969, Ser. No. 841,856
Int. Cl. B64d *33/02*
U.S. Cl. 244—53B 5 Claims



Apparatus for enhancing jet engine efficiency and creating increased thrust, utilizing effective created pressure differentials to establish forward reaction thrust. The apparatus basically consists of a bell-shaped member disposed forward of the engine intake throat. In a modified form a partial bell-shaped member is combined with a lift channel for increased operating efficiency.

3,604,664
POSITIONAL CONTROL SYSTEM

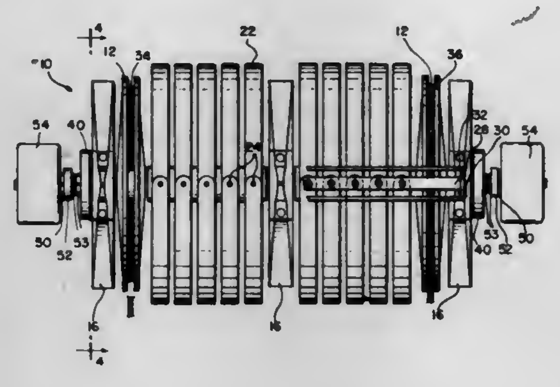
Francis J. Mahoney, Santa Monica, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Aug. 21, 1969, Ser. No. 852,002
Int. Cl. B64c *13/12*
U.S. Cl. 244—84 32 Claims



A control system in which an output member is positioned so its displacement is proportional to the displacement of a plurality of input members. Signals are generated that have a characteristic, e.g., amplitude or pulse-repetition rate, representative of the rate of change of the displacement of the input members. The signals are combined so the characteristics add. A feedback signal is generated that has a characteristic representative of the movement of the output member. The output member is positioned responsive to the combined signal and the feedback signal such that the displacement of the output member is proportional to the sum of the individual displacements of the input members. In one embodiment, the characteristic of the feedback signal is representative of the rate of change of the displacement of the output member, and the output member is positioned responsive to the difference between the characteristic of the feedback signal and the combined signal. In other embodiments, the characteristic of the feedback signal is representative of the displacement of the output member, and the output member is positioned responsive to the difference between the integral of the characteristic of the combined signal and the characteristic of the feedback signal.

3,604,665
AIRCRAFT ARRESTING SYSTEM

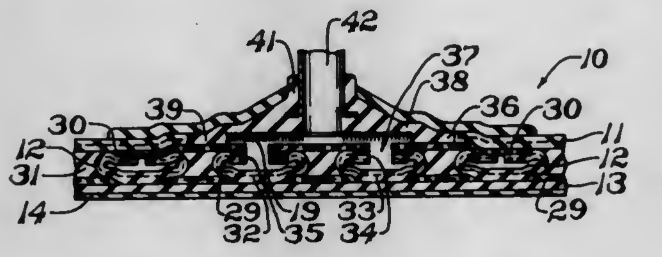
Truman K. Jamison, 1019 Pike St., Crest Hotel, Seattle, Wash.
Filed June 19, 1969, Ser. No. 834,670
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 4 Claims



A plurality of spiral springs are secured to a frame mounted below an aircraft runway. The springs are fixed to a rotatable shaft upon which a pair of cable drums are secured. Cables are fed from the drums onto the runway surface in positions to be engaged by loops protruding from an aircraft. Brakes are provided to prevent the springs from accidentally unwinding after the airplane has come to a stop. Motors are provided to wind the springs so that the system may be employed to catapult aircraft from the runway. Several springs and cable arrangements are illustrated.

3,604,666
PNEUMATIC DEICER

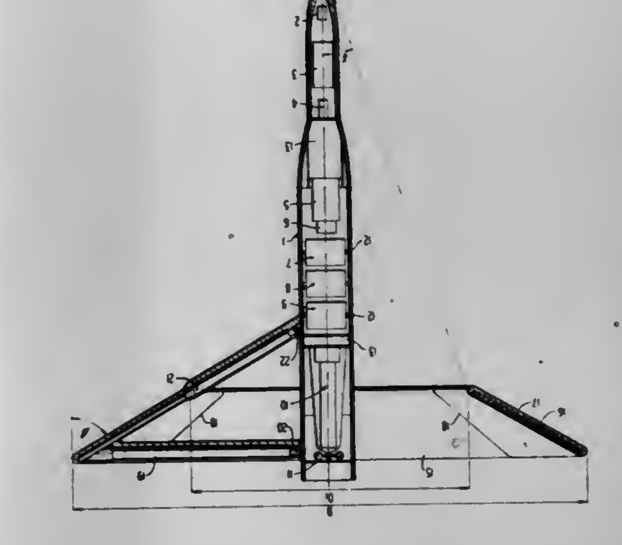
Melvin B. Achberger, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Aug. 25, 1969, Ser. No. 852,769
Int. Cl. B64d *15/16*
U.S. Cl. 244—134 A 5 Claims



A pneumatic deicer having a series of inflatable tubes which are alternately extended by inflation to break up ice accumulations in which the tubes are interconnected by plies of porous fabric having spaced projecting elements providing interstices through which air passes and sealing members adhered to the plies and tubes at the openings to provide an air-tight assembly.

3,604,667
PLANETARY LANDER

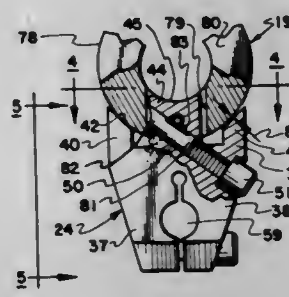
Carlos de Moraes, Littleton, Colo., assignor to Martin Marietta Corporation, Baltimore, Md.
Filed Nov. 26, 1968, Ser. No. 778,933
Int. Cl. B64d *1/00*
U.S. Cl. 244—138 17 Claims



A drag ring penetrometer combination of the type employed for determining the atmospheric and surface characteristics of planets, the drag ring aerodynamically stabilizing and decelerating the penetrometer during its planetary entry to thereby permit continuous transmission of communication during entry and to reduce the aerodynamic heating of the penetrometer, and also to thereby permit a desired amount of oriented penetration into the planet surface.

3,604,668
CLAMPING MECHANISM FOR ASSISTING IN MEASURING MACHINE QUILL TRAVEL

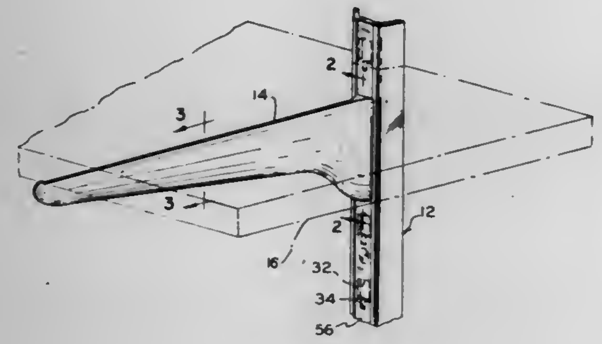
Karl Bernhardt, 628 Euclid St., Santa Monica, Calif.
Filed June 12, 1969, Ser. No. 832,593
Int. Cl. B23q *11/00*
U.S. Cl. 248—223 10 Claims



A clamping mechanism has a block formed with a lug and a pair of parallel arms spaced upon opposite sides of the lug. Extending obliquely across the longitudinal centerline of the lug is a locking pin that is coaxially aligned with a force-transmittting screw coupled to the block. The screw has an inner end engaged against the locking pin and an outer end positioned at a convenient location so that a machinist or the like may easily reach the screw in order to drive the pin to its locking position. To tightly clamp the clamping mechanism against a curved body formed with a bore, the lug is positioned within the bore with at least one arm held aligned against the body periphery. The locking pin is driven against a bore wall location and at least one abutment shoulder formed by the lug is simultaneously driven against another bore wall location.

3,604,669
SHELF BRACKET STRUCTURE

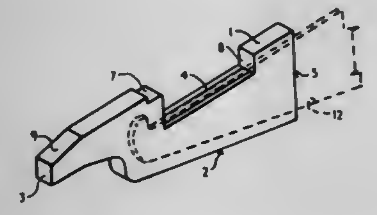
Glen M. Asher, Lake Oswego, Oreg., assignor to Western Wood Mfg. Co., Lake Oswego, Oreg.
Filed Oct. 27, 1969, Ser. No. 869,820
Int. Cl. A47g *29/02*
U.S. Cl. 248—243 **5 Claims**



A shelf bracket structure made of molded plastic material includes channel-shaped support strips which can be secured in vertically extending positions to a wall. Bracing elements extend across the channels and divide the channels into equally spaced elongated recesses in the back of the strips. An opening extends through the front wall of each strip into each of the recesses. Shelf brackets each have on one end an upper hook element received in one of the openings and a lower bracket-aligning projection received in the next lower opening. There is a lateral movement stabilizer for each bracket. In one form of the invention, the stabilizer comprises a pair of lugs on the rear of the strip between which the hook of a bracket slides. In another form of the invention, the stabilizer comprises a tang on the aligning projection, receivable in a narrow slot extending downwardly from each opening. Ends of the strips are formed to overlap each other and end elements cover exposed ends of the strips.

3,604,670
SHELF BRACKET ADAPTER

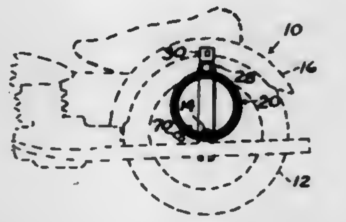
Thomas Herbert Reeves, Scarborough, Ontario, Canada, assignor to FMP Fabricating Limited, Toronto, Ontario, Canada
Filed May 20, 1970, Ser. No. 39,017
Int. Cl. A47g *29/02*
U.S. Cl. 248—250 **5 Claims**



A bracket adapter for use with any type of blade shelf bracket to aid in supporting a shelf; the adapter being in the nature of a sheath that is slipped on the outer end of a shelf bracket, having a recess on its upper side to nest a reinforcing channel on the underside of the shelf and a projecting nose for engagement of the shelf front return whereby the bracket-supported shelf is provided assured stability as the shelf-reinforcing channel nested in the adapter's recess prevents the forward displacement of the shelf and the shelf front return hooked under the adapter's projecting nose precludes any accidental upward displacement of the front edge of the shelf.

3,604,671
CYCLE HELMET COLLAPSIBLE COMPARTMENT

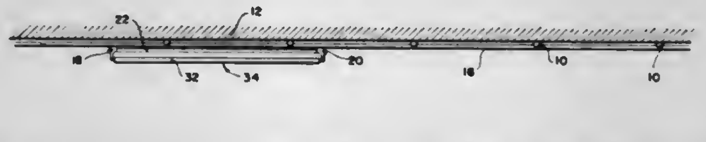
R. C. Walker, 713 Highland Parkway, Norman, Okla.
Filed Oct. 21, 1969, Ser. No. 868,119
Int. Cl. B65d *7/24*
U.S. Cl. 248—309 **6 Claims**



Three concentric rings are diametrically interconnected for pivoting movement of the two inner rings and positioning the respective rings in planes perpendicular with respect to each other to form an open frame cage.

3,604,672
SUSPENSION DEVICE FOR TEACHING AIDS AND THE LIKE

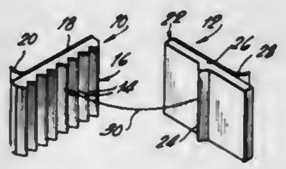
Bengt H. Askesjo, Sollentuna, and Knut Inge Nyhlen, Malmo, both of, Sweden, assignors to Aktiebolaget SKRIVRIT, Sollentuna, Sweden
Filed Dec. 16, 1968, Ser. No. 783,909
Int. Cl. G09b *25/00*
U.S. Cl. 248—324 **3 Claims**



A suspension arrangement for a teaching aid such as a roll map includes a series of elongate downwardly opening channels for slidably receiving a pair of support members which are spaced apart and interconnected by a rigid rod. The support members are adapted to detachably mount a support shaft or the like for the teaching aid. The teaching aid may be pivotably mounted for rotation with respect to the channels so that the angular position of the teaching aid may be varied.

3,604,673
PICTURE STRAIGHTENER

Robert I. Klein, 3 Beachwood Drive, Lawrence, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,873
Int. Cl. A47f *7/14;* **A47q** *1/17*
U.S. Cl. 248—467 **7 Claims**

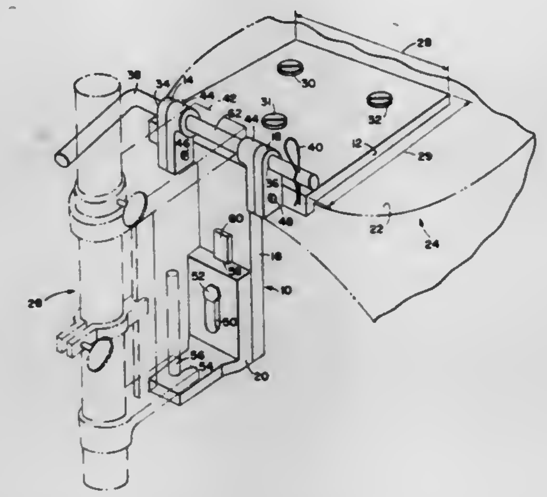


A two-part picture straightener, each part of which is attached respectively by a pressure-sensitive adhesive to the rear of a picture frame and the wall on which it is hung. Lateral displacement is prevented by a mating ridge and groove on respective elements. Also the two elements attract each other magnetically.

3,604,674
TROLLING MOTOR MOUNTING BRACKET

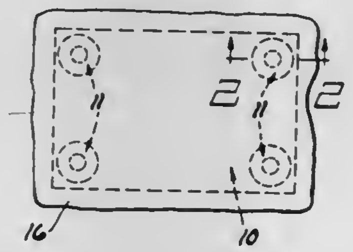
Donald L. Wilkerson, 739 Lily Flagg Drive, Huntsville, Ala.
Filed Apr. 3, 1970, Ser. No. 25,318
Int. Cl. B63h *21/26*
U.S. Cl. 248—4 **6 Claims**

A trolling motor mounting bracket adapted to be permanently affixed to a boat and adapted to pivotally mount a trolling motor outboard of the boat whereby the trolling motor may be raised to a horizontal stored position or lowered to a vertical drive position. The bracket also permits the mounting of various-dimensioned trolling motors to the boat.



3,604,675
CONDENSER SUPPORT

Albert Mitchell, 725 E. 4th St., Royal Oaks, Mich., and White Leonard L., 27165 Bradford Lane, Southfield, Mich.
Filed June 5, 1970, Ser. No. 43,853
Int. Cl. F16f *15/00*
U.S. Cl. 248—22 **7 Claims**

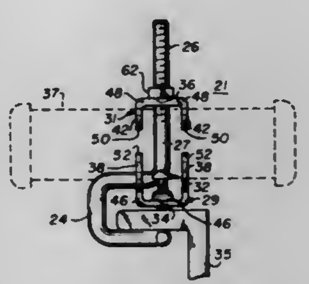


An air conditioner condenser support member which is used in multiple units to form an insulated condenser base in lieu of a concrete base. The condenser support comprises an elongated rigid tubular member having an open lower end and a closed upper end. An outwardly extended flange is secured to the tubular member for engaging the ground and limiting the movement of the tubular member into the ground when the open end of the tubular member is inserted into the ground. The tubular member is provided with a resilient pad on the upper closed end thereof for insulation, noise reduction and vibration-dampening function. In use, at least four of the condenser supports are inserted into the ground, in a substantially rectangular disposition to form a mounting pad for an air conditioner condenser unit.

3,604,676
GROUNDING AND CLAMPING DEVICE

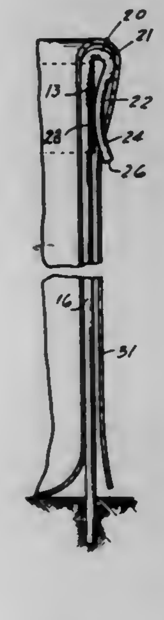
Walter H. Weber, Metuchen, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Oct. 21, 1969, Ser. No. 868,108
Int. Cl. F16l *3/10*
U.S. Cl. 248—68 **4 Claims**

A grounding and clamping device comprised of a combination conduit receiving and locking member and flange clamp to rigidly secure and ground a metallic electrical conduit to a supporting metallic structure. A pair of adjustably coupled recessed members provide a conduit receiving cavity therebetween within which the conduit may be secured; the recessed members may be tightened about the conduit placed within the cavity by threadably engaging threaded extensions protruding from one recessed member and through registering apertures in the other. Coupled to and extending from one of the recessed members is a flange clamp adapted to rigidly secure the recessed members to a support member. At each end of the flange-adapted recessed member is a locking means threadably coupled thereto and extending into the clamp aperture to provide biting engagement between the recessed members and the support member.



3,604,677
BAG HOLDER

Edward C. Gits, LaGrange, Ill., assignor to John W. McConachie, Elmhurst, Ill., a part interest
Filed Oct. 22, 1969, Ser. No. 868,334
Int. Cl. B65b *67/00*
U.S. Cl. 248—97 **2 Claims**

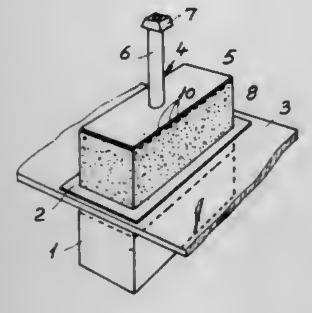


A three-piece holder for large bags consisting of a flexible linear strip whose ends are fastened together to form a wide-mouthed hoop and two leg members having sheperd's crook bent ends for enclampingly receiving the hoop. The other ends of the leg members are pointed and are designed to be stuck into the ground in an upright position to hold the hoop in a horizontal position above the ground. The bag is placed interiorly of the hoop with a portion thereof rolled over the top of the hoop and affixed to a complementary portion of the leg members whereby the bag will be held in an upright, open position.

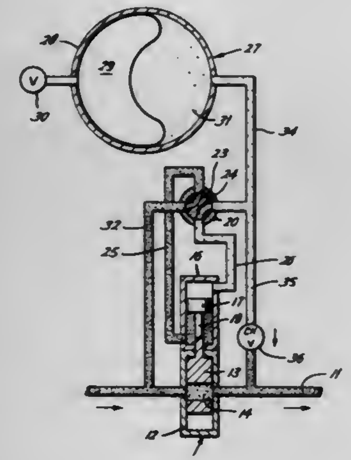
3,604,678
APPARATUS FOR WITHDRAWING FROZEN ARTICLES OR BODIES FROM A FREEZING MOLD

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark
Filed Mar. 19, 1969, Ser. No. 808,415
Claims priority, application Denmark, Mar. 21, 1968, 1214/68
Int. Cl. B28b *7/10*
U.S. Cl. 249—66 **1 Claim**

An apparatus for removing frozen articles of inhomogeneous materials from a mold, comprising a pickup member having a grooved lower surface which is frozen to the upper surface of the article in such a way that an adherence between the frozen material and the grooved side of the pickup member of such a strength is obtained that this adherence can be used for lifting the article away from the mold.

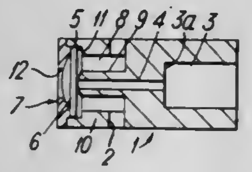


3,604,679
VALVE OPERATOR
John V. Pennington, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Nov. 6, 1969, Ser. No. 874,611
Int. Cl. F16k *31/14*
U.S. Cl. 251—26 **13 Claims**



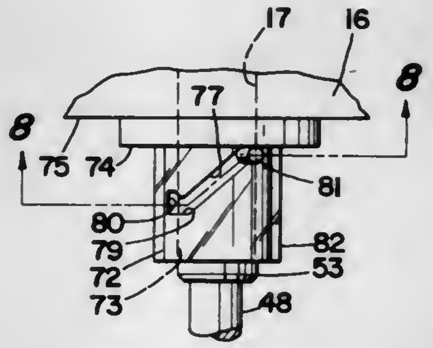
There is disclosed an operator for opening and closing a valve in response to pressure differentials. The energy for providing the pressure differentials is derived from pressure variations of fluid within a flowline, and such fluid is exhausted to the flowline during operation of the valve.

3,604,680
FLUID-PRESSURE-OPERATED SENSING DEVICE
Francis Xavier Kay, Winslow, England, assignor to Instruments and Movements Limited, London, England
Filed Aug. 22, 9169, Ser. No. 852,341
Int. Cl. F16k *7/17*
U.S. Cl. 251—61.1 **1 Claim**



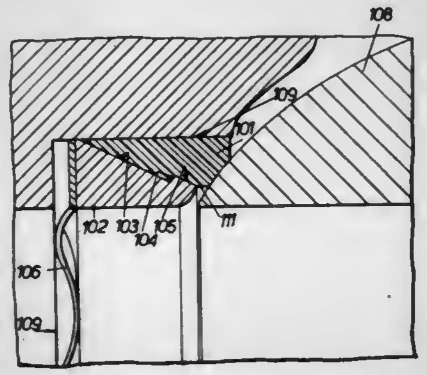
In one embodiment a fluid-operated sensing device comprises a body having a blind bore extending into the body and cylindrical spigot extending coaxially within the bore from the inner end of the bore. A coaxial exhaust passage extends from a conduit in the body coaxially, through the spigot to a valve seat formed at the and of the spigot and a valve member in the form of a disc is held captive in a counterbore at the outer end of the blind bore, between the valve seat and a cover member at the outer end of the blind bore having a central orifice. Vent openings are formed through the wall of the blind bore and the disc can be moved from a position in which it is out of engagement with said seal to allow compressed air to pass from the exhaust passage out of the vent openings, to a position in which it engages the valve seat, by an air jet directed at the orifice in the cover member In another embodiment a body has an external surface with single curvature, which forms a valve seat around an exhaust passage extending from a conduit in the body to the curved surface and a valve member comprises a flexible strip which can be bent against said curved surface to close off said exhaust passage.

3,604,681
SAFETY CATCH FOR AIR JIG VALVES AND THE LIKE
Joseph Verderber, 15255 Lake Shore Blvd., Cleveland, Ohio
Filed Oct. 22, 1969, Ser. No. 868,465
Int. Cl. F16k *35/00, 27/08*
U.S. Cl. 251—100 **8 Claims**



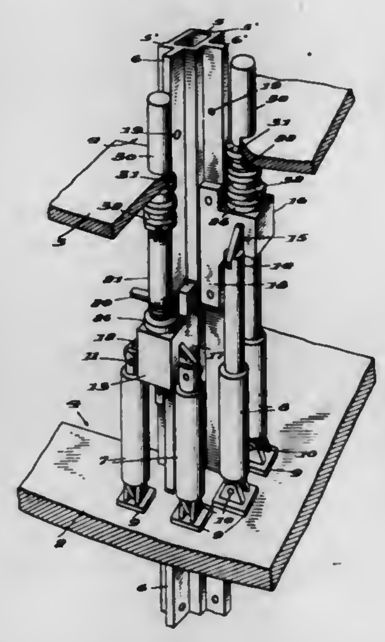
A safety catch is provided for air jig valves and the like, which is effective to latch or lock the air-control valve of an air jig or the like in either of two operative positions, to thereby prevent an operator or bystander from inadvertently or accidentally moving the valve from one of said positions to the other, or, at least, prevent the operator from moving the valve without first releasing the valve from its latched or locked condition. A cover is also provided for the safety catch to prevent dust and dirt from entering portions of the safety catch.

3,604,682
SEAT ASSEMBLY FOR ROTARY BALL VALVES
Cecil G. F. Richards, Queensland, Australia, assignor to B. C. Richards & Co., Pty. Ltd., Queensland, Australia
Filed May 13, 1970, Ser. No. 36,788
Int. Cl. F16k *11/04*
U.S. Cl. 251—362 **3 Claims**



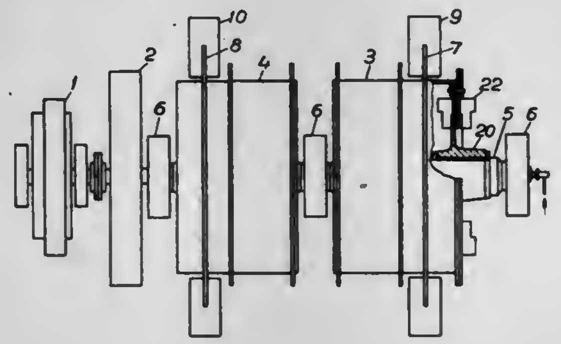
A seal assembly for a rotary ball valve having a sealing ring conically undercut on its rear face, and a backing ring mating with the undercut face as described in U.S. Pat. No. 3,387,815, includes a complementary interfitting circumferential ridge and recess on said mated surfaces.

3,604,683
JACKING MECHANISMS
John R. Sutton, P. O. Box 32, Beaumont, Tex.
Continuation-in-part of application Ser. No. 678,397, Oct. 26, 1967, now Patent No. 3,495,806, dated Feb. 17, 1970. This application July 10, 1969, Ser. No. 840,807
Int. Cl. E02d *21/00*
U.S. Cl. 254—106 **16 Claims**



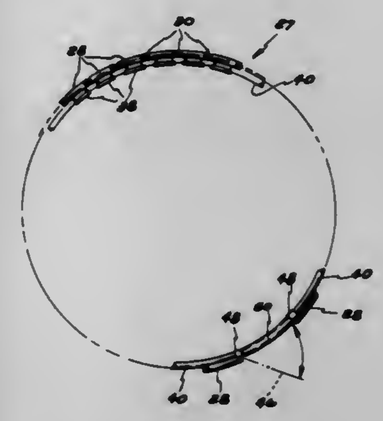
Jacking mechanism to be used in connection with supporting legs for raising or lowering a marine platform as employed, for example, in offshore barge-type equipment. The jacking mechanism combines the action of hydraulic cylinders with a power-driven threaded screw to effect climbing relative to a leg structure of a suitable support tower. Hydraulic cylinders are mounted at one end on a suitable support and at the opposite end connected with a head having means for detachable pin connection with a track along which the head can travel. The pair of hydraulic cylinders or jacks are located symmetrically of each leg section so as substantially to balance the load applied thereto. Movement of the head is opposed by the action of a threaded ram which acts primarily as a safety feature at all times.

3,604,684
MINE HO!ST WITH RELOCKABLE WINDING DRUMS
Einar Elthun, and Josef Marchner, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed June 23, 1969, Ser. No. 835,691
Claims priority, application Sweden, June 27, 1968, 8712/68
Int. Cl. B66d *1/26, 1/44, 5/00*
U.S. Cl. 254—185 **2 Claims**



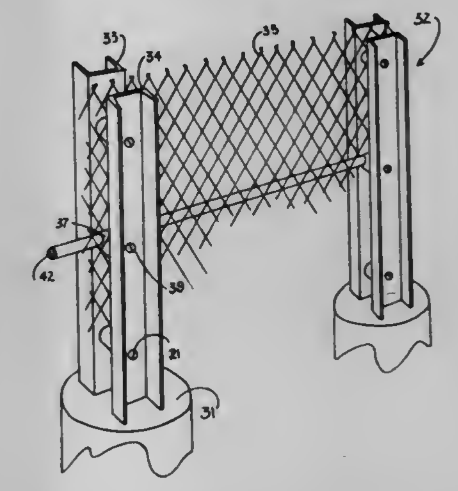
A mine hoist includes a shaft with two drums mounted thereon, one of which is turnable with respect to the shaft. An arrangement is provided for adjusting the relative angular positions of the shaft on the two drums. The movable drum is normally connected to the shaft by a friction clutch which is held in engagement by spring pressure and is released by the operation of a fluid pressure cylinder.

3,604,685
FENCE AND WALL STRUCTURES
Leonard A. Pokryfki, 8938 Hillcrest, Livonia, Mich.
Filed Nov. 29, 1968, Ser. No. 779,764
Int. Cl. E04h *17/18*
U.S. Cl. 256—25 **19 Claims**



An assembly comprised of separate vertical panels locked to each other edge-to-edge to form a continuous wall or fence which is held in an upright substantially rigid expanded relation by means of inflated tubes secured to the panels.

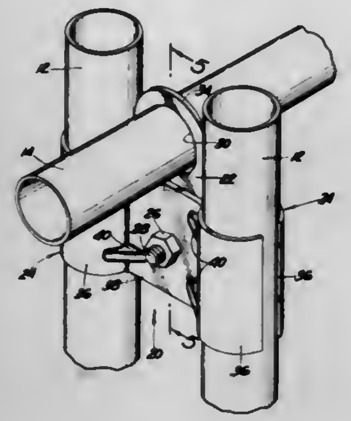
3,604,686
FENCE
Rudolph E. Parisien, 891 Rainbow St., Ottawa, Ontario, Canada
Filed Apr. 15, 1969, Ser. No. 816,221
Int. Cl. E04h *17/14*
U.S. Cl. 256—32 **2 Claims**



A fence construction comprising bifurcated posts supporting fence material, each post being made up of two channel members having their lower ends secured to a base embedded in the ground. The fencing material is disposed between the channel members and fastening means are provided to secure the two channel members together.

3,604,687
FENCE STRUCTURE
Rex T. Moore, 4722 Elmwood Court, Riverside, Calif.
Filed Dec. 22, 1969, Ser. No. 887,466
Int. Cl. E04h *17/14*
U.S. Cl. 256—65 **10 Claims**

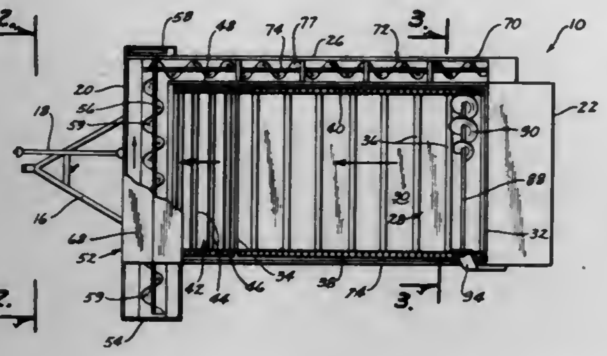
A corral fence made of galvanized steel pipe and comprising horizontal rails passing between and joined to pairs of laterally spaced, parallel posts by means of connecting brackets and associated plates. Each of the brackets includes a pair of opposed bracket members having cylindrically curved end portions which clamp against the sides of the posts, and flat center portions, between which the plate is clamped. The plate has an eye through which the rail passes, and is provided with a vertically elongated slot, through which a bolt passes. The plate is frictionally held between the bracket members. The eye plate is struck a downward blow with a hammer, causing the plate to slide downwardly and indent the rail pipe on the top and bottom, so as to lock it against endwise movement.



3,604,688

MIXING AND FEEDING WAGON

Dorland H. Schuler, Griswold, Iowa
Filed Jan. 12, 1970, Ser. No. 2,300
Int. Cl. B01f *7/08*
U.S. Cl. 259—6 **10 Claims**



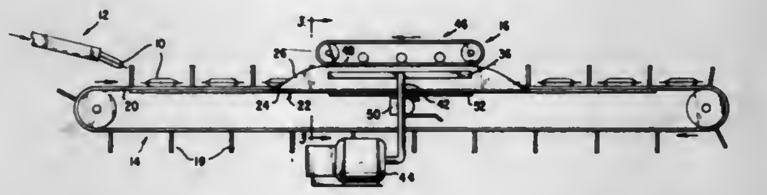
A mixing and feeding wagon comprising a wagon box having a drag chain means movably mounted therein which conveys feed forwardly to a reversible auger conveyor extending across the upper forward end of the wagon box. The reversible auger conveyor will discharge feed from one end thereof at one side of the box when operated in one direction for feeding purposes and will convey feed towards the other end to the forward end of a longitudinal auger conveyor when operated in a reverse direction for mixing purposes. The longitudinal auger conveyor conveys the feed rearwardly along the exterior of the wagon box to a diagonal auger conveyor which extends upwardly into the wagon box at the rearward end thereof. The diagonal auger conveyor has open flighting provided thereon which has decreasing diameter from its lower to upper ends. The reversible auger conveyor is operated in an opposite direction simultaneously with the drag chain means, longitudinal auger conveyor and diagonal auger conveyor to mix the feed in the wagon.

3,604,689

METHOD AND APPARATUS FOR FEEDING FLEXIBLE POUCHES

James L. Hutcheson, Richmond, and Nicholas Constantino, Henrico County, both of, Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Mar. 10, 1970, Ser. No. 18,207
Int. Cl. B01f *11/00*
U.S. Cl. 259—54 **24 Claims**

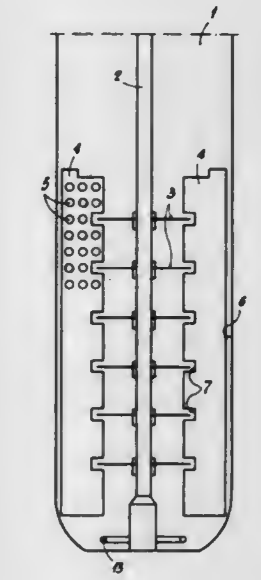
A method of and apparatus for feeding flexible pouches filled with a food product. In order to ensure that the food product is evenly distributed within the flexible pouch prior to subjecting it to a controlled temperature-time-pressure heating cycle, the pouches are fed to a processing station where they are vibrated within a vacuum pocket formed on the conveyor feed belt means. The vacuum pocket is formed by folding the marginal edge portions of the conveyor belt to form a substantially U-shaped trough. Partition means define the ends of the pockets along the conveyor and a cover means engages both the partition means and marginal edge portions of the conveyor belt to form an airtight pocket. An aperture is provided in each pocket to communicate with a source of vacuum. The vacuum causes the pouches to expand or puff up in which condition they are vibrated to effect a substantially uniform distribution of the food product within each pouch.



3,604,690

AGITATION SYSTEM

Knut Rude Traelnes, Yverdon, Switzerland, assignor to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland
Filed Dec. 17, 1969, Ser. No. 885,685
Claims priority, application Great Britain, Dec. 24, 1968, 61354/68
Int. Cl. B01f *7/16*
U.S. Cl. 259—107 **7 Claims**



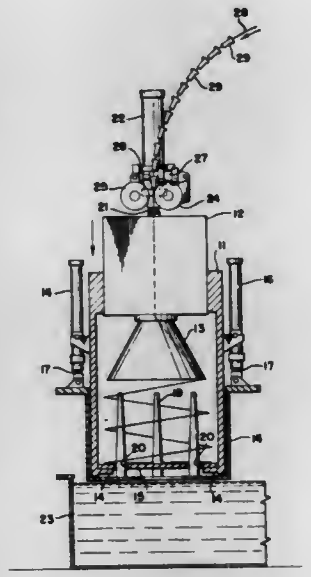
An agitation device for vessels containing a liquid, for example fermenters, comprises at least one rotatable disc having a serrated perimeter, an axial impeller concentric with the disc and at least one baffle cooperable with the serrated edge of the disc arranged to generate zones of shear in the liquid as the disc rotates.

3,604,691

APPARATUS AND METHOD FOR COILING AND QUENCHING ROD

William George Sherwood, Salem, Ohio, assignor to E. W. Bliss Company, Canton, Ohio
Filed May 29, 1969, Ser. No. 828,962
Int. Cl. C21d *9/52*
U.S. Cl. 266—3 R **7 Claims**

Hot rod is coiled and is progressively quenched in apparatus which comprises a coiling basket, laying surface, a reel head for depositing coiled hot rod on the laying surface and a cooling tank with the reel head, laying surface, and coiling basket being movable to and from the coiling tank.

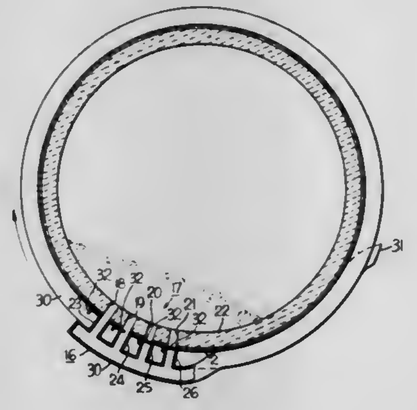


Also disclosed is a method for coiling hot rod and progressively quenching the coiled rod.

3,604,692

ROTARY KILN WITH END AND INTERMEDIATE DISCHARGE

Whitmell J. Smithwick, Brookfield, Wis., assignor to Allis Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 12, 1969, Ser. No. 875,626
Int. Cl. F27b *7/32*
U.S. Cl. 263—33 **5 Claims**

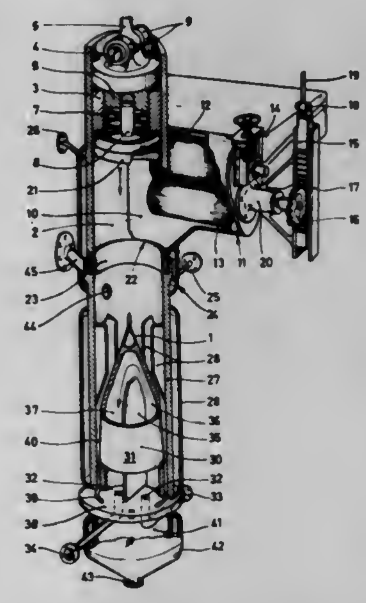


A rotary kiln is disclosed having, in material flow sequence, a drying zone, a preburning zone and a calcining zone. A provision is made for discharging a controlled portion of material from the kiln which has been dried but not calcined. Such a provision includes several radial passages projecting through the kiln shell in a common radial plane located along the kiln at approximately the end of the drying zone adjacent the preburning zone. A duct piece for each passage is connected on one end to a passage at the outer periphery of the kiln and the other end of each duct is connected to a conduit which encircles the outer periphery of the kiln shell for about one and one-quarter turns. An adjustable valve is provided in each duct to control the flow of material out of the kiln and into the encircling conduit. The encircling conduit terminates in a discharge opening which is a sufficient circumferential distance from the passages through the kiln shell, so that at least one portion of material is within the encircling conduit at all times and blocking the entry of atmospheric air into the kiln.

3,604,693

PROCESS AND APPARATUS FOR MELTING BULKY SCRAP MATERIAL FOR SYNTHETIC POLYMERS

Rudi Groepler, Schoenberg, Taunus, and August Jendrusch, Obererlenbach, both of, Germany, assignors to Vickers-Zimmer Aktiengesellschaft Planung und Bau Von Industrieanlagen, Frankfurt, Germany
Filed Apr. 9, 1969, Ser. No. 814,565
Claims priority, application Germany, Apr. 10, 1968, P 17 78 237.5
Int. Cl. F27b *17/00*
U.S. Cl. 263—40 **15 Claims**

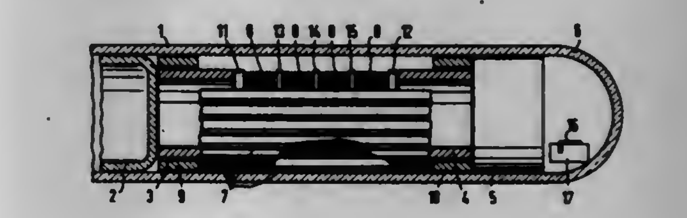


In a process and apparatus for melting bulky synthetic polymer scrap material, the scrap material is introduced into a chamber by rollers and is compressed in the chamber by a piston. The compressed material is heated to melt it and the gases escaping from the material are withdrawn from the chamber in a direction opposite to the direction in which the molten material is withdrawn.

3,604,694

DEVICE FOR HEAT TREATMENT OF SILICON DISCS

Adolf Muller, Pretzfeld, Germany, assignor to Simens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 30, 1969, Ser. No. 862,242
Claims priority, application Germany, Oct. 4, 1968, P 18 01 187.5
Int. Cl. F27b *21/04*
U.S. Cl. 263—47 **-3 Claims**



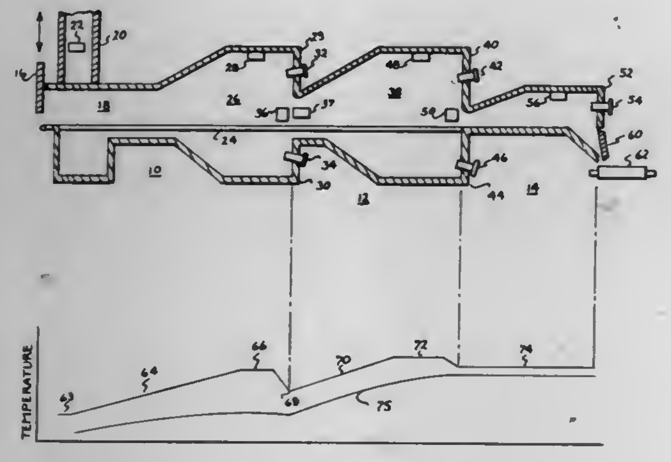
A device for heat treatment of silicon discs in an evacuable horizontal quartz tube. The silicon discs are arranged in stacks. A plurality of thin silicon rods arranged inside the quartz tube in mutually parallel relationship support the silicon discs.

3,604,695

METHOD AND APPARATUS FOR CONTROLLING A SLAB REHEAT FURNACE

Donald E. Steeper, Rexford, N.Y., assignor to General Electric Company
Filed Dec. 15, 1969, Ser. No. 884,887
Int. Cl. F27b *9/40*
U.S. Cl. 266—5 T **23 Claims**

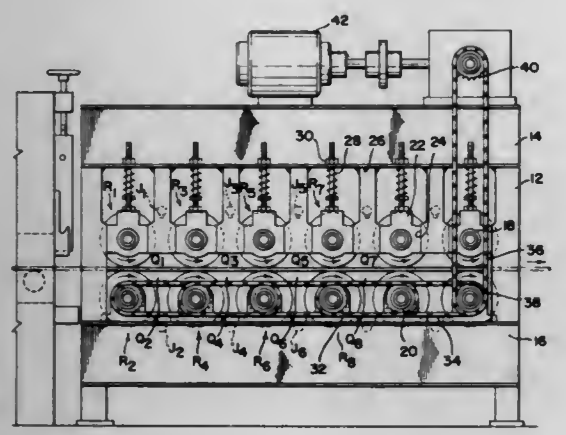
In controlling a slab reheat furnace, the average temperature of each slab in a zone is predicted as a function of the ambient temperature, thermal properties, dimensions, location, velocity and past thermal history of the slab. The deviations between the predicted average temperatures and predetermined desired average temperatures are weighted as



a function of location before being summed to establish a performance index. Proportional plus integral control techniques are used to determine what change in a zone temperature set point will drive the performance index to zero.

3,604,696
CONTINUOUS QUENCH APPARATUS

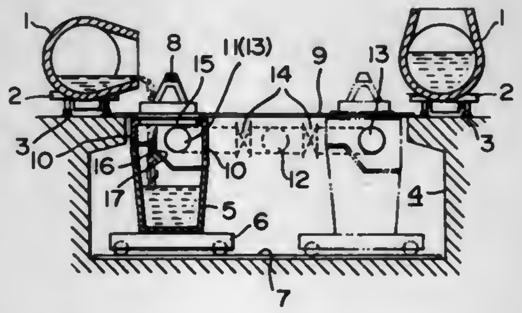
Vincent R. Coleman, Aurora, Ohio; Perry J. Murphy, Jr., Pittsburgh, and Victor N. Lockhart, Irwin, Pa., assignors to The Van Dorn Company, Cleveland, Ohio
Filed Dec. 10, 1968, Ser. No. 782,522
Int. Cl. C21d *1/62*
U.S. Cl. 266—6 S **3 Claims**



Apparatus for continuously and progressively quenching elongated flat steel members comprising a plurality of pairs of continuous cylindrical rolls, each roll pair being closely spaced from a successive roll pair and comprising an upper roll aligned and parallel with a lower roll, the nips of the roll pairs lying in the same plane. A plurality of upper and lower jet quench means are positioned between successive rolls, above and below said plane, the apparatus including means to support the rolls so that they apply a pressure on the steel member being quenched along continuous lines of contact across the member. Passageway means are provided in the rolls for a cooling fluid to cool the rolls, the rolls thereby providing an additional cooling action along said lines of contact of the rolls with the member so that the quenching is uninterrupted, uniform and complete.

3,604,697
HOOD AND LADLE ASSEMBLY FOR COLLECTING DUST POWDERS DURING POURING OF A MOLTEN MATERIAL

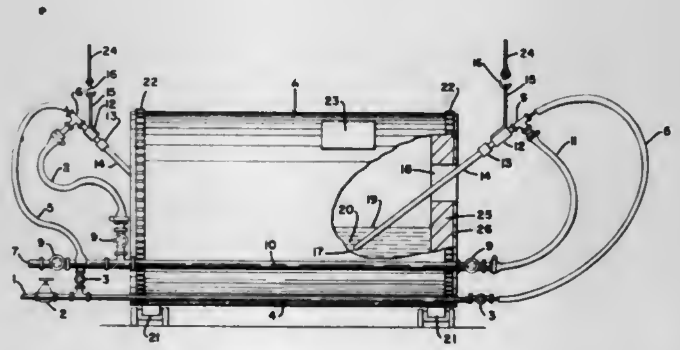
Masashi Kawana; Toshiro Sakai, and Takashi Kosukegawa, all of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Kobe City, Japan
Filed July 11, 1968, Ser. No. 744,084
Claims priority, application Japan, July 14, 1967, 42/45428
Int. Cl. C21c *5/40*
U.S. Cl. 266—31 **6 Claims**



A dust collecting apparatus for collecting duct powder produced during the pouring of molten pig iron comprises a ladle for receiving therein the molten pig iron an a hood assembly movable into alignment atop the ladle. The hood assembly has an opening through which the molten pig iron is poured and inclined guiding members are disposed on opposite sides of the opening to guide the flowing molten pig iron into the ladle. The hood assembly is also provided with a dust outlet which registers with an exhaust duct when the hood assembly is moved into position atop the ladle whereby dust powder produced during the pouring is vented through the exhaust duct and collected.

3,604,698
APPARATUS AND PROCESS FOR THE GASEOUS DEOXIDATION OF ANODE COPPER

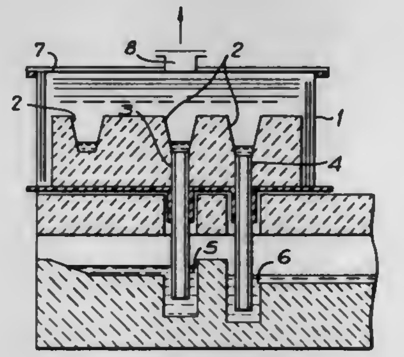
Nickolas J. Themelis, Beaconsfield, and Paul R. Schmidt, Hudson, both of Quebec, Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada
Division of Ser. No. 627,779, Apr. 3, 1967, Pat. No. 3,545,962
Filed Oct. 8, 1969, Ser. No. 871,052
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T **2 Claims**



A process and apparatus for the gaseous deoxidation of molten metal in which a reformable hydrocarbon and steam is substantially simultaneously injected beneath the surface of molten metal in a furnace through water-cooled lances in which partial reforming of the hydrocarbon with the water vapor to carbon monoxide takes place in the lance prior to its introduction into and dispersion within the molten metal in the furnace.

3,604,699
VACUUM CHAMBER FOR DEGASSING MOLTEN METAL

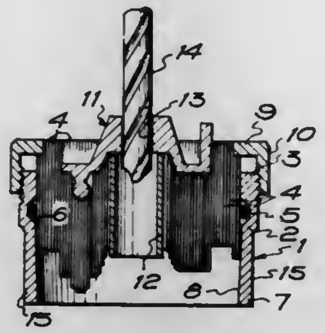
Vadim Nikolaevich Rattenberg, ulitsa Sedova, korpus I, kv. 31, Moscow; Alexei Viktorovich Novikov, ulitsa Frunze, L3, kv. 16, Karagandinskoi Oblasti, and Lev Petrovich Fridman, ulitsa Leni na 35, kv. 6, Karagandinskoi Oblasti, all of, U.S.S.R.
Filed June 26, 2969, Ser. No. 836,853
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V **1 Claim**



A vacuum chamber for degassing molten metal comprises a hermetical cylindrical container provided with a flat duct having the form of a volute-shaped spiral. Connected at the ends of the duct are two branch pipes for introduction and discharge of molten metal.

3,604,700
WORK-SUPPORTING DEVICES

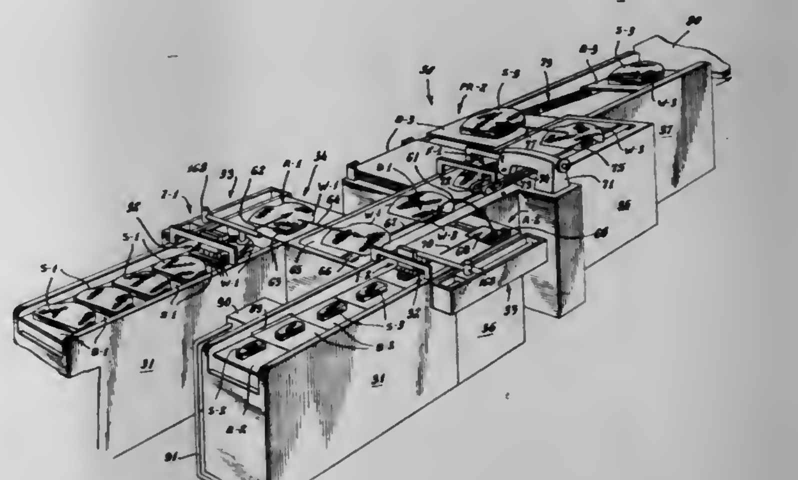
Robert Gault, Sheffield, England, assignor to R. Gault Developments Limited
Filed June 9, 1969, Ser. No. 831,387
Int. Cl. B23q *3/02*
U.S. Cl. 269—288 **17 Claims**



An engineering device which may serve as a work-holding device or as a work-machining tool comprises an enclosure open at one end at least packed with a multiplicity of rodlike elements, enabled to grip a workpiece pushed into the mass of elements, by a wedging action provided by a taper in the enclosure itself or by adjustable inner walls or by small balls within a space between a closed end of the enclosure and the inner ends of the elements and also extending round the sides of the mass of elements, two such devices being capable of incorporation in the jaws of a vice with the rodlike elements in the two jaws extending towards each other, or enabled to provide a multiplicity of teeth conforming to a profile or contour of a workpiece by pressing the protruding ends of the mass of elements against the workpiece with the elements inclined to the surface of the workpieces, the elements being held in such positions by small balls within a space between the inner ends of the elements and a closed end of the enclosure.

3,604,701
PROCESSES, SYSTEMS, AND COMPOSITE SYSTEMS FOR AUTOMATING THE MANUFACTURE OF WEARING APPAREL, HEADGEAR, FOOTWEAR, COMPONENTS THEREOF AND SIMILAR PRODUCTS

George F. Hawley, Bogota, N.J., assignor to Ivanhoe Research Corporation, c/o Robert A. Hack, New York, N.Y.
Filed Nov. 7, 1967, Ser. No. 681,267
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **10 Claims**

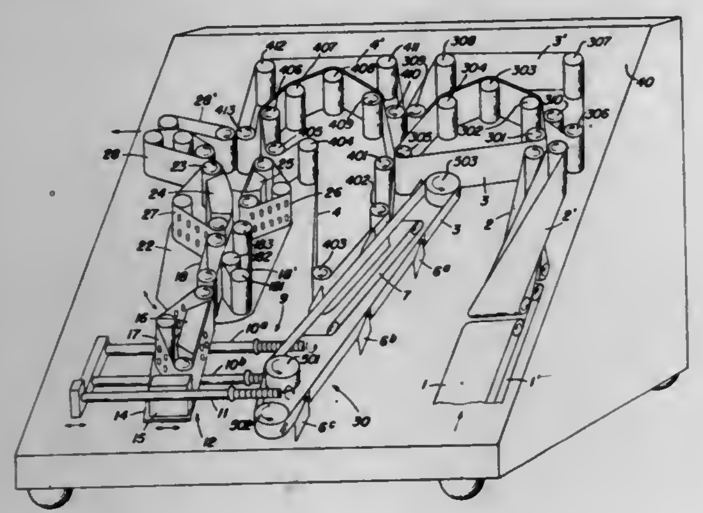


Processes, systems, and composite systems for automating the manufacture of wearing apparel, headgear, footwear, components thereof and similar products (herein called "garments, garment components, and the like articles") providing automatic handling of fabric workpieces to pass them through a multiplicity of work stations and to combine various sizes and shapes of workpieces to produce garments, garment components and the like articles, including steps of automatically feeding stacks of fabric workpieces into cooperative relationship with the respective systems of machine groups wherein the stacks of workpieces are carried by transportable interchangeable coordinating preregistration worktables which cooperatively fit with the respective systems in the composite to which these preregistration worktables are addressed, said transportable worktables serving as an integral part of the machinery to which they are addressed, interacting with the machinery to provide preregistration frames of reference and coordinate control passing the stacks from system to system, taking the workpieces one at a time from the preregistered stacks while differentiating the respective workpieces from the next ones in the stack, putting the workpieces into registry stations, registering them in the registry stations to bring them into more accurately known coordinate positions, combining them with other workpieces, transferring them into work stations and passing them through the work stations, performing work functions thereon and putting those workpieces which have had work functions performed thereon into subsequent stacks in appropriately preregistered positions upon other transportable interchangeable coordinating pregregistration worktables for automatically addressing these preregistered stacks in proper presentation to subsequent systems of the composite without requiring manual rearrangement of the individual workpieces to effect compatibility with the subsequent systems.

3,604,702
AUTOMATIC STACKER-FEEDER FOR A MAIL-HANDLING SYSTEM

Takeo Katagiri, and Kunio Hiromori, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed July 22, 1969, Ser. No. 843,733
Claims priority, application Japan, July 22, 1968, 43/51184
Int. Cl. B65h *3/12, 29/16*
U.S. Cl. 271—5 **4 Claims**

Apparatus adapted for use in mail-handling systems is disclosed in accordance with the teachings of the present invention wherein pieces of mail are supplied by conveyor belt means to alignment means which aligns said pieces of mail to lie in a given plane, said aligned pieces of mail are delivered to rotating shaft means which stacks said aligned pieces of mail in successive order, said stacked pieces of mail are then individually removed from said rotating shaft means by feeder means and delivered to overlapping piece separation means which returns overlapping pieces of mail to said alignment means and transports stacked pieces of mail to further stages of the mail-handling system.



3,604,703

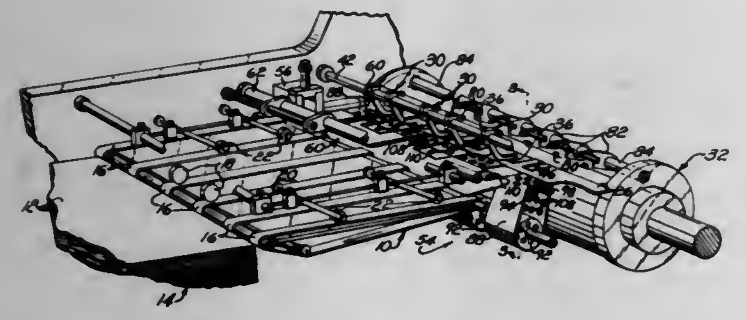
SHEET-FEEDING APPARATUS

Elmer D. Nash, Montgomery, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed June 20, 1969, Ser. No. 835,088

Int. Cl. B65h *9/06*

U.S. Cl. 271—48 **15 Claims**



The present sheet-feeding apparatus has a plurality of spaced-apart transfer belts through which vacuum is applied to the underside of a sheet to enable the transfer belts to move the sheet into a printing press or other machine. A plurality of fingers press the sheet toward the transfer belts to facilitate the application of vacuum to the sheet. In addition, high-velocity jets of air may be directed along the underside of the sheet, alone or in conjunction with the fingers, to form areas of low pressure to enable immediate firm gripping of sheets, thereby resulting in higher speed operation and production of the machine.

3,604,704

STACKER FOR DOCUMENT CARDS

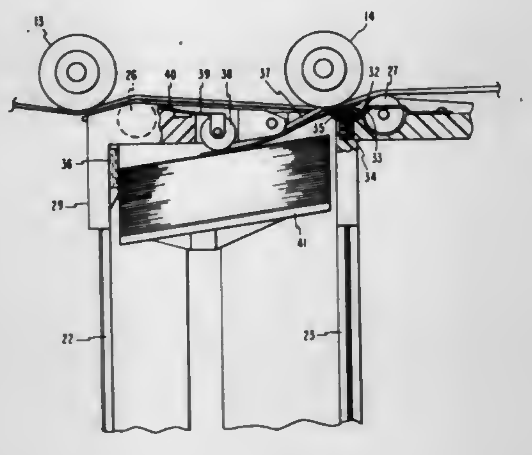
Lonald L. Amundson, and James M. Rigotti, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1969, Ser. No. 859,655

Int. Cl. B65h *29/22*

U.S. Cl. 271—80 **7 Claims**

A stacker for document cards having a card-receiving pocket, a rotatable roller yieldably disposed at the top of the pocket by means of a cantilever spring, a pressure shoe disposed at the card entrance side of the pocket, and a resilient card stop at the other side of the pocket. A supporting plate for the cards is disposed in the pocket and is yieldably held from downward movement in the pocket so as to support a stack of cards therein. As the cards enter the pocket, they deflect the cantilever spring while making contact with the roller and cause the roller to rotate so that the roller drives the cards forwardly and snaps the cards off the pressure shoe; and the roller also, due to its rotation, prevents substantial rebound of the cards from the card stop.



3,604,705

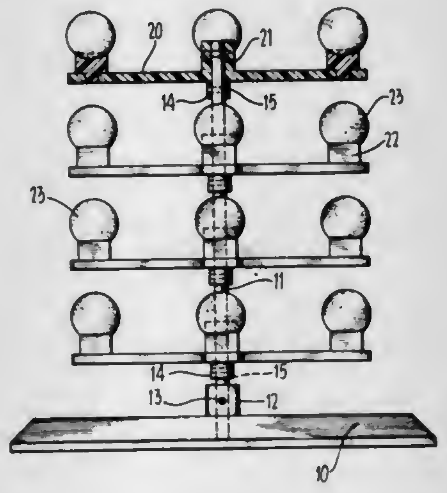
GAME COUNTER HOLDER

Nathaniel F. Hawthorne, 855 Cedar St., Alameda, Calif.

Filed Mar. 10, 1969, Ser. No. 805,603

Int. Cl. A63f *9/00*

U.S. Cl. 273—148 R **4 Claims**



In the device of the present invention, each player tries to secure as large a count as possible, after the first player has secured the requisite number of cards, by securing as many counters as possible. Preferably, the counters are of the nature of ping-pong balls, as such balls are light, resilient, and very active in their bouncing. In the preferred form of the game, the balls can be secured only by means of a pair of tongs which each player has. Preferably, the balls are set in the middle of a table on a device such as shown in the drawings which comprises a plurality of rotatably mounted X-bars carried by a perpendicular shaft. In the present game, when a player has secured the requisite number of cards, he picks up his tongs and starts grabbing the ping-pong balls as fast as he can. The other players, upon perceiving his action, do the same.

3,604,706

RACKET PRESS AND COVER

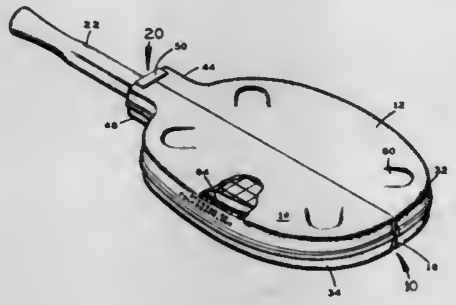
Lucille F. Baukney, 5203 N. 24th Terr., Fort Lauderdale, Fla.

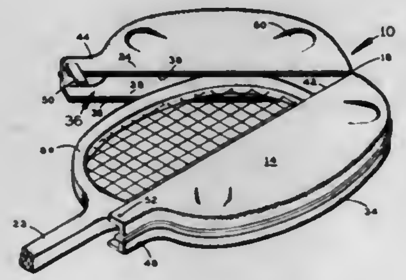
Filed Jan. 10, 1969, Ser. No. 790,207

Int. Cl. A63b *49/14, 49/16*

U.S. Cl. 273—74 **2 Claims**

A racket press and cover including two shell halves pivotally connected together to be opened and closed so that the head of a tennis racket may be inserted therein and removed therefrom. The shell halves and the pivot connection are, in the illustrated embodiment, molded from plastic.





The shell halves have indentations therein which yield resiliently when engaged with the frame of the racket to maintain the frame against warping.

3,604,707

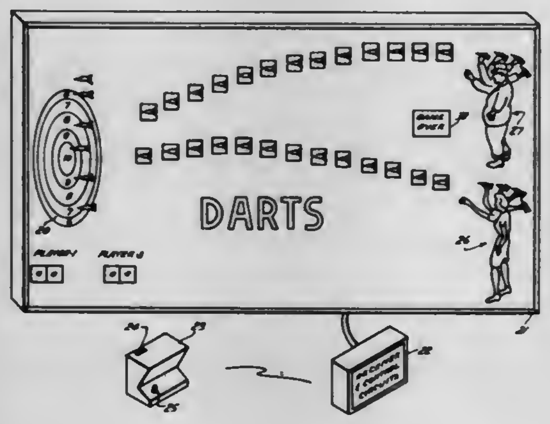
ELECTRIC DART GAME AND THE LIKE

Frederick A. Hurley, Miami, Fla., assignor to Funtronics, Inc., Miami, Fla.

Filed Mar. 24, 1969, Ser. No. 809,534

Int. Cl. A63f *9/00*

U.S. Cl. 273—85 R **5 Claims**



An electronic amusement game is provided having a wall-mounted display panel. Such wall-mounted display panel may be selectively illuminated to provide animation for the amusement game. Remote control means including a coin transmitter and a play transmitter are radio coupled to receiver and control circuit means. The remote control means are actuated by insertion of coins and by actuation of the play transmitter. Actuation of the play transmitter two consecutive times energizes the receiver and control circuit means to show on the display panel the position of a simulated object in a target area. The length of time between the two actuations determines the exact final location of the simulated object. Such receiver and control circuit means also provide a score indication and terminate the game after a certain score has been attained.

3,604,708

SERPENTINE ARROWHEAD

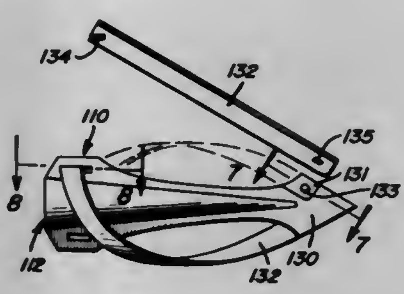
Louis J. Brozina, 303 Alcove Rd., Grand Junction, Colo.

Filed Sept. 12, 1967, Ser. No. 667,102

Int. Cl. F41b *5/02*

U.S. Cl. 273—106.5 B **2 Claims**

An arrowhead having two cutting edge portions extending rearwardly from their point of attachment to a frontal blade portion, and spiraling about the axis of an arrowhead ferrule. Each cutting edge portion encompasses 180° of the ferrule so that acting together they cut a plug from the flesh of an animal target. At their rear points of attachment the cutting edge portions are fastened by a mechanical interlock to flanges which extend radially outwardly from the ferrule. The cutting edge portions may be made replaceable.



3,604,709

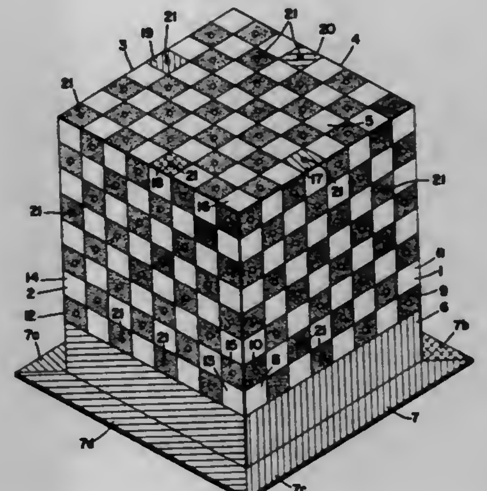
THREE-DIMENSIONAL BOARD GAME APPARATUS

Joseph J. Svetz, 12492 Old State Road, Huntsburg, Ohio

Filed May 14, 1970, Ser. No. 37,260

Int. Cl. A63f *3/02*

U.S. Cl. 273—134 AD **9 Claims**



A three-dimensional game is provided, of generally cubical form, the sides and top of which are provided with squares arranged in somewhat checkerboard fashion, and having holes or recesses for reception of pegs. Moves are made towards a target with the pegs, in a manner dictated by the roll of dice, or by spinning an index or pointer on a dial bearing numbers. The targets are in the form of squares of preselected colors corresponding to the colors of the pegs of each player. Interest is created by adherence to special rules or instructions incidental to the playing of the game. The game may be played by two or four players.

3,604,710

INDOOR GOLF PUTTING GAME

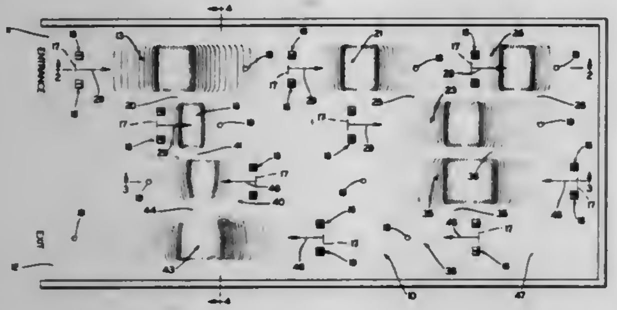
John Jacobs, 4884 S. Boulevard N.W., Canton, Ohio

Filed Aug. 15, 1969, Ser. No. 850,373

Int. Cl. A63b *67/02*

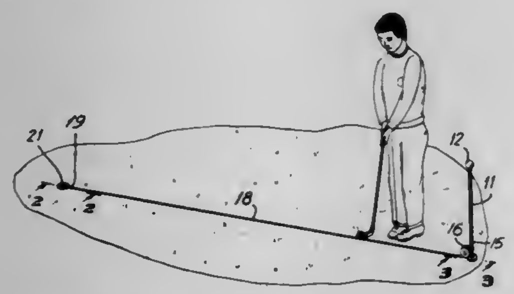
U.S. Cl. 273—176 E **1 Claim**

An indoor golf putting game having a series of elongated relatively narrow putting greens, each with a cup at one end, laid out upon a horizontal surface. The putting greens have variously curved contours built upon the lower horizontal surface. The spaces between the putting greens are level. The entire area, including the spaces between the putting greens, is covered with a carpet to simulate the grass upon an outdoor golf putting green. Markers are placed at the entrance end of each putting green, with information thereon as to the number of the hole, and the number of strokes that is par for the hole. A removable panel, bearing indicia indicating the length of the putting green, is secured to each marker by a dovetail joint. The game is played with conventional golf balls and putters such as are used for outdoor golf.



3,604,711
GOLF-PUTTING GUIDE

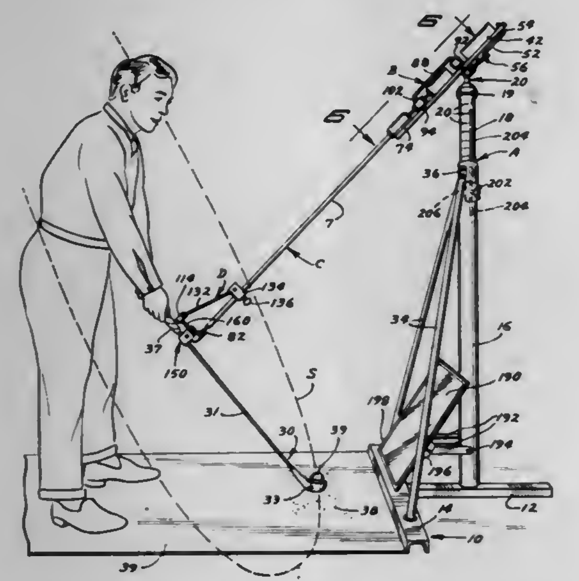
George B. Hansburg, Hansbury Acres, Walker Valley, N.Y.
Filed Feb. 27, 1969, Ser. No. 802,767
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 R **2 Claims**



This invention relates to a golf-training device and more particularly to a putting guide which will enable the golfer to practice putting. The device comprises an upright post which may be detachably secured in the putting green at the position of the ball, the post rigidly mounting a reel at its lower end which carries a cord or tape which may be extended and detachably secured at the edge of the hole, the tape serving as a guide for the golfer. The height of the upright post is such that it may be grasped by the golfer without bending.

3,604,712
GOLF CLUB PRACTICE SWING GUIDE

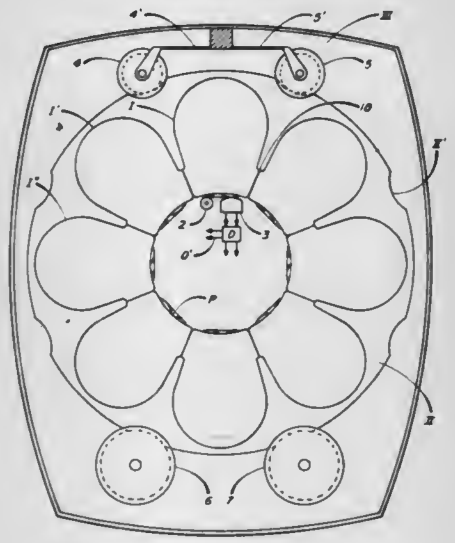
Arthur Prior, Lansing; Frank Albro, Lansing, Mich., and Frank W. Hetman, Minneapolis, Minn., assignors to DeVac, Inc., Minneapolis, Minn.
Filed May 7, 1969, Ser. No. 822,551
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 R **11 Claims**



A golf practice club guide having a standard supporting rotary and translatory motion producing mechanism at the upper end thereof, motion-transmitting mechanism attached to and actuated by the motion-producing mechanism and depending therefrom, clamp means attachable to the shaft of a club and club motion control mechanism carried and actuated by said motion-transmitting mechanism and connected to said clamp mechanism whereby the club is caused to swing with the head thereof moved in an arc. If the club is not swung perfectly, resistance in the parts of the device is met while, with the proper swing, little or no resistance is met in the mechanism as the club swing is made.

3,604,713
MAGNETIC TAPE CARTRIDGE CHANGER SYSTEM

Dean C. Karnopp, Arlington, and John C. Heine, Cambridge, both of, Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.
Continuation of application Ser. No. 700,967, Jan. 26, 1968, now abandoned. This application Feb. 2, 1970, Ser. No. 7,382
Int. Cl. G11b *17/00*
U.S. Cl. 274—4 F **6 Claims**

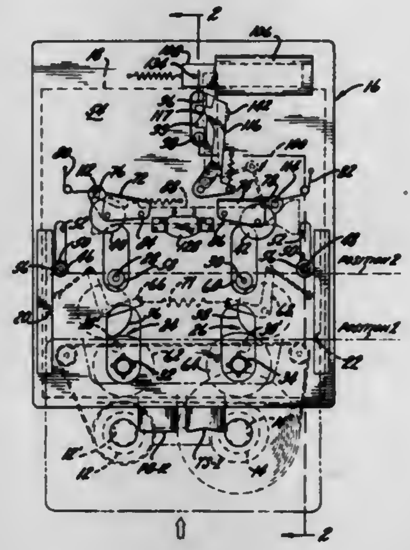


Magnetic tape cartridge changer system wherein cartridges within a magazine may be selected at the discretion of the user or may be played in sequence automatically. Single reel cartridges are snapped into a circular magazine and have exposed portions which follow a circular path to reach a playing position at which a drive roller and transducing head are located. High frequency control signals on the tapes control a motor and gear drive for indexing the cartridges, and the magazine may be turned manually.

3,604,714
BIDIRECTIONAL TAPE TRANSPORT FOR CASSETTES

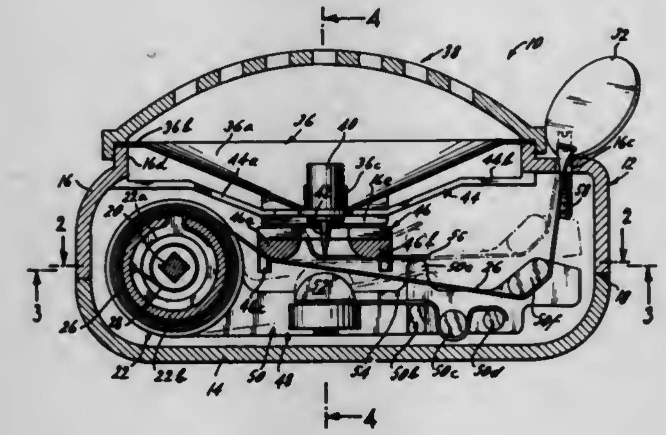
Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Staar S.A., Brussels, Belgium
Filed June 20, 1968, Ser. No. 738,619
Claims priority, application Belgium, June 28, 1967, 45520
Int. Cl. G11b *15/30, 23/10;* **B65h** *17/12*
U.S. Cl. 274—4 E **15 Claims**

A bidirectional tape transport for cassettes, which affords at the selection of the user (1) drive of the tape in either direction, (2) drive of the tape first in one direction of the completion of the playing operation and then in the other direction to the completion of the second playing operation, (3) cassette ejection automatically as the end of the tape is reached after the completion of one or after completion of both playing operations, and (4) ejection of the cassette at any stage of said operations.



3,604,715
SOUND-REPRODUCING DEVICE

Gerhart Weiss, Flushing; Henry Nemeth, Massapequa, and Burt W. Ensmann, Flushing, all of, N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed Nov. 6, 1969, Ser. No. 874,609
Int. Cl. G11b *25/06*
U.S. Cl. 274—11 R **10 Claims**



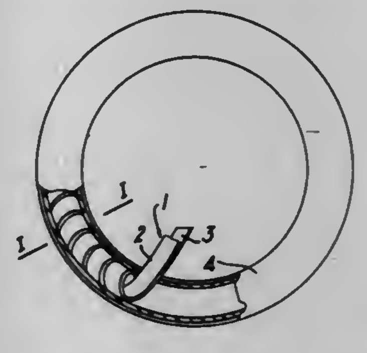
A manually operable sound-reproducing device which uses a linear recording tape having plural side-by-side sound grooves which extend longitudinally of the tape and may be played back on a random basis by pulling the tape past the sound-reproducing system of the device. Depending upon the direction of the initial pull on the tape, one of a plurality of messages recorded on the corresponding sound groove of the tape may be reproduced by the device.

3,604,716
SELF-TIGHTENING SEAL

Jacques Webert, 46 Rue Victor Basche, 92-Montrouge, France
Filed Dec. 2, 1969, Ser. No. 881,431
Claims priority, application France, Dec. 3, 1968, 176,370
Int. Cl. F16j *9/00;* **F02f** *5/00*
U.S. Cl. 277—26 **4 Claims**

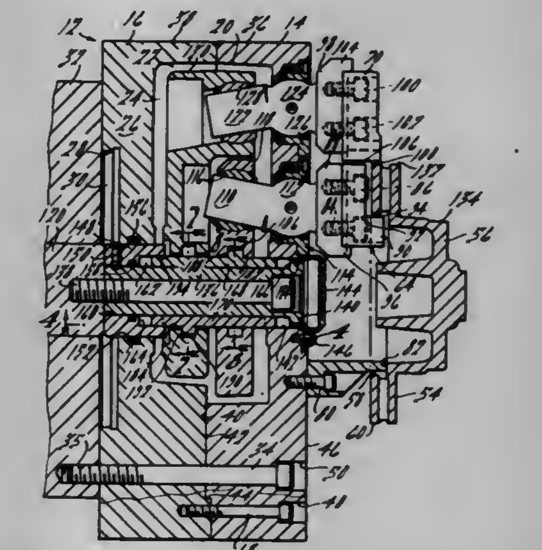
The seal produces a self-tightening action as a function of temperature particularly when the temperature is low.

It comprises external deformable packing element and a core formed by two metals with different expansion coefficient, these metals being disposed in such a way that the metal with higher expansion coefficient is near the packing element and that, when the temperature decreases, the differential expansion of the two metals produces an expansion of the core toward this packing.



3,604,717
PINCH CHUCK

George Hohwart, Howell, Mich., assignor to N. A. Woodworth Company, Ferndale, Mich.
Filed Dec. 15, 1969, Ser. No. 884,959
Int. Cl. B23b *31/10*
U.S. Cl. 279—1 DA **16 Claims**

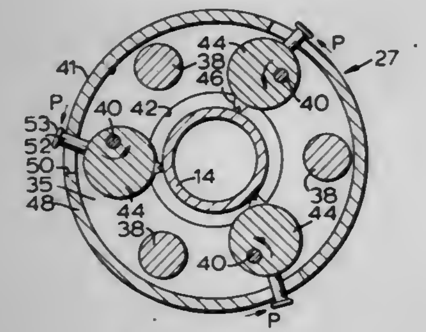


A chuck provided with two sets of opposed work holding jaws having axially oppositely angularly inclined rocker arm portions pivotable in swivel mountings to clamp and release the jaws, and means for pivotally actuating the arm portions of the jaws including a reciprocable actuator, two sets of longitudinally shiftable actuator bars—one for each set of jaws—carried by the actuator, and circumferentially adjustable wedge members also carried by the actuator at the ends of the bars, each actuator bar being associated with a respective work holding jaw and operatively connected to the rocker arm portion thereof so that movement of the actuator in one direction pivots the two sets of rocker arms in opposite directions to move the two sets of jaws in opposition to each other to engage the workpiece with a pinch action, the connecting means and particularly the actuator bars and the wedge members operating, shifting and adjusting automatically under clamping pressure to centralize the surface of the workpiece engaged by one set of jaws in the chuck, to compensate for eccentricity or out-of-roundness of the surface engaged by the other set of jaws, and to equalize or otherwise selectively distribute clamping pressure among the jaws.

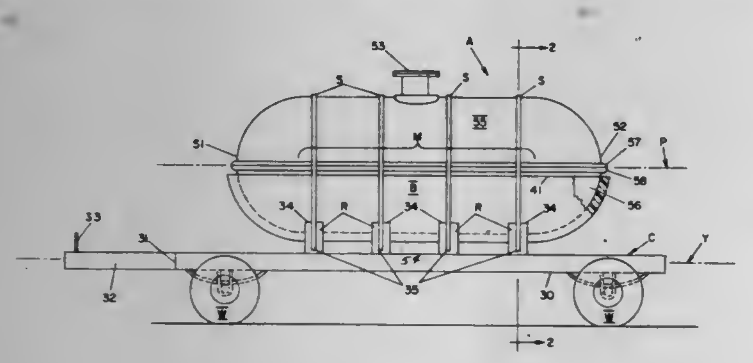
3,604,718
TONG ASSEMBLY FOR DRILL PIPES

Floyd W. Becker, Calgary, Alberta, Canada, assignor to Becker Drilling, (Alberta) Ltd., Calgary, Alberta, Canada
Filed June 9, 1969, Ser. No. 831,694
Int. Cl. B23b *31/12*
U.S. Cl. 279—1 SG **3 Claims**

A tong apparatus for use with a rotary drill apparatus whereby threadedly engaged sections of drill pipe may be disconnected. The apparatus comprises: a mounting element for positioning around a section of drill pipe and spaced therefrom, a coaxial extension above said mounting element having means for connecting the apparatus to the power swivel of the rotary drill apparatus, at least one pivotal member on the mounting element rotatable about a pivot axis and having a pipe gripping portion for contacting the section of drill pipe when the pivot member rotates in one direction with respect to the mounting element and which moves away from the section of drill pipe when the pivotal member rotates in the other direction with respect to the mounting element. An inertial element is integral with the mounting element and is capable of movement with respect to the pivot axis and capable of urging the pivotal member to move tangentially about the pivot axis.



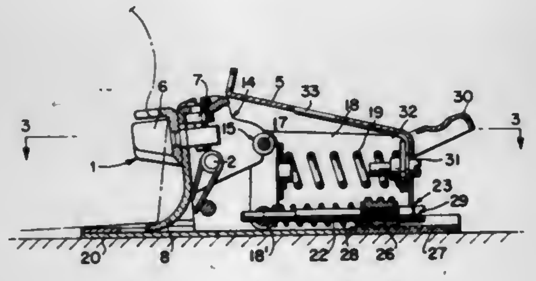
3,604,719
TOWABLE LIQUIDS STORAGE TANK ASSEMBLY
Raymond W. Kerr, 3731 N. 58th St., Lincoln, Nebr.
Filed Jan. 26, 1970, Ser. No. 5,547
Int. Cl. B60p *3/22*
U.S. Cl. 280—5 **5 Claims**



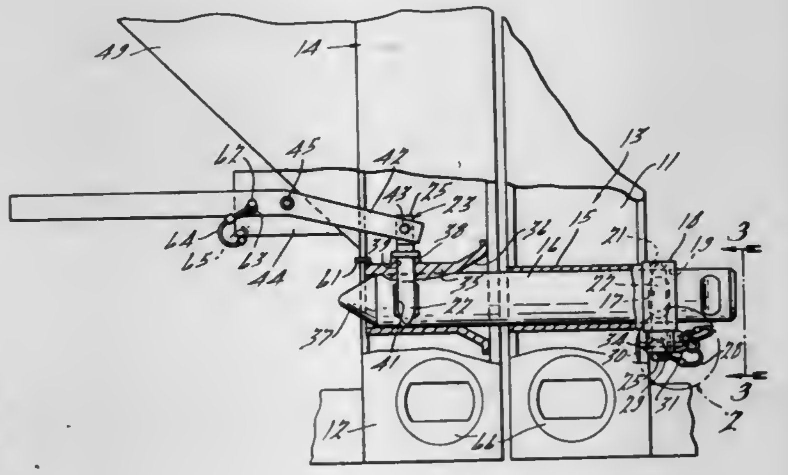
This invention provides a towable liquids storage tank assembly which is especially adaptable for the transporting of agricultural liquid chemicals including fertilizers and pesticides. Primary portions of the towable tank assembly include an elongate thin-walled resinous storage tank, an underlying separable tublike saddle therefor, and a rollably towable trailerlike support means for the saddled tank. The tublike saddle is preferably of a resinous construction molded by the novel method herein i.e. against the lower external surface areas of the elongate resinous storage tank.

3,604,720
SAFETY ATTACHMENT FOR SKIS
Henri Reuge, Les Replans, and Roger Paillard, Sainte-Croix, Vaud, both of, Switzerland, assignors to Reuge S. A., Sainte-Croix, Switzerland
Filed Mar. 28, 1969, Ser. No. 811,444
Claims priority, application Switzerland, Mar. 29, 1968, 4709/68
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **3 Claims**

A safety attachment for a ski for the heel of a shoe having a fixed baseplate and a pivoting element mounted on the plate for the heel attachment. The element is a metallic plate bent in the form of a U whose branches are directed towards the rear with each of them having two spaced notches aligned in pairs. A pivoting control lever has a transverse axis provided with rollers and a compression spring applies said rollers elastically into one of said pairs of notches according to the position of the pivoting element. A casing encloses the pivoting element and the control lever with two lateral sides between which are fixed the axes of the pivoting element and the lever. Means for displacing the casing with relation to the fixed base plate comprises a guide rod mounted on one hand in an opening at the back of the casing and on the other hand in a boring provided in the transverse axis. An endless screw wheel is mounted upon a channelled portion of the rod cooperating with a rack integral with the baseplate. A compression spring is located between the transverse axis and the wheel for urging the casing forwardly toward the heel of the shoe.



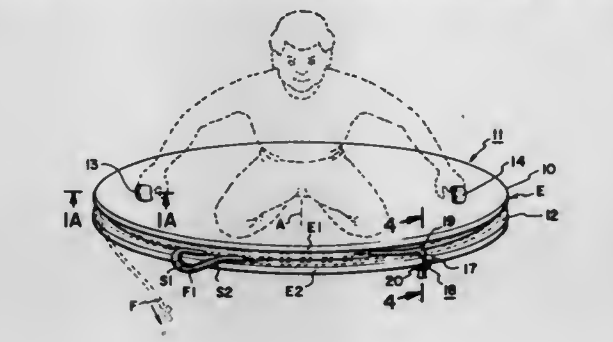
3,604,721
TWO-POSITION FRAME COUPLER
Adrian F. Hulverson, Grosse Point Woods, Mich., assignor to Fruehauf Corporation, Detroit, Mich.
Filed June 11, 1969, Ser. No. 832,391
Int. Cl. B62d *21/12*
U.S. Cl. 280—34 A **6 Claims**



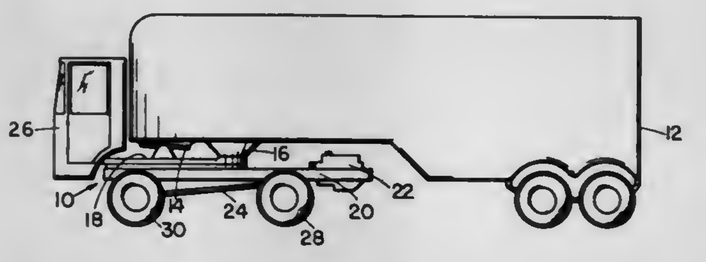
The coupler joins two chassis frames to form an elongated unit which can be transported by a tractor. The rear end of the frame has a pin in each corner which may be adjusted to extend different amounts therefrom. The front end of the frame has two apertures to receive the pins which are locked therein to couple the one end of one frame to the other end of a second frame.

3,604,722
WHEELED REVOLVABLE RIDER PLAY PLATFORM
Kay B. Boley, 985 West 320 North, Orem, Utah
Filed Mar. 2, 1970, Ser. No. 15,498
Int. Cl. B62b *11/00*
U.S. Cl. 280—87.01 **6 Claims**

The present invention comprises a toy device in which a platform is provided with manually gripping means and also with a peripheral edge groove accommodating rope or cable placement. In a preferred form, the invention includes edge slots or equivalent means by which the direction of winding of the rope or cable may be reversed, this at a point midway of the rope's length when inplaced. Rapid pulling of the rope will rapidly revolve a person sitting or kneeling on the platform and may offer both clockwise and counterclockwise rotations by a single rope pull. The device may also be used as a dolly, if desired.

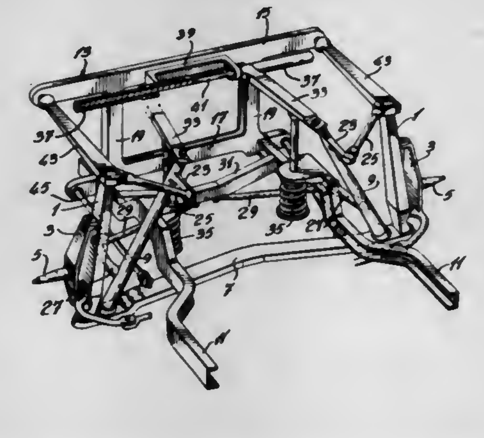


3,604,723
STEERING SYSTEM FOR WHEELED VEHICLES
Harold C. Daily, 618 Vista Lane, Laguna Beach, Calif.
Filed Aug. 1, 1969, Ser. No. 846,823
Int. Cl. B62d *7/00*
U.S. Cl. 280—91 **2 Claims**



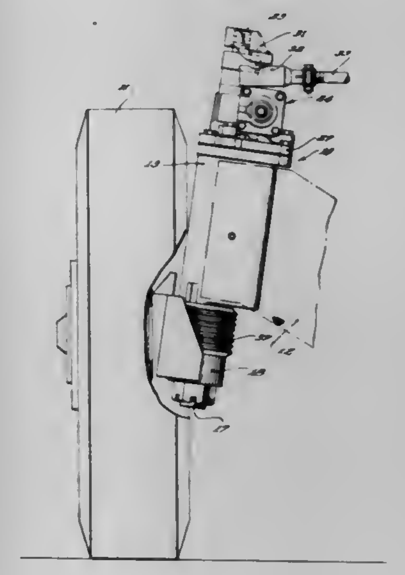
A steering system and a vehicle employing a steering system incorporating means for introducing feedback in the connection between the steering element and the steering wheel to the end that the direction of the steered wheel is determined not only by the steering element but by the response of the vehicle to a change in steered wheel direction. This feature is combined in an articulated vehicle with a pivotal connection between the two portions of the vehicle at a point ahead of the steered wheel. The steered wheel is carried by one portion of the articulated vehicle and in which the driver's station is carried by the other section of the vehicle.

3,604,724
AUTOMOBILE-SUSPENSION
Paul Corbin, 7737, rue St. Denis, Montreal, Quebec, Canada
Filed June 30, 1969, Ser. No. 837,760
Int. Cl. B60g *11/64*
U.S. Cl. 280—96.2 **7 Claims**



An automobile suspension having a body, a pair of uprights each on one side of the body with a wheel mounted thereon and supporting struts to which the front end of the body is suspended, the struts being inclined toward one another for the suspension of the body above the center of gravity thereof. The body has a frame that includes a radiator support yoke at the front end with a torsion rod assembly mounted at the top of the yoke. A pair of trailing arms are articulated at the rear end to the top of the supporting struts and operatively connected at the forward end to the top of the yoke. Two shock absorber units are connected respectively to the frame and to the trailing arms adjacent the supporting struts or, alternatively, directly to the top of the supporting struts. First articulated connections on one side of each strut join the top of the struts and the top of the corresponding uprights while second articulated connections on the sides of the struts opposite that of the first connections interconnect the lower end of the struts and the body at the bottom thereof.

3,604,725
HYDRAULIC SUSPENSION AND STEERING SYSTEM FOR VEHICLES
Raymon L. Goff, and Frederick Eugene Dion, both of Lafayette, Ind., assignors to TRW Inc., Lafayette, Ind.
Filed Aug. 20, 1969, Ser. No. 851,542
Int. Cl. B60s *9/00*
U.S. Cl. 280—96.2 **22 Claims**

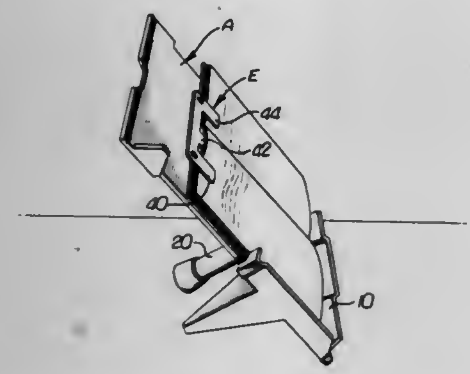


A self-contained oleopneumatic strut suspension system for wheeled vehicles accommodating steering of the wheels and including a pneumatic spring-opposing movement of a fluid-supported piston. In the preferred embodiment the gas spring has a bladder disposed in a porous member such as a perforated tube to minimize damage thereto. The system also includes an additional fluid supply source to compensate for the loading of the vehicle and a bypass around the piston to enable limited movement of the piston before adding additional fluid or acting against the gas spring device. In the preferred embodiment, the system includes a steering mechanism mounted on the upper end of the cylinder to rotate the piston to turn the wheel mounted thereon in response to a steering input or force.

3,604,726
BALANCE BALL FOR AMUSEMENT AND EXERCISE
Charles W. Tracy, Tallahassee, Fla., assignor to International Enterprises, Inc., Tallahassee, Fla.
Filed June 25, 1969, Ser. No. 836,364
Int. Cl. B62k *1/00*
U.S. Cl. 280—205 **4 Claims**

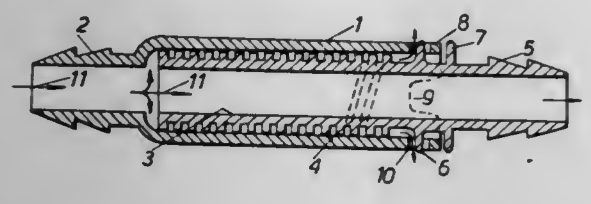
Apparatus including a platform on a freely rotatable ball utilized for developed muscular coordination and balance as well as for amusement. A dome-shaped housing extends over the ball. Secured to the housing is a circular plate on which the user stands. Between the housing and the ball are antifriction devices. In one form, these are ball bearings. In another form, these are low friction areas of Teflon. To retain the housing on the ball, a skirt is secured to the housing and extends below the diameter of the ball.

3,604,727
COPYHOLDER AND ASSEMBLER
Douglas G. Wilkin, 3061 Evelyn St., La Crescenta, Calif.
Division of Ser. No. 647,969, June 22, 1967, Pat. No. 3,484,072
Int. Cl. B42d *9/00*
U.S. Cl. 281—42 **3 Claims**



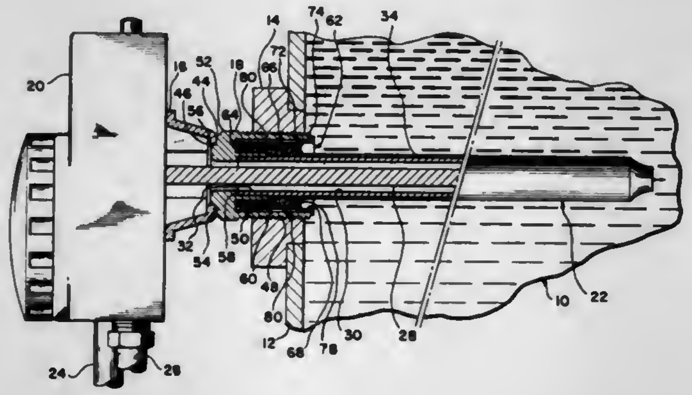
A device for holding open a book to expose selected pages. The device comprises a rigid flat body, preferably of plastic, having three coplanar prongs extending in the same direction from a common base. The first and second prongs extend from ends of the base, while the intermediate, longer third prong is situated relatively closer to the second prong to form therebetween a narrow slot. To hold open a book, the third prong is inserted beneath several leaves on one side of the spine, the second prong is placed atop the same leaves, and the first prong is positioned over the leaves on the other side of the spine. The resultant arching of the leaves retains the device in place and holds open the book.

3,604,728
DRIP LEVEL IRRIGATION
Blass Symcha, and Ishajahu Blass, both of 26 Manch St., Tel Aviv, Israel
Filed Sept. 25, 1969, Ser. No. 861,123
Claims priority, application Australia, Jan. 3, 1969, 48630/69
Int. Cl. F16l *55/00*
U.S. Cl. 285—14 **4 Claims**



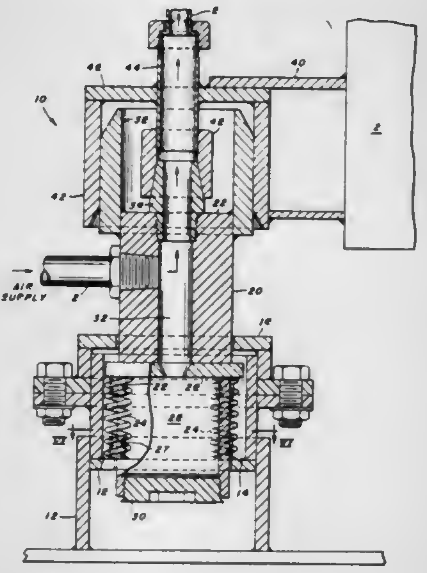
An irrigation dripper unit for use in irrigation in association with an irrigation supply pipe and also, when combined with a supply pipe, to form together with the supply pipe an integral unit. The dripper unit can be connected in series with the supply pipe or, when constituting a part of the integral unit, is connected in series with the supply pipe and has means to tap off a portion of the water flowing through the unit and to discharge such portion at a low drip rate.

3,604,729
MOUNTING ASSEMBLY FOR A THERMOSTAT
Henry C. Braucksiek, Buena Park; Lloyd R. Warner, Downey, and Wilbur F. Jackson, Rolling Hills, all of, Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 30, 1969, Ser. No. 795,214
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 **9 Claims**



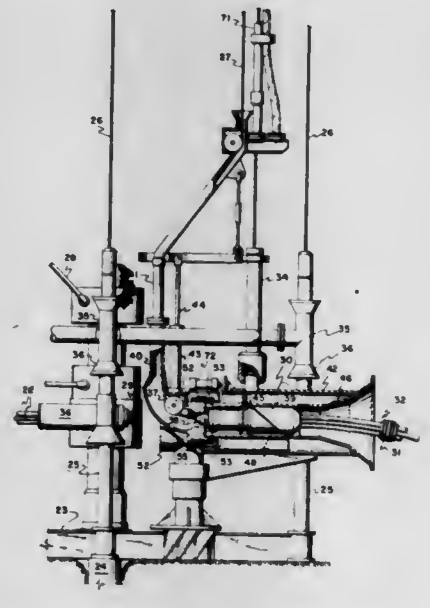
An assembly for mounting a thermostat on an appliance comprising a flanged member, a coupling member abutting the flanged member and having an annular groove defined by an outer wall and an internally threaded wall for receiving the threaded open end of a copper tube of a thermally responsive device, and an insulator inserted in the groove and shaped so as to form an airspace or pocket with the inner surface of the outer wall of the coupling member whereby galvanic corrosion is prevented and compressive installation forces are insulated from the copper tube.

3,604,730
MAKE-AND-BREAK CONNECTION
Charles J. Carroll, McKeesport, and Stephen Shufran, North Versailles, both of, Pa., assignors to United States Steel Corporation
Filed May 29, 1969, Ser. No. 828,932
Int. Cl. F16l *35/00*
U.S. Cl. 285—27 **1 Claim**



The apparatus described is a make-and-break joint connection for a conduit of a pressure-fluid-supply line. The apparatus includes a relatively fixed tubular socket having a tubular plunger reciprocable therein and protruding from one end thereof. A flexible fluid-supply conduit is connected with the plunger and communicates with a fluid passageway extending longitudinally through the plunger. Spring means are disposed within the socket to provide a floating mounting for the plunger so that it is capable of being tilted angularly and moved horizontally relative to the socket. The apparatus further includes a cup movable toward and from the protruding end of the plunger for telescoping engagement therewith. A fluid tube is provided through the bottom of the cup for connection with a fluid conduit leading to an operating pressure cylinder A coupling on the protruding end of the plunger is adapted to engage a coupling on the inner end of the fluid tube in the cup to create an unobstructed fluid passageway between the two conduits when the cup is telescoped onto the protruding end of the plunger. The apparatus is particularly suitable where it is desired to utilize a make-and-break connection which is self-aligning and speedy in operation.

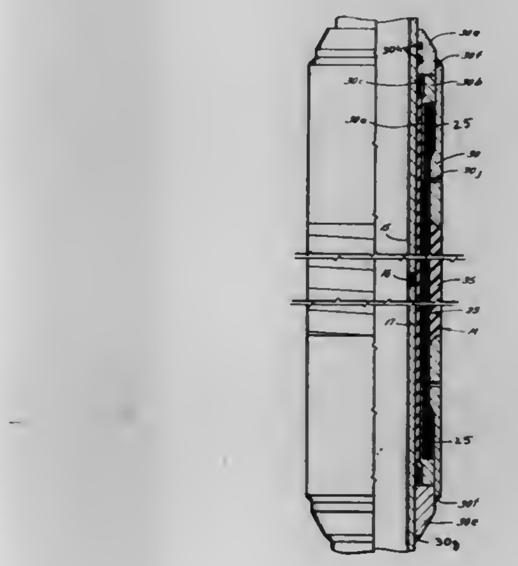
3,604,731
SIMULTANEOUS PIPELINE-WELLHEAD CONNECTIONS
William H. Petersen, Metairie, La., assignor to Shell Oil Company, New York, N.Y.
Filed May 19, 1969, Ser. No. 825,781
Int. Cl. F16l *39/04*
U.S. Cl. 285—29 **9 Claims**



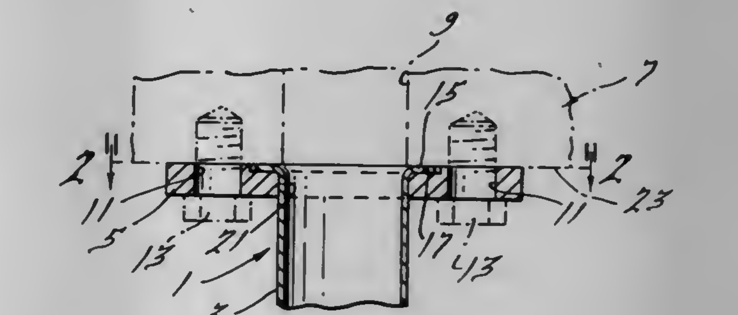
A method and apparatus for connecting a plurality of pipelines or the like to an underwater installation in which a "bundle" of coextensive pipelines is pulled by suitable means toward the installation where rotational alignment means carried by the installation and by the end of the pipeline bundle cooperate to rotate the bundle into a predetermined position. The pipelines may then be connected in fluidtight relationship with corresponding flowlines carried by the underwater installation.

3,604,732
INFLATABLE ELEMENT
Billy C. Malone, Houston, Tex., assignor to Lynes, Inc.
Filed May 12, 1969, Ser. No. 823,880
Int. Cl. F16l *33/16*
U.S. Cl. 285—106 **42 Claims**

An inflatable member having an inflatable element which in some instances surrounds a body. The inflatable element is surrounded by a reinforcing sheath comprising longitudinally extending, circumferentially overlapping strips the ends of which are received in sleeves. A member is positioned adjacent the end of the strips and between the strips within the sleeves. The strips at each end including the members therebetween are secured together with an adhesive within the sleeves. Either or both ends of the inflatable element may be movable, and the movable end is provided with a void-forming medium or material to prevent the adhesive from filling a portion of the space adjacent the movable end and thereby provides a space to accommodate longitudinal movement of the end of the element by compressing or collapsing the material.



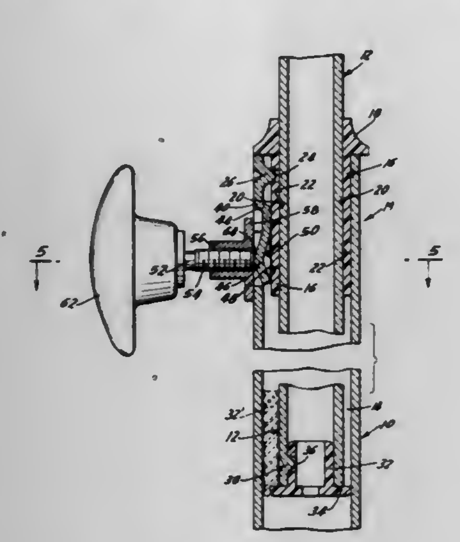
3,604,733
MECHANICAL SEAL FLANGE CONSTRUCTION
Franklin R. Hubbell, III, Brooklyn, Mich., assignor to Tenneco Inc., Houston, Tex.
Filed May 14, 1969, Ser. No. 824,406
Int. Cl. F16l *25/00*
U.S. Cl. 285—334.5 **3 Claims**



An attachment mechanism useful for securing an exhaust pipe to an exhaust manifold comprises an attachment pad which is loosely mounted on the exhaust pipe to engage a canted flange and resiliently press the flange against the manifold when the bolts are screwed home thereby tensioning the bolts and mechanically sealing the tube.

3,604,734
ADJUSTING AND LOCKING MECHANISM FOR ADJUSTABLE AND COLLAPSIBLE TABLE
Walter Friedman, New York, and Aaron Kaufman, Rosedale, both of, N.Y., assignors to Re-Ly-On Metal Products Inc., Brooklyn, N.Y.
Filed May 13, 1969, Ser. No. 824,108
Int. Cl. E04g *25/02*
U.S. Cl. 287—58 **9 Claims**

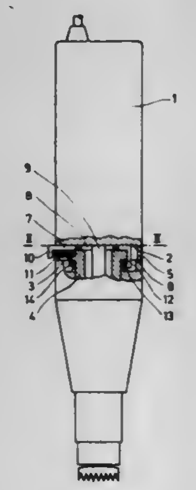
Mechanism for adjustably connecting and locking in adjusted positions two telescoping tubular members which serve as a single standard for interconnecting a table base and a vertically adjustable weight-biased table top, in which the telescoping tubular members are connected for their relative adjustment to produce therebetween a frictionally smooth sliding movement restricted to a maintained straight vertical direction, and in which the locking mechanism is structured to require but a small manual effort on the part of



the user, yet be able to apply or exert a large force on the tubular members such as to firmly lock the same together.

3,604,735
COUPLING FOR DENTAL INSTRUMENTS

Erich Hoffmeister, Biberach an der Riss, Germany, assignor to Kaltenbach & Voigt, Biberach an der Riss, Germany
Filed Aug. 25, 1969, Ser. No. 852,844
Claims priority, application Germany, Aug. 28, 1968, P 17 91 013.3
Int. Cl. F16b *7/00*
U.S. Cl. 287—119 R **3 Claims**

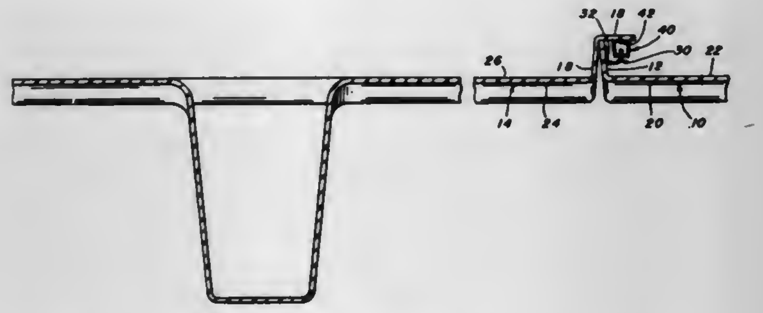


The invention relates to a coupling for the connection of a dental straight or angle handpiece to an electrical driving motor constructed as a miniature motor, the coupling being arranged substantially within a disc which is connected to the drive-side end of the miniature motor. The coupling is constituted by operating element movably mounted in the disc and which is urged into locking position by a spring.

3,604,736
PANEL JOINT CONSTRUCTION

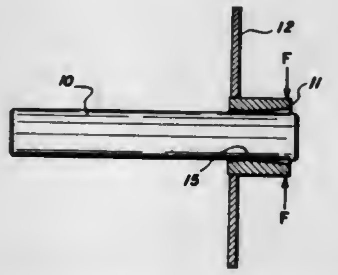
Lawrence T. Vance, Pittsburgh, Pa., assignor to Engineered Products, Inc., Pittsburgh, Pa.
Filed Apr. 17, 1970, Ser. No. 29,616
Int. Cl. F16b *5/00*
U.S. Cl. 287—189.36 **10 Claims**

A panel joint construction having a first panel with a first rearwardly directed flange portion and a second panel having a second rearwardly directed flange portion terminating in an end sector disposed rearwardly of the first panel. A panel clip receiver element secured to one panel and a panel clip secured to the other with the panel clip engaged within the panel clip receiver. The panel clip receiver element having a base portion secured to one panel and two forwardly extending receiver sidewalls each terminating in inwardly rearwardly directed locking flanges. The panel clip secured to the other panel having an anchoring wall and a projecting tongue extending into the panel clip receiver between the locking flanges. Adjustable means permitting variable locking penetration of the projecting tongue into the receiver. The forwardly extending receiver sidewalls may be inclined transversely inwardly toward each other at an angle of about 2° to 15° with respect to a plane perpendicular to the receiver base. The included angle between the locking flanges and the adjacent receiver sidewall being about 25° to 45°.



3,604,737
METHOD OF JOINING MATERIALS

Thomas A. Tarpey, Lynn, Mass., assignor to Xerox Corporation, Rochester, N.Y.
Filed Sept. 24, 1968, Ser. No. 762,060
Int. Cl. F16b *11/00;* **B25g** *3/28*
U.S. Cl. 287—20.3 **2 Claims**

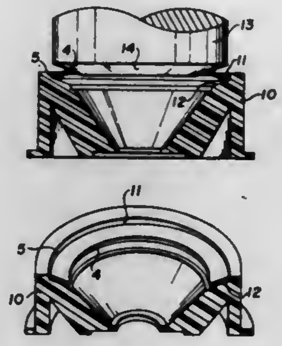


The method of joining a first encompassing member to a support member by inserting an elongated bushinglike element therebetween. The bushinglike element has a fulcrumed interior surface and is of a length such that a portion of the element extends exterior the encompassing member. The extended portion of the element is collapsed into locking or gripping contact with the support member. The opposite end of the element is expanded simultaneously into locking contact with the encompassing member as it is forced upwardly about the fulcrum.

3,604,738
METHOD OF ATTACHING A THIN, FLAT, RESILIENTLY DEFORMABLE RING TO A MATING COMPONENT AND PRODUCT

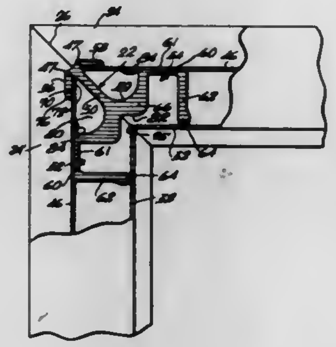
Daton William Alpaugh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 24, 1968, Ser. No. 739,291
Int. Cl. B23p *11/02, 19/02;* **F16b** *43/02*
U.S. Cl. 287—20.3 **7 Claims**

A method of attaching a thin, flat, resiliently deformable ring with an inner edge defining an inside dimension and an outer edge defining a perimeter to a component having a mating wall with a configuration similar to that of a first one of the edges of the ring, and having a contact surface for engaging a surface of a ring when attached to the component. The flat ring is formed into a dished shape such that the inside dimension is increased and the perimeter is reduced, and the dished ring is placed on the mating component with the first edge of the ring in contact with the contact surface and with the peripheral portion of the ring opposite the contacted first edge extending away from the contact surface. The outer edge of the ring is confined as pressure is then exerted on the opposite periphery of the ring to snap that opposite periphery past the contacted first edge to reverse the direction of concavity of the ring and to bring a surface of the ring into contact with the contact surface as the inside dimension is reduced and the outside perimeter is enlarged to form an interference fit with the mating wall of the component.



3,604,739
GUSSET PLATE FOR FRAME MEMBERS

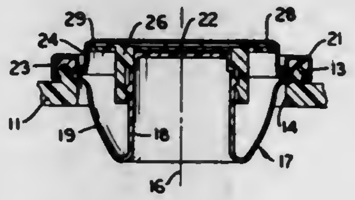
Ray L. Carlisle, 301 S.W. 70 Terrace, Pembroke Pines, Fla.
Filed Dec. 15, 1969, Ser. No. 885,075
Int. Cl. F16b *5/00*
U.S. Cl. 287—189.36 **10 Claims**



For use in joining the mitered ends of a pair of members having pockets, a corner gusset with a stem zone to overlay the mitered line of juncture and having a pair of legs and a pair of arms, with one of the legs and one of the arms extending generally in a common direction from the stem and the other of the arms and legs extending oppositely from the stem so that the legs are adapted to be received in the pockets at the end of the members to be joined in snug relation and the arm is adapted to clampingly embrace the sidewalls of the pocket so that the members joined cannot be separated and resist flexing.

3,604,740
CONTAINER CLOSURE COMBINATION

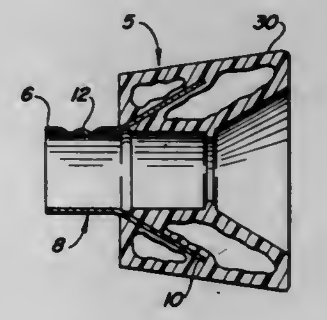
Kenneth L. Summers, Hudson, Ind., assignor to Rieke Corporation, Auburn, Ind.
Filed Feb. 4, 1969, Ser. No. 796,426
Int. Cl. B65d *45/32, 43/10*
U.S. Cl. 292—256.61 **10 Claims**



A plastic container with an opening in a wall thereof encompassed by a boss formed therein, has a plastic closure secured thereto around the opening by a rigid circular anchor ring of inverted U-shaped cross section, the boss having an outwardly projecting the lip disposed in interlocking relationship with an inwardly projecting bead on the anchor ring, with the closure base and boss below the bead squeezed together by crimping or by other means securing the anchor ring thereon.

3,604,741
DOORKNOB

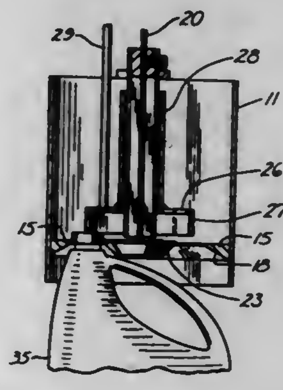
Frank W. Steere, Jr., Akron, Ohio, assignor to Steere Enterprises, Inc., Tallmadge, Ohio
Filed Aug. 19, 1969, Ser. No. 851,423
Int. Cl. E05b *1/04*
U.S. Cl. 292—347 **2 Claims**



A cast hollow plastic knob which may be of flexible elastomeric material or hard material or a sponge, is formed with relatively rigid support means located interiorly to reduce or prevent any tendency for the knob to collapse when pressed or grasped. It may be a larger knob, e.g. a doorknob or a smaller knob, e.g. a cupboard or drawer pull. The support means may comprise an outwardly flaring extension of the tube which supports the knob, if a doorknob, or any one of a variety of other means. The knob is rotationally cast from any suitable material, for example, a plastisol, preferably a vinyl plastisol. It may be made of foamed polyurethane or foamed vinyl plastisol, etc., and for the latter construction a separate vinyl skin may cover the foam. It may be cast from a powder of nylon or other resin. The outward portion of the flaring support is usually so close to the inner wall of the cavity in which the knob is cast, that the plastic material bridges the gap between the two. The plastic is fused by heating during and/or after being cast.

3,604,742
APPARATUS FOR LIFTING OBJECTS WITH OFF-CENTER NECKS

Carlton S. Sprague, Huntington, Ind., assignor to Shuttleworth Machinery Corp, Huntington, Ind.
Filed Oct. 4, 1968, Ser. No. 765,249
Int. Cl. B66c *1/66*
U.S. Cl. 294—33 **8 Claims**

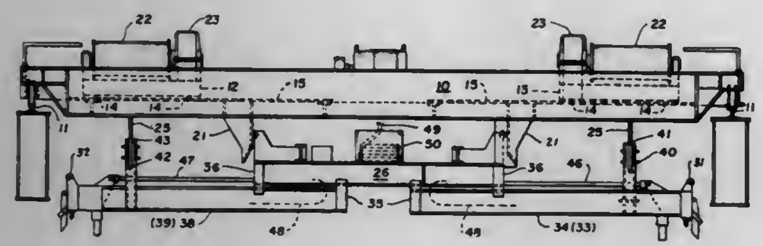


Apparatus for automatically lifting and handling objects having offcenter neck portions such as bottles or other containers. A cylindrical housing has an inwardly directed annular ridge at its lower end. A horizontal disc is suspended at the lower end of a spring rod which is fixed at its upper end relative to said housing. The disc is positioned inwardly of the ridge and with said ridge defines an annular opening concentric with the housing and the disc. Because the neck of the bottle or container is container radially outwardly of the bottle center the same distance the annular opening is located from the housing center, the neck is gripped between the disc and the ridge no matter in what random orientation the neck is located. The rod resiliently and yieldably maintains the disc biased toward the center of said housing thus gripping the neck. A cylindrical ejector plunger is movable downwardly between said ridge and disc and concentrically thereof to eject the bottle from the housing.

3,604,743
ADJUSTABLE SPREADER BEAM STRUCTURES

Edward J. Kinkopf, Alliance, Ohio, assignor to The Alliance Machine Company

Filed Feb. 3, 1970, Ser. No. 8,307
Int. Cl. B66c *1/16*
U.S. Cl. 294—67 CA **6 Claims**

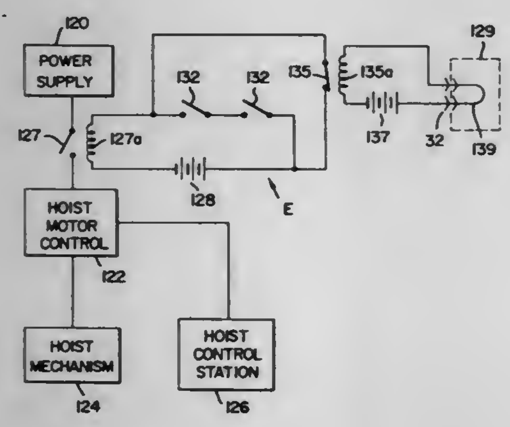


An adjustable spreader beam structure is provided with a wheeled trolley adapted to run on an overhead trackway, a pair of spaced sliding bases on said trolley, a cable drum and drive therefor on each of said bases, means for sliding said bases relatively to one another on said trolley, cables depend from each of said drums, a spreader beam suspended on said cables, said beams having a central member, a pair of extensible end members slidable on said central member, one inside the other and means on the central member moving said extensible end members in alignment with the cable drums.

3,604,744
CRANE COUPLING

Lawrence A. Wright, Alameda, Calif., assignor to Fruehauf Corporation, Detroit, Mich.

Division of Ser. No. 675,488, Oct. 16, 1967, Pat. No. 3,552,794
Int. Cl. B66c *1/00*
U.S. Cl. 294—67 **3 Claims**

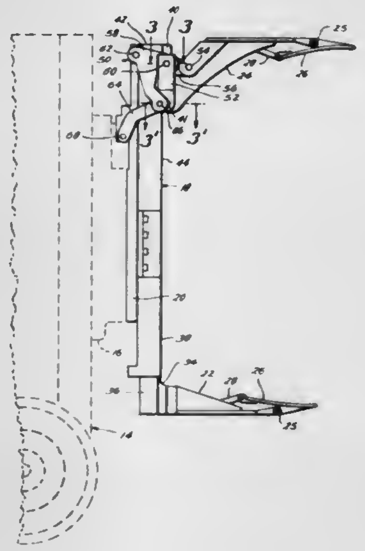


A crane coupling permitting rapid interchange of connection between a crane hoist block or other lifting apparatus and one of a plurality of remotely actuated spreaders of differing sizes, wherein each size of spreader is designed for handling uniformly sized cargo articles or containers of common dimension. To permit rapid change of such spreaders, the lifting apparatus hoist block and selected spreader each have complementary attachment members. These attachment members are adapted for quickly gathering and aligning the hoist block and spreader so as to guide them into slidable engagement to a position of registry. In the position of registry, a pin mounted for reciprocal movement with respect to one of the attachment members penetrates through an aperture defined in the other of the members in order to effect the desired attachment. As attached to the lifting apparatus the spreader is remotely actuated by nonload bearing connections, which connections are protected from inadvertent separation or severance. This protection is afforded by an interlock attached to the coupling and integrated with the lift apparatus that restricts movement of the hoist block when the pin is retracted and restores hoist movement upon manual separation of these nonload bearing connections.

3,604,745
TOGGLE ARM CLAMP FOR LIFT TRUCKS

Stuart W. Sinclair, Houston, Tex., assignor to Anderson, Clayton & Co., Houston, Tex.

Filed June 23, 1969, Ser. No. 835,660
Int. Cl. B66f *9/18*
U.S. Cl. 294—88 **5 Claims**



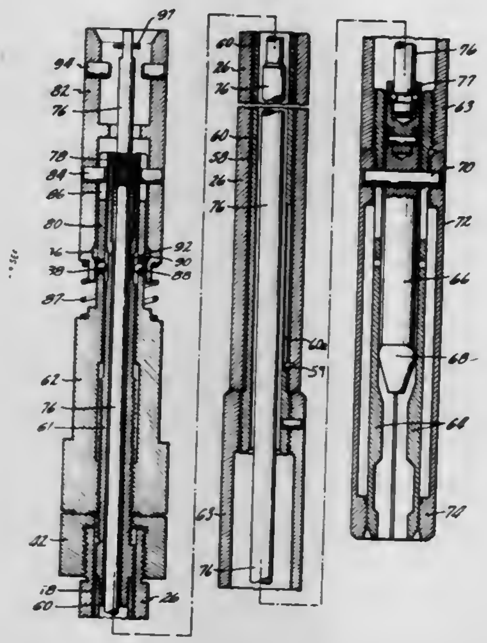
A lift truck clamp for paper rolls, or similar objects, having one swinging arm to increase the range of diameters which can be handled. A toggle linkage is used to control the movement of the swinging arm. The pivot point is so placed as to allow a much shorter swinging arm.

3,604,746
NUCLEAR REACTOR CONTROL ELEMENT GRIPPER AND DRIVE APPARATUS

Gennaro Vincent Notari, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of application Ser. No. 674,205, Oct. 10, 1967, now abandoned. This application Nov. 20, 1968, Ser. No. 777,401
Int. Cl. G21c *19/10*
U.S. Cl. 294—90 **10 Claims**

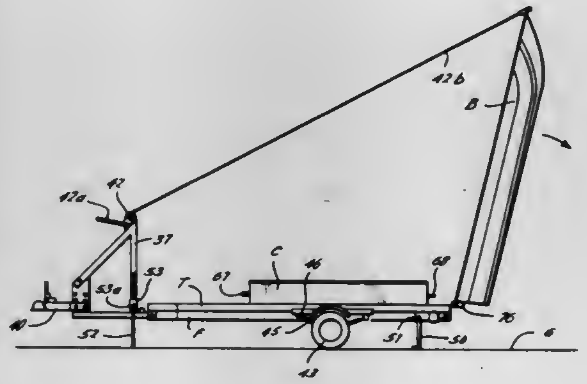
An apparatus for gripping, driving, and disconnecting control elements in a nuclear reactor having grippers mounted on an elongated support tube and gripper operators mounted on an elongated rod extending through the support tube and movable longitudinally therein to operate the grippers. The support tube is suspended from its upper end on a control element drive means by a nut and nut-locking mechanism. Unlocking and rotating the nut raises and lowers the support tube and grippers between an operating position and a disconnecting position and raising and lowering the rod within the tube operates the grippers. A plurality of control elements may be connected to a single drive assembly.



3,604,747
COMBINATION BOAT-TENT CAMPER-TRAILER APPARATUS

DeWitt Y. Gorman, P.O. Box 26323, Houston, Tex.

Filed Nov. 10, 1969, Ser. No. 875,293
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **10 Claims**



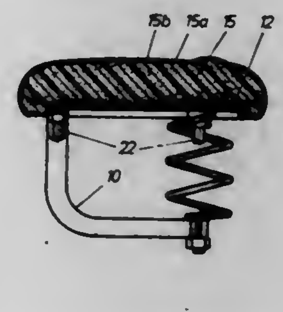
A combination boat-tent camper-trailer apparatus wherein a tent camper is adapted to be removably mounted on a trailer with a boat removably disposed upsidedown over the tent camper on the trailer, whereby both the boat and the tent camper may be removed and floated together to a point remote from the launching thereof so that the tent camper is available at remote and otherwise inaccessible locations.

3,604,748
BICYCLE SADDLE

Klaus Lamkemeyer, 70 Huelsbrockstrasse, 4830 Guitersloh, Westphalia, Germany

Filed Apr. 21, 1969, Ser. No. 817,897
Int. Cl. B62j *1/18*
U.S. Cl. 297—214 **9 Claims**

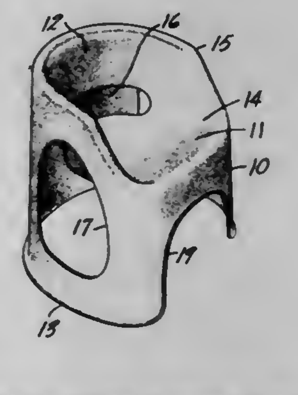
A bicycle saddle comprising a rigid supporting body, a foamed cushion body formed thereon, and a cover skin over said cushion body, wherein said cushion body consists of an open-pore foam body merging by way of a zone of pores of reduced size into said external homogeneous cover skin, said cushion body being connected inseparably to said supporting body during the course of manufacture in the foaming process.



3,604,749
CHAIR

George Parmett, Seaford, and George Schmidt, Douglaston, both of, N.Y., assignors to APL Corporation, Brooklyn, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,340
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **6 Claims**

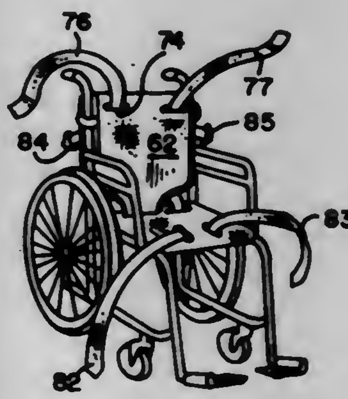


A one-piece stackable chair having a skirtlike frustum for supporting the elements of the chair, a seat formed integrally with the front of the frustum and extending toward the rear, and a curved back in front of the rear of the frustum and depending from the top of the frustum.

3,604,750
HARNESS

Esther W. Doering, 202 No. 9th Street, Olivia, Minn.

Filed Nov. 19, 1968, Ser. No. 776,979
Int. Cl. A47d *15/00*
U.S. Cl. 297—389 **24 Claims**



Harnesses are taught for converting a chair into a security chair to hold an individual in a sitting position while at the same time permitting comfortable shifting movements by the individual. The harnesses are first affixed to a chair and then body holding elements of the harnesses are used to secure a seated individual for safety.

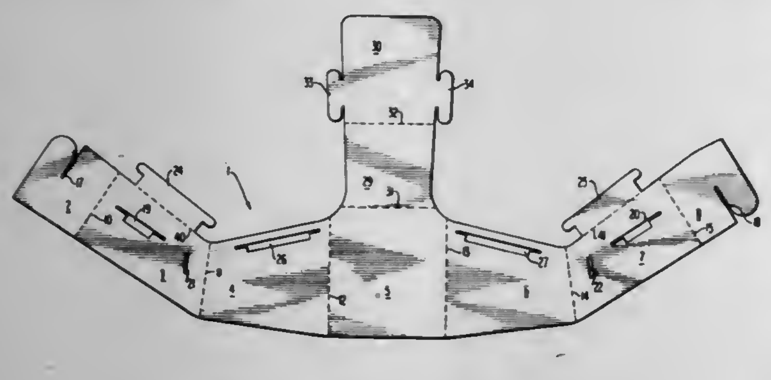
One type of harness especially useful for holding infants is formed from a length of flexible sheetlike material having the following panels in sequence: A seat section, a back section, and a back overlap section which extends from the top of the upright back of a chair downwardly on the rear side. Flexible members or straps connected to the length of material are used to firmly fasten the seat section, back section, and back overlap panel to a chair. Shoulder straps affixed to the back section are crossed over the chest of an individual, and a crotch extension equipped with a sash or belt is drawn upwardly between the legs of an individual, connected to the crossed shoulder straps and then secured laterally and rearwardly of the individual.

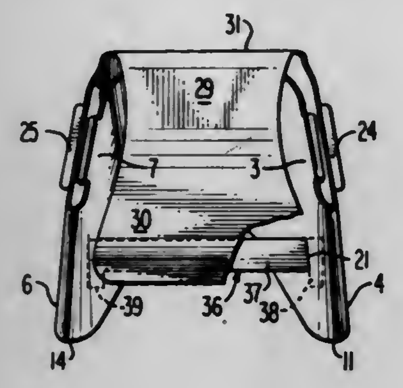
The harness for adults or invalids likewise includes a seat section, back section and back overlap panel, preferably with an underseat panel interposed between the seat section and back section and a slot along the rear edge of the seat section through which the back section and back overlap panel are drawn after the seat section and underseat panel are stretched about the seat of a chair. Additionally, in the embodiment designed especially for use by adults, the long shoulder straps are preferably fixed at one end to the underseat section, and extended upward behind the back section to locations in the back section from which they are extended to cover the chest of the individual. The adult embodiment has separate thigh straps affixed to the seat section. They are adapted to be drawn separately upwardly between the legs of an individual and over his thighs.

3,604,751

DECORATED DETERGENT-RESISTANT PAPER FURNITURE AND COATING SYSTEM THEREFOR

Robert A. Caigan, 1134 First Avenue, New York, N.Y.
Filed Apr. 18, 1969, Ser. No. 817,399
Int. Cl. A47c *9/12, 4/02*
U.S. Cl. 297—440 **8 Claims**



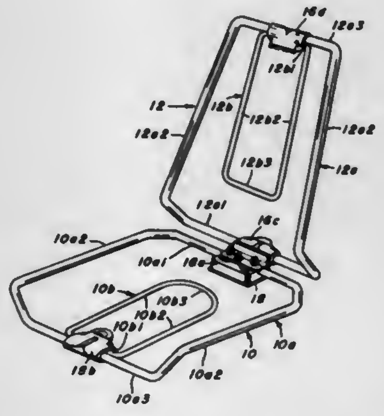


A chair is formed from a single blank of paper stock material coated with a decorative and detergent-resistant coating. The blank comprises panels separated by score lines. The panels, when folded along the score lines, form sides and each side comprises spaced outer and inner panels interlocked by cooperating slots and tabs, the tabs also serving as arm rests. The blank further provides end panels which overlay the panel forming the back of the assembled chair. A seat panel is secured to the top of the back panel by another panel which folds over the back panel and brings the seat panel to its proper position between the inner side panels. The seat panel is secured to the inner side panels by slots and tabs. A rail member extends between the inner side panels and further supports the seat. The coatings can be applied to any paper furniture. The coating is formed of elastic, mar-resistant paint layers which are based upon elastic polyester, elastic polyester polyurethane, elastic epoxy ester and elastic silicone resins for the intermediate and top layers. These resin materials have outstanding color retention and weather resistance and can be rubber or polished to a glossy finish to match the best grades of lacquers which are commercially available.

3,604,752

SUPPORT MEMBER FOR A VEHICLE SEAT

Albert J. Macknick, North Chicago, Ill., assignor to United States Steel Corporation
Filed Sept. 16, 1969, Ser. No. 858,423
Int. Cl. A47c *7/02;* **F16b** *7/00*
U.S. Cl. 297—455 **13 Claims**

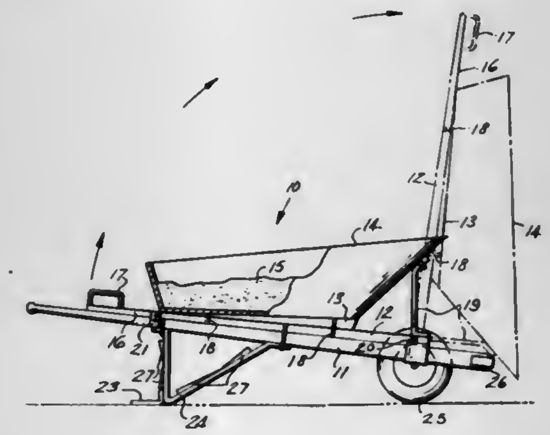


A support member for a vehicle seat having a stationary member is disclosed. The support member has a support portion provided with a support torsion leg, opposed support cantilever legs projecting from the support torsion leg, and a second support cantilever leg connecting the support cantilever legs. One means of a first clamp means and a pivot means secures the support torsion leg to the stationary member. A spring portion of the support member has a spring torsion leg disposed adjacent one leg of the support torsion leg and the second support cantilever leg. Opposed spring cantilever legs project from the spring torsion leg and a spring connecting leg connects the spring cantilever legs. A second clamp means connects the spring torsion leg to the one leg.

3,604,753

SAFETY WHEELBARROW

Placide A. Couture, R.F.D., Dryden, Maine 04225
Filed Oct. 13, 1969, Ser. No. 865,801
Int. Cl. B62b *1/24*
U.S. Cl. 298—3 **3 Claims**

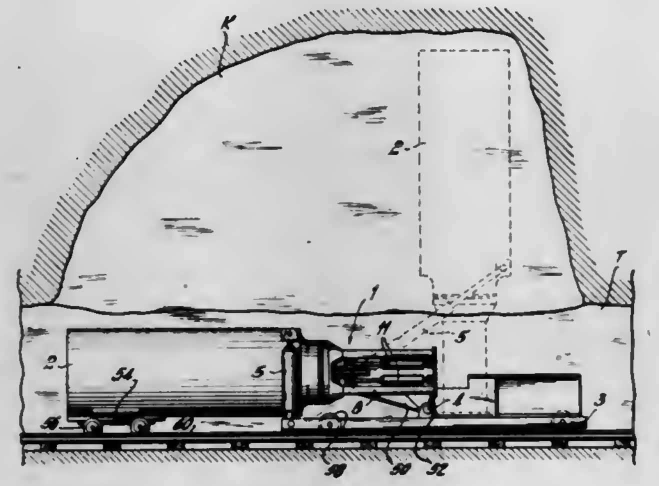


A wheelbarrow which will be safely dumped by listing a secondary frame secured to the body carrying the load. This device prevents possible injury to the user, the barrow from tipping from one side or the other, or going over too far while dumping the contents thereof. The device includes a secondary frame which is pivoted at the front end and has a pair of handles at the other end for grasping and lifting the body while the operator stands upon a foot rest.

3,604,754

APPARATUS FOR AND METHOD OF DRIVING A TUNNEL SHAFT

Gerd Kampf-Emden, Hosel; Heinz Horst, Rheinhausen, and Friedrich Klapdohr, Rheinhausen, all of, Germany, assignors to Demag AG, Duisburg, Germany
Filed Apr. 3, 1969, Ser. No. 812,984
Claims priority, application Germany, June 14, 1968, P 17 58 505.6
Int. Cl. E01g *3/03*
U.S. Cl. 299—18 **19 Claims**



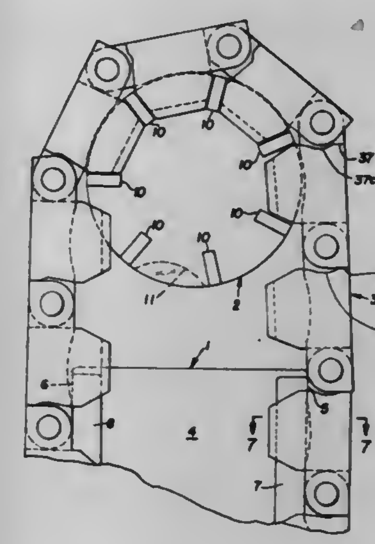
An apparatus for driving a tunnel shaft includes a driving machine which is supported within an auxiliary shaft which is pivotally mounted on a wheeled track car in a position such that it may be raised to the desired drilling or angle by an associated positioning mechanism. The drilling machine is mounted within the auxiliary shaft in a tubular support which may be clamped in position in respect to the auxiliary shaft or when the drilling progresses clamped to the drilled tunnel shaft walls. The drilling tool is mounted in front of the driving motor in a manner such that it can be extended or retracted as desired. An advancing stroke mechanism carried on a frame supporting the auxiliary shaft is arranged to engage a tubular structure supporting the driving motor and advance it outwardly into the wall structure being drilled. The advanced tubular support structure is supported in its extended position by additionally supplied cylindrical supporting and carrying elements which are placed between it and the mounting base therefor on the under carriage as the tunnel is progressively formed. The structure is locked in each incremental advance position by transversely movable hydraulic wedge elements which are positioned behind support cams defined on the previously applied supporting structures until another support structure of a length equivalent to the advance is added behind them. A tunnel shaft is drilled from the bottom to the top by first forming a cavern at the bottom of the intended shaft and moving the drilling apparatus into position within the cavern. Thereafter the auxiliary tunnel shaft is raised to an elevation corresponding to the angle at which the tunnel is to be driven and the drilling tool is extended to form an initial drilling cut while its driving motor is supported within a tubular member located within the auxiliary shaft. After an initial cut is made the drilling member together with its driving motor is advanced outwardly and clamped against the wall of the tunnel which has been drilled at the exterior of the auxiliary shaft.

3,604,755

CUTTER BAR, CUTTER CHAIN AND SPROCKET ASSEMBLY

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio
Filed July 24, 1969, Ser. No. 844,551
Int. Cl. E21c *25/30, 25/34*
U.S. Cl. 299—84 **46 Claims**

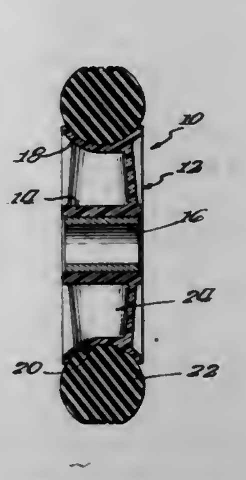
A cutter bar, cutter chain and sprocket assembly wherein means are provided to maintain the pintles joining the chain links in spaced relationship to and beyond the chain guide surfaces on the peripheral edges of the cutter bar. The ends of the pintles are free to extend beyond the exterior surfaces of the links they join, although they do not necessarily have to be so arranged. The pintles are preferably freely rotatable and means may be provided at their ends to hold the pintles in place with respect to the links they join. The pintles are so located and the link so configured that the line of force passing through the pintles also passes through body portions of the links which support cutter bits so that the distance between this line of force and the points of contact between the cutter bits and the material being mined is greatly reduced.



3,604,756

PLASTIC VEHICLE WHEEL

Peregrinus Gruber, Chicago, Ill., assignor to Circle Engineering Co., Inc., Chicago, Ill.
Filed Jan. 6, 1969, Ser. No. 789,154
Int. Cl. B60b *5/00*
U.S. Cl. 301—63 R **3 Claims**



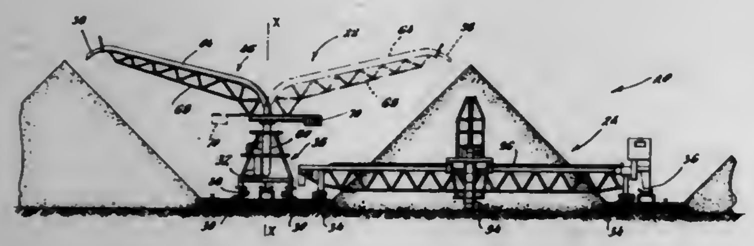
A plastic vehicle wheel for domestic and industrial use comprising a single molded member having a hub and a rim, with the intervening web formed as an imperforate sinuous ribbon folded back and forth around the wheel and having its body everywhere lying substantially on radii of the wheel so that compression resisting column or spoke means are formed which is much longer than the direct circumferential distance about the wheel at any radial point on said web.

3,604,757

STACKING AND RECLAIMING SYSTEM

Gordon R. White, Montville, N.J., assignor to Hewitt-Robins Incorporated, Montville, N.J.
Filed June 2, 1970, Ser. No. 42,699
Int. Cl. B65g *53/04*
U.S. Cl. 302—13 **6 Claims**

A stacking and reclaiming system for storing wood chips in elongated, substantially homogeneous piles and for reclaiming the wood chips from storage on a first in—first out basis. The traveling stacker is a self-contained pneumatic assembly with the blower, chip feeder, discharge blow pipe assembly and power source all being mounted on the carriage. The traveling stacker is fed from one of a first series stationary endless conveyor belts with a tripper that moves with the stacker effecting the transfer of chips from the particular conveyor belt to the feeder. The traveling reclaimer can be a rotary bucket wheel screw-type or drag-type reclaimer, which deposits the chips onto one of a second series of stationary endless discharge conveyor belts for transport to the next processing station.



3,604,758
APPARATUS FOR THE CONVEYANCE OF COHESIVE PARTICULATE MATERIAL

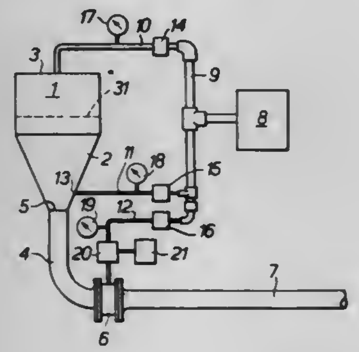
Robert James Flain, and Brian Stanley Mawson, both of Stevenage, England, assignors to National Research Development Corporation, London, England

Filed Sept. 30, 1969, Ser. No. 862,407

Claims priority, application Great Britain, Oct. 2, 1968, 46814/68

Int. Cl. B65g *53/04*

U.S. Cl. 302—24 **12 Claims**



A method of piping cohesive particulate materials, to a delivery point, via a delivery pipe, from a mass flow hopper, the exit from which is too small for the hopper to empty by gravity alone, which comprises introducing gas under pressure into the space above the material in the hopper, introducing gas to the hopper at a point near but somewhat above the exit orifice in quantity insufficient to aerate the particulate material beyond the dense phase (i.e. not less than about 250:1 solid: gas mass ratio) and intermittently introducing gas into the delivery pipe at a point near to but somewhat beyond the junction of that pipe with the hopper exit orifice, to divide the particulate material in the pipe into discrete plugs.

Apparatus for the method may have an electrical oscillator for controlling the intermittent gas introduction into a jacket surrounding a short porous section of the pipe wall.

3,604,759
PARTIAL OBSTRUCTION ARRANGEMENT FOR PREVENTING PLUG FORMATION IN A SHUTDOWN SLURRY PIPELINE

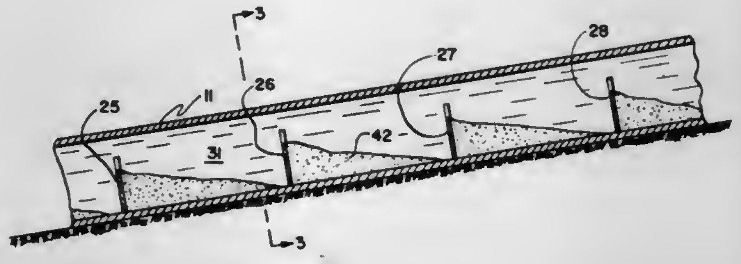
Moye Wicks, III, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,352

Int. Cl. B65g *53/34*

U.S. Cl. 302—64 **9 Claims**

Method and apparatus for preventing plug formation in a shutdown slurry pipeline. A plurality of partial obstructions are positioned in the pipeline in those sections of the line where inclination exceeds some predetermined critical angle to prevent the formation of a line plug by interrupting slumping of the solid phase of the slurry material.



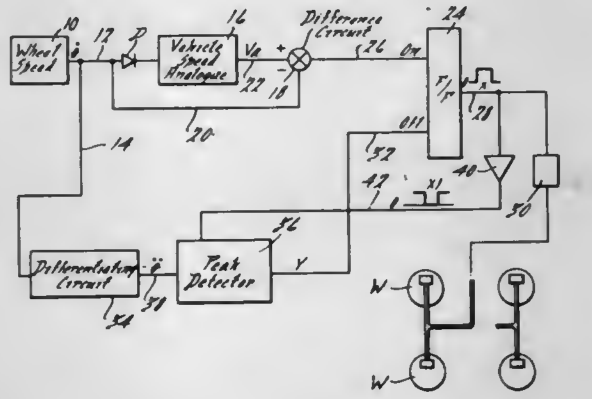
3,604,760
SKID CONTROL SYSTEM

Thomas M. Atkins, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Mar. 24, 1969, Ser. No. 809,543

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 CG **12 Claims**



A skid control system for a wheeled vehicle having a plurality of wheels and a brake system for the wheels with the brake of at least one of the wheels being relieved upon the detection of an incipient skid condition and being reapplied when the spin-up or acceleration rate of that wheel is a maximum.

3,604,761
ANTISKID CONTROL SYSTEM

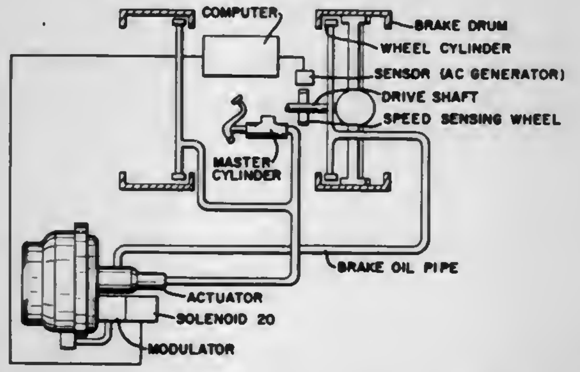
Atutoshi Okamoto, Toyohashi-shi; Noriyoshi Ando, Kariya-shi; Koichi Taniguchi, Kariya-shi; Yoshiaki Nakano, Gifu-shi, and Koichi Toyama, Toyohashi-shi, all of, Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

Filed June 12, 1969, Ser. No. 832,664

Claims priority, application Japan, Aug. 21, 1968, 43/59651

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **2 Claims**



An antiskid control system so constructed that upon application of the braking force to the wheel, the maximum peripheral wheel deceleration developed in the wheel is sensed and stored such that a peripheral wheel deceleration-sensing level is set automatically to a value such as 0.1 g., if said maximum peripheral wheel deceleration is large, while such peripheral wheel deceleration-sensing level is set automatically to a value of 0.8 g., for example, if said maximum peripheral wheel deceleration is small. Thus, this antiskid control system is highly adaptable to various coefficients of road adhesion, operating equally well on rough or slippery road surfaces.

3,604,762
ANTISKID DEVICE

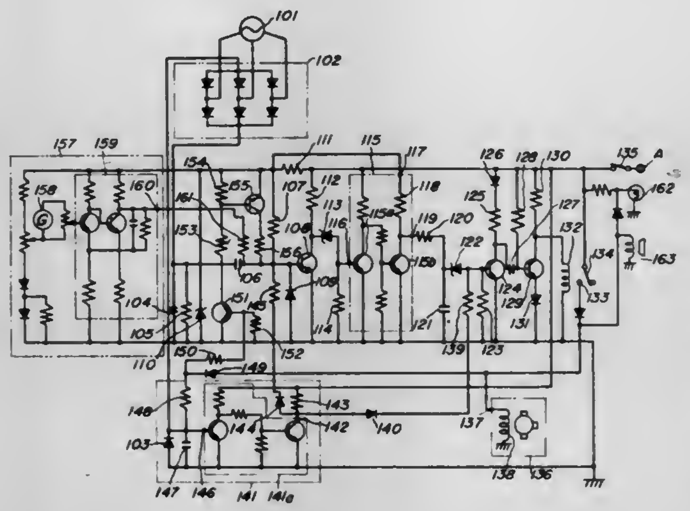
Noriyoshi Ando, and Kazu Majima, both of Kariya-Shi, Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

Filed July 16, 1969, Ser. No. 842,131

Claims priority, application Japan, Oct. 31, 1968, 43/79446

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 BE **5 Claims**



An antiskid device comprising an angular deceleration detector adapted to provide a braking force releasing signal when the angular deceleration of the wheel has exceeded a predetermined value, and a vehicle deceleration detector adapted to change said predetermined value in response to the rate of decrease in the speed of the vehicle, whereby said predetermined value is set to a lower value where the coefficient of road adhesion is low and a locked wheel is liable to occur such as in the case of a snowy frozen road surface and said predetermined value is set to a higher value where the coefficient of road adhesion is high and a locked wheel is not likely to take place, such as in the case of a dry asphalt road surface.

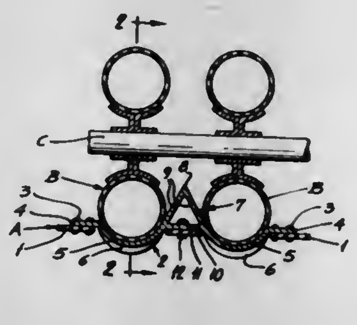
3,604,763
ENDLESS TRACK FOR TRACK-LAYING VEHICLES

John C. Maguire, deceased, late of Cookshire Highway, Lennoxville, Quebec, Canada (by Ivy Maguire, administrator and executrix)

Filed June 27, 1969, Ser. No. 837,379

Int. Cl. B62d *55/24*

U.S. Cl. 305—35 EB **5 Claims**



An endless track for track-laying vehicles having pairs of tire wheels on each side thereof, the endless track consisting of three endless belts interconnected by rigid cross links having a pair of curved portions to receive the tires of a tire wheel, and an inwardly extending V-shaped track guard engaging the inner sides of the tires to prevent the endless track from coming off the tire wheels.

3,604,764
DEVICE FOR SEALABLY TRANSFERRING A LIQUID BETWEEN A STATIONARY HOUSING AND A ROTATABLE SHAFT

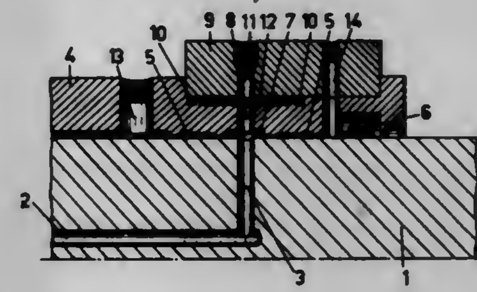
Willem Daane, Vlijmen, Netherlands, assignor to LIPS N.V., Drunen, Netherlands

Filed June 5, 1969, Ser. No. 830,803

Claims priority, application Netherlands, June 5, 1968, 6807878

Int. Cl. F16c *33/10*

U.S. Cl. 308—5 **5 Claims**



A device for transferring a liquid between a stationary housing and a shaft rotatably disposed therein includes a chamber in the housing communicating with a radial channel in the shaft, slide bearings disposed between the housing and the shaft on either side of the chamber and a compensating chamber in the housing having a diameter greater than the diameter of the first chamber whereby liquid pressure in the compensating chamber compensates for the pressure of liquid leaking past the slide bearings.

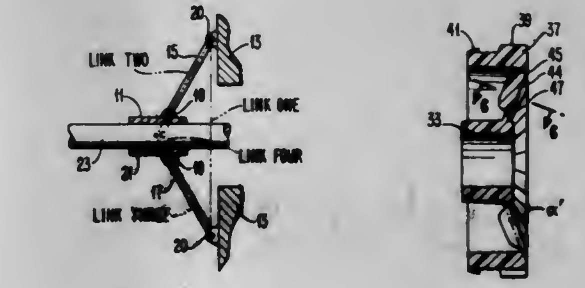
3,604,765
SELF-ALIGNING BEARING

David H. Babcock, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1969, Ser. No. 835,363

Int. Cl. F16c *13/00, 27/00*

U.S. Cl. 308—15 **8 Claims**



A self-aligning bearing is constructed on the principle of a four-bar linkage. The bearing comprises a foundation, a bearing element, and a series of connecting struts which are flexibly joined to the foundation and bearing element.

3,604,766
SUPPORT ASSEMBLY FOR IDLER ROLLS

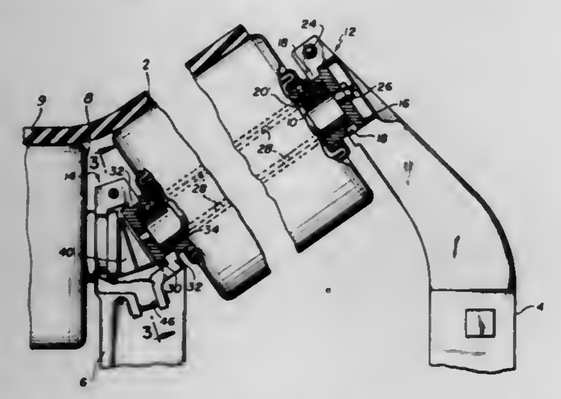
William F. Bankauf, East Paterson, and Daniel J. Di Antonio, Nutley, both of, N.J., assignors to Hewitt-Robins Inc.

Filed Dec. 15, 1969, Ser. No. 884,944

Int. Cl. B65g *15/60;* **F16c** *13/00;* **F16n** *7/24*

U.S. Cl. 308—20 **7 Claims**

A support assembly for supporting both the outer ends and the adjacent ends of shafts for idler rolls has the capped ends of the shafts disposed in horizontally extending openings or slots provided in bracket members of the assembly. Grommets disposed in the brackets which receive the adjacent ends of idler roll shafts permit lubricant to be transferred between the capped ends of the shafts, and cover members detachably mounted on the bracket members retain the capped shaft ends in place and the grommets in their operable positions.



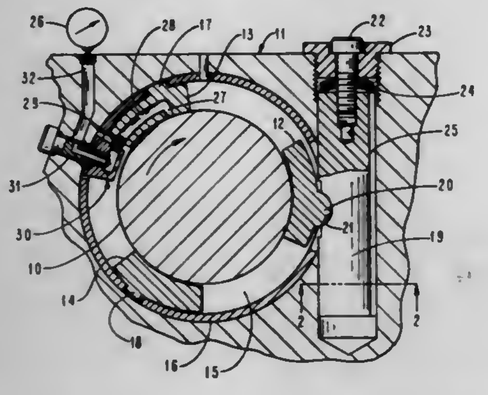
3,604,767
ADJUSTABLE PIVOTED SHOE BEARING AND METHOD OF ADJUSTING

Jacob Decker, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 6, 1969, Ser. No. 863,996

Int. Cl. F16c *17/06, 1/24*

U.S. Cl. 308—73 24 Claims



One of the pivoted bearing shoes of a shoe bearing for a rotating spindle is adjusted relative to the spindle in accordance with the oil pressure between the bearing shoes and the spindle. The adjustment of the one bearing shoe changes the clearance of the bearing shoes so that all of the bearing shoes will have the same clearance relative to the spindle in accordance with the desired speed of the spindle that corresponds to a specific oil pressure between the other bearing shoes and the spindle.

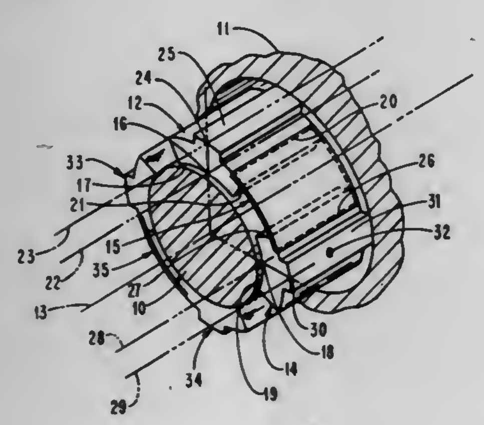
3,604,768
BEARING SHOE CONSTRUCTION

Jacob Decker, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sept. 8, 1969, Ser. No. 856,102

Int. Cl. F16c *17/06*

U.S. Cl. 308—73 9 Claims



Two bearing shoes, each of which has a wrap angle no greater than 60°, are connected to each other by a thin piece of spring steel to provide a resultant wrap angle of the connected bearing shoes on a spindle of preferably greater than 90°. The piece of spring steel bears against retaining surfaces on the two bearing shoes with the retaining surfaces being parallel to axes of the highest points of the arcs of the spindle contacting surfaces. Because of the flexibility of the spring steel, each of the bearing shoes can rock relative to the other. The bearing shoe, which is first passed by the spindle during its rotation, is fixed to the housing.

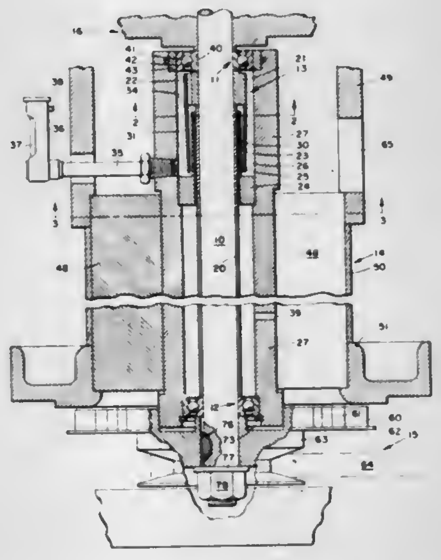
3,604,769
TEMPERATURE-CONTROLLED SPINDLE FOR CENTRIFUGES AND SIMILAR APPARATUS

Allen Latham, Jr, Jamaica Plain, Mass., assignor to Cryogenic Technology Inc., Waltham, Mass.

Filed Sept. 23, 1968, Ser. No. 761,663

Int. Cl. F16c *37/00, 33/66*

U.S. Cl. 308—76 9 Claims



An oil and air cooled rotating spindle. By means of an oil flow path, heat sinks and air-cooled surfaces, the spindle during operation may be constantly maintained at or near ambient temperature thus preventing any changes in temperature of the apparatus rotated by the spindle and hence in any material contained in the apparatus.

3,604,770
HYDRODYNAMIC BEARINGS

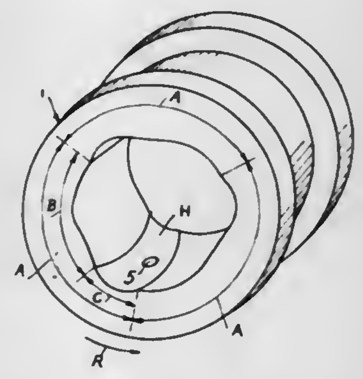
Henri Peltier, and Francois Lhomme, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France

Filed Mar. 26, 1970, Ser. No. 22,891

Claims priority, application France, Mar. 26, 1969, 6908908

Int. Cl. F16c *33/66*

U.S. Cl. 308—240 3 Claims



Hydrodynamic bearing of which the internal surface provides a clearance for an oil film in relation to the shaft surface to be rotatably mounted therein, said internal surface being corrugated to create at least three oil overpressure areas for centering said shaft during its rotation, characterized in that said corrugated surface comprises, for each overpressure area, a contour of substantially sinusoidal pattern corresponding, in the direction of rotation of the shaft, to more than one half-sinusoid having a concave initial portion followed by a larger convex portion creating the hydrodynamic shaft bearing area, said convex portion being furthermore followed by another contour more concave than the preceding one, which constitutes an oil reserve, the generatrices of said contour being curved with a median convexity extending in the direction of rotation of the shaft.

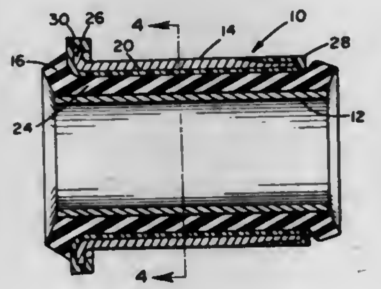
3,604,771
RESILIENT BEARING

Steven O. Luzsicza, Huron, Ohio, assignor to Clevite Corporation

Filed Dec. 8, 1969, Ser. No. 882,842

Int. Cl. F16f *1/38;* **F16c** *33/20, 27/00*

U.S. Cl. 308—238 7 Claims



A resilient bearing having an inner and an outer tubular member with a rubber bushing compressed therebetween. The rubber bushing has ribbed areas to permanently retain a lubricant. The outer member which faces the ribbed surface is encapsulated by a plastic liner which is shrunk in situ on the outer member to provide mechanical locking and a tight seal.

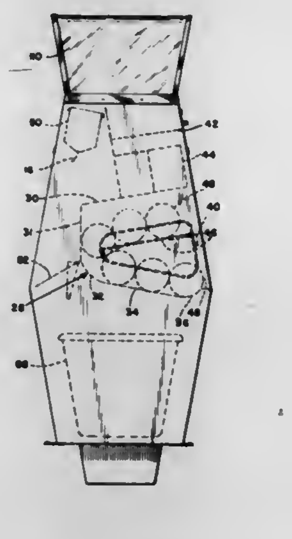
3,604,772
DISPLAY STORAGE AND DISPENSING CABINET

Harvey J. Smith, 1211 Buckingham Rd., Greensboro, N.C.

Filed Aug. 15, 1969, Ser. No. 850,611

Int. Cl. A47f *5/08;* **B65b** *59/00*

U.S. Cl. 312—35 9 Claims



A display, storage and dispensing cabinet for canned goods, tools, and cleaning equipment normally associated with the servicing of vehicles wherein one side of the cabinet is a mirror image of the opposed side such that each includes a storage compartment having a canned goods guide means therein for defining display and dispensing areas, and a service compartment for receiving therein tools and cleaning materials. A receptacle, accessible from either side of the cabinet through removable closures, is located within a lower cabinet housing for collecting empty cans deposited therein.

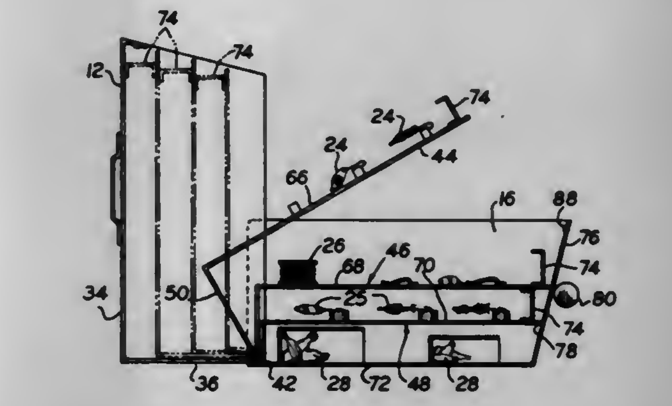
3,604,773
FISHING LURE CONTAINER

John M. Haynes, 139-44 87th Rd., Jamaica, N.Y., and George E. Moritz, 459 Haworth Avenue, Haworth, N.J.

Filed Oct. 27, 1969, Ser. No. 869,767

Int. Cl. A47b *95/02*

U.S. Cl. 312—244 7 Claims



A container comprising a first housing member and a second housing member which together form a pair of opposed exterior housing members cooperating to define an internal storage compartment pivotally mounted to each other for opening and closing movement about a pivot axis oriented transversely of and enclosed within one corner of said storage compartment, and L-shaped internal members, each of said L-shaped internal members having one end of one of the L-shaped members attached directly to and pivotally mounted on said pivot axis, whereby said L-shaped internal members are adapted to be successively pivoted through said opening movement preparatory to successive use of each, and whereby the legs that are directly attached to said pivot are in stacked side-by-side relationship when said container is closed and also when said container is open and all of said L-shaped members have been pivoted.

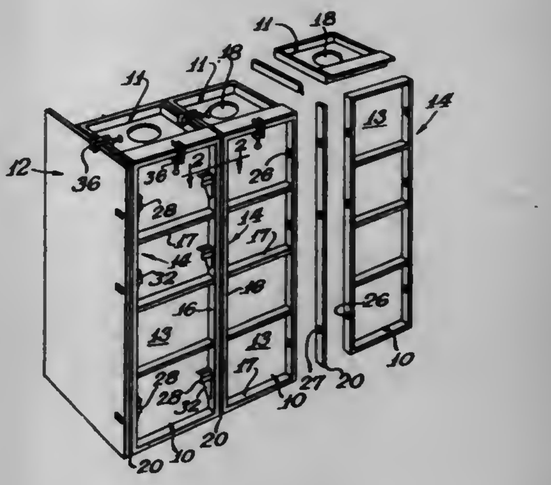
3,604,774
BOOTH ASSEMBLY

John R. Furman, Chicago, Ill., assignor to Rae Systems, Inc., Chicago, Ill.

Filed Nov. 22, 1968, Ser. No. 778,258

Int. Cl. A47b *47/00*

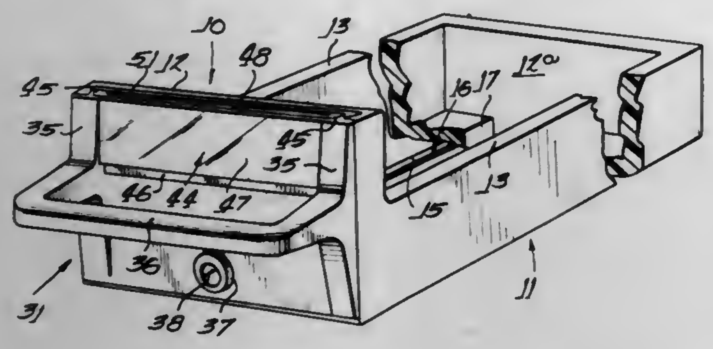
U.S. Cl. 312—263 7 Claims



A booth assembly or the like includes a plurality of panels which contain slotted apertures. A U-shaped fastener member is inserted through the apertures of adjacent panels and is anchored at one end to a first of the panels and the other end to the other panel by a wedge member which is inserted through the U-shaped fastener member. The panels may be arranged in side-by-side relationship or at angles to each other and in one embodiment a strip may be further sandwiched between the panels for supporting shelving. In another embodiment a smooth cover sheet may be provided on a face of each of the panels and anchored in position by a strip which is also sandwiched between the respective panels.

3,604,775
FILE DRAWER ASSEMBLY

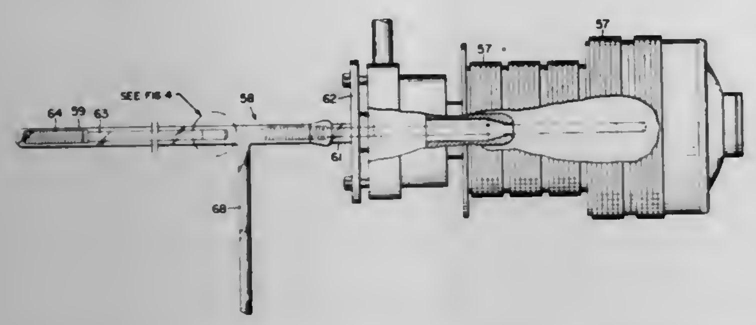
Ralph F. Anderson, and Frank J. Krieps, both of Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed May 1, 1969, Ser. No. 820,794
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **6 Claims**



A library or file drawer assembly formed of a plastic material and having an integral construction of the front, rear and sidewalls and a bottom wall containing a central track for a follower to be adjustably retained in position in the drawer. The drawer front has an undercut recess therein to receive a drawer front panel retained by a dovetail connection and which includes an integral handle for the drawer, an opening for reception of a rod to extend through the drawer, and a smaller undercut recess to receive a label holder.

3,604,776
HIGH-VOLTAGE, LOW-BACKGROUND ELECTRONIC CAMERA

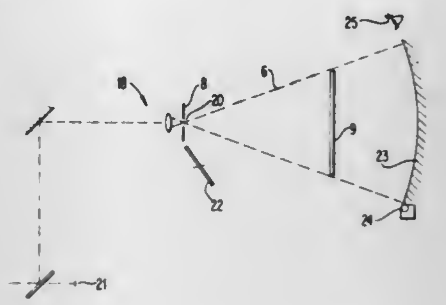
Gerald E. Kron, Flagstaff, Ariz., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 22, 1969, Ser. No. 887,233
Int. Cl. H01j *9/18, 9/38*
U.S. Cl. 316—4 **6 Claims**



Electron cameras or image tubes employ a photoemissive semitransparent cathode upon which light may be focused to emit electrons which then are focused by electron optics either directly upon an electron-sensitive recording material or upon a phospher which provides recorded data for subsequent analysis. The high sensitivity of these cameras renders them particularly useful for direct astronomical studies although the problem of high-background interference due to field emission and other related phenomena have imposed serious limitations upon existing image tubes. The present method permits operation of these tubes at voltages up to external breakdown potentials by providing a tube-fabrication process that eliminates sharp points and assures cleanliness of the electrodes. Undesirable field emissions thus are minimized. The electrodes or electronic lens members are formed initially by machine-working relatively massive tubular metal parts into the final desired tubular shape of the electronic lens members. The wall thickness of these massive parts must be greater than the maximum thickness of the tubular walls of the final shape of the members. When formed, the lens shapes are polished and mounted with the photocathode in operative disposition. To assure the cleanliness, a vacuum is created and a source of electron-emissive material then moved through the vacuum into close proximity with the mounted photocathode. The source is heated to promote a vapor-transfer directly onto the photocathode. Selective deposition of the source material is assured by heating the electronic lens members while maintaining the cathode in a relatively cool condition.

3,604,777
RETURN BEAM HOLOGRAPHY

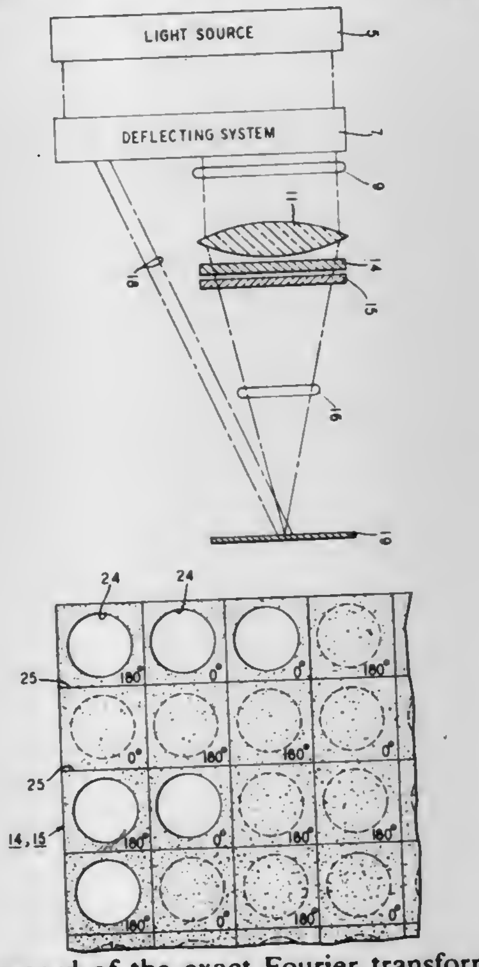
Einar S. Mathisen, Poughkeepsie, and Leonard S. Sheiner, Wappingers Falls, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 21, 1969, Ser. No. 868,146
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **13 Claims**



Method and apparatus for constructing and reconstructing a hologram, whereby the hologram is reconstructed upon the original image plane used in constructing the hologram, by use, in one embodiment, of a spherical mirror placed to reflect divergent light originally passing through the hologram, back through the hologram as convergent light. Included are liquid gate means for reducing reflection glare from the hologram onto the reconstructed image.

3,604,778
FOURIER TRANSFORM RECORDING WITH RANDOM PHASE SHIFTING

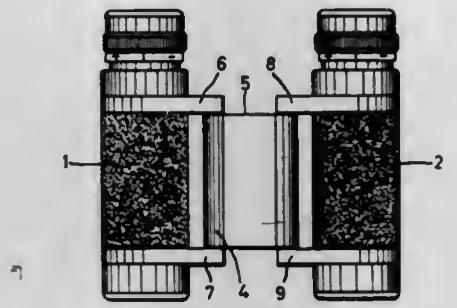
Christoph B. Burckhardt, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 22, 1969, Ser. No. 868,485
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **9 Claims**



In making a record of the exact Fourier transform of an array of beams of electromagnetic radiation, the phase of each of a substantial fraction of the beams is shifted by a constant amount before recording the transform.

3,604,779
BINOCULAR FIELD GLASS WITH DOUBLE JOINT

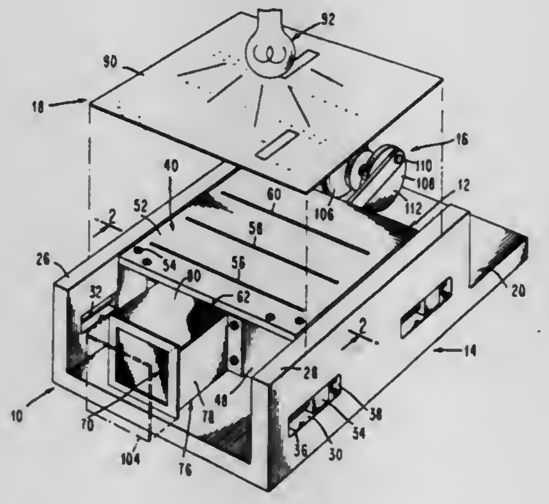
Liebmann Reinhold, Oberkochen/Wurttemberg, Germany, assignor to Carl Zeiss-Stiftung, Wurttemberg, Germany
Continuation-in-part of application Ser. No. 818,494, Apr. 23, 1969, now abandoned. This application Sept. 30, 1970, Ser. No. 77,028
Int. Cl. G02b *7/12*
U.S. Cl. 350—75 **1 Claim**



A binocular field glass in which the two individual telescopes are connected with each other by a bridge forming a double joint and made of two members with oppositely disposed flat faces, each having spaced parallel semicircular precision finished recesses therein to receive two hinge pins accurately parallel with the axes of the telescopes. A single centrally arranged threaded connection holds the two bridge members together, whereby the walls of the recess frictionally engage the hinge pins.

3,604,780
THREE-DIMENSIONAL FIBER OPTIC DISPLAY

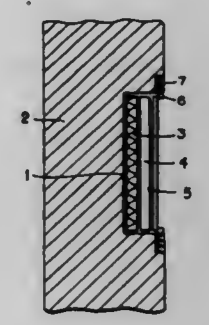
Martin Martin, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 1, 1969, Ser. No. 820,976
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **7 Claims**



A three-dimensional display apparatus is disclosed, having a fixed coded input source, a movable carriage carrying fiber optic elements with their input ends arranged adjacent the input source and their output ends arranged in a display face. In operation, the carriage is oscillated and a plurality of planes of an object are repeatedly displayed within a set volume by the input face, at a rate sufficient to prevent flicker.

3,604,781
REFLECTOR FOR WARNING ROAD TRAFFIC OF ICING CONDITIONS

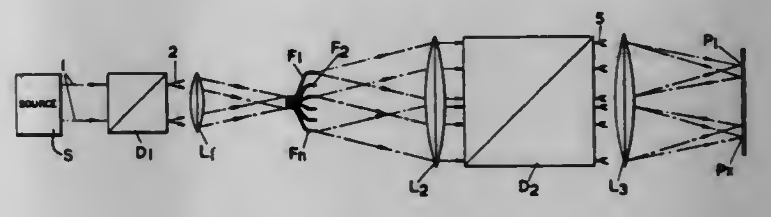
Rudolf Gaeth, Limburgerhof; Karl Hagen, Friedelsheim; Hans-Joachim Orthmann, Limburgerhof, and Karl Gustav Linn, Hochdahl, all of, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Nov. 26, 1969, Ser. No. 880,046
Claims priority, application Germany, Dec. 3, 1968, P 18 12 319.8
Int. Cl. G02b *5/12*
U.S. Cl. 350—97 **7 Claims**



A reflector containing a light-reflecting layer, particularly for affixation to road edge marker posts, for warning traffic of the existence of icing conditions. The reflector consists of a transparent capsular container located in front of a light-reflecting layer and filled with a liquid which extends over the surface of the layer, and which as a result of a change of state loses the transparency it possesses at higher temperatures when temperatures just above the freezing point of water prevail.

3,604,782
ELECTRO-OPTICAL LIGHT DEFLECTION SYSTEMS

Marcus John Dore, Bournemouth, England, assignor to National Research Development Corporation, London, England
Filed Aug. 13, 1969, Ser. No. 849,760
Claims priority, application Great Britain, Aug. 16, 1968, 39232/68
Int. Cl. G02f *3/00*
U.S. Cl. 350—150 **4 Claims**

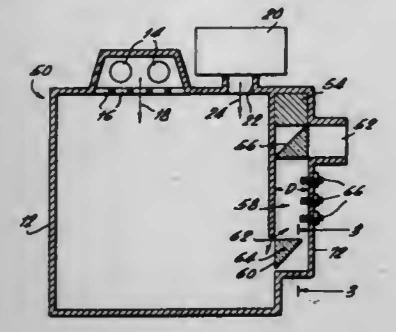


Electro-optical light deflector apparatus in which electro-optically active deflector stages are used alternately with passive deflector stages comprising arrays of fiber-optic light guides having their input ends close together in a line and their output ends spaced apart.

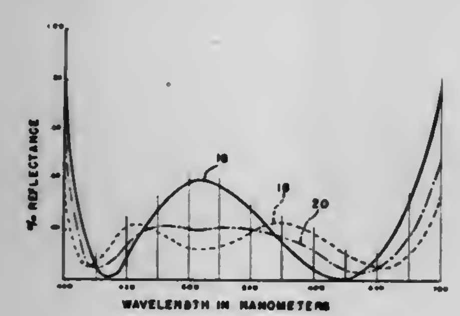
3,604,783
MICROWAVE CAVITY VIEWERS

Howard Roth, Bronx, N.Y., assignor to DCA Food Industries Inc., New York, N.Y.
Filed June 30, 1969, Ser. No. 837,446
Int. Cl. F23m *7/00*
U.S. Cl. 350—163 **6 Claims**

Viewing ports for microwave ovens. In a first embodiment, a transparent mirror is placed over a relatively large aperture in the wall of the oven with the metallic coating of the mirror bearing against the metallic wall of the oven. The interior of the oven is illuminated. The metallic coating of the mirror prevents microwave energy from being transmitted through the mirror, while the one-way viewing characteristic of the mirror allows visible light to be transmitted through it. In a second embodiment, a waveguide is connected between the aperture in the oven and a viewing port. Two prisms are provided, one at the oven aperture and the other at the viewing port. Visible light from inside the oven is reflected by the aperture prism down the waveguide and by the viewing port prism out of the viewing port. Any microwave energy which is transmitted down the waveguide is attenuated both as a result of the waveguide dimensions and special attenuators provided for this purpose. The prism mounted at the oven aperture can be rotated so that the interior of the oven can be scanned.



3,604,784
ANTIREFLECTION COATINGS
Anthony W. Louderback, Long Beach, and Morris A. Zook, Jr., Monterey Park, both of, Calif., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 21, 1969, Ser. No. 792,543
Int. Cl. G02b *1/10*
U.S. Cl. 350—164 **5 Claims**

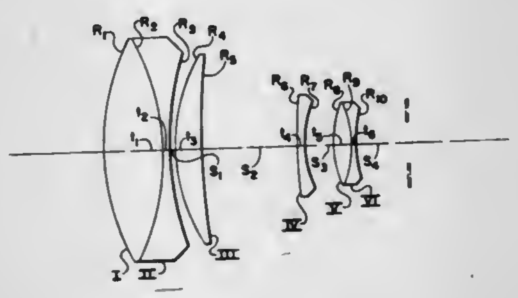


An antireflection coating for a light-reflecting substrate substitute three layers. Thickness of the layer adjacent the substrate is effectively one-quarter or one-half wavelength in optical thickness depending upon the index of refraction of the substrate. The middle layer is effectively one-half wavelength in optical thickness comprising a mixture of metallic oxides and the third layer is effectively one-quarter wavelength in optical thickness. A method of applying the middle layer of the coating employs directing a stream of oxygen at an electron beam which is directed at a source of coating material.

3,604,785
WAVELENGTH SEPARATION IN MULTICOLOR FLUORESCENT MARK CODE READERS
David Neil Travis, and John William Berry, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Dec. 23, 1969, Ser. No. 887,522
Int. Cl. G02b *17/08*
U.S. Cl. 350—195 **3 Claims**

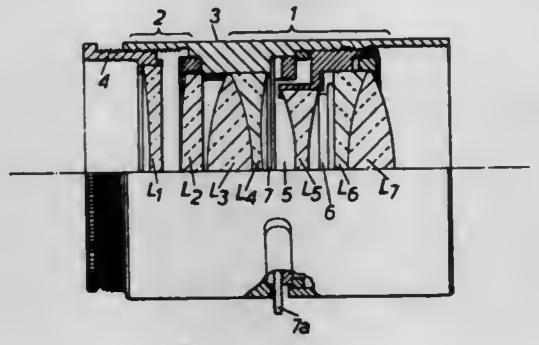
An optical reader for a plurality of narrow wavelength radiation bands, for example those derived from coded inks with narrow band photoluminescent materials as the coding components, comprises two independently adjustable spherical mirrors of radius of curvature R arranged side by side and a planoconvex lens of focal length R with the convex side toward the mirrors and arranged so that the normal to the lens passes symmetrically between the two mirrors and so that the lens and mirrors are separated by a distance R. In the planar surface of the lens are situated a clear entrance aperture and several interference filters, the interference filters being arranged in one or more rows and each one passing the narrow band radiation corresponding to the photoluminescent bands of the different coding components. The spherical half mirrors are adjusted so that the entrance aperture is reflected back and forth to produce images centered on each interference filter. When an image of the entrance aperture is imaged onto a portion backed by an interference filter, the filter passes only one band of wavelengths, reflecting the others back onto the mirrors. Two of the images involve only one reflection and other sets, two, three, four, etc. With a total of four possible reflections, eight coding components can be accommodated. Behind each interference filter is a detector sensitive to light of that particular wavelength.

3,604,786
COMPACT AFOCAL MAGNIFYING LENS
James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed July 22, 1969, Ser. No. 843,707
Int. Cl. G02b *3/02, 3/04*
U.S. Cl. 350—212 **14 Claims**



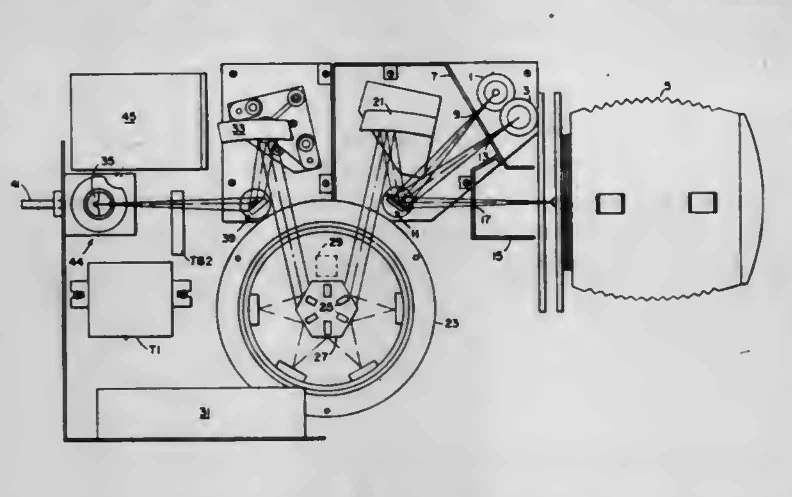
Compact six-element afocal magnifying lenses suitable for use as attachments to photographic objective lenses are described. The overall length of an afocal lens designed according to this invention is less than the focal length of the photographic objective lens with which it is to be associated. Magnifications as high as 2 power are attainable. Three elements are arranged in a positive front group, separated by a large air space from the other three elements which are arranged in a negative rear group. The outer elements in each group of three have higher Abbe values than the inner element of their respective group. High refractive indices are employed in the negative elements and moderate refractive indices in the positive elements. Chromatic and spherical aberrations, coma, astigmatism, field curvature, and distortion can be corrected. An aspheric surface is used.

3,604,787
VARIABLE TRACK LENGTH PHOTOCOPIER LENS SYSTEM
Peter Arnold Merigold, Prestatyn, Flintshire, and Philip J. Rogers, Meliden, Flintshire, both of, Wales, assignors to Pilkington Perkin-Elmer Limited, Liverpool, England
Filed May 16, 1969, Ser. No. 825,209
Claims priority, application Great Britain, May 21, 1968, 24206/68
Int. Cl. G02b *7/04, 9/26, 9/60*
U.S. Cl. 350—216 **2 Claims**



An optical lens system comprises a symmetrical anastigmatic lens unit in combination with a two-element variable-power unit which permits variation in the total distances between the object and image planes with maintained aberration correction.

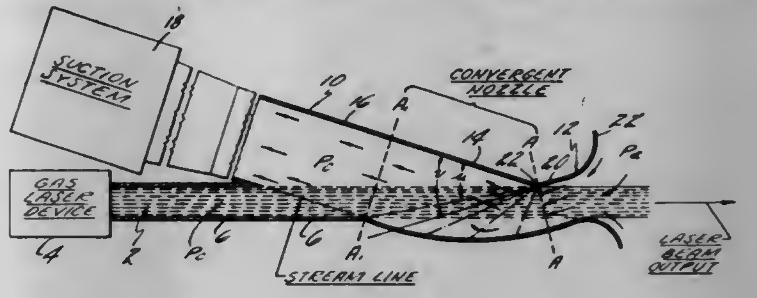
3,604,788
MICROSECOND RADIATION PULSE GENERATOR
Wayne S. Paige, Shelton, Conn., and Walter A. Mannherz, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 2, 1967, Ser. No. 680,142
Int. Cl. G02f *1/34;* **G01j** *3/00*
U.S. Cl. 350—285 **3 Claims**



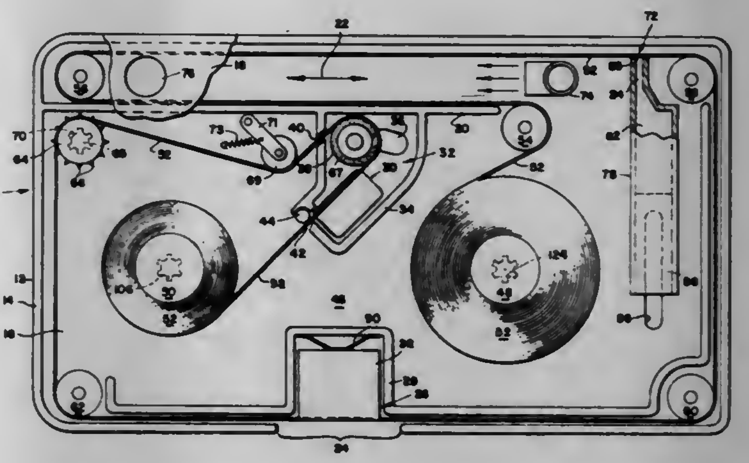
A microsecond radiation pulse generator for the purpose of testing radiometer type equipment. Radiation pulses having rise times better than 0.3 microseconds and pulse widths as long as 10 microseconds are provided by this generator. Its radiation covers the spectral region from 0.2 to 10 microns. Three sources of controllable radiation are provided: ultraviolet, visible, and infrared. Their radiation is chopped by a radiation chopper.

3,604,789
AERODYNAMIC WINDOW
George H. McLafferty, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed May 23, 1968, Ser. No. 731,656
Int. Cl. G02b *5/00*
U.S. Cl. 350—319 **5 Claims**

An output beam is emitted from a gas-dynamic laser and directed through an opening or port to the atmosphere. The gas pressure on the side of the opening from which the laser beam is emitted is below atmosphere (for example, 0.10 atmosphere) and the pressure on the outside of the opening is atmospheric. To prevent flow in said opening between the atmospheric side of the opening and the low-pressure side of the opening in the gas laser, the beam is directed through an aerodynamic window. The aerodynamic window is an opening formed in the sidewall of a passageway and placed in line with the inlet to the passageway so that a laser beam can pass through the opening and out the inlet, the path being unobstructed by attenuating or disturbing materials. The passageway is formed having an inlet section with a short section of constant area and a faired inlet mouth. At the downstream end of the inlet section the passageway bends at an angle forming a sharp corner and extending away from the proposed path of the laser beam. This side of the passageway extends as a straight line. The side opposite the straight side extends on in the same direction as an extension of the short section of constant area and this curves gradually towards the straight side until it becomes parallel therewith. The passageway then extends until it is connected to suction means to obtain the desired pressure characteristic in the passageway so that ambient air does not flow into the opening in the sidewall of the passageway and into the laser cavity.



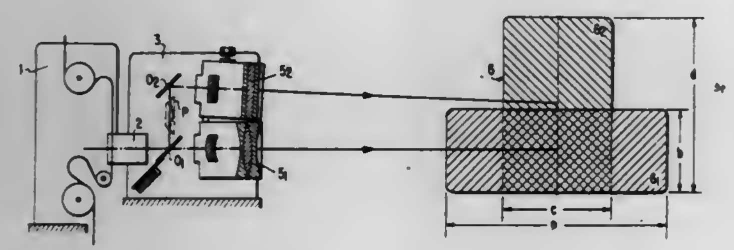
3,604,790
MULTIPURPOSE CASSETTE INCLUDING SOUND RECORDING AND PLAYBACK STATION
Edwin H. Land, Cambridge, and Rogers B. Downey, Lexington, both of, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 21, 1969, Ser. No. 792,733
Int. Cl. G03b *31/02, 23/02;* **G03d** *5/00*
U.S. Cl. 352—29 **15 Claims**



A motion-picture-film-handling cassette, adapted to be mounted in a camera for exposure operations and in a projector for projection operations, which includes a sound recording and playback station. The filmstrip contains a soundtrack and is advanced from an initial position within a light-sealed section of the cassette through an exposure station and the sound recording and playback station and then back into the light-sealed section. The sound-recording station is adapted to receive a sound transducer of the projector into operative relationship to the filmstrip. Intermediate of the film exposure station and the sound recording and playback station, a sprocket, adapted to be driven in unison with the claw mechanism of the projector, engages the filmstrip. Immediately prior to coming into operative relationship with the sound recording and pickup head, the filmstrip is gripped between the idler of the cassette and a capstan, the latter element having a flywheel attached thereto and forming part of the projector so as to extend into the cassette.

3,604,791
SYSTEM (PROCESS) AND DEVICE FOR FILMING AND PROJECTION OF CINEMA FILM FOR VARIABLE SCREEN

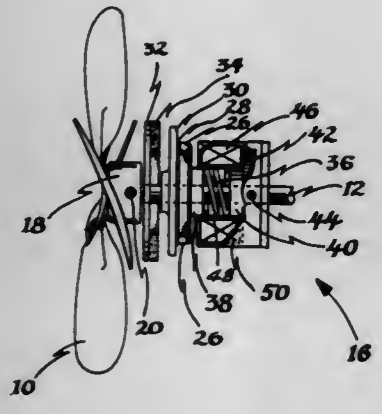
Vasile Baltatu, Bucharest, Romania, assignor to Comitetul De Stat Pentru Cultura Si Arta, Bucharest, Romania
Filed Sept. 21, 1967, Ser. No. 669,474
Claims priority, application Romania, Sept. 24, 1966, 52,226
Int. Cl. G03b *21/32*
U.S. Cl. 352—40 **17 Claims**



A method and apparatus for producing motion pictures which are elongated either horizontally or vertically to suit the artistic requirements of particular scenes. In addition to the normally horizontally elongated images, extra-wide images may be projected if desired. A motion picture camera is provided for making a cinema film in which horizontally elongated picture frames on the strip may carry either horizontally elongated images or vertically elongated images. These images may be anamorphosed. The result is a filmstrip having these images on it, along with the vertical images and deanamorphosed the anamorphosed images. The projector exhibits the images on a motion picture screen which has an inverted T-shape.

3,604,792
SINGLE FRAME CINEMATIC PROJECTOR

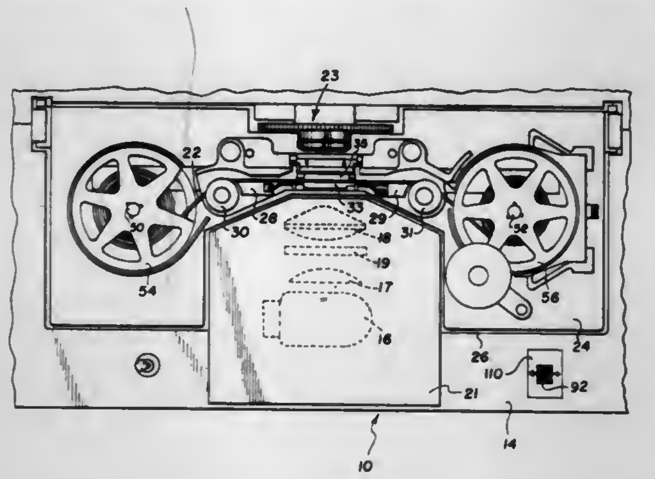
Charles Woodruff, New York, N.Y., assignor to Visual Instruction System, Inc., New York, N.Y.
Filed Feb. 6, 1969, Ser. No. 797,123
Int. Cl. G03b *21/38*
U.S. Cl. 352—169 **10 Claims**



A drive motor for a motion picture projector is normally connected to the shutter mechanism thereof by means of a clutch which is spring-biased to the engaged position, but a solenoid disengages the clutch after a single frame advance. A pair of switches, one manual and the other cam operated, are arranged so that the solenoid is normally deenergized, causing the clutch to be normally engaged and the shutter mechanism to be normally operative. But a cam driven by the shutter shaft transfers one of the switches so as to stop the film advance precisely at a frame display point, thus freezing a single frame on the screen. The manual switch may then be momentarily operated so as to open the circuit of the solenoid, allowing the shutter mechanism to advance through one frame cycle. At the conclusion of that cycle, the next operation of the cam switch restores those conditions which reenergize the solenoid, disengage the clutch, and thus cause the projector to stop and freeze the next frame. Thus the projector can be advanced one frame for each operation of the manual switch. A third switch converts the projector to the continuous frame mode by holding the clutch solenoid circuit continuously open. A cooling fan is operable from the motor drive shaft and is independent of the clutch, so that cooling continues during stop motion operation.

3,604,793
CONTROL FOR STRIP-DRIVING APPARATUS

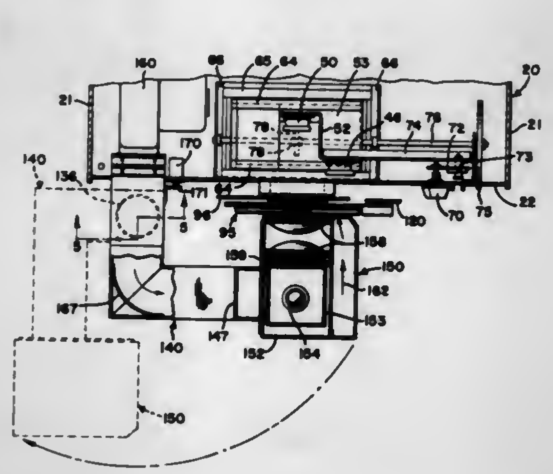
Elmer O. Wangerin, and Donald P. Welty, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 5, 1969, Ser. No. 821,563
Int. Cl. G03b *1/42, 1/48, 1/50*
U.S. Cl. 353—23 **13 Claims**



A control circuit for a strip-driving apparatus wherein a strip of a material such as photographic film is driven from a supply reel to a takeup reel between a pair of transparent flats. The control circuit serves to regulate the speed and direction of a motor connected to the takeup and supply reels, to open the transparent flats to allow the strip to be driven therebetween without scratching the strip and also to provide a delay dependent upon the time for which the strip is driven, before the glass flats are closed.

3,604,794
MICROFILM VIEWER

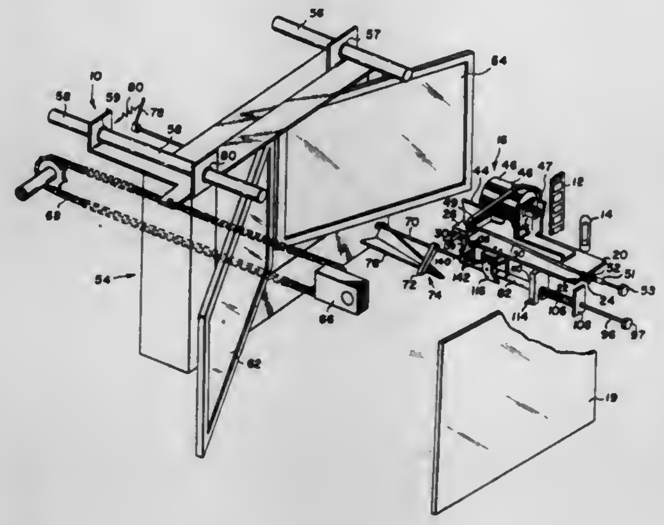
Nicholas T. Simopoulos, Dayton, Ohio, assignor to Labtron Corporation of America, Dayton, Ohio
Filed Mar. 12, 1969, Ser. No. 806,471
Int. Cl. G03b *21/16*
U.S. Cl. 353—61 **8 Claims**



A microfilm projector incorporates a panel which supports a vertical film holder rotatable through 360° and movable both vertically and horizontally for scanning large transparencies and orienting an image on a screen. Selectable lenses are supported by the panel rearwardly of the film holder, and a lamp box is supported in front of the film holder by a ductlike arm pivotally mounted on the panel to provide convenient access to the film holder as well as convenient interchangement of the film holder with a continuous film system. The lamp box is cooled by blowing air through the arm from a blower supported by the panel within a cabinet which may support a back-lighted viewing screen or have a transparent wall for projecting onto a remote viewing screen.

3,604,795
IMAGE PROJECTION SYSTEM

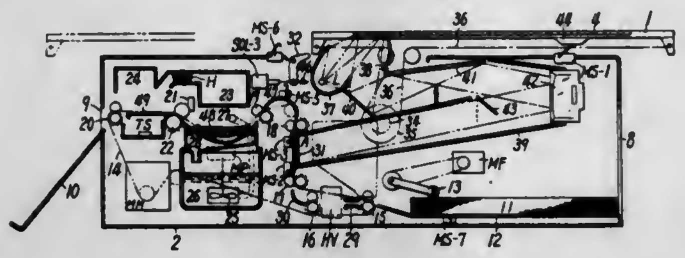
Robert P. Crandall, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 20, 1968, Ser. No. 730,316
Int. Cl. G03b *21/22, 21/28, 27/34*
U.S. Cl. 353—76 **10 Claims**



Apparatus is disclosed for projecting an image onto a display surface with varying degrees of magnification and having the capability of selectively projecting various portions of the image. This apparatus is capable of incorporating a plurality of different lenses and illustratively includes a reflective surface, which is movably mounted to increase or decrease the long conjugate distance between the lens and the display surface. The selected lens is inserted within the apparatus at its given focal distance from the transparency to be projected and is manipulated by a follow focus mechanism to maintain the projected image in focus as the reflected surface is being moved.

3,604,796
MULTIPLE-COPY ELECTROSTATIC MACHINE CONTROL

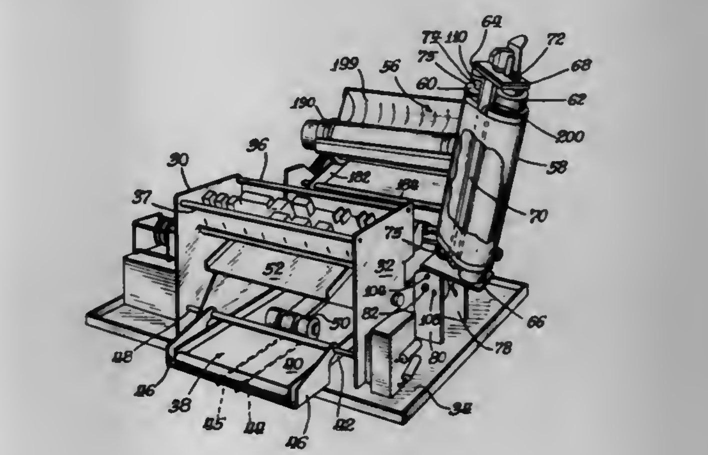
Masaya Ogáwa, Osaka, Japan, assignor to Minoltracamera Kabushiki Kaisha, Osaka, Japan
Filed Jan. 10, 1969, Ser. No. 790,312
Claims priority, application Japan, Jan. 31, 1968, 43-6461
Int. Cl. G03g *15/22*
U.S. Cl. 355—14 **3 Claims**



An electrostatic copier to feed sheet by sheet piled electrophotographic paper and transfer the image of the original sheet onto the paper, including a microswitch disposed at the entrance of an exposure station which is actuated and switches circuits for a charging device and a lamp when the electrophotographic paper charged on the switching on of a copying start switch enters the exposure station. A second microswitch disposed at the exit of the exposure station stops supplying electricity to the charging device, the lamp and two preset switches for copying a plurality of sheets when the tail end of the electrophotographic paper leaves an actuating member.

3,604,797
PHOTOELECTROSTATIC DUPLICATOR

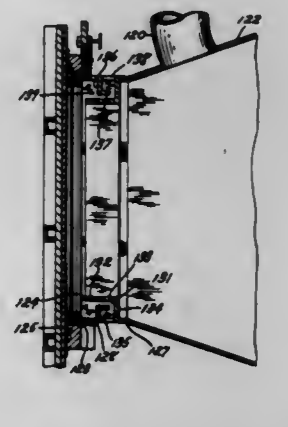
Stanley J. Szczesniak, Lake Villa, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed Jan. 21, 1969, Ser. No. 792,616
Int. Cl. G03g *15/22*
U.S. Cl. 355—16 **8 Claims**



A photoelectrostatic duplicator equipped with a photoconductive belt mounted on a pair of drive rollers so that the belt moves in predetermined path about the rollers. The rollers are mounted in a pivotally mounted frame that is hinged at one end so that it can be swung into a vertical position when mounting or dismounting the belt. A locking device is part of the frame and it includes sliding bearings which are adapted to engage the main frame of the machine to lock the roller frame into its operating position. To unlock the roller frame the bearings are shifted axially clear of the main frame so that the rollers can be tilted on the hinge. One of the drive rollers has flange portions along its outer edges which keep the belt from "walking" off its course.

3,604,798
PHOTO-OFFSET PLATE MAKING MACHINE

Albert Gerson, Baldwin Rd., Yorktown Heights, N.Y.
Division of Ser. No. 537,464, Mar. 25, 1966, Pat. No. 3,484,166
Filed May 29, 1969, Ser. No. 862,094
Int. Cl. G03b *27/52*
U.S. Cl. 355—30 **1 Claim**



A photo-offset platemaking machine, including a negative carrier selectively positioned in fixed position upon a frame or base, and a negative carrier illumination device including a housing having an opening corresponding in size and shape to a planar surface on the negative carrier. The housing includes a source of illumination, and continuous light proof venting members periferally arranged on said housing adjacent said opening, whereby when the continuous edge defining the opening is placed in abutted relation with respect to the planar surface of the negative carrier, a light-tight seal is effected, and air is drawn through the ventilating members to form a cushion of air over the negative carrier to protect the negative from the heat of the illumination device. A cooling element exhausts the air from the hood at a point remote from the opening.

3,604,799

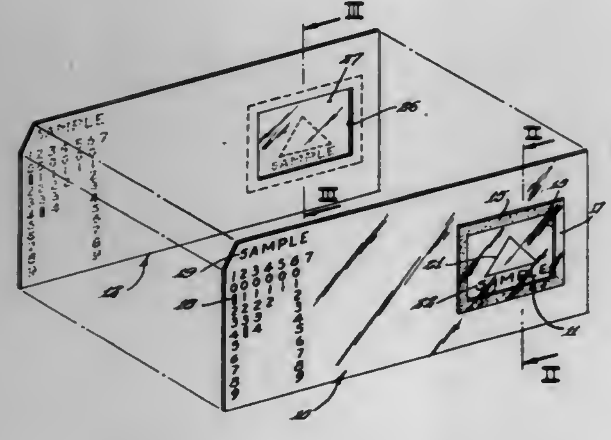
FILM RECORD CARD SYSTEM

Thomas P. Anderson, Hubbard Woods, Ill., assignor to Microseal Corporation, Skokie, Ill.

Filed Oct. 14, 1969, Ser. No. 866,306

Int. Cl. G03b *27/02*

U.S. Cl. 355—79 **3 Claims**



An information-storage system comprises a diazo-reproducible film-record card and a receptor or copying card treated with diazo compounds and carrying a strip of blank film also treated with diazo compounds. The reproducible film record card may be of the type adapted to be processed at high speeds by automatic tabulating or sorting machines and may comprise a sheet form card composed of transparentized paper stock having at least one cutout or aperture formed therein for receiving a strip of film containing a microimage and means for retaining the film within the cutout. The transparentized paper stock has an actinic transmission percentage enabling simultaneous diazo-reproduction of both data printed on the card and the microimage contained on the film. The receptor or copying card may include a card capable of being machine-processed in automatic sorting machines and has an aperture or cutout located coincidentally with the cutout of the reproducible card and mounts a film having a side or face surface thereof coated with diazo compounds and exposed.

3,604,800

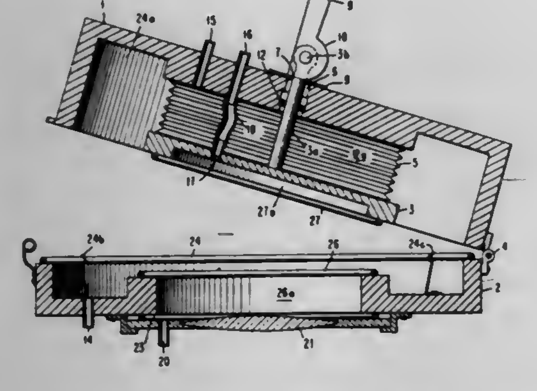
HIGH RESOLUTION CONTACT PRINTING

Joseph G. Jordan, Poughkeepsie, and Robert C. Kammerzell, Hyde Park, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1969, Ser. No. 835,321

Int. Cl. G03b *27/20*

U.S. Cl. 355—91 **11 Claims**



Finely detailed photograph images, e.g. microcircuit patterns, made by vacuum contact exposure have improved resolution of detail. A master plate containing a mask image and a sensitized object plate are manipulated from initial positions of separation into extremely close face-to-face contact. Entrapment of air between the plates, which prevents total contact, is avoided by exhausting the space containing the plates while the plates are held discretely separated and only thereafter manipulating the plates into total contact in the exhausted space.

3,604,801

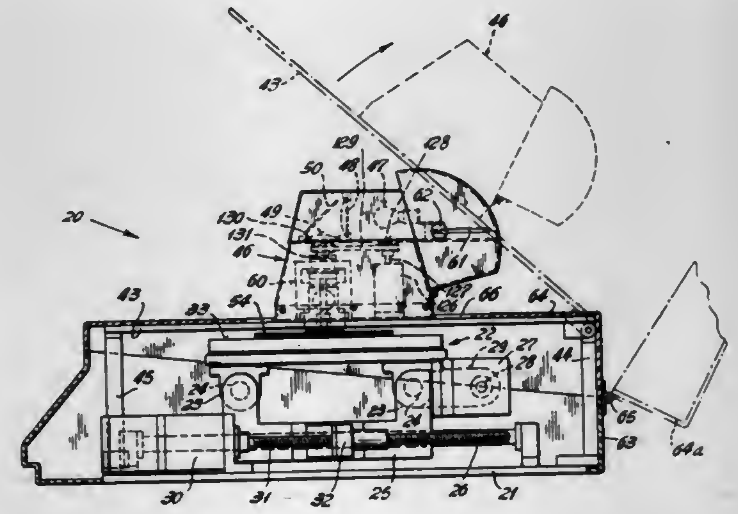
FILM EXPOSING MACHINE FOR MAKING NEGATIVES

Joseph W. Young, New Preston, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed June 11, 1968, Ser. No. 736,161

Int. Cl. G03b *27/04*

U.S. Cl. 355—101 **4 Claims**



A machine that moves a light sensitive film with respect to a light beam along X and Y axes, in which the light beam is controlled as to shape and image on the film by means of an indexable wheel carrying differently shaped apertures with the aperture in alignment with the beam defining the shape of the image formed, and in which the beam impingement on the film is also controlled to permit movement without producing an image. The machine has especial utility in making printed circuit board film negatives as it is capable of automatic operation by a numerically controlled system using programmed commands.

3,604,802

WIDE ANGLE PHOTOELECTRIC POSITION DETECTING DEVICE UTILIZING A CONICAL TRUNCATED OPTICAL CONDENSER

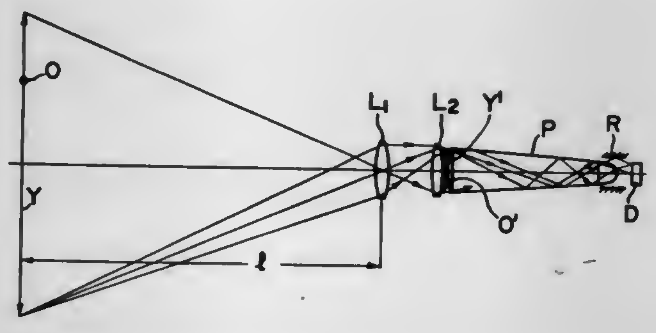
Shigeru Ohmori; Yoshio Ishida, and Harumi Takeda, all of Tokyo, Japan, assignors to Tokyo Optical Company Limited, Tokyo, Japan

Filed Feb. 4, 1969, Ser. No. 796,412

Claims priority, application Japan, Mar. 7, 1968, 43/14,303

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **1 Claim**



A wide angle photoelectric position detecting device having a truncated conical shape optical condenser interposed between an objective lens means with a widened field of view and a photoelectric transducer means. The position detecting device delivers energy from a light or heat source in the widened field of view onto a light receiving surface of said photoelectric transducer element without causing any divergence thereof.

3,604,803

OPTICAL DETECTION METHOD FOR SUBMERGED OBJECTS

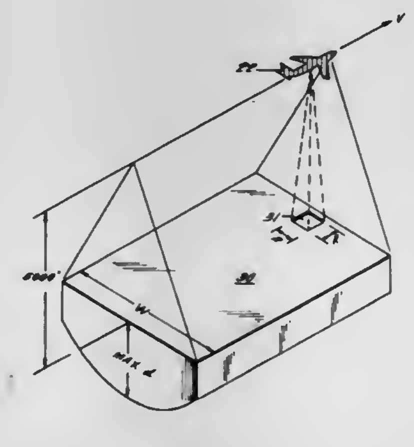
Elliott H. Kahn, Brooklyn, N.Y., assignor to Kollsman Instrument Corporation, Elmhurst, N.Y.

Division of Ser. No. 345,674, Feb. 18, 1964, Pat. No. 3,446,555

Filed Mar. 3, 1969, Ser. No. 803,736

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **10 Claims**



A submerged object indication system is carried from an aircraft flying above the water. A laser pulse generator directs a pulse at a small water area which may be 25 feet in diameter, and the receiver receives the air-water interface reflection which gates open a channel for receiving a submerged object reflection. A time delay is connected between an optical shutter and the detection circuit which receives the air-to-water interface reflection with the time delay related to the depth at which an object reflection is observed. The air-to-water interface signal can also be used to drive an altimeter with signals displayed visually on a cathode-ray tube display. The light source is in the blue-green portion of the spectrum, with the light pulse lengths being about 0.01 microseconds.

3,604,804

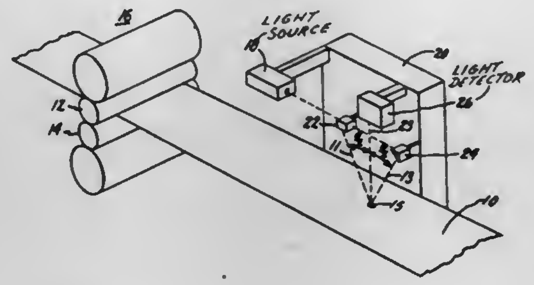
NONCONTACTING MOTION SENSOR

Carl M. Penney, Scotia, and Henry Hurwitz, Jr., Schenectady, both of, N.Y., assignors to General Electric Company

Filed Dec. 27, 1968, Ser. No. 787,519

Int. Cl. G01p *3/36*

U.S. Cl. 356—28 **7 Claims**



The motion of a moving surface is measured without making mechanical contact therewith by measurement of the difference between the Doppler shifts of different components of radiation scattered from a portion of the surface. In one specific embodiment of the invention, two coherent beams of light derived from a single laser are directed so as to be incident upon the same surface portion of a moving object from different directions, and light scattered from both of the incident beams by the surface is observed by a light detector. The detector yields a signal which oscillates at a frequency equal to the difference between the two Doppler shifts. This difference frequency is independent of scattering direction and is directly proportional to the component of the velocity of the illuminated surface in a direction determined solely by the orientation of the two incident beams.

3,604,805

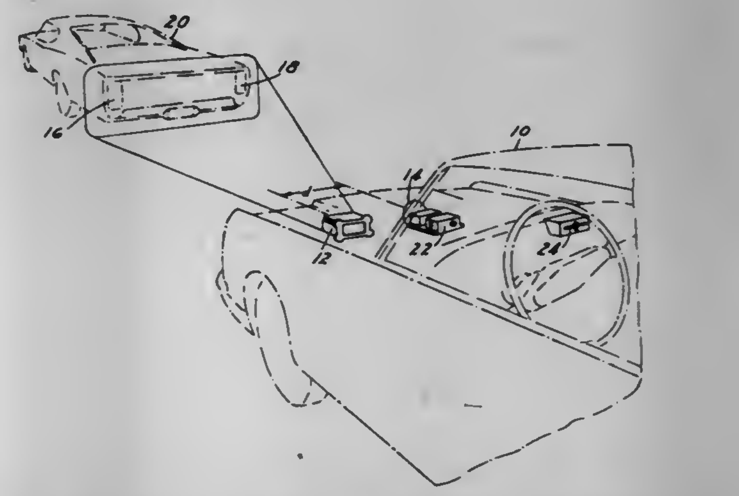
OPTICAL DETECTING AND RANGING SYSTEM FOR AUTOMOTIVE VEHICLES

Gerald C. Scott, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 7, 1969, Ser. No. 839,346

Int. Cl. G01p *3/36*

U.S. Cl. 356—28 **8 Claims**



A mechanical automatic gain control for a high-frequency detecting and ranging system of the short range type in which the axis of the transmitter is displaced relative to the axis of the receiver to linearize the strength of the received signal over the operating ranges of the system. The system may be used as a range or range rate finder in automotive vehicles in order to determine the distance or range and the range rate or relative velocity between a vehicle in which the system is located and the preceding vehicle. The transmitter transmits high-frequency electromagnetic energy, preferably in the infrared region, toward the rear of the preceding vehicle. This electromagnetic energy is reflected by the reflective lens systems found on the rear of conventional vehicles directionally back toward the transmitter. A small portion of this energy finds its way to the receiver which, as stated above, is displaced from the transmitter. It has been found that the strength or amplitude of the received signal does not vary inversely with the fourth power of the range, as is the case in conventional detecting and ranging systems, but may vary from values of 10 to 100.

3,604,806

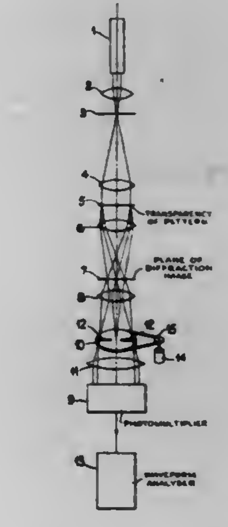
PATTERN CLASSIFICATION APPARATUS

John David Redman, Newbury, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 9, 1968, Ser. No. 766,185

Int. Cl. G06k *9/08*

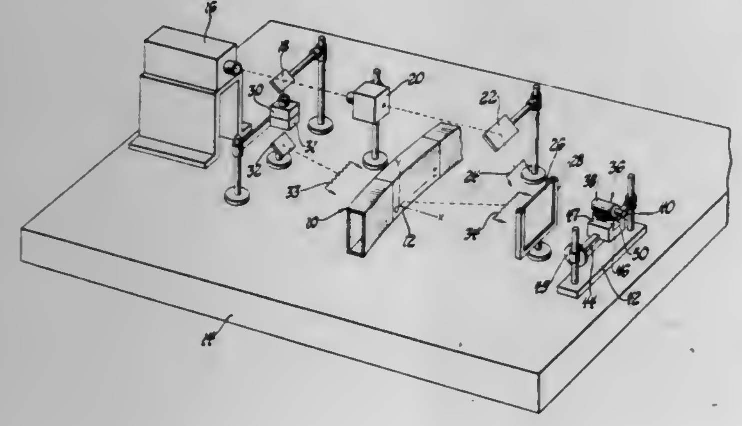
U.S. Cl. 356—71 **2 Claims**



The apparatus uses a beam of collimated light, e.g. from a laser, to produce a diffraction image of the pattern, e.g. a transparent fingerprint. This image is effectively scanned, either mechanically by a light filter or filters which rotate relative to the image, in which case the transmitted light is converted to a cyclically varying electrical signal which can be frequency analyzed into components characteristic of the pattern, or statically by concentric arrays of photosensitive devices whose DC outputs are characteristic of the spatial frequencies of the pattern.

3,604,807
METHOD AND APPARATUS FOR HOLOGRAPHIC REAL TIME VELOCITY MEASUREMENT

Edwin B. Champagne, Ann Arbor, Mich., assignor to GCOptronics, Inc., Ann Arbor, Mich.
Filed Jan. 15, 1970, Ser. No. 3,083
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **9 Claims**

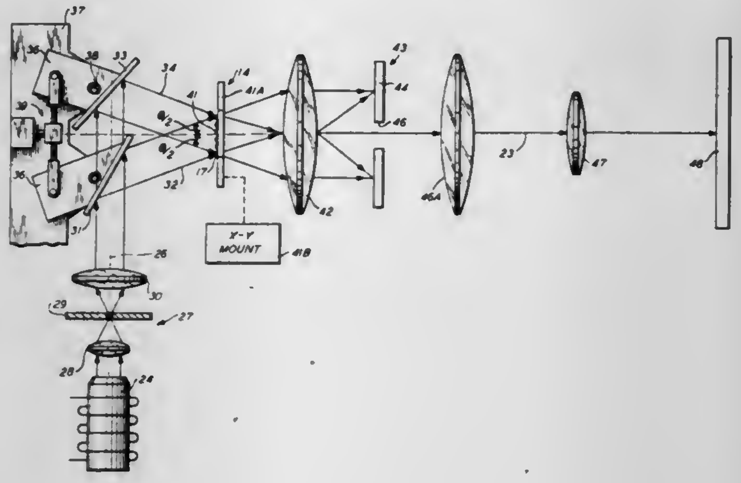


Method and apparatus are disclosed for measuring the velocity of a material using the techniques of holography in conjunction with measurement of a doppler shift frequency enabling the velocity at multiple points to be determined without the need for reestablishing an interferometric system. A hologram is made of a material in a static condition in a test zone. Motion of a test material in the zone is then initiated and the hologram is reilluminated in the same manner as in real time interferometry. A lens system images a point in the test zone onto a photocell and the light scattered from the focal volume is imaged in the photocell and additionally the wave front produced by the hologram is imaged in the photocell. Thus, two fields are superposed on the photocell and a mixing action takes place between one of the fields which is doppler shifted in frequency by the velocity and the other which retains the frequency of the reference beam. Thus the photocell produces an output signal equal to the doppler shift frequency which is proportional to a component of velocity in a known direction.

3,604,808
DETECTION OF CUMULATIVE REGISTRATION ERRORS ON PHOTOMASKS USING OPTICAL INTERFERENCE FRINGES

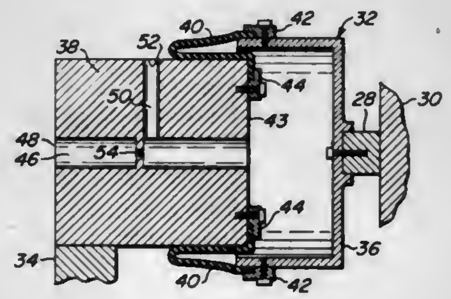
Laurence S. Watkins, Hightstown, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 31, 1969, Ser. No. 872,836
Int. Cl. G06k *9/08;* **G01b** *9/02*
U.S. Cl. 356—71 **6 Claims**

A fringe pattern generated by a pair of intersecting light beams of the same wavelength is employed in a spatial filtering technique to detect cumulative positional errors along a superposed linear test array of identical elements having a nominally fixed pitch between corresponding border edges, as in a row of repetitive images on an array-type photomask. The angle between the beams is adjusted so that the spatial period between points of equal intensity on the fringe pattern is an integral submultiple of the nominal spacing between corresponding edges of adjacent elements of the test array. The fringe pattern is spatially modulated by the test array and its diffraction pattern focused on a low-pass optical filter, which suppresses the spatial period of the fringe pattern. The light passed by the filter is reimaged to form a visual replica of the gross features (i.e., the edges) of the array elements, such edges having a cyclic variation of illumination because of the superposed portions of the fringe pattern. The period of the cyclic variation is inversely proportional to the magnitude of the cumulative positional error along the test array.



3,604,809
INTERFEROMETER-SPECTROMETER BRAKE

Herman De Weerd, Arlington, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.
Filed Mar. 6, 1969, Ser. No. 804,799
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **3 Claims**

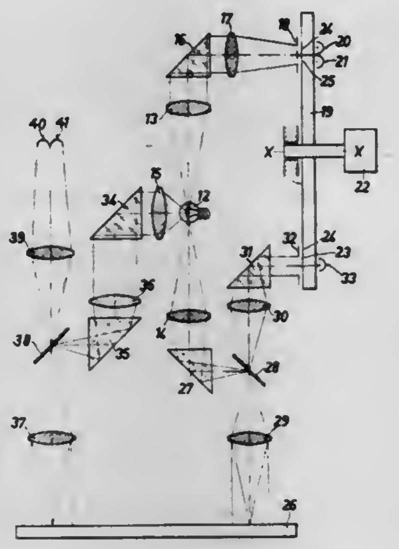


An improved interferometer-spectrometer of the Michelson moving mirror type in which the mirror system is provided with a brake comprising a dashpot having two exit passageways for its working fluid. The dashpot also includes a rolling, everted flexible seal between the cylinder and piston, one of the exit passageways terminating in a port that is coverable by the seal at some position in the rolling travel of the seal.

3,604,810
APPARATUS FOR THE OBJECTIVE LOCALIZATION OF AN OBJECT RELATIVE TO A SCALE CARRIER

Kurt Schuch, Jena, Germany, assignor to VEB Jenoptik Jena GmbH, Jena, Germany
Continuation-in-part of application Ser. No. 405,873, Oct. 22, 1964, now abandoned. This application June 14, 1968, Ser. No. 747,404
Int. Cl. G01b *11/26*
U.S. Cl. 356—139 **1 Claim**

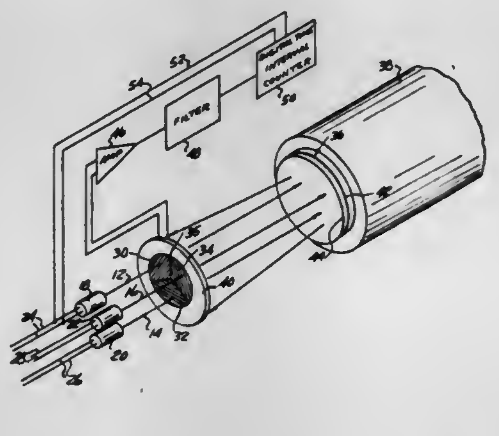
The positioning system of a machine tool comprises a coded multitrace scale which cooperates with a scanner provided with an interpolation system subdividing the intervals of the finest code trace. The scanner is provided with an optical element having a binary-coded scale effecting cyclical motion, and with pulse transmitters starting and terminating



the interpolation process. Photoelectric receivers scan the coded scale and the optical element.

3,604,811
SHAFT POSITION ENCODERS

James M. McMenamin, Livonia, Mich., assignor to Teeg Research, Inc., Detroit, Mich.
Filed July 30, 1969, Ser. No. 846,213
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **13 Claims**

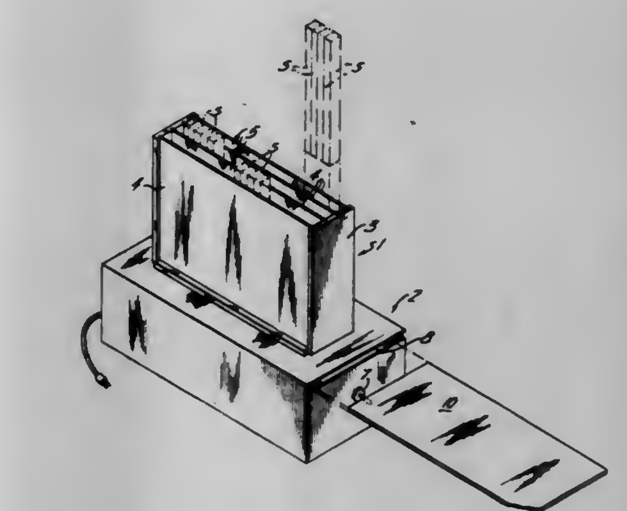


An instrument capable of determining with precision the angular position of a shaft by projecting a plurality of beams of modulated polarized light through an analyzer rotating in unison with the shaft. The signal derived from the light passing through the analyzer is compared to the modulation input of one of the beams, with the resultant signal being representative of the shaft angular position.

3,604,812
DEVICE FOR COMPARATIVE COLOR TESTING

Bernard Hugo Walsen, Ramsey, N.J., assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed June 15, 1970, Ser. No. 46,060
Int. Cl. G01j *3/76*
U.S. Cl. 356—173 **8 Claims**

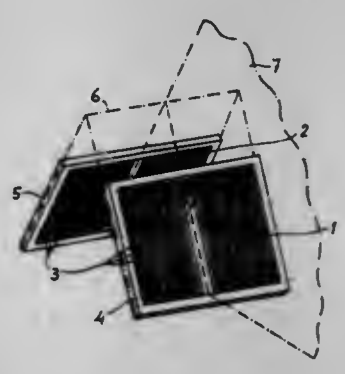
A device for visually comparing the inherent color of specimens of materials, such as transparent polystyrene, under substantially uniform conditions. The device comprises a specimen receiving means mounted to a base housing, said specimen receiving means having sidewalls defining at least one chamber having upper and lower end openings, the upper end opening being adapted to receive a test specimen into the chamber and the lower end opening communicating with the interior of the base housing, and known light source mounted in the base housing and adapted to direct light



waves through the lower end opening of the chamber and illuminate the test specimen received in the chamber.

3,604,813
POSITION-INDICATING INSTRUMENT

Gerrit Hendrik Te Kronnie, and Karel Hero Volkers, both of Van Breestraat 171, Amsterdam, Netherlands
Filed Nov. 25, 1969, Ser. No. 879,836
Claims priority, application Netherlands, Nov. 28, 1968, 6817007
Int. Cl. G01b *11/26*
U.S. Cl. 356—172 **12 Claims**

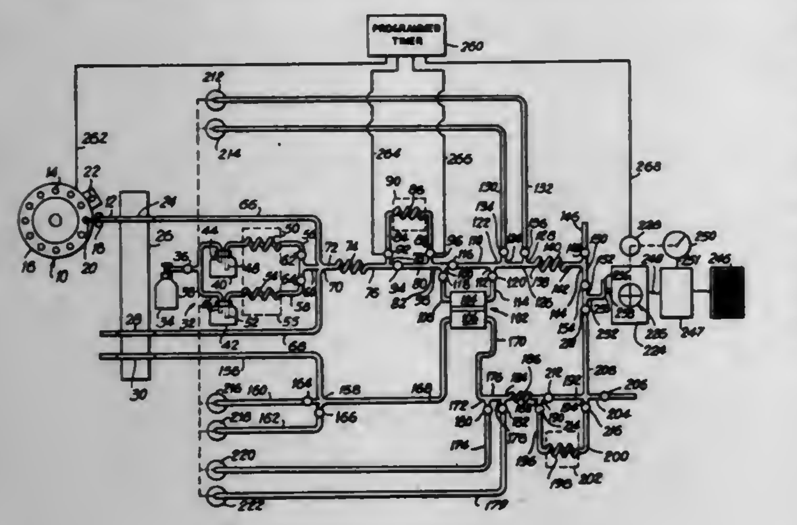


Moire instrument enabling a distant observer to locate a point into an optical plane of reference established by the instrument. The instrument has two line grids positioned in intersecting planes. For good visibility of the moire patterns certain specific conditions concerning the pitch of the grids and their separation have to be met. In order to maintain a sufficient working range, the pitch of the foremost grid may be made slightly larger than that of the rearmost grid.

3,604,814
METHOD AND APPARATUS FOR THE SEQUENTIAL ANALYSIS OF FLUID SAMPLES

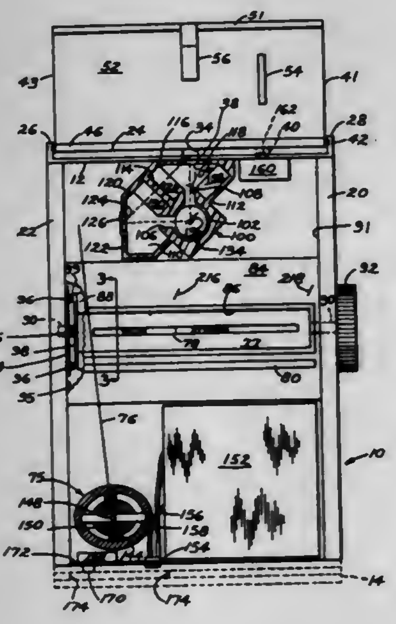
Leonard T. Skeggs, Kirtland, Ohio, assignor to Technicon Corporation, Tarrytown, N.Y.
Filed June 20, 1969, Ser. No. 835,051
Int. Cl. G01j *3/46*
U.S. Cl. 356—181 **7 Claims**

Method and apparatus are provided for the sequential analysis of a series of fluid samples with respect to different constituents thereof through the simultaneous flow of different sample portions through different flow paths for treatment thereof with respect to different ones of said constituents and the subsequent, sequential flow of the thusly treated sample portions through the same analysis means for



the sequential analysis of said different sample portions with regard to different ones of said constituents.

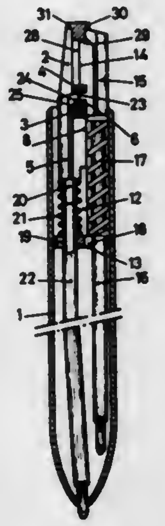
3,604,815
REFLECTANCE METER
Anton Hubert Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Apr. 22, 1968, Ser. No. 723,102
Int. Cl. G01j *3/52, 3/46;* **G01n** *21/48*
U.S. Cl. 356—191 **4 Claims**



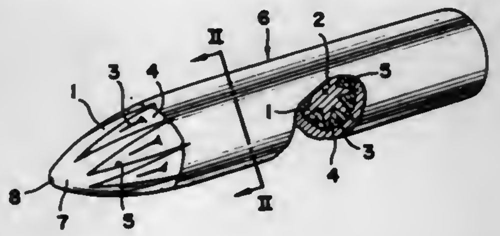
A small, portable photoelectric cell-type reflectance meter is described for use in measuring color reflectance values of analytical test devices. Since these analytical test devices have predetermined ranges of color reflectance values, the reflectance meter is preset to read color values within these ranges. The meter has a constant light output circuit, a regulated power supply based on battery power and a battery power check circuit.

3,604,816
BALLPOINT PEN CONTAINING A NUMBER OF DIFFERENT COLORED CARTRIDGES
Francis Levoin, Lugano, Switzerland, assignor to Cado Etablissment, Vaduz Principality of Liechtenstein
Filed Mar. 20, 1970, Ser. No. 21,316
Claims priority, application Switzerland, Mar. 25, 1969, 4443/69
Int. Cl. B43k *27/00*
U.S. Cl. 401—31 **3 Claims**

A writing instrument, particularly a ballpoint pen containing a number of different colored writing cartridges, each of which is equipped with a pushbutton for advancing the associated cartridge while compressing its return spring. Each pushbutton extends out of the housing sleeve member of the ballpoint pen and both in its writing position as well as in its inoperable position bears against a mechanism which is locked by means of at least one projection in the ballpoint pen housing sleeve member, this projection being situated in an opening, the axis of which extends substantially perpendicular to the lengthwise axis of the ballpoint pen. According to important aspects of the invention, the lock mechanism is equipped at its lower end with an apertured plate member through which pass the writing cartridges and which serves as a support means for each return spring member provided for each writing cartridge. Furthermore, the above-mentioned mechanism includes web members which extend vertically from the apertured plate member and which are connected with one another at their upper end, one such web member carrying the aforementioned projection. Additionally, these web members possess groove means for locking a pushbutton both in its writing position as well as in its inoperable position, the lower end of such groove means having two respective oppositely situated inclined surfaces. Each pushbutton is provided at its inner side with two projections which cooperate with the projections provided at the other pushbutton during actuation of the last-mentioned pushbutton in order to entrain the first-mentioned pushbutton. Additionally, each pushbutton is equipped at its lower end with a tail portion capable of being connected with the associated writing cartridge and at its upper end with two nose members, the upper and lower ends of which are inclined in order to lock such pushbutton when the nose members are located in the groove means and for unlocking such pushbutton when such nose members slide past the inclined surfaces.

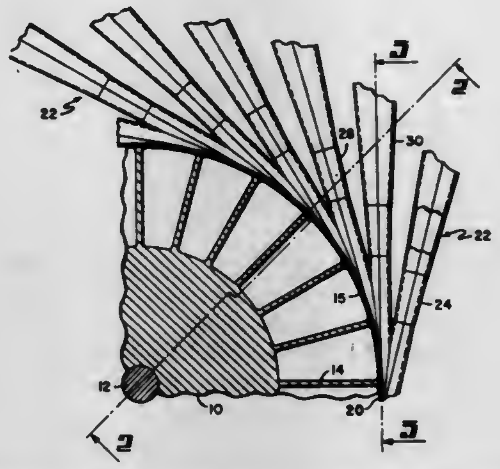


3,604,817
WRITING INSTRUMENTS
Takaji Funahashi, No. 1, 2-chome, Kitatakasho-machi, Nishiku, Nagoya-shi, Aichi-ken, Japan
Filed Mar. 2, 1970, Ser. No. 15,693
Claims priority, application Japan, Mar. 3, 1969, 44/18963
Int. Cl. B43k *5/18*
U.S. Cl. 401—199 **4 Claims**



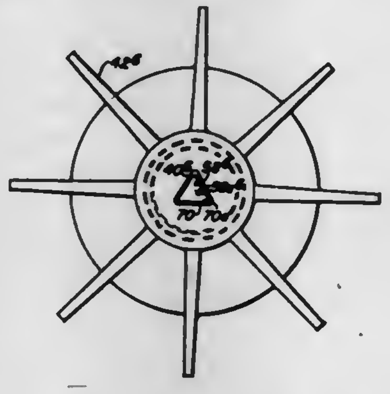
This invention provides writing instruments such as felt pens, marking pens or sign pens in which the construction is reinforced to strengthen the effect of writing instrument thereby increasing writing practice without causing deformation due to pressure applied to the pen point.

3,604,818
CENTRIFUGAL COMPRESSOR DIFFUSER
Val Cronstedt, Williamsport, Pa., and Gary M. Gron, Cincinnati, Ohio, assignors to Avco Corporation, Williamsport, Pa.
Filed Dec. 10, 1969, Ser. No. 883,819
Int. Cl. F04d *1/00, 17/08, 29/00*
U.S. Cl. 415—207 **6 Claims**



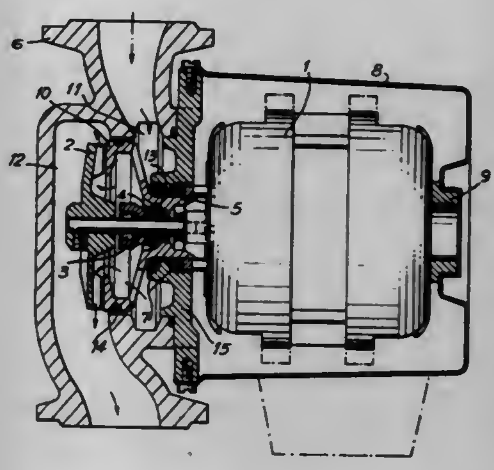
The disclosure illustrates an annular diffuser assembly that receives gas discharged from a compressor impeller at supersonic velocity. The diffuser consists of a series of passages extending in a direction generally tangential to the impeller and spaced around the impeller so that their inlet ends intersect. The passageways each have a straight-sided polygon cross-sectional shape so that the diffuser passages have a series of generally V-shaped entrances. The diffuser passages may be formed with a particular cross-sectional shape to compensate for the variations in velocity of the airstream discharged from the impeller. The passageways may be formed from intersecting tubular elements or may be formed in opposing faces of a pair of sandwiched discs.

3,604,819
IMPELLER SHAFT ASSEMBLY
Francis J. Krahe, Frazier Township, Allegheny County, and Lawrence J. Serena, Washington Township, Westmoreland County, both of, Pa., assignors to United States Steel Corporation
Filed Oct. 14, 1969, Ser. No. 866,312
Int. Cl. B60b *27/06;* **F01d** *5/04*
U.S. Cl. 416—204 **11 Claims**



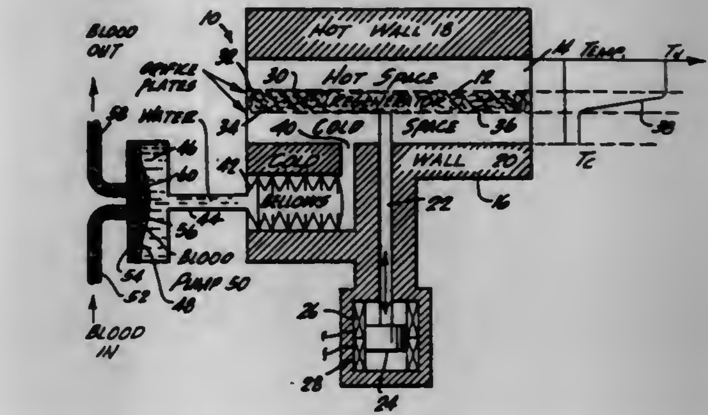
An impeller shaft assembly for a fan operating at high temperatures in the range from ambient temperature to a high-operating temperature is disclosed. The impeller shaft assembly has a metal shaft having at one end a connector portion of reduced nonround cross section. The reduced cross section has rounded corners. The shaft has a tapered portion provided with a taper toward the one end adjacent the connector portion. The shaft has a first coefficient of expansion. A ceramic impeller is disposed on the shaft and is provided with a connector aperture adapted to receive and frictionally engage the connector portion with a predetermined cold clearance. The impeller is provided with a tapered aperture adjacent the connector aperture, is adapted to receive the tapered portion with one cold clearance (of a cold clearance greater than the first predetermined cold clearance, a cold clearance equal to the first predetermined cold clearance and a cold clearance less than the first predetermined cold clearance) and defines an impeller shoulder with the connector aperture. The impeller shoulder is engageable with the shaft shoulder. The impeller has a second coefficient of expansion less than the first coefficient of expansion. Drive means are connected to the shaft to cause rotation of the shaft and the impeller at high speed. The shaft and the impeller are rotated by the drive means at the high speed and at the high temperature so that the predetermined cold clearance and the one cold clearance are reduced to a limit which approaches but never reaches zero.

3,604,820
MOTOR-DRIVEN PUMP
Winfrid Scheller, Luneburg; Harry Zimmermann, Tespe, and Gunther Boes, Luneburg, all of, Germany, assignors to Loewe Pumpenfabrik G.m.b.H., Luneburg, Germany
Filed June 20, 1969, Ser. No. 835,064
Claims priority, application Germany, June 22, 1968, P 17 63 554.0
Int. Cl. F04b *17/00;* **H02k** *5/00*
U.S. Cl. 417—363 **4 Claims**



A power pump including a dry-operating drive motor mounted on the pump housing and connected to a pump impeller, wherein the output shaft includes a seal consisting of a slipring and a contrarotating ring which is coupled to an elastic noise damper on the pump housing.

3,604,821
STIRLING CYCLE AMPLIFYING MACHINE
William R. Martini, Richland, Wash., assignor to McDonnell Douglas Corporation
Division of Ser. No. 702,745, Feb. 2, 1968, Pat. No. 3,513,659
Filed Aug. 13, 1969, Ser. No. 870,930
Int. Cl. F04b *17/00, 43/06;* **F25j** *3/02*
U.S. Cl. 417—379 **9 Claims**



Constant volume regenerative, or Stirling, cycle thermal amplifying machine having an independently oscillated regenerator. Small amount of input energy is used to oscillate the regenerator. These oscillations produce large output pressure pulses which are adapted to drive a device, such as a pump, producing a large amount of output energy. Working fluid in machine is gas in one version wherein a bellows responsive to the pressure pulses of the gas is utilized to drive the pump, and is liquid in another version wherein the bellows can be omitted and the pressure pulses of the liquid is directly utilized to drive the pump.

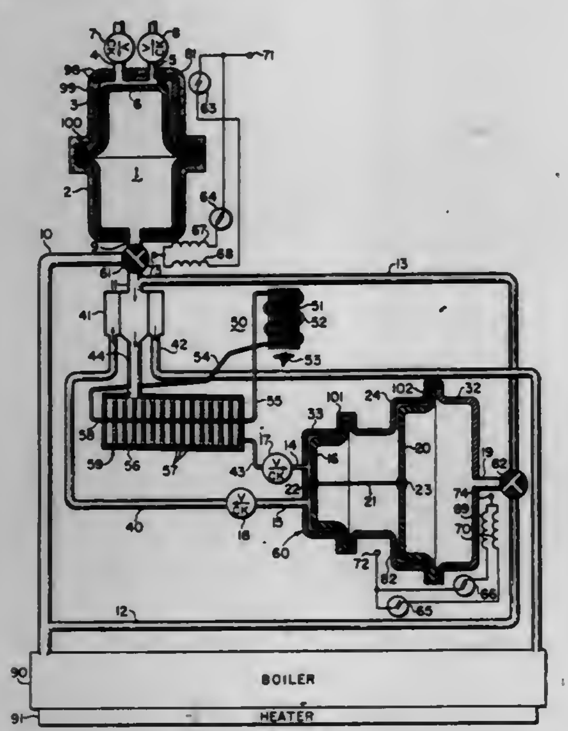
3,604,822
THERMAL COMPRESSOR

Herbert H. Saxe, Owings Mills, Md., assignor to The Bendix Corporation

Continuation-in-part of application Ser. No. 749,445, Aug. 1, 1968, now abandoned. This application Dec. 18, 1969, Ser. No. 886,167

Int. Cl. F04b *17/00;* **F03g** *7/06*

U.S. Cl. 417—339 **11 Claims**



The subject of this invention is a thermally actuated, vapor-driven diaphragm pump wherein condition sensor means and cascaded condenser/heat exchanger means are employed to maximize the cycle rate of the pump and to minimize the amount of driving energy dissipated, thereby producing a pump of high efficiency.

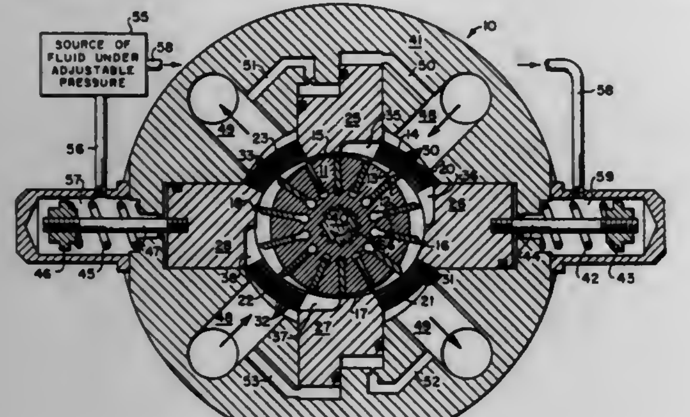
3,604,823
VANE TRACKING IN ROTARY DEVICES

David L. Thomas, Columbus, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Filed Mar. 2, 1970, Ser. No. 15,377

Int. Cl. F01c *21/16*

U.S. Cl. 418—26 **7 Claims**



A two-lobe sliding-vane rotary moving-fluid device (FIG. 1) comprises a cylindrical rotor **11** having vanes **12** slidable in substantially radial directions therein, the tip of each vane maintaining substantial contact with the inner cylindrical surface **13** of a cam **14** surrounding the rotor as it traverses sealing spaces **15, 16, 17, 18,** and port spaces **20, 21, 22, 23** in the cam alternately during rotation.

The port spaces are formed largely of flexible laminations **30, 31, 32, 33;** so the cam is deformable by adjusting forces against its rigid portions **25, 26, 27, 28** to change its shape and thus to vary the fluid displacement by adjusting the relative positions of the rotor and the sealing spaces.

Throughout the range of displacement positions, any appreciable radial sliding of a vane is only inward as it traverses and maintains substantial contact with the inner surface of each sealing space. Such surface is substantially circular in cross section (FIG. 2), and relative movement of the center of rotation **60** of the rotor is substantially along a portion of the radius **73** from the center of curvature **62** of the inner surface to the trailing edge **68** of the sealing space **15,** where the center of rotation can be closer to the sealing space than the center of curvature. The relative movement is substantially along an extension of the radius **74** to the leading edge **71** of the sealing space **16,** where the center of rotation **60** can be farther than the center of curvature **63** of the inner surface of the sealing space.

A fixed-displacement device is similar, except that the cam is not deformable.

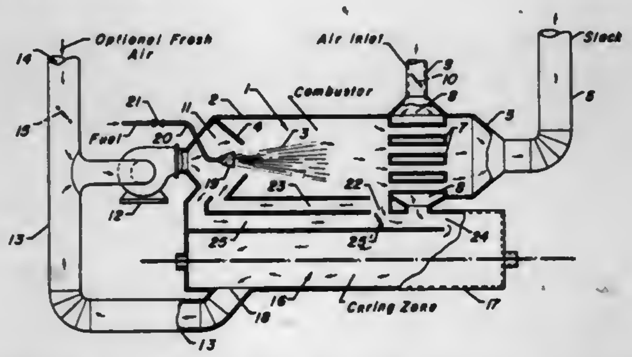
3,604,824
THERMAL INCINERATION UNIT

Leslie C. Hardison, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 27, 1970, Ser. No. 31,961

Int. Cl. F23l *15/00*

U.S. Cl. 431—116 **10 Claims**



A thermal incinerator unit with an improved design that provides a gas recycle passageway means around and in combination with the combustion section to thereby limit the temperature increase through such combustion section and provide a controlled burning of the incinerated portion of the fumes. The recycle arrangement within the incineration unit is particularly applicable to the handling of a high B.t.u. content contaminated gas stream which could normally result in an excessive temperature rise across the combustion zone.

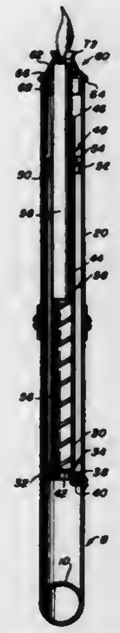
3,604,825
CANDLEHOLDER

Wasily M. Leshko, 402 Center St., Wiconisco, Pa.

Filed Oct. 9, 1969, Ser. No. 865,068

Int. Cl. F23d *3/16*

U.S. Cl. 431—290 **10 Claims**



A special-purpose wax candle holder, more particularly, a portable Troyca-type candelabra which is expressly but not necessarily designed and acceptably adapted for ritualistic and ceremonial use in an all Eastern orthodox church and which is hand carried or held while the apostolic epistle and gospel is read and transfer of the holy eucharist is transferred from oblation to the main altar table. The three outer tubes, which enclose and shield the inner spring-loaded candleholding tubes, provide the desired oriented branches and are coordinated with balanced and braced handling means.

ELECTRICAL

3,604,826
SHUTOFF DEVICE FOR HOLLOW ELECTRODES

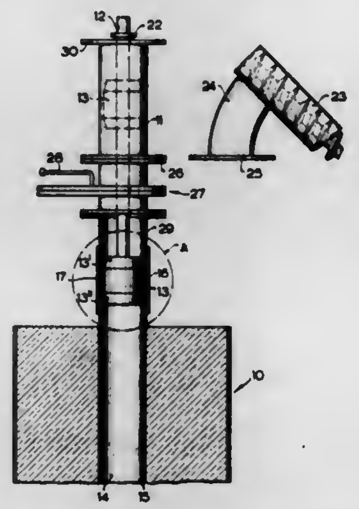
Fritz Muller, Knapsack near Cologne; Hugo Werner, Hermulheim near Cologne, and Werner Nolden, Bruhl, all of, Germany, assignors to Knapsack Aktiengersellschaft, Knapsack bei Cologne, Germany

Filed Apr. 13, 1970, Ser. No. 27,571

Claims priority, application Germany, Apr. 17, 1969, P 19 19 523.4

Int. Cl. H05b *7/06*

U.S. Cl. 13—18 **12 Claims**



Shutoff device for hollow electrodes supplying particulate feed material to and/or supplying gas to or removing furnace gas from electrothermal reduction furnaces, arc melting furnaces, for example calcium carbide furnaces. A supply means mounted on the hollow electrode is formed with a thrust rod slidable therein, coaxially with respect to the electrode, and a stopper is detachably secured to the thrust rod which can be actuated from the outside and enables the stopper to be moved inside the supply means from a position permitting the free supply and removal of material through the electrode to a position inside the electrode where the supply and removal of material therethrough is arrested, and inversely. The shutoff device is more particularly formed with a solid stopper having at least one corrugated steel compensator associated to it for sealing the gap left between the stopper and electrode inside wall.

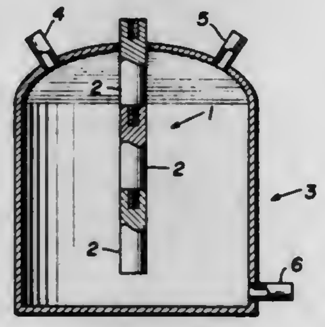
3,604,827
ELECTRODE FOR USE IN MANUFACTURING ELEMENTAL PHOSPHORUS

Milton P. Albert, and Milton J. Scott, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 19, 1969, Ser. No. 878,213

Int. Cl. H05b *7/06*

U.S. Cl. 13—18 **1 Claim**



Improved amorphous carbon electrodes characterized by sonic propagation velocities of from 5,000 to 5,900 ft./sec. exhibit improved performance in electric furnace processes for manufacture of elemental phosphorus.

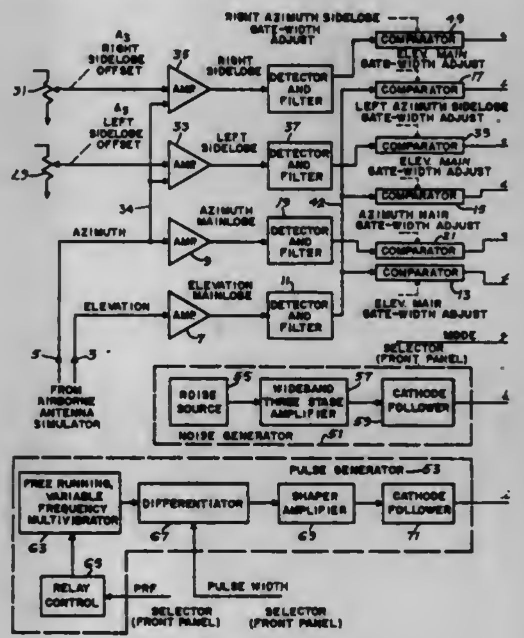
3,604,828
RADAR-JAMMING TECHNIQUE

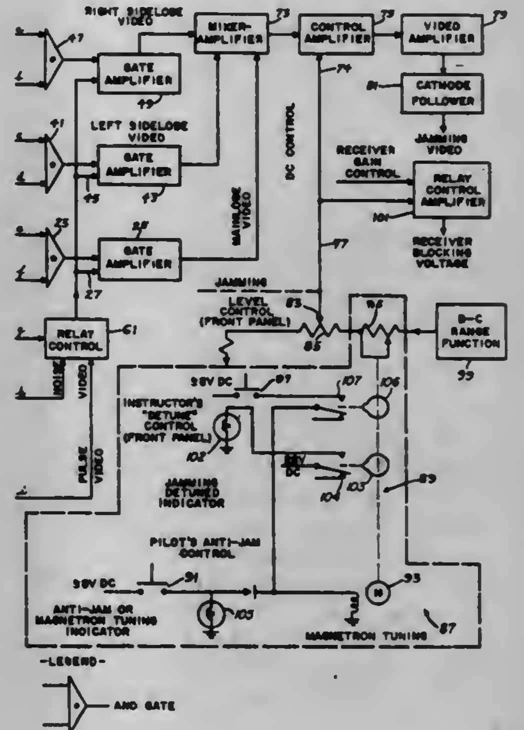
Joseph F. Perkovich, Uniontown, Ohio, assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 27, 1965, Ser. No. 451,702

Int. Cl. G09b *9/00;* **G01s** *9/00*

U.S. Cl. 35—10.4 **8 Claims**





This invention relates to a radar simulator, and more particularly to a radar-jamming simulator.

In order to properly train radar operators in the techniques of operating their radar sets in battle conditions, it is necessary to provide them with training recognition of radar jamming, and the appropriate counter measure techniques to employ in the presence of jamming. To do this it is necessary, in the most preferred form, to provide jamming simulation equipment in association with an operational radar set. This jamming simulation equipment would include means to determine when the antenna of the radar is looking at an actual or simulated target which is to be interrogated or intercepted and to supply the desired simulated jamming effects. It is also necessary to display the simulated jamming signals on the operational radar scope or on a simulated radar scope, so that a radar operator may be able to learn how to apply proper defensive measures to minimize the effects of jamming on his radar scope. Various effects are simulated by such jamming simulation equipment including noise and pulse modulation forms of jamming. Additionally, in order to more realistically simulate jamming operating conditions, receiver blocking and magnetron tuning operations by the radar operator, are also simulated.

3,604,829

A DYNAMIC VOICING FILTER FOR AN ELECTRONIC ORGAN

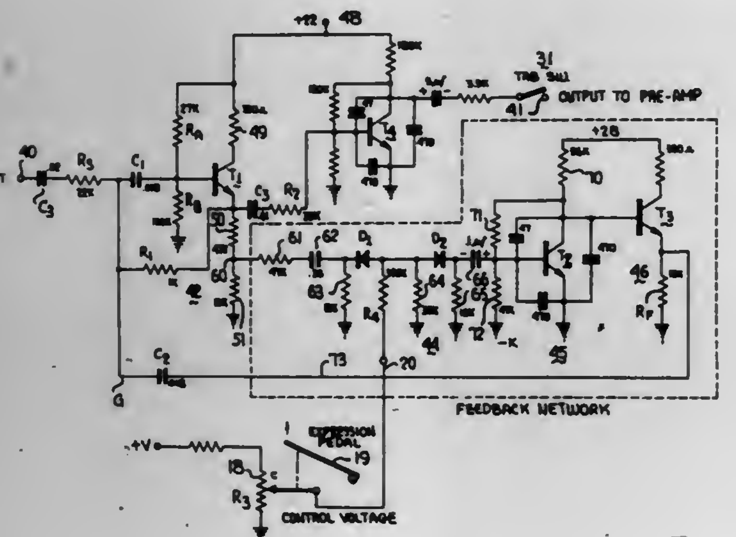
David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Division of Ser. No. 723,685, Apr. 28, 1968, Pat. No. 3,519,720

Filed Dec. 31, 1969, Ser. No. 1,918

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.19 14 Claims



An electric organ having conventional voicing circuits is also supplied with an auxiliary dynamic voicing filter, controlled by the expression pedal of the organ. The voicing filter is an active RC filter, having a feedback loop of controllable gain, that gain determining the peak frequency of the filter. A diode gate in the feedback loop is controlled by a control voltage established as a function of position of the expression pedal of the organ.

3,604,830

SPACE AND TEMPERATURE ACCOMMODATING SELF-CLEANING WEATHER CASING AND HIGH VOLTAGE INSULATING STRUCTURE EMPLOYING THE SAME

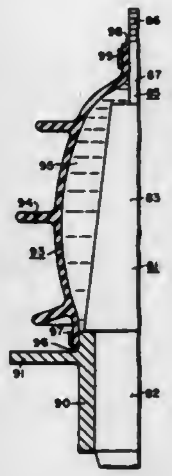
James H. Frakes, Tucson, Ariz., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 685,216, Nov. 22, 1967, now abandoned , which is a continuation of application Ser. No. 543,706, Apr. 19, 1966, now abandoned. This application Nov. 26, 1969, Ser. No. 880,332

Int. Cl. H01b *17/26*

U.S. Cl. 174—31 R 11 Claims

A weather casing has axially spaced sheds extending equal distances from the body portion of the casing, or sheds near one end thereof which extend from the body portion graduated increasing distances as the end is approached, to encase insulating bodies including bushings of tapering outside diameters as well as outside diameters uniform over the length to be covered, and enhance washoff of the lower sheds for either type bushing body. The casings are cemented or clamped at the ends. No gaskets are required. Oil may fill a substantial space between a casing composed of resilient or elastic material and the bushing body, the casing by its resiliency or elasticity accommodating expansion or contraction of the oil due to ambient temperature changes and other causes. The body of the casing and/or the sheds may be so flexible that wind moves the sheds, breaking ice and throwing off snow. Where a filler material is added between casing and body of insulation, the elastic casing keeps the filler material under pressure at all times.



3,604,831

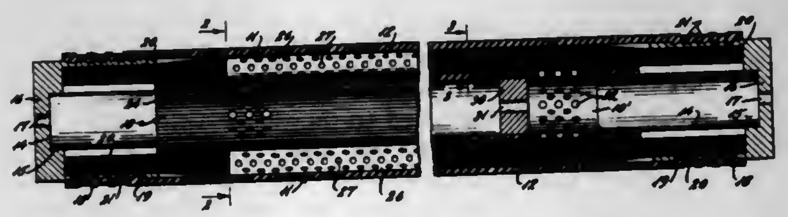
FLUTED CORE

Daniel J. Goodman, 23236 Westbury Dr., St. Clair Shores, Mich.

Filed Oct. 21, 1969, Ser. No. 868,082

Int. Cl. H01b *7/34*

U.S. Cl. 174—15 8 Claims



A high-current-carrying, flexible electric cable has a central hollow core having longitudinal flutes along its exterior, conductors surrounding the core, and sheathing encasing the conductors. The core has an internal restriction adjacent to each end which permits limited flow of liquid through its hollow interior and has a perforated portion adjacent thereto toward each end of the conductor in order that liquid introduced into the core will be forced through the perforations into the interstices between the conductors and a limited portion passes through the interior of the core.

3,604,832

COAXIAL ARRANGEMENT OF TUBULAR MEMBERS, AND SPACER STRUCTURE FOR SUCH ARRANGEMENTS

Hubert Kohler, and Fritz Schmidt, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

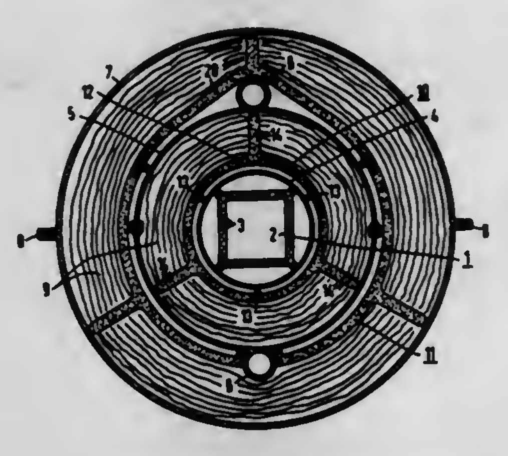
Filed July 22, 1970, Ser. No. 57,085

Claims priority, application Germany, July 25, 1969, P 19 37 795.8

Int. Cl. H01b *7/34*

U.S. Cl. 174—15 10 Claims

A coaxial arrangement for coolable cables or the like, comprises inner and outer tubular members which form a longitudinally extending, annular interspace between each other, one or both these members being contactable by coolant passing through the cable during operation. The annular interspace is secured by longitudinally spaced spacer structures of poor heat-conducting material. Each of the spacer structures is in contact with the respective tubular members at only small areas and has a ring portion surrounding the inner tubular member when in assembled condition. The ring-shaped portion has inwardly directed and angularly spaced bosses or little protrusions which face and contact the inner tubular member when the arrangement is in assembled condition. Three spoke members are joined with and protrude in a radially outward direction from the ring portion so as to engage the outer tubular member of the arrangement when assembled. The three spoke members are 120° peripherally spaced from each other. Each spacer structure is composed of a plurality, preferably three component members, each component member carrying one of the three spoke members.



3,604,833

CONSTRUCTION FOR CRYOGENIC CABLES

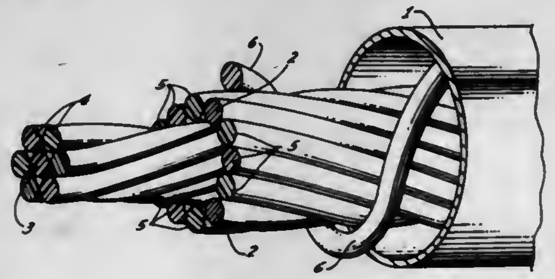
August Beck, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Nov. 28, 1969, Ser. No. 880,995

Claims priority, application Germany, Dec. 4, 1968, P 18 12 613.1

Int. Cl. H01b *7/34*

U.S. Cl. 174—15 14 Claims



Superconductive strings are stranded with insulating strings to form a rope which is inserted in a pipe otherwise filled with or passed through by coolant to obtain cryogenic conditions.

3,604,834

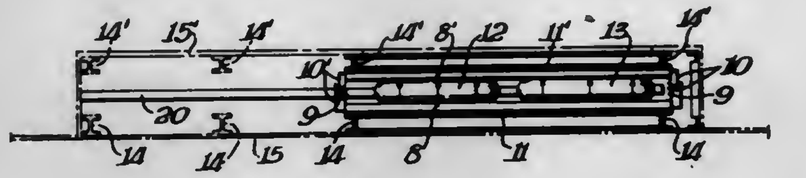
DOOR FOR A SHIELDED ENCLOSURE

Roger C. Follett, Carson, Calif., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 12, 1969, Ser. No. 849,400

Int. Cl. H05k *9/00*

U.S. Cl. 174—35 MS 4 Claims



A sliding door for a shielded enclosure is constructed with a pair of spaced panels and includes an expandable means, typically a bladder, which is disposed between the panels and is adapted to create a uniform sealing pressure of each panel against the door frame.

3,604,835

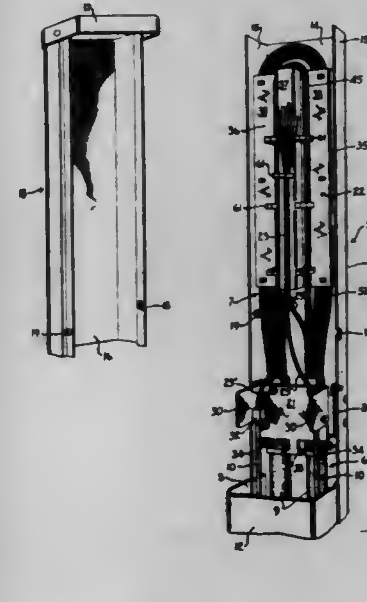
TERMINAL ENCLOSURE FOR BURIED CABLE PLANT

Douglas L. P. Hamilton, 3111 West Mill Road, Milwaukee, Wis.

Filed Apr. 22, 1970, Ser. No. 30,669

Int. Cl. H02g *9/02*

U.S. Cl. 174—38 11 Claims



A terminal chamber in the top part of a terminal enclosure for a buried cable installation is compartmented by platelike supporting and partition members, both carried by a channel-shaped rear member comprising the main enclosure body. Both compartmenting members are in forwardly spaced generally parallel relation to the rear member web. The supporting member, near the bottom of the terminal chamber supports upright stretches of cable and service lines. The partition member, spaced above it, has spliced conductors and an unassigned conductor loop secured to and overlying its front face, while a loop of unassigned conductors lies behind it.

3,604,836

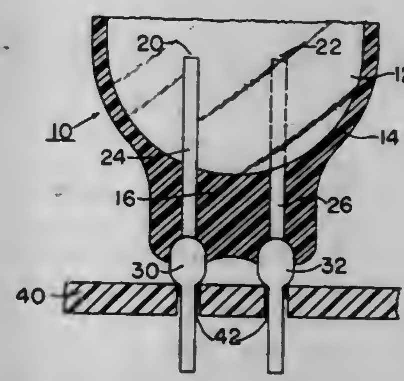
DIP-COATED ELECTRICAL COMPONENTS

Ralph E. Pierpont, Kennebunk, Maine, assignor to Sprague Electric Company, North Adams, Mass.

Filed Sept. 8, 1969, Ser. No. 855,897

Int. Cl. H05h *5/00*

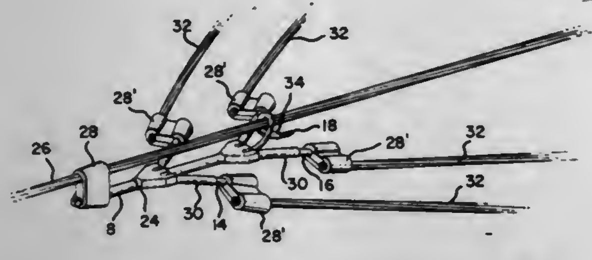
U.S. Cl. 174—52 PE 3 Claims



Solder globules applied to lead wires for dipped electrical components act as reference points and barriers in dipping, and as standoffs and soldering assists for circuit board mounting.

3,604,837
UTILITY MIDSPAN ADAPTER

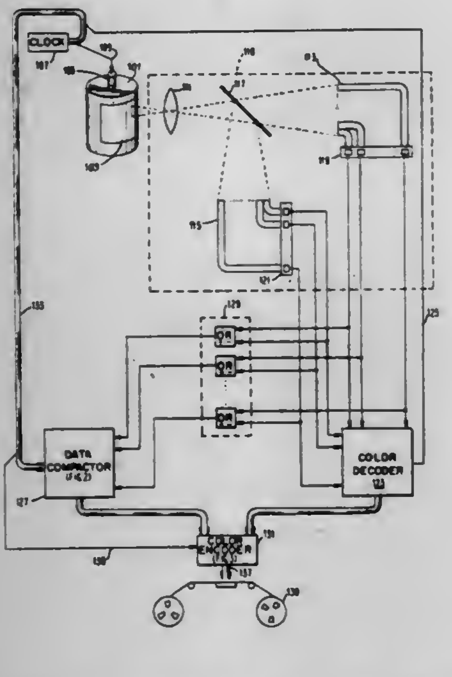
James L. Mixon, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 3, 1970, Ser. 60,676
Int. Cl. H02g *7/00*
U.S. Cl. 174—72 R **6 Claims**



An adapter for splicing a plurality of taplines and a streetlight to a selected point on an electrical transmission line and including a stamped plurality of legs. One leg is spliced to the transmission line and the remaining legs project from the adapter and are spliced respectively to taplines. One of the legs is anchored to the transmission line and provided with a streetlight.

3,604,838
COLOR ENCODER FOR COMPACTING AND RECORDING COLOR INFORMATION OBTAINED BY SCANNING A DOCUMENT

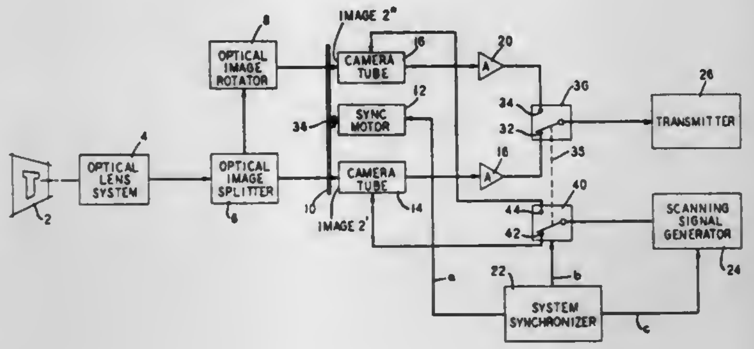
John V. Sharp, West Hurley, and Donald R. Thompson, Woodstock, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 11, 1969, Ser. No. 815,444
Int. Cl. H04n *1/46*
U.S. Cl. 178—5.2 R **6 Claims**



A color encoder compacts the data obtained from scanning a multicolored document by eliminating redundant information. The data is generated by scanning small contiguous regions of the document with a color-detecting system. The small regions scanned are preferably square and have sides equal in length to half the width of the narrowest line which appears on the document. The data compaction is performed in two steps. First, the data from the scan of a line is compacted by combining the data from pairs of adjacent regions to form one piece of data for each pair of regions. Second, the compacted data from successive scan lines is compacted in the same way, yielding one line of data for each pair of lines. This compaction reduces the data from four regions of one piece of data. The scanned document is specially prepared and has a background color with predetermined characteristics suitable for use with the color detector which determines the color of each region. The color encoder determines and records which is the first region in a group of regions to have a nonbackground color, the color of that region and whether any subsequent region in the group of regions has a different nonbackground color.

3,604,839
FIELD-SEQUENTIAL COLOR TELEVISION APPARATUS EMPLOYING COLOR FILTER WHEEL AND TWO CAMERA TUBES

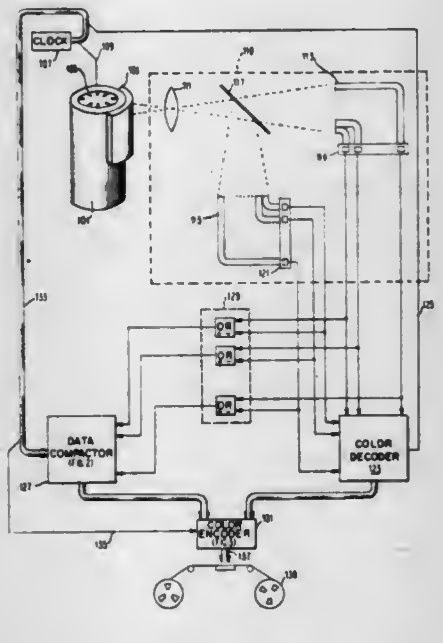
Sotirios Constantine Kitsopoulos, Waedenswil, Switzerland, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 19, 1970, Ser. No. 12,630
Int. Cl. H04n *9/34*
U.S. Cl. 178—5.4 CF **11 Claims**



In a three-color, field-sequential television system, color crosstalk is reduced and signal-to-noise ratio increased by using two monochrome television camera tubes in optical correspondence with a three-color filter wheel. The physical relationship of the camera tubes and the filter wheel allows the tubes to be scanned in alternate time periods, thereby extending exposure time relative to scanning time. The video signals from the two tubes are combined to produce a three-color, field-sequential television signal.

3,604,840
COLOR ENCODER

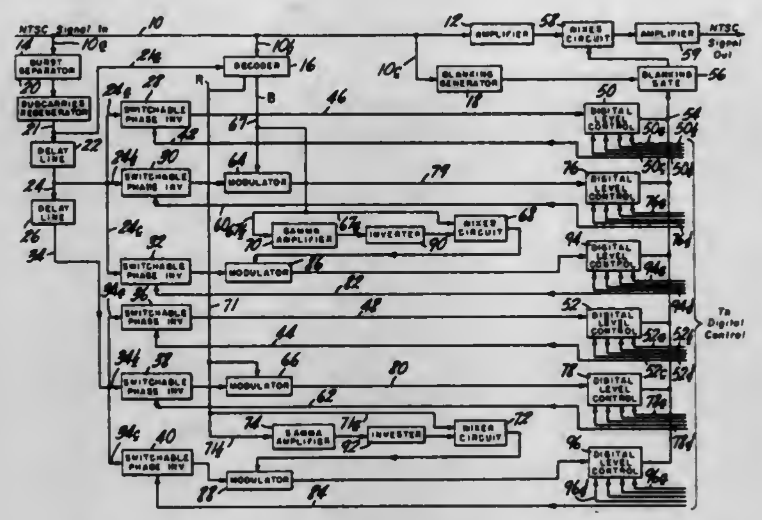
John V. Sharp, West Hurley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,274
Int. Cl. H04m *5/42*
U.S. Cl. 178—5.4 R **7 Claims**



A color encoder for encoding the colors detected in scanning a document which detects the first region among a contiguous set of regions of equal area containing a color other than background color. If any other regions contain a color other than said first region (not including background), this is also detected. It records which regions contain a color and which regions contain background, the color of the first region which contains a color, and whether any of the other regions contains a different color.

3,604,841
CORRECTION APPARATUS FOR ENCODED COLOR TELEVISION SIGNALS

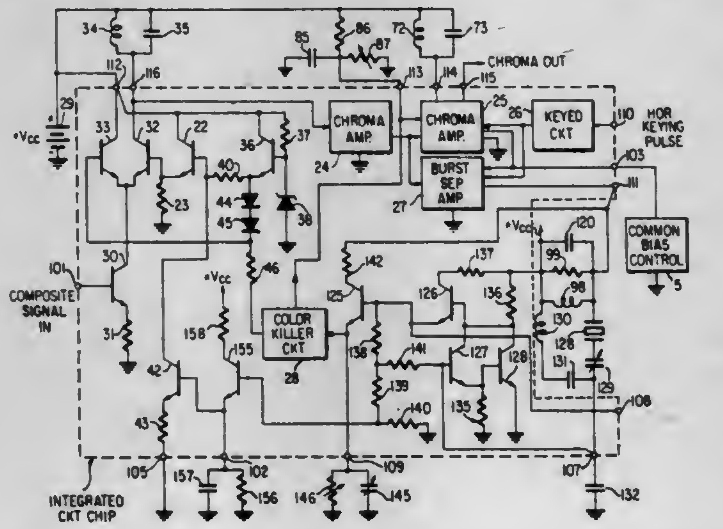
Adrian B. Ettlinger, Hastings-on-Hudson, N.Y., and Renville H. McMann, Jr., New Canaan, Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.
Filed May 1, 1969, Ser. No. 820,790
Int. Cl. H04n *1/00*
U.S. Cl. 178—5.4 R **4 Claims**



In one embodiment of the invention described herein, synchronous blue and red color carrier correction signals of proper phase are developed from an encoded color television signal. The carrier signals have introduced therein fixed increments of correction to produce thereby blue and red black level correction signals. The signals are also supplied to a set of modulator circuits wherein the signals are modulated by decoded blue and red color component signals. The resulting gain control signals, which have amplitudes proportional to the instantaneous amplitudes of the decoded signals, are also corrected in increments. Furthermore, the signals are supplied to another set of modulator circuits wherein the signals are modulated by signals comprising the differences between gamma corrected and linear decoded blue and red color component signals. The resulting gamma correction signals have introduced therein fixed increments of correction and are thereafter combined with the color black level and gain control signals and added to the encoded color television signal.

3,604,842
AUTOMATIC CHROMA CONTROL CIRCUITS

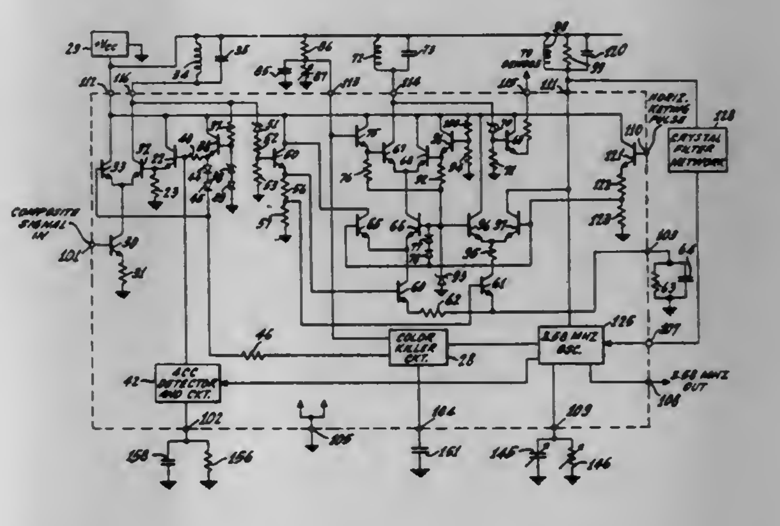
Leopold Albert Harwood, Somerville, N.J., assignor to RCA Corporation
Filed May 8, 1969, Ser. No. 822,951
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 AC **10 Claims**



Automatic chroma control circuitry employs a peak detector circuit, operated from a chroma oscillator configuration, which oscillator exhibits a varying amplitude response determined by a narrow band filter included in an AC feedback path for the oscillator and arranged to selectively filter signal frequencies within the narrow band-pass as coupled thereto during the oscillatory burst interval. The band-pass filtered signals, including noise components serving to vary the peak amplitude of the oscillator cause the detector to provide at an output a control voltage proportional to the highest peak of the oscillator. This control voltage is applied to a chroma amplifier stage for varying the gain in accordance with varying oscillator amplitude.

3,604,843
AMPLIFIER CIRCUITS

Leopold Albert Harwood, Somerville, and Erwin Johann Wittmann, N. Plainfield, both of, N.J., assignors to RCA Corporation
Filed May 8, 1969, Ser. No. 822,887
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 R **10 Claims**



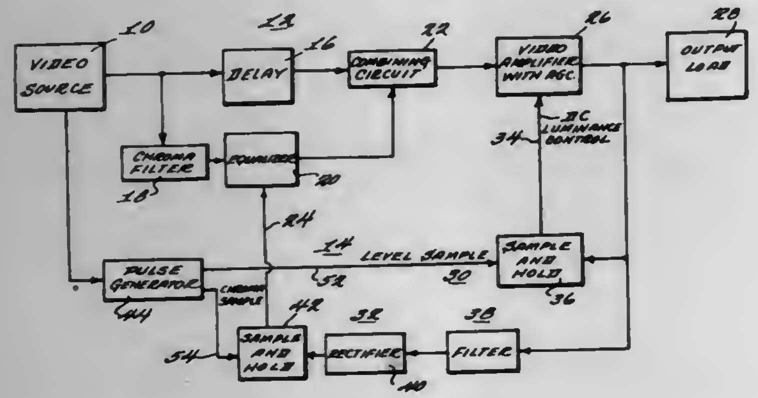
An amplifier comprises first and second transistors. A voltage divider is coupled between the base electrode of the first transistor and a point of reference potential. The base electrode of the second transistor is also coupled to an intermediate point on the voltage divider. A degenerating resistor coupled between the emitters is selected to provide a DC voltage drop thereacross equal to the DC drop between the base electrodes. A common current return path coupled to the emitter of the second transistor biases both transistors linearly with said voltage divider while the degenerating resistor also serves as a negative feedback element for signals applied to the base electrode of the first transistor.

The bias scheme enables both transistors to operate linearly, as stably biased, while exhibiting different gain factors for signals applied to their respective base electrodes.

3,604,844
VIDEO SIGNAL PROCESSING AMPLIFIER WITH AUTOMATIC GAIN CONTROL

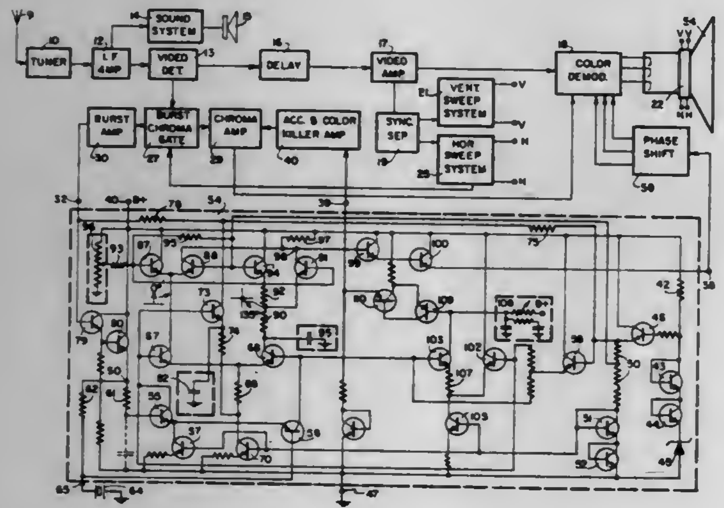
John D. Ross, Dollard des Ormeaux, Quebec, Canada, assignor to Central Dynamics, Ltd., Pointe Claire, Montreal, Quebec, Canada
Filed May 28, 1969, Ser. No. 828,538
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 AC **11 Claims**

Automatic gain control circuitry is disclosed for maintaining the chrominance and luminance levels of a composite color television signal at a constant value. First and second test signals are respectively inserted in the 17th and 18th lines of the vertical blanking interval of each television field. The first test signal is typically a 100 IRE unit white pulse while the second is a high frequency burst signal, the frequency of which may correspond to that of the color burst. In order to maintain the level of the chrominance component of the composite color signal at a constant value, the composite color signal is applied to a signal amplifying channel where the chrominance component is extracted and the amplitude thereof is adjusted by a DC control signal which is derived as follows: The composite color signal is also applied to a pulse generator which produces a first sampling pulse during the 18th line of the vertical blanking interval so as to coincide with the approximate center of the second test signal, this sampling pulse being applied to a first sample and hold circuit. After the chrominance level has been adjusted, the adjusted composite color signal is also applied to the first sample and hold circuit. In particular, the high frequency burst test signal is filtered and rectified and the center portion thereof is sampled by the above-mentioned first sampling pulse to thereby derive the above-mentioned DC control pulse for adjusting the level of the chrominance component. The first test signal has its level sampled by a second sampling pulse generated by the pulse generator to thereby derive a second DC control signal which controls the level of the entire composite color television signal.



3,604,845
BURST-RESPONSIVE DIFFERENTIAL OSCILLATOR CIRCUIT FOR A TELEVISION RECEIVER

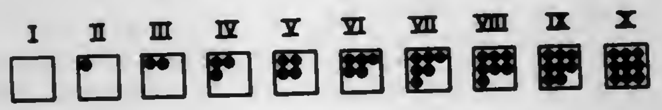
Gildo Cecchin, Niles, and Francis H. Hilbert, River Grove, both of, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 26, 1969, Ser. No. 880,320
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 AC **6 Claims**



A color television receiver uses an integrated circuit to provide the subcarrier reference signals and ACC control voltage for the receiver. The circuit includes a first differential amplifier, unbalanced at the burst signal frequency, operated as the color reference oscillator to provide first and second differently phased output signals which are applied to a pair of differential steering gates. A phase-shift hue control of the color reference signal is obtained by adding selected outputs of the pair of differential steering gates. In addition, a differential amplifier is operated as diodeless detector for deriving ACC voltage from the oscillator output when burst signals are applied to the input of the oscillator.

3,604,846
METHOD AND SYSTEM FOR RECONSTRUCTION OF HALF-TONE IMAGES

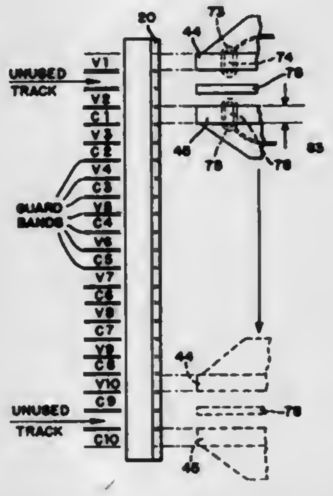
David Behane, Yellow Springs; Lewis H. Spradley, Centerville; Lysle D. Cahill, Dayton, and William M. Marshall, Dayton, all of, Ohio, assignors to The Mead Corporation, Dayton, Ohio
Filed Mar. 3, 1969, Ser. No. 803,910
Int. Cl. H04n *1/04, 1/28, 1/40*
U.S. Cl. 178—6.6 R **12 Claims**



Reproduction of original graphic representations is accomplished by (a) optically scanning an original (b) producing a density sealed digital output (c) processing this information to derive code signals defining relative density of incremental areas as an increment matrix of one or more dots, and (d) placing dots on a receiving member according to these code signals. During processing the span of the density scale can be adjusted to enhance contrast in all or some areas of the image, without loss of mensuration accuracy. The printout is made through control of individual marking drops which are selectively charged and deposited on or diverted from the receiving member according to the code signals.

3,604,847
MULTITRACK MAGNETIC RECORDING SYSTEM

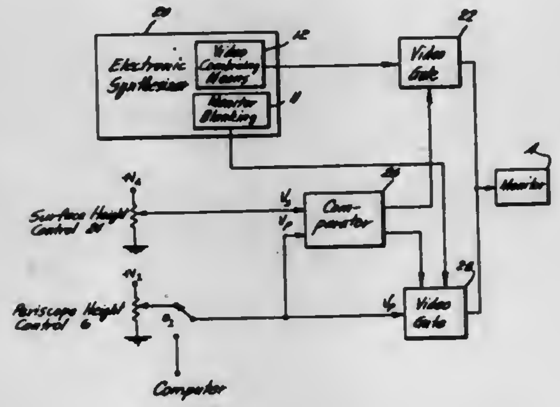
Kingston E. Ganske, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Feb. 14, 1968, Ser. No. 705,479
Int. Cl. G11b *3/36, 21/08, 23/18*
U.S. Cl. 178—6.6 A **10 Claims**



A magnetic recording head has at least two magnetic transducers constructed in a common head in spaced-apart relation sufficient for convenient assembly and proper shielding of the individual transducers. The transducers follow spaced parallel tracks on the magnetic tape, and are moved after following one set of tracks on the tape into a position for following additional spaced tracks. No two adjacent tracks on the tape contain the same type of recorded information, and all of the tracks are equally spaced apart over the entire range of movement of the head. In color television recording, one transducer records and/or plays back video information and the other transducer records and/or plays back color information and audio. The transducers in the head are spaced apart (on centers) a distance greater than the movement imparted to the head for following different tracks, the movement preferably being two thirds this transducer spacing. This produces alternate tracks on the tape with minimum guard band between any two adjacent tracks, and with each video track on opposite sides of a color-audio track. In longitudinal recording this permits use of a maximum amount of the tape surface, leaving only two possible track areas unused.

3,604,848
PERISCOPE BREAKWATER SYNTHESIZER

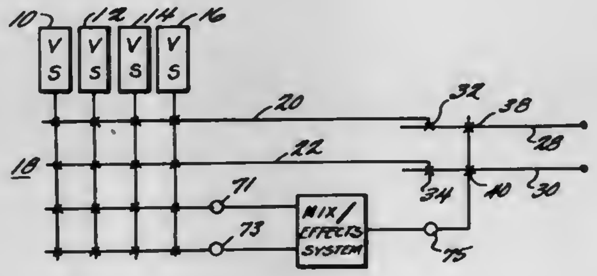
Carl R. Driskell, Winter Park, Fla.
Filed Apr. 27, 1970, Ser. No. 31,953
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **5 Claims**



Electronic means for automatically changing the illumination of the view observed through the periscope of a submarine periscope view simulator training device as the simulated depth of the periscope is changed. As an ascending periscope approaches the surface of the sea from below, the illumination of the periscope view increases at a rate related to the rate of ascent from darkness to a higher value at a position just below the surface. As the periscope breaks through the surface, full illumination is provided and the scene at the surface becomes visible. A reverse sequence is followed when a periscope descent is made. The invention provides means for simulating the changes in illumination observable in a periscope during the simulation of both ascents and descents.

3,604,849
MIX-EFFECTS SYSTEM FOR TELEVISION VIDEO SIGNALS

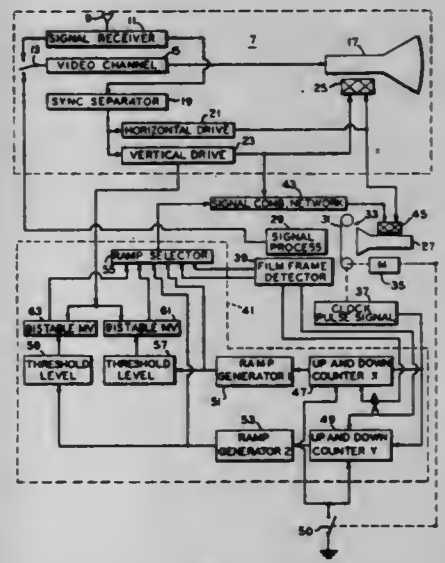
Ole Skrydstrup, Pierrefonds, Quebec, Canada, assignor to Central Dynamics, Ltd., Montreal, Quebec, Canada
Filed May 28, 1969, Ser. No. 828,536
Int. Cl. H04n *5/24*
U.S. Cl. 178—6.8 **19 Claims**



A mix/effects system for television video signals is disclosed, the system including a plurality of video sources, a matrix of switching cross points, the input buses of which are respectively connected to said plurality of video sources and the output buses of which are connected to appropriate destination points. Switching circuitry having two input terminals is connected to no more than two of the output buses from said matrix of switching cross points. The switching circuitry also includes two output terminals, the switching circuitry comprising a plurality of switching elements. A mixing amplifier having two input terminals is connected to the two output terminals of the switching circuitry. Circuitry for generating control signals for controlling the energization of the switching elements enables the switching circuit together with the mixing amplifier to provide a wide variety of video signal effects at the output terminal of the mixing amplifier.

3,604,850
VARIABLE SPEED CONTINUOUS MOTION FILM AND TELEVISION SCAN SYNCHRONIZATION

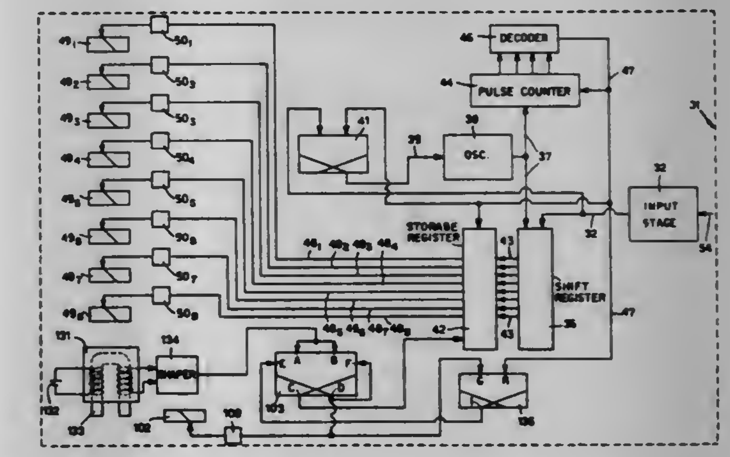
Robert Roy Eckenbrecht, East Bethany; Charles Bailey Neal, Batavia, and Dong Woo Rhee, Williamsville, all of, N.Y., assignors to Sylvania Electric Products, Inc.
Filed Apr. 15, 1970, Ser. No. 28,864
Int. Cl. H04n *5/36*
U.S. Cl. 178—7.2 D **26 Claims**



A system is provided for deriving images from a film of film frames, either motionless or continuously and bidirectionally movable at different speeds, and effecting translation between the different film frame speeds and the scanning frequency of a display device whereon the derived images are displayed. A flying spot scanner system is employed wherein a film of film frames is continuously advanced through a film scanning zone, the film frames are detected to provide a pair of vertical scan modification signals, a selector means switches from one to the other of the modification signals in accordance with the positional location of the film frames within the film scanning zone and the retrace period of the vertical scanning signals, and the vertical scan and vertical scan modification signals are combined and applied to the flying spot scanner system to vertically modulate electron beam scanning in accordance with film movement.

3,604,851
RECEIVING DEVICE FOR CODE COMBINATIONS FOR A TELEPRINTER OF THE START-STOP TYPE

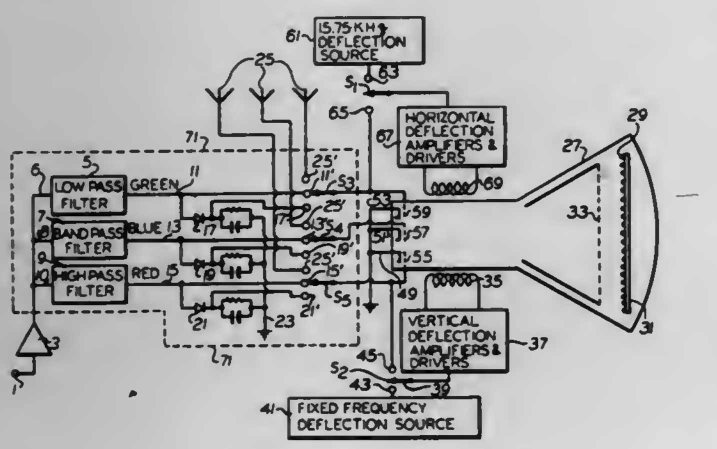
Bruno Sandrone, and Giuseppe Ricciardi, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Torino, Italy
Filed June 12, 1969, Ser. No. 832,616
Claims priority, application Italy, June 12, 1968, 52014-A/68
Int. Cl. H04l *15/24*
U.S. Cl. 178—36 **11 Claims**



A receiving device for a start-stop teleprinter comprises a shifting register adapted to serially receive a code combination and to transfer in parallel the received combination to a temporary storing register for simultaneously controlling a set of code electromagnets. A start electromagnet adapted to cause a printing mechanism to be cyclically operated is controlled by a bistable control circuit, which is set by a character ready signal generated upon receiving the code combination. The circuit then clears the storing register and is reset by a signal generated upon sensing at least one element movable with said mechanism.

3,604,852
APPARATUS FOR THE VISUAL AESTHETIC DISPLAY OF SOUND

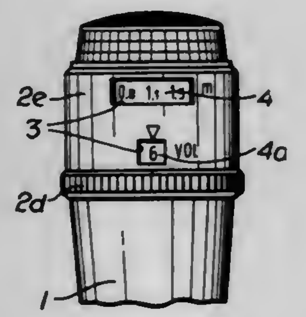
Joseph B. Weintraub, New York, N.Y., assignor to Howard Wise, New York, N.Y., a part interest
Filed Mar. 2, 1970, Ser. No. 15,440
Int. Cl. G10l *1/14*
U.S. Cl. 179—1 VS **6 Claims**



An apparatus for visually displaying aesthetic configurations representative of sound including multicolor kinescope displays in which the degree of sharp curvatures or discontinuities in the configurations being viewed on the kinescope display is substantially reduced by jointly varying beam intensity and beam deflection as a function of sound spectral content.

3,604,853
ADJUSTMENT-FACILITATING DEVICE FOR USE WITH A MICROPHONE AND VOLUME CONTROLLER

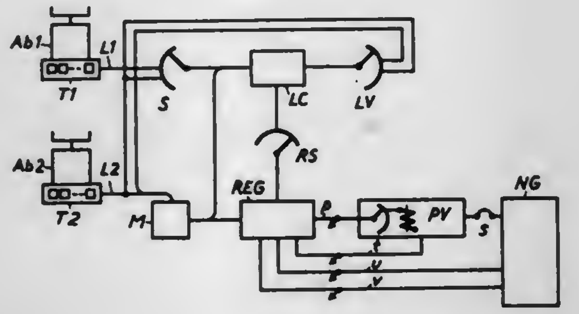
Ernst Pless, Vienna, Austria, assignor to Akustische V. Kino-Geraete Gesellschaft m.b.H., Vienna, Austria
Filed Nov. 20, 1967, Ser. No. 684,354
Claims priority, application Austria, Nov. 29, 1966, A11034/66
Int. Cl. G06c *3/00*
U.S. Cl. 179—1 A **5 Claims**



A device for facilitating correlation between the values, sound source distance, sound source volume and gain control setting, of an electroacoustical system including a microphone and an amplifier having a gain control, when two of these values are known, comprises a scale support carrying, in mutually fixed coordination, a first scale representative of the setting of the gain control, and at least one other scale representative of the distance of the sound source from the microphone. A slide on the support is movable along the scales and has a first indicator cooperable with the first scale and second indicator elements cooperable simultaneously with at least three adjacent indicia of each other scale. The device may comprise a unit physically independent of the microphone and the gain control, incorporated with the microphone, or incorporated with the gain control.

3,604,854
ARRANGEMENT AT A CALLED SUBSCRIBER'S INSTRUMENT FOR INDICATING THE CALLING INSTRUMENT

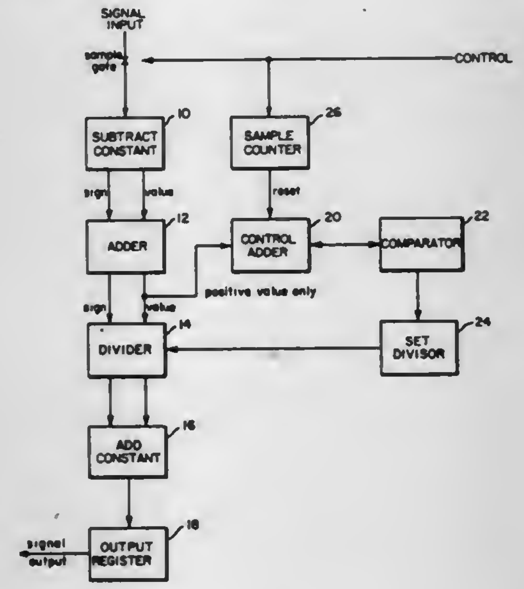
Anton Christian Jacobaeus, Stockholm, and John Carl Harold Bjork, Trangsund, both of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 10, 1969, Ser. No. 875,475
Claims priority, application Sweden, Dec. 13, 1968, 17113/1968
Int. Cl. H04m *15/06*
U.S. Cl. 179—5.5 **1 Claim**



In an automatic telephone exchange certain subscribers can use short numbers instead of the directory numbers for calls to optionally selected extensions which often are called from the subscriber. The invention has for a purpose to indicate at the called subscriber's instrument who is calling or has called with the use of a short number. A registering means for short numbers is arranged at the subscriber's instrument. In the exchange identifying means and analyzer are arranged so that on one hand the identity of the called extension corresponding to a short number is indicated for connecting a telephone communication, on the other hand the short number of the calling subscriber valid at the called part is indicated for setting the registering means of the called subscriber's instrument.

3,604,855
DIGITAL CONFERENCE CIRCUIT FOR PCM SIGNALLING SYSTEM

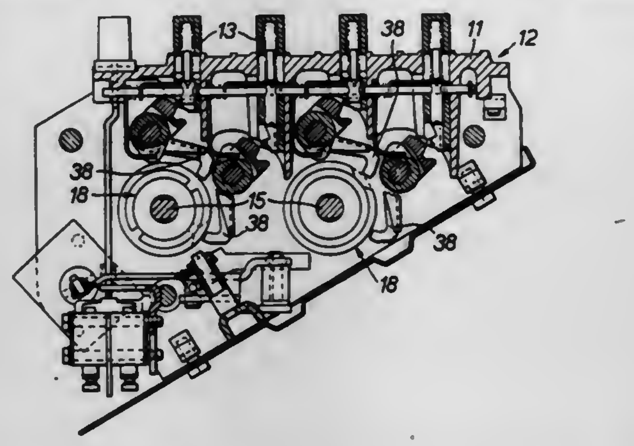
Uwe A. Pommerening, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Jan. 2, 1970, Ser. No. 98
Int. Cl. H04m *3/56*
U.S. Cl. 179—18 BC **4 Claims**



Signals from all conference channels are added in digital (binary) form and the sum is fed through a divider to an output register for distribution to all participating channels. The divider is set in response to a comparison between sums taken over predetermined successive intervals (about one-quarter second) and the maximum capacity of any one channel. The comparison made for each interval determines the divisor for the next interval.

3,604,856
AUTOMATIC DIALING SYSTEM FOR TELEPHONES

Gavin Patrick Blandy Martin, Alcester, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed May 26, 1969, Ser. No. 828,455
Int. Cl. H04m *1/26*
U.S. Cl. 179—90 B **8 Claims**

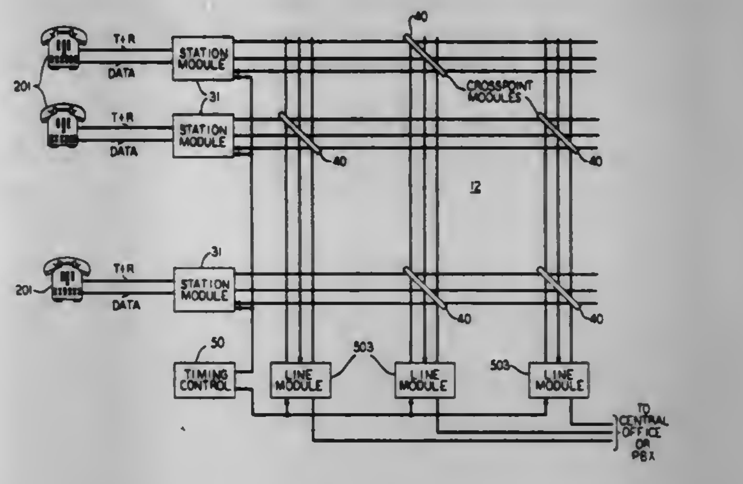


An automatic dialing system for telephones having a plurality of rotatable memory units each of which contains a telephone address, selection means for selecting one of the plurality of memory units, and a dialing switch mechanism which is rotatable to dial digits, and which is urged towards its rest position by a return spring. The memory units and the dialing switch mechanism are connected to respective first and second outputs of a differential gear mechanism the input of which is driven by an electric motor, and a pawl assembly is associated with the memory units and is operable to prevent rotation of the memory units. A first cam is rotatable with the input of the gear mechanism, and a second cam is rotatable with the first output of the gear mechanism. A cam follower is urged into engagement with the first cam, and is engageable by the second cam, movement of the cam follower operating a switch to control energization of the electric motor driving the input of the gear mechanism. The first cam is provided with a depression which is engageable by the cam follower to break the electric motor circuit and the second cam has a lobe which is engageable with the cam follower to move the cam follower to complete the motor circuit. The cam follower is moved out of engagement with the depression in the first cam to energize the motor, whereafter the cam follower rides on the periphery of the first cam as the first cam rotates, the first cam being rotated through one complete revolution to perform a dialing cycle to dial a single digit. The first and second cams are displaced angularly when a digit is dialed so that at the end of a dialing cycle the motor is deenergized with the lobe of the second cam displaced angularly from the depression in the first cam, and the second cam then being rotated by return movement of the dialing switch mechanism so that subsequently the lobe lifts the cam follower to restart the motor whereafter a further dialing cycle is performed. The dialing system is stopped after the full address has been dialed by performing a cycle at the end of the address in which no digit is dialed, so that the cam follower engages the depression in the first cam fractionally after the lobe of the second cam has past the cam follower.

3,604,857
LINE-ORIENTED KEY TELEPHONE SYSTEM

David C. Opferman, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed July 25, 1969, Ser. No. 844,913
Int. Cl. H04n *1/00*
U.S. Cl. 179—99 **9 Claims**

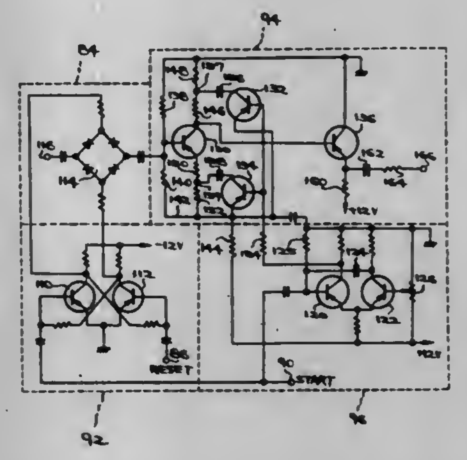
A key telephone system is disclosed in which only one pair of speech leads extends to the station set regardless of the number of lines connectable to that station set. Data is transferred between the station set and a station module for each set. A line module is further provided for each line from the central office or PBX coming into the key telephone system and a line is assigned or made available to a station set by the inclusion of a cross-point module in a cross-point array. As each line module is enabled in sequence, it first transmits line



control information to all the station modules connected thereto and then receives station set control information from all the station modules connected thereto. Station set information is stored in the station module for all lines available to that station set and then transmitted to the station set after all line modules have been enabled in one cycle of operation.

3,604,858
SIGNAL EDITING SYSTEM FOR HIGH FREQUENCY SIGNAL MAGNETIC RECORDING AND REPRODUCING APPARATUS

Toshio Doi, Hamatmatsu, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan
Filed May 7, 1969, Ser. No. 822,620
Claims priority, application Japan, May 9, 1968, 43/30,518
Int. Cl. G11b *27/08;* **H04n** *5/78*
U.S. Cl. 179—100.2 B **7 Claims**



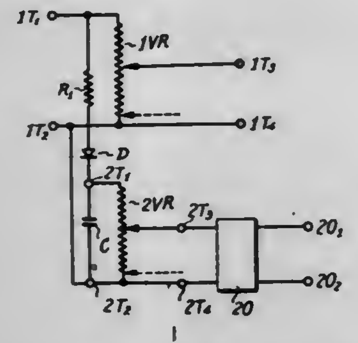
The invention provides a signal editing system for magnetic recording and reproducing apparatus which record on magnetic tape or other storage medium. The recorded signal includes a carrier wave which is frequency-modulated by video signals or other wide-band signals. This signal editing system is useful in recording a second signal on the magnetic medium on which a first signal is already recorded. The second signal is recorded on the magnetic track of the first signal on the magnetic medium, beginning at a suitable point on the magnetic track. The carrier wave components and the upper side band components of the second frequency-modulated signal are recorded at a predetermined higher than normal signal level only during the period the two signals are recorded, one superimposed over the other. The lower side band components of the second frequency-modulated signal are recorded at a signal level which is gradually lowered from said predetermined level with lowering of frequencies.

The system markedly reduces distracting editing marks which generally occur as a result of superimposed recording of two signals. It also reproduces recorded video signals at a high fidelity.

3,604,859
AUTOMATIC RECORDING LEVEL CONTROL DEVICE FOR MAGNETIC TAPE RECORDER

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Jan. 8, 1969, Ser. No. 789,877
Claims priority, application Japan, Feb. 29, 1968, 43/12573
Int. Cl. G11b *5/44*
U.S. Cl. 179—100.2 K **13 Claims**

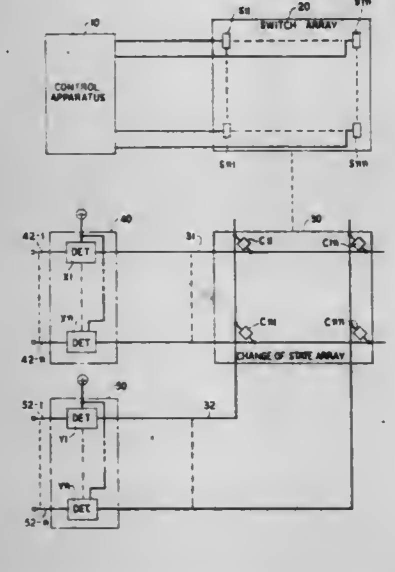


This invention relates to an automatic recording level control device for a magnetic tape recorder, comprising a rectifying circuit for obtaining a DC signal to be used for calculating an average value of the recording current in the recording circuit, a detecting circuit which senses the output of said rectifying circuit and creates a variation in the output of the detecting circuit when the sensed output reveals that the recording current has reached an appropriate recording level, a driving means to cause variation in the resistance of a variable resistor for the purpose of controlling the recording level of the recording circuit, and an engaging and stop means which engages with the driving means and stops the movement thereof, depending on the value of the output of the detecting circuit, so that the variation of the variable resistor is stopped at an appropriate position, whereby the recording level of the recorder is automatically controlled to an appropriate value along with the initiation of the recording operation.

3,604,860
CHANGE OF STATE DETECTOR

Robert F. Buchheit, Reynoldsburg, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 30, 1969, Ser. No. 889,254
Int. Cl. H04m *3/24*
U.S. Cl. 179—175.2 C **10 Claims**

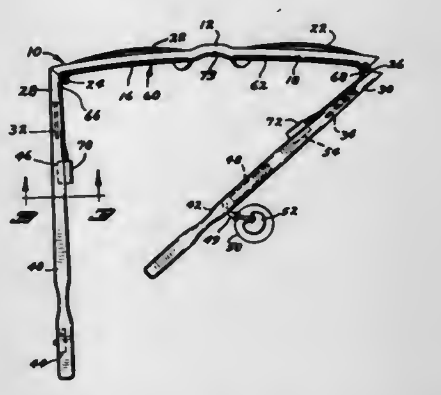


An arrangement for identifying the change of state of any one of a group of switching devices includes first and second groups of intersecting conductors. Each conductor is connected through a signal detector to an energy source. Switching means associated with each one of the devices momentarily connects a distinct pair of intersecting conductors whereby a distinct pair of detectors identifying a switching device is activated.

3,604,861
SPECTACLE HEARING AID WITH CROSSOVER SIGNAL ROUTING

Frederick W. Lewis, and William M. Sanzone, both of Minneapolis, Minn., assignors to The Telex Corporation, Tulsa, Okla.

Filed Apr. 25, 1969, Ser. No. 827,457
Int. Cl. G02c *11/06;* **H04r** *25/00*
U.S. Cl. 179—107 S **2 Claims**

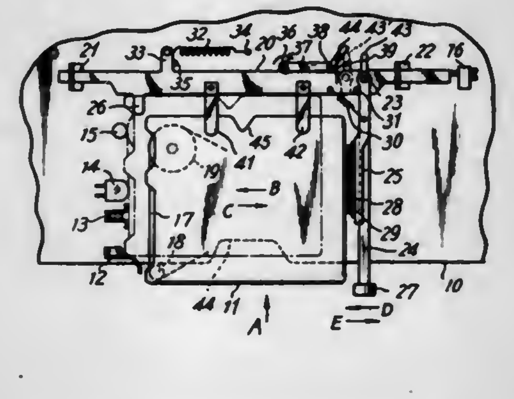


A spectacle hearing aid for directing sound signals from the side of a patient's head having a severe hearing loss to the side having normal or near normal hearing. The apparatus includes a microphone in one of the templar members of the spectacles for converting sound energy to electrical impulses and a conductor assembly adhesively bonded to the rear of the spectacle frame in a position extending transversely above the spectacle lenses. One end of the conductor assembly is connected to the microphone. The other end is connected to means for converting electrical impulses back to sound energy. In one application, the microphone is provided in one of the templar members. The ear with normal or near normal hearing is fitted with the templar member containing an amplifier. Provision is made for sound to enter the good ear in a normal manner and in addition to receive amplified sound from the other side of the head. In another application, microphones are provided on both sides of the head for receiving and amplifying sounds on both sides of the head and for transmitting the resulting amplified sound to the good ear.

3,604,862
TAPE-CARTRIDGE-POSITIONING APPARATUS

Itsuki Ban, 829 Higashi-Oizunimachi Nerima-Ku, Tokyo-to, Japan

Filed Dec. 16, 1969, Ser. No. 885,476
Claims priority, application Japan, Dec. 18, 1968, 43/92338
Int. Cl. G11b *23/04*
U.S. Cl. 179—100.2 Z **9 Claims**

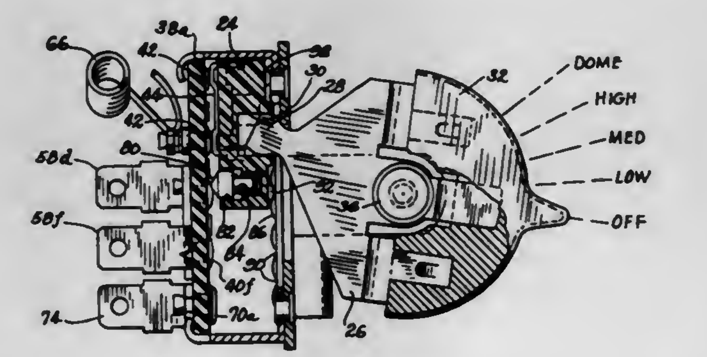


A tape cartridge positioning apparatus for an endless magnetic tape cartridge player wherein a reciprocating lever member is slidably supported on a deck in the player housing and normally placed in a first position, a tape cartridge is transversely inserted in the housing through an opening and laid on the deck, the tape cartridge being interposed between a rear arm and a front arm provided on the lever member, the lever member being manually slided from a first position to a second position whereby the rear edge of the cartridge is urged by the rear arm to be moved to the playing position. The reciprocating lever member which is moved to the second position against the bias of a tension spring is retained by a latching means thereby holding the tape cartridge in the playing position. In response to release of retention of the latching means the reciprocating lever member is returned to the first position by the bias of the tension spring at the same time the cartridge is returned to the nonplaying position as the front edge thereof is urged by the front arm.

3,604,863
MULTIPOSITION ELECTRICAL SWITCH

William N. Schink, Crystal Lake, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.

Filed July 7, 1969, Ser. No. 839,473
Int. Cl. H01h *15/00*
U.S. Cl. 200—16 R **14 Claims**



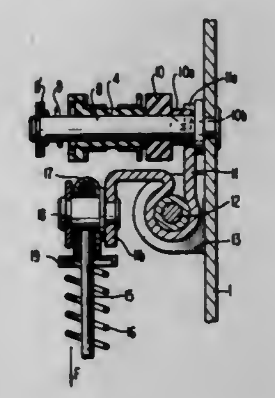
Twin contactors are mounted on a movable carriage and are engageable with contacts arranged in first and second rows. The contacts in one row are staggered relative to the contacts in the other row. In successive positions of the carriage, the contactors alternately form conductive bridges between adjacent contacts in the rows. A first interconnecting strap extends between staggered contacts in the two rows so that both of such contacts may serve as battery or feed contacts. A second strap extends between another pair of staggered contacts in the two rows to provide duplicate switch positions. Two additional contacts are positioned opposite each other at one end of the rows. An additional contactor is mounted on the carriage to form a bridge between such additional contacts in one extreme position of the carriage. The additional contactor is of small size and is offset laterally away from one of the rows of contacts so that the additional contactor does not form a bridge between the staggered contacts.

3,604,864
POINT CONTACT MOUNTING FOR IGNITION DISTRIBUTORS

Roger Jean Habert, Paris, France, assignor to Ducellier et Cie, Paris, France

Filed Feb. 18, 1970, Ser. No. 12,396
Claims priority, application France, Feb. 24, 1969, 6904662
Int. Cl. H01h *19/00*
U.S. Cl. 200—19 R **9 Claims**

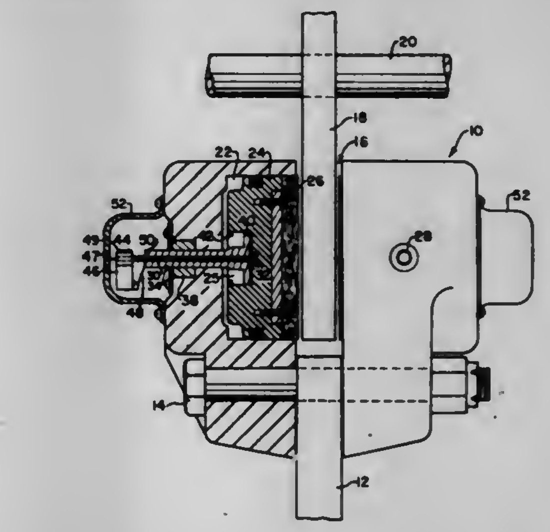
Pitting of the ignition contacts of an ignition distributor is avoided by effecting relative displacement or wiping action between the fixed and movable contacts. The wiping action is achieved by shifting the breaker arm axially on its pivot shaft in response to variations in the intake manifold pressure of the associated internal combustion engine. The contacts may therefore be associated with a distributor which does not employ manifold or vacuum advance characteristics. When the breaker arm pivot shaft is parallel to the distributor rotor shaft, provision of helically extending lobes on the distributor cam will also effect advance-retard characteristics in response to axial movement of the breaker arm on its pivot shaft. Alternatively, with a distributor cam having lobes extending parallel to the axis of the rotor shaft, inclination of the pivot shaft for the breaker arm likewise effects the advance-retard characteristics. In all arrangements, axial shifting of the breaker arm on its pivot shaft effects a wiping action between the fixed and movable contacts.



3,604,865
BRAKE POSITION INDICATOR

Carl E. Bricker, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 13, 1970, Ser. No. 36,903
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.4 **7 Claims**



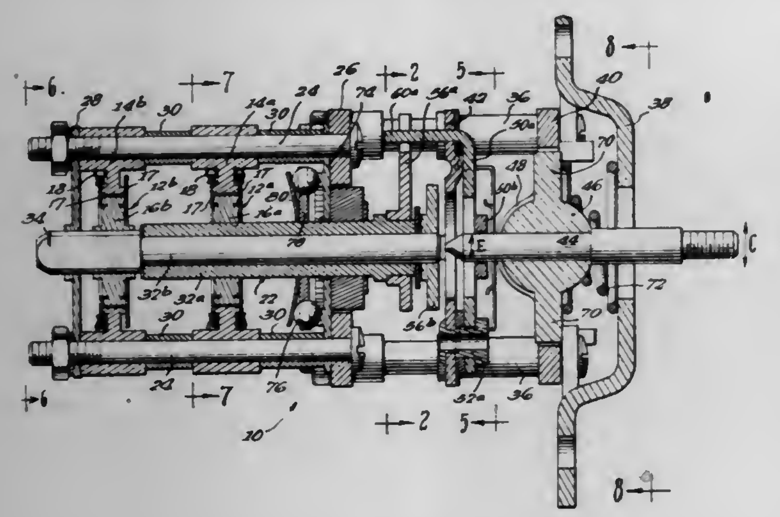
A device for indicating when the pads of a disc brake system are in contact with the brake disc. The device automatically compensates for the gradual reduction of thickness of the brake pads through wear. A pin extends rearwardly through the housing, is attached at one end to the piston and carries at its outer end a microswitch. A second pin also extends through the housing parallel to the first pin and contacts the operating lever of the switch as the piston moves toward the disc. The second pin is frictionally retained in the housing and is attached to the piston by a connection which causes movement of the second pin only when the piston moves beyond a predetermined amount.

3,604,866
FOUR-WAY TOGGLE SWITCH WITH IMPROVED JOYSTICK CONTROL MECHANISM

John Darvasi, Des Plaines, Ill., assignor to Oak Electro/Netics Corporation

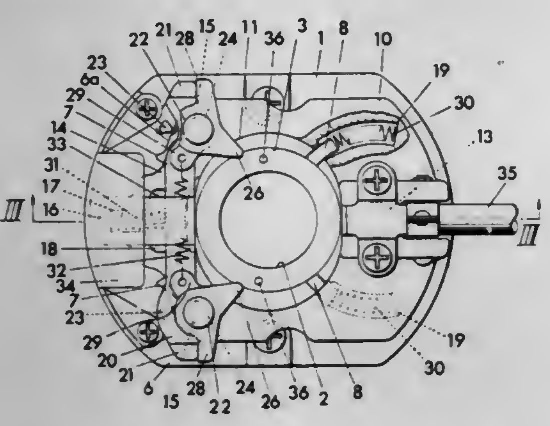
Filed Sept. 18, 1969, Ser. No. 859,144
Int. Cl. H01h *19/00, 21/00*
U.S. Cl. 200—6 A **12 Claims**

A rotor-actuating means for use in a rotary switch which includes at least one generally planar switch section disposed along a drive shaft with the rotor of the switch section being driven by the drive shaft. A toggle lever is pivotally mounted on a frame generally concentric with the axis of the drive shaft for generally linear reciprocating movement in at least one plane generally perpendicular to the plane of the switch section. A drive yoke member is pivotally mounted on the frame at a point spaced from the drive shaft adjacent one end of the shaft with an elongate radial slot intersecting the axis of the shaft and receiving the toggle lever, and with an axially extending arm diametrically disposed on the side of the drive shaft opposite the pivot point for the drive yoke member. A driven yoke member is fixed on the shaft and has a radially extending slot for receiving the arm of the drive yoke whereby linear movement of the toggle lever is translated through the drive yoke and driven yoke members to an increment of rotational movement of the shaft and rotor.



3,604,867
RELEASE DEVICE FOR DIRECTIONAL INDICATOR SWITCH

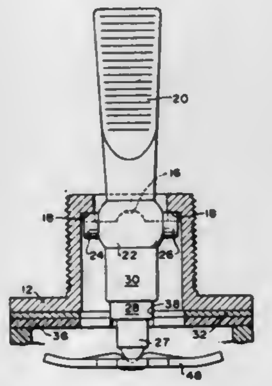
Masaru Suzuki, Hekikai-gun, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Japan
Filed Nov. 24, 1969, Ser. No. 879,435
Claims priority, application Japan, Nov. 25, 1968, 43-103079
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.34 **7 Claims**



An automatic release device for a vehicle directional switch indicator mechanism, wherein a frame member is disposed in surrounding relationship to the steering shaft and a support member or bracket is movably mounted on the frame and is connected to manual actuating lever. The support member is spring biased into a neutral position and is displaceable in opposite directions into operative positions which cause closing of suitable switches to indicate suitable vehicle turn signals. The support member has a further ratchet support element mounted thereon which has a pair of pivotal ratchets mounted adjacent opposite ends thereof and disposed for coaction with suitable pins secured to the steering axle. The ratchet support member is floatably mounted for limited movement relative to the bracket and the ratchet support member has suitable stop members which coact between the frame and the bracket for permitting the bracket to be returned to its neutral position when the steering axle is likewise returned to its original position.

3,604,868
LOCKING TOGGLE SWITCH

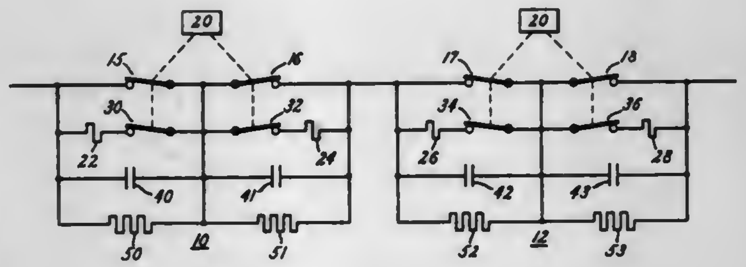
Kent J. Batcheller, and Earl Bullis, Jr., both of Westwood, Mass., assignors to Joseph Pollak Corp., Boston, Mass.
Filed July 30, 1970, Ser. No. 59,420
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 G **8 Claims**



A toggle switch designed to prevent accidental actuation. The switch may be locked against operation by pushing the toggle into the body of the switch and turning it through 90°. Conversely, the toggle must be pushed and twisted through 90° to return the toggle from the locked position into the normal operating position. The mechanism by which the locking feature is obtained utilizes the toggle pivots and operating grooves normally found in toggle switches but adds a second set of grooves perpendicular to the normal operating grooves and into which the toggle pivots may be shifted. The conventional spring used for plunger pressure in a toggle switch also serves to hold the toggle pivots in either set of grooves. In an alternative embodiment, the switch may be of the double-throw type capable of being locked in any position, the toggle being captured in the same manner as in the single-throw version by being pushed into the body of the switch and turned through 90°.

3,604,869
HIGH-VOLTAGE MULTIBREAK CIRCUIT BREAKER WITH MEANS FOR ACCELERATING RESTORATION OF NORMAL VOLTAGE DISTRIBUTION FOLLOWING SPARKOVER AND CLEARANCE OF ONE BREAK

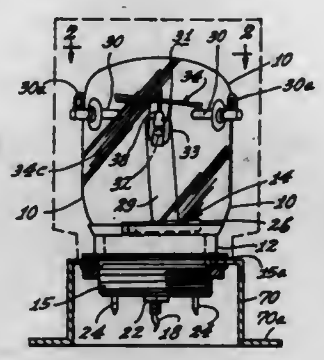
Walter R. Wilson, Wallingford, Pa., assignor to General Electric Company
Filed July 3, 1969, Ser. No. 838,831
Int. Cl. H01h *33/02*
U.S. Cl. 200—144 AP **4 Claims**



A high-voltage multibreak electric circuit breaker that has capacitors connected across its series breaks to uniformly distribute voltage across the breaks when the breaker is open. Should one of the breaks of the open circuit breaker sparkover and immediately clear, restoration of normal voltage distribution across the breaks is accelerated by a plurality of very high ohmic resistors respectively connected in parallel with the capacitors.

3,604,870
MAGNETICALLY OPERATED ENVELOPE ENCLOSED HIGH-VOLTAGE RELAY

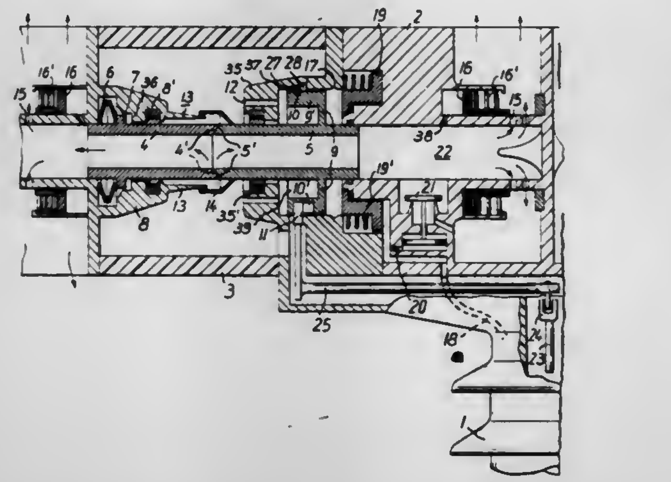
Victor E. De Lucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 840,380, July 9, 1969. This application Mar. 2, 1970, Ser. No. 15,762
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 **7 Claims**



A high-voltage vacuum relay is provided of the double-pole, doublesthrow type and which has particular application to medical purposes, although it is not limited to uses. The movable and fixed contacts of the relay are mounted with an envelope, with the movable contacts supported by the envelope for pivotal movement, and for selective engagement with the fixed contacts in a manner such that under no conditions will one contact of any pair open without the other.

3,604,871
GAS BLAST CIRCUIT-INTERRUPTING DEVICE HAVING QUICK-ACTING CONTACT RELEASE MEANS

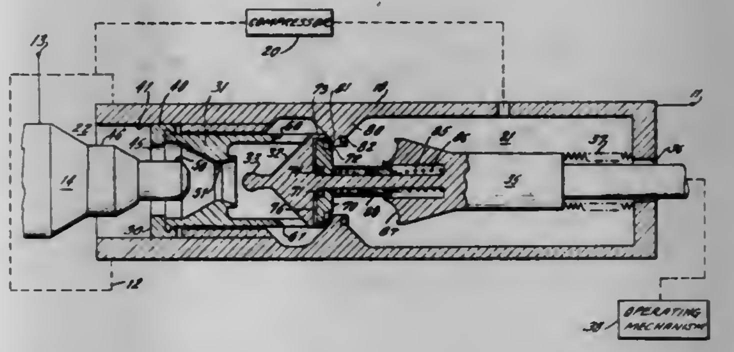
Karl Kriechbaum, Kassel, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany
Filed Feb. 18, 1970, Ser. No. 12,172
Claims priority, application Germany, Apr. 5, 1969, P 19 17 724.3
Int. Cl. H01h *33/00*
U.S. Cl. 200—148 **13 Claims**



A circuit-interrupting device having extremely short switch-off times with a pressure chamber designed to contain a quenching gas under pressure and a pair of oppositely opposed contacts guided for a limited movement within the pressure chamber. A spring biases one of the contacts toward the other; and a quick-acting release device, such as a piston ring lock, holds the other contact against the first contact under high contact pressure when the interrupting device is in its switch-on position. The contact that is retained by the release device is biased only by the quenching gas in the switch-off direction. When the release device releases this contact, the two contacts separate from each other very rapidly. The contacts are sealed so that the quenching gas can not escape through the hollow bore of the contacts until they have separated. The release device may be provided with a suitable device to compensate for temperature fluctuations. The actuation of the release device may occur in dependence on the net current in the circuit, so that the separation of the tubular contacts occurs under minimum arc duration and, thus, with minimum switching effort.

3,604,872
PRESSURIZED GAS INTERRUPTER STRUCTURE

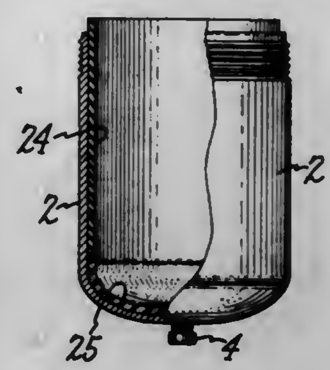
George A. Wilson, Media, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Apr. 19, 1970, Ser. No. 29,401
Int. Cl. H01h *33/86*
U.S. Cl. 200—148 B **9 Claims**



A pressurized SF_6 gas interrupter structure is used with a conventional mechanical circuit breaker operating mechanism. The operating mechanism is not opposed by high gas pressure, used for arc interruption, while the high gas pressure is used for high initial contact parting speeds. Maximum gas flow is obtained during contact opening for arc extinction purposes, while gas flow is restricted during closing to conserve the supply of pressurized gas.

3,604,873
LIQUID-FILLED ELECTRICAL CIRCUIT INTERRUPTER HAVING A FLUID PRESSURE-RESISTANT INSULATING COATING

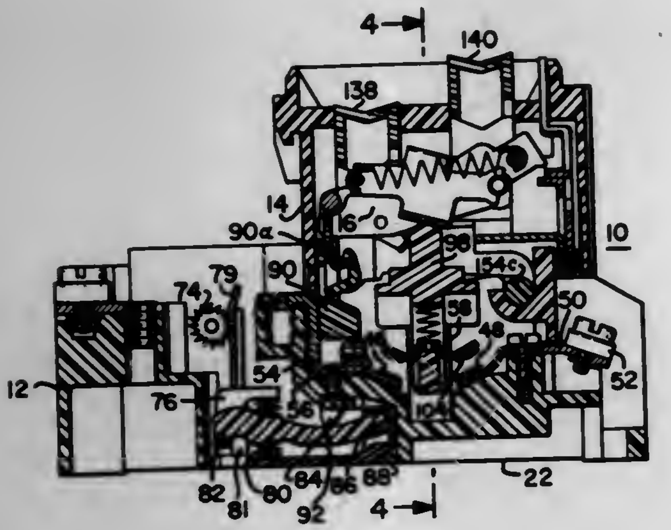
Vincent J. Boliver, Pittsfield, Mass., assignor to General Electric Company
Filed July 14, 1969, Ser. No. 841,204
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 R **5 Claims**



An electric circuit interrupter having a metal container partially filled with insulating liquid and housing arc-developing circuit interrupting means characterized by having a coating of thermal-setting epoxy resin-insulation material immovably bonded to the surface of said container adjacent the arc-developing means thereby to permanently insulate that surface from arcs developed by the arc-developing means. The insulating coating and bonding arrangement of the invention are particularly resistant to displacement by high-pressure liquid circulated in the container by arc-generated gases.

3,604,874
MOVABLE CONTACT GUIDING AND ACTUATING MECHANISM IN A MANUALLY OPERATED ELECTRIC SWITCH

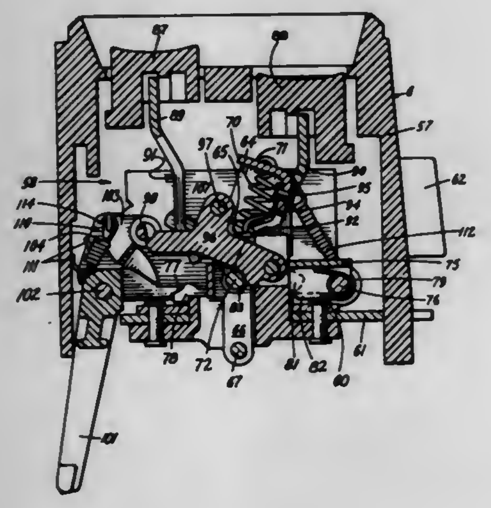
Jordan F. Puetz, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.
Filed Feb. 6, 1970, Ser. No. 9,203
Int. Cl. H01h *3/00*
U.S. Cl. 200—153 G **9 Claims**



A manually operated switch having a toggle-acting mechanism which applies positive pressure between the contacts during the interval the toggle levers are passing through the pivot center of the toggle levers. The switch includes a stabilizer which prevents the movable contact carrier from tilting so that an offcenter load may be applied on the contact carrier and a lever arrangement which will cause the operating buttons of the switch to become aligned when the switch is tripped in response to an electrical overload in the circuits controlled by the switch.

3,604,875
MODULAR ELECTRIC SWITCH WITH TOGGLE ACTUATING MEANS

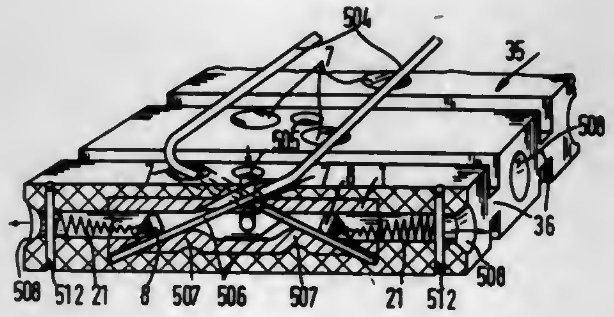
Robert E. Walters, Bayside, and Gerd C. Boysen, Milwaukee, both of, Wis., assignors to Allen-bradley Company, Milwaukee, Wis.
Division of Ser. No. 488,548, Sept. 20, 1965, Pat. No. 3,430,014
Filed Aug. 2, 1968, Ser. No. 749,716
Int. Cl. H01h *3/46*
U.S. Cl. 200—153 G **2 Claims**



An electric switch with a snap action mechanism including toggle links joined at a knee. Holding means retain the knee of the toggle as the mechanism passes an overcenter position and thereafter release the knee at a selected point while biasing means assist in returning the mechanism and a connected contact carrier from a toggle position in which the toggle links are extended.

3,604,876
ELECTRICAL CONTACT DEVICE

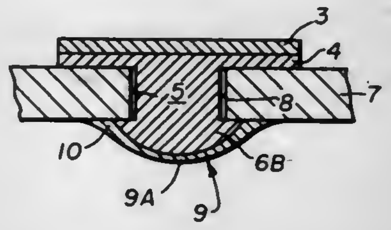
Max Pasbrig, Casa Luce-Via all'Eco, Orselina, Switzerland
Continuation-in-part of application Ser. No. 700,933, Jan. 26, 1968, now Patent No. 3,551,883. This application Dec. 23, 1968, Ser. No. 785,921
Int. Cl. H01h *9/02;* **H01r** *7/06*
U.S. Cl. 200—166 CT **47 Claims**



An electrical contact device comprising a housing having elongated recesses associated in pairs, extending at an acute angle and forming a channel. Spring loaded clamping members are arranged in the elongated recesses. Electrical conductors introduced through the elongated recesses are automatically locked and retained by the clamping members and the clamping members are tilted from their inoperative position into a position in which they rest against the electrical conductor.

3,604,877
ELECTRICAL CONTACT ASSEMBLY

John R. Cockshutt, Red Bank, N.J., assignor to Engelhard Minerals & Chemicals Corporation
Filed Dec. 2, 1969, Ser. No. 881,510
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **1 Claim**

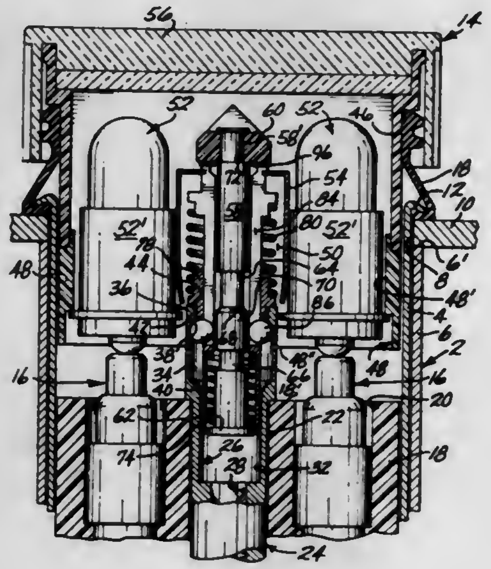


An electrical contact assembly comprising an electrical contact of the rivet type mounted in an aperture in a metal arm. The shank of the contact being provided with an end portion composed of a metal solder which when staked against the metal arm and subsequently heated provides a solder joint in the form of a fillet between the staked end and the metal arm.

3,604,878
LATCH MECHANISM FOR RELEASABLY ENGAGING PUSHBUTTON CAPS IN ELECTRICAL DEVICES

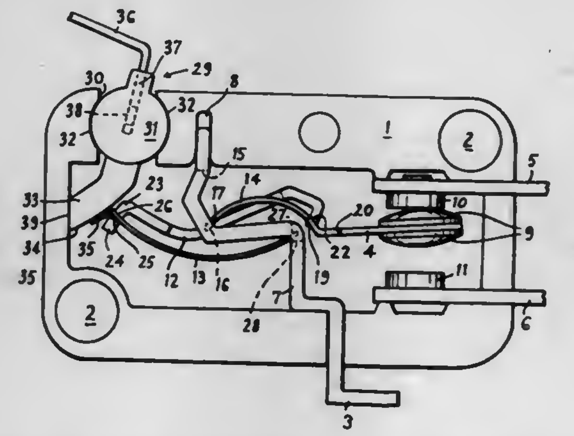
James W. Amis, Jr., Bellevue; Maurice D. Fuller, Mercer Island, and James B. Dobson, Seattle, all of, Wash., assignors to Korry Manufacturing Company, Seattle, Wash.
Filed May 22, 1969, Ser. No. 826,962
Int. Cl. H01h *9/18*
U.S. Cl. 200—167 A **13 Claims**

A latch mechanism is disclosed whereby pushbutton caps and the like may be releasably engaged in electrical devices having flange means on a relatively stationary member therein, forming abutments on the opposite sides thereof. The mechanism includes an elongated element which is longitudinally reciprocated in relation to the member transverse to the flange means, during engagement and disengagement of the cap; and which has a pair of longitudinally spaced recesses therein forming a land therebetween which is spaced from the flange means on the member as the land passes the flange means in the reciprocable motion of the element. In addition, the mechanism includes slidably guided detent ball means on the land, and a pair of stop means which are slidably mounted on the element over the recesses, and yieldably biased relatively toward one another along the longitudinal axis of the element, with the detent ball means retained therebetween so that the detent ball means tends to remain on the land. The stop means are operatively insertable into the space between the land and the flange means, and the detent ball means is larger in dimension than the width of the space, but adapted to shift from side to side of the flange means under the bias of one of the stop means, when the detent ball means is displaced into the adjacent recess against the bias of the respective stop means as a consequence of abutting the adjacent side of the flange means as the element is reciprocated in relation to the member.



3,604,879
LEVER-OPERATED MICROSWITCHES

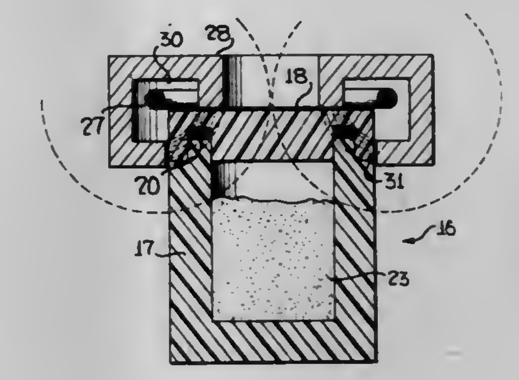
Donald Courtney Beer, Newick, England, assignor to Otehall Limited, Sussex, England
Filed May 26, 1969, Ser. No. 827,733
Claims priority, application Great Britain, May 29, 1968, 25819/68
Int. Cl. H01h *3/02*
U.S. Cl. 200—172 B **8 Claims**



An electric switch, particularly a microswitch, comprises an insulating casing housing the switch movement or mechanism. A rockable actuating member for the mechanism is mounted in an opening in the casing and, inside the latter, operates on a member of the mechanism. Rocking movement of the actuating member actuates the switch mechanism and causes a contact-carrying arm of the mechanism to snap over from one contact position to another. The actuating member is rockably mounted in the opening in the switch casing by means of a cylindrical boss portion of the actuating member engaged in generally partcylindrical bearing recesses formed respectively in opposite sides of the opening.

3,604,880
FLUX CONCENTRATOR

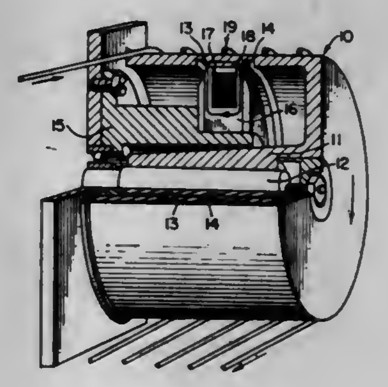
Roger M. O'Neill, Oaklawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Division of Ser. No. 655,931, July 25, 1967, Pat. No. 3,548,140
Filed June 22, 1970, Ser. No. 48,412
Int. Cl. B23k *13/02*
U.S. Cl. 219—10.53 **2 Claims**



This disclosure relates to apparatus for inductively coupling energy into heat activated magnetic sealing material to effect the sealing of containers. Such apparatus includes a coil generally conforming to the shape of the container portion to be sealed and a flux concentrator of relatively high permeability and electrical resistivity for concentrating magnetic flux only in those areas of the container including the sealing material. The flux concentrator houses the coil and is formed with an air gap shaped to accommodate the container portion to be sealed. Further, this application discloses a method of sealing containers by coupling energy into heat activated magnetic sealing materials while limiting the heating of adjacent portions of the container and the container contents.

3,604,881
APPARATUS FOR INTRODUCING A LATENT CRIMP INTO A YARN

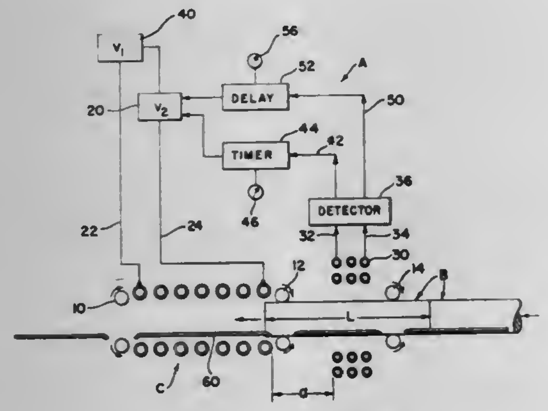
Hendrinus Sempel, Arnhem, Netherlands, assignor to American Enka Corporation, Enka, N.C.
Filed July 3, 1969, Ser. No. 838,998
Claims priority, application Netherlands, July 8, 1968, 6,809,645
Int. Cl. H05b *5/00, 3/02*
U.S. Cl. 219—10.61 **1 Claim**



A yarn transport roll is divided into annular regions and magnetic lines of force are introduced into one narrow annular region for heating purposes.

3,604,882
POWER CONTROL DEVICE FOR AN INDUCTOR

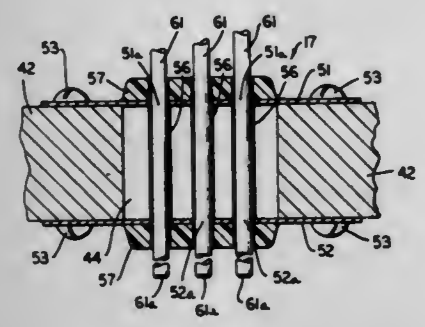
Richard F. Seyfried, Parma Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed July 24, 1970, Ser. No. 58,003
Int. Cl. H05b *5/00, 5/04*
U.S. Cl. 219—10.69 **5 Claims**



A sensing coil is placed in advance of an inductor used to inductively heat an elongated workpiece and a low-level voltage below the heating voltage, is maintained on the inductor. As the workpiece passes through the sensing coil into the energized inductor, an induced voltage is created within the sensing coil. This induced voltage is used to increase the voltage across the inductor to the induction heating level. As the workpiece exits from the sensing coil, the voltage across the inductor is decreased again to its low level.

3,604,883
MULTIPLE ELECTRODE ASSEMBLY FOR ELECTRICAL DISCHARGE MACHINING

Clifford H. Dietz, Indianapolis, Ind., assignor to Engineered Models Corporation, Indianapolis, Ind.
Filed Mar. 26, 1969, Ser. No. 810,766
Int. Cl. B23p *1/08;* **H01t** *13/28*
U.S. Cl. 219—69 **2 Claims**

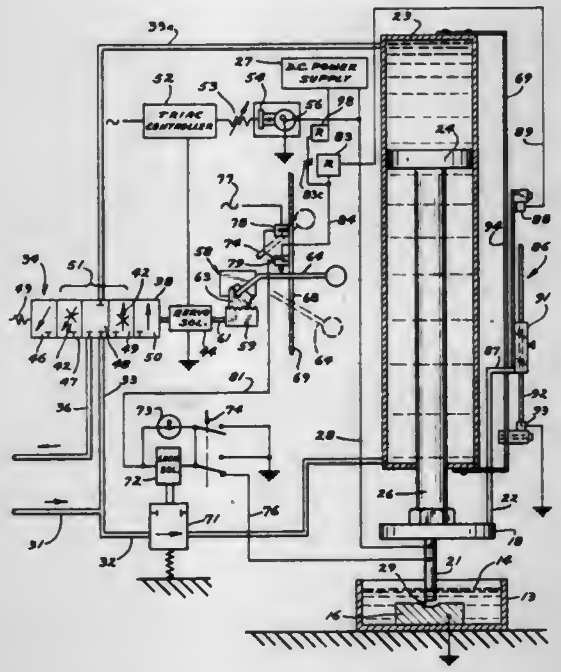


The invention is embodied in an assembly providing multiple, closely spaced electrodes for attachment to a conventional electrical discharge machining apparatus. The relatively slender (small-diameter) rod electrodes are each held in an encircling tube which is rigidly held in two spaced, parallel plates with a material such as an epoxy resin adhering to the plates and sealing the tubes in place.

3,604,884
ELECTRODE FEED CONTROL FOR EDM MACHINE

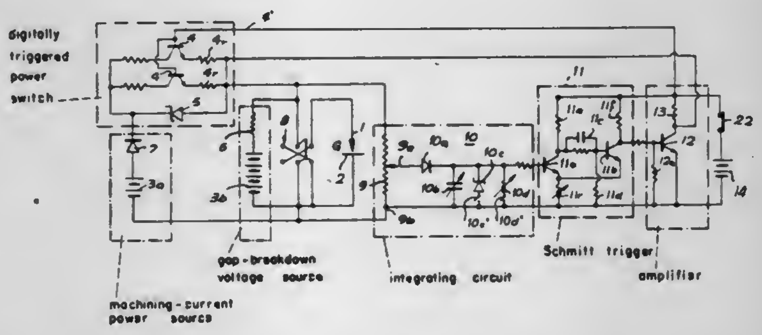
Sven Olof Olsson, Richfield, Minn., assignor to Essar Corporation, Minneapolis, Minn.
Filed Apr. 24, 1969, Ser. No. 819,006
Int. Cl. B23p *1/14*
U.S. Cl. 219—69 G **23 Claims**

An electrical discharge machining device or EDM machine having an electrode movable toward and away from a workpiece by a hydraulically operated double acting cylinder. A control valve, combined with a servo solenoid and manually operated lever, is operable to control the flow of hydraulic fluid to the cylinder. A light responsive electrical control operates the servo solenoid in response to the size of the electrical discharge gap between the electrode and the workpiece. Interposed in the fluid line to the hydraulic cylinder is a lock valve operable to lock the cylinder and fix the position of the electrode relative to the workpiece. The manually controlled lever is operable to engage switches to override the lock valve control during the electrical machining and elevation of the electrode operations of the device. Hydraulic pressure is continuously supplied to the control valve from a pair of liquid storing chambers connected to the control valve with a switching valve. Fluid under pressure in either one of the chambers operates the switching valve to provide a continuous source of hydraulic fluid under pressure to the control valve.



3,604,885
EDM POWER SUPPLY FOR GENERATING SELF-ADAPTIVE DISCHARGE PULSES

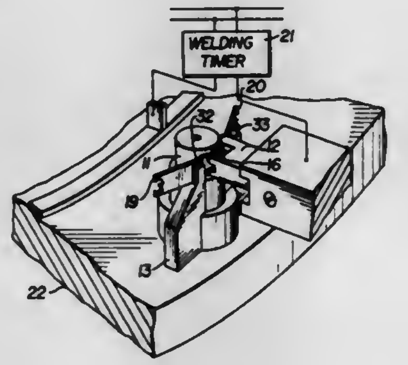
Kiyoshi Inoue, 100 Sakato, Kavaski, Kanagawa, Japan
Continuation-in-part of application Ser. No. 682,824, Nov. 14, 1967, now Patent No. 3,359,755, which is a continuation-in-part of application Ser. No. 493,473, Oct. 6, 1965, now Patent No. 3,360,683. This application July 2, 1969, Ser. No. 838,575
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 P **47 Claims**


digitally triggered power switch
gap-breakdown voltage source
integrating circuit
Schmitt trigger
amplifier
machining-current power source

An EDM (electric-discharge machining) power supply system for generating self-adaptive discharge pulses wherein an electrode is spacedly juxtaposed with a workpiece across a discharge gap while a dielectric liquid coolant is passed therethrough. The electrode and the workpiece are relatively displaced during the machining of the latter to maintain the gap spacing generally constant via a servomechanism. According to the invention, there is applied across the electrode and the workpiece a direct-current arc-striking voltage sufficient to initiate discharge across the gap while permitting the voltage to build up thereacross to a level constituting a function of conductivity characteristics of the gap and to decay with a discharge across the gap. An analog signal is derived across the gap and represents the voltage buildup and decay thereacross. Machining current flow through the gap across the electrode and the workpiece is triggered by a digital signal derived when the analog signal exceeds a threshold value and initiation of the discharge is induced by the arc-striking voltage. A second digital condition terminates the machining current flow which is controlled by a semiconductive power switch turned on and off instantaneously in dependence upon the digital conditions. A limited current high-voltage source is connected in a closed loop circuit with the electrode, the workpiece and the gap to provide the voltage buildup across the latter, while the voltage across the gap is detected by a voltage divider or the like and the output of this voltage divider is supplied via an integrating circuit in a squaring or gating-type logic device, e.g., a Schmitt trigger capable of producing the digital output for triggering the semiconductive power switch of the machining-current power supply.

3,604,886
WELDING JIGS FOR ALIGNING MOUNTING STRAPS ON CYLINDRICAL CRT ELECTRODES

Chester O. Merchant, Owensboro, Ky., assignor to Kentucky Electronics, Inc., Owensboro, Ky.
Filed Mar. 9, 1970, Ser. No. 17,623
Int. Cl. B23k *9/12;* **B21j** *13/08*
U.S. Cl. 219—80 **4 Claims**

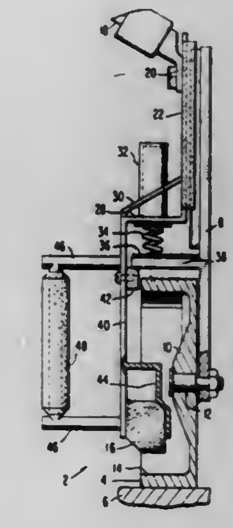


A jig is arranged with a cylindrical metallic post for receiving a cylindrical CRT electrode snugly thereover arranged adjacent a pair of separated shaped insulating mounts with protruding fingers above a rest platform for engaging the ends of and confining a mounting strap with a cylindrical section conforming to the outer surface of the cup electrode, so that the strap is held in place adjacent the cylindrical electrode in a loosely fitting arrangement into which a welding head may be moved into the cylindrical section between said fingers to push the strap closely adjacent the cylinder and weld it thereto.

3,604,887
ROLLER ELECTRODE SOLDERING OR BRAZING DEVICE

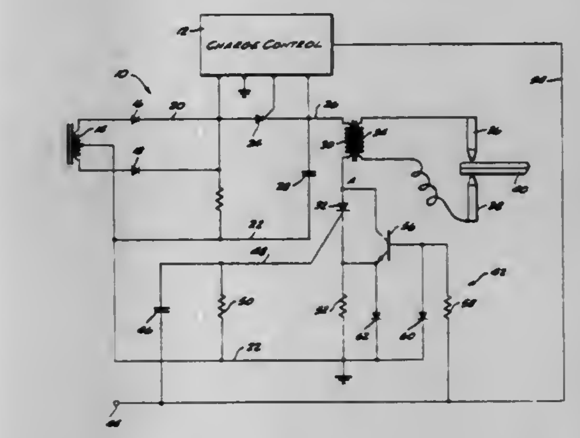
Charles A. Newton, 1335 O Street, Anchorage, Alaska
Filed Apr. 15, 1970, Ser. No. 28,854
Int. Cl. B23k *11/06*
U.S. Cl. 219—84 **5 Claims**

A hand-held soldering device has a rotary electrode through which one side of an electrical circuit is completed to the work when the device is pressed against the work.



3,604,888
WELD CONTROL CIRCUIT

Richard G. Friess, San Marcos, and Tor Hougen, Oceanside, both of, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 26, 1970, Ser. No. 14,421
Int. Cl. B23k *11/26*
U.S. Cl. 219—113 **3 Claims**

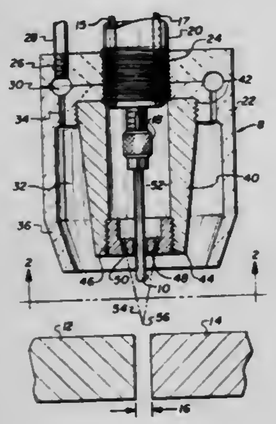


A charged capacitor is connected in series with a pulse welder transformer primary and a switching SCR. The weld control circuit is connected to fire the SCR, when the weld pulse is required. A transistor connected across the SCR shunts the SCR to positively reduce the SCR current below its holding current value. The SCR current is measured so that the transistor is not turned on until the current is at a safe value.

3,604,889
PLASMA-GENERATING METHOD AND MEANS

Roderick Rohrberg, Torrance, Calif., assignor to North American Rockwell Corporation and Air Products and Chemicals, Inc., Allentown, Pa., part interest to each
Continuation-in-part of application Ser. No. 693,365, Dec. 16, 1967. This application May 8, 1969, Ser. No. 830,565
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **14 Claims**

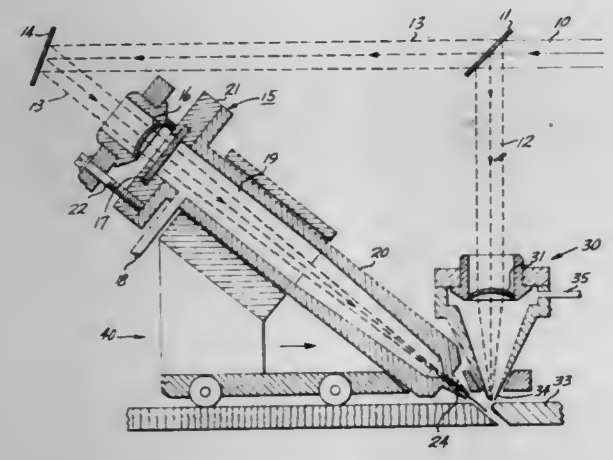
An inert gas welding torch is used to create plasma by directing one or more discrete high velocity jet gas streams into a welding arc between the electrode and the workpiece. The plasma stream is controllable with regard to energy content or location by varying the amount or direction of the inert gas flow. The plasma stream is insensitive to variations of arc length, and permits abnormally high current densities in the electrode. When used with consumable electrodes, the invention is useful for casting as well as for deep welding heavy plate materials in a single pass.



3,604,890
MULTIBEAM LASER-JET CUTTING APPARATUS

George J. Mullaney, Seattle, and John M. Webster, Tukwila, both of, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 15, 1969, Ser. No. 866,549
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L **12 Claims**



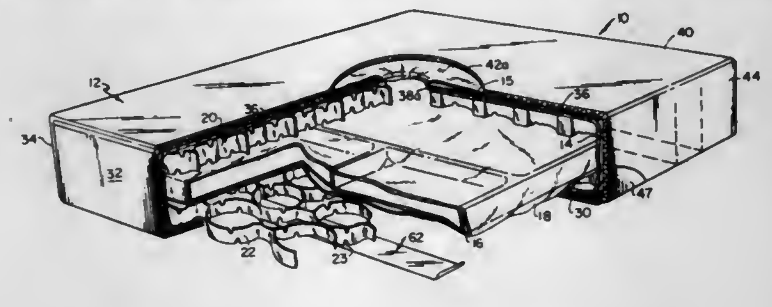
A multibeam laser-oxidizer system which optimizes the cutting performance of a laser cutting tool. Two laser beam systems of different focal length are focused on substantially the same area of the material to be cut. The beam of shortest focal length provides a preheat zone with the short depth of focus and small spot size (compared to the second beam) serving to bring the material to a temperature such that a jet of oxidizing gas applied to the heated spot gives rise to the initiation of the cut. The long focal length lens system concentrates the radiant energy of the second beam over a large depth of focus compared to the preheat beam and as a result a uniform cut through a substantial thickness of material is achieved. Details of the lens systems and cutting toolhead are provided together with details of gas flow openings in the cutting tool for supplying both oxidizing and inert shield gases to the cutting area.

3,604,891
ELECTROLYTIC HEATING

Milton S. Cohen, 41 Scituate St., Arlington, Mass.

Filed May 1, 1969, Ser. No. 820,934
Int. Cl. H05b *1/00*
U.S. Cl. 219—200 **20 Claims**

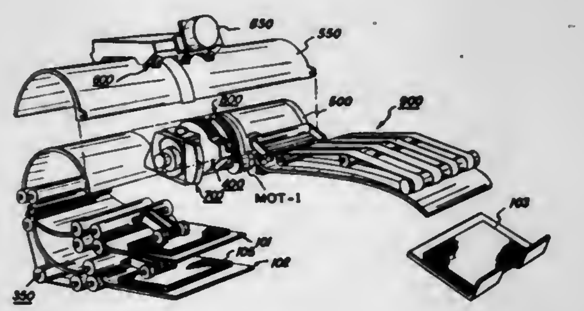
Heating an electrolytic solution by placing at least three spaced electrodes in direct contact with the solution and connecting two of the electrodes to a source of power to cause electrical current to pass between the two electrodes along a path including the solution and the third electrode.



3,604,892
FUSING APPARATUS

Charles Louis Huber, Marion, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 733,468, May 31, 1968, Pat. No. 3,535,492
Filed Mar. 5, 1970, Ser. No. 26,455
Int. Cl. G03g *13/20*
U.S. Cl. 219—216 **7 Claims**

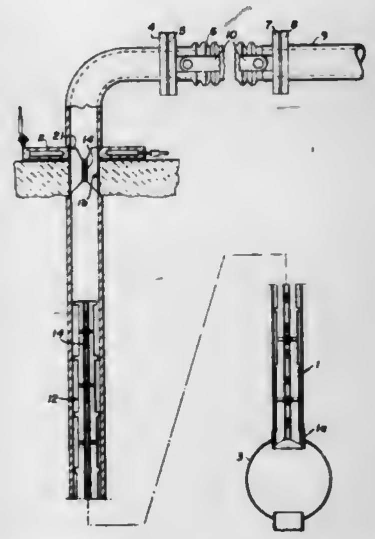


Apparatus for permanently affixing electroscopic toner particles in image configuration to an electrographic support material upon which the toner powder is electrostatically bonded including a plurality of radiant heating elements supported for movement in a circular path adjacent to and transverse of the path of support material movement such that the toner powder is uniformly fused to the support material by the rotating heating elements passing adjacent thereto.

3,604,893
METHOD AND APPARATUS FOR ELECTRICALLY HEATING A FLUID

Anthony Horton, Welwyn Garden City, England, assignor to Laporte Titanium Limited, London, England

Filed Oct. 7, 1968, Ser. No. 765,562
Claims priority, application Great Britain, Oct. 11, 1967, 46500/67
Int. Cl. F24h *1/10;* **H05b** *1/00*
U.S. Cl. 219—300 **29 Claims**

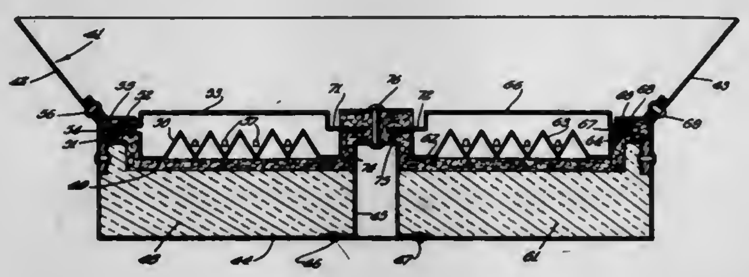


A process and apparatus for heating fluids, particularly gaseous halides of titanium, silicon, aluminum, zirconium and mixtures thereof. The fluid to be heated is passed through at least one metal tube which has a plurality of metal fins disposed internally of said tube, the fins being in electrical contact with the wall of the tube. An electrical potential is applied between two points spaced apart along the length of the tube to cause an electric current to flow through the wall of said tube and said fins to thereby heat the tube wall and the fins. The configuration of said tube wall and said fins is such that the cross-sectional area of the flow path of the electric current between the said two points increases in the direction of flow of the gas in said tube to thereby prevent the temperature of the inner surface of the wall of the tube from increasing in the direction of flow of said fluid. In addition, the configuration of the fins is such that the temperature of the surface of the fins that are exposed to the fluid does not substantially exceed the maximum temperature of the inner surface of the wall of the tube between said two points.

3,604,894
ELECTRICAL INFRARED RADIATION SYSTEM

William G. Milligan, 1618 San Angelo Blvd., San Antonio, Tex.

Filed May 22, 1968, Ser. No. 731,154
Int. Cl. H05b *3/20*
U.S. Cl. 219—377 **6 Claims**

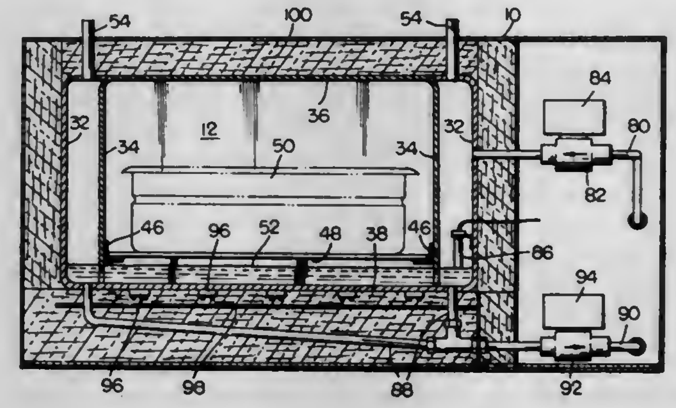


A heating assembly of improved efficiency wherein electrically energized heating elements are disposed between the peaks of ridged heat-absorbing and re-radiating surfaces and preferably combined with a convection-reducing wire screen in immediate proximity to the peaks of the surfaces, the angularly disposed ridges and the wire screen cooperating to increase the radiant heat output by a more effective utilization of the heated air and by improved infrared radiation capability.

3,604,895
ELECTRICALLY HEATED STEAM TREATMENT DEVICE

Robert Harold MacKay, Fort Wayne, Ind., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Oct. 28, 1969, Ser. No. 871,831
Int. Cl. F27d *11/02;* **A21b** *1/00, 1/22*
U.S. Cl. 219—401 **18 Claims**



A steam treatment device in which a chamber having an access door is provided for receiving material to be treated. The access door seals the chamber when closed.

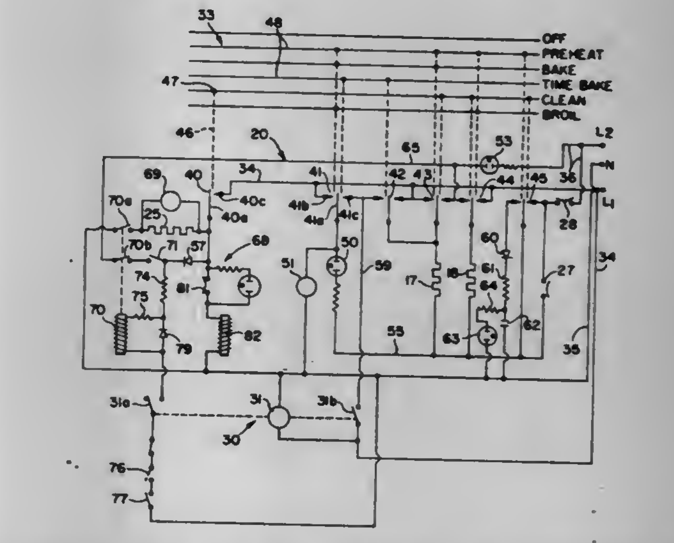
The device includes an arrangement for supplying water to the chamber and an electrical heating arrangement for converting the water to steam and a valve arrangement for maintaining a predetermined steam pressure within the chamber.

The device has a timer for controlling the length of the treatment cycle and also has interlocks so that the device will operate only when the access door is closed and opening of the access door is prevented while the device is in operation.

3,604,896
ELECTRIC SELF-CLEANING OVEN CIRCUIT

Carl L. Anderson, Shiloh; John T. Lamb, Mansfield, and Ralph J. Norris, Mansfield, all of, Ohio, assignors to The Tappan Company, Mansfield, Ohio

Filed Aug. 21, 1968, Ser. No. 754,304
Int. Cl. A21b *1/40*
U.S. Cl. 219—412 **9 Claims**

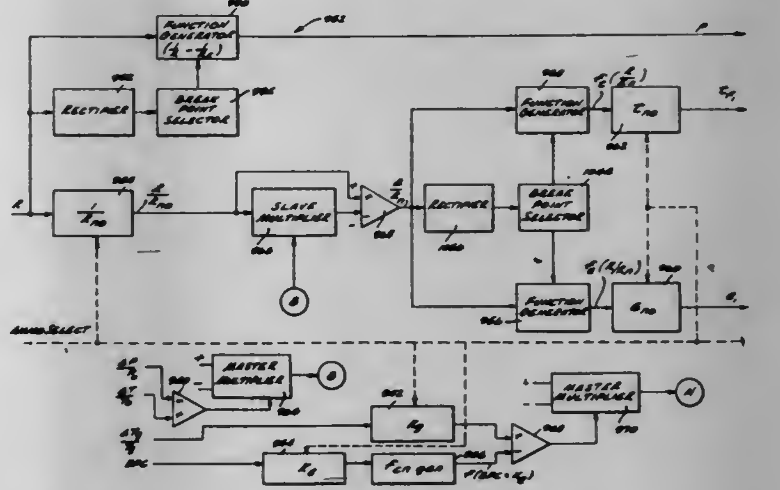


A control circuit for a self-cleaning oven consisting of a switching system for alternatively connecting the bake and broil elements across the 236-volt powerline to generate heat for normal cooking operations, and for connecting the elements in parallel across the 236-volt line during the self-cleaning cycle. A semiconductor rectifier in series with the parallel-connected elements is utilized to control the rate of heat rise during the cleaning cycle to a predetermined cleaning temperature level, and to further limit power application thereafter. The switching system also controls temperature-regulating components and a safety circuit responsive to abnormal operation of the semiconductor rectifier to interrupt the cleaning cycle.

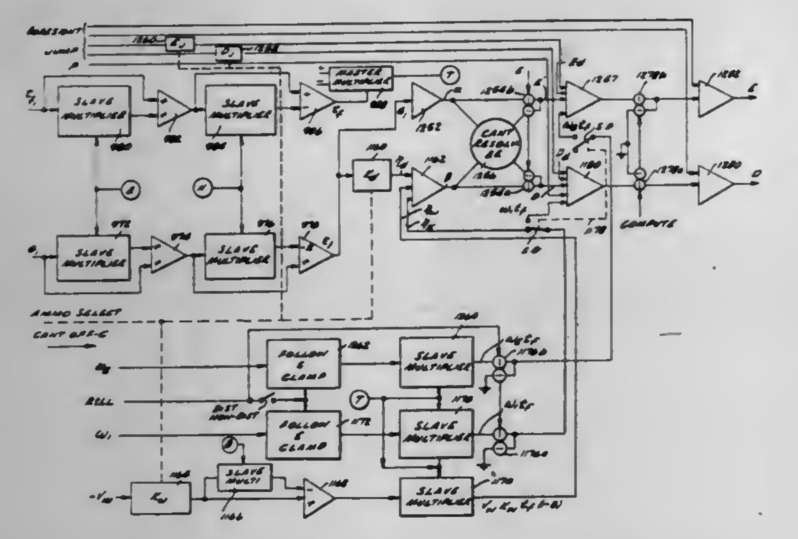
3,604,897
ELECTRONIC BALLISTIC COMPUTER FOR TANK FIRE CONTROL SYSTEM

William E. McAdam, Jr., Thousand Oaks; Roy G. Clutterbuck, Los Angeles, and Millard M. Frohock, Jr., Thousand Oaks, all of, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 21, 1968, Ser. No. 754,424
Int. Cl. G06g *7/80*
U.S. Cl. 235—61.5 **26 Claims**

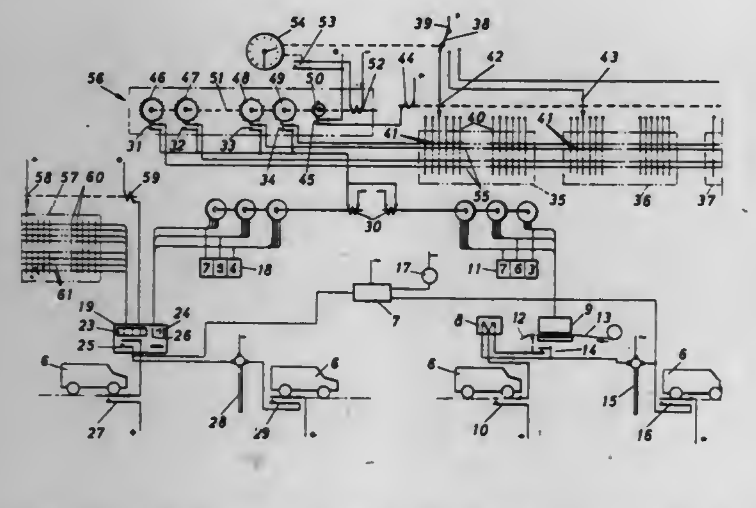


A computer circuit for generating signals related to the ballistics of a plurality of projectile or ammunition types, the signals including time of flight, superelevation, and ballistics drift signals. The computer includes a plurality of parallel channels, and a first adjustable operational amplifier, which operates on the range information by a selected ballistics normalizing transfer function to generate an individual normalized range signal for a selected individual one of the plurality of projectile or ammunition types, a first multiplier means for multiplying the normalized range signal received from the operational amplifier by a partial derivative of nonstandard air pressure and temperature, each parallel channel including a function generator coupled to receive and operate on the normalized range signal with a nonlinear transfer function common to the ballistics of all of the projectile types for generating an exponential function signal related to the selected projectiles, and a second adjustable operational amplifier coupled to the function generator for operating on the function signal by a selected individual unnormalizing transfer function for each projectile for generating signals related to the ballistics of the projectile, such as superelevation and time of flight on each channel and second and third multiplier means in each channel respectively coupled to multiply the superelevation signal and the time of flight signal by the partial derivative of nonstandard air temperature and air pressure conditions and by the partial derivative of nonstandard propellant grain temperature and effective full charge to correct for changes in standard conditions.



3,604,898
A FULLY AUTOMATIC OR SEMIAUTOMATIC PARKING AREA

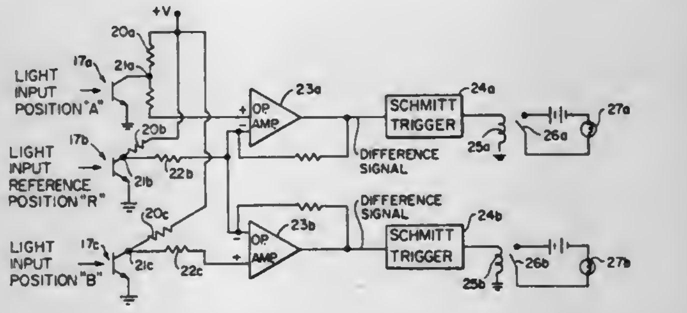
Sven Tore Magnus Magnusson, Goteborg, Sweden, assignor to Telub AB, Vaxjo, Sweden
Filed Mar. 15, 1968, Ser. No. 713,488
Claims priority, application Sweden, Mar. 17, 1967, 3730/67
Int. Cl. G06k *17/00*
U.S. Cl. 235—61.6 **3 Claims**



The present invention relates to a fully automatic or a semiautomatic parking plant in which means are arranged for ensuring that the parking fee is calculated in a correct way and this even when different rates are valid for different hours of the day. The parking plant according to this invention is of the kind in which a ticket is received at the entry bearing markings for indicating the entry time and in which a ticket-checking apparatus or cash register is arranged at the exit for sensing the markings on the ticket and calculating the fee. The plant is further provided with a period number work which is driven by means of a programming work driven by a clock work, the period number work adapted to deliver its values to the ticket distributor at the entry of the plant or to the cash register.

3,604,899
MARK-DETECTING SYSTEM

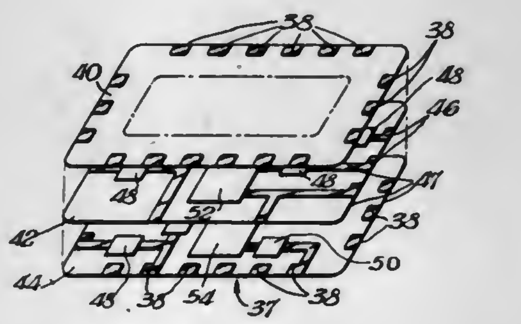
John William Donohoe, South Natick, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Feb. 12, 1970, Ser. No. 10,772
Int. Cl. G06k *7/14;* **G01n** *21/30*
U.S. Cl. 235—61.11 E **10 Claims**



A mark-detection apparatus having a plurality of photodetectors for receiving light reflected from a plurality of points on an object such as a ticket and wherein a signal is generated representing the difference between the light detected by each of the photodetectors to indicate if a ticket has been altered.

3,604,900
ELECTRONIC CREDIT CARD

Charles G. Kait, Williamstown, Mass., assignor to Sprague Electric Company, No. Adams, Mass.
Filed July 7, 1969, Ser. No. 839,500
Int. Cl. G06r *19/00*
U.S. Cl. 235—61.12 N **2 Claims**

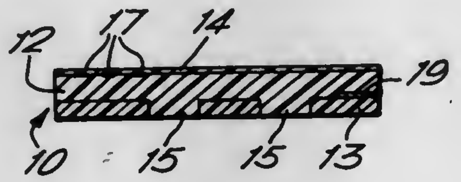


An electrically encoded credit card includes encoded information in the form of electrical elements and is adapted for decoding by a card-reading means for advising a merchant as to customer identification and credit rating.

3,604,901
INFORMATION CARD

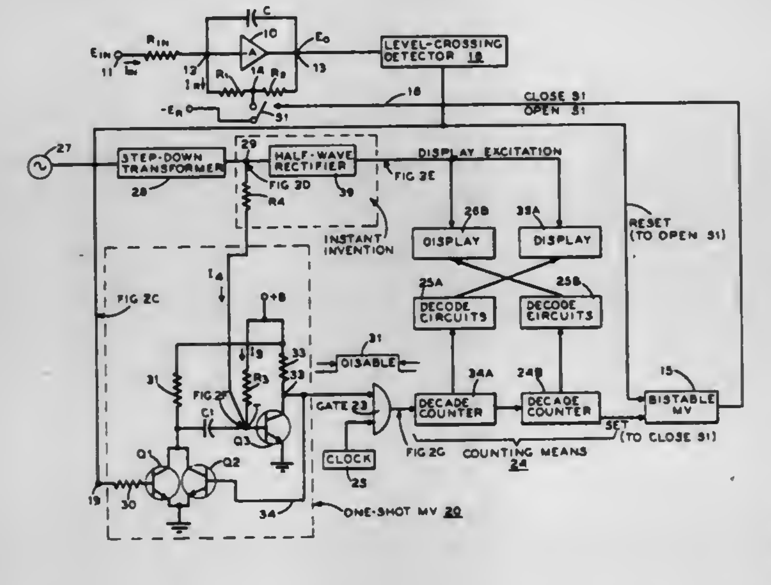
Tadao Morita, Kyoto, and Kazuhiro Kawahara, Amagasaki, both of, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed Dec. 2, 1969, Ser. No. 881,416
Claims priority, application Japan, Dec. 5, 1968, 43/106286
Int. Cl. G06k *19/02*
U.S. Cl. 235—61.12 R **11 Claims**

An information card for use in sales transactions, bank deposits or withdrawals and the like, which comprises a bottom layer of a light opaque material having holes formed therein to express a predetermined coded information such as the card identification number and the like, an intermediate layer of a translucent thermoplastic material on said information layer and a top layer of a transparent material covering said intermediate layer for protection of the upper surface thereof. These three layers are formed into a single card of laminated construction. The translucent material of the intermediate layer has a softening point much lower than those of the other layers, so that when heated and compressed for lamination, it flows into and fills the information holes in the bottom layer. The material filling the holes reinforces the bottom layer and consequently the card which would otherwise become very weak due to the presence of many holes and yet permits sufficient light to pass through the holes, so that with the other area of the bottom layer being substantially light opaque, very accurate photoelectric detection of the information holes can be achieved.



3,604,902
APPARATUS FOR ELIMINATING FLICKER IN A DRIVEN DISPLAY

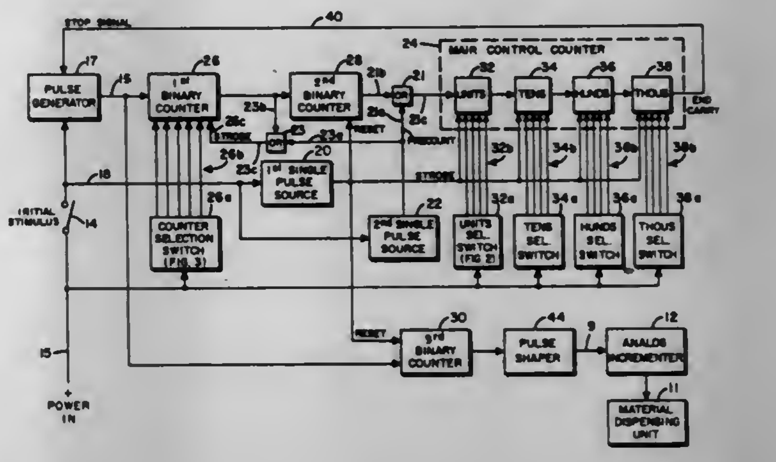
Irwin Munt, Elizabeth, N.J., assignor to Weston Instruments, Inc., Newark, N.J.
Filed Apr. 4, 1969, Ser. No. 813,506
Int. Cl. H03k *21/18;* **G09f** *9/00*
U.S. Cl. 235—92 EA **5 Claims**



The state of a display-controlling (or driving) binary counter is synchronized to the state of the display controlled thereby. A time-varying signal alternately extinguishes and excites (strobes) the display and the phase of this signal is used to control the operation of the counter such that the counter does not change state significantly until the display is extinguished. The counter state is controlled by the state of a resistor-capacitor (RC) monostable multivibrator, which in turn, is synchronized while in an unstable state to the time-varying signal. Synchronization is conveniently effected by utilizing the capacitor of the multivibrator to integrate the time-varying signal and using the resulting integrated signal to trigger the monostable into a stable state.

3,604,903
MATERIAL DISPENSING CONTROL SYSTEM

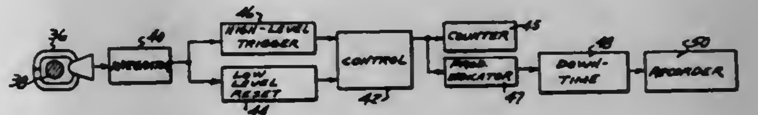
John L. Hill, and Neil B. Howes, both of St. Paul, Minn., assignors to Ramsey Engineering Company, St. Paul, Minn.
Filed Oct. 23, 1968, Ser. No. 769,822
Int. Cl. H03k *21/36*
U.S. Cl. 235—92 PE **14 Claims**



An electronic system produces a train of electrical pulses or signals for controlling the dispensing of materials in different amounts or proportions, such as desired in the automatic batching of concrete. By control settings preset on a main electronic decimal counter, a prescribed number of pulses is delivered by the system to a mechanical analog device which in turn controls the material-dispensing mechanism. Additional presettable electronic counters are combined with the main decimal counter to achieve any number of batch formulations proportioned on the basis of arithmetic ratios established by the control settings selected on the counters.

3,604,904
MONITORING DEVICE

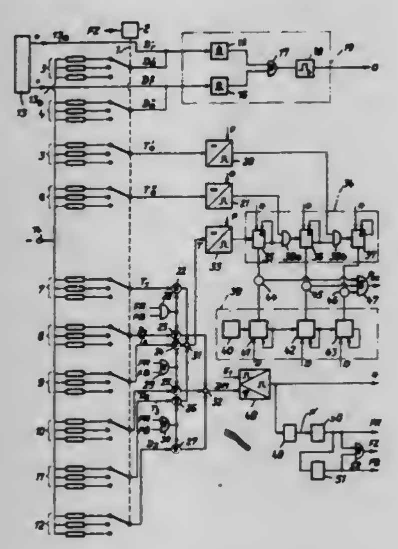
Ariel I. Stiebel, Bloomfield Hills, and Seymour A. Lippmann, Huntington Woods, both of, Mich., assignors to Radex Corporation, Detroit, Mich.
Filed Feb. 6, 1969, Ser. No. 796,974
Int. Cl. G07c *3/10*
U.S. Cl. 235—92 PD **18 Claims**



A monitoring device specially adapted for production control purpose by providing one count for each workpiece produced by a machine, such as a forge hammer or the like, which requires an indefinite number of strokes or motions in order to produce a finished workpiece. The total energy consumed by the machine for producing a finished workpiece is transduced into an electrical signal comprising a first train of electrical pulses of a first amplitude duration ratio, corresponding to the working cycle of the machine, followed by a second train of second electrical pulses of a lower amplitude duration ratio, corresponding to the idling cycle of the machine. Those signals are integrated by appropriate means supplying at its output a voltage level varying between a maximum level corresponding to the first train of pulses and a minimum level corresponding to the second train of pulses. The minimum voltage level is used to set a control means which is in turn activated by a voltage level corresponding to approximately the maximum level, and each time the control means is activated, a count is registered. Additionally, diverse indicators are provided for monitoring production cycles of the machine, down time cycles, and for providing a permanent record of production rates.

3,604,905
ELECTRONIC DEVICE FOR THE AUTOMATIC CONTROL OF A RAILWAY TRAIN

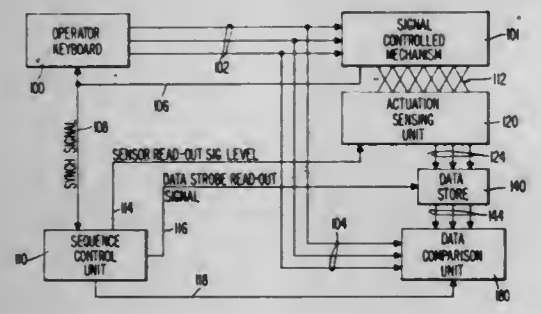
Pierre Riondel, Geneva, Switzerland, assignor to Societe Anonyme des Ateliers de Secheron, Geneva, Switzerland
Filed July 12, 1968, Ser. No. 744,553
Claims priority, application Switzerland, Oct. 23, 1967, 14755/67
Int. Cl. B60z *3/00;* **G06f** *15/48*
U.S. Cl. 235—150.24 4 Claims



A system for the automatic control of a railway train wherein the itinerary is divided into several zones, in each of which the feed current of the motors can be cut off before the end of the zone is reached by the train if a time interval which is a determined function of the distance counted from the beginning of the zone becomes greater than the real time.

3,604,906
VERIFIER FOR SIGNAL CONTROLLED MECHANISM

James R. Hunter, Chadds Ford, and Ermenegildo Fiorentino, Bridgeport, both of, Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Sept. 4, 1969, Ser. No. 855,344
Int. Cl. G06k *5/00;* **H03k** *13/32*
U.S. Cl. 235—153 10 Claims

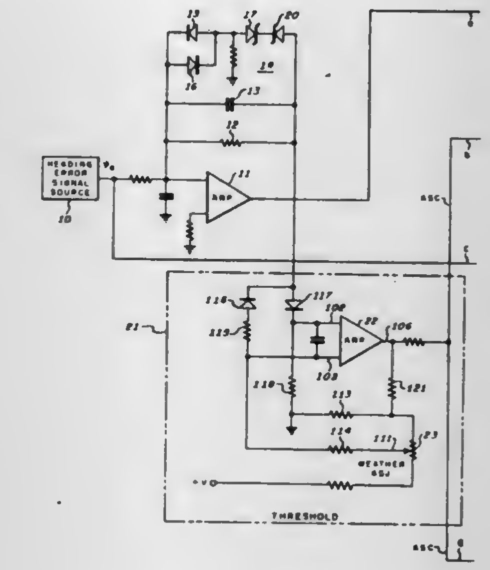


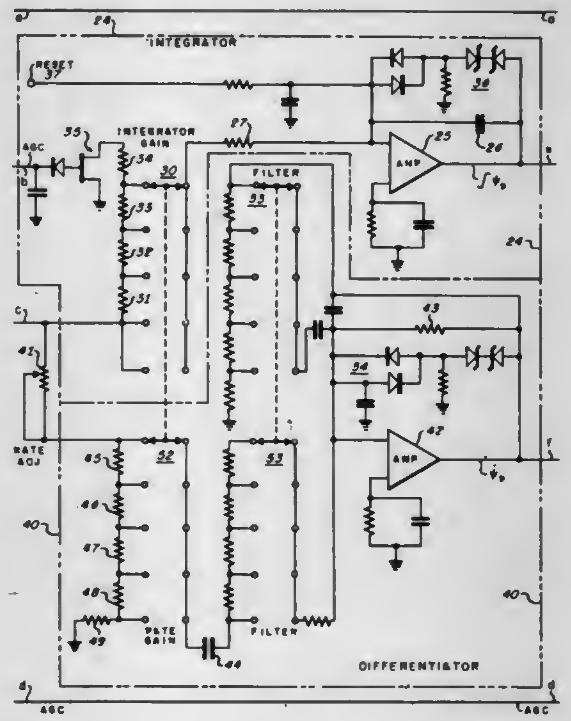
Apparatus for verifying the operation of mechanisms electrically controlled by operator keyboards which includes delayed electrical sensing of the activation of the mechanisms and alternate printing of data corresponding to the keyboard output signals and to the signals transduced from the operation of the mechanisms. In one version of the verifier the actuation sensing is performed by switches to set a storage means which is then read out after a predetermined delay from the time that data signals are received from the keyboard for storage or printing.

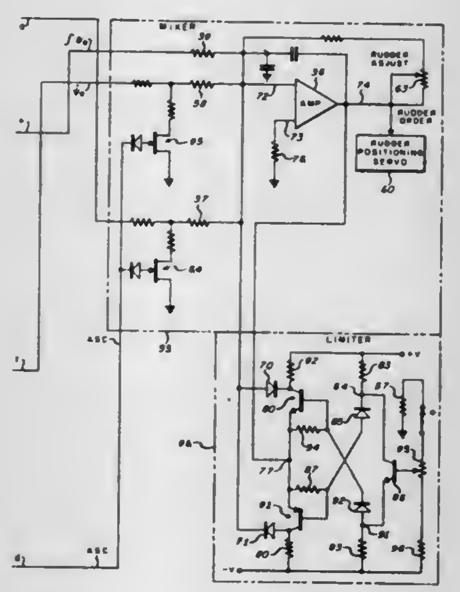
3,604,907
STEERING COMMAND COMPUTER FOR NAVIGABLE CRAFT

Charles R. Wesner, Crozet, Va., assignor to Sperry Rand Corporation
Filed Mar. 2, 1970, Ser. No. 15,697
Int. Cl. B63h *25/04;* **G05b** *13/02*
U.S. Cl. 235—150.2 6 Claims

Computer apparatus for use in navigable craft for providing a steering command signal in response to a heading error signal. A threshold circuit provides a first signal when the magnitude of the heading error signal is not in excess of a threshold and a second signal when the magnitude thereof exceeds the threshold. Gain-controlling circuits are included for effecting a first computer gain in response to the second signal and a lower gain in response to the first signal. Means for adjusting the threshold in accordance with yawing motion of the craft are included.

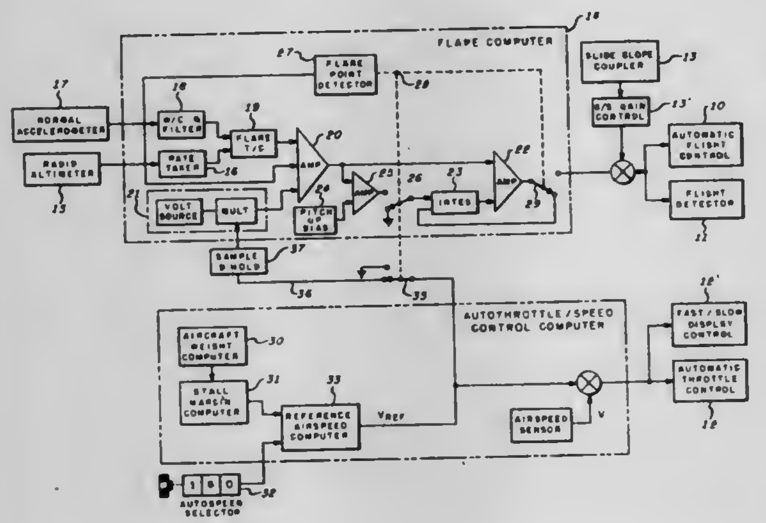






3,604,908
LANDING CONTROL SYSTEM FOR AIRCRAFT

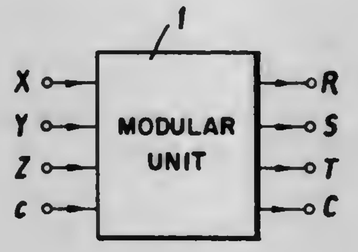
Raymond G. Loome, Phoenix; Harry Miller, Scottsdale, and Robert H. Parker, Phoenix, all of, Ariz., assignors to Sperry Rand Corporation
Filed May 19, 1969, Ser. No. 825,590
Int. Cl. G06g *7/78;* **B64c** *19/00*
U.S. Cl. 235—150.22 6 Claims



An improved automatic landing control system for aircraft in which the automatic control system flarepath control law parameters includes a normally fixed bias term for establishing a nominal descent rate of the aircraft at touchdown, as well as a term which determines the shape or curvature of the flarepath. Accurate and automatic control of craft airspeed in accordance with a reference airspeed is provided. The dispersion of the touchdown point along the runway caused by uncontrollable variable errors (such as errors in measuring absolute altitude, errors resulting from aircraft displacement from the glide slope beam at flare initiation, headwinds or tailwinds, and windshear) is greatly reduced by varying, during the glide slope controlled approach and prior to flare initiation, the nominal touchdown bias term as a function of the reference airspeed of the aircraft, or alternatively, to vary the flare time constant or path curvature term as a function of airmass flightpath angle and the touchdown bias term as a function of both flightpath angle and reference airspeed.

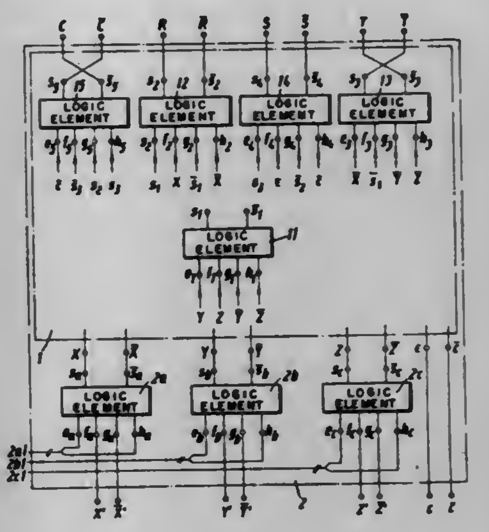
3,604,909
MODULAR UNIT FOR DIGITAL ARITHMETIC SYSTEMS

Heinz Vogel, and Hubert Eing, both of Konstanz, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Danube, Germany
Filed May 24, 1968, Ser. No. 731,806
Claims priority, application Germany, May 24, 1967, T-33931
Int. Cl. G06f *7/50, 7/52*
U.S. Cl. 235—175 7 Claims



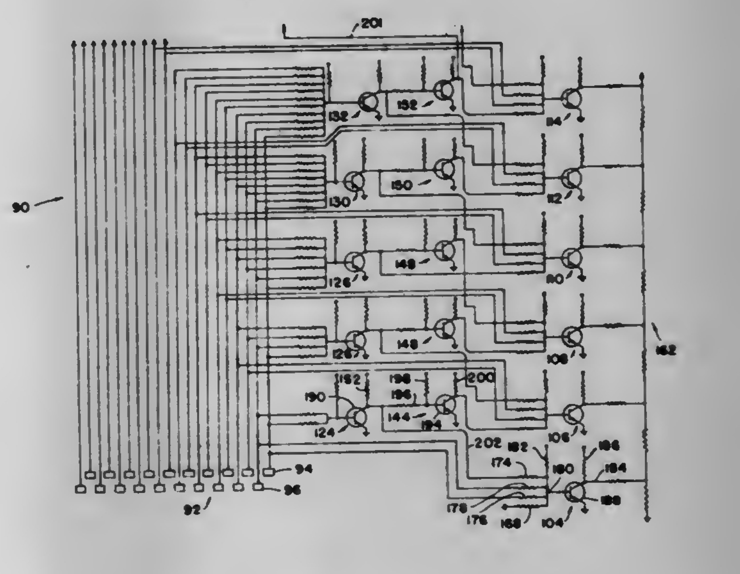
$$R = X \oplus Y \oplus Z$$
$$S = X \oplus Y \oplus Z \oplus c$$
$$T = XY \vee XZ \vee YZ$$
$$C = c(X \oplus Y \oplus Z) \vee \overline{(X \oplus Y \oplus Z)}(XY \vee XZ \vee YZ)$$

A modular logic unit consisting of a plurality of identical logic elements interconnected to perform a large variety of arithmetic operations which fully utilize the logic elements so as to make efficient use of the logic elements and to maintain the cost of such unit at a minimum. An arithmetic unit composed of a plurality of such modular units and a plurality of associated storage registers, there being one modular unit associated with each bit location of the storage registers.



3,604,910
PARALLEL COMPARATOR WITH SIMULTANEOUS CARRY GENERATION AND AN ANALOG OUTPUT

Robert W. Kearns, 20424 Rutherford Ave., Detroit, Mich.
Filed Aug. 31, 1967, Ser. No. 664,814
Int. Cl. G06f *7/50*
U.S. Cl. 235—177 18 Claims

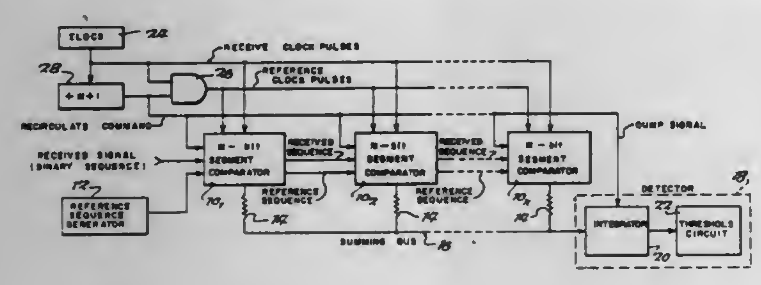


A parallel comparator for digital signals, such as two binary coded numbers, comprising a plurality of parallel carry stages, each having a single semiconductor for receiving input signals representative of all the significant positions in the digital signals up to the particular stage and for providing an output signal in accordance with whether or not a carry output signal is required in the particular stage, an adding stage for each significant position in the signals to be compared, each having a single semiconductor for receiving the input signals in the respective significant position or stage from the input circuits, a carry signal for the respective stage and a carry-not signal from the next significant position or stage from the parallel carry stages, and analog ladder means for receiving the output from the adding stages to provide an analog comparator output signal.

The comparator includes means for providing a direct current or alternating current analog output signal and for varying the output signal in both directions from a zero signal as well as means for limiting the number of input signals to the parallel carry stages.

3,604,911
SERIAL-PARALLEL DIGITAL CORRELATOR

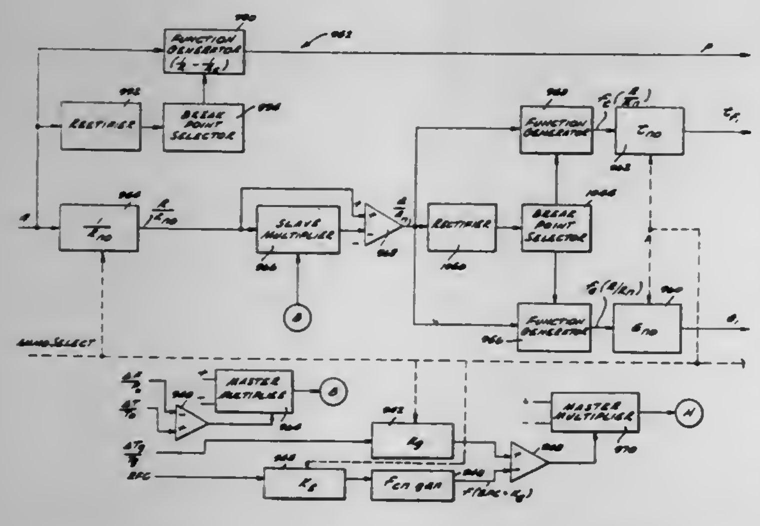
Joseph W. Schmitt, Cheektowaga, N.Y., assignor to Sylvania Electric Products Inc.
Filed May 15, 1969, Ser. No. 824,869
Int. Cl. G06f *15/34;* **G06g** *7/19*
U.S. Cl. 235—181 **8 Claims**



A digital correlator for measuring the amount of agreement between two binary sequences comprising a plurality of cascade-connected segment comparators each operative to serially compare the bits within an M-bit segment of the sequences. A summing bus collects in parallel the comparison output signals of the segment comparators and applies them to a detector comprising an integrator and threshold circuit. Each segment comparator comprises a pair of M-bit shift registers each of which processes bits of a respective one of the binary sequences, a pair of exclusive OR gates for controlling serial loading and recirculation of respective registers, clock drive and feedback connections for recirculating the contents of both registers between the loading of each bit into one of the registers, and a modulo 2 adder for serially comparing the outputs of the registers.

3,604,912
IN-LINE PARTIAL DERIVATIVE MULTIPLIER FOR COMPUTER CIRCUITS

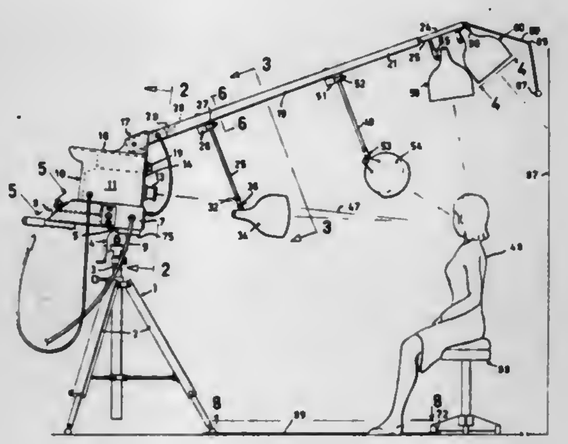
Millard M. Frohock, Jr., Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 21, 1968, Ser. No. 754,440
Int. Cl. G06g *7/28, 7/16*
U.S. Cl. 235—197 **8 Claims**



A computer circuit for generating signals related to the ballistics of a plurality of projectile or ammunition types, the signals including time of flight, superelevation, and ballistics drift signals and a circuit including master-slave multipliers for multiplying selected generated signals by partial derivatives corresponding to nonstandard changes in standard conditions. Each slave multiplier includes a first circuit path that directly conducts a signal generated by the computer to a summing circuit and a second circuit path that multiplies the generated signal by the ratio of change in the standard condition to the standard condition and feeds this signal to the summing circuit where it is summed with the generated signal to produce a partial derivative output signal. More specifically, the computer includes a plurality of parallel channels, and a first adjustable operational amplifier which operates on the range information R by a selected ballistics-normalizing transfer function $1/R_n$ to generate an individual normalized range signal R/R_n for a selected individual one of the plurality of projectile or ammunition types, a first multiplier means for multiplying the normalized range signal received from the operational amplifier by a partial derivative of nonstandard air pressure and temperature, each parallel channel including a function generator coupled to receive and operate on the normalized range signal with a nonlinear transfer function common to the ballistics of all of the projectile types for generating an exponential function signal related to the selected projectiles, and a second adjustable operational amplifier coupled to the function generator for operating on the function signal by a selected individual unnormalizing transfer function for each projectile for generating signals related to the ballistics of the projectile, such as superelevation and time of flight on each channel other multiplier means in each channel are coupled in series circuit relationship to multiply the superelevation signal and the time of flight signal by the partial derivative of nonstandard air temperature and air pressure conditions and by the partial derivative of nonstandard propellant grain temperature and effective full charge to correct for changes in standard conditions.

3,604,913
PHOTOGRAPHIC LIGHTING ASSEMBLY

Richard C. Crete, 16 S. School St., Lodi, Calif.
Filed Feb. 7, 1969, Ser. No. 797,403
Int. Cl. G03b *15/035*
U.S. Cl. 240—1.3 **5 Claims**



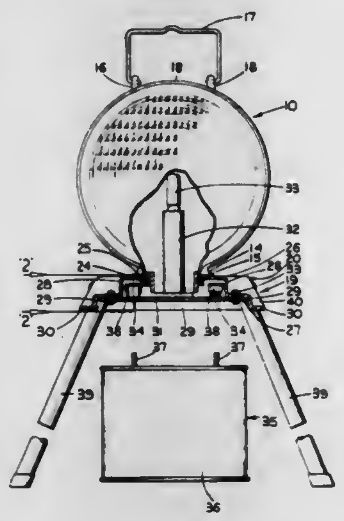
A compact, portable photographic assembly that includes a camera support for supporting a camera in a position with the optical axis of its lens directed generally horizontally to one side of said camera, said support being rotatable about a vertical axis, and supporting the inner end of a relatively long boom in a position projecting laterally outwardly and upwardly from said support with said inner end positioned above said camera, and its outer end spaced above the head of a person to be photographed when such person is on said optical axis. Arms spaced between the inner and outer ends of said boom project laterally oppositely outwardly of said boom, each being swingably connected with said boom at one of their ends and each having a lamp and reflector on its opposite end movably supported thereon for varying the position of the lamp and reflector to provide diffused reflected rays of light or direct rays according to the effect desired. The arms carrying said lamps and reflectors are swingable about said one of their ends for movement to collapsed positions alongside and substantially parallel with said boom when the assembly is not in use.

3,604,914
HAZARD LAMPS

Alan Graham Gibson, Burton-on-Trent, England, assignor to The Silvaflame Company Limited, Birmingham, England
Filed Oct. 4, 1968, Ser. No. 765,127
Claims priority, application Great Britain, Oct. 11, 1967, 46382/67
Int. Cl. F21v *5/00*
U.S. Cl. 240—2 R **9 Claims**

An electrical hazard lamp is provided which includes a body member serving as a head member for a multilegged

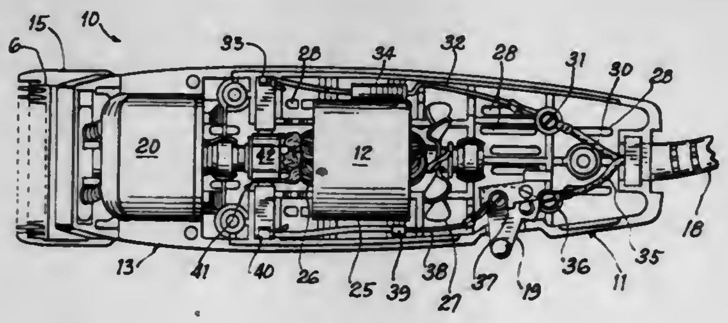
stand and also as a protective cover above a battery. The head member includes an upper wall and a peripheral downwardly extending flange which collectively define a shallow chamber having an open mouth presented downwardly to receive the upper end of a battery supported from the head member. Leg-receiving sockets are formed in the peripheral flange and legs are releasably secured in these



sockets by screws. Alternatively, the legs are irremovably secured in their sockets by rivets arranged to permit the legs to pivot between splayed and compact positions. In the latter arrangement a battery case is releasably attached beneath the head member, the battery case having an outwardly projecting flange which is arranged to constrain the legs releasably in their splayed positions.

3,604,915
ELECTRIC MOTOR APPLIANCE WITH ASSOCIATED LIGHT SOURCE

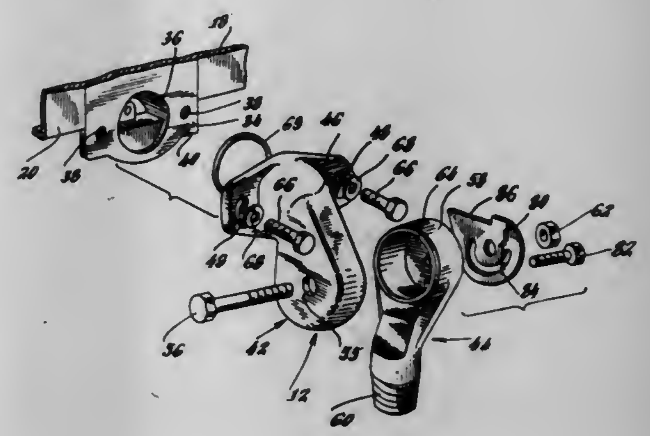
John F. Wahl, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.
Filed Jan. 15, 1969, Ser. No. 791,413
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **4 Claims**



An electric motor appliance with associated lamp energized from a commercial alternating current source of voltage. The appliance shown by way of example is an electric hair clipper. The associated lamp, which illuminates the area being worked on by the appliance, operates at low voltage and is mounted in shockproof manner, both contributing to long lamp life. The lamp is shockproof mounted by engagement with resilient metallized material which also serves as a reflecting member. The appliance employs a permanent magnet motor, and the lamp is connected in parallel with the motor armature, suitable resistance being provided in the armature and lamp circuits to limit the current and voltage to proper values for the lamp. Resilient arcuate conductor lengths mounted on a separable portion of the appliance housing, which also contains the lamp, constitute the connections between the lamp circuit and the motor armature, minimizing assembly cost and facilitating access to the housing interior.

3,604,916
FLOODLIGHT-MOUNTING ARRANGEMENT

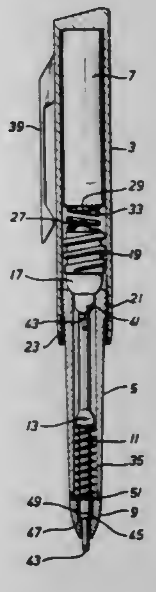
Tarek Adra, La Canada, and Robert P. Draper, Burbank, both of, Calif., assignors to Harvey Hubbell Incorporated, Bridgeport, Conn.
Filed Oct. 15, 1968, Ser. No. 767,638
Int. Cl. F21p *5/00*
U.S. Cl. 240—3 **6 Claims**



A vertically adjustable floodlight-mounting device including first and second cooperating swivel joint elements is mounted on a horizontally adjustable support and is supportingly secured to the housing of a floodlight to permit the later to be selectively adjusted in a vertical plane. An adjustable mounting plate securing the mounting device to the floodlight housing, permits the housing to be selectively moved relative to the mounting device to thereby alter the relationship between the longitudinal axis of the floodlight and the fixed rotation axis of the swivel joint elements.

3,604,917
BALLPOINT PEN LIGHT

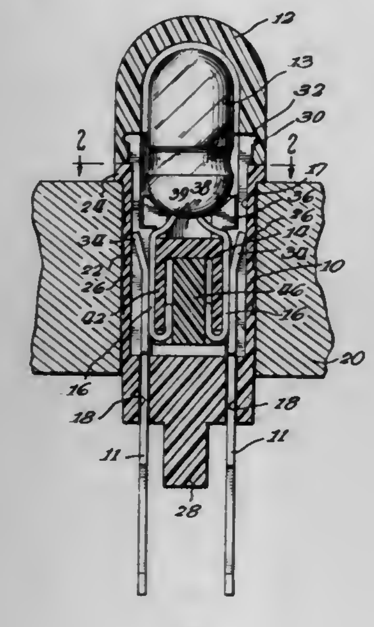
Oron Laverne Schmidt, 8318 Dillon, Houston, Tex.
Filed Jan. 22, 1969, Ser. No. 793,134
Int. Cl. F21u *33/00*
U.S. Cl. 240—6.46 **6 Claims**



A ballpoint pen construction having self-contained electrical illuminating source and structural couplings whereby the ballpoint cartridge may be extended for use either with or without utilization of the illumination means, thereby conserving the energy in the power source when the pen is in operation and the illumination is unnecessary.

3,604,918
MINIATURE LAMP ASSEMBLY

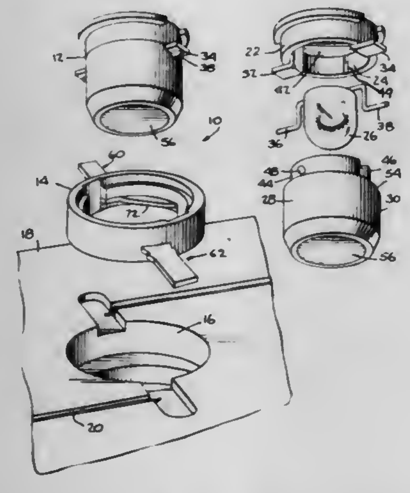
Arthur Keith Cook, and Edward Fulton, both of Santa Ana, Calif., assignors to Oak Electro/Netics Corp.
Filed Nov. 29, 1968, Ser. No. 779,998
Int. Cl. B60g *3/04*
U.S. Cl. 240—8.16 **4 Claims**



A miniature lamp assembly which includes a replaceable wire lead miniature bulb and a housing having a receptacle for receiving the bulb. A pair of terminal contact members are mounted on the housing with portions thereof exposed within the receptacle. A two-piece bulb base is provided for assembly with the bulb to position and hold the wire leads so that the bulb and bulb base can easily be inserted into the receptacle formed by the housing with the wire leads in engagement with the exposed portions of the terminal contact members.

3,604,919
ILLUMINATION DEVICE FOR EDGELIGHTING TRANSPARENT PANELS

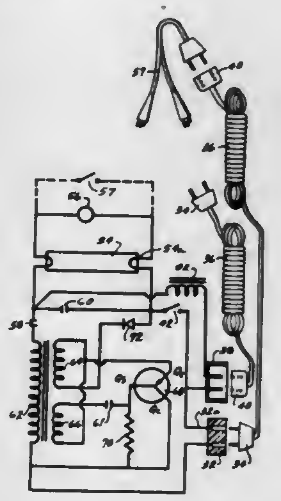
William C. MacPherson, Encinitas, Calif., assignor to Hudson Lamp Company, Kearny, N.J.
Filed July 3, 1969, Ser. No. 838,768
Int. Cl. B60g *3/04;* **H01r** *13/12*
U.S. Cl. 240—8.16 **16 Claims**



An illumination device includes a lamp assembly enclosing a lamp bulb and providing electrically conductive tabs extending outward from the sidewalls of the lamp assembly and connected in electrical communication with the lamp bulb, and a socket adapted for mounting in a hole in a transparent panel. The socket includes socket spring locking means consisting of a finger portion extending outside of the socket and a bowed spring portion connected to such finger portion and fitting into recesses formed in the inner walls of the socket. The finger portions tightly lock into grooves formed on opposite sides of the panel hole so as to lock the socket in the panel. The lamp assembly is adapted to be inserted into the socket and locked into place by pressing the lamp assembly with its tabs against the socket and rotating such lamp assembly relative to the socket to compress the bowed portion and permit such tabs to pass over center and lock into place in the recesses provided in the socket.

3,604,920
PORTABLE FLUORESCENT LANTERN

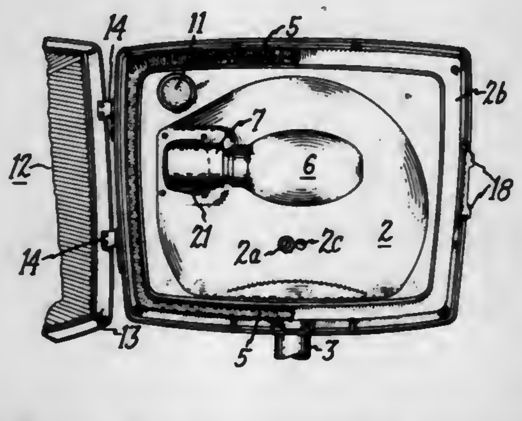
Donald M. Niles, P.O. Box 3, Largo, Fla.
Filed Sept. 30, 1968, Ser. No. 763,513
Int. Cl. F21l *3/00*
U.S. Cl. 240—11.4 R **5 Claims**



A portable fluorescent hand lantern with circuitry for energizing the lantern either on AC or DC power. The lantern is fitted with electrical connectors for respective engagement with female and male sockets of a standard electrical power cord. In AC operation, the female socket of the electric cord is inserted into the lantern and the male socket fits into a standard AC outlet. In DC operation, the power cord is reversed with the male socket of the cord inserted into the lantern and the female socket of the cord connected to a battery adapter. To operate the lantern under DC power, the circuitry includes a transistorized DC to AC power inverter.

3,604,921
LUMINAIRE OF GENERALLY RECTANGULAR SHAPE

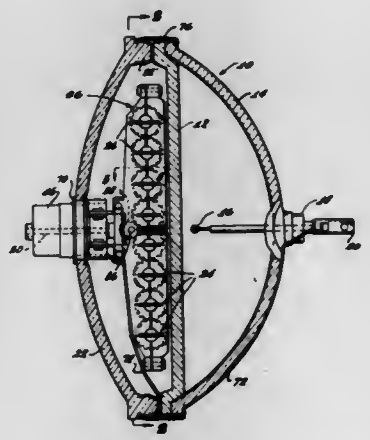
David L. Wood, and Jonathan C. Abercrombie, both of Hendersonville, N.C., assignors to General Electric Company
Filed Aug. 19, 1968, Ser. No. 753,672
Int. Cl. F21s *1/10*
U.S. Cl. 240—25 **11 Claims**



Luminaire of generally rectangular shape adapted to be mounted in vertical or horizontal position for illuminating surfaces at right angles thereto comprises a generally rectangular housing having curved sides and closed by a refractor mounted in a frame which overlaps the rim of the housing and is attached to one side thereof by partially concealed spring metal hinges. The hinges comprise spaced spring plates which are adapted to flex during movement of the frame between closed and open position. On the opposite side, a detent latch holds the frame in closed position. Ribs on the housing walls serve to hold the luminaire reflector in a downwardly tilted position. The rear wall of the housing is indented at opposite sides to define a slip fitter for mounting the luminaire on a pipe support.

3,604,922
AUTOMOBILE HEADLAMP

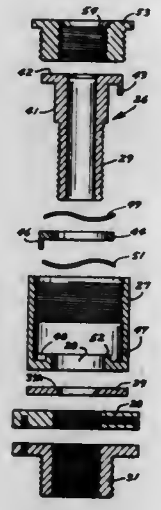
John F. Steel, P. O. Box 401, Palm Beach, Fla.
Filed Aug. 20, 1968, Ser. No. 753,991
Int. Cl. F21v *15/02, 17/00*
U.S. Cl. 246—46.07 **10 Claims**



A headlamp has a rear filament compartment and a forward compartment containing parallel louvers. The louvers above the axis are connected by gears near one side of the frame, and those below the axis are connected by gears near the other side of the frame. A transverse shaft, either the motor shaft or a shaft driven by a face gear on the shaft of a motor extending through the lens, carries end gears meshing the gears of the innermost louvers, which are between the motor and filament and prevent direct exposure of the motor to filament heat. Cushion elements prevent physical contact between the glass parts and the louver and motor assembly.

3,604,923
SWIVEL MOUNTING FOR ELECTRICAL APPLIANCE

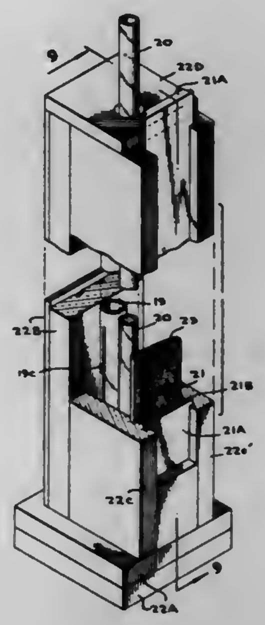
Dillon W. Moffatt, 727 Winnetka Ave., Golden Valley, Minn.
Filed Dec. 9, 1968, Ser. No. 782,106
Int. Cl. F21v *21/00;* **F16l** *27/00*
U.S. Cl. 240—52 R **13 Claims**



A lamp connected to a support with a flexible arm enclosing an electrical cable. Separate swivel mounts connected to opposite ends of the arm movably attach the arm to the support and to a lampshade. Each swivel mount has a stationary member with a fixed stop and a pair of relatively rotatable members mounted on the stationary member to permit approximately 600° of rotation of the flexible arm relative to the support and approximately 600° of rotation of the lampshade relative to the arm.

3,604,924
AUTOMATIC SEDIMENTATION RATE RECORDER

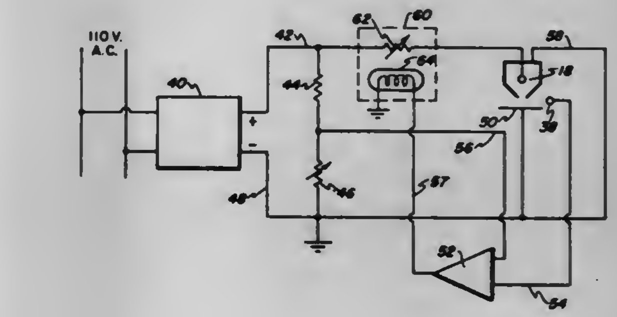
Adrian W. Standaart, 5 Bonbrook Circle, Winston-Salem, N.C.
Continuation-in-part of application Ser. No. 828,209, May 27, 1969, now abandoned. This application Sept. 24, 1969, Ser. No. 864,943
Int. Cl. G01n *33/16*
U.S. Cl. 346—33 ME **34 Claims**



An automatic sedimentation rate recording apparatus wherein an elongated container tube containing a fluid sample is placed in a holder adjacent an elongated record forming strip and a high-intensity flashlamp, and a solid state timer circuit times out a selected test period, for example, of 1 hour, activates the flashlamp to produce in the record forming strip an image indicating the level of the sediment in the container tube, and an indicator lamp is activated to signal completion of the test and recording.

3,604,925
APPARATUS FOR CONTROLLING THE AMOUNT OF CHARGE APPLIED TO A SURFACE

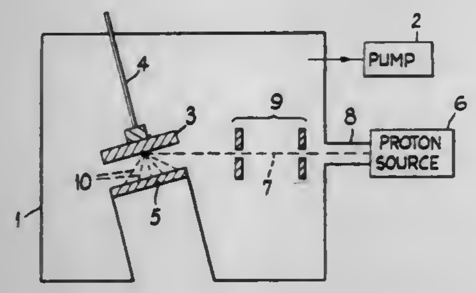
Christopher Snelling, Penfield, and Norman R. La Fond, Webster, both of, N.Y., assignors to Zerox Corporation, Rochester, N.Y.
Filed Dec. 3, 1968, Ser. No. 780,811
Int. Cl. G03g *13/00*
U.S. Cl. 250—49.5 ZC **4 Claims**



Apparatus for automatically controlling the amount of electrostatic charge applied to a plate by controlling the potential applied to a corona wire.

3,604,926
MAGNIFYING DEVICES FOR OBSERVING CRYSTAL LATTICE STRUCTURES

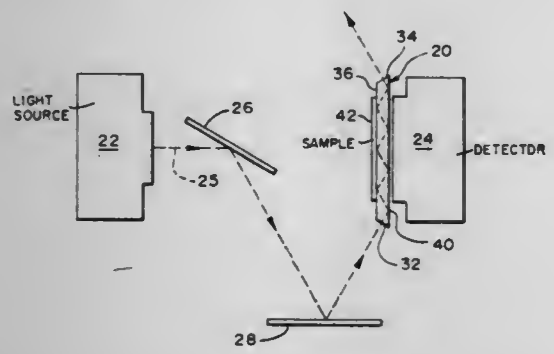
Richard Stuart Nelson, Goring-on-Thames, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Dec. 11, 1967, Ser. No. 689,659
Claims priority, application Great Britain, Dec. 14, 1966, 56,081/66
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 **1 Claim**



A collimated beam of protons is directed at an area on the surface of a specimen and the backscattered protons are used to produce a magnified image of the area. The image may be produced by arranging a fluorescent screen in the path of the scattered protons.

3,604,927
TOTAL REFLECTION FLUORESCENCE SPECTROSCOPY

Tomas Hirschfeld, Thousand Oaks, Calif., assignor to Block Engineering, Inc., Cambridge, Mass.
Filed Nov. 16, 1966, Ser. No. 594,860
Int. Cl. G01n *21/52*
U.S. Cl. 250—71 R **5 Claims**

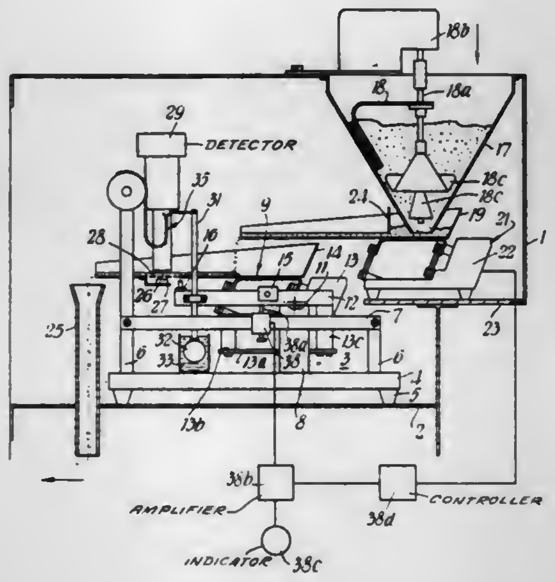


A fluorescence spectroscopic device and method of using an attenuated, total, multiple reflection slab on one surface of which a sample is placed. A beam of fluorescence-exciting radiation is passed through the slab by multiple reflections. A detector is located alongside the slab and out of the path of any of the exciting radiation to pick up fluorescent emission passing through the cell and across the path of the exciting radiation. The slab thereby serves as a no-loss secondary filter with respect to the fluorescence, permitting the latter to be easily distinguishable from the exciting radiation even where the wavelengths are similar.

3,604,928
APPARATUS FOR TESTING AND REGULATING THE FLOW OF POWDERED MATERIAL

Peter Edward Starnes, Reading, England, assignor to Hilger & Watts Limited, London, England
Filed Mar. 21, 1968, Ser. No. 714,878
Int. Cl. G01n *23/12*
U.S. Cl. 250—43.5 **8 Claims**

Apparatus for testing powdered sample material by radiometric analysis including a sample carrier in the form of a vibratory conveyor, means for forming a layer or ribbon of powdered sample material on said carrier of continuously measured and substantially constant mass per unit area and substantially constant thickness and width, a source of radiation past which said sample layer can be moved by the carrier at a substantially constant distance from said source so as to be irradiated thereby and means for measuring the resultant radiations emanating from the sample material.



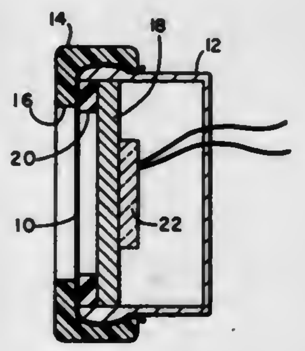
3,604,929
PROCESS FOR THE DETECTION AND MEASUREMENT OF IONIZING RADIATION BY THE USE OF RADIATION-DEGRADEABLE MATERIAL

Jean-Paul Lucien Goulin, Vincennes, France, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 17, 1969, Ser. No. 799,878
Claims priority, application France, Mar. 5, 1968, 142344/68
Int. Cl. G01t *5/00, 5/10*
U.S. Cl. 250—83 **17 Claims**

Radiation-degradeable film, a portion of which has been irradiated, is treated initially with a basic solution, containing a chemical reagent which swells the material constituting the film, making it possible for the basic solution to attack the radiation degraded parts more deeply. Also, in a further operation the film may be treated with a solvent which dissolves surface roughness formed during the initial treatment so that the nondegraded parts recover their initial transparency while the more deeply attacked degraded parts remain visible. This method lends itself to automatic dosimetry in which the optical densities of irradiated and nonirradiated portions of the material are compared.

3,604,930
METHOD AND APPARATUS FOR DISPLAYING VISUAL IMAGES OF INFRARED BEAMS

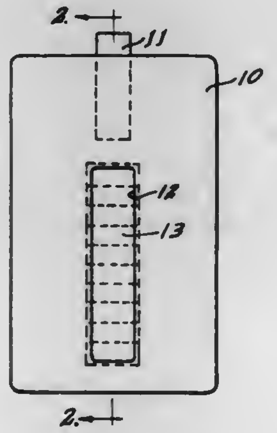
Philips J. Allen, Washington, D.C.
Filed Mar. 5, 1970, Ser. No. 16,887
Int. Cl. G01n *21/00*
U.S. Cl. 250—83 R **3 Claims**



A method and device for displaying a visual pattern of an incident beam of infrared radiation includes a film of minute droplets of a liquid crystal composition encapsulated in gelatin. The nature of the composition is such that within a certain temperature range its optical properties change with a change of temperature so that it appears to change color. The film of liquid crystal is thermally biased to its critical temperature so that when incident infrared radiation is absorbed by the composition, the temperature thereof is raised which causes a color change in the zone of the film on which the radiation is incident.

3,604,931
NEUTRON DOSIMETER INCLUDING A STEP WEDGE FORMED OF AN ALPHA-ATTENUATING MATERIAL

Jacob Kastner, Downers Grove, and Billie G. Oltman, Worth, both of, Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 10, 1969, Ser. No. 883,737
Int. Cl. G01t *3/02*
U.S. Cl. 250—83.1 R **4 Claims**

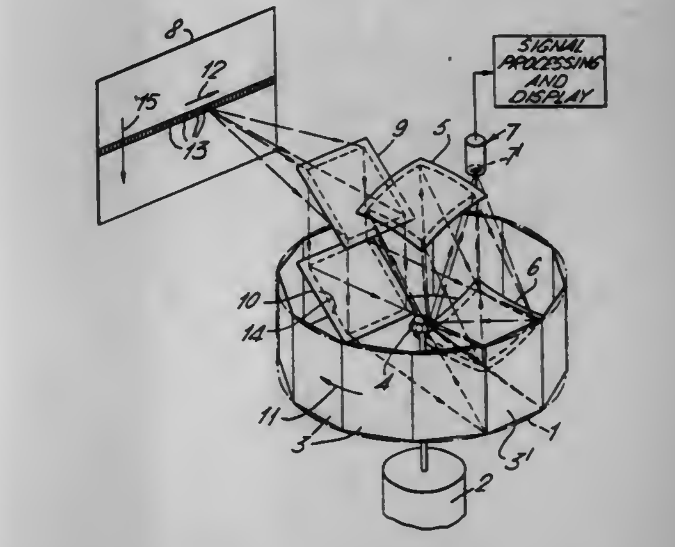


A neutron dosimeter includes a material which emits alpha particles when bombarded with neutrons, a plastic foil in position to intercept these alpha particles and a step wedge of a material, capable of attenuating the alpha particles, disposed between the alpha-emitting material and the plastic foil. The step wedge varies from zero thickness to such a thickness as will attenuate the most energetic alpha particles formed in the dosimeter to particles having an energy such that the particles form tracks in the plastic foil. Following exposure to neutrons the plastic foil is etched to expose the alpha tracks in the plastic. The location of the tracks in the plastic indicates the energy of the neutrons and the total number of tracks in the plastic indicates the intensity of the neutron flux.

3,604,932
INFRARED OPTICAL SCANNING SYSTEM COMPRISING A ROTATABLE FACETED MIRROR HAVING INCLINED FACETS

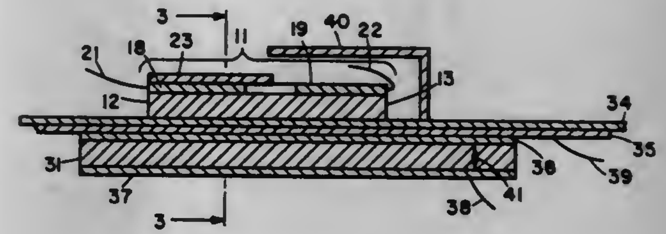
Allan David Beach, Newbury, England, assignor to National Research Development Corporation, London, England
Filed Feb. 27, 1970, Ser. No. 15,117
Claims priority, application Great Britain, Feb. 28, 1969, May 8, 1969, 11007/69;23624/69
Int. Cl. G01j *1/04;* **G02b** *17/00*
U.S. Cl. 250—83.3 H **11 Claims**

An optical scanning system incorporates a rotatable faceted mirror with facets inclined to the rotation axis. The mirror is arranged substantially centrally with respect to a ring of imaging elements, e.g. concave mirrors, with one imaging element corresponding to each facet. The imaging elements are rotated synchronously with the faceted mirror so that each in turn is operative in conjunction with the corresponding facet to effect a line scan, the optical path extending from the faceted mirror parallel to the rotation axis towards a detector or a light source, preferably via a fixed optical relay system. The scanning system is particularly applicable to infrared thermography, and for this purpose may incorporate self-calibrating arrangements utilizing internal radiation sources.



3,604,933
ELECTROMAGNETIC RADIATION-DETECTION DEVICE COMPRISING FERROELECTRIC SENSING, REFERENCE AND TEMPERATURE-STABILIZING COMPONENTS

Leslie E. Cross, and Eugene P. Lunghofer, both of State College, Pa., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,815
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 **21 Claims**

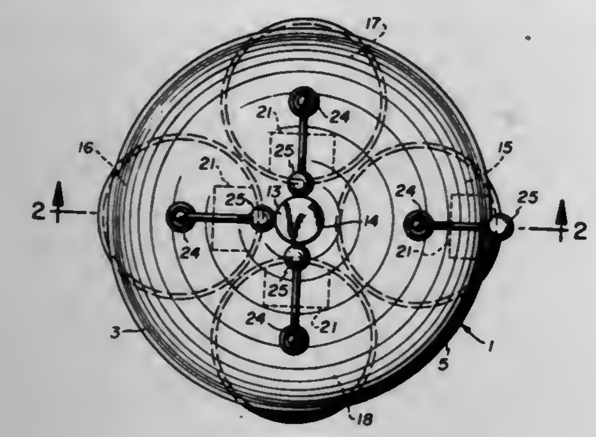


An electromagnetic radiation detection device having increased sensitivity comprises ferroelectric crystalline sensing and reference components, temperature stabilized with a ferroelectric TANDEL at a temperature near a crystallographic transition temperature of the ferroelectric crystalline material used. The device has wide application wherever sensitive electromagnetic radiation detectors are required. Two embodiments are described having varying complexity and sensitivity.

3,604,934
APPARATUS FOR RADIOACTIVE IRRADIATION OF SAMPLE MATERIALS

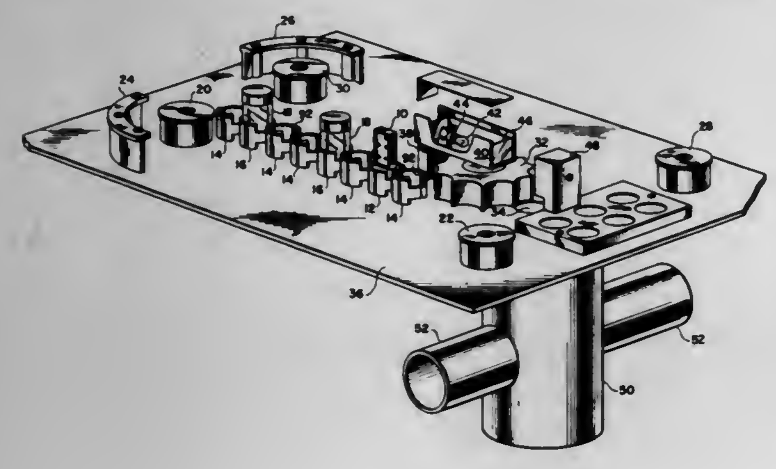
Anthony P. Melillo, West Orange, and John E. Corea, Livingston, both of, N.J., assignors to Radiation Resources, Inc., Fairfield, N.J.
Filed Sept. 10, 1968, Ser. No. 758,897
Int. Cl. G21h *5/00*
U.S. Cl. 250—106 **1 Claim**

Apparatus for the irradiation of sample materials with radioactive radiation comprising a housing containing a substantially centrally located cavity containing radioactive material, a plurality of horizontally disposed cylindrical passages each having a vertical axis and communicating with the central cavity, the passages being spaced from each other about the central cavity, each passage containing a coaxial cylindrical rotatable carrier therein, the carrier having a seat for containing a sample to be irradiated, the seat being recessed into the peripheral wall of the carrier, each seat being horizontally registrable with the central cavity upon rotation of the carrier, thereby permitting a plurality of the carrier seats to be simultaneously or selectively exposable to the source of radiation.



3,604,935
SIGNALLING MEMBER AND METHOD FOR PROGRAMMING AUTOMATIC RADIOACTIVITY-MEASURING SYSTEM

Roy E. Nather, Salano Beach, Calif., assignor to Beckman Instruments, Inc.
Continuation of application Ser. No. 541,674, Apr. 11, 1966, now abandoned. This application Apr. 1, 1969, Ser. No. 812,457
Int. Cl. G01t *1/17, 7/02*
U.S. Cl. 250—106 4 Claims

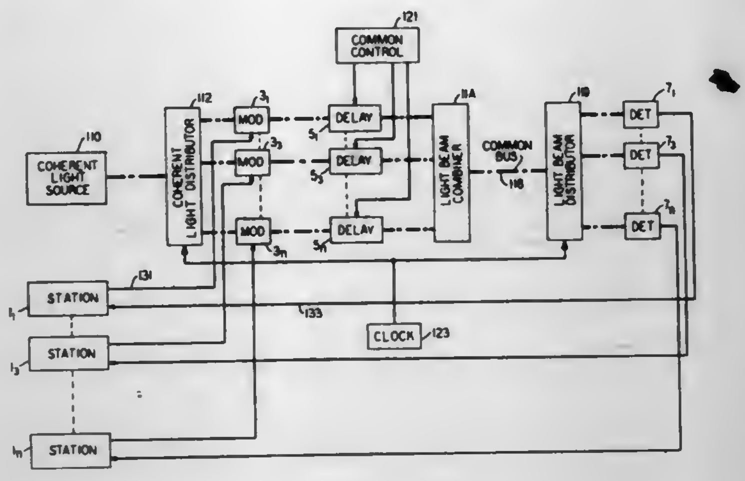


Apparatus and method for coding commands on a pseudosample signaling member (control tower) which may be sensed and used to alter the program of an automatic radioactivity measuring system for the following samples. The signaling member is placed in the sample conveyor. It may also direct functions such as group reject.

3,604,936
OPTICAL TIME DIVISION SWITCHING SYSTEM

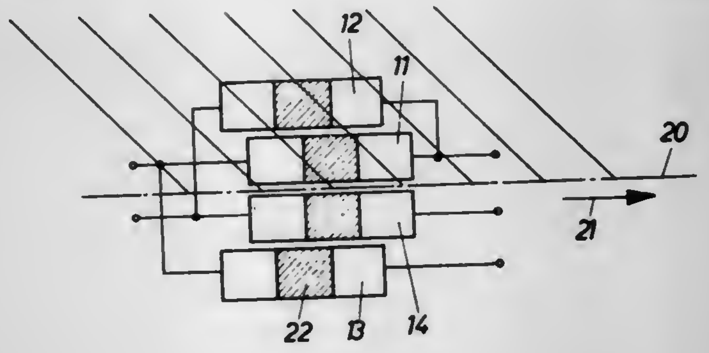
Rudolf Kompfner, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 20, 1968, Ser. No. 754,010
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 13 Claims

An optical time division switching system is described in which coherent light from a laser is successively applied to a group of modulators controlled by electrical signals from corresponding stations. The light from each modulator is selectively delayed for transmission to another station in the group and then sequentially combined into a single light beam. This light beam is applied to a group of detectors wherein the light is successively demodulated in accordance with the selectively delay sequence. The electrical signals from each detector are connected to their corresponding stations to complete the desired communication paths.



3,604,937
DEVICE FOR DETECTING EDGES OR A PATTERN BY PHOTOELECTRIC MEANS

Gunter Hahn, Hausen, Germany, assignor to Messer Griesheim GmbH, Frankfurt/Main, Germany
Filed June 13, 1969, Ser. No. 832,909
Claims priority, application Germany, June 15, 1968, P 17 63 516.4
Int. Cl. G05b *1/00*
U.S. Cl. 250—202 8 Claims

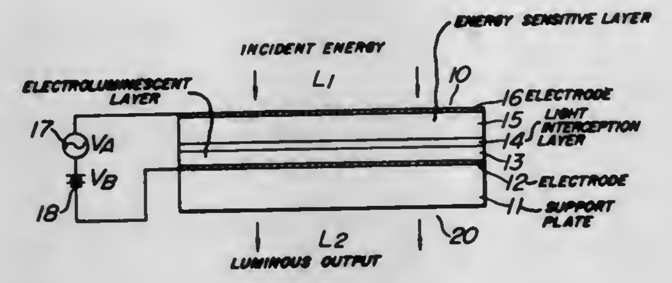


In an apparatus for photoelectrically following up an edge portion or a pattern for controlling a processing machine such as a cutting apparatus, a bridge circuit comprising at least four branches having a light-sensitive resistor included in each of the branches, one pair of the light-sensitive resistors being disposed on a dark region on one side of the edge portion or pattern, another pair of the light-sensitive resistors being disposed on a bright region on the other side of the edge portion or pattern, the light-sensitive resistors having similar characteristics.

3,604,938
METHOD FOR OPERATING ELECTROLUMINESCENCE DISPLAY DEVICE

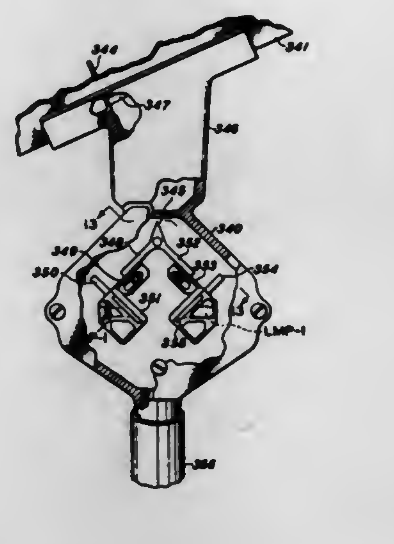
Tadao Kohashi, Yokohama, and Kazunobu Tanaka, Kawasaki-shi, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of application Ser. No. 618,380, Feb. 24, 1967, now abandoned. This application Apr. 29, 1969, Ser. No. 820,136
Int. Cl. H01l *17/00*
U.S. Cl. 250—213 R 13 Claims

A method of operating an electroluminescent display device in which a unidirectional electric field of a predetermined direction is established across an electroluminescent layer comprising electroluminescent phosphor and glass enamel thereby to control the luminescence of said electroluminescent layer caused by excitation with an AC electric field.



3,604,939
TONER CONCENTRATION SENSING APPARATUS HAVING PLURAL SENSORS AND A FLOW CONTROL MEANS FOR EACH SENSOR

John Maksymiak, Penfield, and Salvatore Latone, Rochester, both of, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 24, 1968, Ser. No. 731,756
Int. Cl. G01f *11/00;* **G01n** *21/22;* **G03g** *13/00*
U.S. Cl. 250—218 3 Claims

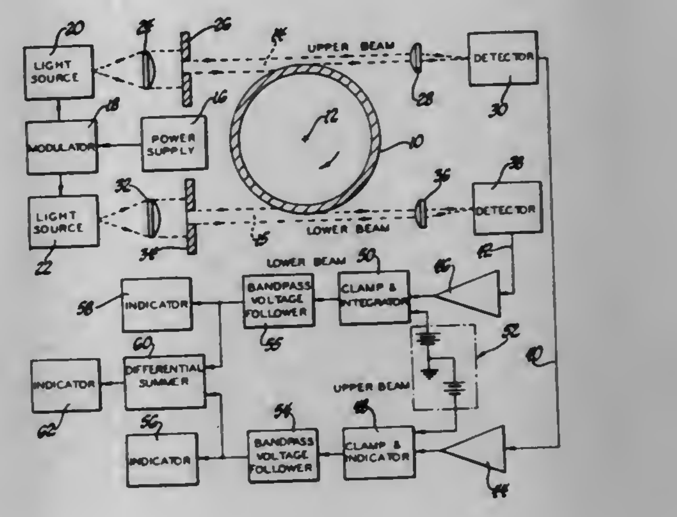


A toner concentration sensing apparatus arranged in the circulation path of developing material in an electrostatic reproduction machine and having a housing into which some of the moving developing material is diverted. The apparatus includes means in the housing or splitting the inflowing material into a plurality of paths each of which has associated therewith a toner concentration sensing device all of which cooperate with a toner replenishing means. A timing mechanism is connected to the sensing devices for periodically controlling their operation as toner concentration sensing devices.

3,604,940
RADIANT ENERGY INSPECTION SYSTEM FOR ROTATING OBJECTS

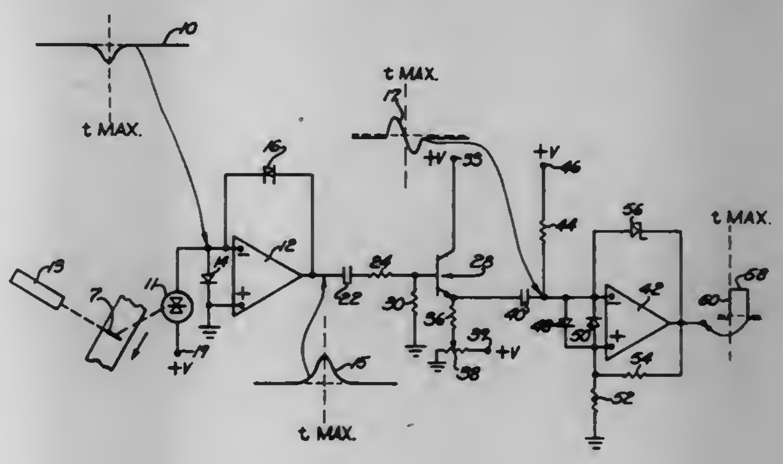
David R. Matthews, Ann Arbor, Mich., assignor to Laser Systems Corporation, Ann Arbor, Mich.
Filed Aug. 4, 1969, Ser. No. 847,109
Int. Cl. G01b *7/12*
U.S. Cl. 250—219 S 10 Claims

Radiant energy inspection system for rotating objects including means for directing parallel light beams tangentially along diametrically opposite surface locations of the object, each beam being partially intercepted in accordance with the radial displacements of the object surface relative to the beams. Geometric qualities of the object are determined by producing signals representing the unintercepted beam portions and comparing the signals with one another in a predetermined algebraic frame of reference. Eccentricity is indicated by in-phase signal variations while surface irregularities are indicated by phase shifted signal variations. Diameter is indicated by the algebraic difference between the signals.



3,604,941
SYSTEM FOR SENSING INDICIA ON MOVING MEMBERS

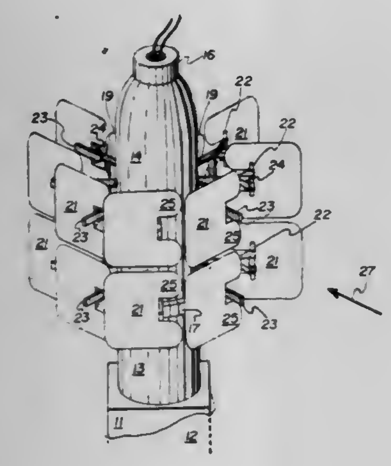
James N. Crum, Stonington, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Nov. 18, 1969, Ser. No. 877,700
Int. Cl. G08c *9/06*
U.S. Cl. 250—219 8 Claims



A system for sensing a register mark, or other indicia, which, for example, may be associated with a high-speed web-fed printing press, provides a signal which indicates the passage of the register mark past a conventional sensor. The signal from a conventional amplifier coupled to the sensor is coupled through an operational amplifier that has a varistor connected between its inverting input and its output to an emitter-follower circuit that has a threshold adjustment resistor in its emitter path to ground. The output of the emitter-follower circuit is coupled to an RC differentiating circuit and the differentiating circuit is coupled to a second operational amplifier. The second operational amplifier has a Zener diode connected between its inverting input and its output and it produces an output voltage which is close to ground when the differentiated signal is of one polarity and an output pulse signal which is independent of width of the sensed signal, and which occurs essentially simultaneously with the occurrence of a peak magnitude of the sensed signal which is provided by the conventional sensor-amplifier combination, when the differentiated signal changes to the other polarity.

3,604,942
UNDERWATER GENERATOR

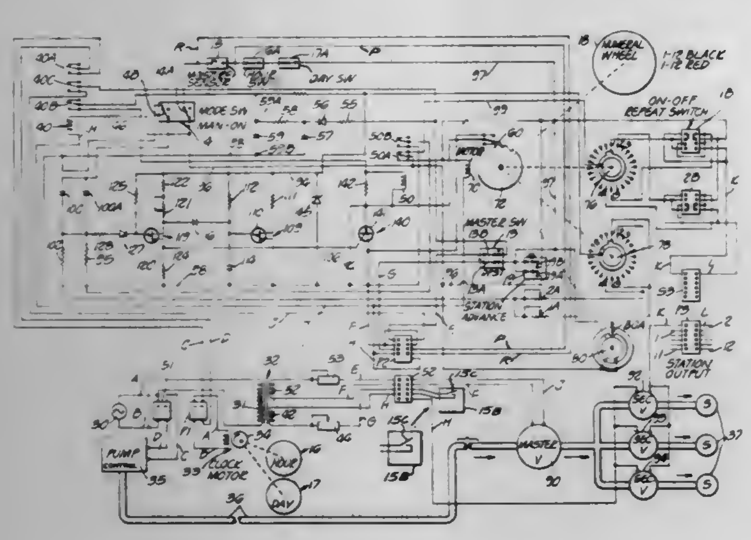
Curtis A. Nelson, 139-B Poinsettia Court, Chula Vista, Calif.
Filed May 11, 1970, Ser. No. 36,093
Int. Cl. F03b *13/10*
U.S. Cl. 290—54 R **1 Claim**



An underwater generator having an outside sealed stator mounted to a concrete base which, in turn, is anchored in a river bottom; a rotor rotatably carried by said stator by a plurality of bearing races, and a plurality of radially extending arms, each arm pivotally carrying a paddle, each paddle having a geometry operable for opening with water current and closing against water current.

3,604,943
SPRINKLER SYSTEMS AND VARIABLE TIMING MEANS

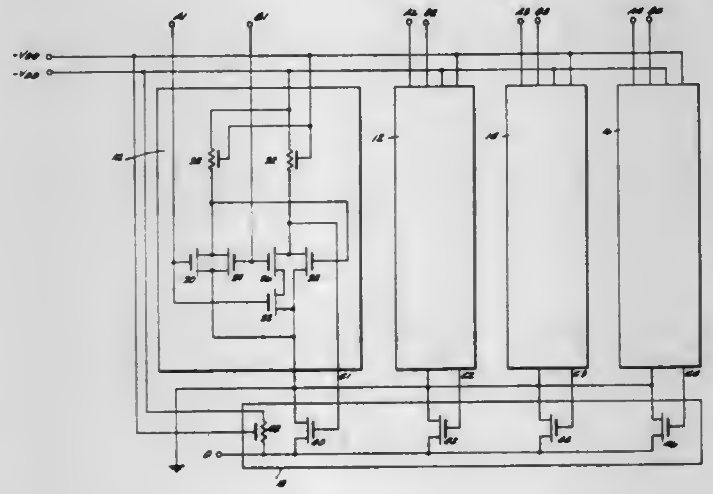
Donald R. Bayer, Claremont, and Gary R. Lachman, Glendora, both of, Calif., assignors to Clemar Manufacturing Corporation
Filed Feb. 26, 1970, Ser. No. 14,342
Int. Cl. H02j *3/14*
U.S. Cl. 307—41 **20 Claims**



A programming system involving automatic water sprinkling in which one of a plurality of resistances is automatically selected for insertion in the RC (resistance-capacitance) frequency-determining circuit of a relaxation oscillator. The oscillator after a time delay established by the selected resistance, causes a motor to rotate a plurality of selected switches, one of which selects a different resistance and another of which selects a different watering station. Manual override is provided. Means involving an On-Off-Repeat switch allows a selected watering station to correspondingly be (1) included once in the program, (2) excluded from the program or (3) included for a second time (repeat) without regard to particular time of day. Means are provided to prevent a watering operation at a station when the ground at that station is sufficiently moist.

3,604,944
MOSFET COMPARATOR CIRCUIT

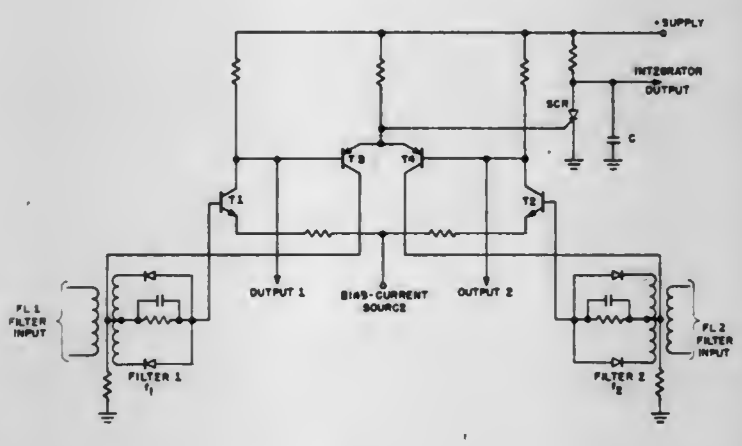
James L. Gundersen, Carson, and Stephen P. F. Ma, Santa Monica, both of, Calif., assignors to Hughes Aircraft Company, Culver city, Calif.
Filed Apr. 9, 1970, Ser. No. 27,081
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **3 Claims**



A metal oxide semiconductor field-effect transistor (MOSFET) digital comparator circuit of a type that can be constructed on a single semiconductor substrate. The circuit includes a series of exclusive OR gates, each of which accepts one bit from each of the binary words being compared. The exclusive OR gates provide an output signal when the bits being compared are not the same. The output signals from each of the exclusive OR gates are applied to a MOSFET NOR gate which will provide an output signal when all of the bits compare.

3,604,945
REGENERATIVE TONE DECODER

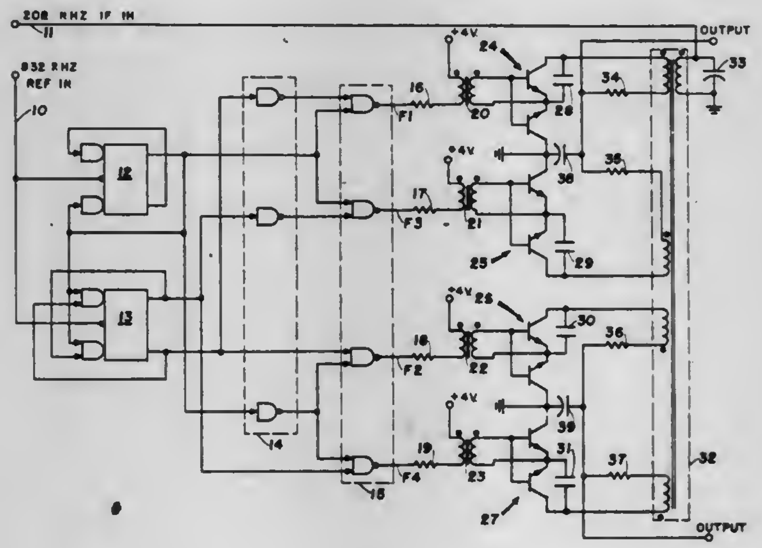
Eric J. Hoffman, Baltimore, and Reginald M. Rhue, Laurel, both of, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Nov. 5, 1968, Ser. No. 773,572
Int. Cl. H03k *3/26*
U.S. Cl. 307—233 **6 Claims**



For a spacecraft command system, a tone decoder which distinguishes between binary zeros and ones. The circuit combines the operations of a differential amplifier, a threshold detector, a Schmitt trigger and a fast-reset integrator in a single circuit which uses fewer components than would be required if these operations were cascaded, as in the prior art.

3,604,946
DUTY-CYCLE PHASE DETECTOR

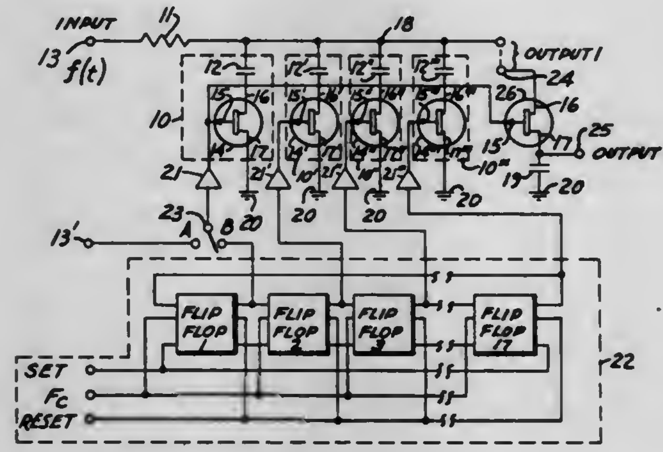
Edward F. Prozeller, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Apr. 28, 1969, Ser. No. 819,902
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **5 Claims**



A phase detector circuit in which the rectifying elements conduct for a fraction of the reference period and therein determine the relative phase difference between an unknown input signal and a reference signal. This is primarily accomplished by obtaining from the reference signal switching functions that are of fractional duty cycle as compared to the unknown signal. The output of this fractional duty cycle phase detector is a DC voltage whose level is proportional to the phase difference between the reference and the unknown input signal.

3,604,947
VARIABLE FILTER DEVICE

Steven H. Puthuff, San Diego, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Continuation-in-part of application Ser. No. 661,093, Aug. 16, 1967, which is a continuation-in-part of application Ser. No. 504,032, Oct. 23, 1965, now abandoned. This application June 24, 1969, Ser. No. 843,900
Int. Cl. H03k *5/20*
U.S. Cl. 307—233 **6 Claims**

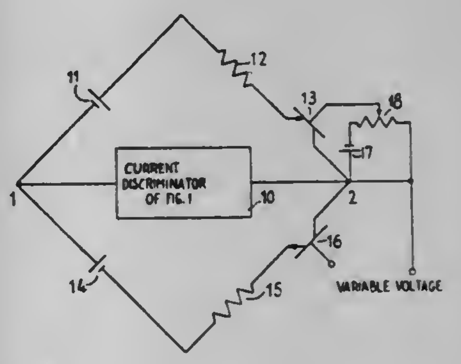


The present invention relates to electrical circuit apparatus capable of providing sampled integration of an electric signal.

According to the present invention, an integrator filter is provided having at least one capacitor stage. Each stage includes a capacitor in series with an electronic switch, such as a field-effect transistor capable of being switched at a desired frequency.

3,604,948
SAFETY DISCRIMINATOR DEVICE

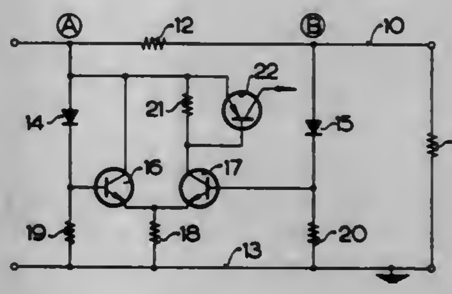
Jacques Dutilloeil, and Joseph Claes, both of Mont-sur-Marchienne, Belgium, assignors to Ateliers De Constructions Electriques De Charleroi (ACEC), Societe Anonyome, Charleroi, Belgium
Continuation of application Ser. No. 591,533, Nov. 2, 1966. This application Apr. 7, 1970, Ser. No. 26,267
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **1 Claim**



A discriminator device for detecting if a current or a voltage is below or above a predetermined threshold which includes an amplification element having first and second main electrodes and a control electrode, and a DC power source connected between the main electrodes of the amplification element. An alternating current generator is connected between one pole of the power source and the first main electrode, and an alternating current detector is connected between the other pole of the power source and the second main electrode, said detector being sensitive to an alternating current having an intensity above a predetermined level. In addition, an input circuit is connected to the control electrode of the amplification element and this input circuit includes means for generating a DC voltage drop for biasing the amplification element which is independent of the strength of the current flowing therethrough, this input circuit being adapted to control the gain of the amplification element.

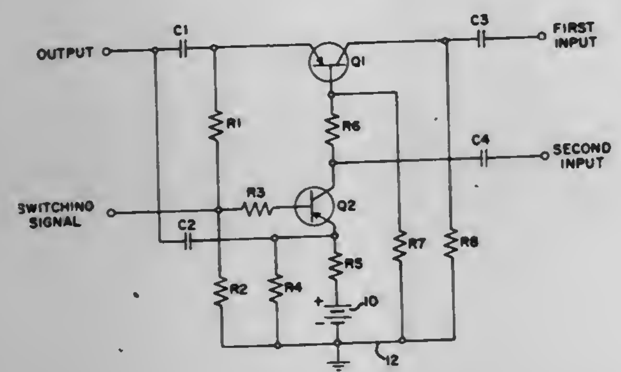
3,604,949
MONITORING CIRCUITS FOR DIRECT CURRENT CIRCUITS

Gerhard Conzelmann, Leinfelden; Adolf Kugelmann, Leonberg; Heinz Moller, Stuttgart; Heinz Kammerer, Nellingen; Karl-Ernst Boeters, Berlin, and Hans-Joachim Fleischer, Berlin, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed June 18, 1970, Ser. No. 47,516
Claims priority, application Germany, June 18, 1969, P 19 30 753.0
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **20 Claims**



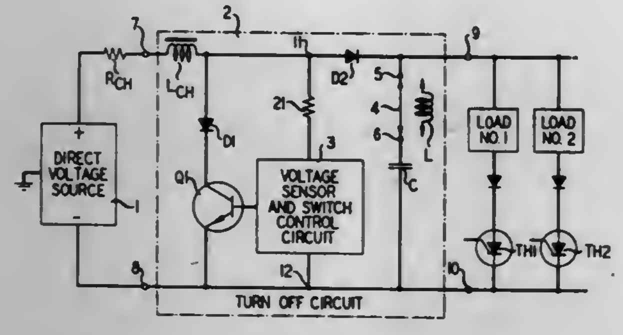
The voltage drop across a control resistor in the monitored direct current circuit, which drop varies in accordance with the condition of the direct current load, affects the amount of current through a differential amplifier and causes operation of a transistor switch in one of the two collector circuits of the amplifier whenever the load current changes sufficiently. The switch controls an indicating device.

3,604,950
SWITCHING CIRCUIT
Melvin T. Anderson, Forest, and James E. Luth, Lynchburg, both of, Va., assignors to General Electric Company
Filed May 7, 1969, Ser. No. 822,444
Int. Cl. H03k *17/00*
U.S. Cl. 307—243 **2 Claims**



One of two input circuits is selectively connected to an output circuit through first and second PNP-type transistors. Normally, the first transistor is turned off and the second transistor is turned on to disconnect the first input circuit from the output circuit, and to connect the second input circuit to the output circuit. The first transistor can be turned on and the second transistor can be turned off by a switching signal to connect the first input circuit to the output circuit, and to disconnect the second input circuit from the output circuit.

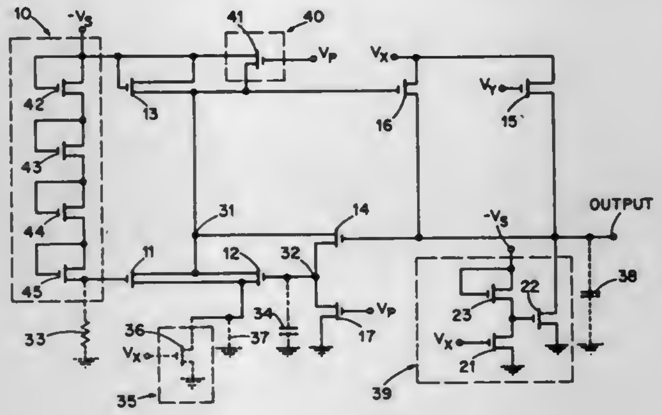
3,604,951
THYRISTOR SWITCH TURNOFF CIRCUIT
Frank J. Zgebura, Whippany, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.
Filed Dec. 27, 1968, Ser. No. 787,375
Int. Cl. H03k *17/00, 17/56*
U.S. Cl. 307—252 **9 Claims**



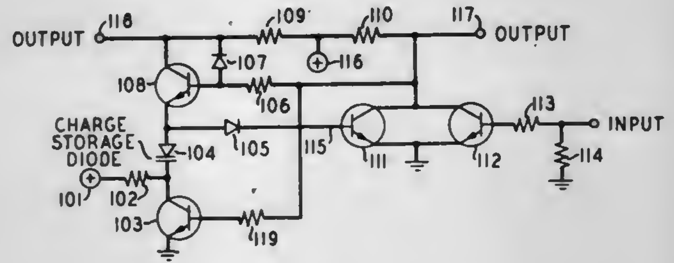
Thyristor switches, which are normally reopened by a resonant turnoff circuit, may become permanently conductive (latched on) under gamma radiation. This invention senses the latch-on condition and bypasses current from the thyristor through a normally open switch by repeatedly closing the normally open switch until the thyristor recovers. A resonant charging circuit is utilized to very rapidly restore normal operation after the thyristor switch recovers.

3,604,952
TRI-LEVEL VOLTAGE GENERATOR CIRCUIT
William M. Regitz, Franklin, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 12, 1970, Ser. No. 10,829
Int. Cl. H03k *5/01*
U.S. Cl. 307—264 **19 Claims**

Herein is revealed an adaptive tri-level voltage generator circuit which may be used with a random access memory cell and which circuit employs transistors preferably of the silicon gate or MOS (metal oxide semiconductor) field effect type. The illustrated embodiment employs a feedback subcircuit arrangement wherein a feedback controllable voltage is established in the feedback loop. Timing signals are received in a fixed relationship so that initially a first voltage level is established on the circuit's output line. An intermediate voltage level is established on the output line upon receipt of a first timing signal activating the feedback subcircuit to lower the feedback voltage. Such intermediate voltage is determined by the voltage drops in a feedback subcircuit. By means of a control subcircuit, receipt of a second timing signal causes the output to settle at a third level approaching the level of the first timing signal which is still present. Removal of the first timing signal causes the output to return to its initial level. The intermediate voltage adapts to changes in the threshold voltage of transistors included in the feedback subcircuit.



3,604,953
REGENERATIVE SWITCHING CIRCUITS USING THE CHARGE STORAGE CHARACTERISTICS OF PN JUNCTIONS TO PERFORM THE SWITCHING AND TIMING FUNCTIONS
Philip M. Carmody, Roselle Park, and Dennis J. Lynes, Madison, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 15, 1969, Ser. No. 824,991
Int. Cl. H03k *3/26*
U.S. Cl. 307—273 **10 Claims**

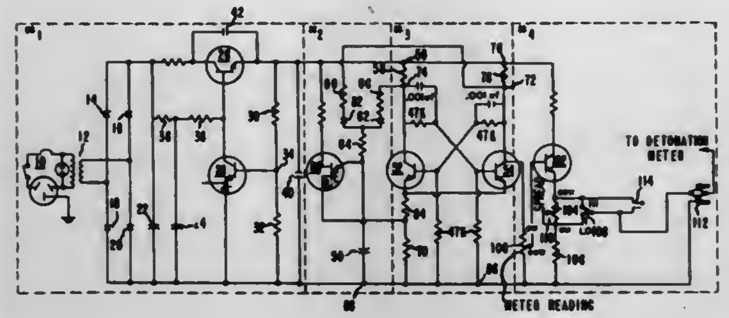


A regenerative switching circuit having two active switching elements uses the charge storage and current limiting capabilities of a PN junction to perform the switching and timing functions. When the circuit is in one state, a forward current flows through a PN junction associated with one of the switching elements, and charge is stored near the junction. When the circuit is switched to its other state, a reverse current flows through the junction for a predetermined period until the stored charge is depleted, whereupon the current is blocked and the circuit reverts to its original state.

3,604,954
TRANSISTORIZED KNOCK SIGNAL GENERATOR
Joe Turner May, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 26, 1967, Ser. No. 678,318
Int. Cl. H03k *5/02*
U.S. Cl. 307—264 **1 Claim**

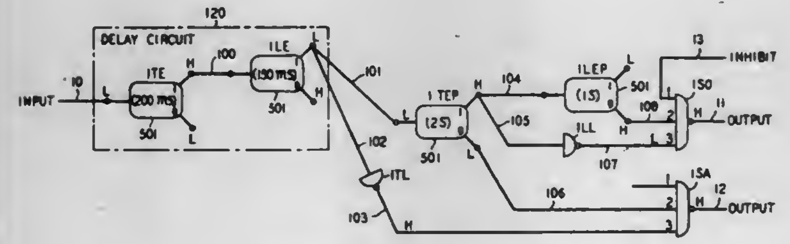
Improved electronic wave signal generator having one or more variable attenuating means for converting fixed voltage

square waves to variable voltage magnitude square waves



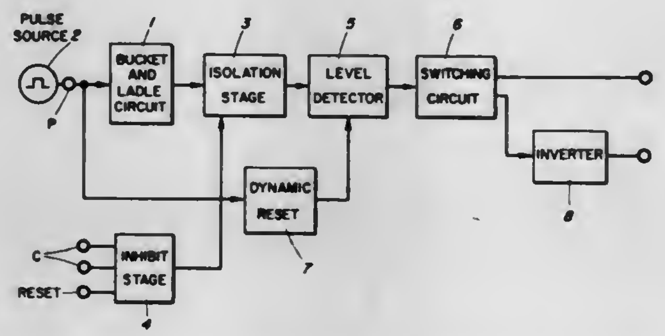
especially useful in checking and calibrating detonation meters.

3,604,955
STEP INPUT RESPONSIVE OUTPUT PULSE GENERATION CIRCUIT
Ronald Joseph Angner, Freehold, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Feb. 26, 1970, Ser. No. 14,451
Int. Cl. H03k *17/28, 1/18*
U.S. Cl. 307—293 **16 Claims**



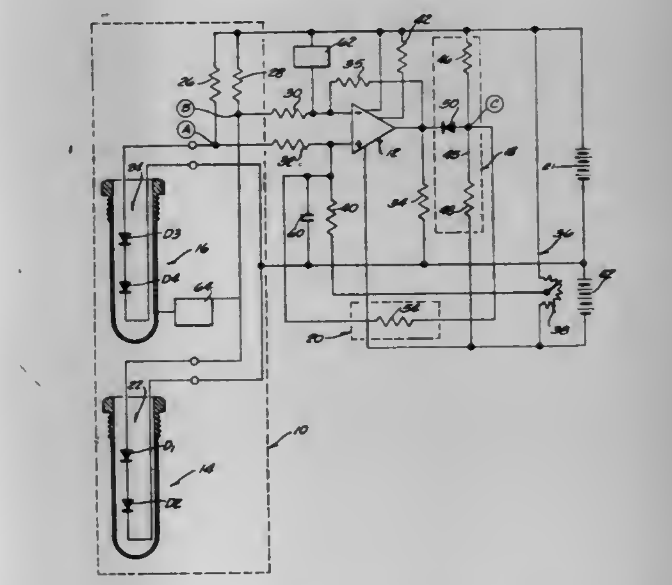
A group of timers, each having the characteristic of providing an immediate output voltage translation when an input goes from low to high and providing a delayed output voltage translation when the input goes from high to low, are arranged to detect the leading and trailing edges of a step input and to generate a step function having leading and trailing edges independently delayed from the respective leading and trailing edges of the detected step input. The delayed step function is supplied to another group of timers arranged to provide individually controllable pulse outputs in coincidence with the leading and trailing edges of the delayed step function.

3,604,956
RADIATION IMMUNE TIMING CIRCUIT
Walter A. Cooke, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 1, 1969, Ser. No. 838,168
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **8 Claims**



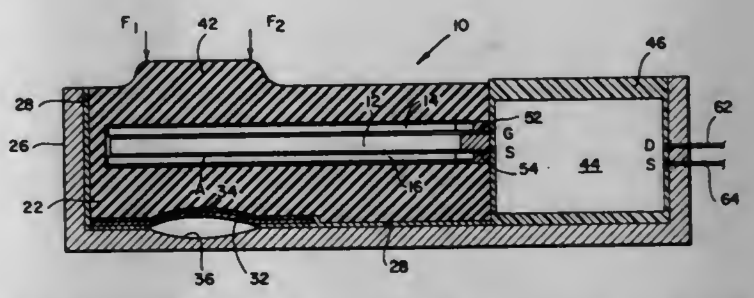
An interval-timing circuit which remains accurate after being subjected to a transient radiation impulse. The circuit includes a bucket and ladle integrating network for converting digital timing pulses to an analog voltage signal. The analog voltage signal is converted to a current signal by an isolation circuit and is then passed to a current level detector which generates an output when the current signal reaches a predetermined magnitude. A dynamic resetting circuit is coupled to the current level detector to prevent the generation of a premature response due to false activation of the level detector by a transient radiation impulse.

3,604,957
TEMPERATURE MEASUREMENT HAVING SENSOR AND REFERENCE DIODES AT INPUTS OF REGENERATIVE DIFFERENTIAL AMPLIFIER
Otto G. Satula, Oak Creek, Wis., assignor to Electronic Construction Corp., Milwaukee, Wis.
Filed May 2, 1969, Ser. No. 821,351
Int. Cl. H03k *17/14, 17/74*
U.S. Cl. 307—310 **5 Claims**



A differential-temperature-sensing system including a temperature-sensing network having a linear voltage drop characteristic to provide a differential voltage input signal to an amplifier which is balanced to provide a set output voltage when the differential input voltage is zero and a monitoring network having a feedback circuit connected to the amplifier input to trigger the amplifier in response to a change in the set output voltage.

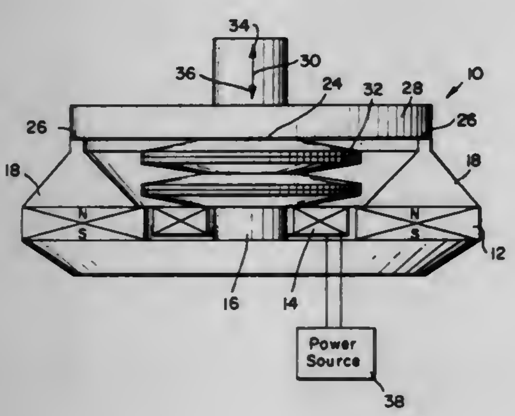
3,604,958
SENSING TRANSDUCER
Oscar Palini, Camp Springs, Md., assignor to U.S. Research Corporation, Washington, D.C.
Filed May 14, 1970, Ser. No. 37,111
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **18 Claims**



An improved sensing transducer for use in a security device to protect objects from unauthorized removal is designed to sense both increases and decreases in pressure and to provide an output signal indicating that a pressure change has occurred. The sensing transducer includes a piezoelectric element and an actuator for transmitting pressure to the piezoelectric element to provide two different types of stress in the element. When an increase or decrease in pressure occurs, the piezoelectric element produces an output signal to indicate a change in pressure.

3,604,959
LINEAR MOTION ELECTROMECHANICAL DEVICE UTILIZING NONLINEAR ELEMENTS

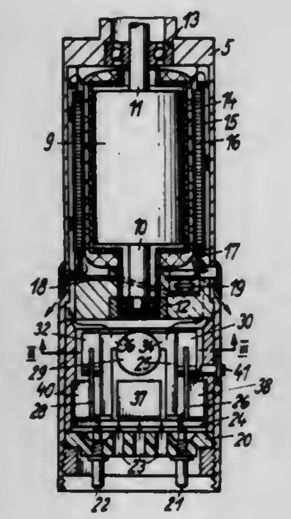
Oded E. Sturman, Arleta, Calif., assignor to Fema Corporation, Pacoima, Calif.
Filed Dec. 15, 1969, Ser. No. 885,098
Int. Cl. H02k *33/16*
U.S. Cl. 310—12 **10 Claims**



A linear motion electromagnetic device has a nonlinear spring to establish a spring force armature position characteristic proportionally opposite to a magnetic force armature position characteristic established by a permanent magnet. An electromagnetic coil is energized to control the position of the armature.

3,604,960
DENTAL DRILL HANDLE

Erich Krestel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Jan. 26, 1970, Ser. No. 5,817
Claims priority, application Germany, Feb. 5, 1969, P 19 05 624.7
Int. Cl. H02k *7/14*
U.S. Cl. 310—50 **8 Claims**

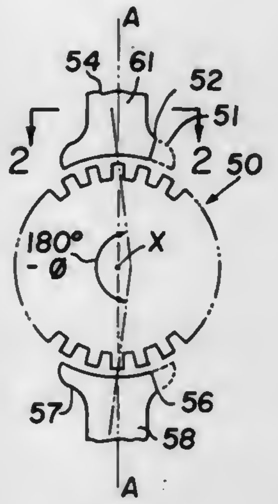


A dental drill handle has a small electric direct-current motor located in the handle and driven by an electronic commutator. The motor is cooled by compressed air. The structural part of the electronic commutator are all located within the handle in such manner that they are at least partly exposed to the flow of compressed air used for cooling the motor.

3,604,961
DIRECT CURRENT MOTOR HAVING POLES ARRANGED TO MINIMIZE COGGING TORQUE

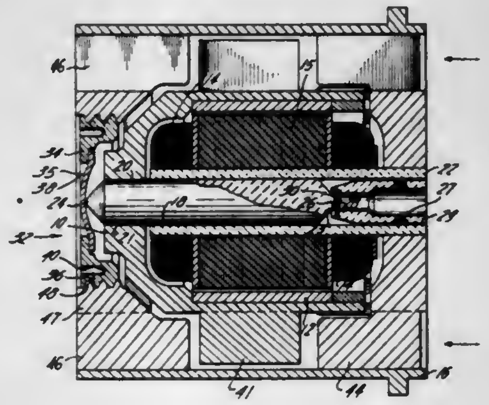
Neil Saldinger, Woodland Hills, Calif., assignor to Vernitron Corporation, Great Neck, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,464
Int. Cl. H02k *5/24, 23/04*
U.S. Cl. 310—51 **3 Claims**

A direct current motor has a rotatable axially slotted cylindrical armature and an even number of permanent magnet poles. The poles are spaced apart 360°/N where N is the number of poles. The poles can be asymmetrically shaped so that the points of maximum field strength of each pole are spaced 360°/N ±Φ from each adjacent pole to effect cooperative cancellation of cogging torque tending to be generated between the armature and the respective adjacent poles.



3,604,962
MOTOR BEARING AND FAN CONSTRUCTION

John C. Larson, Woodstock, and Jacques J. Desy, Bearsville, both of, N.Y., assignors to Rotron Incorporated, Woodstock, N.Y.
Filed Sept. 11, 1969, Ser. No. 857,128
Int. Cl. H02k *5/16*
U.S. Cl. 310—67 **7 Claims**

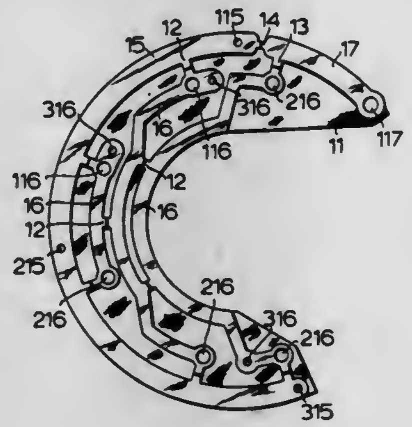


An electric motor in accordance with the invention disclosed herein comprises a stator coaxial with and separated from a rotor by a radial or journal bearing arrangement including a pin rotatably received in a sleeve. One end of the pin comprises a thrust face which bears against a thrust bearing to prevent axial movement of the motor. In one embodiment, the thrust face is convex and the thrust bearing is a flat jewel or plastic member. In another embodiment, the thrust face is flat and the thrust bearing is a spherical jewel. In still another embodiment, the thrust face is concave and the thrust bearing is a spherical jewel. For taking up axial play, an adjustably mounted resilient plug member is moved into close proximity with the other end of the pin. Fan blades are mounted on the periphery of the rotor and rotate within a housing coupled to the stator.

3,604,963
PREFABRICATED CONNECTOR PLATE FOR USE WITH A PLURALITY OF DIFFERENT AC TO DC GENERATOR CIRCUITS

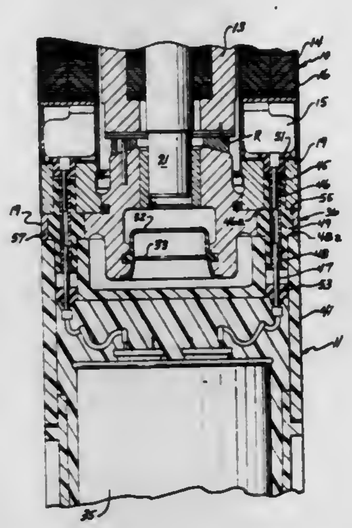
Yasuo Tawara, Nagoya shi, Japan, assignor to Nippon Denso Kabushiki Kaisha, Kariga-shi, Aichi-ken, Japan
Filed Nov. 26, 1969, Ser. No. 880,231
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 **17 Claims**

A direct-current generating arrangement in which a *Y*-connected alternator is connected with its output to a rectifying unit for converting the alternating current generated, into corresponding direct current. An electrically insulating plate with conductive element on its surface, is operatively connected, through these conductive elements, with the terminals of the rectifier and the output terminals of the alternator. One of the conductive elements in the form of a conductive path stretching along the electrically insulating plate, is connected to the neutral circuit point of the *Y* connection of the alternator. A second conductive element or path is connected with the terminal of the rectifier. Interconnecting passage elements, when not severed, lead the conductive elements or paths on the insulating plate, to form an integral structure of the conductive element, so that the network of conductive elements may be stamped from a single sheet of conductive material.



3,604,964
SUBMERSIBLE MOTOR CONNECTOR ASSEMBLY

Kenneth W. Conrad, Davenport, and Elmer M. Deters, Muscatine, both of, Iowa, assignors to Red Jacket Manufacturing Company, Davenport, Iowa
Filed May 20, 1970, Ser. No. 38,976
Int. Cl. H02k *5/22*
U.S. Cl. 310—71 **16 Claims**

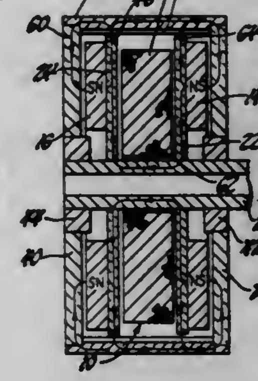


A submersible motor connector assembly in which prong-type connectors are located in sockets on a submersible electric motor and on a detachable motor components housing, and a double-ended connector member is provided for electrically connecting the prongs on the motor and housing and for sealing the same from the surrounding medium.

3,604,965
DOUBLE MAGNETIC ALTERNATE PATH SIGNAL GENERATOR

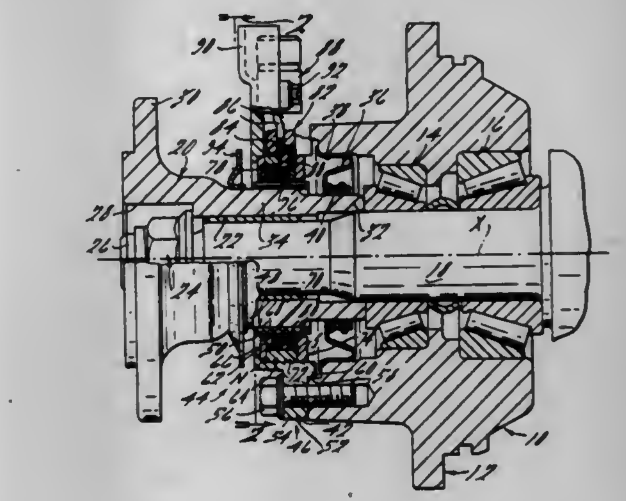
Richard S. Stroud, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 13, 1970, Ser. No. 19,436
Int. Cl. H02k *21/38*
U.S. Cl. 310—155 **5 Claims**

A signal generator having a stator and a rotor in which either the stator or the rotor is comprised of two members each having teeth around its periphery. The two members are positioned such that the teeth on the two members are out of phase with each other. Two permanent magnets are provided wherein each one is associated with one of the toothed members. The remaining stator or rotor has teeth confronting the teeth on the two members such that when the rotor is rotated, alternate magnetic paths are provided for each of the magnets. A coil is associated with the two members such that when the rotor is rotated, changing flux which results from the providing of alternate paths for the flux output of the permanent magnets induces a voltage in the coil corresponding to the changing flux and, therefore, the rotation of the rotor.



3,604,966
ROTATIONAL SPEED SENSOR

John V. Liggett, Westland, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Sept. 22, 1969, Ser. No. 859,775
Int. Cl. H02k *17/42*
U.S. Cl. 310—168 **9 Claims**

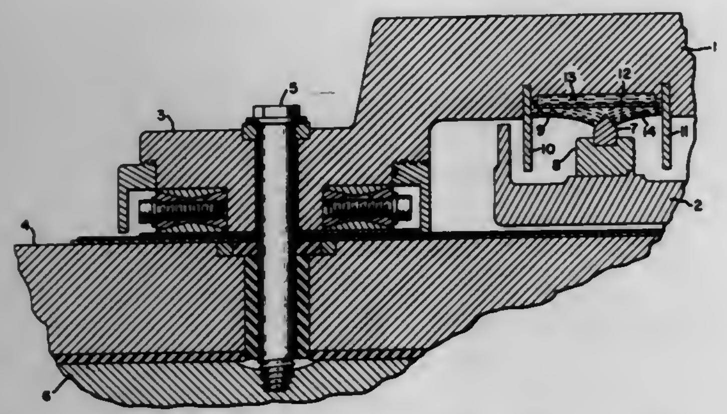


A rotational speed sensor for a skid control system for sensing the rotational speed of a prop shaft of a wheeled vehicle having a rotor mounted for rotation with a prop shaft and a stator mounted on the differential housing of the vehicle. The stator and rotor are provided with confronting circumferentially disposed teeth with the stator further including a coil for providing an output signal to the skid control system and the rotor further including a magnet for establishing a flux through the coil.

3,604,967
LIQUID METAL COLLECTOR VELOCITY DIVIDER

Gerd E. Krulls, and Earl R. Booser, both of Scotia, N.Y., assignors to General Electric Company
Filed Apr. 10, 1970, Ser. No. 27,357
Int. Cl. H02k *31/00*
U.S. Cl. 310—178 **3 Claims**

Liquid metal collector is provided with a rotatable cup member and a stationary conductor blade. A floating ring is positioned generally intermediate between the blade and cup member and is immersed in the liquid metal such that is effectively reduces the rotational velocity of the liquid metal relative to the ring members by approximately one-half over

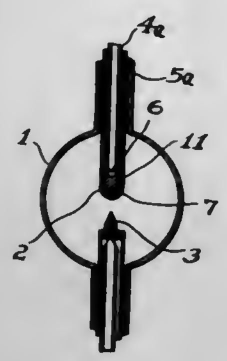


the surface of the conductor blade. By so reducing the velocity of the liquid metal, power losses are reduced and antierosion characteristics are improved. A plurality of floating rings may be employed which will reduce the relative velocities even more.

3,604,968

HIGH PRESSURE DISCHARGE LAMP OF THE COOLED ELECTRODE TYPE

Yasuhiro Shimizu, and Yoshihiko Nakamura, both of Himeji, Japan, assignors to Ushio Electric Inc., Tokyo, Japan
Filed June 27, 1969, Ser. No. 837,294
Claims priority, application Japan, July 1, 1968, 45,207/68
Int. Cl. H01j *61/52*
U.S. Cl. 313—32 1 Claim



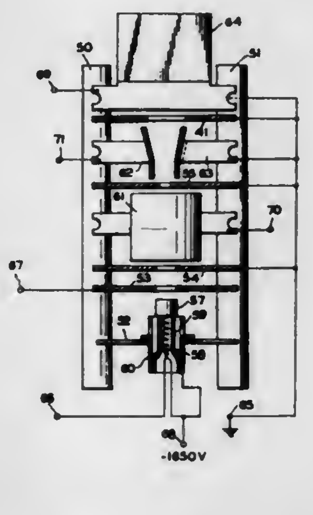
A high pressure discharge lamp of the cooled electrode type comprising electrodes, an envelope sealing portion for said electrodes and said envelope, and a cooling liquid inlet passage and a cooling liquid outlet passage formed in the interior of at least one of said electrodes for introducing a cooling liquid into same discharging same therefrom. An indented or grooved portion and bulkheads are provided so as to form a snaky cooling liquid passage in the interior of the forward end portion of said electrode for increasing the area for dissipating heat from the electrode and for increasing mechanical strength of the forward end portion of said electrode.

3,604,969

MINIATURIZED CATHODE-RAY TUBE WITH PRECISELY ORIENTED ELECTROSTATIC DEFLECTION ELECTRODES

Horst H. Blumenberg, Owensboro, Ky., assignor to Kentucky Electronics, Inc., Owensboro, Ky.
Division of Ser. No. 843,296, July 22, 1969
Filed Sept 29, 1969, Ser. No. 861,788
Int. Cl. H01j *29/74, 29/82*
U.S. Cl. 313—78 4 Claims

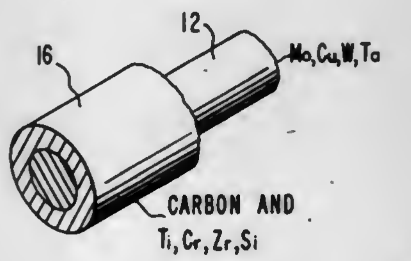
A character display system has a plurality of small cylindrical side-by-side cathode-ray tubes about 0.8 inch in diameter and less than 4 inches long, aligned to form a line of individual characters. The tubes have structure for precisely aligning the characters uniformly including an electron gun fashioned to center the electron beam by means of electrostatic deflection electrode pairs held in two glass beads oriented with a seven pin miniature glass stem to produce two normal deflection axes. Similar electrode structure is employed for a plurality of electrodes in the gun formed of a rectangular-shaped blank held at opposite ends in the two beads, and a set of snubber springs is affixed to one such electrode oriented toward the stem to and in centering the gun within the tube cylindrical walls.



3,604,970

NONELECTRON EMISSIVE ELECTRODE STRUCTURE UTILIZING ION-PLATED NONEMISSIVE COATINGS

Robert D. Culbertson, Campbell; Russell C. McRae, Cupertino, and Harold P. Meyn, Palo Alto, all of, Calif., assignors to Varian Associates, Palo Alto, Calif.
Continuation-in-part of application Ser. No. 666,802, Sept. 11, 1967, now abandoned. This application Oct. 14, 1968, Ser. No. 767,170
Int. Cl. H01j *43/00*
U.S. Cl. 313—107 1 Claim

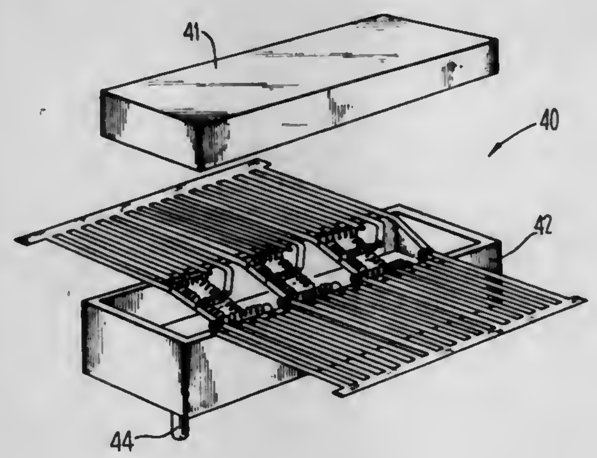


A nonemissive electrode structure is disclosed together with a method for fabricating same. The nonelectron emissive electrode structure includes a core member which may be made of any one of a number of different metals such as molybdenum, copper, tantalum or tungsten. A nonelectron emissive material is deposited over the core metal. The nonemissive deposited layer may be any one of a number of different materials which will provide electron emission inhibiting characteristics in the presence of surface contamination by barium and/or strontium. Examples of such electron emission inhibiting materials include titanium, chromium, zirconium, or silicon. An outer coating of carbon is formed over the emission inhibiting layer to further enhance the nonelectron emissive characteristics of the electrode. Alternatively, the nonemissive deposited layer and carbon coating may be codeposited into a single covering layer deposited over the core material. The electrode structure is especially suitable as a grid structure in an electron discharge device employing either an oxide coated cathode or a dispenser cathode of the type containing barium and/or strontium.

3,604,971

FILAMENT MOUNTING STRUCTURE FOR DISPLAY DEVICE

Robert A. Tracy, Mountain View, Calif., assignor to The Singer Company, New York, N.Y.
Filed July 30, 1969, Ser. No. 846,105
Int. Cl. H01k *9/00, 1/42;* **H01l** *1/28*
U.S. Cl. 313—109.5 7 Claims

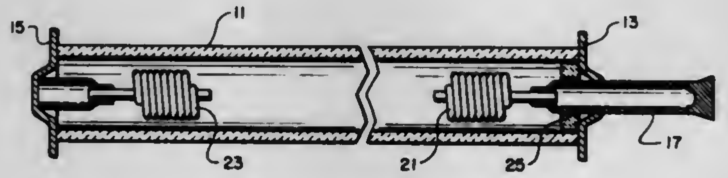


A filament display device which is suitable for use as a readout device for a wide variety of electronic devices, especially those utilizing integrated circuits, employs a plurality of incandescent filaments arranged to form a character array. In one embodiment, a character array is formed by bonding each character segment to different ends of a preformed lead assembly. In another embodiment, the array is constructed by building up the leads and filaments by the electroforming technique. After forming the character array, it is placed in an enclosure which is then evacuated and backfilled slightly with an inert atmosphere. A plurality of such arrays can be simultaneously constructed and then enclosed in a single package to form an entire display panel.

3,604,972

METAL VAPOR LAMP WITH ALKALI METAL RESERVOIR MEANS

Stephen Levy, Asbury Park, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Feb. 25, 1970, Ser. No. 14,148
Int. Cl. H01j *61/22, 61/28*
U.S. Cl. 313—174 2 Claims



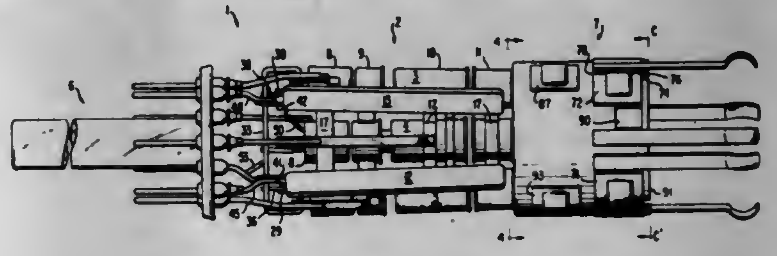
This invention contemplates the use of a porous beryllium plug, having an oxidized surface, which is located in and adjacent to, or on the cooler end of an alkali metal vapor lamp to serve as a reservoir for the alkali metal.

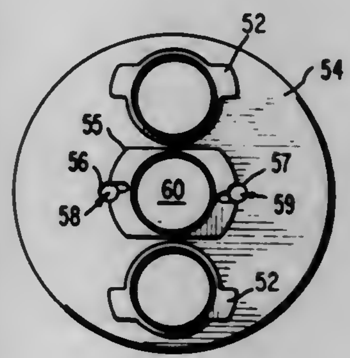
3,604,973

ELECTRON GUN WITH MEANS FOR ALIGNING ELECTRODES DURING ASSEMBLY

Frederick F. Doggett, East Syracuse, and Leonard W. Jenne, Jr., Baldwinsville, both of, N.Y., assignors to General Electric Company
Division of Ser. No. 731,807, May 24, 1968
Filed Sept. 16, 1969, Ser. No. 870,767
Int. Cl. H01j *1/92, 19/46, 29/50*
U.S. Cl. 313—260 3 Claims

An electron gun assembly of the three gun, in-line type. The three guns each including a plurality of electrode elements are rigidly attached to four support rods or glass beads by a mounting means comprising four metal straps which connect each of the outer gun elements to two support rods and the center gun elements to all four support rods. A first group of four L-shaped metal tabs are imbedded in the ends of the support rods, and two mounting bars are each connected at both ends to two of the tabs for the purpose of making electrical connections to the gun heater elements. A second group of U-shaped metal tabs are also imbedded in the ends of the support rods to permit a mechanical connection of a stem component whereby the gun electrode elements are isolated from forces applied to the stem. A convergence assembly is self-registering with respect to the gun assembly by the alignment of precision holes in the base of the convergence assembly with cutouts provided in a flange on the center gun electrode. A plurality of slots are provided in the wall of the convergence assembly which permit self-registering of pole piece elements positioned inside the assembly.

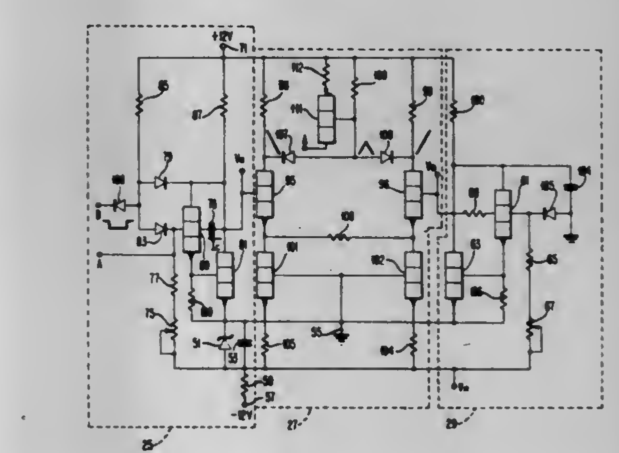




3,604,974

APERIODIC LINEARITY CORRECTION CIRCUIT FOR CRT DEFLECTION

David W. Phillips, and George W. Van Cleave, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 8, 1969, Ser. No. 882,953
Int. Cl. H01j *29/56*
U.S. Cl. 315—27 GD 4 Claims

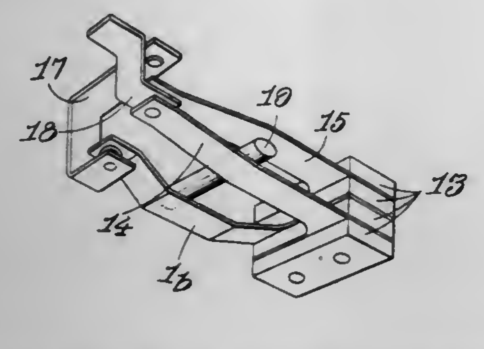


A linearity correction circuit for a cathode-ray tube incorporating a horizontal sweep generator which is responsive to a direct coupled, amplified, inverted and rectified version of its output signal, which when integrated by the horizontal sweep generator, causes a decrease in the amplitude of the horizontal sweep signal near the ends of the sweep where the nonlinearity is greatest. No reactive components are utilized in the feedback network enabling the circuit to be reset at any time during a sweep or held in the reset position for any length of time greater than the minimum recovery time of the sweep generator with no effect on the shape of the next sweep.

3,604,975

VEHICLE LIGHT CONTROL SYSTEM

Masaru Suzuki, Hekikaigun, and Tatsushi Kubota, Gifu, both of, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima3cho, Nishikasugai, Aichi, Japan
Filed Apr. 25, 1969, Ser. No. 819,363
Claims priority, application Japan, Apr. 29, 1968, 43/35024
Int. Cl. B60q *1/46;* **H01h** *21/18*
U.S. Cl. 315—83 **6 Claims**

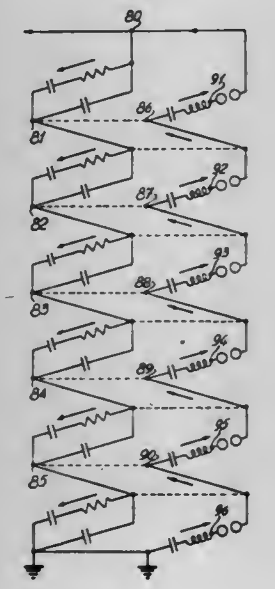


A combined switch device of dimmer and flasher comprising a first, second and third movable conductive elements arranged horizontally or vertically in parallel with and at a spacing from each other, all of said movable conductive elements serving as a dimmer switch as well as a flash switch in association with an operating member movable upwardly or downwardly from its neutral position, and having as a whole a comparatively flatter shape.

3,604,976

ELECTRICAL CIRCUIT FOR SYNTHETIC TESTING OF CIRCUIT INTERRUPTERS AND METHOD OF OPERATION

Vladislav Zajic, Montreal, Province of Quebec, Canada, assignor to Hydro-Quebec, Montreal, Quebec, Canada
Filed May 6, 1969, Ser. No. 822,161
Claims priority, application Canada, Apr. 12, 1969, 048,563
Int. Cl. G01r *31/02;* **H03k** *3/53*
U.S. Cl. 315—191 **13 Claims**

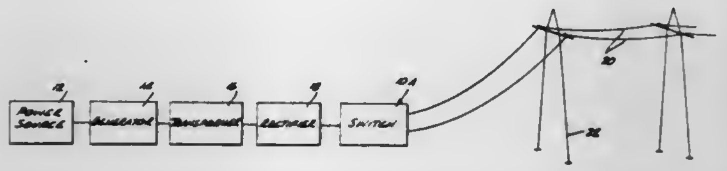


The application relates to a high voltage generator for the so-called synthetic testing of circuit interrupters operating at high and very high voltages, such generator being used more particularly in a testing circuit of the current injection type, and capable of providing successively an injection current waveform and a transient recovery voltage waveform. The generator comprises an injection branch providing the injection current waveform and a regulating branch providing the transient recovery voltage waveform. The injection branch is formed by at least two groups of elements, each comprising a capacitance, an inductance and a spark gap in series forming a unit, and by a switching system for interconnecting the units in series, or in parallel, or in a combined series-parallel connection. The regulating branch is formed by at least two groups of elements, each comprising at least one capacitance and at least one resistor forming a unit, and by a switching system for interconnecting the units in series, or in parallel, or in a combined series-parallel connection.

3,604,977

A CROSS FIELD SWITCHING DEVICE WITH A SLOTTED ELECTRODE

Gunter A. G. Hofmann, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 15, 1969, Ser. No. 791,216
Int. Cl. H05b *41/16, 41/24*
U.S. Cl. 315—267 **9 Claims**

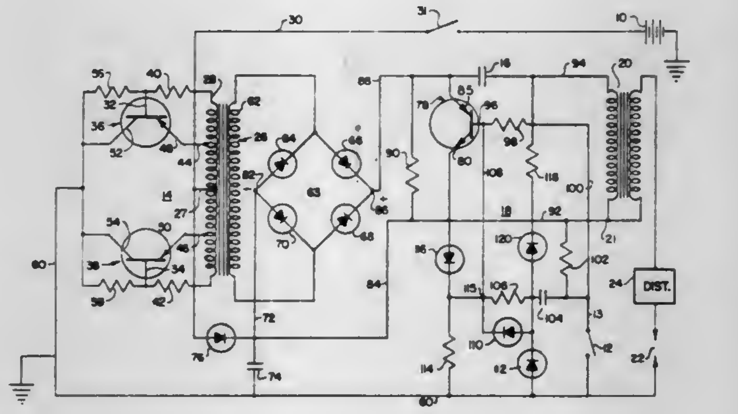


The switching device has an anode and a cathode with a gas-filled annular space therebetween. When an axial magnetic field above a critical value is applied to the gas-filled space, and after initation, cascading ionization occurs for conduction. The magnetic field above the critical value is supplied by a substantially fixed field source, and reduction below the critical value is accomplished by employing one of the electrodes as a coil through which current can be passed to change the total magnetic field with respect to the critical value.

3,604,978

CAPACITOR DISCHARGE IGNITION SYSTEM

Robert G. Van Houten, and John C. Schweitzer, both of Grand Junction, Colo., assignors to Delta Products Inc., Grand Junction, Colo.
Filed May 18, 1965, Ser. No. 456,789
Int. Cl. F02p *3/06;* **H01t** *15/02*
U.S. Cl. 315—209 CD **9 Claims**

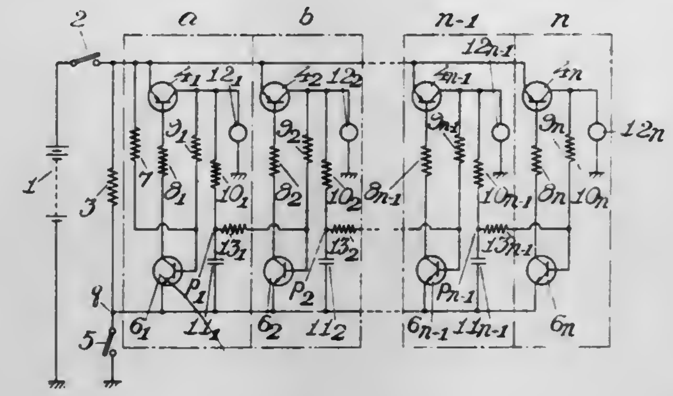


A capacitor discharge ignition system which includes a storage capacitor, a charging circuit for charging the capacitor, a switch effectively directly connected across the output of the charging circuit and adapted to be actuated in timed relation with respect to an engine, wherein the charging circuit comprises a converter which stalls on actuation of the switch means which is connected to provide a low impedance short across the output of the converter to reset the converter and switch means in timed relation as a function of the engine speed. The switch includes a trigger circuit and a feedback circuit is provided to feed back a portion of the energy stored in the storage capacitor to effectively completely discharge the trigger circuit of the switch when actuated. There may further be provided means for supplying a reverse gate voltage to the switch means to prevent spurious signals from actuating same.

3,604,979

SEQUENTIAL FLASHER

Tetsuji Shimizu; Ryozo Yagi; Susumu Usami, and Shozo Naito, all of Nagoya, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi-Prefecture, Japan
Filed Oct. 31, 1967, Ser. No. 679,390
Claims priority, application Japan, July 22, 1967, Aug. 1, 1967, 42/63595; 42/66732
Int. Cl. H05b *39/09;* **B60q** *1/38*
U.S. Cl. 315—317 **5 Claims**



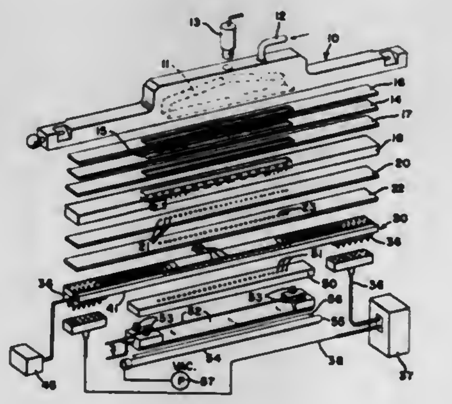
A sequential flasher, of the type used, for example, on automotive vehicles, includes a plurality of amplifier stages each including a pair of transistor amplifiers, a positive feedback circuit interconnecting the amplifiers, electric lamps serving as loads, and electronic time constant means, the feedback circuit in each stage being arranged in a cascade connection with the electronic time constant means. No mechanical switching elements are used. In one embodiment of the invention, each of the stages has a respective electric lamp, and a first switch is provided to connect the sequential flasher to one terminal of a source of potential, such as a battery, and a second switch is provided to connect the sequential flasher to the opposite terminal of the battery, with this second switch preferably being a cyclically operable switch.

In a second embodiment of the invention, the last stage does not have a respective electric lamp, and the second switch is omitted. The last stage has associated therewith a diode which, in conjunction with the electronic time constant means of the last stage, serves to repetitively initiate operation of the sequential flasher as long as the first switch is closed.

3,604,980

DROP-CHARGING APPARATUS

John A. Robertson, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed May 25, 1970, Ser. No. 41,125
Int. Cl. G01d *15/18;* **B05b** *5/00, 5/02*
U.S. Cl. 317—3 **5 Claims**

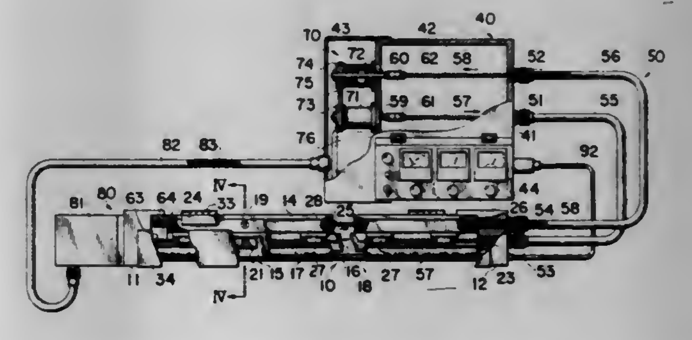


In a noncontacting coating system in which drops of coating material are selectively charged to divert them from their normal trajectory and thereby permit a patterned coating layer to be applied to a workpiece, the drop charging element is formed as a support plate having a planar surface parallel to the initial path of the coating drops and provided with strips of conductive material connected to appropriate leads for selectively charging the drops as they pass the conductive strips. A shield bar is positioned adjacent the support plate and notches are formed in the bar opposite the conductive strips. The shield bar may be formed of a conductive material, or coated with a conductive material at least in the area of the notches, and a selectively variable potential applied thereto to adjust the trajectory of all drops simultaneously.

3,604,981

POWDER SPRAYER OF HIGH-TENSION DISCHARGE TYPE

Shiro Saito, Tokyo, Japan, assignor to Nikka Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 19, 1969, Ser. No. 886,651
Int. Cl. B05b *5/04*
U.S. Cl. 317—3 **9 Claims**

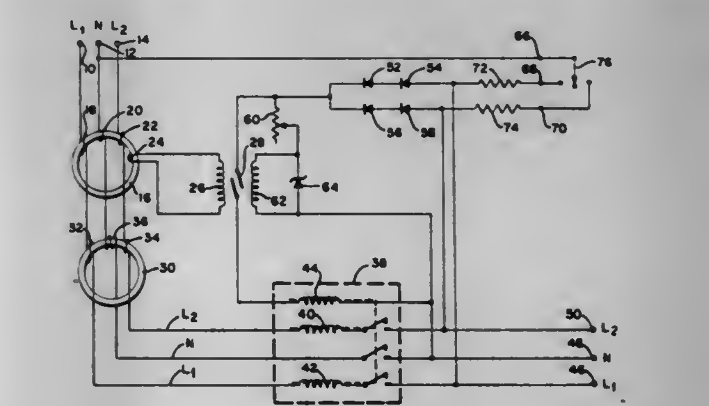


A powder spray of high-tension discharge type has an elongated thin main body installed within a narrow restricted space of a printing machine or the like. The main body comprises a roller, an elongated blockaded space closed at one side by the roller, and an elongated blockaded passage communicating with the blockaded space at one end portion thereof. Powder is a powder box provided separately from the main body is fed into the blockaded space by a feed screw conveyor passing through said space. The powder carried outside of the main body in accordance with the rotation of the roller is blown-down by discharge between the roller and an insulated electric wire extending parallel to said roller. The extra powder in the space is carried into the blockaded passage and is returned to the powder box by another screw conveyor passing through the blockaded passage.

3,604,982

GROUND FAULT AND OVERLOAD CURRENT INTERRUPTING APPARATUS

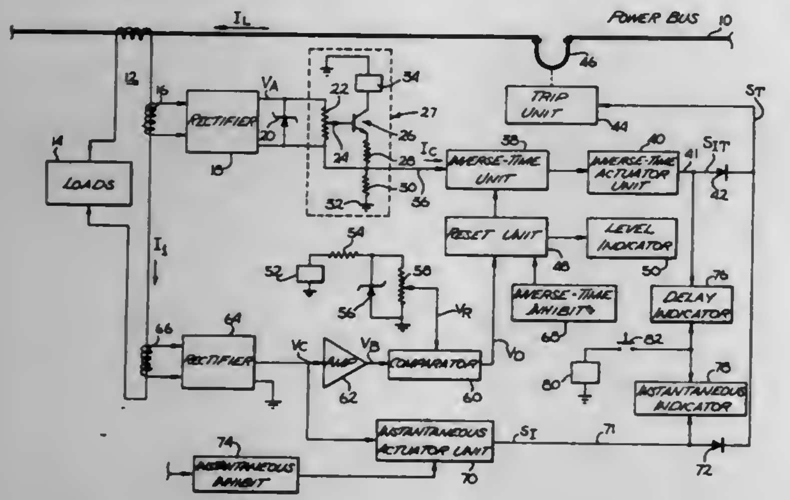
Thomas M. McDonald, Monroe, Conn., assignor to Hubbell Harvey Incorporated, Bridgeport, Conn.
Filed Feb. 13, 9169, Ser. No. 798,956
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 R **9 Claims**



A unit which combines the features of electrical overload and ground fault protection. A single circuit breaker includes overload tripping coils and a shunt coil which is energized by the output of a differential transformer. In one form, the unit is designed to operate in a three-wire, grounded neutral system. The shunt coil is operable from both line conductors so that operation from a two-wire supply is possible without modification.

3,604,983
INSTANTANEOUS AND INVERSE-TIME-OVERCURRENT SENSOR

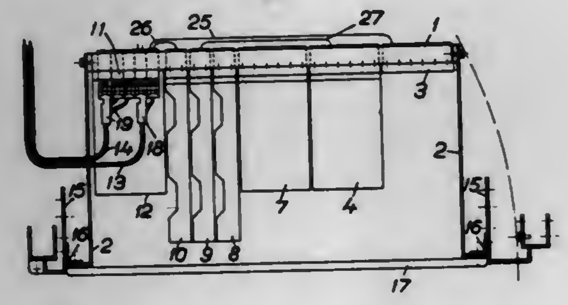
Harry P. Levin, North Hollywood, and Robert K. Bunce, Pasadena, both of, Calif., assignors to Automation Electric, Inc., Vernon, Calif.
Filed May 19, 1969, Ser. No. 825,737
Int. Cl. H02h *3/08*
U.S. Cl. 317—38 **21 Claims**



An instantaneous and inverse time-overcurrent sensor for protecting a monitored circuit against overload conditions. The sensor includes a solid state reactor stage coupled to an inverse-time unit so as to produce a trip signal when a time-overcurrent condition in the monitored circuit exceeds a selected value. The t time-overcurrent characteristics of the device are readily adjustable to cover most circuit protection requirements. Additional circuitry is provided for producing an instantaneous trip signal upon the occurrence of an excessively high value of overcurrent. Indicator devices are provide d for giving visual indications, and retaining such indications, after the occurrence of an instantaneous or an inverse-time trip.

3,604,984
ELECTRICAL CONNECTION SYSTEM FORMED OF PLINTHS WITH OPPOSED PAIRS OF ROLLS IN FRONT AND BACK FOR RECEIVING CONNECTORS

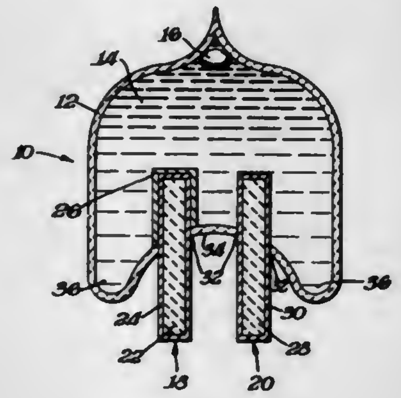
Per Andreassen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Continuation-in-part of application Ser. No. 767,153, Oct. 14, 1968. This application Dec. 22, 1969, Ser. No. 887,008
Int. Cl. H02b *1/04;* **H01r** *31/08*
U.S. Cl. 317—99 **3 Claims**



A system for assembling and connecting electrical apparatus such as relays, supervision panels, circuit cards and electrode connections, multipole contacts and the like includes cabinets having frameworks fixed or pivoted in them. Assembly frames attached to the framework carry a number of connection plinths, module determined in size, having holes arranged in pairs in rows to receive contact sockets from one side of the plinth and contact pins for direct engagement in the sockets from the other side. The pins are held in the sockets by connecting elements provided with resilient tongues arranged in recesses inside the plinth. The connection elements are common to a pair of holes, and are provided with openings in their legs which are engageable over projections on the contact pins.

3,604,985
COULOMETRIC DEVICE WITH NONCONDUCTIVE INORGANIC ELECTRODE SUBSTRATE

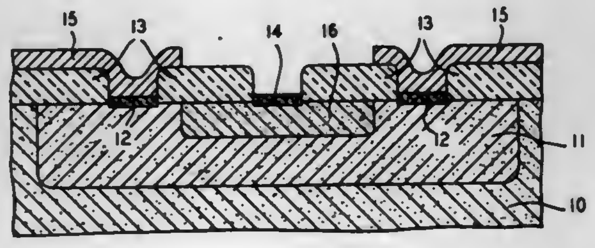
David B. Peck, and Walter W. Schroeder, both of Williamstown, Mass., assignors to Sprague Electric Company,, North Adams, Mass.
Continuation-in-part of application Ser. No. 792,648, Jan. 21, 1969, now Patent No. 3,564,343. This application Feb. 2, 1970, Ser. No. 7,657
Int. Cl. H01g *9/06*
U.S. Cl. 317—230 **6 Claims**



A coulometric cell employs a nonconductive inorganic envelope containing an electrolyte and an expansion bubble. First and second spaced electrode members extend from outside of said envelope, through the wall thereof and into said electrolyte. Each electrode member comprises a nonconductive inorganic substrate having at least the same coefficient of thermal expansion as that of the inorganic envelope. Each substrate carries a thin conductive film which extends from within to outside of said envelope. The envelope is bonded in fluidtight arrangement about the periphery of the electrode members where they pass through the wall thereof.

3,604,986
HIGH FREQUENCY TRANSISTORS WITH SHALLOW EMITTERS

Martin Paul Lepselter, New Providence, and Alfred Urquhart MacRae, Berkeley Heights, both of, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Mar. 17, 1970, Ser. No. 20,308
Int. Cl. H01l *11/06*
U.S. Cl. 317—235 **9 Claims**

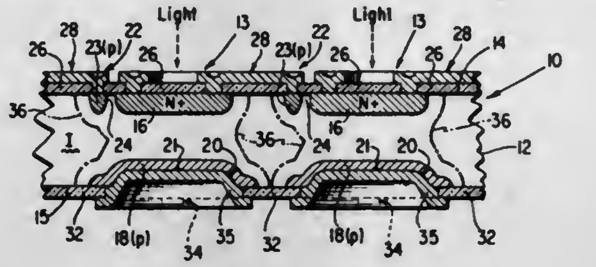


It has been recognized that a Pt-Si contact forms without the usual concentration of minority carrier recombination sites. Thus, as applied to emitter regions, the contact appears to be an extension of the semiconductor. This allows the emitter region to be very shallow leading to better control of

the base width. Methods for fabrication taking advantage of ion implantation techniques for forming very shallow, sharp emitter profiles are also described.

3,604,987
RADIATION-SENSING DEVICE COMPRISING AN ARRAY OF PHOTODIODES AND SWITCHING DEVICES IN A BODY OF SEMICONDUCTOR MATERIAL

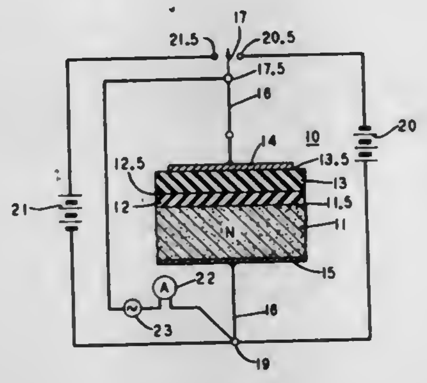
Jacques M. Assour, Princeton, N.J., assignor to RCA Corporation
Filed Dec. 6, 1968, Ser. No. 781,753
Int. Cl. H01l *11/00*
U.S. Cl. 250—209 **10 Claims**



A device for converting patterns of light into electrical signals includes a body of intrinsic silicon having opposed major surfaces. Regions of one type conductivity in the body adjacent to one of the major surfaces and regions of relatively opposite type conductivity adjacent to the other major surface, separated by material of the body of predetermined thickness, define an *x–y* array of high-speed PIN photodiodes. Other regions adjacent to the one major surface define low capacitance PIN switching diodes for isolating the photodiodes.

3,604,988
SEMICONDUCTOR MEMORY APPARATUS WITH A MULTILAYER INSULATOR CONTACTING THE SEMICONDUCTOR

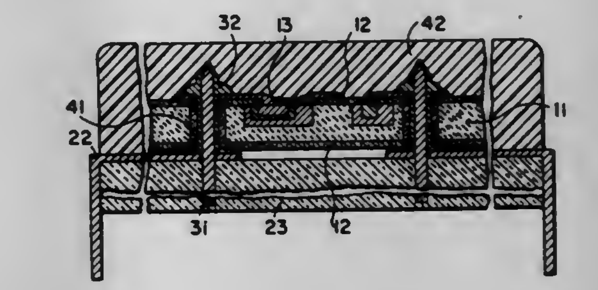
Dawon Kahng, Bridgewater Township, Somerset County, and Edward H. Nicollian, Murray Hill, both of, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Oct. 3, 1969, Ser. No. 863,663
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **5 Claims**



An electronic memory apparatus is disclosed in which the memory element is an insulated gate field effect transistor (IGFET) whose gate contains a metal electrode located on top of two parallel layered insulators, such as silicon oxide and zinc sulfide. The memory of a signal voltage applied to the gate electrode is provided by the phenomenon of tunneling of electrical charges between the metal electrode and the interface between the two insulator layers. These charges are trapped at this interface until a voltage of opposite sign is applied which is sufficient to discharge ("erase") the trapped charges at the interface. Nondestructive readout of the presence or absence of these trapped charges is afforded by monitoring the source-drain current in the transistor.

3,604,989
STRUCTURE FOR RIGIDLY MOUNTING A SEMICONDUCTOR CHIP ON A LEAD-OUT BASE PLATE

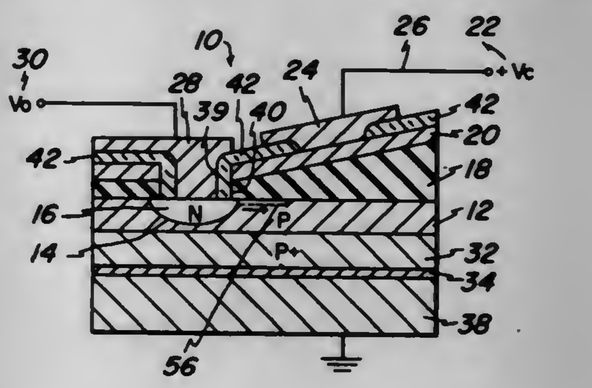
Yuichi Haneta, and Toshio Wada, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan
Filed Oct. 9, 1969, Ser. No. 864,995
Claims priority, application Japan, Oct. 11, 1968, 43/74355
Int. Cl. H01l *1/14*
U.S. Cl. 317—234 R **3 Claims**



A semiconductor wiring unit is formed by passing conducting needles projecting from a stem plate through apertures formed in the wiring layers of a semiconductor chip. The apertures are located in registration with the needles. After insertion in the apertures the needles are soldered to the wiring layers.

3,604,990
SMOOTHLY CHANGING VOLTAGE-VARIABLE CAPACITOR HAVING AN EXTENDIBLE PN JUNCTION REGION

Raymond A. Sigsbee, Schenectady, N.Y., assignor to General Electric Company
Filed Apr. 1, 1970, Ser. No. 24,653
Int. Cl. H01l *5/02*
U.S. Cl. 317—234 R **14 Claims**

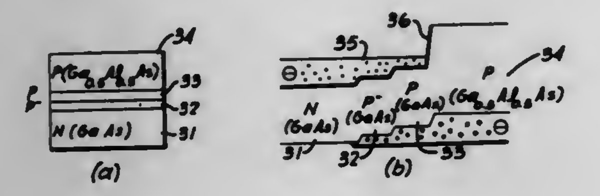


A voltage-variable semiconductive capacitor is described wherein a smooth alteration in output capacitance is produced by incrementally extending a PN junction along the surface of a semiconductive body with an inversion layer formed below a control electrode insulator characterized by a decreased capacitance with increased span of the insulator from the expanding edge of the PN junction. In a first embodiment of the invention, the decreased capacitance is achieved by increasing the thickness of the control electrode insulator at a linear slope between 0.25 and 3.0 percent while in a second embodiment, the thickness of the control electrode insulator is increased in uniform steps of approximately 200–500 A, to produce a digitalized change in output capacitance. A capacitor structure also is described wherein isolated regions of a first type conductivity within a semiconductive body of second type conductivity are sequentially interconnected utilizing commonly energized control electrodes having a gradually reduced capacitance relative to the underlying semiconductive body with increased departure of each electrode from the edge of the initially extended region.

3,604,991
INJECTION-TYPE SEMICONDUCTOR LASER ELEMENT

Hiroo Yonezu, and Akira Kawaji, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 30, 1970, Ser. No. 23,631
Claims priority, application Japan, Apr. 1, 1969, 25335/1969
Int. Cl. H01l *15/00*
U.S. Cl. 317—235 R **5 Claims**

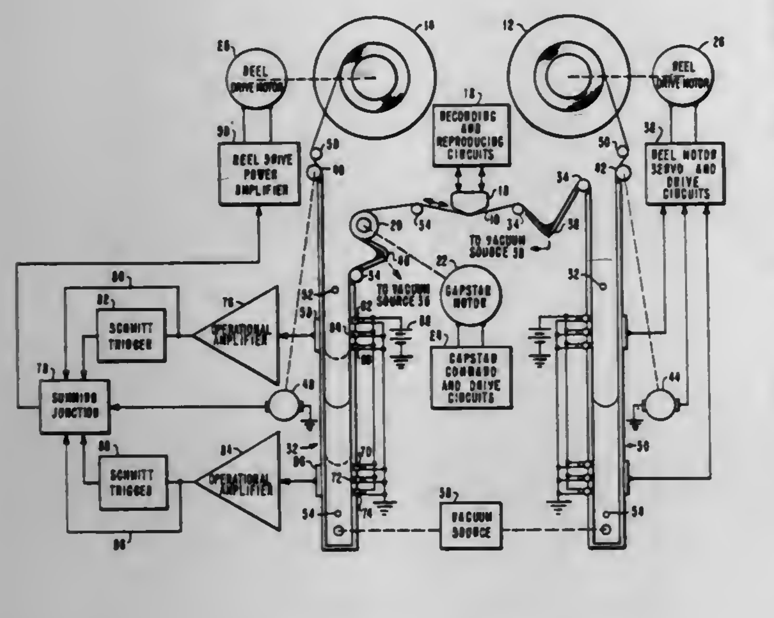


An injection-type semiconductor laser element is disclosed having an N-type substrate, a P^1-type layer having a specified thickness and impurity concentration on the substrate, a highly doped P-type layer on the P^1-type layer, and a P$^+$-type layer on the P-type layer. In an alternative device, a P-type layer of a different material and having a larger band gap is placed on the highly doped P-type layer.

3,604,992
REEL SERVO SYSTEM

Azmi S. Audeh, Camarillo; Anil N. Deodhar, West Los Angeles, and Henry G. Glattfelder, Los Angeles, all of, Calif.

Filed Feb. 10, 1970, Ser. No. 10,255
Int. Cl. B65h *59/38;* **H02p** *7/68*
U.S. Cl. 318—6 **14 Claims**

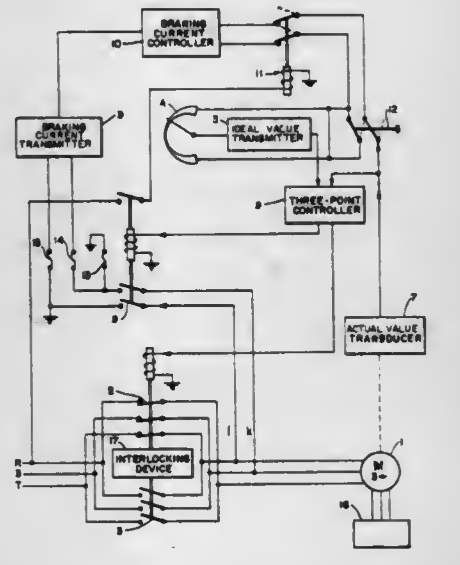


A reel servosystem for a digital magnetic tape transport responds to tape loop length signals from two spaced-apart linear sensors in a vacuum chamber and a reel motor braking signal which is proportional to tape velocity at some point between the vacuum chamber and the associated tape reel. A Schmitt trigger increases the tape loop length signals by a selected amount whenever they exceed a threshold magnitude thereby providing a more rapid response and cancelling the effect of the braking signal. A summing junction provides a signal representing the sum of the tape loop length signals and the reel motor-braking signal to drive the reel motor. During steady state operation the reel motor drive signal is proportional to the length of the tape loop and maintains the tape loop at selected reference positions within the vacuum chamber dependent on direction.

3,604,993
SPEED CONTROL SYSTEM FOR CONVEYING MACHINE ENERGIZED BY THREE-PHASE CURRENT

Erich Volkert; Klaus Gunther, and Gunter Willkommem, all of Erfurt, Germany, assignors to Veb Starkstrom-Anlagenbau, Erfurt, Germany

Filed Oct. 11, 1968, Ser. No. 766,722
Int. Cl. H02p *3/24*
U.S. Cl. 318—212 **5 Claims**

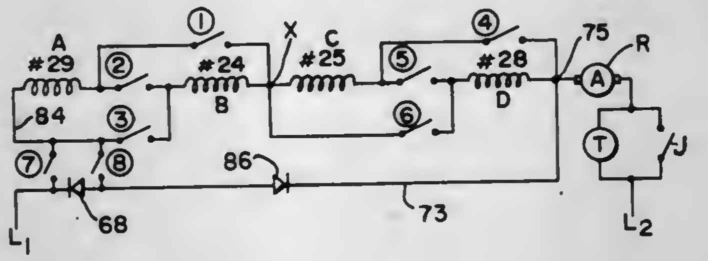


An ideal value transmitter provides an ideal value voltage corresponding in magnitude to a desired speed of a conveying machine. An actual value transducer coupled to the rotor of the conveying machine provides an actual value voltage corresponding in magnitude to the actual speed of the machine. A three point controller connected to the transmitter and transducer provides a control signal equal to the difference in magnitude between the ideal and actual value voltages. Two reversing contactors coupled to the controller and connected to the stator of the machine supplies three-phase current to the machine under the control of the control signal provided by the controller. A direct current contactor coupled to the controller and connected to the stator of the machine supplies direct current to the machine under the control of the control signal.

3,604,994
LIQUIDIZER SPEED CONTROL

William J. Conlon, New Britain, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,315
Int. Cl. H02p *7/10*
U.S. Cl. 318—252 **16 Claims**

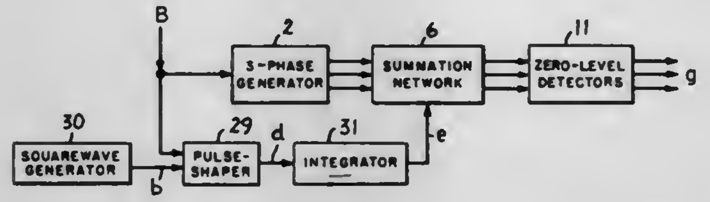


A food-comminuting device driven by a universal fractional horsepower motor in which a speed control includes oppositely poled serially connected semiconductors that shunt a field of variable impedance for a high speed range and one of the semiconductors is switched into series relationship with the field for a low speed range to eliminate any overlapping of the speed ranges. The motor can be turned OFF in three ways with the speed control switches by removing the semiconductors from the motor circuit or permutation opening of a plurality of the speed control switches employed, or both.

3,604,995
GENERATOR FOR PRODUCING A WIDTH-MODULATED SQUARE VOLTAGE

Arne Jensen, Als, and Tom Kastrup Petersen, Nordborg, both of, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 27, 1968, Ser. No. 755,538
Claims priority, application Germany, Aug. 29, 1967, D 53 958 VIIIb/21c
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **10 Claims**

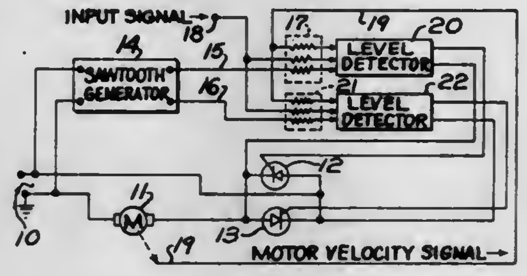


Apparatus producing a width modulated square wave for use in a motor control circuit controlling the speed of an alternating-current motor. A low frequency three-phase generator with stationary components develops three wave outputs integrated and summed with a high frequency wave signal, in a summation circuit, produced by a frequency generator. The sign of the outputs of the summation circuit is ascertained by zero level detectors and employed for controlling the motor speed. A direct-current control voltage is applied to the apparatus to control the amplitude of the high and low frequency waves.

3,604,996
CONTROLLED POWER SUPPLY SYSTEM

Fritz Norman Lutz, Northfield, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Sept. 26, 1968, Ser. No. 762,858
Int. Cl. H02p *5/16*
U.S. Cl. 318—345 **27 Claims**



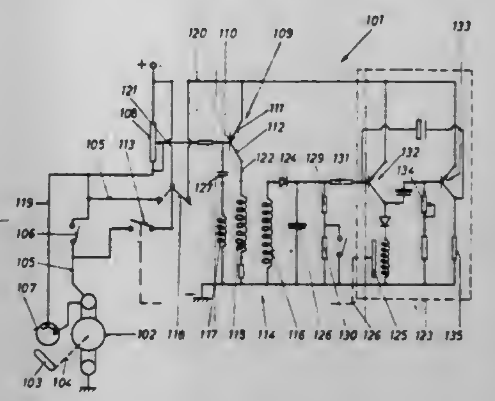
Controlled power supply system for connection to an AC source and having two oppositely connected silicon controlled rectifiers (SCRs) for conducting current in opposite directions to an electrical load. Two sawtooth waves of opposite slope and phase-displaced by 180° are combined with an error signal to determine the firing times of the SCRs. The error signal represents the difference between a desired value and the actual value of a load variable, such as rotational speed when the load is an electric motor. Each sawtooth wave has a period equal to the AC source signal and during each cycle has a straight line slope for 270°, is abruptly reset to a reference level, and remains at the reference level for the remaining 90° of the cycle.

3,604,997
CONTROL SYSTEM FOR THE DRIVING MOTOR OF WINDSHIELD WIPERS

Karl Kirchner, and Ernst Kirchner, both of Schanzstrasse 2, Friedrichshafen, Germany

Filed Apr. 15, 1969, Ser. No. 816,251
Claims priority, application Germany, Apr. 29, 1968, Aug. 13, 1968, Jan. 28, 1969, P 17 55 347.8;P 17 80 187.5;P 19 03 990.8
Int. Cl. B60s *1/08*
U.S. Cl. 318—443 **9 Claims**

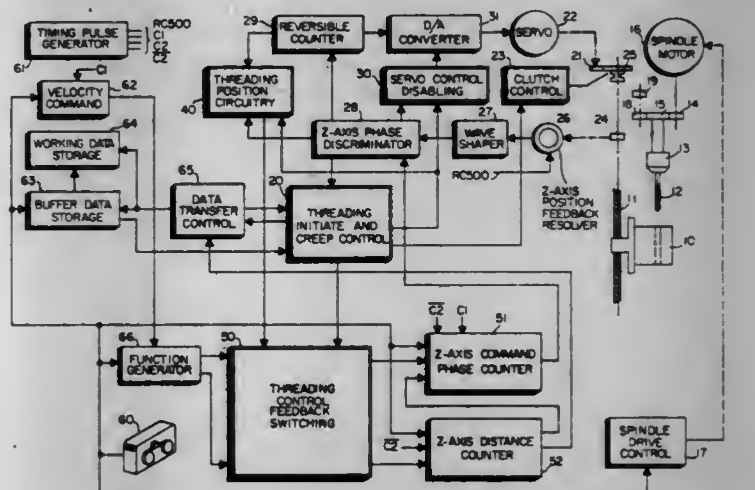
An intermittent windshield wiper system having a first switch actuated by a voltage drop responsive to the motor load, timing means comprising an unstable multivibrator actuated by the first switch means and controlling second switch means in series with the motor and a power source.



3,604,998
DUAL DRIVE SERVO-CONTROLLED THREAD CUTTER INCLUDING MODE ENGAGEMENT FEATURES

Thomas P. Haught, Stuarts Draft, and James W. Stugart, Waynesboro, both of, Va., assignors to General Electric Company

Filed Dec. 24, 1968, Ser. No. 786,671
Int. Cl. G05b *7/00*
U.S. Cl. 318—591 **7 Claims**



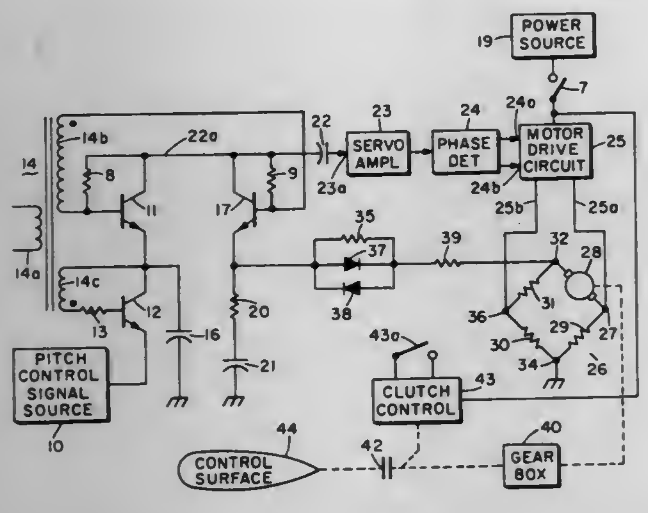
A controlled machine-positioning system wherein machine movement may be determined by separate drive sources, one of which is servo-controlled and directly responsive to input data, and the other being only indirectly controlled. This system is particularly useful as incorporated in numerically controlled arrangements for certain unique threadcutting operations and wherein the normal servocontrol is not wanted for a particular operating mode.

3,604,999
POSITION SERVOMECHANISM INCLUDING A SYNCHRONIZING CIRCUIT FOR BUMPLESS ENGAGEMENT OF A CLUTCHED LOAD

Frank David Pugh, Pompano Beach, Fla., assignor to The Bendix Corporation

Filed Oct. 20, 1969, Ser. No. 867,475
Int. Cl. G05b *7/00*
U.S. Cl. 318—591 **7 Claims**

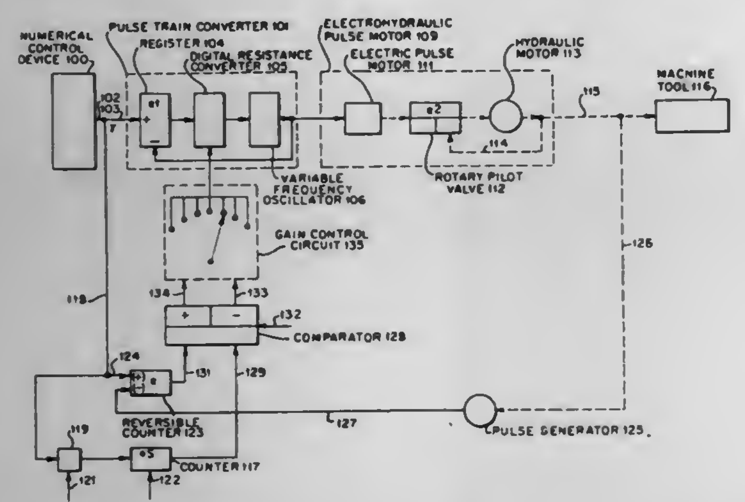
A servosystem motor driven by an error signal is connected to a controlled element through a clutch which is disengaged when the servosystem is initially energized. Resulting rapid movement of the now unloaded motor generates a large feedback voltage which is derived from motor back e.m.f. Feedback voltage is applied to an integrating feedback circuit to generate a degenerative feedback signal having servomotor velocity and displacement components. A servosystem modulator combines a command signal with the feedback signal to generate the error signal which is thus minimized before the clutch is engaged to provide automatic



synchronization of the servosystem with the element. The clutch may now be engaged without abrupt, dangerous movement of the element.

3,605,000
NUMERICAL CONTROL INCLUDING A VARIABLE GAIN LOOP CONTROLLING A PILOT STEPPING MOTOR CONTROLLING AN ELECTROHYDRAULIC POSITIONING MOTOR

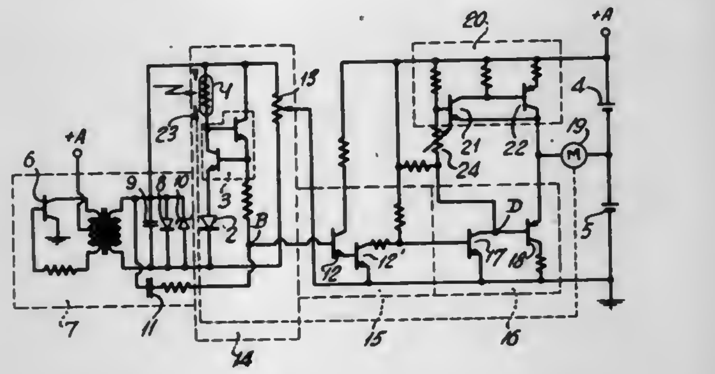
Seiuemon Inaba, and Kanryo Shimizu, both of Kawasaki-shi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 19, 1969, Ser. No. 878,059
Claims priority, application Japan, Nov. 21, 1968, 43-85479
Int. Cl. G05b *5/01, 19/40*
U.S. Cl. 318—619 **6 Claims**



A pulse train converter converts a first command pulse train issued by command pulse means to a second command pulse train and supplies the second command pulse train to electrohydraulic pulse motor. The pulse train converter has a storage connected to the command pulse means for storing the difference in the number of pulses of the first and second command pulse trains and an oscillator connected to the storage for issuing the second command pulse train at a frequency proportional to the content of the storage. A comparer coupled between the command pulse means and the motor detects the difference between the number of pulses in the first command pulse train and the revolutions of the motor. A gain control connects the comparer to the pulse train converter in a manner whereby the ratio of the frequency of the second pulse train to the content of the storage is controlled so that the detected difference is in proportion to the frequency of the first command pulse train.

3,605,001
SERVO-CONTROLLED CAMERA DIAPHRAGM INCLUDING A UNIQUE DITHER CIRCUIT

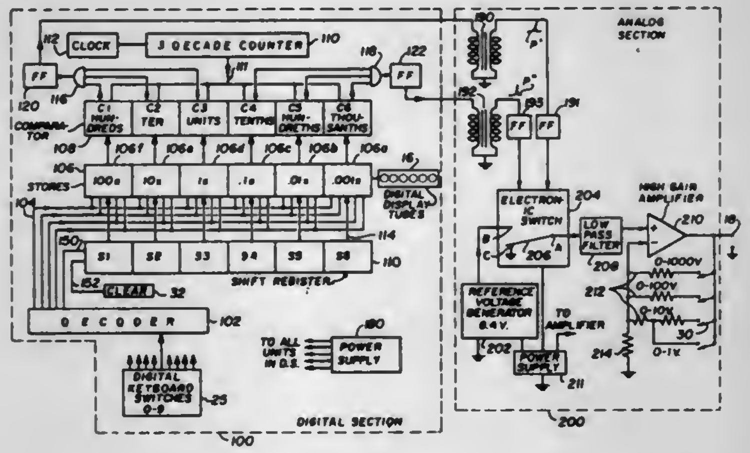
Seinan Miyakawa, Toshima-ku, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Aug. 19, 1969, Ser. No. 855,451
Claims priority, application Japan, Aug. 21, 1968, 43/59149
Int. Cl. G05b *11/01*
U.S. Cl. 318—631 **4 Claims**



A light-controlled automatic diaphragm comprises a network including a photoconductor and potentiometer for producing a DC information signal responsive to the light incident on the photoconductor and the setting of the potentiometer which is adjusted to other photographing parameters. A DC motor is connected to a diaphragm intercepting the light to the photoconductor and an amplifier network controlled by the information signal controls the direction and value of current to the motor and hence its direction of rotation. An oscillator energized by the motor power supply applies an AC signal to the information signal so that AC current is applied to the motor when it approaches its stop condition to brake the motor, the oscillator output being rectified to energize the information signal network.

3,605,002
HIGH PRECISION POWER SUPPLY

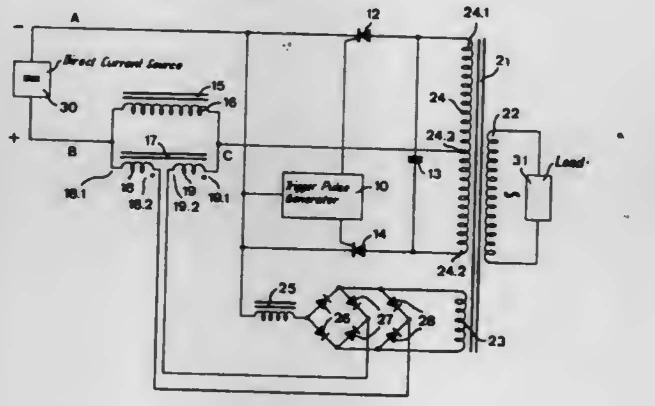
Robert C. Smyth, Centerport, N.Y., assignor to Digital Apparatus Corporation, Deer Park, N.Y.
Filed Mar. 27, 1970, Ser. No. 23,261
Int. Cl. H02m *7/00*
U.S. Cl. 321—8 R **7 Claims**



A high precision power supply generates voltage with an accuracy of at least 30 parts per million and is comprised of a digital section interconnected with an analog section by pulse transformers. Numbered keyboard switches in the digital section select a desired output voltage which is displayed numerically by electronic digital display tubes. A shift register in circuit with number storage means enables any one of the displayed numbers to be changed without changing any other displayed number. The analog section includes a stable reference voltage generator, electronic switch, filter and a high gain amplifier which produces an output voltage corresponding to the displayed numbers. The electronic switch passes proportional parts of the reference voltage to the amplifier via the filter under control of pulses received from the digital section. The amplifier is capable of producing current in one of two ranges depending upon the output voltage.

3,605,003
STABILIZED SINE WAVE INVERTER

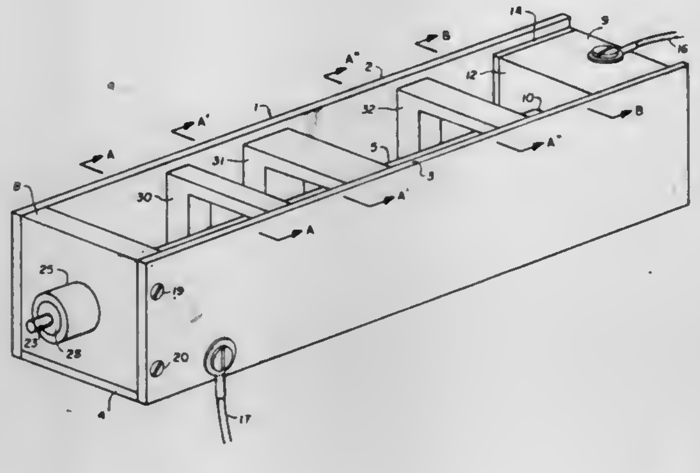
Walter B. Guggi, CH-8172 Niederglatt, Switzerland
Filed Mar. 30, 1970, Ser. No. 024,007
Claims priority, application Switzerland, Mar. 26, 1969, 004893/69
Int. Cl. H02m *7/48*
U.S. Cl. 321—45 **6 Claims**



Direct current is converted into alternating current by rendering switches such as SCR's alternatively conductive and thereby providing an alternating current flow within an arrangement of inductors and capacitors. Some of the alternating current is rectified and fed back through appropriate networks to the DC current input side of the inverter thereby stabilizing the output voltage and preserving the wave shape generated by the inverter as the load changes.

3,605,004
HIGH EFFICIENCY DIODE SIGNAL GENERATOR

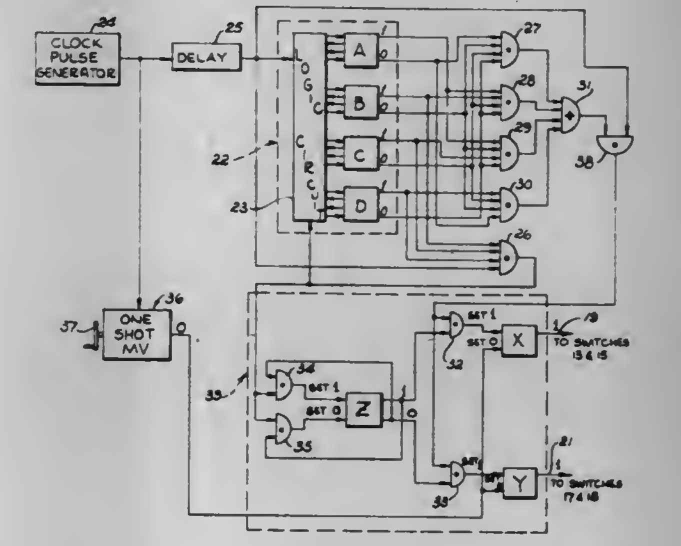
Martin I. Grace, Framingham, Mass., assignor to Sperry Rand Corporation
Filed June 16, 1970, Ser. No. 46,708
Int. Cl. H02m *5/16*
U.S. Cl. 321—69 W **11 Claims**



A microwave of high-frequency amplifier or frequency converter which exploits and open-faced nonradiating waveguiding circuit configuration for efficient interaction with a semiconductor high-efficiency-mode diode. Because of the geometrical nature of the circuit, manufacture and adjustment of the amplifier are facilitated.

3,605,005
INVERTERS

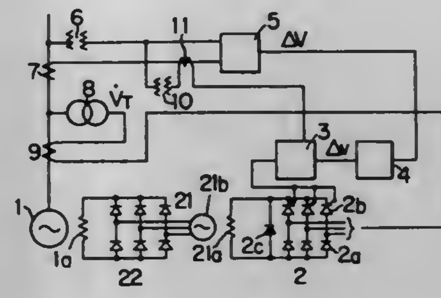
Albert Donald Stolzy, Sherman Oaks, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Sept. 10, 1970, Ser. No. 71,000
Int. Cl. H02m *1/12*
U.S. Cl. 321—9 A **20 Claims**



An inverter which can eliminate lower harmonics of a fundamental by switch timing. However, any number of harmonics may, in fact, be eliminated. Filter design is thus much less complex and expensive and, in some cases, a filter may be eliminated. It is an outstanding feature of the invention that the embodiments of FIGS. 1, 2 and 5 may be entirely and easily incorporated in an integrated circuit.

3,605,006
COMPOUND EXCITATION SYSTEM OF AC GENERATOR BY THYRISTOR CONTROL

Masaomi Nagae; Sumio Yokokawa, and Takehito Inoue, all of Kawasaki-shi, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Japan
Filed July 7, 1969, Ser. No. 839,465
Claims priority, application Japan, July 15, 1968, July 15, 1968, July 12, 1968, 43/60398;43/60399;43/49222
Int. Cl. H02p *9/30*
U.S. Cl. 322—24 **4 Claims**

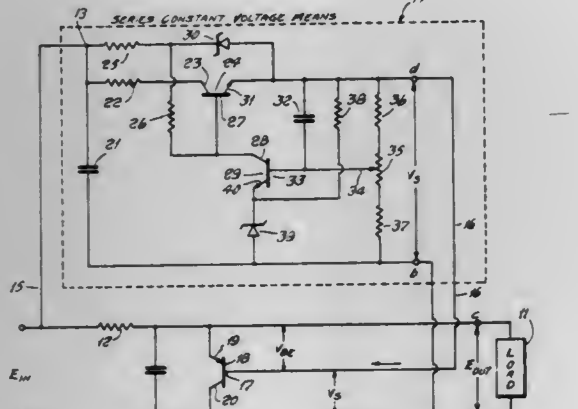


For the excitation of an AC generator, a voltage being in proportion to the terminal voltage of the generator and a voltage being in proportion to the load current of the generator are combined vectorially, and the resultant sum-voltage is impressed on a field winding of the generator through a rectifying device with thyristors for the supply of a field current. Separately, an electric quantity of the same phase as the resultant voltage is prepared as a synchronizing signal for an ignition pulse regulator controlling the thyristors.

3,605,007
DC POWER SUPPLY REGULATED BY A SHUNT TRANSISTOR WHOSE BIAS VOLTAGE IS VARIED BY TRANSISTOR MEANS TO STABILIZE LOAD VOLTAGE

Robert E. Jehle, Woodhaven, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 5, 1969, Ser. No. 847,670
Int. Cl. G05f *1/60*
U.S. Cl. 323—22 T **4 Claims**

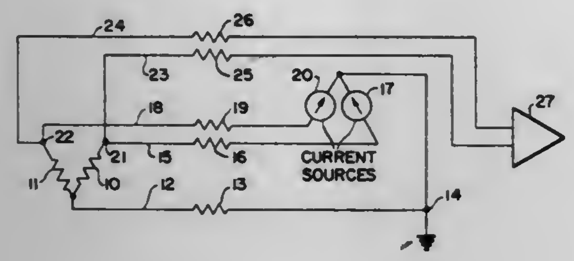


An adjustable DC power supply regulated by the combination of a voltage dropping resistor in series between the DC source and the load, a transistor shunting the load, and other transistor circuitry that monitors the load voltage while drawing very little current, and responds to any load voltage change to adjust the bias on the shunt transistor in a direction to change the current drawn by the shunt transistor and thereby to change the voltage drop across the voltage dropping resistor to oppose change in load voltage.

3,605,008
TRANSDUCER NETWORK WITH CURRENT SOURCE CONDITIONING

William E. Shoemaker, Fullerton, and Barret B. Weekes, Newport Beach, both of, Calif., assignors to Beckman Instruments, Inc.

Division of Ser. No. 522,868, Jan. 25, 1966, Pat. No. 3,457,493
Int. Cl. G01r *17/10*
U.S. Cl. 323—75 N **5 Claims**

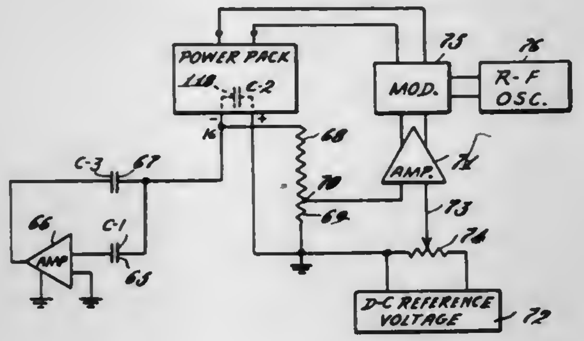


A transducer network having a multiplicity of branches and related circuit nodes is connected to a constant current supply providing a multiplicity of constant current sources. Branches and nodes of the network which are remotely located from the current sources are connected to the current sources by conductors exhibiting an inherent impedance. A pair of input terminals of a high input impedance amplifier is connected to a pair of nodes of the transducer network.

3,605,009
STABILIZED POWER SUPPLY

Harald A. Enge, Winchester, Mass., assignor to Deltaray Corporation, Winchester, Mass.

Filed May 6, 1970, Ser. No. 35,007
Int. Cl. G05f *1/46, 3/08*
U.S. Cl. 323—93 **7 Claims**

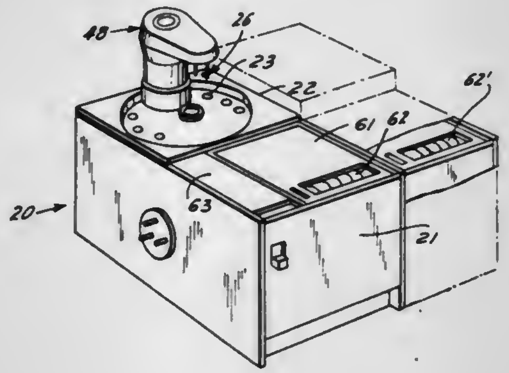


A high voltage power supply for providing highly stabilized voltages of several hundred kilovolts or more which can be applied between the filament assembly and the grounded anode of the gun for an electron microscope, for example, and made as an integral unit with the microscope structure. A plurality of stacked power deck units are mounted within an insulative tube which may also enclose the filament assembly and an accelerator tube if one is used. A coupling capacitor for feeding the output voltage to a regulator system is fashioned as an integral part of the overall structure and arranged so as to couple solely to the output voltage terminal in order to provide accurate corrections of rapid fluctuations of the output voltage. Provision is also made for the regulation of slower fluctuations, such as slow voltage drifts.

3,605,010
AUTOMATIC LYSIS DETECTION APPARATUS

Stanford G. Folus, Randallstown, Md., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed July 14, 1969, Ser. No. 841,474
Int. Cl. G01n *27/42*
U.S. Cl. 324—30 R **11 Claims**

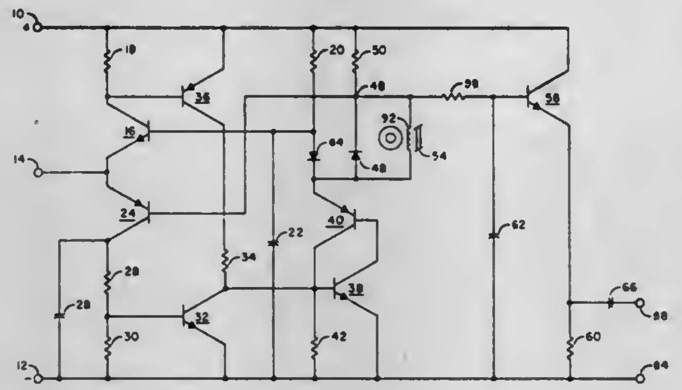


A portable compact lightweight apparatus for measuring the time for initiation of clot formation of blood or plasma by detecting the presence of fibrin, and for measuring the time required for the fibrin to lyse. The apparatus provides means for producing and detecting fibrin. Electrode means are associated with said apparatus for holding the fibrin thread. Furthermore, means are provided for producing a circuit and detecting the current flow while the fibrin is intact and shutoff means are present and responsive to the lysing of the fibrin which breaks the current path thereby recording the time for a fibrin to lyse.

3,605,011
CONTROL APPARATUS

Clifton W. Hart, Mound, and Eugene E. Rosacker, Richfield, both of, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 25, 1967, Ser. No. 643,299
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **7 Claims**

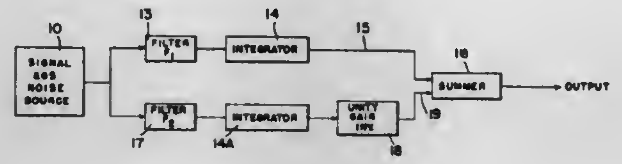


A pulse width modulated magnetometer utilizing a single winding and having solid-state feedback. The operation of the magnetometer lying in the method of passing current through the single winding only until its saturable core is saturated to produce a pulse width modulated output since the change in flux in the core between residual and saturated conditions is dependent upon ambient magnetic field conditions.

3,605,012
NOISE CANCELLATION FILTER SYSTEM

Jacob H. Kubanoff, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Army

Filed July 15, 1969, Ser. No. 841,825
Int. Cl. G01r *23/02;* **H04b** *1/10*
U.S. Cl. 324—78 F **3 Claims**



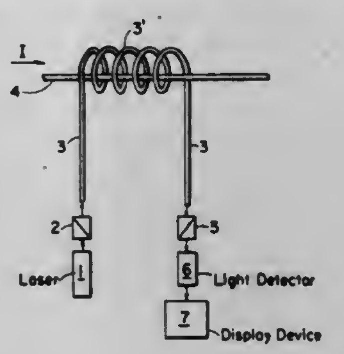
There is provided a system which detects a desired signal in the presence of random noise. A plurality of filters having successively adjacent passbands simultaneously receive a composite of noise and desired signal. Each filter passes only that portion of the composite within its respective passband. All portions are then integrated and thereafter alternate portions are inverted. Inverted and noninverted portions are then summed, the desired signal, if present, appearing as a residue. Sensing indicators connected to each summer output then indicate within which filter the desired signal appeared.

3,605,013
CURRENT-MEASURING SYSTEM UTILIZING FARADAY EFFECT ELEMENT

Shogo Yoshikawa, and Atsufumi Ueki, both of Tokyo, Japan, assignors to Nippon Selfoc Company, Limited, Tokyo, Japan

Filed Nov. 7, 1969, Ser. No. 874,926
Claims priority, application Japan, Nov. 16, 1968, 83680/43
Int. Cl. G01r *13/40, 19/00;* **G02f** *1/22*
U.S. Cl. 324—96 **5 Claims**

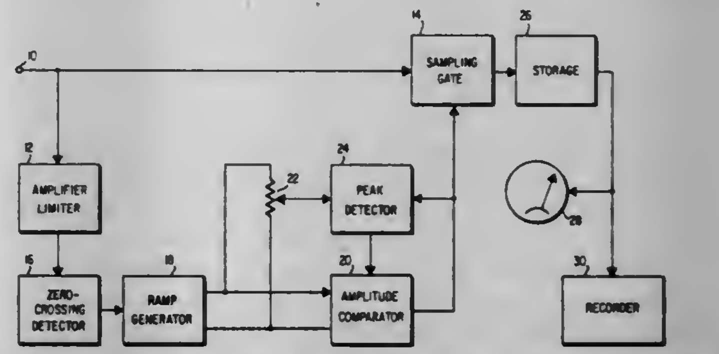
A current-measuring system comprises a fiberlike light guide capable of causing the Faraday effect. The guide is adapted to be placed in proximity to a current-carrying conductor. Polarized light is applied to one end of the guide, and the output of the guide is applied to an analyzer and a detector, thereby to provide an indication of the magnitude of the current flow in the conductor.



3,605,014
PHASE-SAMPLING VOLTMETER

Robert H. McCracken, 5120 Newport Ave., Chevy Chase, Md.

Filed July 17, 1969, Ser. No. 842,478
Int. Cl. G01r *19/00, 27/28*
U.S. Cl. 324—102 **5 Claims**

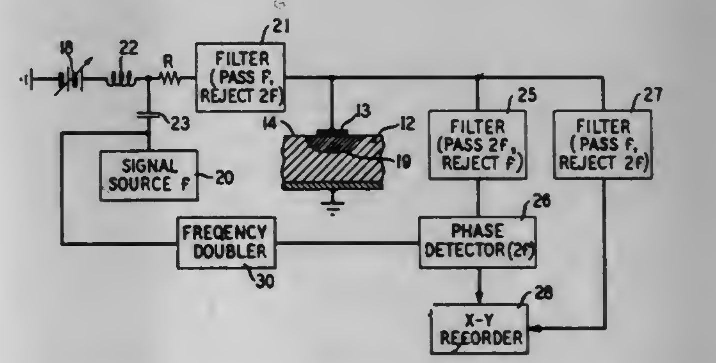


A voltmeter is provided which is capable of measuring the amplitude of a recurrent input signal waveform at any selected phase. Zero-crossings of the input signal are used to synchronize a ramp generator and the output thereof is applied as one input to a comparator device. A potentiometer is used to select a fraction of the ramp voltage which is equal to the fraction of the waveform cycle which represents the desired phase. This selected fractional ramp is then peak detected to provide a reference voltage to the other input of the comparator device. When the ramp voltage reaches the desired fractional voltage, the comparator device will emit a pulse which in turn will enable a sampling gate which allows a sample of the input signal at the selected phase to be stored.

3,605,015
METHOD AND APPARATUS FOR DETERMINING DEEP IMPURITY CONCENTRATION IN SEMICONDUCTORS

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

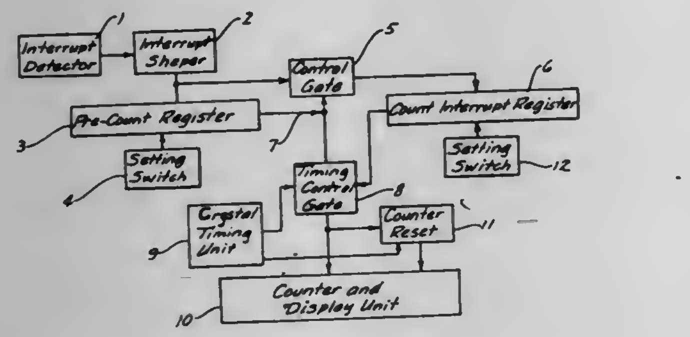
Filed Jan. 19, 1970, Ser. No. 3,771
Int. Cl. G01r *31/22;* **H01l** *7/00*
U.S. Cl. 324—158 D **7 Claims**



The deep impurity concentration of a semiconductor is determined by forming a diode region in the wafer, applying a reverse-bias voltage across the diode, applying a first alternating current to the diode, deriving a second alternating current from the diode, and determining the phase difference of the first and second currents, said difference being proportional to the concentration of deep impurity levels at the edge of the depletion layer. In a preferred embodiment, the phase shift of the second harmonic frequency is used to determine deep level concentration.

3,605,016
INTERVAL TIMER APPARATUS

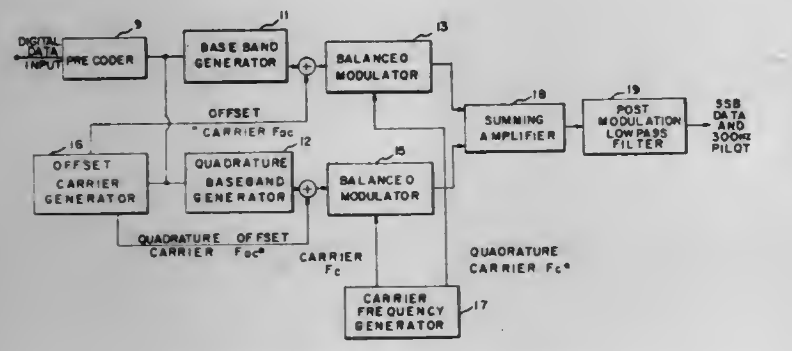
Dana W. Zimmerli, and Duane F. Rost, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Jan. 19, 1970, Ser. No. 3,713
Int. Cl. G04f *9/00*
U.S. Cl. 324—186 **9 Claims**



This invention relates to an interval timer apparatus for automatically timing a predetermined number of laps of known distance by a moving object, such as a race car, after the car has completed a predetermined number of practice laps; with the time or count of the timed laps being directly read out by a visual counter, and which count remains visible until a new count begins. The apparatus comprises a detection unit for producing a pulse for each interrupt by the car, which pulses are sent to a pair of preset shift register, one for the nontimed interrupts and one for the timed interrupts, with a standard clock frequency gated to a decade counter and display unit when the pulses have been shifted to the timed interrupt register.

3,605,017
SINGLE SIDEBAND DATA TRANSMISSION SYSTEM

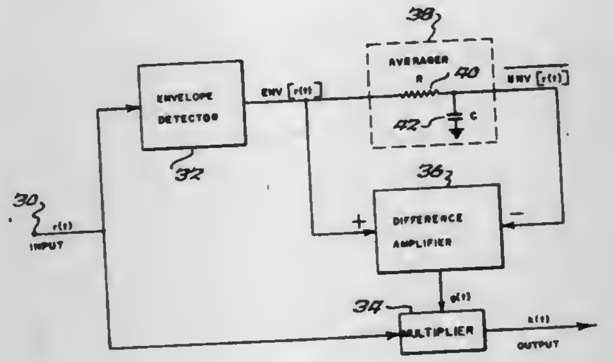
Allan B. Chertok, Cambridge, and Philip P. Carvey, Boston, both of, Mass., assignors to EG & G Inc., Bedford, Mass.
Filed June 6, 1969, Ser. No. 831,139
Int. Cl. H04b *1/68*
U.S. Cl. 325—38 **12 Claims**



A system for transmitting binary data along band limited transmission channels in which digital transversal networks are used to generate, in response to binary bits to be transmitted, a series of doublet symbols and simultaneously a series of Hilbert transforms of the doublet symbols. The outputs from the two transversal networks, together with quadrature related offset carriers, are used to modulate quadrature related carrier signals of identical frequency to produce single-sideband suppressed carrier transmission signals including an offset pilot tone. The receiver decoder includes means responsive to the transmitted pilot tone for correcting the locally generated carrier frequency for phase jitter and phase translation introduced in the transmission channel. The receiver also includes a phase lock system for correcting phase uncertainties in the receiver arising from the pilot tone filter and from the phase of the locally generated offset carrier.

3,605,018
INTERFERENCE SUPPRESSION IN A RECEIVER BY ENVELOPE VARIATION MODULATION

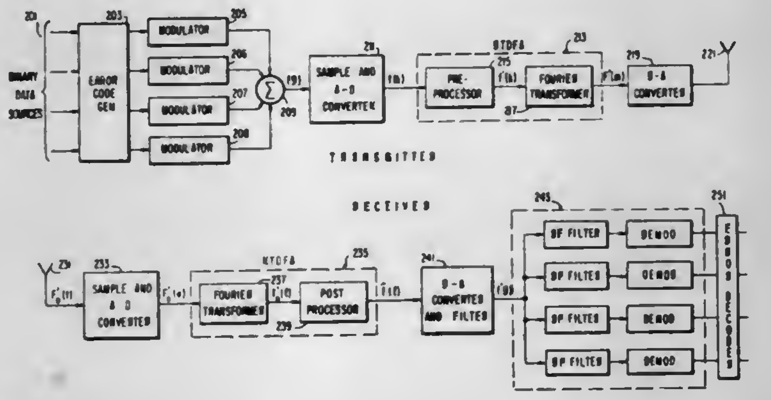
Gino John Coviello, Buffalo, N.Y., assignor to Sylvania Electric Products Inc.
Filed Sept. 13, 1968, Ser. No. 759,655
Int. Cl. H04b *1/10*
U.S. Cl. 325—65 **12 Claims**



A nonlinear signal-processing circuit, especially useful in the receiver of a quaternary-phased spread spectrum communication system, for suppressing interfering signals that are stronger than the desired signal and have relatively constant waveform envelopes. The circuit includes an envelope detector combined with an averager and difference amplifier for deriving from the composite received signal a control voltage which is a function of the instantaneous phase difference between the interfering and desired signals. This control voltage and the composite received signal are then multiplied to produce as an output the desired signal with the interfering signal substantially suppressed.

3,605,019
SELECTIVE FADING TRANSFORMER

Joseph T. Cutter, Washington, D.C.; John M. Davies, Potomac; Don G. Freeman, Gaithersburg; Gordon R. Schwarz, Potomac, and Richard Vanblerkom, Rockville, Md., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,415
Int. Cl. H04b *15/00*
U.S. Cl. 325—65 **5 Claims**

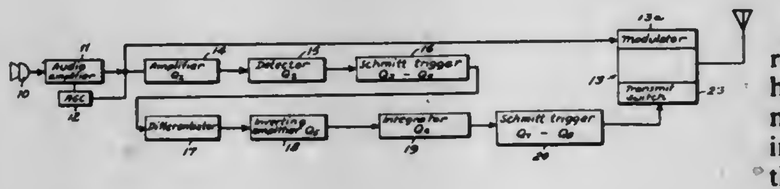


The invention is a communication system which causes errors introduced by selective frequency fading channels to be time localized. It does this by transmitting the Fourier transform of the baseband signal. The preferred embodiment consists of a frequency division multiplexor multiplexing a plurality of channels and a Fourier transformer taking the Fourier transform of the digital representation of the resultant

waveform. The Fourier transform is reconverted into an analog representation by a D-A converter and transmitted by means of an A-D converter. The receiver reconverts the analog representation of the Fourier transform into a digital signal, a Fourier transformer takes the inverse transform, as a D-A converter, reconverts the digital representation back into an analog waveform and then an FDM demodulator demultiplexes the analog waveform resulting in a signal representative of the input to the transmitter with errors introduced by the channels appearing as burst errors (time localized).

3,605,020
SELECTIVE AUTOMATIC AUDIO THRESHOLD CIRCUIT

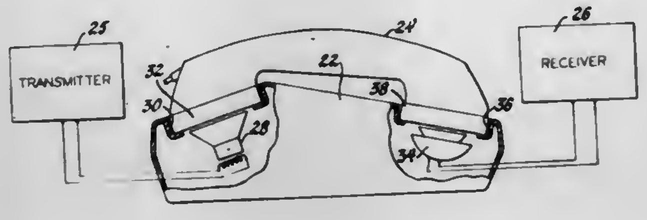
William B. Sullivan, Jr., Columbus, Ohio
Filed July 31, 1970, Ser. No. 59,971
Int. Cl. H04b *1/04*
U.S. Cl. 325—152 **3 Claims**



This invention is an electronic system for keying radiophone transmitters in response to audio information and more particularly to a selective automatic audio threshold circuitry with the ability to adapt to environmental noise conditions.

3,605,021
ACOUSTICAL COUPLER FOR FREQUENCY SHIFT TELEGRAPHIC SYSTEMS

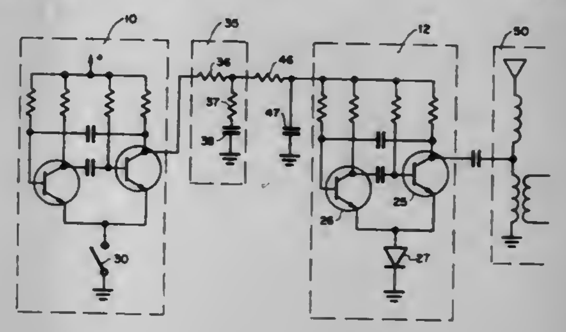
Eugene A. Mychalowych, Warren, Mich., assignor to Digital Techniques Corporation, Royal Oak, Mich.
Filed Feb. 10, 1969, Ser. No. 797,730
Int. Cl. H04b *1/16*
U.S. Cl. 325—320 **13 Claims**



There is disclosed, in a data communication system, an acoustical coupler which enables the transmission of data over telephone lines through a conventional subscriber telephone set. The coupler serves to link or operably join an encoder-decoder, such as a teletypewriter set, with a telephone handset and thence the telephone lines. The coupler comprises a holder adapted to receive a telephone handset and includes a transmitter adapted to convert the mark and space signals of the encoder to frequency shift tone signals suitable for transmission. The coupler also includes a receiver adapted to convert tone frequency signals to mark and space signals for application to the decoder. The coupler is capable of operating in a full-duplex system, or if desired in a half-duplex system.

3,605,022
FM RECEIVER SELF-TEST CIRCUIT

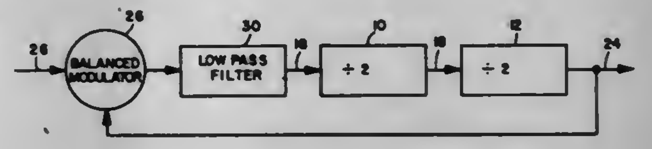
Vincent J. De Fillipo, North Plainfield; Andrew R. Saldutti, Clark, and Stanley J. Zalesky, Red Bank, all of, N.J.
Filed Feb. 28, 1969, Ser. No. 803,221
Int. Cl. H04b *1/16*
U.S. Cl. 325—363 **4 Claims**



A self-testing equipment for a frequency-modulated receiver includes a pulse generator rich in harmonics and having a repetition frequency chosen such that the fundamental frequency is substantially equal to the channel spacing of the FM receiver being tested. The supply voltage for the pulse generator is derived from a power supply generator which produces a pulsating voltage varying periodically at a relatively slow rate. This voltage is applied to the pulse generator and serves to modulate the frequency of the pulse generator at the same rate. The accompanying harmonics of the pulse generator are also modulated but at a correspondingly high rate lying within the audio bandwidths of each receiver channel. Inserted between the power supply generator and the pulse generator is a time constant network which permits the supply voltage to vary exponentially during each power supply period. In this way, the frequency deviation of the pulse generator is controlled.

3,605,023
FREQUENCY DIVIDER

Arthur Jonathan Kline, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 11, 1969, Ser. No. 849,216
Int. Cl. H03b *19/00*
U.S. Cl. 328—25 **7 Claims**

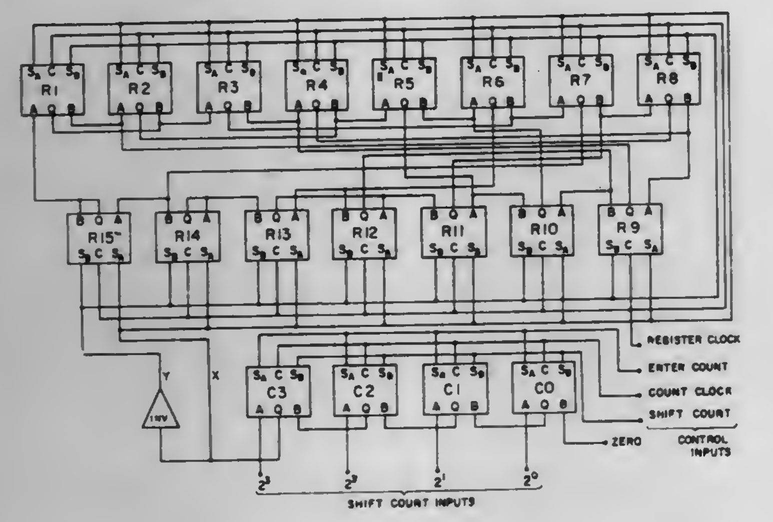


A frequency divider is disclosed which comprises one divide-by-two divider or a plurality of cascaded divide-by-two dividers. The input of the divide-by-two divider or of the cascaded divide-by-two dividers is through a balanced modulator. The output of the divide-by-two divider or of the cascaded divide-by-two dividers which is the output of the disclosed frequency divider is fed back to the other input of the modulator.

3,605,024
APPARATUS FOR SHIFTING DATA IN A LONG REGISTER

Kenneth E. Batcher, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed June 1, 1970, Ser. No. 42,186
Int. Cl. G11c *19/00*
U.S. Cl. 328—37 **5 Claims**

An improved shift register and interconnection of components related thereto is provided. With just two sets of connections between stages of a shift register of length 2^n-1 where n is a positive integer, any end-around shift can be performed with n shift pulses. Modifications of the apparatus allow any register length with a slight loss in efficiency.



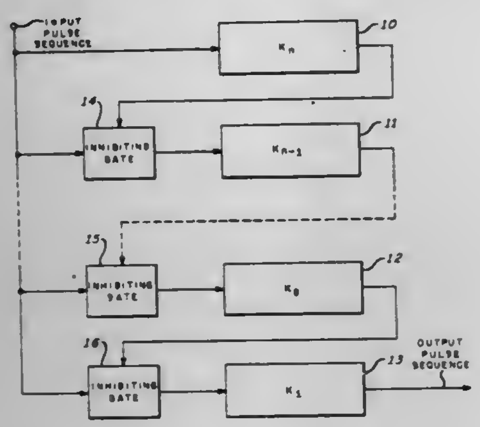
3,605,025
FRACTIONAL OUTPUT FREQUENCY-DIVIDING APPARATUS

Andrew James Lincoln, Concord, and Shimon Even, Cambridge, both of, Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed June 30, 1969, Ser. No. 837,666

Int. Cl. H03k *21/36*

U.S. Cl. 328—48 **3 Claims**



Apparatus for dividing the pulse repetition frequency of a pulse sequence by multiplying the frequency thereof by a rational fraction having a value less than unity. The apparatus comprises a plurality of pulse repetition frequency dividers, one of which is directly responsive to the pulse sequence and the others of which are responsive thereto via a plurality of respectively associated inhibiting gates. The dividers and the gates are alternately concatenated such that the pulse signal provided by each divider inhibits conduction of one input pulse to the next following divider.

3,605,026
APPARATUS FOR PROVIDING A PULSE TRAIN HAVING A MEAN FREQUENCY PROPORTIONAL TO A DIGITAL NUMBER

Keith Romilly Roskrudge Bowden, Bognor Regis, England, assignor to Rosemount Engineering Company, Ltd., Bognor Regis, England

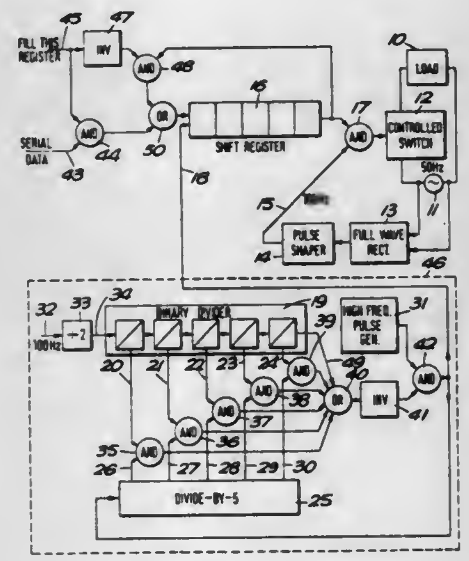
Filed July 14, 1969, Ser. No. 841,242

Claims priority, application Great Britain, July 17, 1968, 34028/68

Int. Cl. H03k *1/16*

U.S. Cl. 328—63 **11 Claims**

The apparatus provides a series of output pulses having a mean frequency in accordance with a digital input; such pulses may be used for controlling power, e.g. discrete cycles or half cycles of AC power, fed to a load. The digital number is put in a recycling storage medium, e.g. a shift register or delay line and, in one arrangement, a gate is arranged to pass or not pass a pulse from a pulse train according to one selected digit in each cycle of the storage medium, each digit being selected, during a given time interval, for a number of times corresponding to the significance of the digit. With a shift register, it is more convenient to control the shifting by shift pulses such that each digit is put in an output stage, to control a gate, for a number of times in given time interval proportional to the significance of the digit.



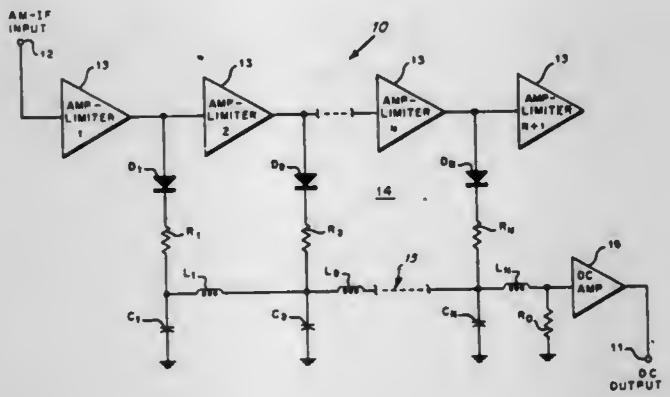
3,605,027
LOG AMPLIFIER

Daniel R. Nichols, Linthicum Heights, and John O. Wedel, Baltimore, both of, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 19, 1969, Ser. No. 800,918

Int. Cl. G06g *7/24*

U.S. Cl. 328—145 **2 Claims**



A log intermediate-frequency amplifier in which a voltage feedback circuit is used between the output and the input of a summing DC amplifier to provide a substantially low effective input impedance for the DC amplifier to eliminate the error caused by the possibility of back biasing of detector stages comprising part of the composite log amplifier.

3,605,028
CIRCUIT ARRANGEMENT FOR THE MULTIPLICATION OF TWO VARIABLES

Jakob de Vries, Allenwinden, Switzerland, assignor to Landis & Gyr, A.G., Zug, Switzerland

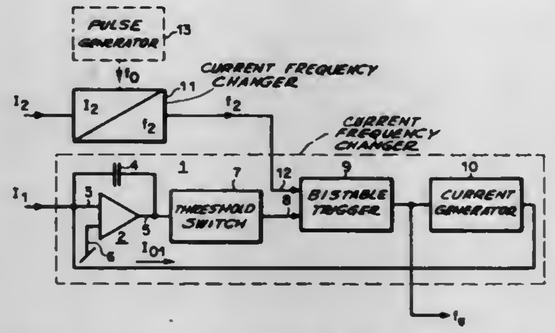
Filed Jan. 27, 1970, Ser. No. 6,202

Claims priority, application Switzerland, Jan. 30, 1969, 1402/69

U.S. Cl. 328—160 **10 Claims**

The invention relates to a circuit arrangement for multiplying two values, particularly for forming the product of

current and voltage, in order to measure real output, comprising a current frequency changer, which generates a sequence of output pulses at a pulse sequence frequency proportional to the product and which has an operational amplifier, the input of which is coupled to the output via a capacitor, a pulse produced by a current generator being supplied to the operational amplifier when a threshold switch downstream of the latter responds.



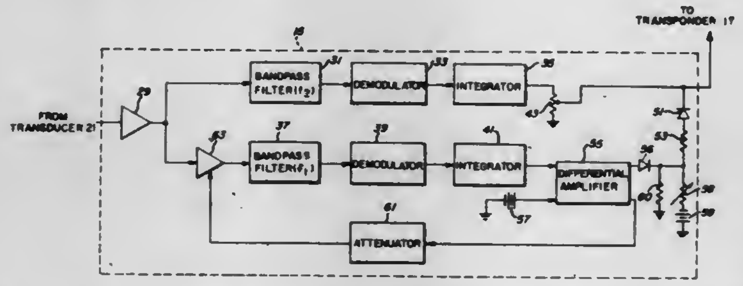
3,605,029
SIGNAL DETECTION APPARATUS

Nathan Freedman, West Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed June 30, 1969, Ser. No. 837,627

Int. Cl. H04b *15/00*

U.S. Cl. 328—167 **2 Claims**



A receiver for use in a system in which randomly varying target-indicating signals from a transducer are detected in the presence of noise signals which may vary in amplitude between wide limits. Advantage is taken of the fact that the spectrum of frequencies of randomly varying target-indicating signals differs from the spectrum of frequencies of noise signals. Therefore, by appropriately multiplexing and filtering the signals from a transducer, separate signals proportional, respectively, to the root mean square value of noise signals and target-indicating signals may be derived and compared to produce an output signal which changes from one level to another when target-indicating signals are present.

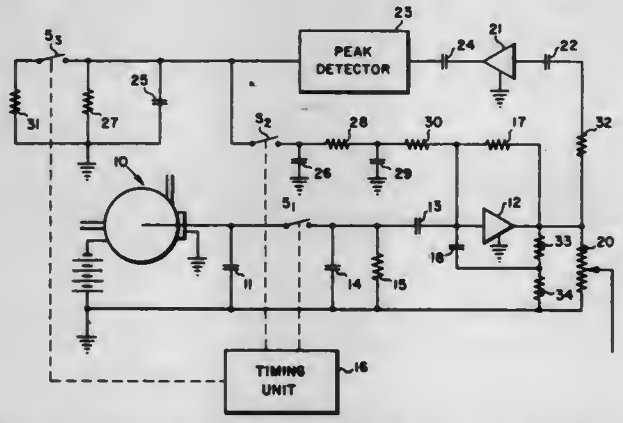
3,605,030
HIGH SENSITIVITY AMPLIFIER WITH PEAK DETECTOR AND STORAGE MEANS

Marshall D. Elmore, Norwalk, Calif., assignor to Beckman Instruments, Inc.

Filed June 26, 1967, Ser. No. 648,765

Int. Cl. H03k *9/00;* **H03f** *3/68*

U.S. Cl. 329—104 **10 Claims**



A high sensitivity electrometer employing a capacitor to accumulate an electronic charge over a relatively long period and a first switch for coupling the charge to an operational amplifier over a short period. An inverting capacitively coupled amplifier drives a storage circuit comprising a peak detector and memory capacitor. A second switch synchronized with the first switch couples the storage circuit to the operational amplifier through a filter network to apply the stored peak voltage in the memory capacitor as a direct coupled electrometer input signal.

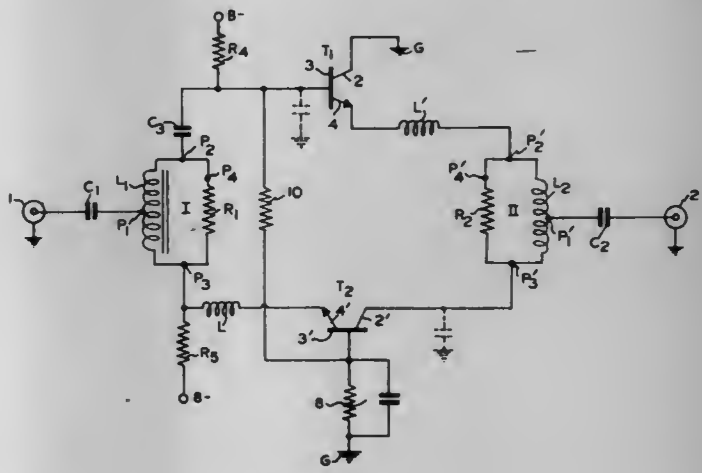
3,605,031
WIDE-BAND LOW-DISTORTION ALTERNATING CURRENT AMPLIFIER

Ben H. Tongue, West Orange, N.J., assignor to Blonder-Tongue Laboratories, Inc., Newark, N.J.

Filed Sept. 4, 1969, Ser. No. 855,323

Int. Cl. H03f *3/68;* **H01p** *5/12*

U.S. Cl. 330—30 **5 Claims**



This disclosure deals with a wide-band low-distortion alternating current amplifier employing input and output hybrid couplers interconnected by two paths, one containing a grounded collector transistor circuit and the other a grounded base transistor circuit, or similar functioning circuits as employed with other types of electron relay devices.

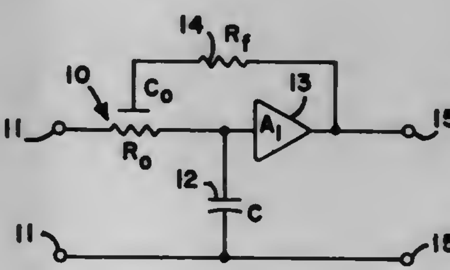
3,605,032
ACTIVE RC NETWORKS

William J. Kerwin, Sunnyvale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Continuation-in-part of application Ser. No. 714,295, Mar. 19, 1968, now abandoned. This application May 4, 1970, Ser. No. 31,885

Int. Cl. H03f *1/36*

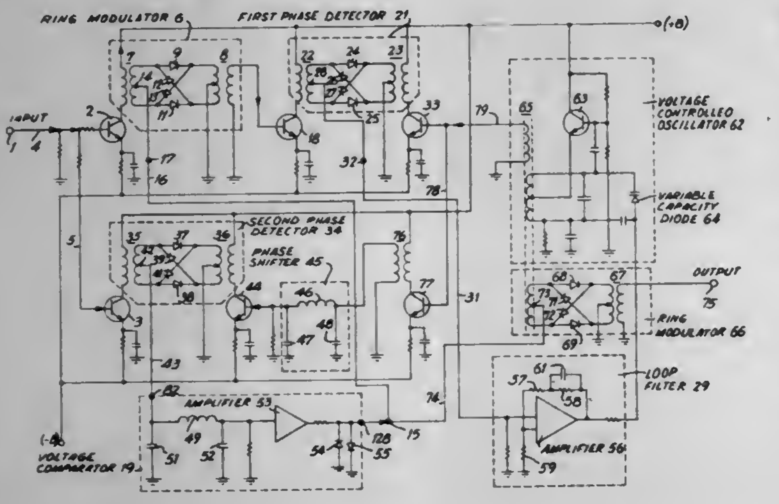
U.S. Cl. 330—107 **7 Claims**



An active RC network formed by a voltage amplifier, a passive RC input circuit for the amplifier which circuit includes a distributed RC element, and a provision for positive feedback from the output of the amplifier to the input circuit. In one embodiment, a lumped capacitor is connected in shunt with the voltage amplifier whereby a pole of the network transfer function can be located at any desired position farther from the origin than a zero of the function. Another embodiment includes a lumped resistor, which is connected in shunt with the voltage amplifier, whereby a pole can be located at any desired position closer to the origin than the zero. In another embodiment, a pole is located simply by proper selection of the amplifier gain and the parameters of the distributed element; also the amplifier gain is always less than unity in this embodiment so that a very simple oscillator may be provided by location of the pole on the imaginary axis of the impedance plane. Still further embodiments provide for the distributed element to be advantageously divided into a plurality of sections. In view of the reduced gain requirements of the networks of this invention, the voltage amplifier may in many cases be a simple emitter follower, and an example of a network with such an amplifier is described. The networks may be connected in cascade to contribute separate factors in an overall response, and an example of the use of such cascaded networks to obtain a low-pass filter response is described.

3,605,033
PHASE-CONTROLLED OSCILLATOR FOR PRODUCING A STABILIZED PHASE OUTPUT

Hiroshi Nakamura, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed May 4, 1970, Ser. No. 34,210
Claims priority, application Japan, May 7, 1969, 44-35041
Int. Cl. H03b *3/04*
U.S. Cl. 331—12 **7 Claims**

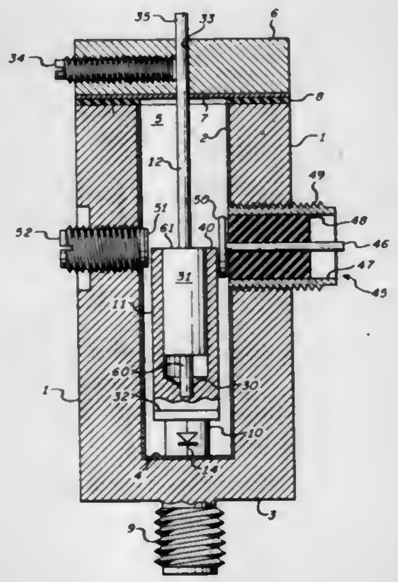


A phase-controlled oscillator has a loop comprising phase-detecting means, a loop filter connected to the phase-detecting means and a voltage-controlled oscillator connected to the phase-detecting means and the loop filter. The phase-detecting means compares an input signal with the output signal of the voltage-controlled oscillator. The phase-detecting means comprises a first phase detector coupling input means to the voltage-controlled oscillator. A second phase detector has a comparison phase which differs from that of the first phase detector by $\pi/2$ radians. The second phase detector is coupled to the input means. A voltage comparator coupled to the second phase detector discriminates the polarity of the output of the second phase detector. An inverter coupled to the first phase detector, to the voltage comparator and to the input means inverts the phase of the output of the first phase detector in accordance with the output of the voltage comparator and shifts the phase of the output of the phase-controlled oscillator by π radians in accordance with the output of the voltage comparator.

3,605,034
COAXIAL CAVITY NEGATIVE RESISTANCE AMPLIFIERS AND OSCILLATORS

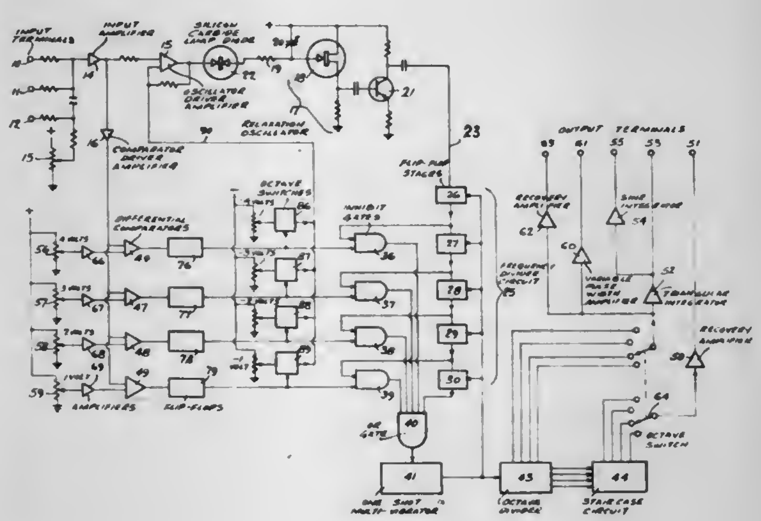
Charles T. Rucker, Clearwater, and John W. Amoss, Jr., Dunedin, both of, Fla., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,725
Int. Cl. H03b *7/14*
U.S. Cl. 331—56 **21 Claims**

A semiconductor diode interiorly coupled to fields within a coaxial line cavity resonator serves as a negative resistance device, amplifying the high frequency fields present within the cavity. The combination forms a single port microwave amplifier or oscillator. A simple resistor, placed in the diode bias circuit in series with the diode, eliminates spurious modes of high frequency oscillation within the cavity.



3,605,035
VOLTAGE-CONTROLLED EXPONENTIAL OSCILLATOR

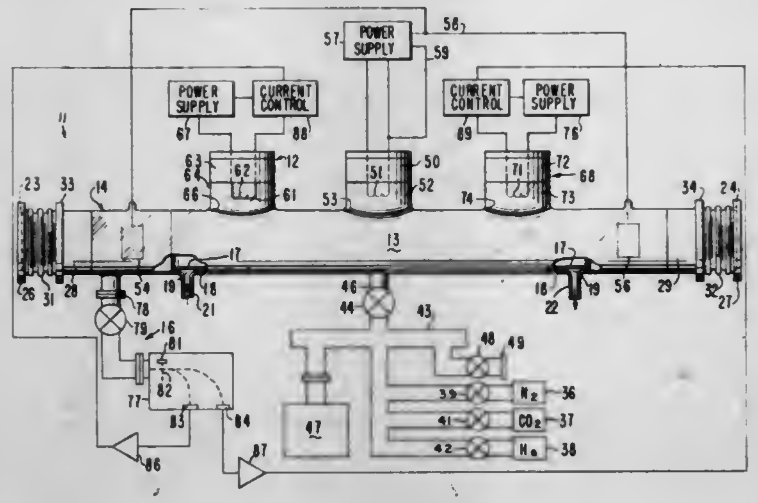
David O. Rocheleau, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada
Filed Mar. 27, 1970, Ser. No. 23,399
Int. Cl. H03b *3/04;* **H03k** *3/26*
U.S. Cl. 331—61 **4 Claims**



An accurate exponential characteristic is obtained by employing as a diode a silicon carbide lamp having a low temperature coefficient, and by restricting the frequency of the oscillator itself to one octave, the necessary wide range of output frequencies being obtained in a frequency divider. The oscillator is automatically biased to reset it repeatedly to the bottom of its restricted frequency range, as the input continues to rise, such resetting being coordinated with selection of the appropriate frequency range of the frequency divider in order that the output should continue to advance in frequency with the input voltage.

3,605,036
METHOD AND APPARATUS FOR THERMOCHEMICALLY CONTROLLING THE GAS ATMOSPHERE OF A GAS COHERENT RADIATION GENERATOR

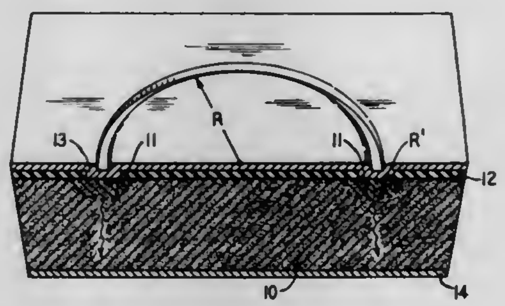
Bruce E. Barnaby, Belmont, Calif., assignor to Laser Sciences, Inc., Bethel, Conn.
Filed Oct. 17, 1967, Ser. No. 675,983
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **17 Claims**



$CaCO_3$ is located inside the optical cavity of a CO_2 gas laser and is maintained at 680° C. to evolve CO_2 to replenish the gas atmosphere of the laser with CO_2 during operation. Titanium is located inside the optical cavity and is maintained at a temperature in the range of 700 to 900° C. to preferentially getter CO gas formed in the gas atmosphere of the laser during operation.

3,605,037
CURVED JUNCTION LASER DEVICES

Lucian A. D'Asaro, Madison, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed May 2, 1969, Ser. No. 821,282
Int. Cl. H01s *3/18*
U.S. Cl. 331—94.5 **7 Claims**

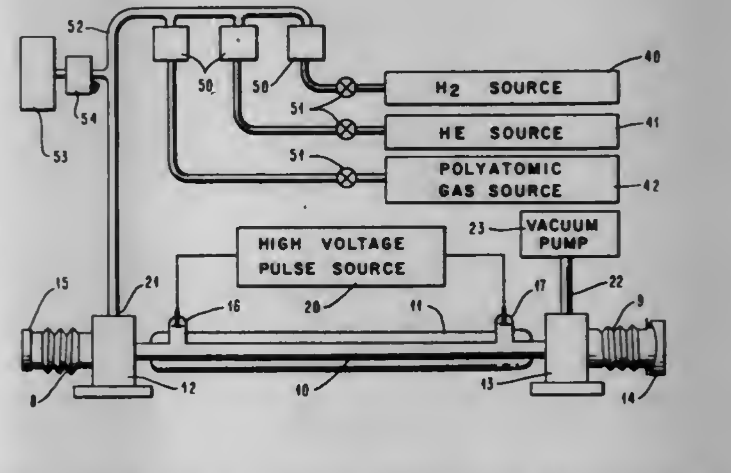


The specification describes an injection-type laser device in which the junction is formed in a curved configuration to form a ring or semiring shaped cavity. The radius of curvature of the ring must exceed a critical minimum for sustained laser oscillations.

3,605,038
POPULATION INVERSION AND GAIN IN MOLECULAR GASES EXCITED BY VIBRATIONALLY EXCITED HYDROGEN

Francis T. Byrne, and Carl F., both of Shelton, Silver Spring, Md., assignors to International Business Machine Corporation, Armonk, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,411
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 **12 Claims**

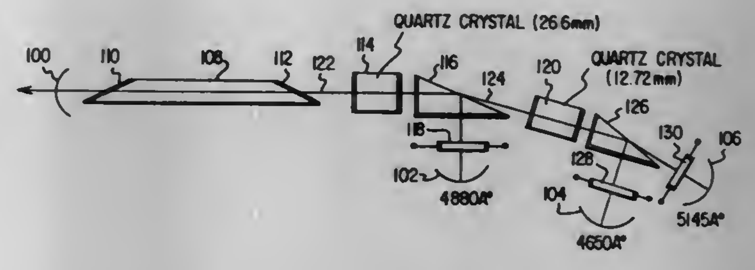
Population inversion and optical gain is obtained from a gaseous mixture which includes vibrationally excited hydrogen, helium, and a polyatomic molecular gas which has a resonant energy level near the first vibrational energy level of hydrogen, and which has allowed transitions to an intermediate vibrational level lying between the resonant level and the ground state.



Coherent infrared emission is observed when the gaseous system is excited in a laser system.

3,605,039
MULTICOLOR LASER FREQUENCY SELECTOR

Thomas J. Harris, Poughkeepsie, N.Y., and Max Erhard, Baden-Wurttemberg, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 564,948, July 13, 1966. This application Nov. 20, 1969, Ser. No. 871,708
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **8 Claims**

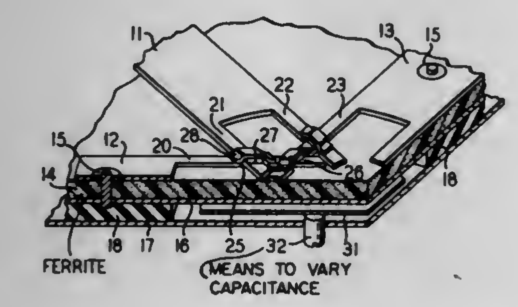


A laser cavity is formed by a partially transmissive output mirror and a plurality of reflecting mirrors. An ionized gas laser having Brewster angle windows is placed in the cavity. Spaced from one of the windows is a polarizing quartz crystal, the faces of which are coated with antireflective coatings. Adjacent to the quartz crystal is a right triangular birefringent prism having antireflecting coatings on two of its faces. The combined effect of the crystal and the prism is to disperse one laser wavelength along a path through an electro-optical crystal to a reflecting mirror. In addition, other laser wavelenths are transmitted to another quartz crystall and another birefringemt crusta; wjpse cp,bomed effect is to disperse a second laser wavelength along a path through an electroOoptical crystal to another reflecting mirror. Other laser wavelengths are transmitted by the second birefringent crystal to another quartz crystal and birefringent crystal and from there additional respective electro-optical crystals and mirrors. When none of the electro-optical crystals is energized, the laser output beam will contain those wavelengths incident on the several mirrors. All other wavelengths capable of being generated by the laser are suppressed because of the losses introduced by the action of the quartz crystal and birefringent crystals. One or more of the several wavelengths may be removed from the laser beam by energizing the corresponding electro-optical crystal.

3,605,040
Y-JUNCTION CIRCULATOR WITH COMMON ARM CAPACITOR

Reinhard H. Knerr, Allentown, and Daniel J. Thibault, Whitehall, both of, Pa., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Nov. 3, 1969, Ser. No. 873,372
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **5 Claims**

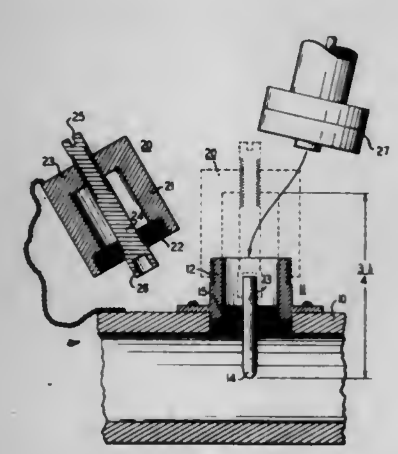


A Y-junction strip line circulator of the lumped constant type in which a single, common capacitor tunes symmetrically with the inductance of all three circulator arms. The capacitor may be fixed or may be electrically or mechanically variable to tune, adjust or switch the circulator.

3,605,041
PERMANENT WAVEGUIDE CONNECTION FOR OCCASIONAL USE

Robert W. Judkins, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 31, 1969, Ser. No. 889,397
Int. Cl. H01p *1/16, 5/08, 7/06*
U.S. Cl. 333—9 **3 Claims**



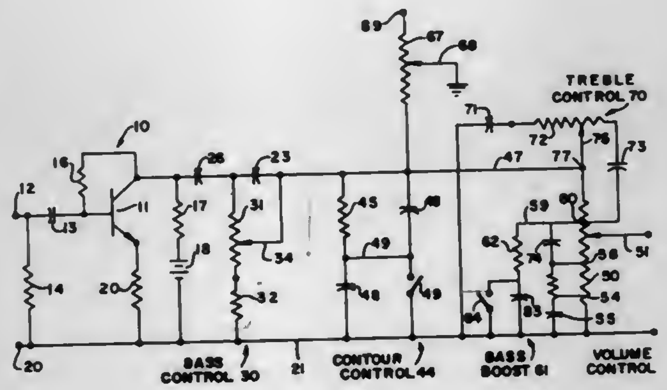
A coaxial coupling for connecting a test or other incidental signal with a waveguide by means of a probe within the guide is provided with a cavity forming cap so that when the connection is not in use and the cap is in place, the cap together with the probe forms a quarter wavelength shorted stub which renders the probe electrically invisible within the waveguide.

3,605,042
TREBLE CONTROL CIRCUIT

Earl E. Rapp, Decatur, Ill., assignor to General Electric Company

Filed Dec. 22, 1969, Ser. No. 887,114
Int. Cl. H03h *7/06, 7/10*
U.S. Cl. 333—28 T **6 Claims**

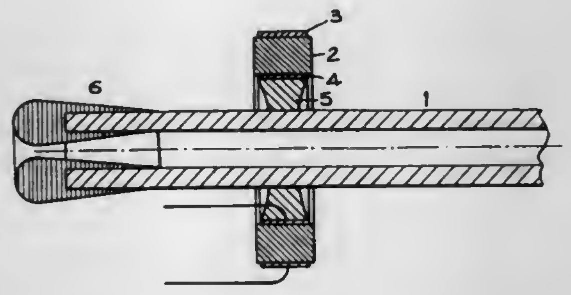
A treble tone control circuit in an audio amplifier comprising the series arrangement of a first capacitor connected to one of a pair of circuit input leads, a treble control potentiometer, and a second capacitor connected between the treble control potentiometer and a point on the volume control potentiometer of the amplifier. The wiper on the treble control potentiometer is connected to the other circuit input lead and a third capacitor is connected between the same point on the volume control potentiometer to which the second capacitor is connected and a second point on the volume control potentiometer. This circuit provides an increased treble cut with little or no midband attenuation and a greater maximum treble cut as the treble compensation circuit is progressively disabled.



3,605,043
DISPERSIVE DELAY LINE WITH TUBULAR SECTION

Georges Bienvenu; Pierre Tournois, and Jean Louis Vernet, all of Paris, France, assignors to CSF Compagnie Generale de Telegraphie Sans Fil

Filed Mar. 21, 1968, Ser. No. 714,982
Claims priority, application France, Mar. 29, 1967, 100665
Int. Cl. H03h *7/30, 9/30;* **H01v** *7/00*
U.S. Cl. 333—30 **11 Claims**

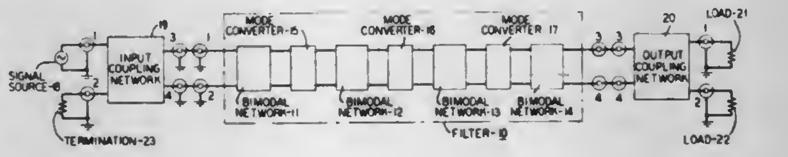


A dispersive delay line with a tubular waveguide wherein are axially propagated waves of sonic or ultrasonic energy corresponding both to shear and compressional modes; suitable transducers are provided at the ends of the waveguide for exciting and collecting said waves.

3,605,044
FILTER STRUCTURES USING BIMODAL, BISYMMETRIC NETWORKS

Harold Seidel, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Nov. 18, 1968, Ser. No. 776,398
Int. Cl. H03h *7/10*
U.S. Cl. 333—73 R **8 Claims**

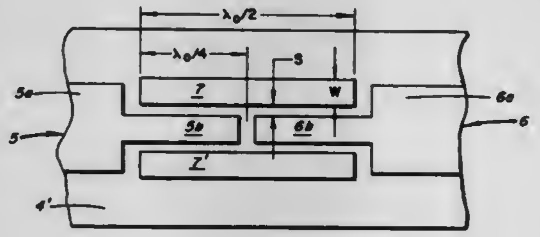


A variety of filter structures are synthesized by means of a cascade of bimodal networks. By including mode converters between adjacent pairs of networks, successive networks can be made to respond to one or the other of said modes. A transmission line filter and a coupler (channel dropping) filter are described.

3,605,045
WIDE-BAND STRIP LINE FREQUENCY-SELECTIVE CIRCUIT

Alan J. Ramsbotham, Jr., Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 15, 1969, Ser. No. 791,322
Int. Cl. H03h *7/04, 7/08;* **H01d** *3/08*
U.S. Cl. 333—73 S **10 Claims**

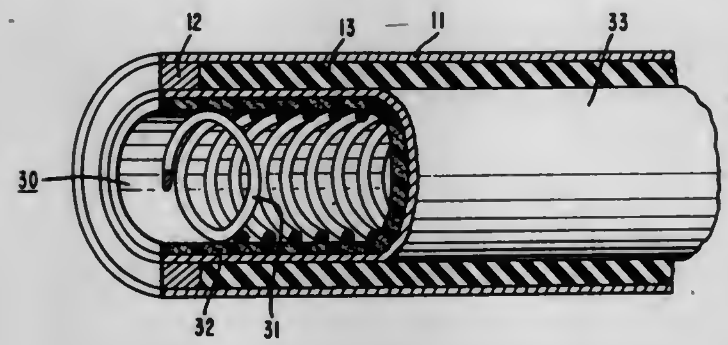


A wide-band frequency-selective microwave circuit having ground planes, dielectric layers, and conductive strip sections. The conductive strip sections are in the same plane and juxtaposed to each other to form resonant circuit elements.

3,605,046
DEFLECTION-FREE WAVEGUIDE ARRANGEMENT

Stewart E. Miller, Middletown Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Mar. 12, 1969, Ser. No. 806,663
Int. Cl. H01p *1/04, 3/12, 11/00*
U.S. Cl. 333—95 **3 Claims**



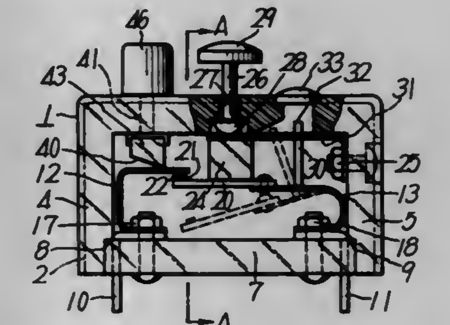
A waveguide transmission line comprising a series of sections, each section comprising a section of waveguide disposed within a section of a larger diameter rigid jacket and bound, under tension, at both ends of the jacket. This structure is used to substantially eliminate deflections in short sections of the waveguide. Advantageously, the space between the waveguide and the jacket is filled with a flexible material such as rubber or plastic foam to prevent sag due to gravitational force.

3,605,047
AUTOMATIC CIRCUIT BREAKER WITH MAGNETIC LATCHING MEANS

Yasuo Kasahara, Tokyo, Japan, assignor to Kabushiki-Kaisha Nakatani, Tokyo, Japan

Filed July 6, 1970, Ser. No. 52,847
Claims priority, application Japan, July 15, 1969, Dec. 8, 1969, 44/56270;44/98500
Int. Cl. H01h *9/16*
U.S. Cl. 335—1 **4 Claims**

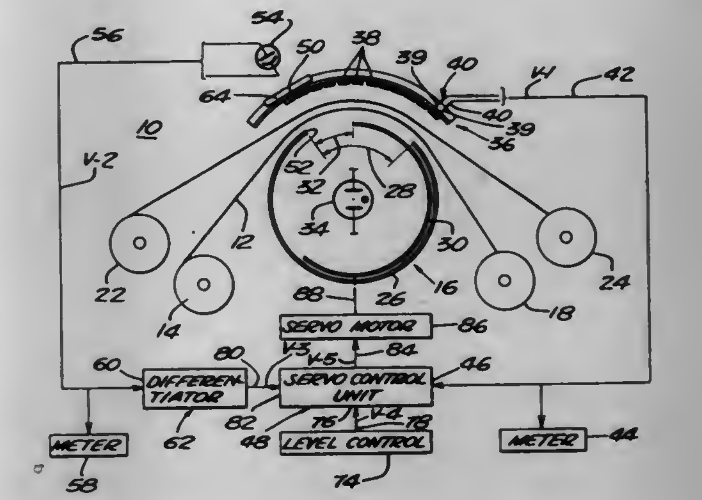
A compact circuit protector comprises first and second conductive leaf springs secured in a casing at their one ends, which are held in contact with first and second terminals leading to the exterior of the casing. The leaf springs are bent toward each other, and a conductive, magnetic plate is secured to the second leaf spring and extend between the free ends of the leaf springs. First and second contacts are mounted on the free ends of the first leaf spring and the conductive, magnetic plate in opposing relationship. A permanent magnet carried by a third spring is arranged adjacent the magnetic plate to attract and hold it magnetically, thereby keeping the both contacts in engagement. An overcurrent through the magnetic plate across the terminals diminishes the magnetic attraction to move the plate away from the magnet by the resilience of the second leaf spring, providing the circuit interruption.



3,605,048
EXPOSURE CONTROL DEVICE FOR PHOTOGRAPHIC FILM PRINTERS

Ralph N. Sargent, III, Westwood, Calif., assignor to Michael H. Werner, Los Angeles, Calif.

Filed Aug. 29, 1968, Ser. No. 756,103
Int. Cl. G03b *27/78*
U.S. Cl. 355—83 **15 Claims**



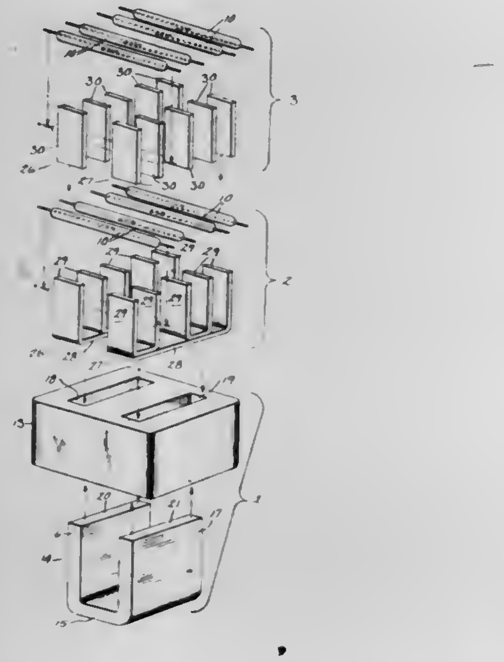
A photographic film printer which includes a sensor assembly for monitoring light energy projected in series through segments of a pair of films. Light energy for exposing the print film is emitted through a light output printing aperture of adjustable width, as the film segments are drawn over the printing aperture. The sensor assembly includes a baffle plate positioned adjacent to and in alignment with the light output printing aperture. A plurality of light sensors are mounted on the baffle plate so that the sensors are aligned substantially across the maximum adjustable width of the printing aperture. A light detector assembly is also mounted on the baffle plate, and the light detector responds to light energy transmitted through a section of the printing aperture adjacent to a leading edge thereof. Control means respond to signals produced by the light sensors and the detector to adjust the width of the printing aperture as a preselected function of the printing light energy exposing the film print.

3,605,049
SEALED CONTACT RELAY

Wayne H. Wielebski, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

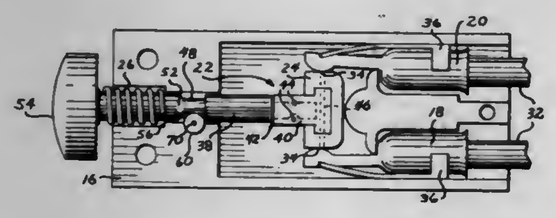
Filed Jan. 12, 1970, Ser. No. 2,023
Int. Cl. H01h *50/04, 50/08, 50/40, 51/28*
U.S. Cl. 335—152 **9 Claims**

A sealed contact relay has a plurality of sealed switches each enclosed in a modular cartridge. The relay structure has a U-shaped yoke made of magnetic material with two coils, one surrounding each leg of the yoke. A set of spaced magnetic flux fingers extend from the end of each leg of the yoke and in the same general direction. The cartridges are removably mounted between the spaced flux fingers of each set and bridge across the magnetic gap between the two sets of flux fingers. An indicator cap is attached to the top of the relay having a pivotally mounted indicator arm which swings away from a spring-biased position when the coils are energized. In another embodiment, a manual actuator is provided and has a magnet that can be moved into magnetic contact with the flux fingers to cause flux to flow in either direction through them.



3,605,050
QUICK-ACTING, SAFETY DISCONNECT ELECTRICAL SWITCH

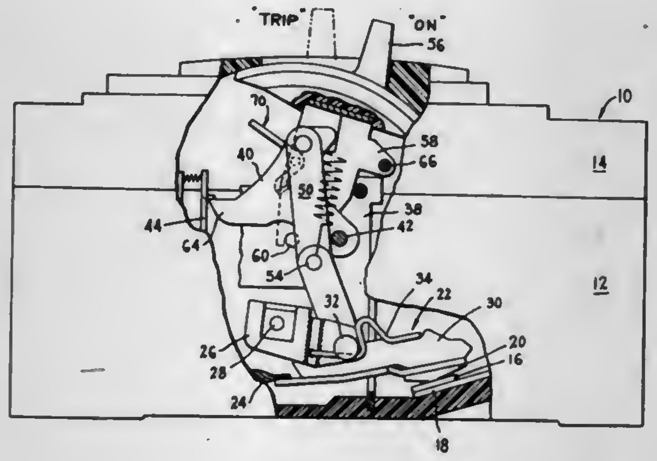
Wayne E. Goldman, Lexington, and Edward D. Winkler, Reading, both of, Mass., assignors to Anderson Power Products, Inc., Boston, Mass.
Filed Apr. 3, 1970, Ser. No. 26,521
Int. Cl. H01h *9/20*
U.S. Cl. 335—164 **8 Claims**



A quick-acting electrical switch which provides a positive means for disconnecting relatively high currents in a single conductor. Circuit connection is made between two switch contacts by a reciprocally movable, spring-loaded bridging assembly. When the bridging assembly is pushed into the "-Current ON" position, it is locked in position by a trigger-actuated latching mechanism. The bridging assembly will snap to the "Current OFF" position when the trigger is actuated either mechanically or by means of a solenoid. In the preferred embodiment, the latch mechanism engaging portion of the bridging assembly is free to rotate with respect to the latching mechanism to provide wear equalization. A plurality of the quick-acting switches can be stacked together with a common trigger for multiple pole requirements.

3,605,051
AVOIDANCE OF SWITCHING DEVICE FALSE OFF HANDLE INDICATION

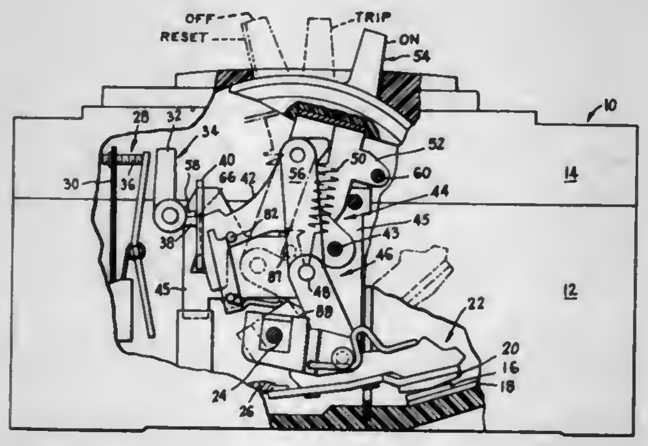
Robert T. Casey, Southington, and Keith W. Klein, Simsbury, both of, Conn., assignors to General Electric Company
Filed Jan. 22, 1970, Ser. No. 4,835
Int. Cl. H01h *3/20*
U.S. Cl. 335—166 **4 Claims**



Auxiliary trip device usable with an electrical switching apparatus having a movable contact arm, an operating mechanism including a releasable cradle for moving the contact arm between open and closed circuit positions, and a manually actuatable handle operably connected to the operating mechanism and automatically movable to a trip position upon release of the cradle. The auxiliary trip device is movable responsive to movement of the handle toward OFF position for tripping the cradle when the contact arm is in closed circuit position for avoiding a false OFF handle indication.

3,605,052
AVOIDANCE OF SWITCHING DEVICE FALSE OFF HANDLE INDICATION

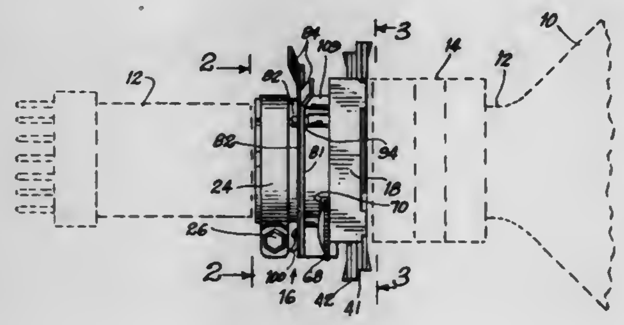
Herbert M. Dimond, West Hartford, and Keith W. Klein, Simsbury, both of, Conn., assignors to General Electric Company
Filed Jan. 22, 1970, Ser. No. 4,942
Int. Cl. H01h *3/20*
U.S. Cl. 335—166 **7 Claims**



Switching apparatus having an operating mechanism including a releasable trip member or cradle for automatically opening relatively movable contact means, a manually actuatable handle movable between ON, OFF, and RESET positions for manually closing and opening the contact means and for resetting the cradle in a latched position and means preventing movement of the handle to the OFF or RESET positions when the contact means is in closed circuit position, to preclude a false OFF handle indication.

3,605,053
CONVERGENCE- AND PURITY-ADJUSTING DEVICE FOR COLOR TELEVISION PICTURE TUBE

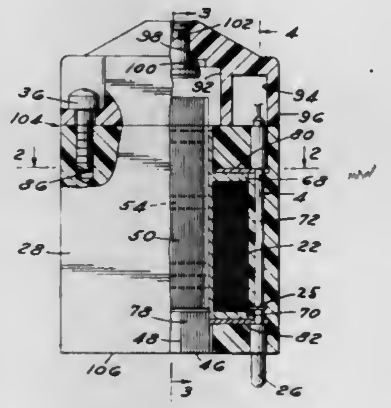
Albert M. Anthony, Conneaut, Ohio, assignor to Tracor, Inc., Austin, Tex.
Filed Aug. 27, 1969, Ser. No. 853,387
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **18 Claims**



The convergence- and purity-adjusting device has a body adapted to be mounted around the neck of a color television picture tube. First and second slides are mounted on the body for movement in a direction perpendicular to the axis of the picture tube. Each slide carries three permanent magnets. The magnets on the two slides are mounted in corresponding positions, but are oppositely polarized. A drive is provided to move the slides in opposite directions. Such drive comprises a pinion rotatably mounted on the body. Racks are provided on the slides and are arranged to engage opposite sides of the pinion. A control knob is connected to the pinion. The purity-adjusting rings are mounted on posts, projecting from the body.

3,605,054
ENCAPSULATED ALTERNATING CURRENT SOLENOID

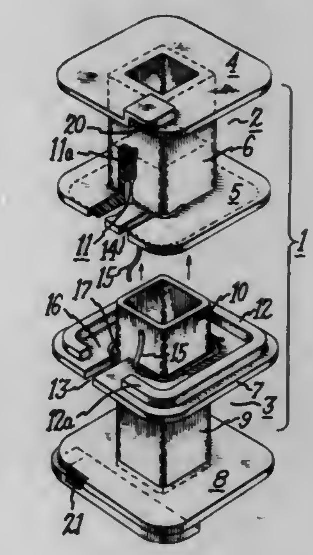
Louis R. Conrath, Lathrup Village, Mich., assignor to Detroit Coil Company, Ferndale, Mich.
Continuation-in-part of application Ser. No. 854,691, Sept. 2, 1969. This application Apr. 7, 1970, Ser. No. 26,241
Int. Cl. H01f *7/10*
U.S. Cl. 335—243 **14 Claims**



This disclosure relates to alternating current solenoids of the commercial industrial type, including a C-stack, a solenoid coil disposed within the C-stack and a plunger having a shank portion received within the coil passage, and wherein the conventional sideplates, baseplate, cover, backstop, assembly bolts or rivets and even the flanged coil bobbin may be eliminated. The C-stack and coil are encapsulated in a thermosetting resin block extending from the bight portion to the pole faces of the C-stack and between the C-stack and the coil, and the pole faces of the C-stack are exposed to allow abutment by the plunger. A cap encloses the operating spaced for the plunger head at the pole faces of the C-stack and is secured to the thermosetting resin block providing a completely enclosed solenoid unit. Vacuum encapsulation may be facilitated by utilizing an encapsulating cup which forms an integral part of the final product. The coil assembly is shown as having means for retaining, during the encapsulated process, electric terminals which are exposed in the final product for connecting the coil to a source of current.

3,605,055
TWO-PIECE WINDING BOBBIN FOR WATT-HOUR METER POTENTIAL COIL

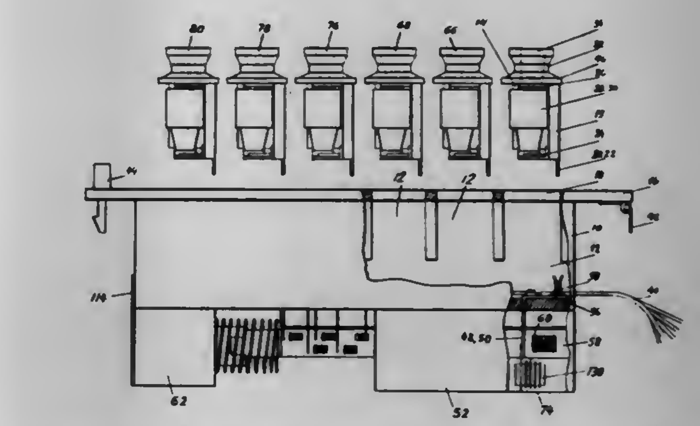
James J. Grady, Somersworth, N.H., assignor to General Electric Company
Filed July 2, 1970, Ser. No. 52,021
Int. Cl. H01f *27/30*
U.S. Cl. 336—185 **16 Claims**



A winding bobbin for a watt-hour potential coil is formed of two flanged spools that are fitted together to make a unitary bobbin assembly. The two-piece bobbin arrangement is characterized by incorporating an insulated chamber between the adjacent spools when they are in their assembled position, thereby to afford an insulated passageway for connecting the respective electromagnetic coils wound on the two spools in a manner such that the voltage gradient between successive end turns of wire on each coil is reduced to approximately 50 percent of the end-turn gradient that would exist on a single-coil bobbin having an equal number of turns on its supported coil.

3,605,056
SWITCH PROTECTING DEVICE

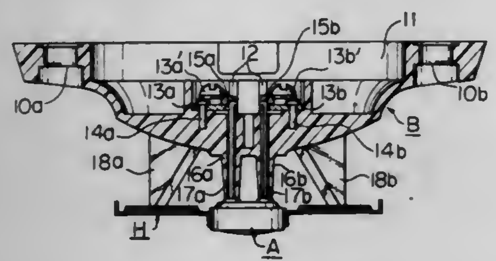
Kurt Tage Lennart Bergman, Sundsvall, Sweden, assignor to David O. Hagglund, Stockholm, Sweden
Filed June 4, 1968, Ser. No. 734,484
Claims priority, application Sweden, June 5, 1967, 7811/67
Int. Cl. H01h *85/56*
U.S. Cl. 337—8 **1 Claim**



A combined switch-protecting and safety device has safety fuses which can be introduced separately into openings provided in a front wall of a casing, while a rear wall extending parallel to the front wall serves as a supporting plate for switch protective means the various parts of which are mounted on the outer side of the plate.

3,605,057
HEAT DETECTION UNIT

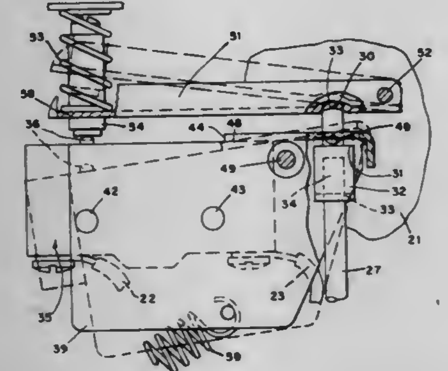
Hiroaki Mamiya, Osaka, Japan, assignor to Matsushita Denko Kabushiki Kaisha, Osaka, Japan
Filed Nov. 21, 1969, Ser. No. 878,858
Claims priority, application Japan, Nov. 25, 1968, Nov. 29, 1968, 102655/68;102656/68
Int. Cl. H01h *37/04*, *37/52*
U.S. Cl. 337—380 **3 Claims**



A heat detection unit including in a sealed block a contact assembly connected to an electric driving circuit for fire alarm or extinguisher apparatus and adapted to be closed by self-turning or deforming action of an associated heat-sensitive bimetal element. The bimetal element is arranged to be thermally close contact with a sealing metal cap of the block having a heat-collecting plate member provided with a plurality of holes adapted to have circumferential heat collected at both surfaces of the plate and transmitted to the cap through the shortest distance.

3,605,058
ULTRA SENSITIVE THERMOSTATIC SWITCH

Frank Reingruber, 60 Main St., Bartlett, N.H.
Filed Apr. 27, 1970, Ser. No. 31,985
Int. Cl. H01h *37/04*, *37/48*
U.S. Cl. 337—386 **5 Claims**

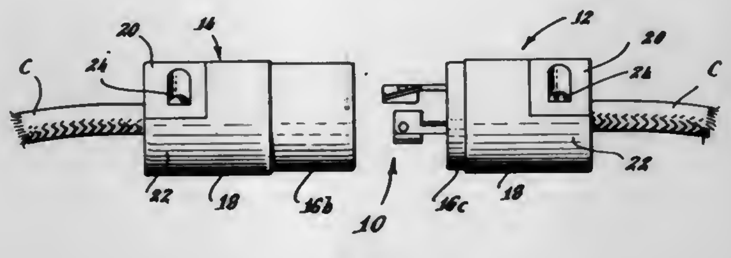


A thermostatic switch of the elongated probe, pivoted microswitch, pivoted switch arm type uses only a single probe to double the travel of the switch button away from the arm. For each degree change of temperature sensed by the probe, the switch contacts are moved double the conventional distance, thereby increasing the sensitivity of the switch.

3,605,059
BACK-WIRED ELECTRICAL CONNECTOR DEVICE

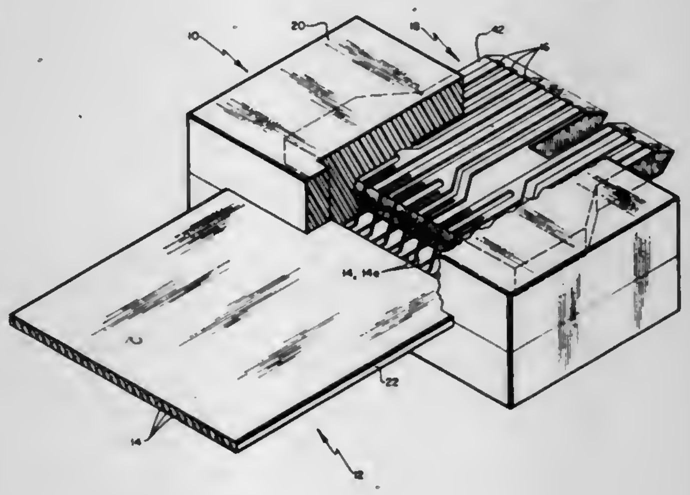
Vincent F. Lipinski, Stratford, and George A. Riley, Bridgeport, both of, Conn., assignors to Harvey Hubbell, Incorporated, Bridgeport, Conn.
Filed Dec. 24, 1968, Ser. No. 786,698
Int. Cl. H01r *3/06*, *33/72*
U.S. Cl. 339—14 L **3 Claims**

This disclosure relates to an electrical connector device having terminal-contact members with terminal portions retained in cavities in an insulator body, each terminal portion having binding plates angularly disposed with respect to the axis of the device. Angularly disposed wire entry openings are provided in the insulator body to direct wire lead ends to the binding plate wiring areas. The terminal-contact members and the insulator body are formed with keying means to provide noninterchangeability of these members in the cavities, and a protective cover is secured to the insulator body with a labyrinthian seal located between the insulator body and the protective cover to protect the wiring areas from foreign matter.



3,605,060
APPARATUS FOR TERMINATING ELECTRICAL RIBBON CABLE

Eberhardt P. Praeger, and Brian A. Wolfset, both of Framingham, Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 5, 1968, Ser. No. 750,291
Int. Cl. H01r *13/50;* **H05k** *1/04*, *3/34*
U.S. Cl. 339—17 F **14 Claims**

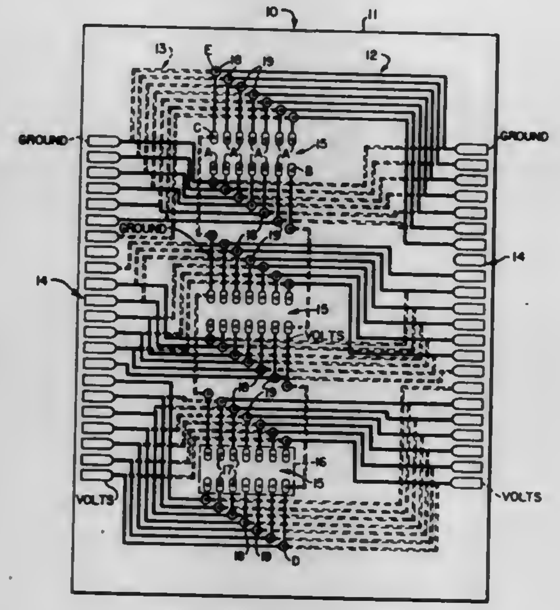


A new termination, with which a miniature ribbon cable can be connected readily to other electrical devices, has adjacent cable conductors connected without fan-out to a connector plate having contacts on opposite sides of a boardlike insulator. The cable insulation is removed from the conductors, prior to assembly of the cable with the connector plate, preferably along the entire conductor length that overlies the insulator.

3,605,061
PRINTED CIRCUIT BOARD

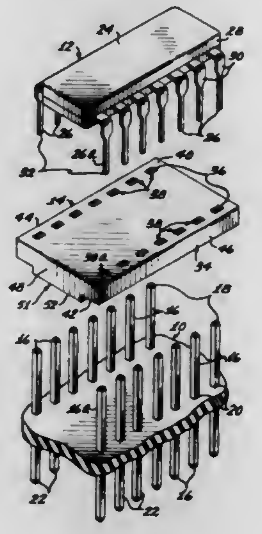
Orval J. Martin, Toledo, Ohio, assignor to The Reliance Electric and Engineering Company
Filed Sept. 9, 1968, Ser. No. 758,277
Int. Cl. H01r *13/50;* **H05k** *1/04*
U.S. Cl. 339—17 **3 Claims**

A printed circuit board and system. The board is of insulating material with circuit patterns secured to each side of the board and terminals emanating from the circuit patterns along two edges of the board. The system includes the board with a circuit or component connected by the circuit patterns to the terminals, a first connector interconnecting at least two of the terminals at one edge of the board for internal circuit or component wiring, and a second connector connected to at least two of the terminals at the other edge of the board for external wiring.



3,605,062
CONNECTOR AND HANDLING DEVICE FOR MULTILEAD ELECTRONIC ELEMENTS

William G. Tinkelenberg, and Dennis E. Rich, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.
Filed July 1, 1969, Ser. No. 838,286
Int. Cl. H01r *13/50;* **H02b** *1/06*
U.S. Cl. 339—17 CF **2 Claims**

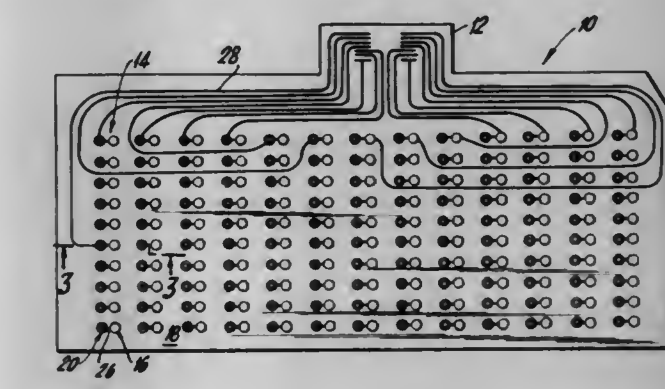


A device adapted to facilitate the handling, storage, and shipping of a multilead electronic element. The device also provides a solderless demountable connector for attaching the element to a wiring panel.

3,605,063
SYSTEM FOR INTERCONNECTING ELECTRICAL COMPONENTS

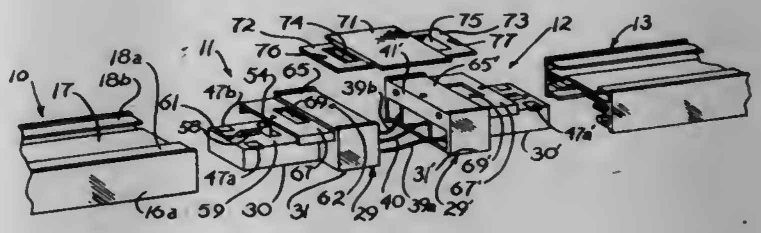
Marvin C. Stewart, 88 Harriman St., Hempstead, N.Y.
Filed Mar. 12, 1969, Ser. No. 806,407
Int. Cl. H01r *29/00*
U.S. Cl. 339—18 R **17 Claims**

A system for interconnecting electrical components. Individual components are mounted on the edge of cards having a matrix of paired conductive pads supported thereon. EAch pair of pads is electrically connected and one pad of each pair comprises a plated through hole to the other side of the card. Conductive paths provide electrical connection between the component leads and selected pairs of pads. Interconnection between components is accomplished through wiring cards which also support a matrix of paired conductive pads with one pad of the pair comprising a plated through hole to the other side of the card. Two types of wiring cards are used, one referred to as a vertical card in which all of the pad pairs in a vertical column are interconnected by conductive paths and the other referred to as a horizontal card in which all of the pad pairs in a horizontal row are interconnected by conductive paths. Alternate cards have plated through holes which are staggered. Electrical interconnection is accomplished by forming a stack of a component card, a vertical card, a horizontal card, another vertical card and another component card, compressing the stack to make electrical contact between the pad pairs of adjacent cards. Suitable electrical paths between components is accomplished by punching holes in the wiring cards to interrupt electrical connection between the pads of a pair or between pad pairs. In this manner, electricity may be conducted either through a card to the next card by means of the plated through holes or along the surface of the card by means of the conductive paths interconnecting pad pairs.



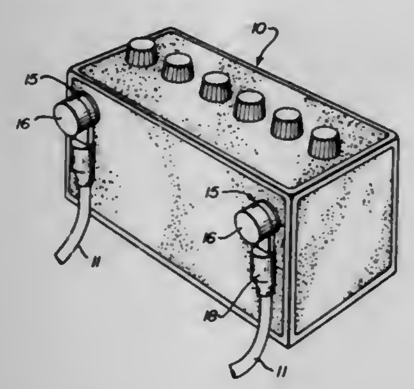
3,605,064
SPLICE BOX FOR A POWER DISTRIBUTION SYSTEM

Larry L. Routh, Castro Valley, and James Contratto, Livermore, both of, Calif., assignors to U.S. Industries, Inc., New York, N.Y.
Filed Dec. 3, 1968, Ser. No. 780,840
Int. Cl. H01r *9/02*, *13/46*, *19/54*
U.S. Cl. 339—21 R **11 Claims**



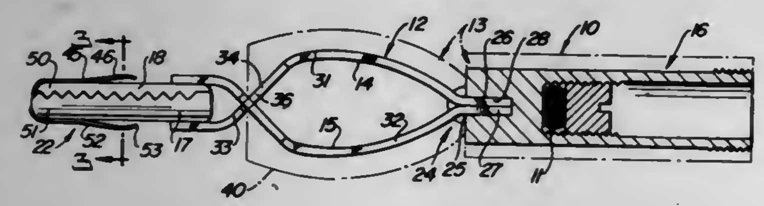
A splice box or coupler for a power distribution system of the type providing a substantially continuous convenience outlet enabling electrical plugs to be connected thereto at substantially any selected location therealong. The system includes one or more track components that provide such convenience outlet, and each such track component is equipped with a conductor assembly having a plurality of spaced-apart conductors. The splice box or coupler is connectable with such track component at an end thereof, and may be used either to join successive track components or to attach an end block or junction box thereto at which the conductors of the distribution system are connected with power supply lines. The splice box, for the purpose of establishing connection thereof with a track component, has a housing portion insertable into the end of a track component, and it is equipped with a plurality of contacts movable into engagement with the respective conductors of such track component when assembled therewith, and which contacts are selectively manipulatable to establish either a two-conductor single electric circuit or a three-conductor double electric circuit.

3,605,065
SIDE TERMINAL BATTERY ADAPTER
John K. Shannon, 6504 43rd Ave., Kenosha, Wis. 53140
Filed May 20, 1970, Ser. No. 39,077
Int. Cl. H01m *5/00*; **H01r** *11/00*
U.S. Cl. 339—28 R **6 Claims**



A side terminal battery adapter to convert a conventional installation for use with a battery having conventional terminal posts normally at the top. The adapter has a terminal clamp at one end proportioned to engage the conventional battery terminal post and is secured to an adapter cable of preselected length which terminates at its other end in an adapter-threaded end. The threaded end is characterized by an insulating skin, a nut embedded in its conductive central body portion, and an annular insulating face surrounding the connection proportioned to insulatingly and circumferentially compressibly engage a plastic collar on the side mount terminal of the installation.

3,605,066
ELECTRICAL CONNECTOR
Charles J. Vierck, Sr., P.O. Box 1036, Jupiter, Fla., and Charles Vierck, Jr., 404 N.E. 4th Ave., Gainesville, Fla.
Filed Mar. 14, 1969, Ser. No. 807,258
Int. Cl. H01r *29/00*
U.S. Cl. 339—32 R **10 Claims**

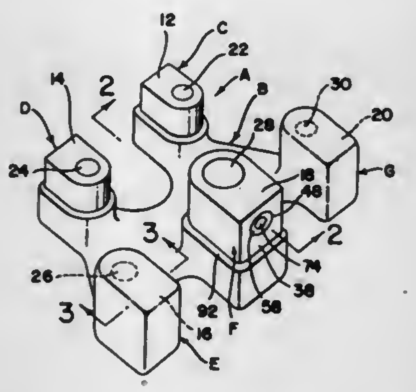


An electrical connector which establishes gripping electrical contact with a conductor and which can be plugged into an electrical jack opening and resiliently maintained in electrically conducting contact with boundaries of the jack opening.

The connector includes relatively movable gripping jaws urged together by biasing means whereby the jaws can grip a conductor inserted between them. At least one spring construction is disposed on an externally facing portion of the jaws for resiliently engaging a boundary of a jack opening and establishing electrical contact between the jaws and the boundary of the jack opening.

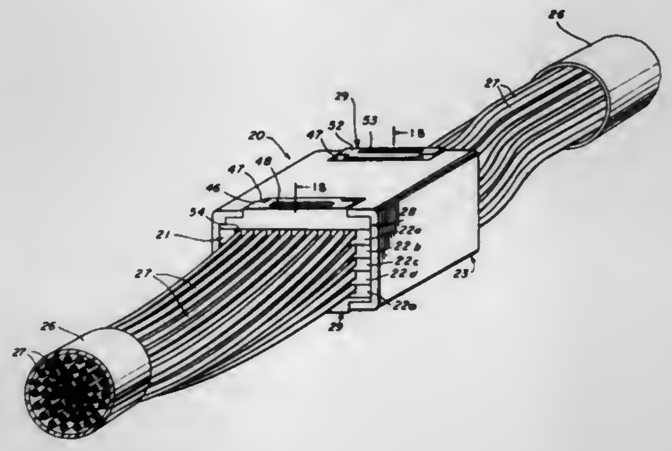
3,605,067
MULTIPLE CABLE ELECTRICAL CONNECTOR
Julius R. Szabo, and Richard P. Mott, both of P.O. Box 5000, Cleveland, Ohio 44101
Filed Oct. 25, 1968, Ser. No. 770,587
Int. Cl. H01r *13/44*
U.S. Cl. 339—36 **3 Claims**

A multiple cable electrical connector comprises a metallic body having a base portion and at least three spaced-apart legs extending upwardly from the base portion. The legs have axial recesses therein for receiving the ends of electrical conductor cables. Each leg has a lateral threaded bore intersecting the recess at substantially right angles and a setscrew is threadedly received in each bore. Each setscrew has an inner end received in the recess and a saddle clamp is mounted on the inner end of each setscrew in each recess. The base portion of the connector and at least one leg may be completely encapsulated in elastomeric electrical insulating material.



The insulating material may be bonded to the base portion and unbonded to the one leg so that it is easily peeled off from the leg. The legs are spaced in such a manner that two connectors may be interdigitated to provide double the number of available recesses while taking up very little additional space.

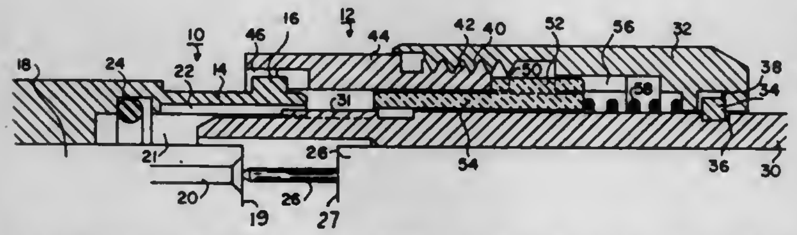
3,605,068
ELECTRIC COUPLER
Vincent A. Rayburn, Baltimore, Md., assignor to Western Electric, New York, N.Y.
Continuation-in-part of application Ser. No. 418,995, Dec. 17, 1964, now Patent No. 3,457,640. This application Apr. 21, 1969, Ser. No. 817,866
Int. Cl. H01r *25/00*
U.S. Cl. 339—49 **30 Claims**



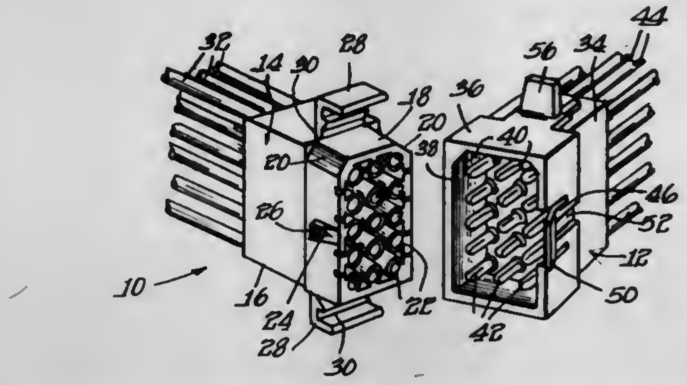
An electrical coupler unit includes a plurality of wafers which are stacked so that open slots of each of the wafers form contactor-receiving cells with associated portions of flat surfaces of adjacent wafers. A plurality of contactors are inserted into and locked within the cells formed by the stacked wafers and are formed with pockets for supporting the ends of associated conductors which are soldered thereto. Mating coupler units are assembled within supporting bands to facilitate the connecting of mating contactors of the units to form an electrical coupler.

3,605,069
RIGID ELECTRICAL CONNECTOR
Robert F. Dorrell, Des Plaines, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed May 26, 1969, Ser. No. 827,811
Int. Cl. H01r *13/54*
U.S. Cl. 339—90 R **20 Claims**

A connector which is adapted to maintain a substantially airtight seal between mating faces of a connector plug and receptacle by substantially preventing any relative movement between these elements. The connection is performed through two means, the first of which is effective to loosely couple the plug and receptacle, and the second of which is effective to force the forward faces of insulating blocks in each of the elements against each other under pressure to cause a compression of at least one of the blocks resulting in the desired seal. The compression of a block also provides a rigid connection which is resistant to movement under conditions of stress, shock and vibration. The resistance to movement may be enhanced by terminating the coupling in a metal-to-metal bottoming of the plug and receptacle shells.

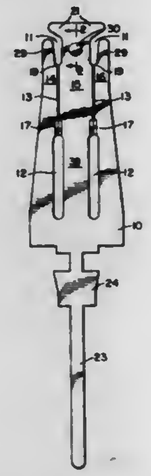


3,605,070
ELECTRICAL CONNECTOR
Kerry M. Krafthefer, Downers Grove, Ill., assignor to Molex Incorporated, Downers Grove, Ill.
Filed May 5, 1969, Ser. No. 821,852
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **3 Claims**



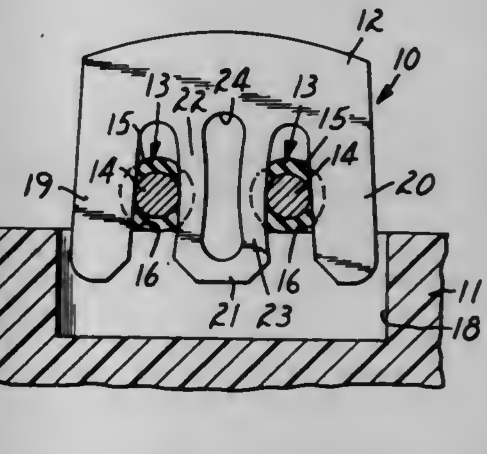
A plug and socket electrical connector comprising mating plastic housings and metal terminals housed therein. The housings are provided with interengaging latch members including an apertured tongue on one of the housings. Handle members are provided on the same housing for gripping by the thumb and middle finger while the latch is retracted by the index finger to separate the connectors.

3,605,071
TWO WIRE CLIP-TYPE TERMINAL AND TOOL FOR OPERATING SAME
William S. Sedlacek, Chicago, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.
Filed May 22, 1969, Ser. No. 827,013
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 P **11 Claims**



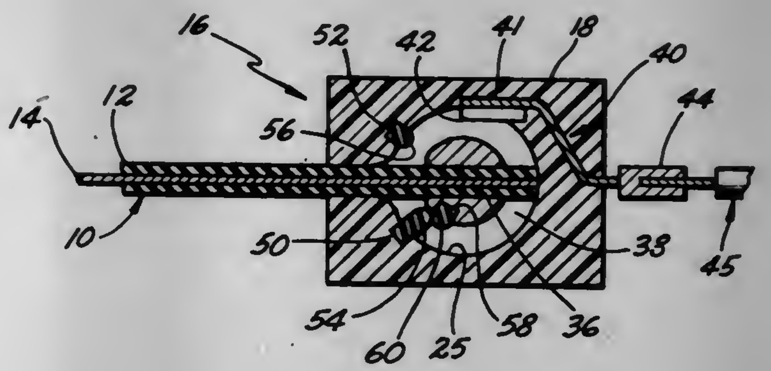
A clip terminal is made from resilient strip stock. It has two notches at its upper end which connect with narrow slots which separate the body portion into a center arm and two end arms. The width of each end arm is less than the width of the center arm so that the stiffness of the center arm is more than twice the stiffness of either end arm. The tool for inserting a wire in either slot has a recess which receives all three arms. The insertion of the wire deflects one end arm, but the side of the recess limits the deflection. The surfaces of the recess each have a groove to receive a boss formed on the center arm so that the deflection of either end arm will be limited independently of the other end arm.

3,605,072
SOLDERLESS WIRE CONNECTOR
Aelred Daniel Driscoll, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 28, 1969, Ser. No. 803,235
Int. Cl. H01r *11/20*
U.S. Cl. 339—98 **5 Claims**



A solderless wire connector comprising a thin resilient flat plate contact element with parallel extended legs fitting into a grooved wire-supporting base and defining open-ended wire-receiving slots, wherein said legs are internally perforated to provide stress relief along wire-contacting edges.

3,605,073
CONNECTOR FOR FLAT CABLE
Ottomar H. Vetter, Minneapolis, Minn., assignor to United-Carr Incorporated, Boston, Mass.
Filed Sept. 5, 1969, Ser. No. 855,695
Int. Cl. H01r *9/08*
U.S. Cl. 339—99 R **7 Claims**



A flat cable having laterally spaced ribbon conductors embedded in its insulation is inserted into a plastic block containing a rotatable cylinder. The cylinder has a diametrically oriented slot for the reception of the inserted end of the flat cable. An annular space circumscribes the cylinder and a number of serrated contacts extend into the annular space so that when the cylinder is rotated the teeth on the contacts peel the insulation from the cable to establish electrical engagement with the ribbon conductors.

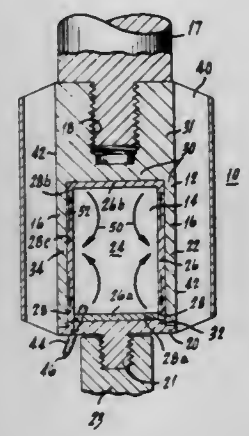
3,605,074
ELECTRICAL CONNECTOR ASSEMBLY HAVING COOLING CAPABILITY

Robert Alfred Freggens, Lancaster, and Willis Eugene Harbaugh, Leola, both of, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,160

Int. Cl. H01r *13/00*

U.S. Cl. 339—112 **8 Claims**



An electrical connector assembly having cooling capability and adapted to electrically couple an electrical device with a voltage source. The connector assembly includes a hermetically sealed hollow envelope of electrically conducting material, a capillary wick lining the inner surface of the envelope, and a vaporizable heat-transfer medium disposed within the envelope. The assembly further includes a first means for electrically connecting the envelope with the voltage source and a second means for electrically connecting the electrical device to the envelope, both the first and second means being in heat transfer relationship with the envelope, and heat dissipation means in heat-transfer relationship with the envelope.

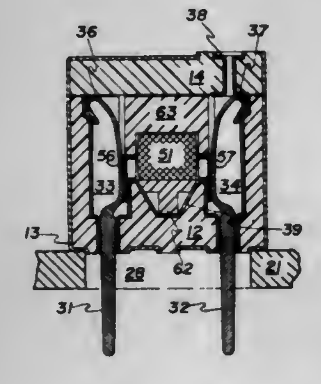
3,605,075
MODULAR ELECTRICAL SYSTEM

Martin Alex Stofkooper, 17420 Ventura Blvd., Encino, Calif.

Filed July 1, 1968, Ser. No. 750,396

Int. Cl. H01r *9/22*

U.S. Cl. 339—126 **2 Claims**



A modular electrical system comprising a basic unit consisting of an insulative block having two parallel rows of electrical receptacle holes with spring contacts therein terminating in a loop on one end and a contact on the other side of the insulative block, the loop side preferably extending above the block, the insulative block having a conductive coating forming a shield on five sides thereof, the receptacle holes carrying the spring loop contacts being adapted and dimensioned for receiving dual-in-line packaged electrical component leads with a cover thereover for depressing the loop portion of the spring contacts creating a higher pressure contact between the spring and the component which results in a low resistance connection between the component leads and the other end of the spring contact via a conductive coating on the receptacle hole wall and the spring contact itself, the cover in a multimodular system can be a printed circuit board having conductive portions contacting the top of the spring loop; a heat sink disposed between the components and a power bus running between the two rows of receptacle holes; a pair of collars extending from one surface of the insulated block being dimensioned for a press fit within an aperture of a mounting plate or board.

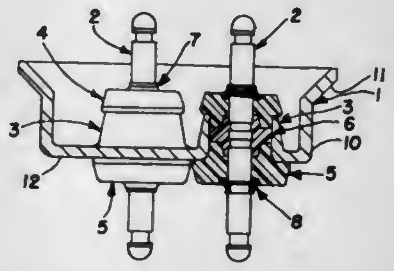
3,605,076
HERMETICALLY SEALED TERMINAL CONSTRUCTION

Hilliard Dozier, Cincinnati, Ohio, assignor to U.S. Terminals, Inc., Cincinnati, Ohio

Filed Aug. 21, 1969, Ser. No. 852,053

Int. Cl. H01r *9/20*

U.S. Cl. 339—126 **12 Claims**



Hermetically sealed electrical terminals in which the conductor pins are electrically insulated from and hermetically sealed to a support by means of a pair of essentially rigid dielectric caps between which a distortable dielectric sealing member is incapsulated, the assembly permitting the use of highly conductive conductor pins, such as copper and copper alloys, which cannot be used in conventional glass-to-metal hermetically sealed terminals.

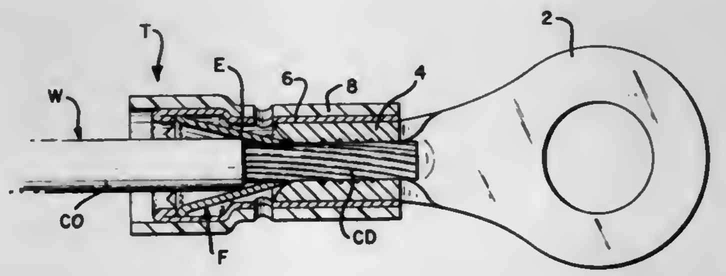
3,605,077
WIRE STOP AND WIRE GUIDE IN TERMINALS AND CONNECTORS

Karl Lester Kaylor, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 18, 1969, Ser. No. 817,396

Int. Cl. H01r *11/12, 11/08*

U.S. Cl. 339—223 **7 Claims**



An electrical terminal for use in conjunction with thinly insulated wires and cables is disclosed. The terminal has funnel means therein to guide the conductors of the wires into place in the terminal wire barrels. The terminal has means therein to limit the forward insertion travel of the wire to assure that no wire insulation enters the wire barrel area. The funnel means provides strain relief means in a crimped connection where the wire joins the terminal.

3,605,078
CONTACT SOCKETS AND MANUFACTURING METHOD

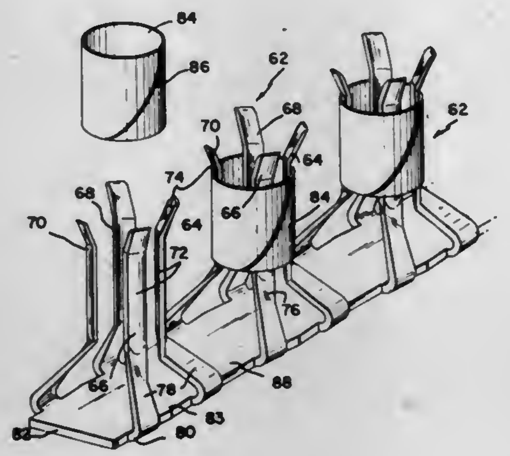
Clarence Leonard Paullus, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 24, 1969, Ser. No. 801,436

Int. Cl. H01r *13/16*

U.S. Cl. 339—259 **23 Claims**

Contact socket comprises four parallel contact arms arranged in surrounding relationship to the socket axis. Cylindrical spring surrounds the arms and, upon insertion of a contact pin, resiliently urges them against the surface of the pin. Inner ends of arms are integral with a sheet metal strip from which they were formed. A strip of sockets is manufactured by blanking a stock metal strip to produce arms on each side, these arms being later twisted and bent to produce any one of several types of socket strip including single or double rows of sockets on parallel spaced-apart axes and axially aligned contact sockets on opposite sides of the strip.



3,605,079
ELECTRICAL TERMINAL CONNECTIONS

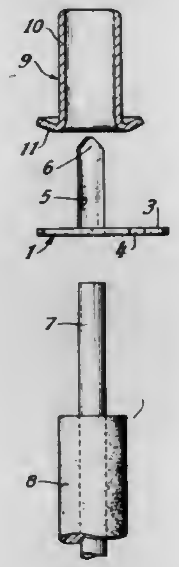
Hans Wernhard Schneider, Castle Works, High St., Old Woking, Surrey, England

Filed Feb. 6, 1970, Ser. No. 9,328

Claims priority, application Great Britain, Feb. 13, 1969, 7895/69

Int. Cl. H01r *11/08*

U.S. Cl. 339—276 R **4 Claims**



An electrical contact assembly comprises an apertured tag through which the bare end of a conductive wire passes. A tang projects rearwardly from the aperture to lie alongside the wire and a sleeve surrounds the tang and wire. The sleeve is crimped to press the wire into conductive relationship with the tang and hence the tag.

3,605,080
ELECTRODYNAMIC SONAR PROJECTOR

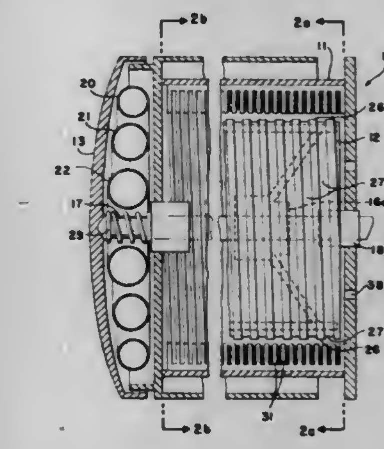
Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 22, 1969, Ser. No. 887,202

Int. Cl. H04b *11/00*

U.S. Cl. 340—12 **10 Claims**

A compact, high-power, electromechanical transducer having a reduced inertia for efficient, low frequency transmission of sonar energy is provided, and includes a pair of coaxially disposed, cylindrically shaped members operatively connected to an outwardly facing projecting piston. DC conductors are mounted between radially inwardly projecting, helically configured ribs on the outer member and alternate with control current conductors, similarly disposed adjacent the radially inwardly projecting ribs, to electromechanically cooperate for attracting and repelling radially outwardly extending ridges carried on the inner cylindrical member and reciprocably displace the piston in accordance with the impressed alternating control frequency. Locating all the conductors on the outer stator shell member and constructing the inner armature member of a lightweight fiber glass material mounting small radially outwardly projecting ridge portions, provide a transducer having a minimal inertial resistance to bidirectional excursions ensuring an efficient distortion free transmittal of acoustic energy.



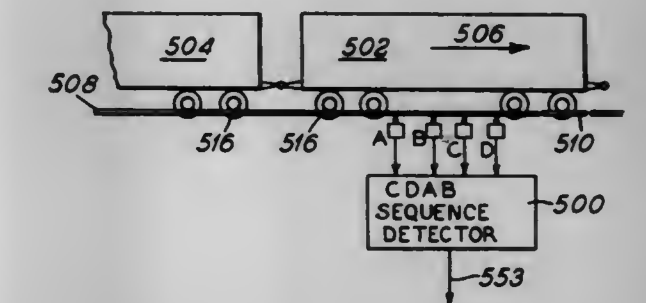
3,605,081
SEQUENCE DETECTOR FOR RAILWAY VEHICLE CONTROL SYSTEM

Lawrence A. Tonies, Grayslake, Ill., assignor to Mangood Corporation, Grayslake, Ill.

Filed Feb. 27, 1970, Ser. No. 15,141

Int. Cl. G06f *7/02*

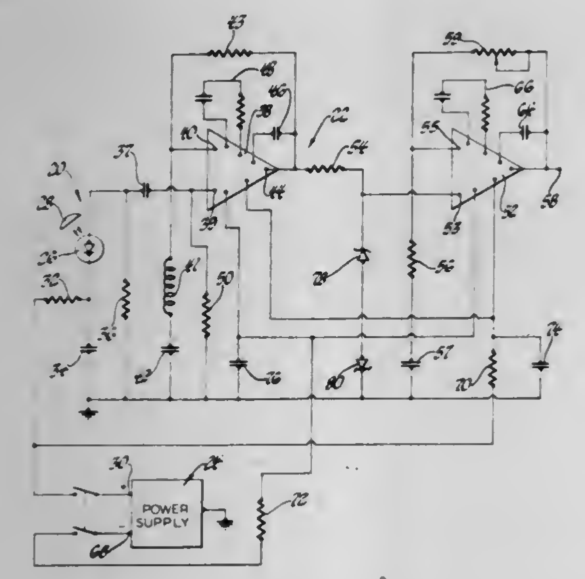
U.S. Cl. 340—23 **6 Claims**



An axle sequence detector for detecting a unique sequence of actuation of four railway track switches or actuators. Of all the possible sequence combinations, it responds to only one, actuating a sequence identification signal in response to that one sequence. It disregards all the other possible sequences. One application is given where axle detectors are arranged along the line of movement of a train, the sequence detector identifying a unique activation of the axle detectors in the order of "3rd + 4th + 1st + 2nd." Initially, the output lines of all switches or activators except the 3rd are blocked by control gate means. Actuation of the 3rd track switch unblocks a circuit containing the 4th track switch. Actuation of the latter unblocks the 1st track switch and renders the 3rd track switch circuit nonconductive. Actuation of the 1st track switch unblocks the 2nd track switch circuit and renders the 4th track switch circuit nonconductive. Actuation of the 2nd track switch triggers a sequence output signal and renders the 1st track switch nonconductive. Any other sequence commands circuit reset and start over.

3,605,082
INTRUDER DETECTION SYSTEM

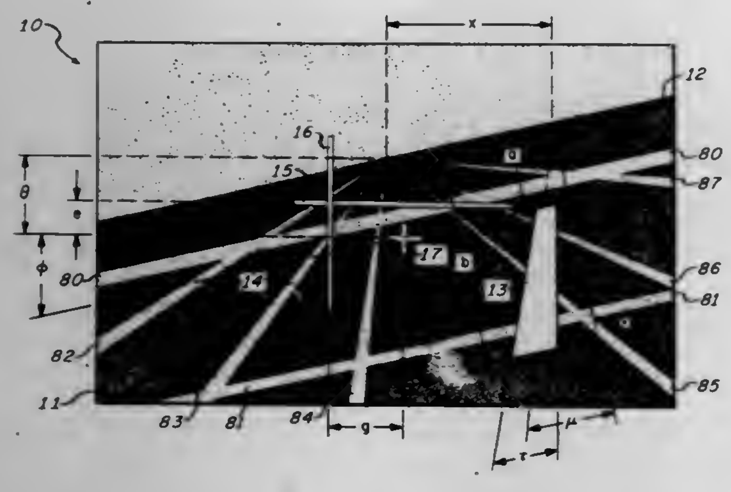
David R. Matthews, Ann Arbor, Mich., assignor to Laser Systems Corporation, Ann Arbor, Mich.
Filed Apr. 16, 1969, Ser. No. 816,727
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 **20 Claims**



An intruder detection system of the type employing a transmitter for producing a continuous train of radiant energy pulses and a receiver which is spaced from the transmitter and in the line of sight thereof to define a monitored area. The receiver controls an alarm device in such a fashion that the alarm device remains inactive as long as pulses continue to be received but which becomes active if the pulse train is interrupted either by means of an intruder in the line of sight or by an attempt to defeat the system with a continuous radiant energy source focused on the receiver.

3,605,083
ATTITUDE AND FLIGHT DIRECTOR DISPLAY APPARATUS UTILIZING A CATHODE-RAY TUBE HAVING A POLAR RASTER

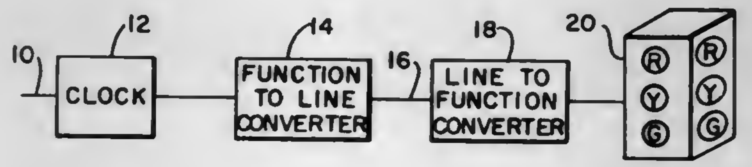
Melvin G. Kramer, Riverton, Wyo., assignor to Sperry Rand Corporation
Filed Oct. 8, 1969, Ser. No. 864,815
Int. Cl. G08g *5/02*
U.S. Cl. 340—27 NA **22 Claims**



Apparatus for providing a contact analog display on a cathode-ray tube representing the horizon, ground plane grid lines in perspective, and a runway or other flight path reference in perspective, by intensity modulating the electron beam of the cathode-ray tube while it traces out a spiral raster. Center reference indicia and flight director bars may be generated during the retrace time of the raster.

3,605,084
APPARATUS FOR DIGITAL CONTROL OF TRAFFIC CONTROL TIMERS

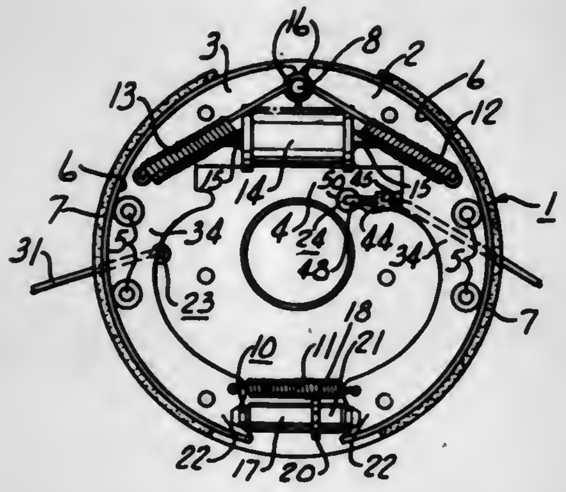
John Matysek, Crozet, Va., assignor to Remote Controls Corporation
Continuation-in-part of application Ser. No. 826,212, May 20, 1969. This application Oct. 2, 1969, Ser. No. 863,309
Int. Cl. G08g *1/07*
U.S. Cl. 340—40 **8 Claims**



A traffic control system utilizing digital timing signals, which can be derived from locally available 60 hertz power, to time each traffic interval. The timing signals are transformed to pulses marking the initiation of each traffic interval. These in turn are converted into signals which can be transmitted, for example via two pair of electrical conductors, from a remote traffic guidance center to a local traffic controller in which they are reconverted to signals for each traffic phase. These phase signals are then steered to switching circuits which control energization of the traffic signal indicators. The timing circuit can be utilized independently as a cyclic timer, either with or without conversion for transmission to a remote location.

3,605,085
BRAKE LINING WEAR DETECTION MEANS

John L. Fiorita, Box 58 Rd #2, Cheswick, Pa., and Harold H. Shaffer, Jr., 613 Saxonburg Rd., Pittsburg, Pa.
Filed Aug. 18, 1969, Ser. No. 850,752
Int. Cl. B60q *1/44*
U.S. Cl. 340—52 A **9 Claims**

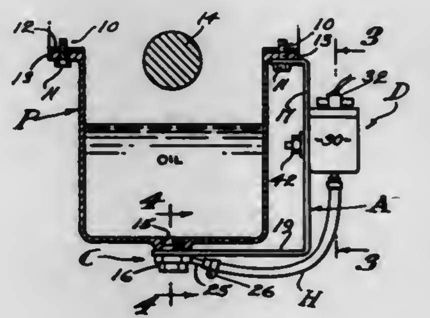


Brake lining wear detection means to indicate when the brake lining on a motor vehicle brake assembly, either the conventional type or disc type, has worn to a preselected wear limit indicative of replacement wherein there is provided limit switch means in the detection circuit and mounted on the vehicle brake assembly in adjacent spaced relation relative to a brakeshoe in the brake assembly to operate the detection circuit when the brake lining wear has reached the preselected wear limit.

3,605,086
OIL LEVEL INDICATOR

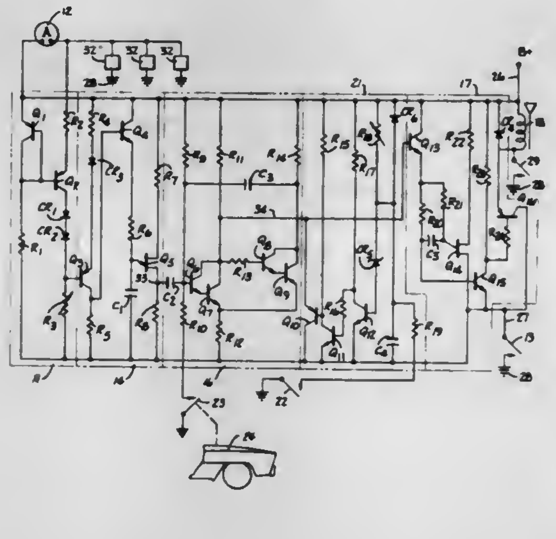
Matej Karl Triska, Box 240 Woodglen Rd., Glen Garden, N.J.
Filed Apr. 23, 1969, Ser. No. 818,702
Int. Cl. B60q *1/00*
U.S. Cl. 340—59 **4 Claims**

An oil level indicator that detects the level or insufficiency thereof in an engine crankcase or the like. Internal combustion engines and in particular automotive engines cannot be inspected during operation for detecting the level of lubricating oil therein. And, since it is imperative that a sufficiency of oil be maintained therein despite whatever malfunction might cause the loss of oil, this invention provides an apparatus in the nature of an attachment that adapts to the crankcase of any usual internal combustion engine, so as to reflect the oil level therein and to provide a signal in the event that said level is insufficient. More particularly, the apparatus is adaptable to existing crankcase openings and fastening points, and provides for adjustability in order to be suited for any prescribed insufficiency as circumstances require. Preferably an electrical contact is made that operates a lighted signal which warns the vehicle operator.



3,605,087
VEHICLE ALARM SYSTEM

Philip L. Nine, Indianapolis, Ind., assignor to Curtis Dyna-Products Corporation, Westfield, Ind.
Filed Aug. 6, 1969, Ser. No. 847,922
Int. Cl. B60r *25/10*
U.S. Cl. 340—64 **14 Claims**

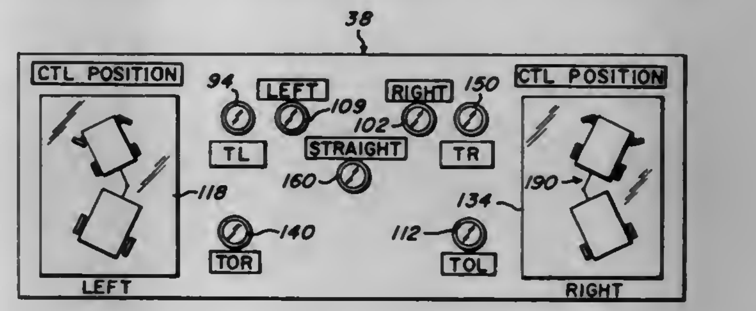


A sensitive current detector includes the vehicle ammeter and is responsive to current therein to activate a first pulser which sets a monostable multivibrator which activates another pulser having an output to the vehicle horn relay to sound the horn at a 2-cycle per second (Hz.) frequency. The monostable multivibrator resets after 1 minute of sounding of the horn to deactivate the horn unless the current detector continues to sense current. A delay timer responds to a key-operated switch or a remote disable switch to inhibit, for 15 seconds, activation of the sound pulser by the monostable. The monostable multivibrator can also be set by mechanically operable switches.

3,605,088
VEHICLE TRAILER ANGULAR POSITION INDICATOR

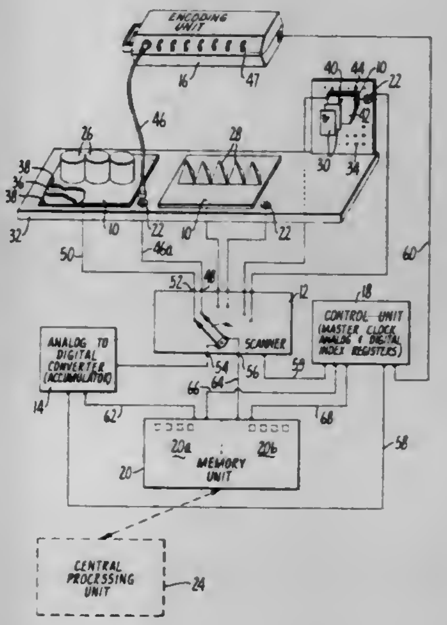
Joseph A. Savelli, 589 Magie Ave., Fairfield, Ohio
Filed Dec. 3, 1969, Ser. No. 881,702
Int. Cl. B60q *1/26*
U.S. Cl. 340—70 **16 Claims**

Apparatus for assisting the driver of a tow vehicle in moving a trailer vehicle in a reverse or backup direction. The apparatus of this invention particularly relates to a tow vehicle and a trailer vehicle which are pivotally attached one to the other. The apparatus of this invention includes means which sense and indicate the angular position of the trailer vehicle with respect to the tow vehicle and which also includes means which sense and indicate the angular position of the front wheels of the tow vehicle to assist the driver of the tow vehicle in reverse movement of the trailer vehicle.



3,605,089
PHYSICAL INVENTORY SCANNING AND RECORDING SYSTEM

George W. Gray, Boise, Idaho, assignor to J.A. Terteling & Sons, Boise, Idaho
Filed July 14, 1969, Ser. No. 841,496
Int. Cl. G06f *3/05*
U.S. Cl. 340—172.5 **12 Claims**

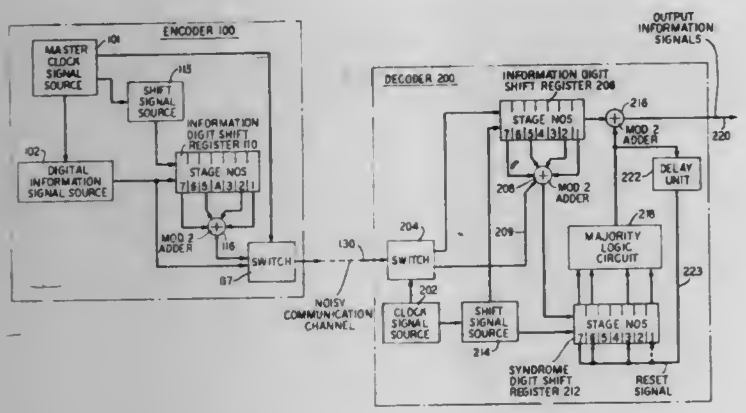


In the system, the weight of items physically present in defined increments of inventory placed on electrical transducer units continuously responsive to the weight of those items is sequentially monitored to provide a record of current inventory. The outputs of the weight-responsive transducer units are translated into signals representing the weight of the inventoried items and this information is stored in a computer accessible memory bank or other storage media, i.e. magnetic tape, paper tape, disc storage, etc. Provision may optionally be included to selectively impart identifying data to the transducer signal for storage along with the corresponding inventory weight through the use of a signal generating encoder which selectively attaches to the system at the site of the respective transducer units.

3,605,090
DECODER FOR CONVOLUTIONAL SELF-ORTHOGONAL ERROR-CORRECTING CODES

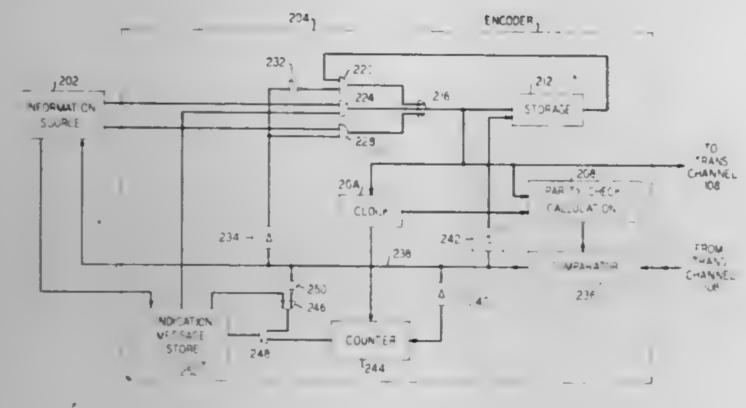
Herbert O. Burton, Little Silver, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Apr. 16, 1969, Ser. No. 816,605
Int. Cl. G06f *11/12;* **G08c** *25/00*
U.S. Cl. 340—146.1 **5 Claims**

An error-correcting decoder for convolutional self-orthogonal codes includes a multistage syndrome register. A majority logic circuit is connected to selected stages of the register. If, during the decoding process, the logic circuit senses that a majority of the selected stages contain "1" signals, the circuit generates a correction signal that is utilized to invert the information digit currently being processed. Circuitry is provided responsive to such a correction signal for resetting to "0" all the selected stages of the syndrome register. In this way the undesirable error propagation characteristic of a conventional feedback decoder is significantly improved.



3,605,091
FEEDBACK ERROR CONTROL ARRANGEMENT

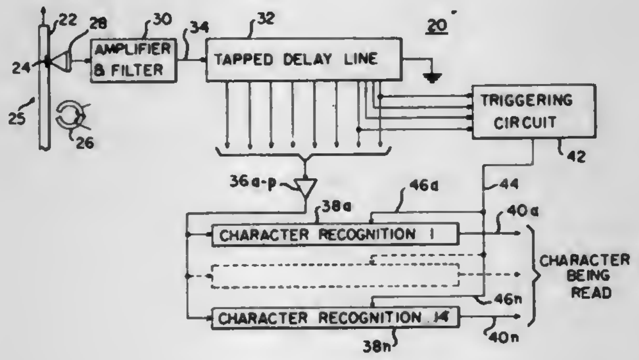
Shih Y. Tong, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 18, 1969, Ser. No. 859,107
Int. Cl. G06f *11/10;* **G08c** *25/02;* **H04l** *1/10*
U.S. Cl. 340—146.1 **20 Claims**



A feedback error control arrangement for data transmission systems which have both forward and reverse channels is disclosed. Parity check digits for an information message are generated at a transmitting terminal and stored there while the information message only is transmitted via the forward channel to a receiving terminal. At the receiving terminal, parity check digits for the information message are again generated and sent back via the reverse channel to the transmitting terminal where they are compared with the parity check digits stored. If the parity digits agree, the next information message is transmitted. If they disagree, the first information message is retransmitted and a record is kept of the position in the data train of the retransmitted message. After all information messages have been sent, the record information is transmitted. Upon receipt of this information, the receiving terminal rewinds the tape and in accordance with the record information, sequentially locates and erases the incorrect messages.

3,605,092
MAGNETIC INK CHARACTER RECOGNITION SYSTEM

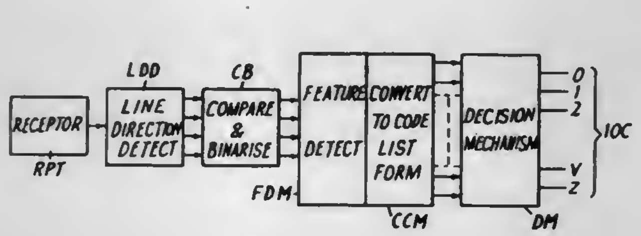
Harold S. Richard, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Jan. 19, 1970, Ser. No. 3,689
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 C **15 Claims**



A triggering circuit is provided with an MICR character reader which enables the character recognition circuits during the time the analog waveform provided by a transducer reading head is properly positioned in a tapped delay line. The triggering circuit is responsive to the signals appearing at certain of the tapped outputs of the delay line, and a comparator included therein allows the character recognition circuits to be enabled when the voltage at the most delayed tap is a certain percent of the highest voltage appearing at the other taps coupled to the triggering circuit.

3,605,093
SYSTEMS AND APPARATUS FOR CHARACTER RECOGNITION

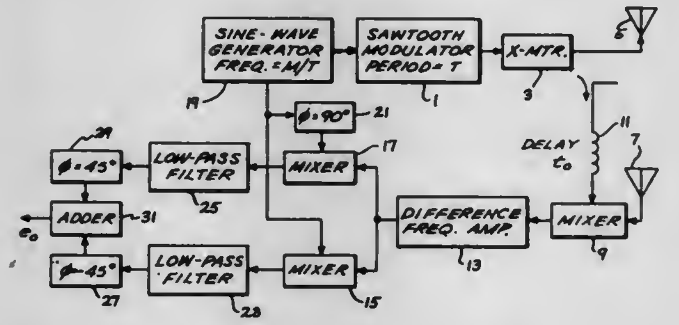
John Ronald Parks; Charles Howard Davis, and Gerald Owen Plumb, all of Teddington, Middlesex, England, assignors to National Research Development Corporation
Filed June 25, 1969, Ser. No. 836,425
Claims priority, application Great Britain, June 25, 1968, 30,306/68
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 J **20 Claims**



System and apparatus for recognizing both handwritten and machine-printed character patterns in which the character filed is scanned by photoelectric means to generate an analog-form signal which is converted into a four-bit binary form and fed to a four-bit parallel shift register from which differently delayed versions are taken to summing circuits in the development of *n*-tuples which operate to detect the presence of short line segments of specific orientation within the character area. By means of further summing circuits the line segment responses are analyzed to identify and indicate the position of a number of different topographical features such as line endings, bends or corners, line junctions and line crossings. These feature responses are converted into a list of code signals for matching, as by computer, with standard lists of similar code signals derived from ranges of different standard characters.

3,605,094
FREQUENCY MODULATED RANGING DEVICE

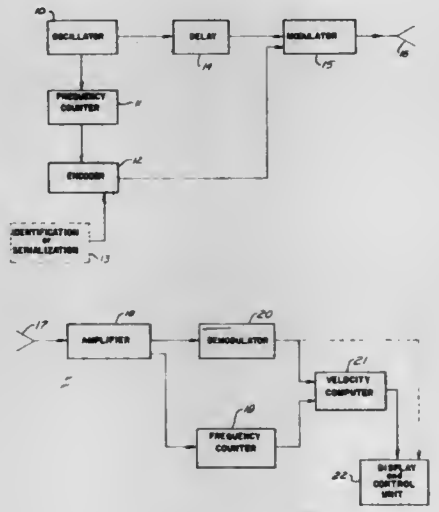
Salvador J. Peperone, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of Army
Filed Dec. 18, 1969, Ser. No. 886,274
Int. Cl. G01s *9/24*
U.S. Cl. 343—14 **2 Claims**



A frequency-modulated continuous-wave radar system virtually insensitive to targets beyond a predetermined range utilizes a delayed sample of the transmitted energy to mix with the reflected energy received. The mixer produces a difference frequency which is then separately mixed with quadrature components of the continuous wave carrier. The resultant signals are filtered to remove all but the Doppler components and then combined to yield a Doppler signal representing a target within the desired range.

3,605,095
DEVICE FOR MEASURING RELATIVE VELOCITIES

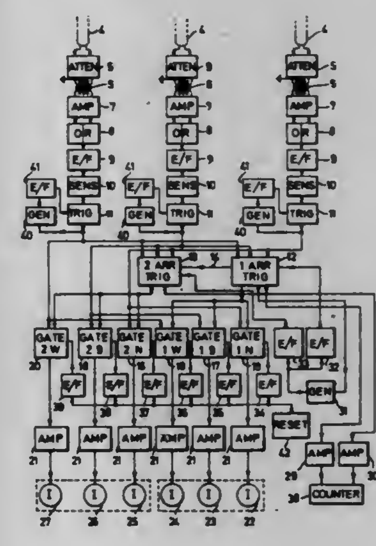
Robert A. Higgins, Apt. 34 Hawerysh Apts., Brookings, S. Dak.
Filed Oct. 1, 1969, Ser. No. 862,742
Int. Cl. G01s *9/44*
U.S. Cl. 343—112 S **8 Claims**



An electronic device for determining the relative speed between two units—vehicles or the like—by utilizing the Doppler effect. A transmitter would be located in one vehicle to transmit on a given frequency but also to transmit an encoded number corresponding to the transmitting frequency. The receiver, by detection of the shift between the coded number and the received frequency would determine the relative speed between the transmitter and the receiver.

3,605,096
NUCLEAR EXPLOSION DIRECTION INDICATOR

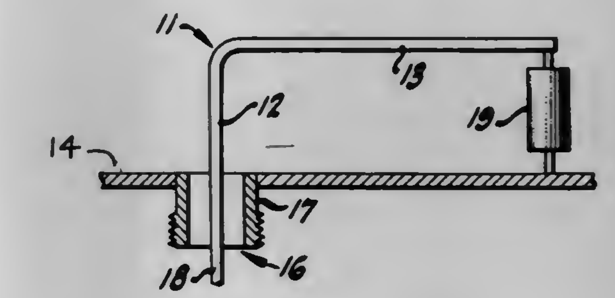
Reginald Allan Fothergill; William Harold Sellek, and Kenneth George Norman, all of Basingstoke, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Sept. 23, 1968, Ser. No. 761,601
Claims priority, application Great Britain, Oct. 3, 1967, 45065/67
Int. Cl. G01s *3/50*
U.S. Cl. 343—113 **8 Claims**



The indicator comprises three nondirectional aerials located at the apexes of a triangle, preferably equilateral, which receive the transient radiofrequency signal radiated from the explosion. These signals are fed to trigger circuits and coincidence gates which determine which of the three aerials were first and second to receive the transient. The time interval between these first and second arrivals is also measured. This interval gives the bearing of the explosion relative to the line joining the first and second arrival aerials.

3,605,097
END-LOADED FILAMENT ANTENNA

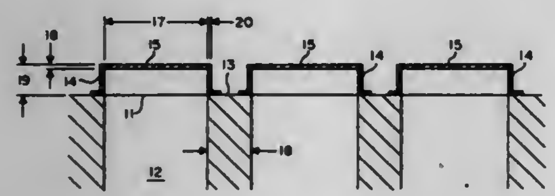
Endre B. Hadik-Barkoczy, Belmont, Calif., assignor to Textron Inc., Belmont, Calif.
Continuation-in-part of application Ser. No. 725,987, May 2, 1968, now abandoned. This application July 14, 1969, Ser. No. 841,210
Int. Cl. H01q *11/02*
U.S. Cl. 343—739 **9 Claims**



This invention relates to an electrically small antenna having a directional radiation pattern. The invention is physically embodied as a small filament, extending upwardly from a ground plane into connection with the top of a small passive resistor in turn extending downwardly to the ground plane. This filament lies in a single plane and produces linearly polarized radiation in such plane, with maximum radiation in a predetermined direction in such plane and elliptically polarized radiation in other planes but still with maximum radiation in a single direction.

3,605,098
PHASED ARRAY ANTENNA INCLUDING IMPEDANCE MATCHING APPARATUS

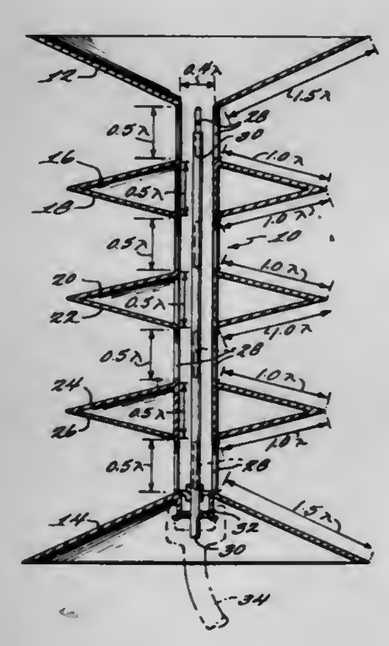
Peter W. Hannan, Centerport, N.Y., assignor to Hazeltine Corporation
Filed Apr. 14, 1969, Ser. No. 815,566
Int. Cl. H01q *3/26, 13/00*
U.S. Cl. 343—771 **11 Claims**



An impedance-matched phased array antenna in which the radiating elements comprise slots or holes in a conductive ground plane. The antenna includes a plurality of impedance-matching members, each consisting either of a thin sheet of high-*k* dielectric material or thin metal pieces which collectively have dielectric characteristics at the operating wavelengths. Each impedance matching member is supported in laterally spaced relationship with the other impedance matching members by a dielectric support member associated with each opening in the ground plane. Each combination of impedance-matching member and support member provides environmental protection for one of the openings in the ground plane. The lateral spacing between the impedance-matching members prevents accumulation of large sheets of water in front of the radiating elements which could cause severe impedance mismatches. Alternative arrangements are also covered.

3,605,099
PHASED SLOT ANTENNA ARRAY WITH FRUSTOCONICAL REFLECTOR

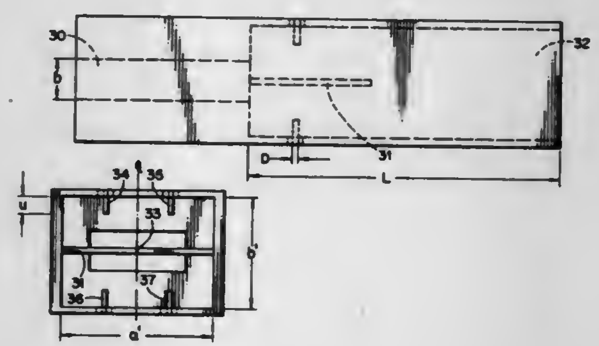
Howard E. Griffith, P. O. Box 547, West Monroe, La.
Filed Aug. 14, 1969, Ser. No. 849,969
Int. Cl. H01q *13/10*
U.S. Cl. 343—771 **10 Claims**



An antenna for omnidirectional or directional transmission. The antenna comprises a central member for supporting at least one pair of spaced frustoconical reflector elements. The support member is slotted between the reflector elements to serve as an energy radiator. Energy is supplied to the radiator by connecting adjustable probes between the slots and a central conductor within the support member.

3,605,100
ELECTRICALLY SCANNED TRACKING FEED

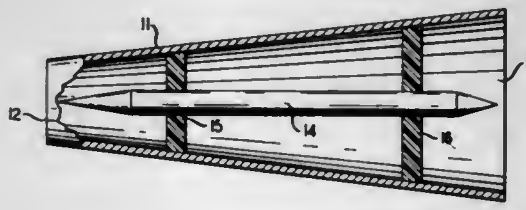
Leonard I. Parad, Framingham, Mass., assignor to Sylvania Electric Products, Inc.
Filed Aug. 28, 1969, Ser. No. 853,704
Int. Cl. H01q *13/00*
U.S. Cl. 343—777 **5 Claims**



Apparatus for electrically scanning a radio frequency tracking feed beam employing a feed in which the phase center of the beam is located at the aperture. Two lobes with 180° phase reversal are provided in both azimuth and elevation by exciting the feed in the higher order modes, typically the TE_{20} mode for azimuth and the hybrid $TE_{11}+TM_{11}$ mode in elevation. Sequentially lobed tracking is obtained by moving the phase center to the left and the right of the focal axis of the feed for azimuth tracking and above and below the focal axis for elevation tracking.

3,605,101
DUAL MODE CONICAL HORN ANTENNA

Nicholas J. Kolettis, Morristown, and Elliott R. Nagelberg, Summit, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 30, 1969, Ser. No. 862,352
Int. Cl. H01q *13/00*
U.S. Cl. 343—783 **2 Claims**

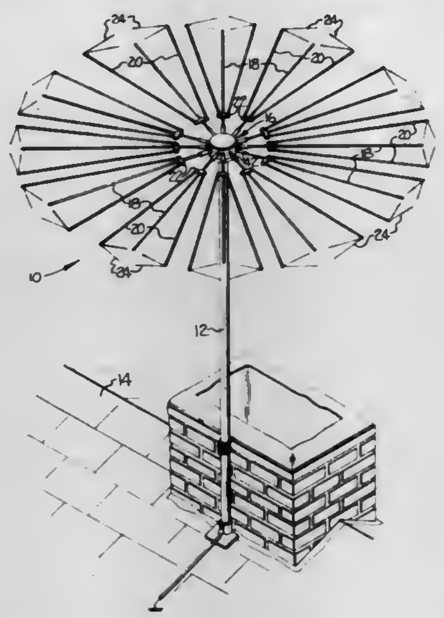


A circular rod having tapered ends is coaxially mounted within a conical horn antenna. When energy in the $TE°_{11}$ mode is fed into the throat of the antenna, it transforms smoothly over the length of the rod into the hybrid $HE°_{11}$ mode. At the antenna aperture, the energy again transforms and this time appears in correctly phased $TE°_{11}$ and $TM°_{11}$ modes.

3,605,102
DIRECTABLE MULTIBAND ANTENNA

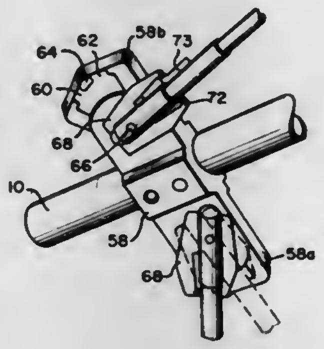
Talmadge F. Frye, 817 Lewis St., Asheboro, N.C.
Filed Mar. 10, 1970, Ser. No. 18,209
Int. Cl. H01q *3/24, 21/26*
U.S. Cl. 343—797 **13 Claims**

An electrically directable antenna having a plurality of radially extending dipole rods which may be selectively interconnected to provide various directivity patterns. In addition. various pairs of dipole rods within each directivity pattern may be selected such that optimum reception is obtained in each of a plurality of widely separated broadcast bands.



3,605,103
BRACKET FOR ADJUSTING DIPOLE ELEMENTS OF A TV RECEIVING ANTENNA

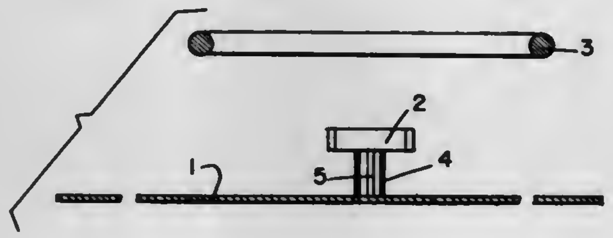
Sylan Simons, 74 Greenwich Ave., Glenville, Conn.
Filed May 1, 1969, Ser. No. 821,032
Int. Cl. H01q *21/12*
U.S. Cl. 343—812 **3 Claims**



A bracket for adjusting the dipole elements of a TV receiving antenna in which the dipoles may be selectively placed in a straight configuration, which is colinear, or in a V-shape depending upon the reception desired. The dipoles may be either preset in the desired configuration or changed in place, without necessitating a disassembly of the antenna.

3,605,104
PARASITIC LOOP COUNTERPOISE ANTENNA

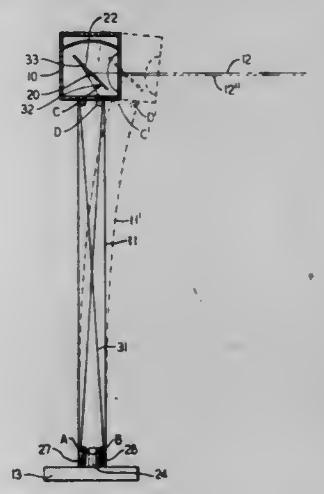
Vaughan H. Weston, West Lafayette, Ind.; Dipak L. Sengupta, Ann Arbor, Mich., and Joseph E. Ferris, Saline, Mich., assignors to The United States of America as represented by the Secretary of the Army and/or the Administration of Federal Aviation Administration
Filed Aug. 19, 1969, Ser. No. 851,404
Int. Cl. H01q *19/10*
U.S. Cl. 343—837 **3 Claims**



An antenna system comprising an active radiating element, such as an Alford loop, for radiating electromagnetic energy, a surface positioned below the radiator element to form a ground plane or counterpoise, and one or more passive parasitic loop elements positioned above the radiator so that the radiation from the parasitic elements is of a magnitude and polarity to cancel the radiation field below the plane of the counterpoise.

3,605,105
STABILIZER FOR REFLECTOR OF A POLE-MOUNTED ANTENNA

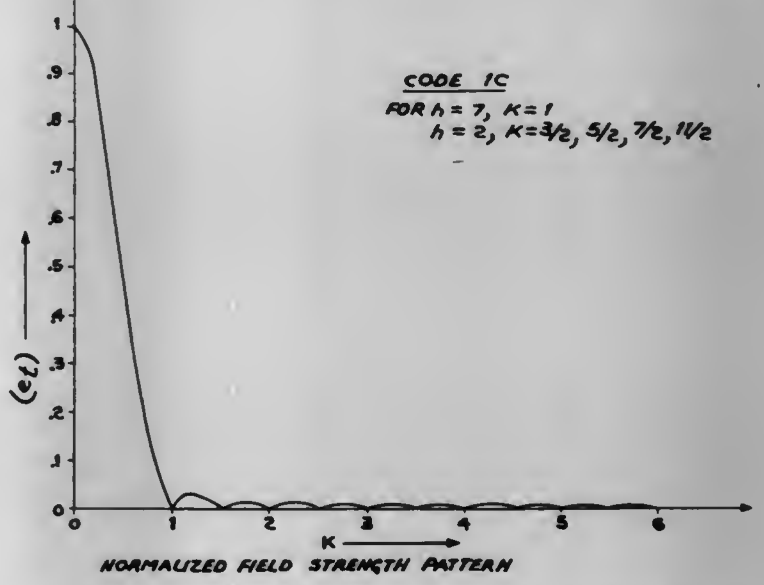
Arno A. Penzias, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 17, 1969, Ser. No. 867,181
Int. Cl. H01q *1/12*
U.S. Cl. 343—839 **9 Claims**



A pole-mounted directional microwave antenna having a plane reflector is disclosed. The antenna package mounted atop the pole contains a reflector which is rotatable in elevation angle providing control of the direction of the axis of propagation. A flexible belt within the pole is run between pivots at the top and bottom of the pole so that deflection of the pole in a plane containing the axis of propagation varies the separation between the pivots and affects movement of the belt. This movement is translated by a mechanical linkage to rotation of the reflector so that the resultant axis of propagation remains parallel to its undeflected orientation, thus automatically compensating for wind-induced pole sway in the direction of propagation. In addition, the elevation angle of the reflector can be set by moving the belt from the ground.

3,605,106
SLOT FITTING OF CODED LINEAR ARRAY ANTENNA

Frank S. Gutleber, Little Silver, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 30, 1969, Ser. No. 837,834
Int. Cl. H01q *21/00*
U.S. Cl. 343—844 **5 Claims**

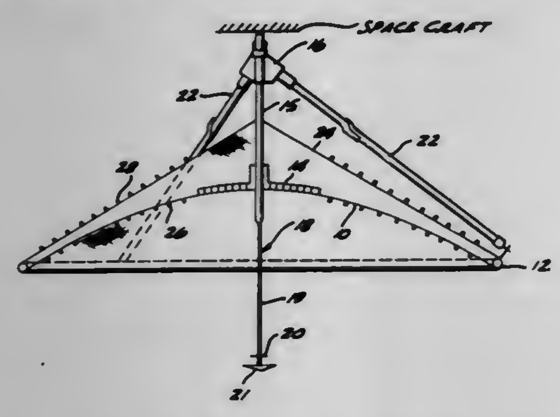


There is provided a method for fitting the irregular radiator spacing as disclosed in U.S. Pat. No. 3,130,410 into a regular grid by approximation. This permits the construction of a space-coded array in a simpler and less costly manner.

3,605,107

LIGHTWEIGHT REFLECTING STRUCTURES UTILIZING MAGNETIC DEPLOYMENT FORCES

Kurt Amboss, and Wolfgang Knauer, both of Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed July 17, 1969, Ser. No. 842,525
Int. Cl. H01q *15/20, 19/12, 1/36*
U.S. Cl. 343—915 **5 Claims**

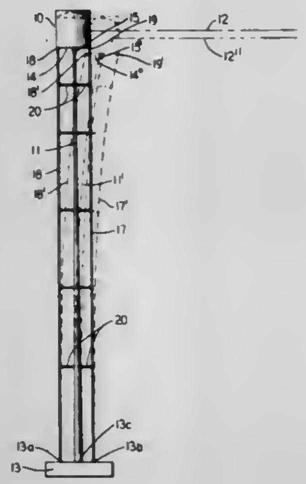


The apparatus of the present invention provides an ultralightweight collapsible reflecting structure for electromagnetic wave energy that is primarily intended for space applications. The vast distances over which space systems must operate frequently dictate the use of antennas which are highly directional, which generally requires large reflecting structures of relatively close dimensional tolerances for focusing the electromagnetic radiation. The collapsible reflectors of the present case are provided by a precontoured flexible lightweight foil or screen which is deployed by the use of magnetic pressures generated by current loops or permanent magnets.

3,605,108

PLATFORM STABILIZER FOR POLE-MOUNTED ANTENNA

Arthur B. Crawford, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 17, 1969, Ser. No. 867,150
Int. Cl. H01q *3/02*
U.S. Cl. 343—882 **2 Claims**

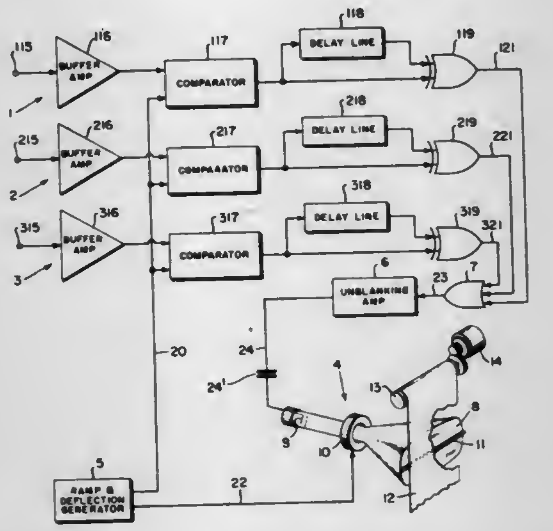


A pole-mounted directional microwave antenna secured to a platform is disclosed. The platform is rotatably mounted atop the pole so that the elevation angle of the beam axis of the antenna may be controlled. A stabilizing outrigger rod is mounted parallel to the pole, and the rod is linked to the platform. Spacers between the pole and the rod maintain a fixed separation, and when the pole is deflected in a plane containing the beam axis the rod is deflected in a parallel manner causing the platform to rotate so that the beam axis remains parallel to its undeflected orientation, thus automatically compensating for wind-induced pole sway in the direction of propagation. Three rods are used to compensate for sway in any direction.

3,605,109

METHOD AND APPARATUS FOR PRODUCING CONTINUOUS GRAPHIC DISPLAYS FROM INTERMITTENTLY SAMPLED DATA

Tommy N. Tyler, Englewood, and Peter R. Lowe, Denver, both of, Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 8, 1970, Ser. No. 1,427
Int. Cl. G01d *9/32*
U.S. Cl. 346—1 **20 Claims**

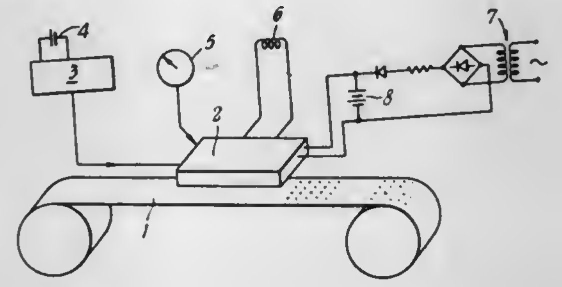


The values of a plurality of data signals to be plotted against time as curves on a moving photosensitive record sheet are sampled by being simultaneously compared continuously with a single cyclically repeated ramp voltage by a plurality of comparators. Each of the latter produces an output each time that the ramp voltage just exceeds the value of the corresponding signal. The ramp voltage is synchronized with the horizontal sweep for a fiber optics cathode-ray tube, across the optics strip of which the record sheet is advanced at right angles. An EXCLUSIVE OR gate for each signal unblanks the normally blanked beam of the tube for a period in each sweep to mark a line on the sheet. Each period is that in which the ramp voltage lies between the two values of the corresponding signal at which the corresponding comparator output is produced for the present and the immediately previous sweeps. The lines produced for each signal combine to form a recorded curve for that signal. In one form, each gate is controlled by the corresponding comparator output applied both directly and through a device providing a delay of one sweep period. In another form, each gate is controlled by two comparator outputs, one based on the present value of the corresponding signal, and the other based on a stored value of that signal from the previous sweep.

3,605,110

EVENTS RECORDERS

David Conner Southward, London, and Peter Eric Smith, Caversham, both of, England, assignors to Audits of Great Britain Limited, London, England
Filed Dec. 23, 1968, Ser. No. 785,951
Claims priority, application Great Britain, Jan. 4, 1968, 710/68
Int. Cl. H04n *7/02*
U.S. Cl. 346—37 **14 Claims**

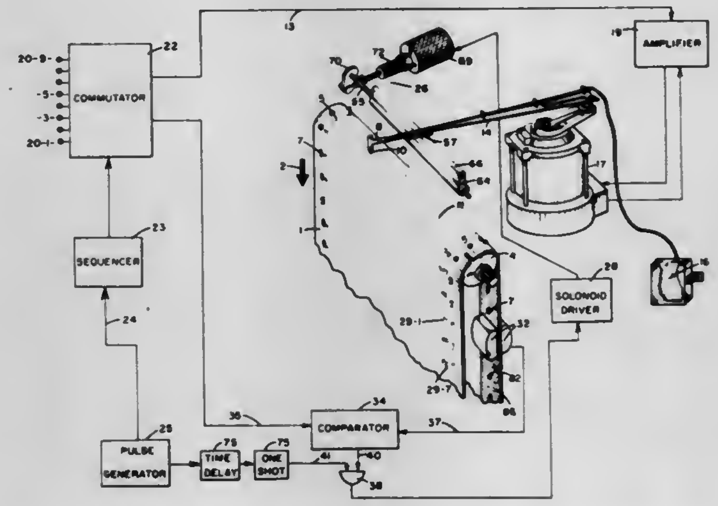


An events recorder comprising a clock provided by an intermittently energized stepping motor which is held in its stationary positions by its remanent magnetism, and, for television receiver monitoring, a pickup coil for picking up receiver line frequency to sense the beginning and end of viewing.

3,605,111

TRACE-INTERRUPTING MULTICHANNEL RECORDER

Ronald H. Schmoll, Broadview Heights, Ohio, assignor to Clevite Corporation
Filed Mar. 19, 1970, Ser. No. 21,041
Int. Cl. G01d *9/34*
U.S. Cl. 346—62 **6 Claims**

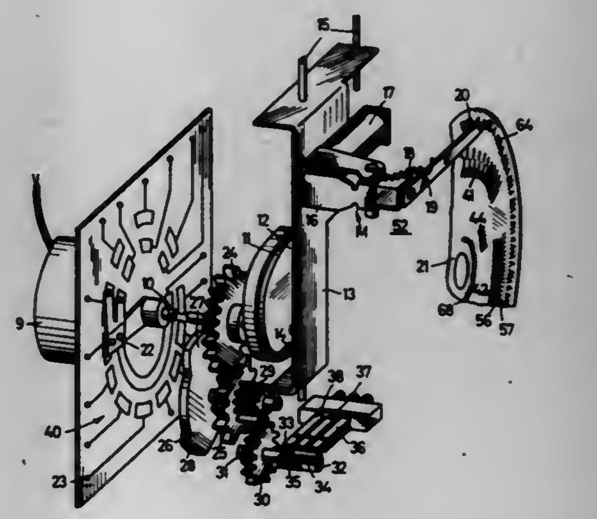


A multichannel strip chart recorder has a commutator to sequentially sample signals at a plurality of channels and apply the samples to a single-pen recording device. A spring-biased actuator holds the pen off the chart during commutation. A solenoid overcomes the spring allowing the pen to record a dot for each signal sample. Thus, each signal is recorded as a trace made up of a series of dots. Trace-identifying symbols are preprinted sequentially and repetitively along an edge of the chart in predetermined relation to the chart sprocket holes. As each symbol moves into approximate alignment with the path of the recording pen tip the solenoid action is inhibited by signals from electro-optical devices sensing the positions of sprocket holes and notches at the edge of the chart so that the trace identified with that symbol is interrupted. When the signal at one channel has higher frequency content than the signals at other channels, the commutator sequence may be arranged to sample that signal more often than the signals at other channels.

3,605,112

APPARATUS FOR RECORDING THE NUMBER OF EVENTS AT A MACHINE

Oskar Zumkeller, Villingen, and Karl-Christian Christiansen, Moenchweiler, both of, Germany, assignors to Kienzle Apparate G.m.b.H., Villingen, Black Forest, Germany
Filed Apr. 24, 1970, Ser. No. 31,656
Claims priority, application Germany, Apr. 26, 1969, P 19 21 339.9
Int. Cl. G07c *3/12*
U.S. Cl. 346—67 **10 Claims**

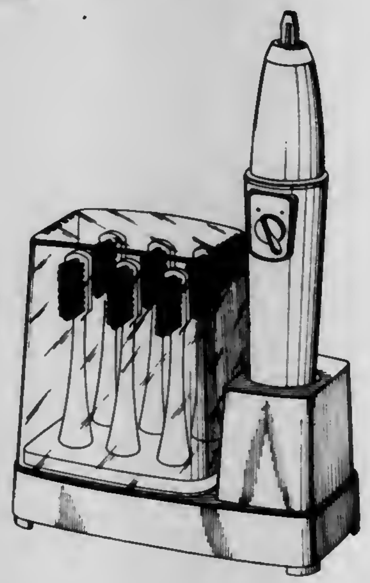


Two series of radial lines are recorded in adjacent circular tracks of a rotating record carrier for representing workpieces produced by a machine. Since the recorded lines are spaced in each track twice as far as if only one track were provided, automatic evaluation of the recorded number of lines is facilitated. The apparatus has a multivibrator and two AND gates for routing alternate pulses representing workpieces to different contact means of a rotary switch by which the positions of the recording means on different tracks are determined.

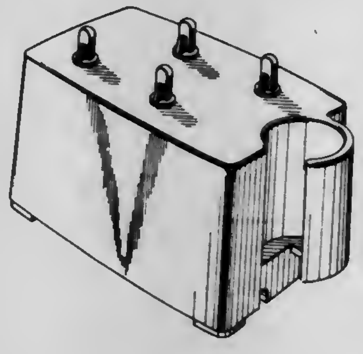
DESIGNS

SEPTEMBER 14, 1971

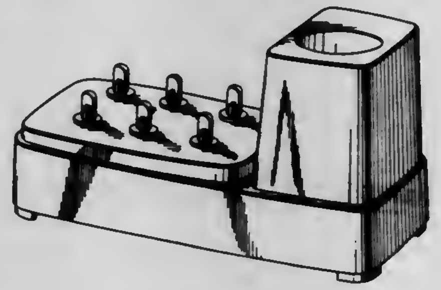
221,823
AUTOMATIC TOOTHBRUSH
William J. Cook, Trumbull, Conn., assignor to
General Electric Company
Filed Aug. 11, 1970, Ser. No. 24,426
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—15



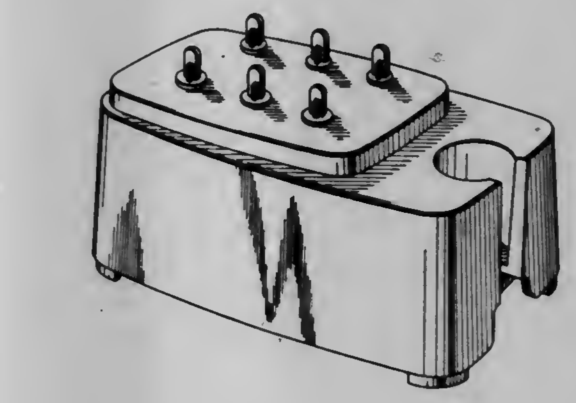
221,824
HOLDER FOR AN ELECTRIC TOOTHBRUSH
OR SIMILAR DEVICE
William J. Cook, Trumbull, Conn., assignor to
General Electric Company
Filed June 24, 1970, Ser. No. 23,639
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—16



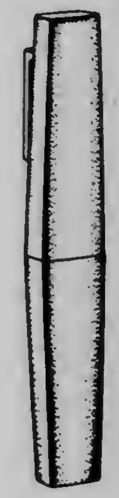
221,825
HOLDER FOR AN ELECTRIC TOOTHBRUSH
William J. Cook, Trumbull, Conn., assignor to
General Electric Company
Filed July 6, 1970, Ser. No. 23,825
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—16



221,826
HOLDER FOR AN ELECTRIC TOOTHBRUSH
William J. Cook, Trumbull, Conn., assignor to
General Electric Company
Filed Sept. 23, 1970, Ser. No. 25,168
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—16

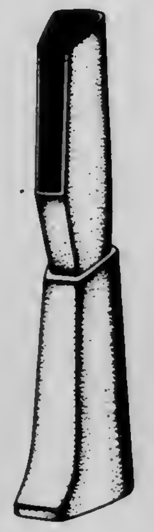


221,827
FOUNTAIN TOOTHBRUSH WITH POCKET
HOLDER
Benjamin N. Yamada, Menlo Park, Calif., assignor to William A. Anderson, San Francisco, and Raymond H. Heiskell, San Mateo, Calif.
Filed Sept. 21, 1970, Ser. No. 25,101
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



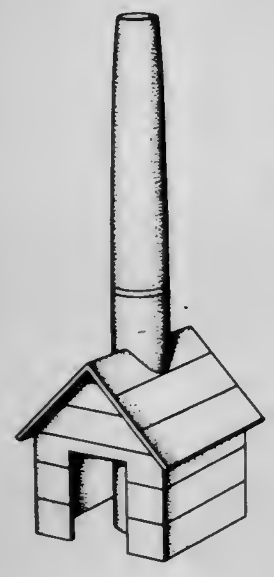
221,828
COMBINED FOUNTAIN TOOTHBRUSH AND HOLDER

Benjamin N. Yamada, Menlo Park, Calif., assignor to William A. Anderson, San Francisco, and Raymond H. Heiskell, San Mateo, Calif.
Filed Sept. 21, 1970, Ser. No. 25,118
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



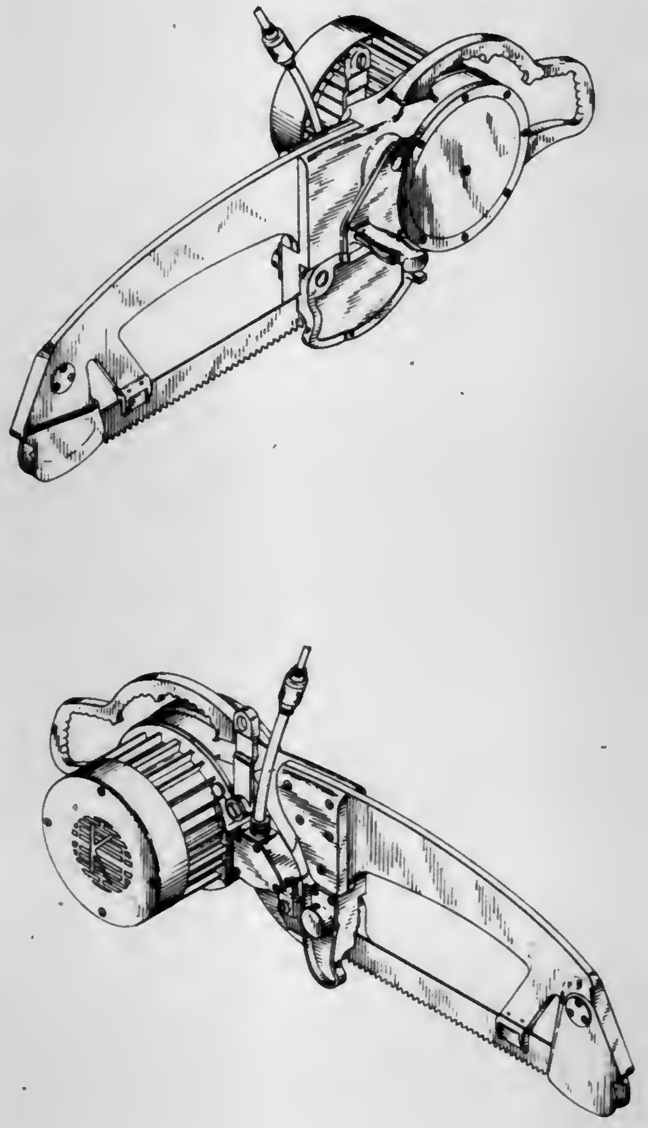
221,829
COMBINED CHILD'S FOUNTAIN TOOTHBRUSH AND HOLDER

Benjamin N. Yamada, Menlo Park, Calif., assignor to William A. Anderson, San Francisco, and Raymond H. Heiskell, San Mateo, Calif.
Filed Sept. 21, 1970, Ser. No. 25,105
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—26



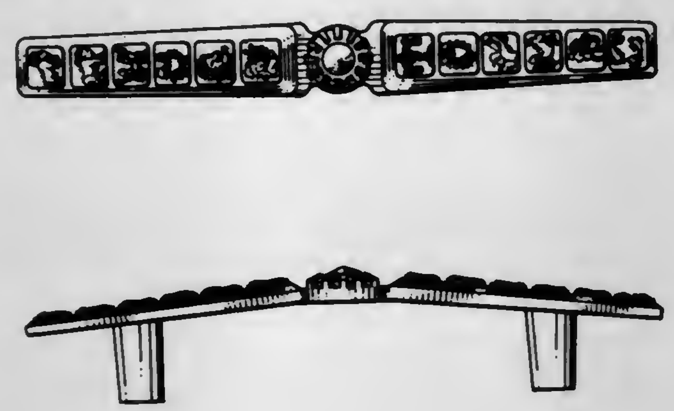
221,830
CARCASS SPLITTER

Ralph Karubian, 2001 W. Gage Ave., Los Angeles, Calif. 90047
Filed Aug. 17, 1970, Ser. No. 24,525
Term of patent 14 years
Int. Cl. D8—*02*; D7—*99*
U.S. Cl. D8—64



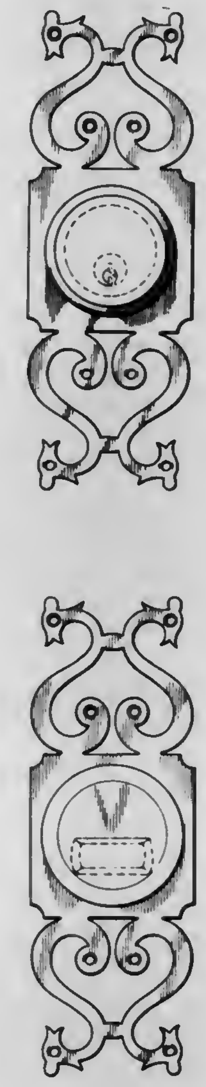
221,831
PULL

Howard B. Gorton and Ray Tintary, Covina, Calif., assignors to Ajax Hardware Manufacturing Corp., City of Industry, Calif.
Filed Aug. 12, 1970, Ser. No. 24,446
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—166



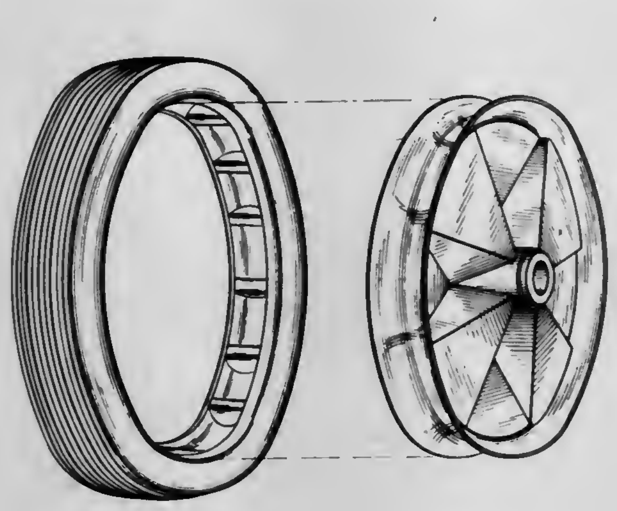
221,832
DECORATIVE ESCUTCHEON FOR BARREL LOCKS, LATCHES OR THE LIKE

Hubert Vachette, Paris, France, assignor to Securite et Decoration, Paris, France
Filed Jan. 26, 1970, Ser. No. 21,088
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



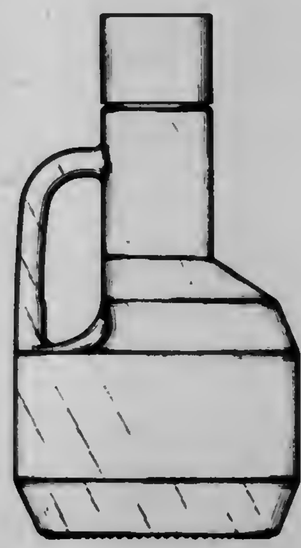
221,833
CASTER WHEEL

Raymond S. Haydock, deceased, late of Chicago, Ill., by Mildred Rose Haydock, executrix, Chicago, Ill. (8020 N. Austin Ave., Morton Grove, Ill. 60053)
Filed Mar. 18, 1969, Ser. No. 16,316
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—226



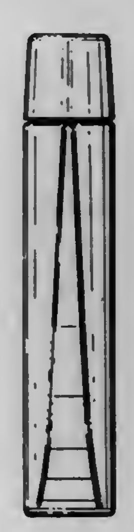
221,834
BOTTLE

Ira W. Schwartz, Great Neck, N.Y., assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed June 10, 1970, Ser. No. 23,411
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48



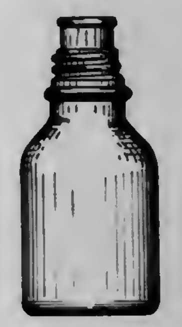
221,835
COMBINED BOTTLE AND CLOSURE THEREFOR

Cyril Edward Higgs, Leeds, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Apr. 13, 1970, Ser. No. 22,398
Claims priority, application Great Britain Oct. 15, 1969
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—149



221,836
BOTTLE

Robert L. Giles, Mundelein Village, and Clarence J. Endicott, Waukegan, Ill., assignors to Abbott Laboratories, Chicago, Ill.
Filed July 16, 1970, Ser. No. 23,985
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—160

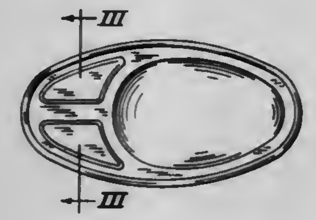


221,837

SPOON-SHAPED PACKAGE ELEMENT FOR FOOD OR THE LIKE

William E. R. Watt, New Kensington, and Regis A. Fleck, Tarentum, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 25, 1968, Ser. No. 14,184
Term of patent 14 years
Int. Cl. D9—*99*

U.S. Cl. D9—185

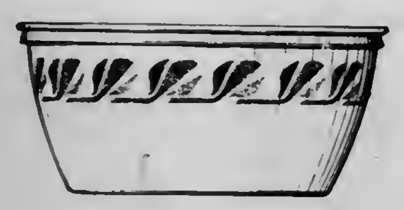


221,838

PACKAGING CUP

Robert A. Fraser, Baltimore, Md., assignor to J. H. Filbert, Inc., Baltimore, Md.
Filed May 28, 1970, Ser. No. 23,199
Term of patent 14 years
Int. Cl. D9—*04*

U.S. Cl. D9—220

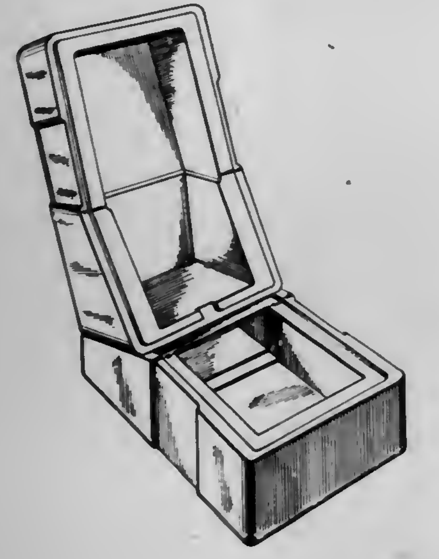


221,839

DISPLAY CONTAINER

Donald A. Leathers, 1 School St., South Easton, Mass. 02375
Filed July 13, 1970, Ser. No. 23,912
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—222

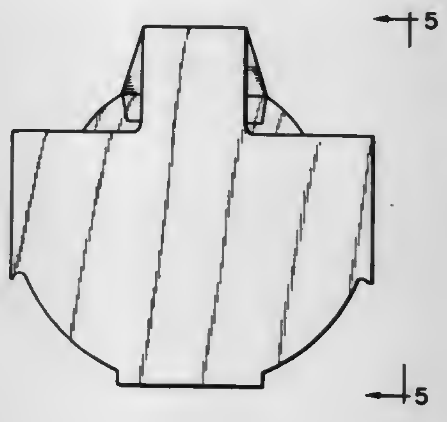


221,840

PACKAGE FOR CULINARY WARE

David J. Freiman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 20, 1970, Ser. No. 24,018
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—250

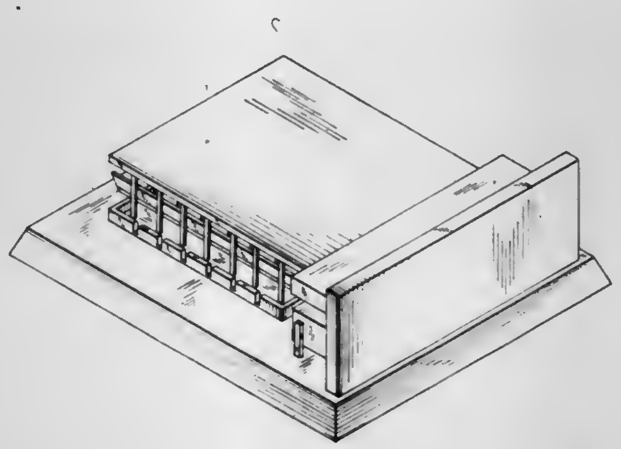


221,841

MEAT CUBING DEVICE

Irene Saxton, 250 W. 100th St., New York, N.Y. 10025
Filed June 29, 1970, Ser. No. 23,742
Term of patent 3½ years
Int. Cl. D15—*08*

U.S. Cl. D11—1

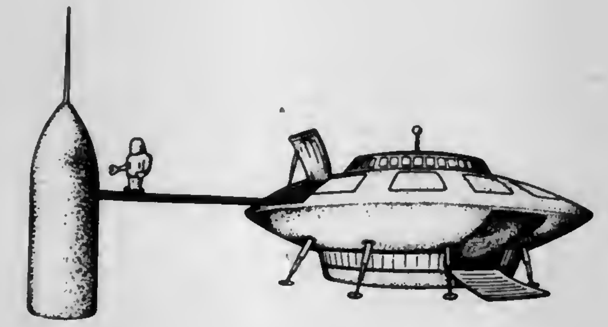


221,842

BUILDING

Lee Sebastian, 6372 Orange St., Los Angeles, Calif. 90048
Filed Nov. 28, 1969, Ser. No. 20,308
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D13—1

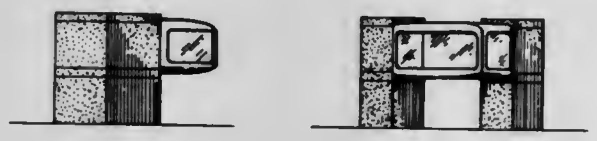


221,843

BUILDING UNIT

William C. Mead, 87 Day St., Granby, Conn. 06035
Continuation-in-part of design application Ser. No. 14,261, Nov. 1, 1968. This application June 8, 1970, Ser. No. 23,379
Term of patent 14 years
Int. Cl. D25—*04*

U.S. Cl. D13—1

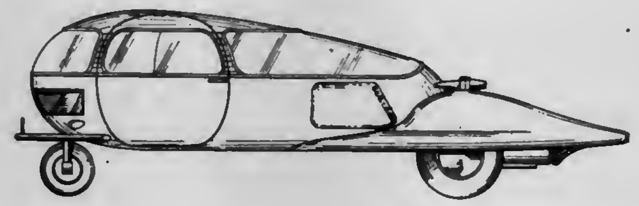


221,844

AUTOMOBILE

Paul M. Lewis, Loveland, Colo.
(P.O. Box 651, Sidney, Nebr. 69162)
Filed July 22, 1970, Ser. No. 24,063
Term of patent 14 years
Int. Cl. D12—*08*

U.S. Cl. D14—3

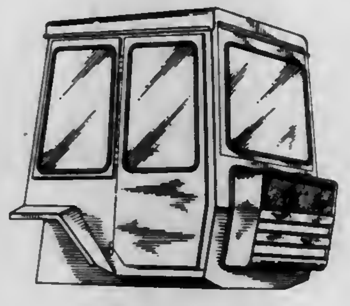


221,845

TRACTOR CAB

Leo J. Lorenz, Farmington, and Wilford E. Bean, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 21, 1970, Ser. No. 24,620
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D14—27

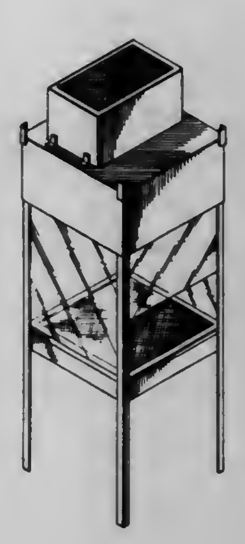


221,846

ENVIRONMENTAL WORK STATION

Warren E. Dexter, Fairfax, Va.
(P.O. Box 395, Annandale, Va. 22003)
Filed Apr. 1, 1970, Ser. No. 22,168
Term of patent 14 years
Int. Cl. D24—*01*

U.S. Cl. D16—2

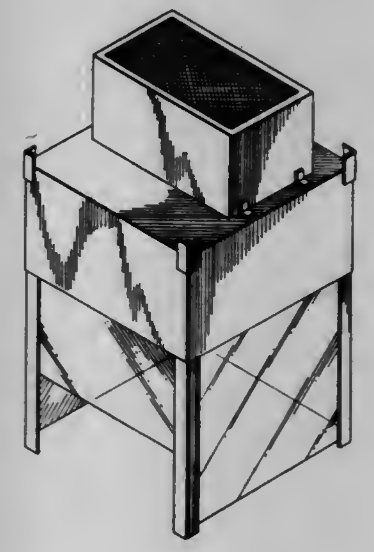


221,847

ENVIRONMENTAL WORK STATION

Warren E. Dexter, Fairfax, Va.
(P.O. Box 395, Annandale, Va. 22003)
Filed Apr. 1, 1970, Ser. No. 22,169
Term of patent 14 years
Int. Cl. D24—*01*

U.S. Cl. D16—2

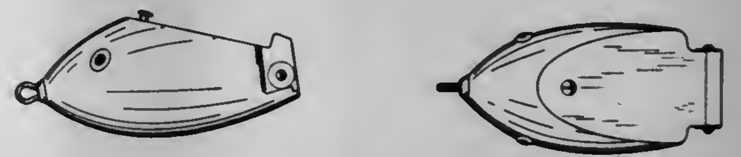


221,848

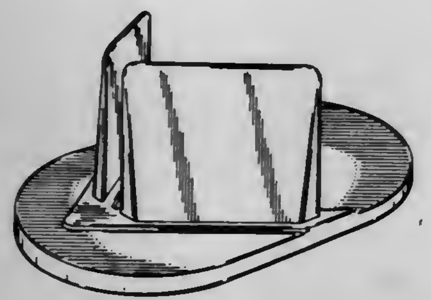
FISHING LURE BODY

James W. Omdall, Jr., Box 93, Palmyra, Wis. 53156
Filed Aug 4, 1970, Ser No 24,291
Term of patent 14 years
Int. Cl. D22—*05*

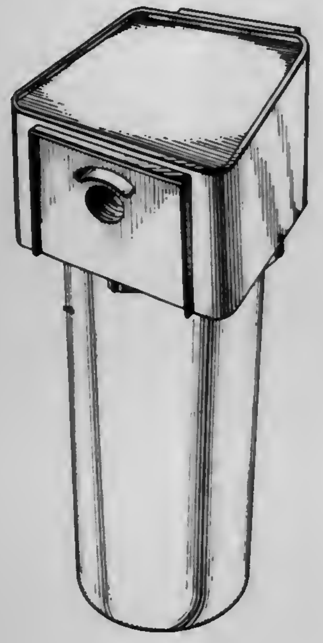
U.S. Cl. D22—27



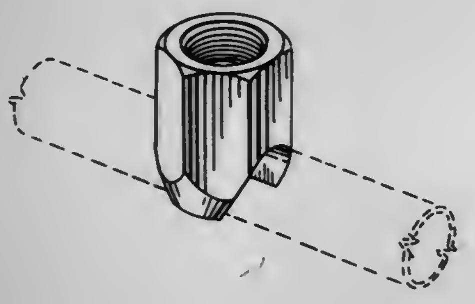
221,849
FISHING FLOAT
Leo J. Spade, Nashville, Kans. 67112
Filed May 20, 1970, Ser. No. 23,068
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30



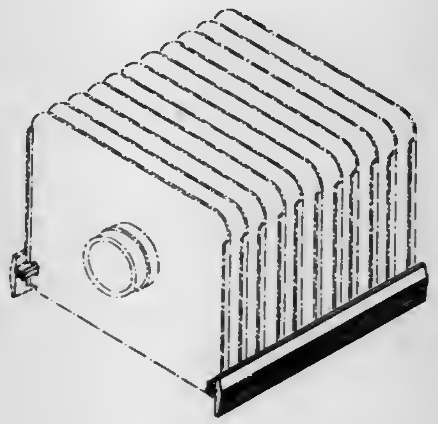
221,850
FILTER HOUSING
Douglas West Anderson, Palatine, Ill., assignor to Morton International, Inc., Chicago, Ill.
Filed Mar. 2, 1970, Ser. No. 21,698
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



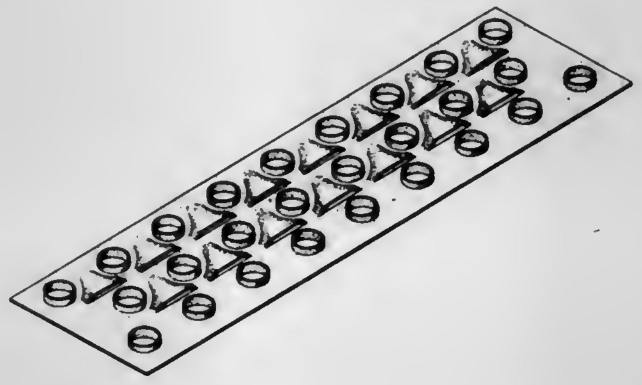
221,851
VALVE RECEIVING TUBING CONNECTOR
John W. Mullins, P.O. Box 20524, Oklahoma City, Okla. 73120
Filed Mar. 2, 1970, Ser. No. 21,708
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



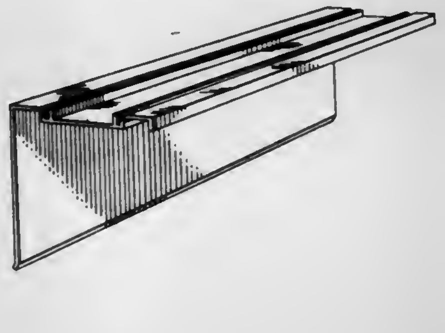
221,852
CORNER RAIL FOR FIN-AND-TUBE BASEBOARD HEATING ELEMENTS
Claude William Schaefer, Jr., 119 St. Dunstans Road, Baltimore, Md. 21212
Filed May 4, 1970, Ser. No. 22,800
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



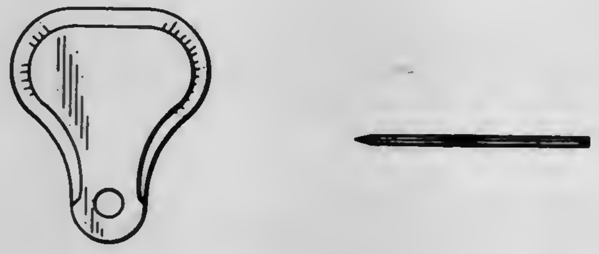
221,853
HEAT RADIATION PLATE
Keiichi Kimura, 2–304 Osakabe, Yaoshi, Osakafu, Japan
Filed Dec. 31, 1969, Ser. No. 20,722
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



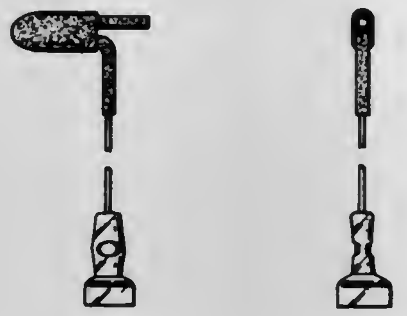
221,854
CURBING FOR ROOF VENTILATOR OPENING
Joshua R. Dowdell, Jr., Dallas, and Paul H. Sanderson, Jr., Lake Dallas, Tex., assignors to Dowco Corporation, Dallas, Tex.
Filed June 17, 1970, Ser. No. 23,540
Term of patent 14 years
Int. Cl. D23—*04*; D25—*01*; D8—*03*
U.S. Cl. D23—153



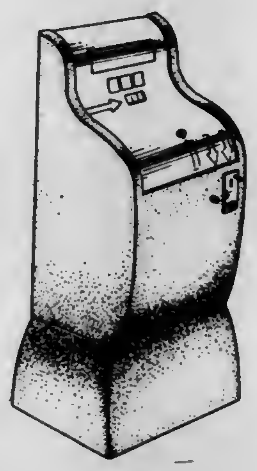
221,855
BLADE FOR A DENTAL INSTRUMENT
James Vannes Boone, Meadows Bldg., Dallas, Tex. 75206
Filed Oct. 13, 1969, Ser. No. 19,514
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



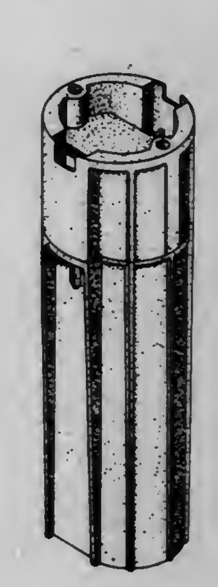
221,856
TEST LEAD
Newil J. Kinnard, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Jan. 8, 1970, Ser. No. 20,806
Term of patent 14 years
Int. Cl. D10—*11*
U.S. Cl. D26—1



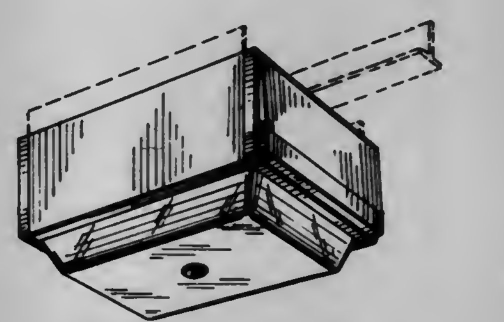
221,857
BREATH TESTING MACHINE CABINET
Herbert C. Schulze, Carlsbad, Calif. 92008; Sam Priestly, Carlsbad, Calif. (P.O. Box 1069, Oceanside, Calif. 92054); and Marthe-Ann Klimo, P.O. Box 105, Encinitas, Calif. 92024
Filed May 13, 1970, Ser. No. 22,950
Term of patent 3½ years
Int. Cl. D21—*04*
U.S. Cl. D26—1



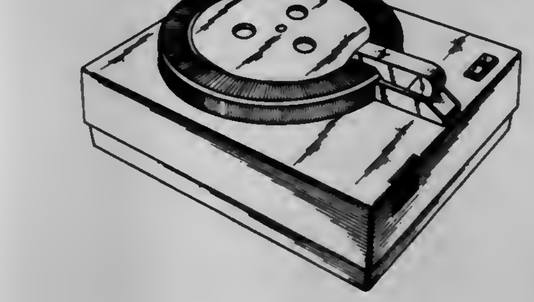
221,858
SUBMERSIBLE MOTOR COMPONENTS HOUSING
Elmer M. Deters, Muscatine, Iowa, assignor to Red Jacket Manufacturing Company, Davenport, Iowa
Filed May 18, 1970, Ser. No. 23,029
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—1E



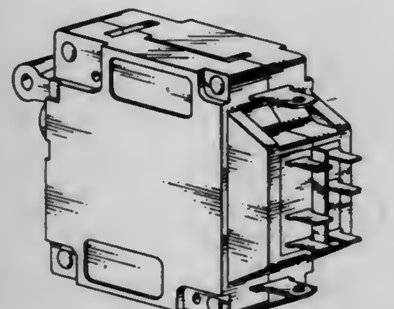
221,859
HOUSING FOR GARAGE DOOR OPERATOR
Giacinto C. Dercoli, Park Forest, Ill., assignor to The Alliance Manufacturing Company, Inc.
Filed Jan. 26, 1970, Ser. No. 21,066
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D26—5



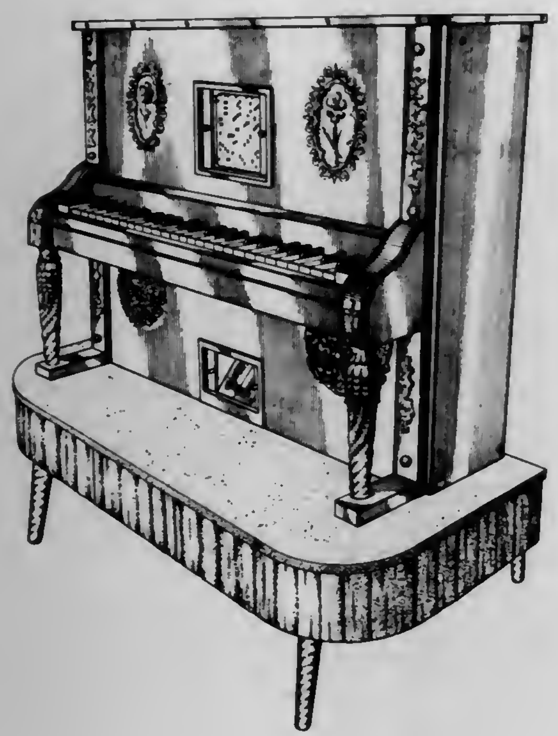
221,860
SMALL CARD READER
Bernhard Cramer, Pforzheim, and Louis Lucien Lepoix, Baden-Baden, Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed May 4, 1970, Ser. No. 22,787
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



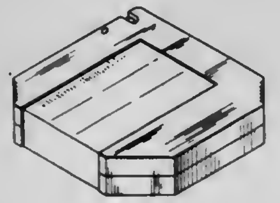
221,861
CIRCUIT BREAKER
Ralph B. Davis, Lawrence Township, Mercer County, N.J.
(8 Devon Ave., Trenton, N.J. 98638)
Filed Apr. 27, 1970, Ser. No. 22,657
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



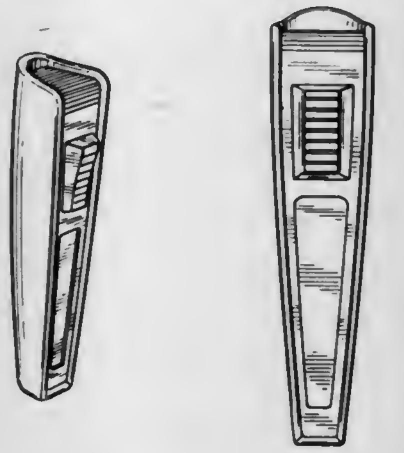
221,862
TAPE PLAYER
LeRoy Benjamin, 501 N. Highland Ave.,
Hollywood, Calif. 90036
Filed Aug. 18, 1969, Ser. No. 18,732
Term of patent 14 years
Int. Cl. D14—*01*; D17—*01*
U.S. Cl. D26—14



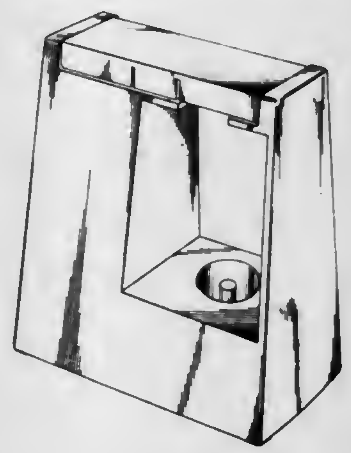
221,863
TAPE CASSETTE OR SIMILAR ARTICLE
Lewis W. Bennett, Rochester, N.Y., assignor to
The Singer Company
Filed Apr. 13, 1970, Ser. No. 22,377
Term of patent 14 years
Int. Cl. D14—*02*; D16—*99*
U.S. Cl. D26—14



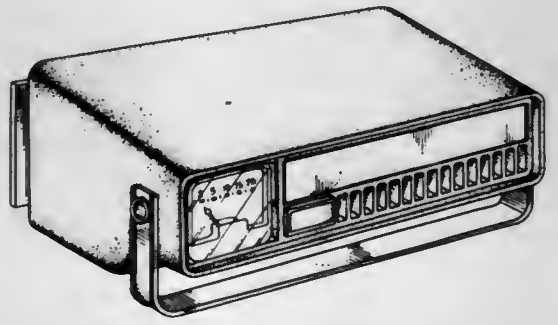
221,864
MICROPHONE
Robert E. Haueter, Minneapolis, Minn., assignor to
The Telex Corporation, Tulsa, Okla.
Filed July 24, 1970, Ser. No. 24,105
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



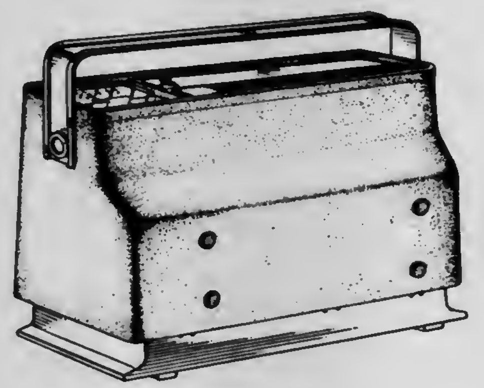
221,865
COMBINED HOLDER AND RECHARGER FOR ELECTRIC SHAVERS
Norman D. Poisson, 21 Nicholson St.,
Marblehead, Mass. 01945
Filed Dec. 18, 1969, Ser. No. 20,562
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



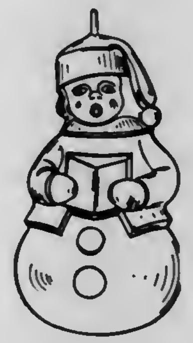
221,866
BATTERY CHARGER
Lawrence W. Bonzer, Long Beach, Calif., assignor to
Lear-Siegler, Incorporated, Santa Monica, Calif.
Filed Sept. 30, 1970, Ser. No. 25,264
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



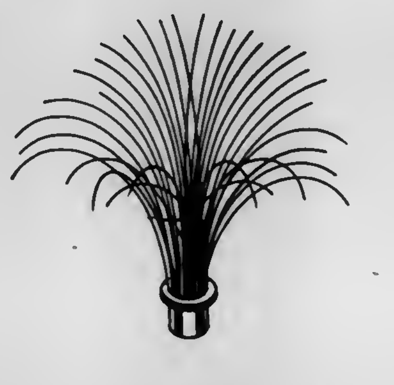
221,866
BATTERY CHARGER
Lawrence W. Bonzer, Long Beach, Calif., assignor to
Lear-Siegler, Incorporated, Santa Monica, Calif.
Filed Sept. 30, 1970, Ser. No. 25,264
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



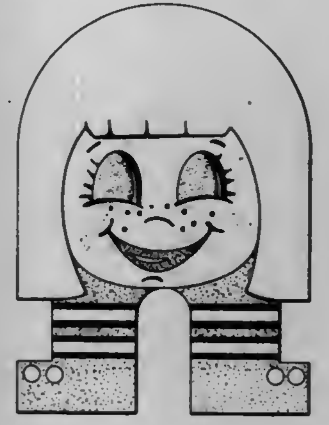
221,867
CHRISTMAS TREE ORNAMENT
Ramona McD. Trush, 67 Albany St.,
Cazenovia, N.Y. 13035
Filed Mar. 4, 1970, Ser. No. 21,734
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1



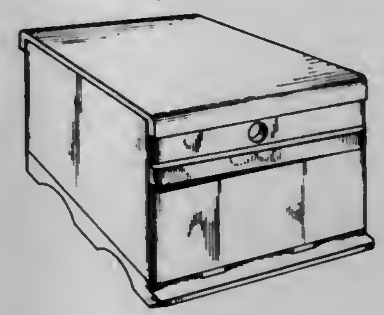
221,868
FIBER OPTIC CHRISTMAS TREE ORNAMENT
Shirlee E. Fairchild and Virginia M. Lawn, Huntington Beach, Calif., assignors to Poly-Optics, Inc.
Filed Apr. 30, 1970, Ser. No. 22,721
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1



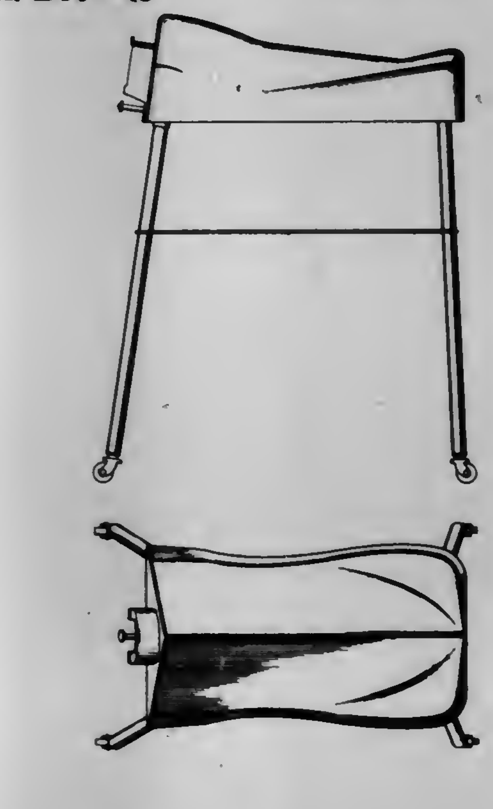
221,869
DECORATIVE PLAQUE OR SIMILAR ARTICLE
Joan K. Deck, W. Circle Drive,
Martinsville, N.J. 08836
Filed June 15, 1970, Ser. No. 23,466
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23



221,870
FOAMED PLASTIC BEE HIVE
Lionel C. L. Kett, P.O. Box 105,
Pleasanton, Calif. 94566
Filed Nov. 5, 1969, Ser. No. 19,948
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



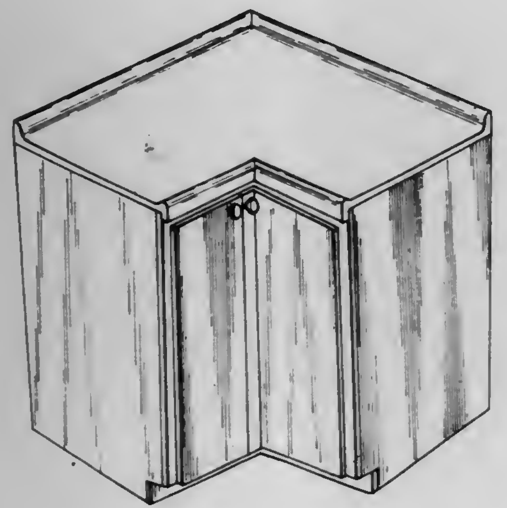
221,871
SADDLE RACK
Woodrow W. Pearce, 1200 Riverside Drive,
Burbank, Calif. 91506
Filed Nov. 24, 1969, Ser. No. 20,241
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—45



221,872
CABINET

Valentino Lancione, 908 Hazel Way,
Coraopolis, Pa. 15108
Filed Sept. 30, 1969, Ser. No. 19,354
Term of patent 14 years
Int. Cl. D6—*04*

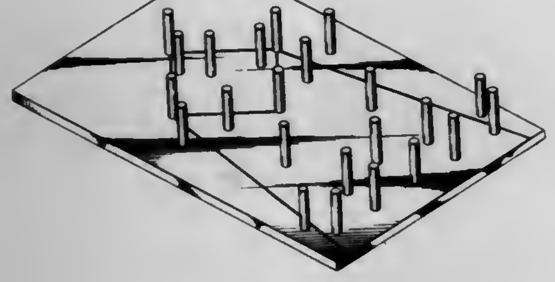
U.S. Cl. D33—19



221,873
GAME BOARD OR SIMILAR ARTICLE

Joseph E. Stoy, 1525 NE. 72nd St.,
Portland, Oreg. 97213
Filed Jan. 12, 1970, Ser. No. 20,890
Term of patent 14 years
Int. Cl. D21—*01*

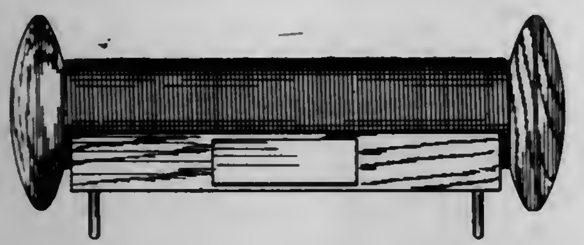
U.S. Cl. D34—5



221,874
EXERCISER

Harry J. Collins, Jr., Milwaukee, Wis., and William F. Deknatel, Chicago, Ill., assignors to The Setwell Company, Traverse City, Mich.
Filed May 15, 1970, Ser. No. 23,003
Term of patent 14 years
Int. Cl. D21—*03*

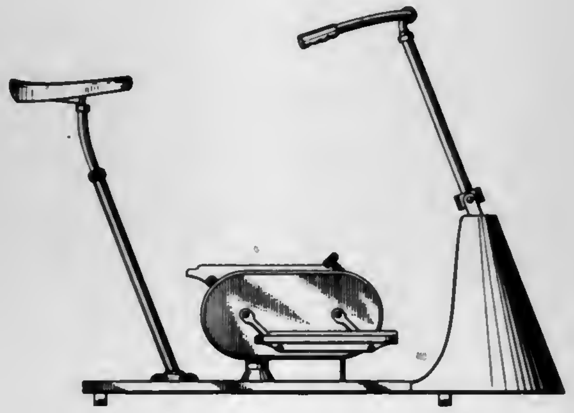
U.S. Cl. D34—5



221,875
STATIONARY EXERCISE BICYCLE

David H. Braun, Miami, Fla., assignor to Allied Leisure Industries, Inc., Hialeah, Fla.
Filed May 28, 1970, Ser. No. 23,196
Term of patent 14 years
Int. Cl. D21—*03*

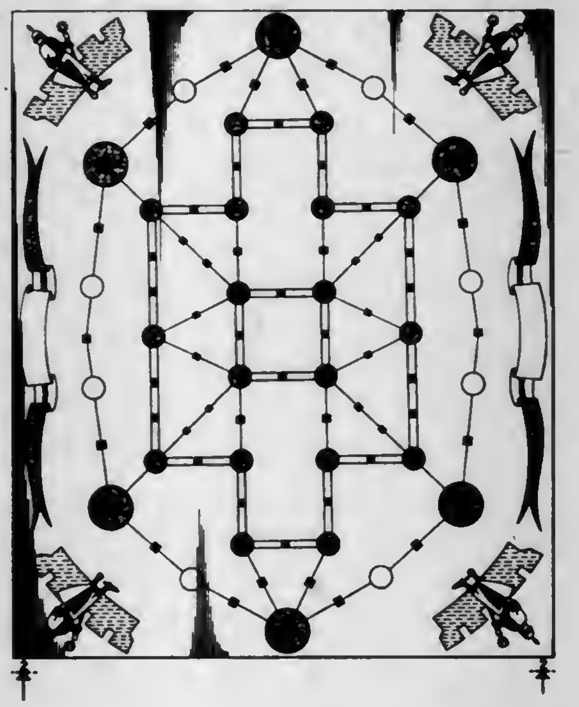
U.S. Cl. D34—5



221,876
GAME BOARD

William S. Kelly, 67—81 Alderton St.,
Rego Park, N.Y. 11374
Filed May 28, 1970, Ser. No. 23,202
Term of patent 14 years
Int. Cl. D21—*01*

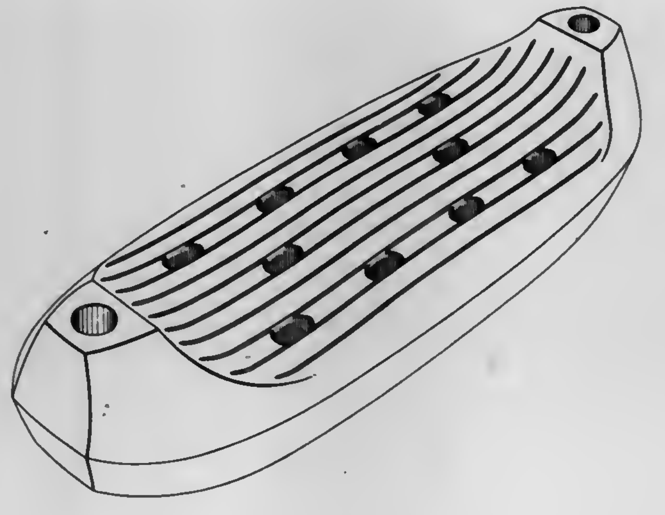
U.S. Cl. D34—5



221,877
SWING SEAT

James E. Richardson, Weston, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.
Filed July 17, 1970, Ser. No. 24,003
Term of patent 14 years
Int. Cl. D21—*02*

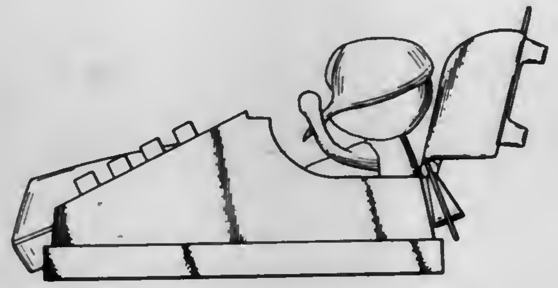
U.S. Cl. D34—5



221,878
TOY TELEPHONE

Ernest L. Thornell, Horicon, Wis., assignor to
The Quaker Oats Company
Continuation of design application Ser. No. 16,106, Mar. 7, 1969. This application June 4, 1970, Ser. No. 23,320
Term of patent 14 years
Int. Cl. D21—*01*

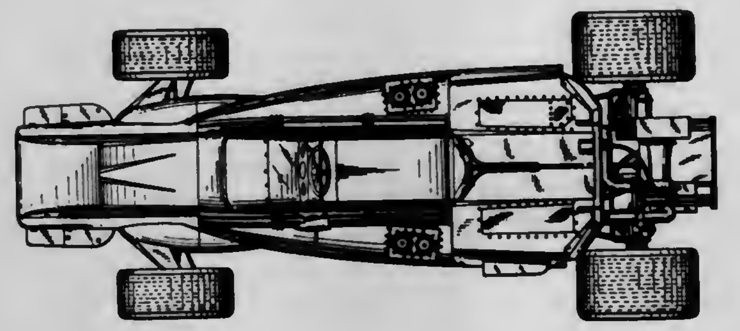
U.S. Cl. D34—15



221,879
MODEL RACING CAR

Daniel S. Gurney, Santa Ana, Calif., assignor to All American Racers, Inc., Santa Ana, Calif.
Filed Sept. 10, 1970, Ser. No. 24,941
Term of patent 7 years
Int. Cl. D21—*01*

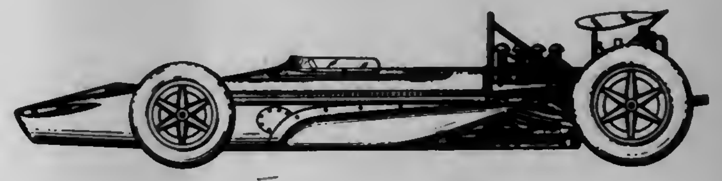
U.S. Cl. D34—15



221,880
MODEL RACING CAR

Robert John Herd, Milton Malsor, England, assignor to March Engineering Limited, Oxfordshire, England
Filed July 31, 1970, Ser. No. 24,246
Claims priority, application Great Britain Feb. 2, 1970
Term of patent 7 years
Int. Cl. D21—*02*

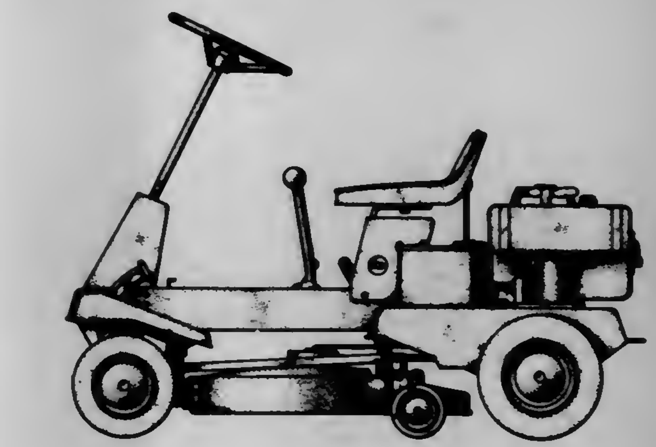
U.S. Cl. D34—15

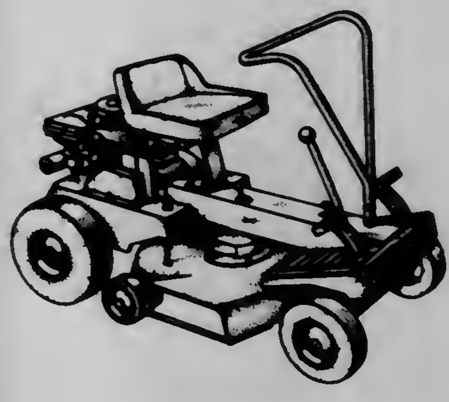


221,881
RIDING MOWER

Robert B. Mead, Wilmington, Ohio, assignor to Mast-Foos Manufacturing Company, Inc., Springfield, Ohio
Filed Apr. 2, 1970, Ser. No. 22,199
Term of patent 14 years
Int. Cl. D15—*03*

U.S. Cl. D40—1

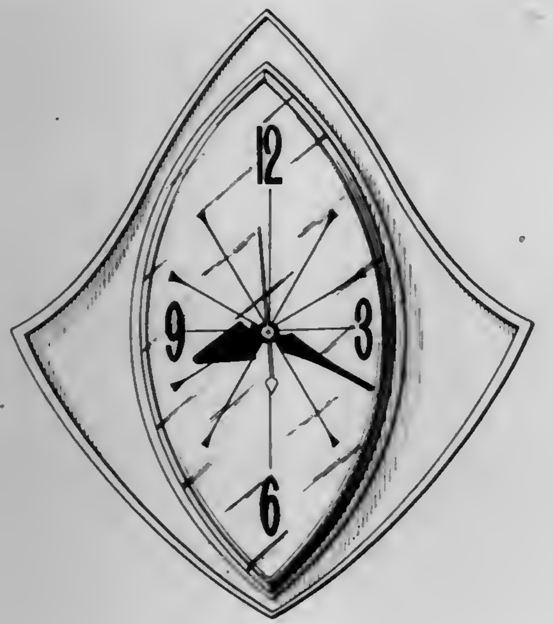




221,882
CLOCK OR SIMILAR ARTICLE

Arthur M. Felske, Westport, Conn., assignor to
General Electric Company
Filed June 29, 1970, Ser. No. 23,707
Term of patent 14 years
Int. Cl. D10—*01*

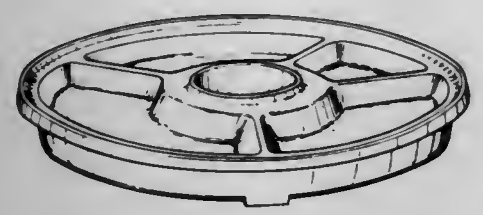
U.S. Cl. D42—7



221,883
BUFFET TRAY

John Brian Cash, Hotel Picadilly,
Manchester 1, England
Filed Apr. 2, 1970, Ser. No. 22,214
Claims priority, application Great Britain Nov. 21, 1969
Term of patent 14 years
Int. Cl. D7—*01*

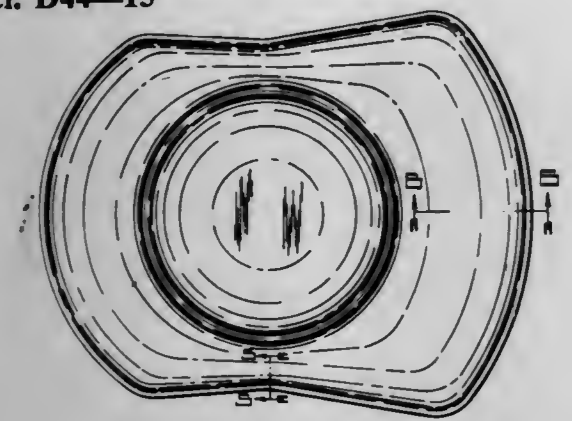
U.S. Cl. D44—10



221,884
COMBINED BOWL AND PLATE

Charles L. Seltz, Ann Arbor, Mich., assignor to King-Seeley Thermos Company, Ann Arbor, Mich.
Filed July 6, 1970, Ser. No. 23,838
Term of patent 14 years
Int. Cl. D7—*01*

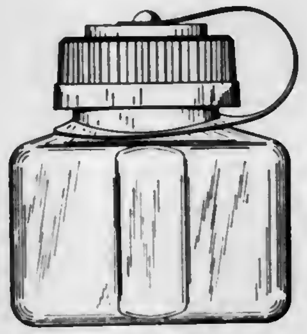
U.S. Cl. D44—15



221,885
LUBRICATOR RESERVOIR OR SIMILAR ARTICLE

Donald G. Gruett, Manitowoc, Wis., assignor to
Oil-Rite Corporation, Manitowoc, Wis.
Filed Apr. 15, 1970, Ser. No. 22,444
Term of patent 14 years
Int. Cl. D15—*99*

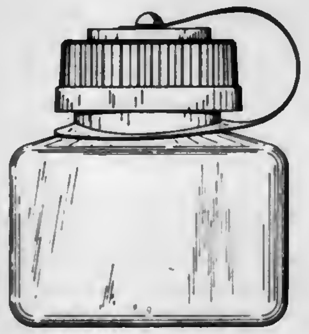
U.S. Cl. D46—1



221,886
LUBRICATOR RESERVOIR OR SIMILAR ARTICLE

Donald G. Gruett, Manitowoc, Wis., assignor to
Oil-Rite Corporation, Manitowoc, Wis.
Filed Apr. 15, 1970, Ser. No. 22,445
Term of patent 14 years
Int. Cl. D15—*99*

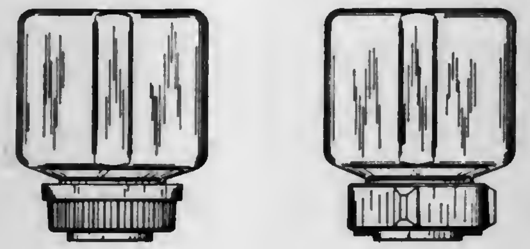
U.S. Cl. D46—1



221,887
LUBRICATOR RESERVOIR OR SIMILAR ARTICLE

Donald G. Gruett, Manitowoc, Wis., assignor to
Oil-Rite Corporation, Manitowoc, Wis.
Filed Apr. 15, 1970, Ser. No. 22,446
Term of patent 14 years
Int. Cl. D15—*99*

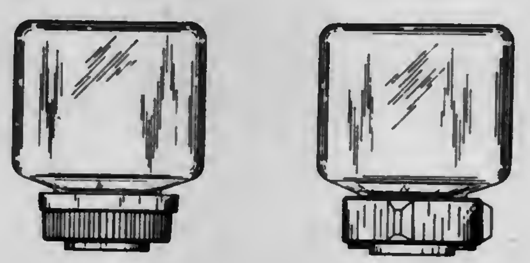
U.S. Cl. D46—1



221,888
LUBRICATOR RESERVOIR OR SIMILAR ARTICLE

Donald G. Gruett, Manitowoc, Wis., assignor to
Oil-Rite Corporation, Manitowoc, Wis.
Filed Apr. 15, 1970, Ser. No. 22,447
Term of patent 14 years
Int. Cl. D15—*99*

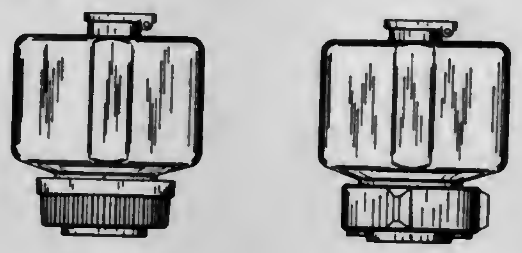
U.S. Cl. D46—1



221,889
LUBRICATOR RESERVOIR OR SIMILAR ARTICLE

Donald G. Gruett, Manitowoc, Wis., assignor to
Oil-Rite Corporation, Manitowoc, Wis.
Filed Apr. 15, 1970, Ser. No. 22,448
Term of patent 14 years
Int. Cl. D15—*99*

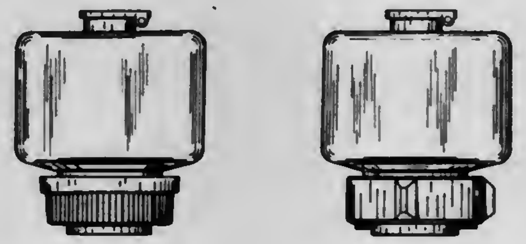
U.S. Cl. D46—1



221,890
LUBRICATOR RESERVOIR OR SIMILAR ARTICLE

Donald G. Gruett, Manitowoc, Wis., assignor to
Oil-Rite Corporation, Manitowoc, Wis.
Filed Apr. 15, 1970, Ser. No. 22,449
Term of patent 14 years
Int. Cl. D15—*99*

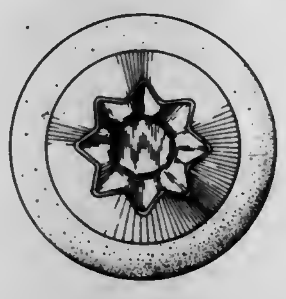
U.S. Cl. D46—1



221,891
CANDLE HOLDER

David Douglas, 1119 Lincoln Blvd.,
Manitowoc, Wis. 54220
Filed Sept. 29, 1970, Ser. No. 25,260
Term of patent 14 years
Int. Cl. D26—*01*

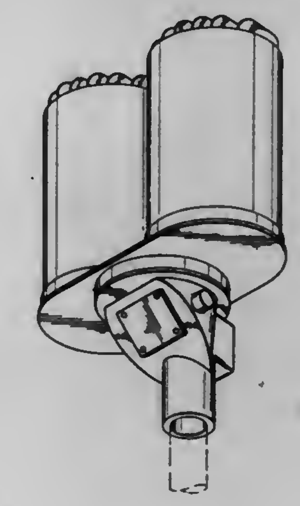
U.S. Cl. D48—2



221,892
COMBINED BALLAST SUPPORT AND BRACKET FOR A LIGHT FIXTURE

Carl R. Snyder, Alief, Tex., assignor to
Esquire, Inc., New York, N.Y.
Filed Mar. 30, 1970, Ser. No. 22,099
Term of patent 14 years
Int. Cl. D26—*99, 03*

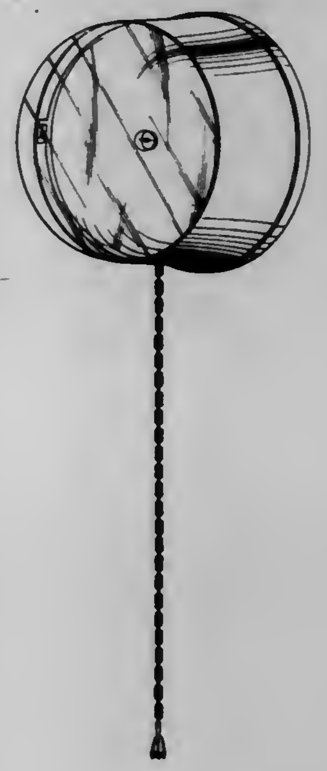
U.S. Cl. D48—4



221,893
BATTERY POWERED LIGHTING FIXTURE FOR WALL, CEILING OR THE LIKE

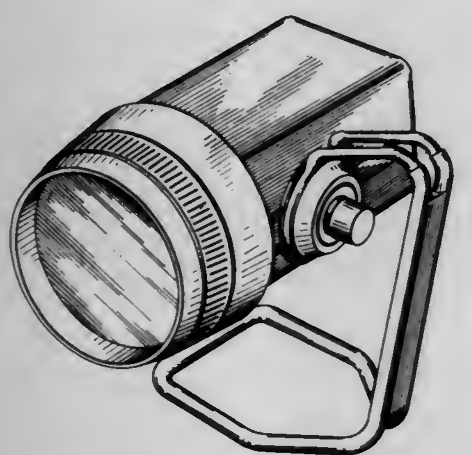
Curtiss M. Peasley, 25 Boulder Drive,
Burlington, Mass. 01803
Filed Sept. 10, 1970, Ser. No. 24,933
Term of patent 14 years
Int. Cl. D26—*05*

U.S. Cl. D48—4



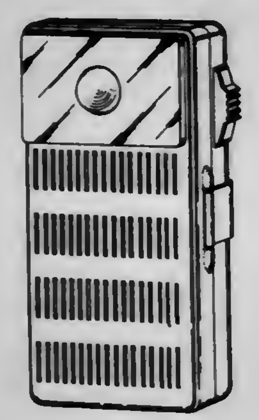
221,894
COMBINED ELECTRIC LANTERN AND MOVEABLE HANDLE THEREFOR

Nolan K. Rhoades, Beloit, Wis., assignor to ESB Incorporated
Filed Feb. 27, 1970, Ser. No. 21,660
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24



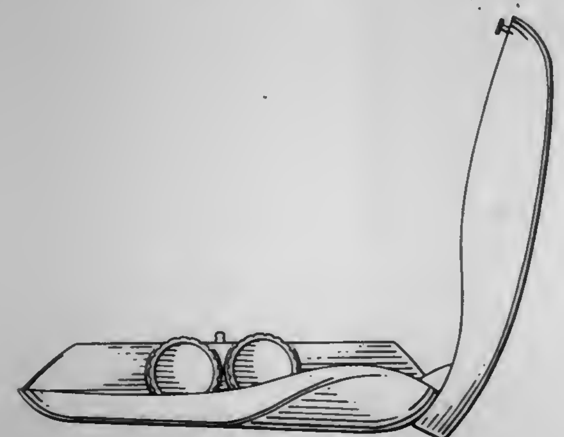
221,895
CASING FOR AN ELECTRIC LAMP

Rene Marcel Angibaud, Vernon, France, assignor to Société les Piles Wonder
Filed July 16, 1970, Ser. No. 23,981
Claims priority, application France Feb. 18, 1970
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24



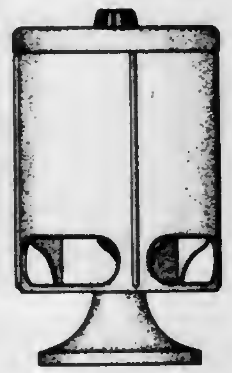
221,896
FERTILITY TIMING CALCULATOR

James E. Richardson, Weston, Conn., assignor to Cambridge Research and Development Group, Westport, Conn.
Filed Nov. 21, 1969, Ser. No. 20,209
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—1



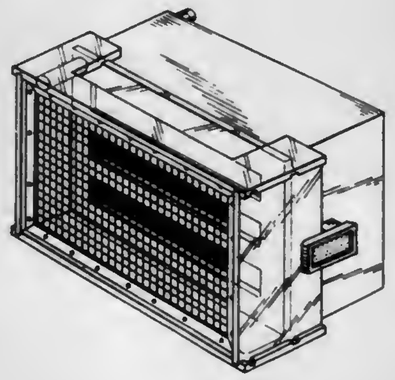
221,897
BOTTLE DISPENSER

Louis Brodsky, Parlin, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed May 7, 1970, Ser. No. 22,880
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—2



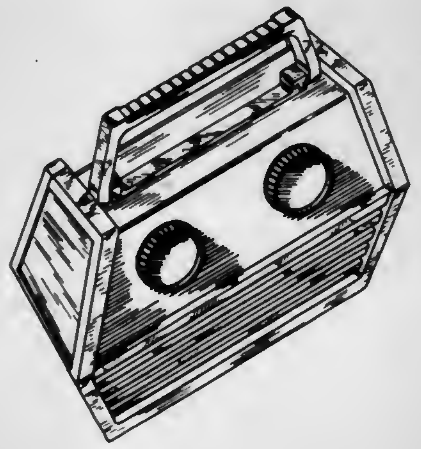
221,898
ELECTROSTATIC FIBER APPLICATOR

Vernon J. Pewtress, Farmington Township, Oakland County, Mich., assignor to Co-Polymer Chemicals, Inc., Livonia, Mich.
Filed Feb. 24, 1970, Ser. No. 21,567
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D55—1



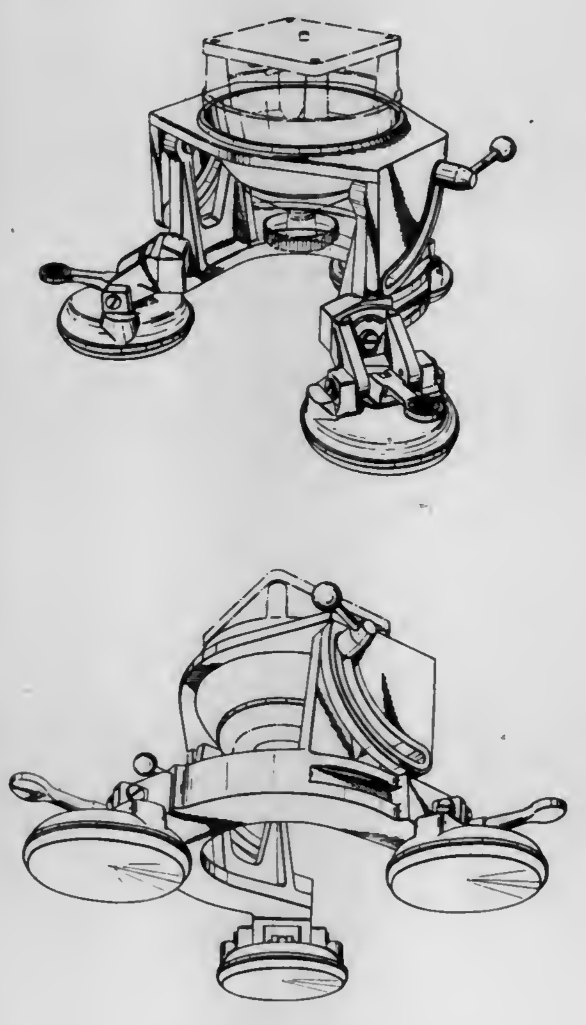
221,899
PORTABLE RADIO

E. Burton Benjamin, Chicago, Ill., assignor to Midland International Corporation, North Kansas City, Mo.
Filed May 25, 1970, Ser. No. 23,140
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



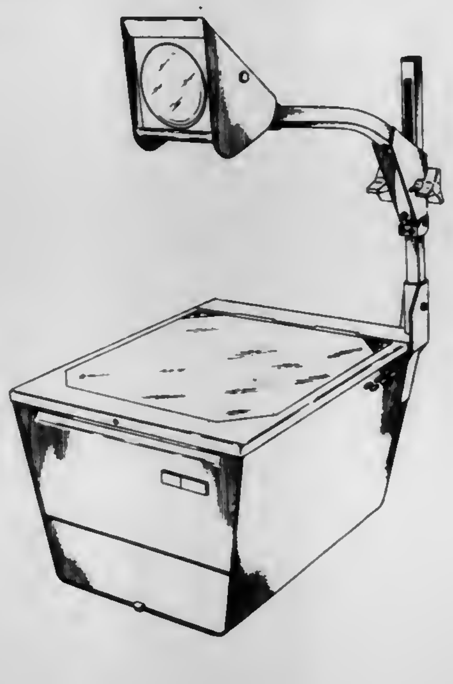
221,900
SUPPORT FOR A CINEMATOGRAPH, TELEVISION, STILL CAMERA OR OTHER OPTICAL INSTRUMENT

David Wylie Samuelson, Ronald Valentine Prime, and Brian Frederick Elsden, London, England, assignors to Samuelson Film Service Limited, London, England
Filed Dec. 23, 1969, Ser. No. 20,612
Term of patent 14 years
Int. Cl. D16—*07*
U.S. Cl. D61—1



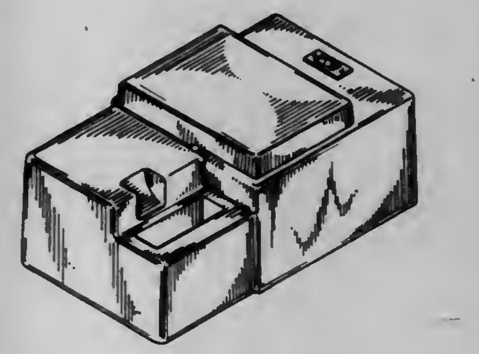
221,901
OVERHEAD PROJECTOR

Jacob W. Patla, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Mar. 5, 1970, Ser. No. 21,748
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



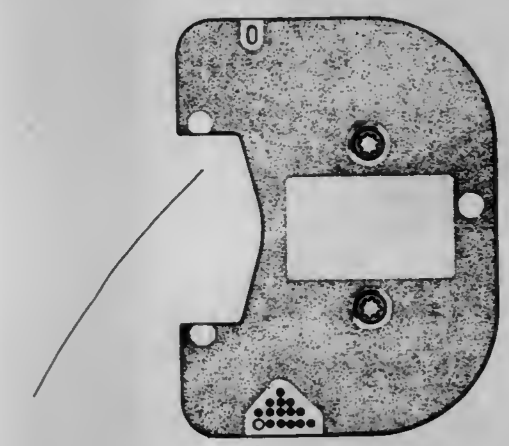
221,902
SCROLL STRIPPER FOR MICROFILM CARTRIDGE

Nicholas P. Schleich, Golf, Ill., assignor to The Matrix Corporation
Filed Mar. 9, 1970, Ser. No. 21,814
Term of patent 7 years
Int. Cl. D16—*06*
U.S. Cl. D61—1



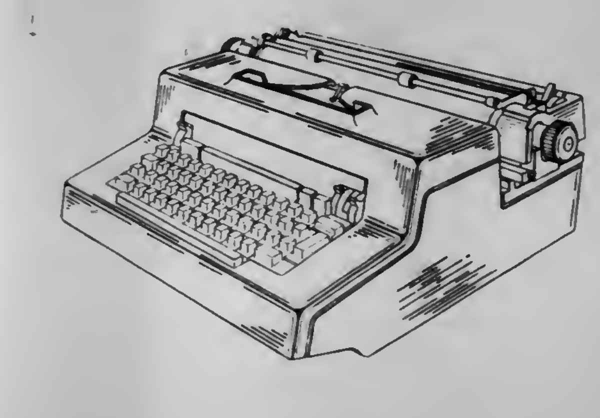
221,903
FILM CARTRIDGE

Richard Alan De Vries, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 17, 1970, Ser. No. 24,541
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1



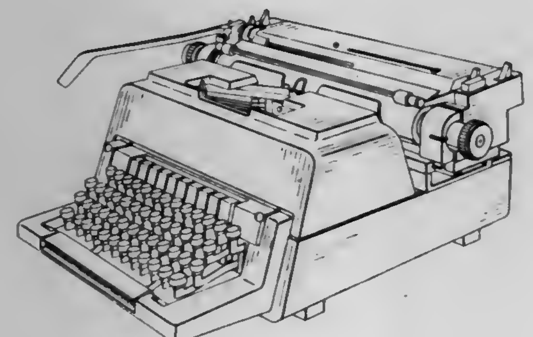
221,904
TYPEWRITER

Ettore Sottsass, Jr., Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Torino, Italy
Filed Oct. 2, 1970, Ser. No. 25,307
Claims priority, application Italy Apr. 20, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



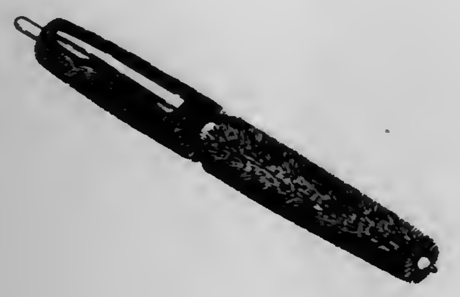
221,905
TYPEWRITER

Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Torino, Italy
Filed Nov. 9, 1970, Ser. No. 25,898
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



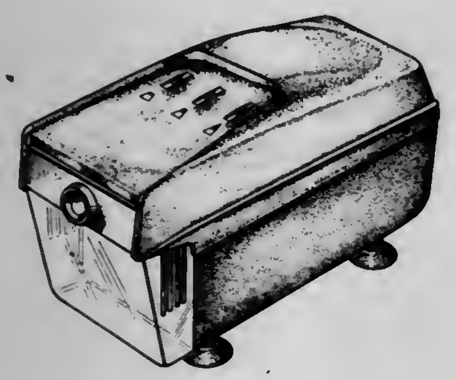
221,906
WRITING IMPLEMENT

Joseph J. Collins, Los Angeles, Calif. (15050 Burbank Blvd., Van Nuys, Calif. 91401), and Pasqual F. Fortugno, Los Angeles, Calif.; said Fortugno assignor to said Collins
Filed Apr. 16, 1970, Ser. No. 22,466
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17



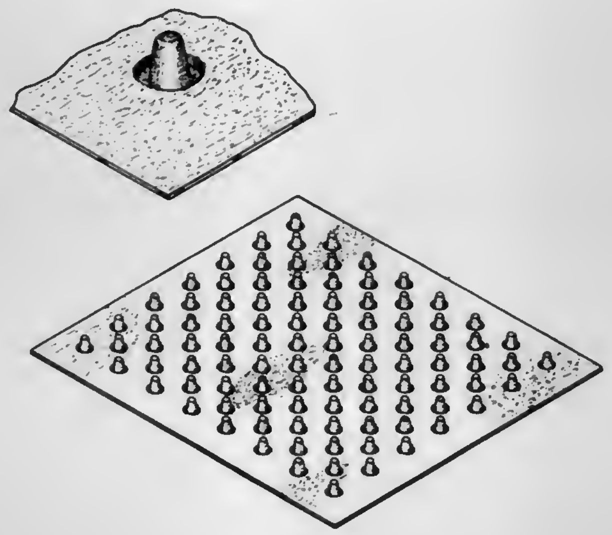
221,907
ELECTRIC PENCIL SHARPENER

Daisuke Kajiwara, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 14, 1970, Ser. No. 24,962
Claims priority, application Japan Mar. 20, 1970
Term of patent 14 years
Int. Cl. D19—*099*
U.S. Cl. D74—21



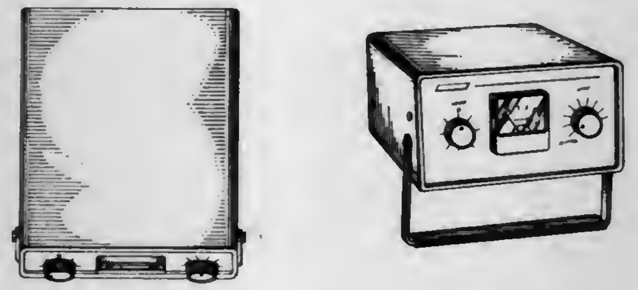
221,908
SURGICAL INSTRUMENT HOLDER

Howard Berkowitz, Stony Brook, N.Y., assignor to Surgi-Med Corporation, Great Neck, N.Y.
Filed Jan. 12, 1970, Ser. No. 20,875
Term of patent 14 years
Int. Cl. D24—*99;* D5—*03*
U.S. Cl. D83—1



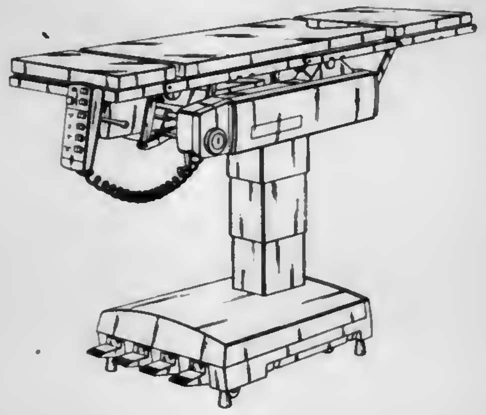
221,909
AUTOMATIC X-RAY EXPOSURE CONTROL UNIT

Victor E. De Lucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.
Filed Feb. 9, 1970, Ser. No. 21,328
Term of patent 14 years
Int. Cl. D24—*02;* D14—*03*
U.S. Cl. D83—1



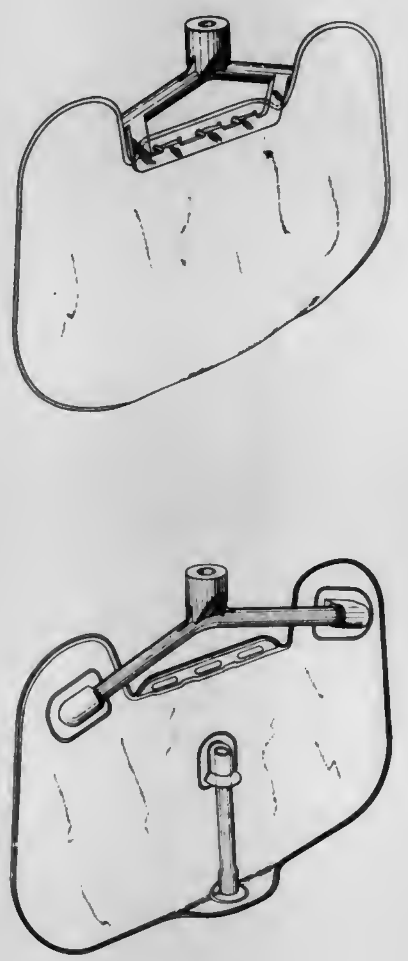
221,910
SURGICAL TABLE

Thomas Brendgord, Fairview, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Feb. 9, 1970, Ser. No. 21,339
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



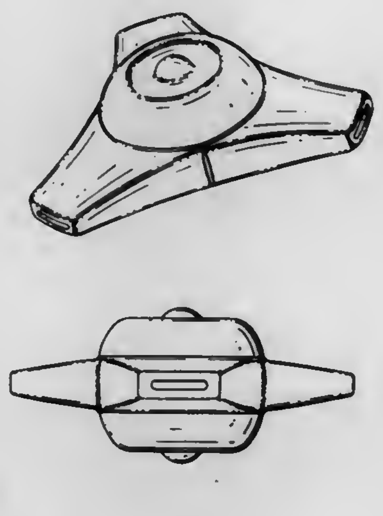
221,911
MEDICAL DRAINAGE BAG OR SIMILAR ARTICLE

Richard E. Ericson, Keene, N.H., assignor to Elliot Laboratories, Inc., Fitzwilliam, N.H.
Filed Mar. 19, 1970, Ser. No. 21,971
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—1



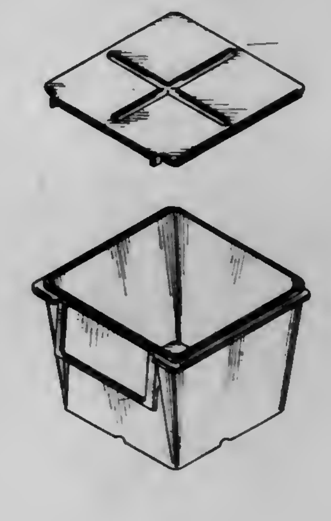
221,912
CHILD'S MUSICAL TEETHING TOY

David Day, Hill Cottage, Pippingford, Nutley, Sussex, England
Filed Aug. 6, 1970, Ser. No. 24,338
Term of patent 7 years
Int. Cl. D24—*05*
U.S. Cl. D83—8



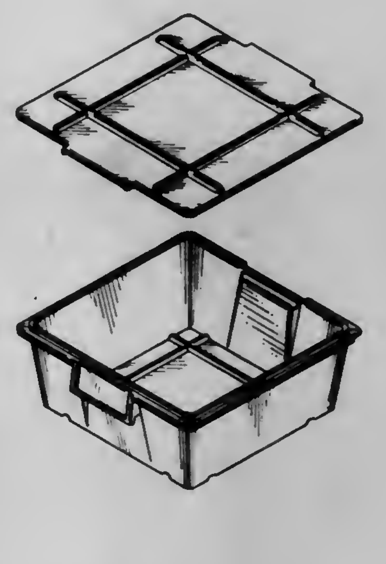
221,913
COMBINED STACKABLE CONTAINER AND COVER THEREFOR

George D. Perkins, South Pasadena, and David E. Workman, Pasadena, Calif., and Joseph W. Kneier, Chesterland, Ohio, assignors to Pendleton Tool Industries, Inc., Los Angeles, Calif.
Original design appplication Dec. 16, 1968, Ser. No. 14,977, now Patent No. 218,658, dated Sept. 8, 1970. Divided and this application May 6, 1970, Ser. No. 22,841
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



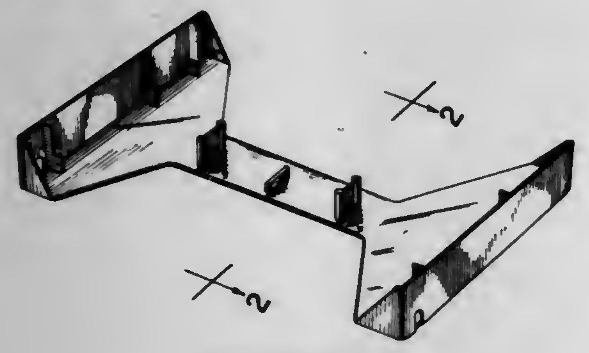
221,914
COMBINED STACKABLE CONTAINER AND COVER THEREFOR

George D. Perkins, South Pasadena, and David E. Workman, Pasadena, Calif., and Joseph W. Kneier, Chesterland, Ohio, assignors to Pendleton Tool Industries, Inc., Los Angeles, Calif.
Original design application Dec. 16, 1968, Ser. No. 14,977, now Patent No. 218,658, dated Sept. 8, 1970. Divided and this application May 6, 1970, Ser. No. 22,847
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



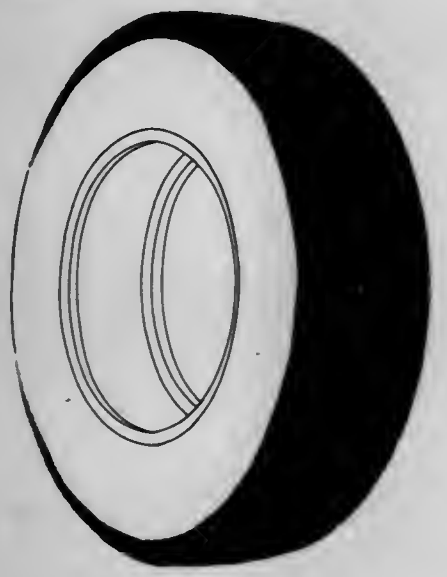
221,915
TAPE CASSETTE TRAY

Robert L. Goldthwaite, New Milford, Conn., and Donald D. Merry, Plymouth, Mich., assignors to Richardson-Merrell Inc., New York, N.Y.
Filed Aug. 12, 1970, Ser. No. 24,444
Term of patent 14 years
Int. Cl. D3—*99;* D14—*02*
U.S. Cl. D87—1



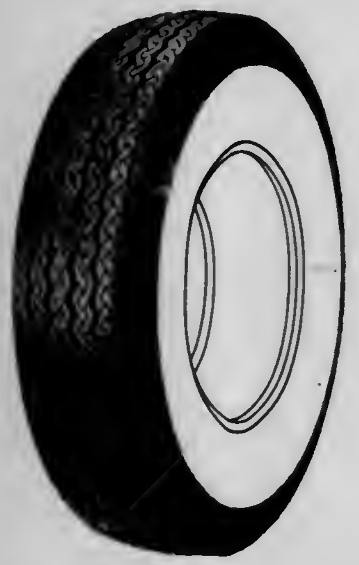
221,916
TIRE

Harold D. Fetty, Birmingham, Mich., and James J. Martell and Walter W. Hinkel, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 17, 1970, Ser. No. 24,513
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



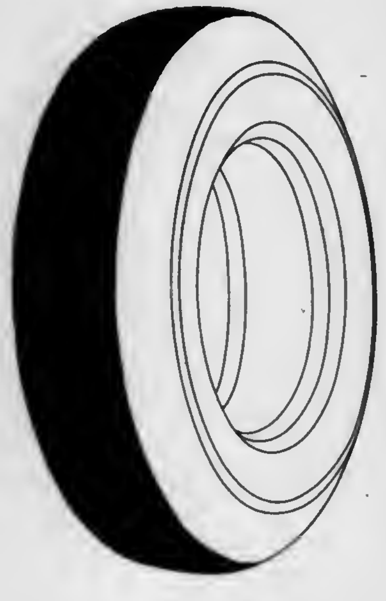
221,917
TIRE

Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 2, 1970, Ser. No. 24,804
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



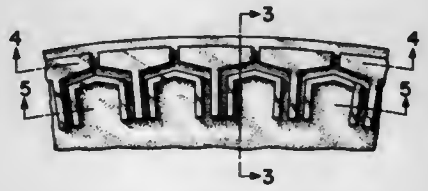
221,918
TIRE

Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 8, 1970, Ser. No. 24,884
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



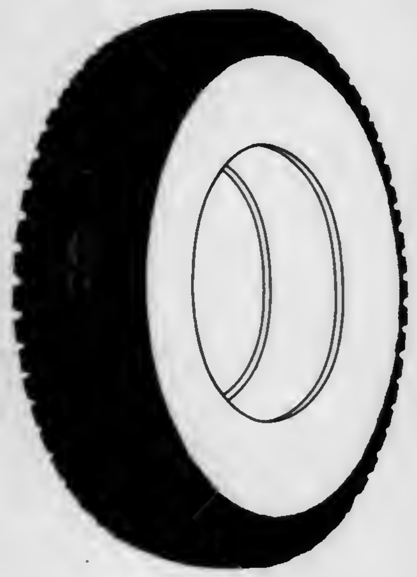
221,919
TIRE

Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 8, 1970, Ser. No. 24,885
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



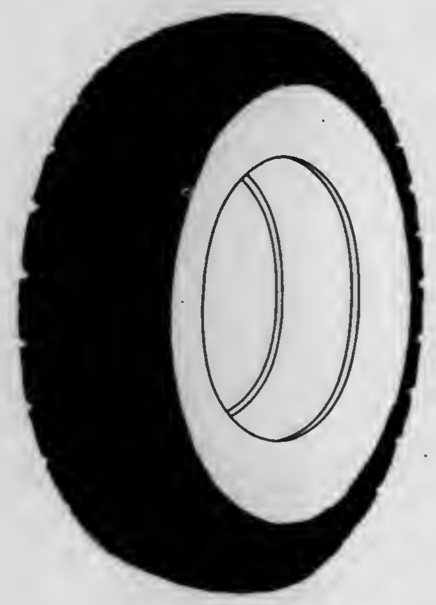
221,920
TIRE

Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 10, 1970, Ser. No. 24,916
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



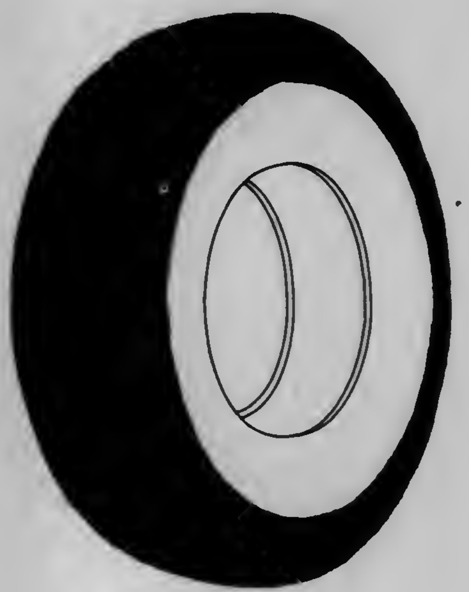
221,921
TIRE

Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 10, 1970, Ser. No. 24,917
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



221,922
TIRE

Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 10, 1970, Ser. No. 24,918
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF SEPTEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-T-O, Inc.: *See—*
  - Gray, Robert F., 3,604,175.
- AB Lyckeaborgs Bruk: *See—*
  - Lewin, Gunnar Erik Werner, 3,604,212.
- Abbiati, Ettore, to Olivetti, Ing., C., & C., S.p.A. Biquinary calculating machine. 3,604,619, Cl. 235-61.
- Abbott, Frank R., to United States of Ameria, Navy. Electrodynamic sonar projector. 3,605,080, Cl. 340-12.
- Abercrombie, Jonathan C.: *See—*
  - Wood, David L.; and Abercrombie, Jonathan C.,3,604,921.
- ABU Aktiebolag: *See—*
  - Nurmse, Karl; and Svensson, Hugo Ragnvald, 3,604,658.
- ACF Industries, Incorporated: *See—*
  - Smith, Garth R., 3,604,578.
- Achberger, Melvin B., to Goodrich, B. F., Company, The. Pneumatic de-icer. 3,604,666, Cl. 244-134.
- Adams & Whelan: *See—*
  - Whelan, John C., 3,604,126.
- Adams, Charles B.: *See—*
  - Harer, Delmar C.; Adams, Charles B.; and Meek, Nigel W.,3,604,189.
- Adcox, L. D. Master container filling machine. 3,604,181, Cl. 53-61.
- Addressograph Multigraph Corporation: *See—*
  - Sejeck, Arthur W.; and Garcowski, Ronald J., 3,604,349.
- Addressograph-Multigraph Corporation: *See—*
  - Mahoney, Donald T., 3,604,351.
  - Sleeper, Donald W., 3,604,652.
  - Szczesniak, Stanley J., 3,604,797.
- Adra, Tarek; and Draper, Robert P., to Hubbell, Harvey, Incorporated. Floodlight mounting arrangement. 3,604,916, Cl. 240-3.
- Aerial Transit Systems, Inc.: *See—*
  - Harbert, Arney J.; and Towner, Robert M., 3,604,361.
- Aeroglide Corporation: *See—*
  - Aldridge, Hal F., 3,604,039.
- Aerojet-General Corporation: *See—*
  - Puthuff, Steven H., 3,604,947.
- Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
  - Gramain, Philippe; and Libeyre, Roger, 3,604,247.
- Ahn, Albert D.Invalid's sock holding appliance. 3,604,604, Cl. 223-111.
- Ainsworth, Wm., Inc.: *See—*
  - Blethen, Charles B.; and Smith, James E., 3,604,525.
- Air Products and Chemicals, Inc.: *See—*
  - Grandia, Willem A., 3,604,250.
  - Rohrberg, Roderick, 3,604,889.
- Akashi, Goro: *See—*
  - Ohno, Naoyoshi; Akashi, Goro; Miyake, Tokuaki; and Fujiyama, Masaaki,3,604,394.
- Aktiebolaget SKRIVRIT: *See—*
  - Askesji, Bengt H.; and Nyhlen, Knut Inge, 3,604,672.
- Akustiche u. Kino-Gerate Gesellschaft m.b.H.: *See—*
  - Pless, Ernst, 3,604,853.
- Alamance Industries, Inc.: *See—*
  - Fain, Bobby R., 3,604,644.
- Albert, Milton P.; and Scott, Milton J., to Monsanto Company. Electrode for use in manufacturing elemental phosphorus. 3,604,827, Cl. 13-18.
- Albro, Frank: *See—*
  - Prior, Arthur; Albro, Frank; and Hetman, Frank W.,3,604,712.
- Alco Machine Shops, Incorporated: *See—*
  - Dobbs, Marvin C., 3,604,481.
  - Dobbs, Marvin C., 3,604,571.
- Aldridge, Hal F., to Aeroglide Corporation. Cleaning means for guide bushings. 3,604,039, Cl. 15-102.
- Allebach, Gene E.; and Edmondson, Richard, to National Machinery Company, The. Transfer and ejection mechanism for forging machine. 3,604,242, Cl. 72-421.
- Allegheny Ludlum Steel Corporation: *See—*
  - Dupuis, Hubert, 3,604,122.
- Allen, Philips J., to United States of America, Navy. Method and apparatus for displaying visual images of infrared beams. 3,604,930, Cl. 250-83.
- Allen-Bradley Company: *See—*
  - Walters, Robert E.; and Boysen, Gerd C., 3,604,875.
  - Wielebski, Wayne H., 3,605,049.
- Allers, Erling: *See—*
  - Strom, Paul; and Allers, Erling,3,604,139.
- Alliance Machine Company, The: *See—*
  - Kinkopf, Edward J., 3,604,743.
- Allied Chemical Corporation: *See—*
  - Jones, David P., 3,604,655.
  - Prevorsek, Dusan C.; Lamb, George E. R.; Thiuvillakkat, Krishnan; and Oswald, Hendrikus J., 3,604,196.
- Allis-Chalmers Manufacturing Company: *See—*
  - Baxa, Edward H., 3,604,125.
  - Boone, Jerry C.; and Miller, Edgar S., 3,604,427.
  - Coleman, Martin W., 3,604,186.
  - Jenness, Raymond C., 3,604,639.
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  - Ross, Roy C.; and Coleman, Martin W., 3,604,544.
  - Sabaski, Richard E., 3,604,637.
  - Sabaski, Richard E., 3,604,638.
  - Smithwick, Whitmell J., 3,604,692.
- Allison, Arthur F.; and Salzbrenner, Siegfried R., to Cutler-Hammer, Inc. Frequency base knife control systems. 3,604,300, Cl. 83-76.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
  - Andreassen, Per Vasteras, 3,604,984.
  - Eithun, Einar; and Marchner, Josef, 3,604,684.
  - Lundstrom, Hans, 3,604,060.
- Alpana Aluminum Products, Inc.: *See—*
  - Hetman, Frank W., 3,604,049.
- Alpaugh, Daton William, to Eastman Kodak Company. Method of attaching a thin, flat, resiliently deformable ring to a mating component and product. 3,604,738, Cl. 287-20.3
- Alsco, Inc.: *See—*
  - Nash, John J., 3,604,097.
- Altmann, Heinz C.; Bushnell, Clifford B.; West, Henry L.; and Lange, Thomas O., to Eastman Kodak Company. Apparatus and methods for determining imbalance. 3,604,248, Cl. 73-66.
- Altrichter, William C.: *See—*
  - Griffith, George L.; Riotto, Dominic J.; and Altrichter, William C.,3,604,511.
- Amboss, Kurt; and Knauer, Wolfgang, to Hughes Aircraft Company. Lightweight reflecting structures utilizing magnetic deployment forces. 3,605,107, Cl. 343-915.
- Amelchenko, Alexei Semenovich. Device for assembling radio parts with axially extending wire lead-outs. 3,604,093, Cl. 29-203.
- American Cyanamid Company: *See—*
  - Sekiguchi, Hideto; Matsumoto, Tomohide; Hoten, Masanobu; and Kawasaki, Hideo, 3,604,197.
  - Stolzenberg, Sidney Joseph; and Linkenheimer, Wayne Henry, 3,604,417.
  - Travis, David Neil; and Berry, John William, 3,604,785.
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  - Brown, Arthur S.; and Durch, Edward L., 3,604,155.
- Ametek, Inc.: *See—*
  - Zuck, Earl Donald, 3,604,390.
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  - Loeffler, Herbert H., 3,604,562.
- Amis, James W., Jr.; Fuller, Maurice D.; and Dobson, James B., to Korry Manufacturing Company. Latch mechanism for releasably engaging pushbutton caps in electrical devices. 3,604,878, Cl. 200-167.
- Amoss, John W., Jr.: *See—*
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- AMP Incorporated: *See—*
  - Kaylor, Karl Lester, 3,605,077.
  - Mixon, James L., Jr., 3,604,837.
  - Paullus, Clarence Leonard, 3,605,078.
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  - Audeh, Azmi S.; Deodhar, Anil N.; and Glattfelder, Henry G., 3,604,992.
- Amsted Industries Incorporated: *See—*
  - Kulieke, Frederick C., 3,604,569.
- Amundson, Lonald L.; and Rigotti, James M., to International Business Machines Corporation. Stacker for document cards. 3,604,704, Cl. 271-80.
- Anba Sportmode Vorsteher K.G.: *See—*
  - Vorsteher, Susanne, 3,604,070.
- Anchor Hocking Corporation: *See—*
  - Fink, Roger H., 3,604,551.
  - Nixdorff, Frank S., Jr., 3,604,057.
  - Shank, Herbert C., Jr., 3,604,584.
- Anderson Carl L.; Lamb, John T.; and Norris, Ralph J., to Tappan Company, The. Electric self-cleaning oven circuit. 3,604,896, Cl. 219-412.
- Anderson, Clayton & Co.: *See—*
  - Sinclair, Stuart W., 3,604,745.

- Anderson, Gordon Campbell: *See—*
  - Von Kaenel, John Clifford; Anderson, Gordon Campbell; and Seymore, Stephen David, Jr.,3,604,063.
- Anderson, Melvin T.; and Luth, James E., to General Electric Company. Switching circuit. 3,604,950, Cl. 307-243.
- Anderson Power Products, Inc.: *See—*
  - Goldman, Wayne E.; and Winkler, Edward D., 3,605,050.
- Anderson, Ralph F.; and Krieps, Frank J., to Keystone Consolidated Industries, Inc. File drawer assembly. 3,604,775, Cl. 312-330.
- Anderson, Thomas P., to Microseal Corporation. Film record card system. 3,604,799, Cl. 355-79.
- Ando, Noriyoshi; and Majima, Kazu, to Nippon Denso Kabushiki Kaisha. Anti-skid device. 3,604,762, Cl. 303-21.
- Ando, Noriyoshi: *See—*
  - Okamoto, Atutoshi; Ando, Noriyoshi; Taniguchi, Koichi; Nakano, Yoshiaki; and Toyama, Koichi,3,604,761.
- Andreassen, Per Vasteras, to Allmanna Svenska Elektriska Aktiebolaget. Electrical connection system formed of plinths with opposed pairs of holes in front and back for receiving connectors. 3,604,984, Cl. 317-99.
- Angner, Ronald Joseph, to Bell Telephone Laboratories, Incorporated. Step input responsive output pulse generation circuit. 3,604,955, Cl. 307-293.
- Anthony, Albert M., to Tracor, Inc. Convergence and purity adjusting device for color television picture tube. 3,605,053, Cl. 335-212.
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U.S. GOVERNMENT PRINTING OFFICE: O—1971

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 20, 1971 Volume 890 Number 3

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CONDITION OF PATENT APPLICATIONS AS OF AUGUST 24, 1971

* Date of Oldest Application (New)

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-04-70
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HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-15-70
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ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	12-11-70
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PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-70
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MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	*5-14-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-04-70
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Expiration of patents: The patents within the range of numbers indicated below expire during August 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,685,085 to 2,688,132, inclusive
Plant Patents	Numbers 1,294 to 1,299, inclusive

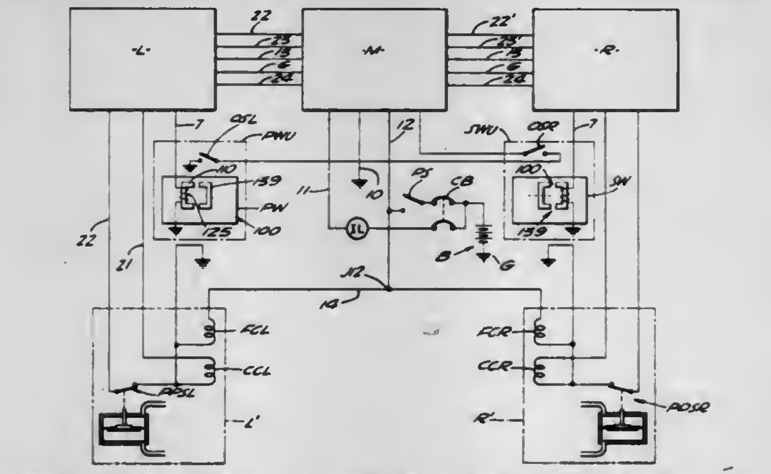
REISSUES

SEPTEMBER 20, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,168
AUTOMATIC BRAKE CONTROL SYSTEM

Bernard B. Thompson, Bainbridge Island, Wash., Donald J. O'Connell, deceased, late of Pacoima, Calif., by Frances M. O'Connell, administratrix, Mission Hills, Calif., assignors to Crane Co., Chicago, Ill.
Original No. 3,245,213, dated Apr. 12, 1966, Ser. No. 217,509, July 25, 1962. Application for reissue Feb. 7, 1967, Ser. No. 642,610
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 **37 Claims**



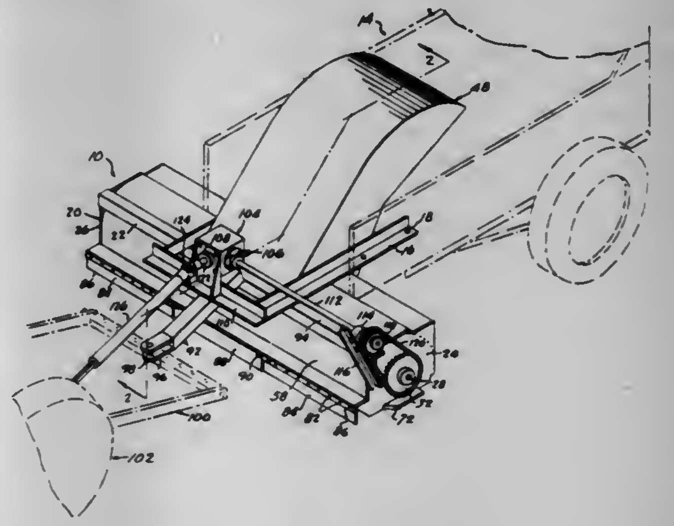
A braking system for vehicle wheels utilizing the rotational speed of the most rapidly rotating wheel to furnish a comparison standard governing the application of braking effort to the wheels. The system includes means for withholding this comparison standard from a locked or skidding wheel and operates to apply decreasing braking effort to any wheel rotating at a speed less than that of the fastest rotating wheel. If all wheels decelerate too rapidly, a memory or reference means initiates relaxation of all brakes until some wheel attains a speed approaching the fastest wheel speed just prior to skidding.

Rotational wheel speeds are sensed by transducer means operatively associated with the respective braked wheels and including a coil energized by D.C. which is modulated by A.C. generated as the wheel rotates and having a frequency proportional to rotational speed. A wave potential, preferably of square wave form, produced therefrom is employed, in the case of the fastest rotating wheel, to charge capacitive means to a potential representing the rotational speeds of the respective wheels and which potential is permitted to decay at a desired rate such as the fastest normal deceleration rate selected as optimum for that vehicle. An output signal to brake application control means is produced which is inversely proportional to the frequency of the speed signal sensed for the associated wheel and this signal is employed to relax the brake to an extent proportional to the magnitude of the output signal thereby permitting the wheel to recover from an overbraked condition.

27,169
REFUSE GATHERING MACHINE

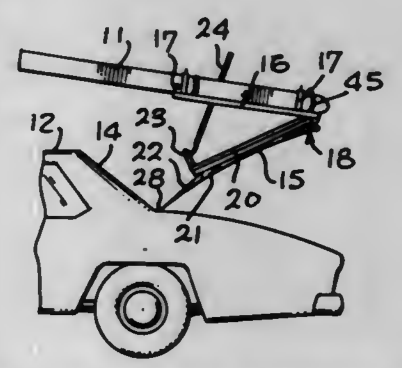
Herbert O. Vinyard, Rte. 2, Box 75H,
Hammond, La. 70401
Original No. 3,348,652, dated Oct. 24, 1967, Ser. No. 544,600, Apr. 22, 1966. Application for reissue Oct. 8, 1969, Ser. No. 870,517
Int. Cl. B65g *31/04, 65/06*
U.S. Cl. 198—7 **18 Claims**

A refuse gathering machine comprising an open bottom horizontal housing, an upwardly directed inclined chute leading from said housing and communicating with a central portion of the interior thereof, the upper and lower walls of said chute penetrating within said housing in curved lower portions while the sidewalls of the chute terminate at the housing without entrance, a conveyor shaft extending the length of the housing and having oppositely turned conveyor screw portions at its ends and a thrower rotor at its center including a pair of blades lying in planes parallel to the shaft and having outer free edges which pass said curved lower portions of the chute walls with wiping tolerance, said conveyor screw portions serving to move refuse toward the center of the shaft when it is rotated and said thrower rotor serving to throw material upwardly through the chute to a receiver.



27,170
UTILITY CARRIER FOR VEHICLES

Leslie E. Porter, Oakdale, Calif., assignor of fractional part interest to Philip P. Pendergrass, Oakland, Calif.
Original No. 3,333,750, dated Aug. 1, 1967, Ser. No. 558,032, June 16, 1966. Application for reissue June 30, 1969, Ser. No. 870,174
Int. Cl. B60r *9/04*
U.S. Cl. 224—29R **12 Claims**



A utility carrier for mounting equipment to be transported arranged to be mounted on the trunk lid of a vehicle and adapted to rotate about the hinge axis of the *lid comprising a bottom section adapted to be secured directly on the trunk lid; a top section for mounting the equipment, the top section being hingeably coupled at one end thereof to the bottom section whereby the opposite end of the top section is pivotable between a stored position substantially adjacent the bottom section and an elevated position disposed at a substantial tilting angle with respect to the bottom section; and means extendable between the sections for releasably coupling the bottom section and the top section and for supporting the top section in its elevated position so that the trunk lid may be rotated in a manner to provide sufficient clearance between the equipment carried on the top section and portions of the vehicle.*

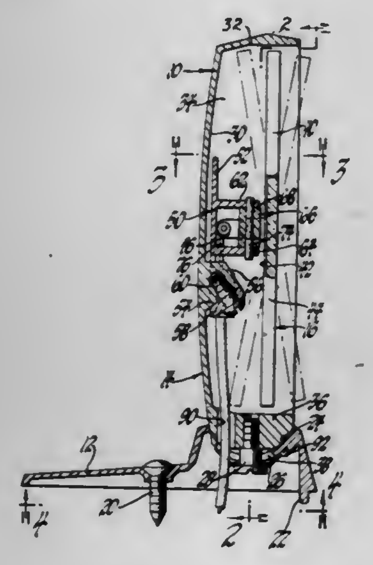
27,171
METHOD FOR THE PRODUCTION OF CERTAIN AROMATIC AND HETERO-AROMATIC ALDEHYDES

Robert K. Grasselli, Garfield Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
No Drawing. Original No. 3,452,032, dated June 24, 1969, Ser. No. 623,563, Mar. 16, 1967, which is a continuation-in-part of Ser. No. 450,537, Apr. 23, 1965. Application for reissue Aug. 25, 1969, Ser. No. 860,126
Int. Cl. C07d *31/32;* **B01j** *11/32*
U.S. Cl. 260—297 **9 Claims**

The instant invention relates to a direct-catalytic process for making monoolefinically unsaturated aromatic aldehydes from allyl substituted aromatic compounds.

27,172
REMOTE CONTROL MIRROR

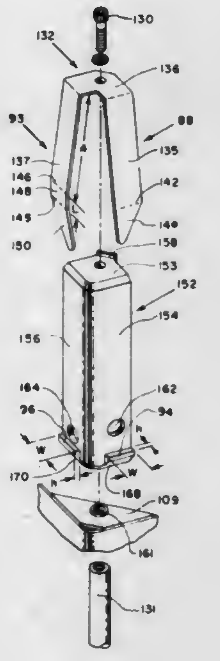
Andrew J. Van Noord, Grand Rapids, Mich., assignor to Kent Engineering, Grand Rapids, Mich.
Original No. 3,370,479, dated Feb. 27, 1968, Ser. No. 338,892, Jan. 20, 1964. Application for reissue Feb. 27, 1970, Ser. No. 15,306
Int. Cl. F16c *1/10*
U.S. Cl. 74—501M **21 Claims**

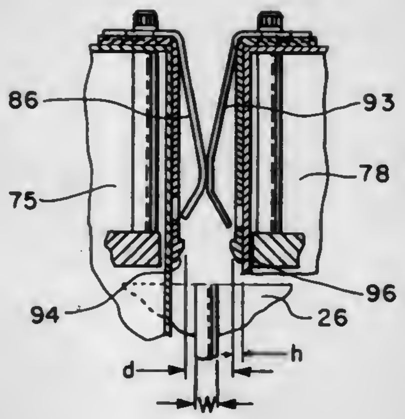


A two-wire remote control mirror including a housing on a swivel base and having the mirror mount secured to the inside back wall of the housing from under the front edge of the mirror as tilted back for such purpose.

27,173
REACTOR DEVICE

James Lloyd Lass and Carl Raymond Mefford, San Jose, Calif., assignors to General Electric Company
Original No. 3,338,791, dated Aug. 29, 1967, Ser. No. 461,870, June 7, 1965. Application for reissue May 29, 1969, Ser. No. 835,291
Int. Cl. G21c *3/32*
U.S. Cl. 176—66 **10 Claims**



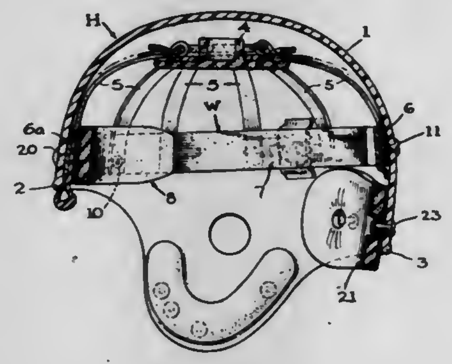


A fuel bundle comprising fuel material disposed in an elongated channel, a spring assembly connected to one end of said channel, said spring assembly having a first member and a second spring member, each of said first and second spring members extending generally parallel to the other surface of the end of said channel, said first spring having a knee portion and said second spring members having a flat section.

PATENTS
GRANTED SEPTEMBER 20, 1971
GENERAL AND MECHANICAL

3,605,113
PROTECTIVE HEADGEAR

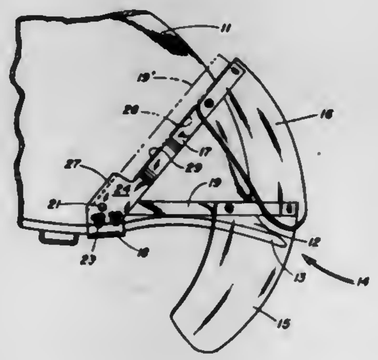
Charles Wayne Marietta, 5538 University Blvd., Dallas, Tex.
Filed May 5, 1969, Ser. No. 821,666
Int. Cl. A42b *1/08*
U.S. Cl. 2—3 **11 Claims**



A helmet having a suspension assembly including both a head size band partially encircling the wearer's head and a removable frontal pad, the latter of which is substantially rigidly attached to the inner periphery of the helmet shell while the former is suspended in a manner isolated from the shell inner periphery.

3,605,114
PROTECTIVE EYESHIELD FOR HELMETS

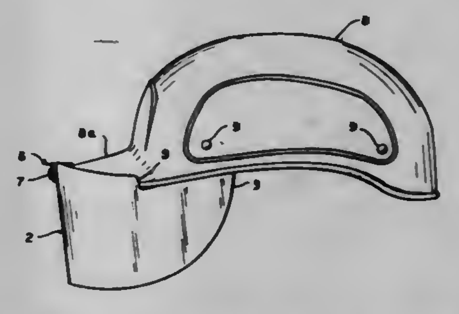
Stuart L. Hanlein, College Park, Md., and John F. Quinlan, Jacksonville, N.C., assignors to the United States of America as represented by the Secretary of the Navy
Filed Apr. 6, 1970, Ser. No. 25,941
Int. Cl. A61f *9/04*
U.S. Cl. 2—10 **5 Claims**



An eyeshield assembly detachably securable to the brim of a helmet. The assembly includes a fixed support bracket having screw clamps on each end for engagement with the brim of a helmet and a movable bracket pivotally mounted upon the fixed support bracket. A transparent shield is mounted on the movable support and may be lowered to a eye-shielding position or raised to a retracted position out of the line-of-sight of the wearer and beneath a protective cover which is mounted on the fixed support bracket to protect the transparent shield against becoming scratched while not in use.

3,605,115
SHIELD

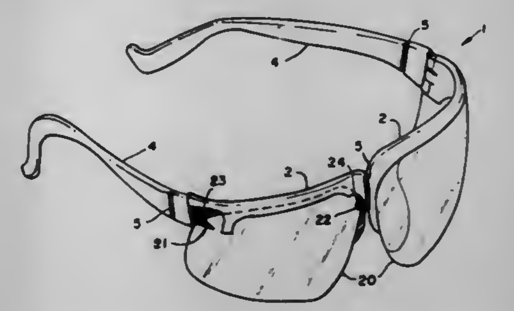
William R. Bohner, Reading, Pa., assignor to ESB Incorporated, Philadelphia, Pa.
Filed Sept. 10, 1969, Ser. No. 856,649
Int. Cl. A61f *9/04*
U.S. Cl. 2—10 **4 Claims**



A transparent plastic shield for protecting the eyes or face of the wearer and having hook shaped ends which are detachably secured to the anchors for a headband suspension in a safety cap. The shield has a cut-out portion along the top of the side portions and a central stop element which is held on the top of the brim portion of the cap.

3,605,116
INDUSTRIAL SPECTACLES

Jack N. Simpson, Sinking Spring, George R. Hoffmaster, Reading, and Palmer E. Brace, Mohnton, Pa., assignors to ESB Incorporated, Philadelphia, Pa.
Filed Feb. 27, 1968, Ser. No. 708,594
Int. Cl. A61f *9/02*
U.S. Cl. 2—14R **5 Claims**

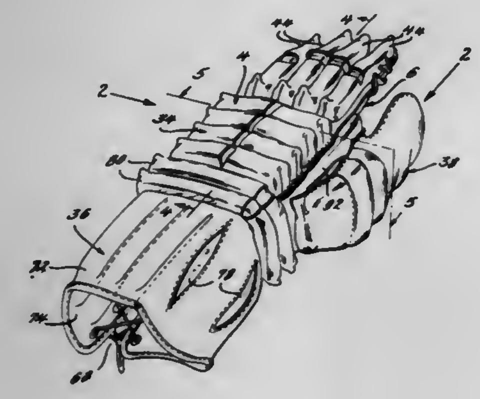


Spectacles, such as industrial spectacles and sunglasses, having embedded in the nose piece a malleable insert to permit slight bending, horizontally, with a permanent set of the two lens surrounding portions, either toward or away from the face, so as to adjust the frame to the facial contour of the wearer. Such insert may also be embodied in each temple. The nose piece insert when twisted vertically also permits adjustment of the temple extremities so that they may be brought into horizontal alignment.

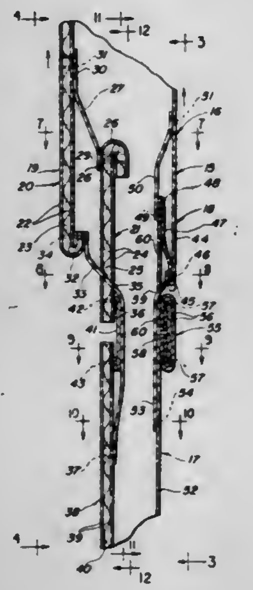
3,605,117
HOCKEY GLOVES

Roland N. Latina, Belleville, Ill., assignor to A-T-O Inc., Willoughby, Ohio
Filed Jan. 30, 1970, Ser. No. 7,131
Int. Cl. A61d *13/10, 19/00;* **A61f** *9/00*
U.S. Cl. 2—16 **12 Claims**

A hockey glove has a hand receiving portion which is adapted to receive and envelope the user's hand. That portion includes an open-ended palm area and thumb and finger stalls which open into the palm area. A padded back portion overlies the palm area and finger stalls and is connected to the ends of the finger stalls and to the outer side of the palm area, but otherwise remains detached from the hand receiving portion. A padded thumb protector overlies the thumb stall, but is connected thereto only through a connecting flap extending from and beyond the end of the thumb stall. The rear ends of the back portion and the thumb protector as well as the open end of the hand receiving portion are all connected to a padded arm guard in the vicinity of the user's wrist so that the arm guard encircles the user's forearm. Since the hand receiving portion is for the most part detached from the overlying back portion and thumb protector, it is extremely flexible, affording the user a high degree of control over a hockey stick.

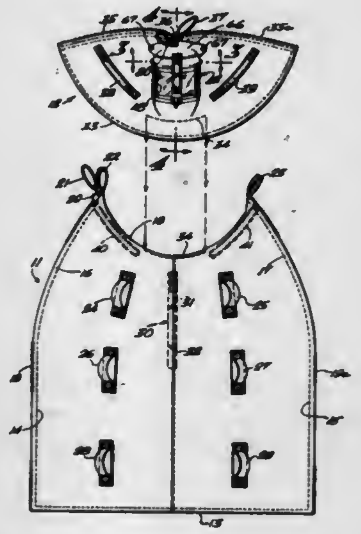


3,605,118
GARMENT
Jacob A. Elin, 400 E. Randolph St.,
Chicago, Ill. 60601
Filed July 11, 1969, Ser. No. 841,089
Int. Cl. A41d *13/02*
U.S. Cl. 2—79 **15 Claims**



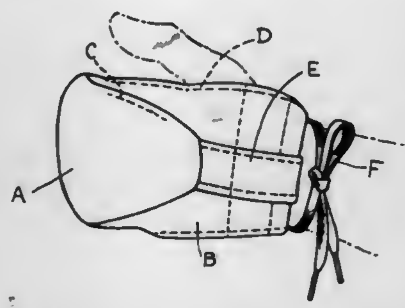
A close-fitting, neat, attractive and warm garment for use as a work suit, ski suit, hunting suit, sports suit, bobsledding suit, snowmobile suit, and the like, which includes a blouse or jacket portion and a trousers portion. The blouse or jacket portion and the trousers portion of the garment each include a flexible fabric outer liner component and flexible, warm, heat-insulating inner liner component. A first flexible elastic means is provided for interconnecting the blouse or jacket portion to the trousers portion of the flexible, warm, heat-insulating inner liner component of the garment and a second flexible, elastic means is provided for interconnecting the blouse or jacket portion and the trousers portion of the flexible elastic outer liner component of the garment so that in use both the flexible, warm, heat-insulating inner liner component and the flexible, fabric outer liner component of the garment will expand or yield to conform to the needs and requirements of the wearer when the wearer moves forwardly or sidewise from a normal upright position and without binding of the garment or discomfort to the wearer.

3,605,119
COMBINATION BODY COVER AND STRETCHER
Roy L. Cherry, 15205 NE. 6th Ave.,
Miami, Fla. 33161
Filed July 20, 1970, Ser. No. 56,355
Int. Cl. A41d *3/08*
U.S. Cl. 2—88 **8 Claims**



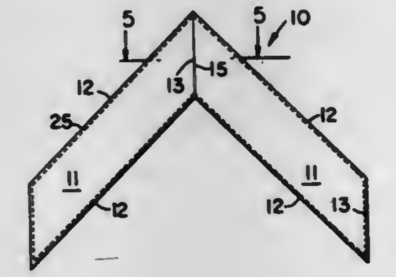
A combination body cover and stretcher is described including a hooded fire-resistant cape adapted to be wrapped around an incapacitated fire victim at the scene of a fire in such a way that his entire body is protected until he can be carried to safety. The cape is provided with handle grip means along each side for use in transporting the covered victim as if he were on a stretcher. The hood has a liftable visor permitting exposure of the face for administrating oxygen, performing resuscitation procedures and the like life-saving operations without the necessity of removing the entire hood.

3,605,120
FOOTBALL GLOVE
Homer B. Hobbs, P.O. Box 323,
Lithia Springs, Ga. 30057
Filed Oct. 27, 1969, Ser. No. 869,827
Int. Cl. A41d *13/10, 19/00, 19/02*
U.S. Cl. 2—159 **2 Claims**



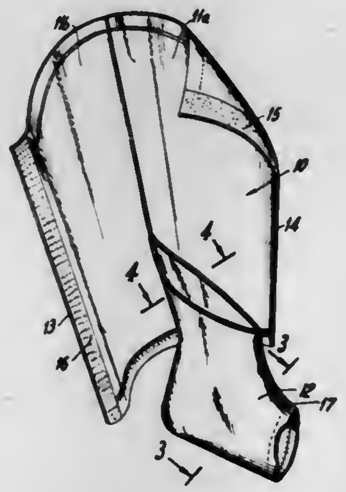
An athletic glove for holding the fingers of football players closed to encourage proper tackling includes a finger receiving pocket which is maintained in folded position with a free forward end folded back adjacent a front portion covering the palm.

3,605,121
SCARF CONSTRUCTION
Mary Suzuki, 36 W. 84th St.,
New York, N.Y. 10024
Filed Dec. 4, 1969, Ser. No. 882,253
Int. Cl. A42b *5/00*
U.S. Cl. 2—207 **1 Claim**



A scarf construction comprising first and second elongate panels of pliant material joined at an angle with respect to each other to form a substantially V shaped or chevron scarf construction.

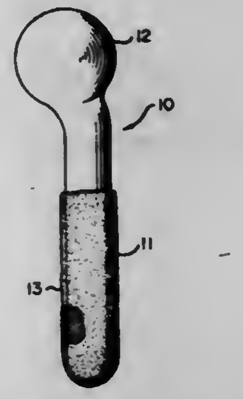
3,605,122
ADJUSTABLE ELASTIC STOCKING
Harvey L. Myers, 885 N. Village Ave.,
Rockville Centre, N.Y. 11570
Filed Feb. 28, 1969, Ser. No. 803,286
Int. Cl. A41b *11/00*
U.S. Cl. 2—239 **1 Claim**



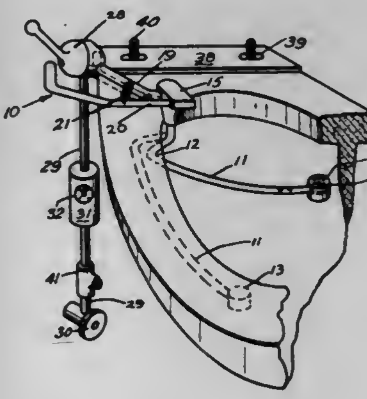
An elastic stocking having a foot engaging portion and a leg engaging portion. The foot engaging portion is constructed to permit insertion of the foot therethrough and is attached to the leg engaging portion. The leg engaging portion comprises a member having two longitudinal edges adapted to overlap when the member is wrapped around the leg of the user. The longitudinal edges are provided with elongated complemental fastening strips, one strip being affixed to the inner surface of the member, and the other strip to the outer surface of the member.

3,605,123
BONE IMPLANT
Henry Hahn, Fairfax, Va., assignor to Melpar, Inc.,
Falls Church, Va.
Filed Apr. 29, 1969, Ser. No. 820,184
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 **31 Claims**

A permanent implant for bone tissue which has a dense cast or wrought base portion of high strength metal, and a porous metal layer overlying and bonded to the base portion. The porous layer is thin in comparison with the thickness of the base portion and is preferably plasma flame coated on the base portion. The shape of the base portion depends upon the specific requirements of the bone tissue it is to replace or repair. The porous layer may cover only that part of the surface of the base portion which is to be in contact with the bone tissue after implantation, and permits the growth of bone tissue into the pores.



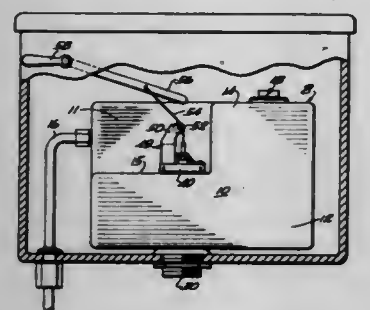
3,605,124
PORTABLE BIDET
Henry G. Marcard, 8409 Brimfield St., Panorama City, Calif. 91402, and Carlos A. Vincenzi, 13430 Burbank Blvd., Van Nuys, Calif. 91401
Filed Sept. 18, 1969, Ser. No. 858,962
Int. Cl. E03d *9/08*
U.S. Cl. 4—7 **18 Claims**

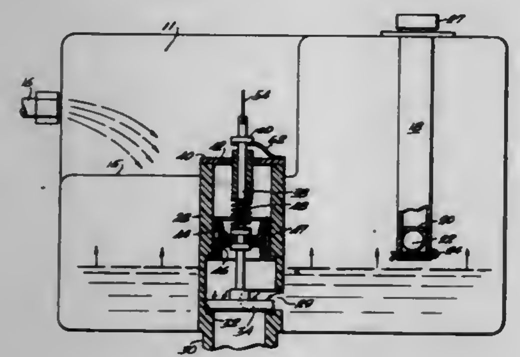


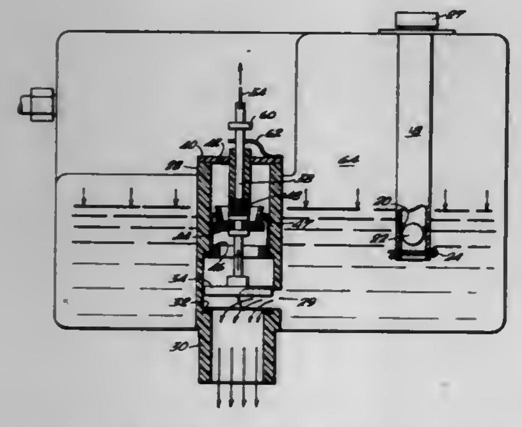
A portable bidet for converting a flush toilet to a bidet, the bidet having a fluid delivery pipe rotatably connected to a pivot valve, the fluid delivery pipe adapted to rotate from its inactive position adjacent the internal rim of the toilet bowl to its operating position in the center of the bowl. A positioning means actuated by a flow of water, and adapted to automatically rotate the fluid delivery pipe to its operating position. A heater and thermostatic valve are provided to heat the water and provide an aromatic toilet bowl cleaning device.

3,605,125
HYDRAULIC TANK ASSEMBLY FOR A WATER CLOSET
James W. Gibbs, 8027 W. 14th Ave. 33110, and John L. Gibbs, 14820 Miami Lakeway E. 33114, both of Hialeah, Fla.
Filed Mar. 23, 1970, Ser. No. 21,760
Int. Cl. E03d *3/00, 5/00, 11/00*
U.S. Cl. 4—26 **4 Claims**

A hydraulic assembly for filling and rapidly discharging a liquid from a hermetically sealed tank. Vertically positioned in the tank is a chute having an open lower end and a closed upper end and having an aperture opening into the lower portion of the tank. A valve seat extends around the inner periphery of the chute positioned below this aperture, while positioned within the chute is a valve head with a stem. The valve head is capable of vertical movement from an open position above the aperture to a closed position in sealed engagement with the seat. On the valve stem is a rolling diaphragm disposed for vertical movement in the chute. Manual means are associated with the stem for moving the valve head from the closed to the open position, and spring means, normally resisting upward movement of the valve head when the valve head is seated, are disposed above the rolling diaphragm around said stem. There is also an air vent and check valve passing through the tank. The check valve moves to a closed position when liquid in the tank rises to a predetermined level and falling to open the vent to the atmosphere when liquid falls below this level. Pressurized water is supplied into the tank by an inlet conduit. Operation of the manual means will open the valve head, forcing the liquid to flow through the aperture and outwards from the cylinder, the flow thereof being augmented by compressed air pressure acting to rapidly force liquid through the aperture and out of the cylinder.

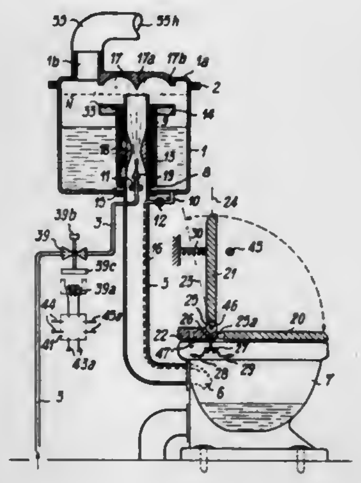


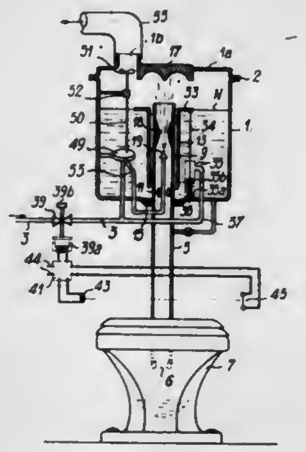




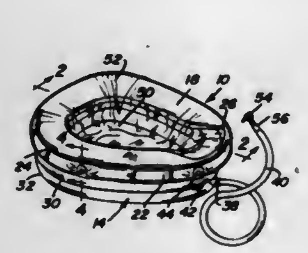
3,605,126
WATER CLOSET INSTALLATION
Georges A. Henry, 19 Rue Folletiere,
Draguignan, France
Filed Mar. 3, 1970, Ser. No. 16,127
Claims priority, application France, Mar. 5, 1969,
6,064
Int. Cl. E03d *9/04, 9/05, 11/02*
U.S. Cl. 4—72 **10 Claims**

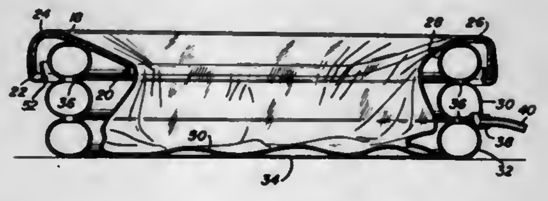
A combined water-flush and air-blast system for a water closet installation. The flush pipe connecting the flush reservoir to the commode of the water closet is used as an air-suction pipe. The air-suction means is supplied by the water used for filling-in the flush reservoir. The system is actuated by control means responsive to the presence and absence of a user.

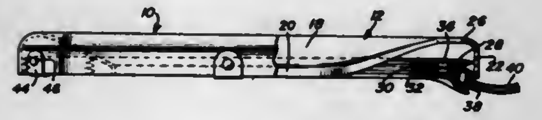




3,605,127
BEDPAN
Helen B. Dailey, San Francisco, Calif.
(1417 2nd St., Apt. F 309, Coronado, Calif. 92118)
Filed Oct. 3, 1969, Ser. No. 863,554
Int. Cl. A61g *9/00*
U.S. Cl. 4—112 **2 Claims**

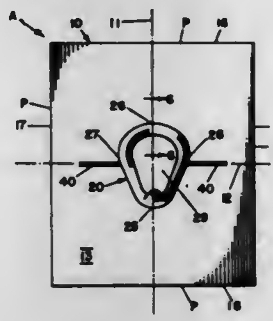


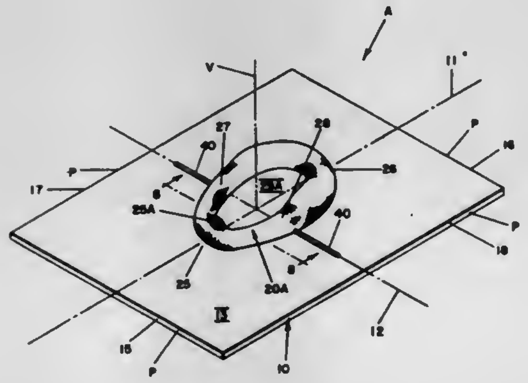


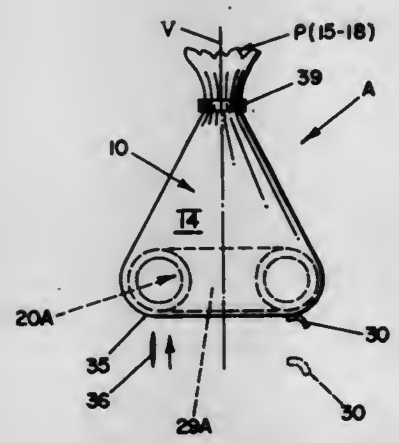


A bedpan employing a rigid annular seat and an inflatable annular member underlying the seat whereby the combined seat and inflatable member have only the combined vertical dimension of the seat when the inflatable member is uninflated thereby enabling the bedpan to be easily placed under a patient after which the inflatable member is gently inflated to provide adequate space to conveniently receive three to four quarts of waste material, liquid or the like. The annular inflatable member has a bottom member attached thereto and a liner is provided for the interior of the cylindrical member as well as the bottom with the liner extending in overlying relation to the seat and being detachably connected to the external periphery thereof to enable removal of the liner along with its content after removal of the bedpan for easy disposal of the liner and its contents.

3,605,128
DISPOSABLE BED PAN
Merton E. Oden, 810 W. 11th St., Wahoo, Nebr. 68066, and John J. Forman, 7723 Lafayette St., Omaha, Nebr. 68114
Filed June 1, 1970, Ser. No. 42,282
Int. Cl. A61g *9/00*
U.S. Cl. 4—113 **16 Claims**

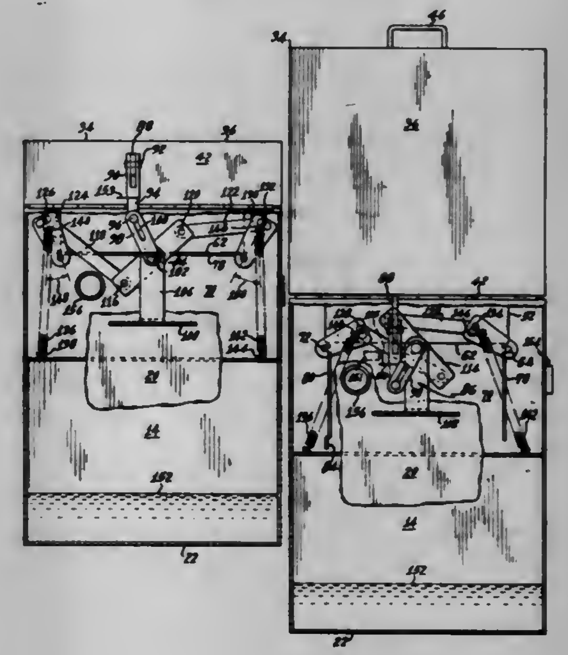






A single use disposable bed pan commercially suppliable as a compact package and comprising a thin flexible sheet-like base member having a lower surface adapted to be horizontally positioned upon the bed linens, together with a fluid inflatable annular tube superimposed upon and annularly attached to the base member whereby the inflated tube central opening provides a receptacle for body wastes. The entire bed pan and collected wastes are wholly conveniently disposable in a sack-like form through water sewer systems, incineration, chemical treatment tanks, or the like.

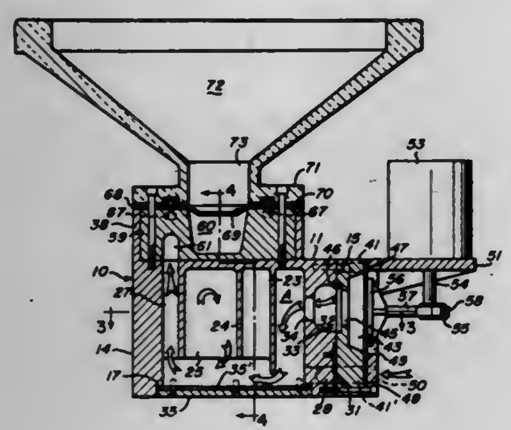
3,605,129
CHEMICAL TOILET
Francis L. Ellis, John H. Thornton, and B. Frank Inman, Jacksonville, Fla., assignors to Duval Chemical Toilets, Inc., Jacksonville, Fla.
Filed Apr. 9, 1970, Ser. No. 26,939
Int. Cl. A47k *11/02;* **A61l** *11/00*
U.S. Cl. 4—115 **17 Claims**



A self-contained chemical toilet for vehicular use having a toilet seat pivotally mounted to a housing and surroundingly positioned over an opening in the top wall, and a cover assembly pivotally mounted to the housing to cover the seat, opening and top wall. A pair of door members are respectively mounted to each of a pair of rods within the housing with the door members being pivotal from a closed horizontal position between the solution and the opening to an opened vertical position extending downwardly toward the chemical solution to baffle same during vehicular movement. A passageway member is attached to the housing top wall and depends downwardly into the interior thereof for sealingly engaging the door members when in their closed position to prevent splash-up of the solution onto the toilet seat and top wall. Linkage means extend between the cover assembly and each rod which is operable to pivot the rods and attached door members into their open position upon opening of the cover assembly and into their closed position on closing of the cover assembly. A counter records the number of times the cover assembly is opened for use of the toilet.

3,605,130
TOILET BASE
Linus E. Russell, Springfield, Ohio, assignor to Peters and Russell, Incorporated, Springfield, Ohio
Filed Aug. 2, 1968, Ser. No. 749,882
Int. Cl. E03d *5/01*
U.S. Cl. 4—90 **24 Claims**

A toilet featuring a uniquely chambered base enabling a most compact toilet installation, the base being so formed to per se serve as a highly effective medium for directing water to flow to and from a toilet bowl in a manner to provide for an efficient disintegration and discharge of contained waste. The base construction is such that flow therethrough will not only be forceful but smooth and relatively quiet.



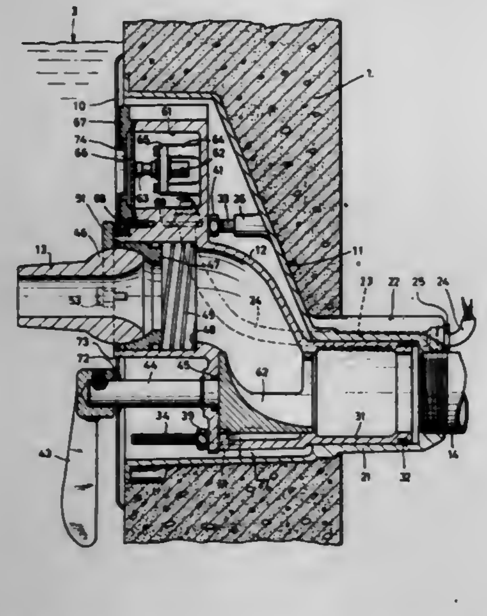
3,605,131
DEVICE FOR GENERATING A CURRENT OF WATER IN SWIMMING POOLS

Rudolf Brazel and Ernst Ritz, Schwabisch Gmund, and Elmar Weller, Lindach, Germany, assignors to UWE-Unterwasser-Electric GmbH & Co. KG., Schwabisch Gmund, Germany

Filed July 29, 1969, Ser. No. 845,818

Int. Cl. E04h *3/18, 3/20*

U.S. Cl. 4—172.16 **12 Claims**



A housing is mounted in a shell secured in the wall of a swimming pool and has a swingable nozzle for connection with a source of water under pressure to provide a water jet in the pool which can be turned on or off by a handle on the housing and may permit the introduction of admixed air into the jet stream.

3,605,132
AUTOMATIC PLUMBING VENT VALVE

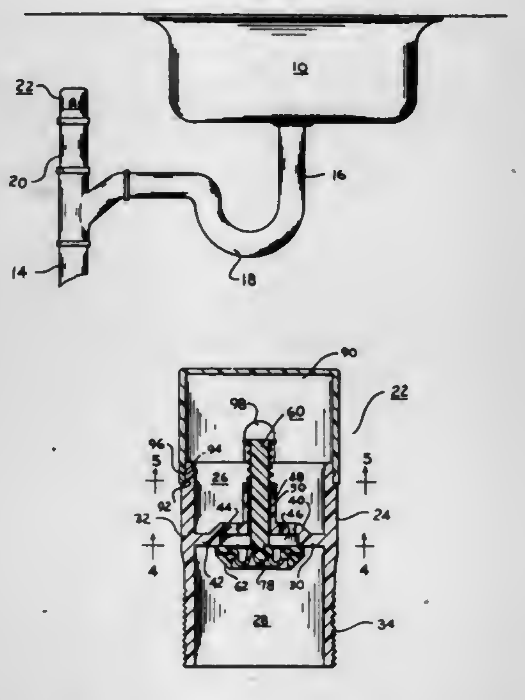
John F. Lineback, 801 Emerson, South Bend, Ind. 46615

Filed July 22, 1969, Ser. No. 843,341

Int. Cl. E03d *9/04*

U.S. Cl. 4—211 **5 Claims**

An automatic plumbing reventing valve having a body constructed of plastic material and defining an inlet and outlet chamber with a partition therebetween. The partition includes a transversely extending valve seat and holes therethrough in the confines of the valve seat. A valve element having a generally disc-shaped configuration seats on the partition and is lightly urged to its seat by a spring member operating on a stem extending through the partition. The valve is for secondary plumbing vent risers and is normally only used in conjunction with a system having a main vent.



3,605,133
SPRAYING DEVICES CAPABLE OF BEING MOUNTED ON A LAVATORY PAN

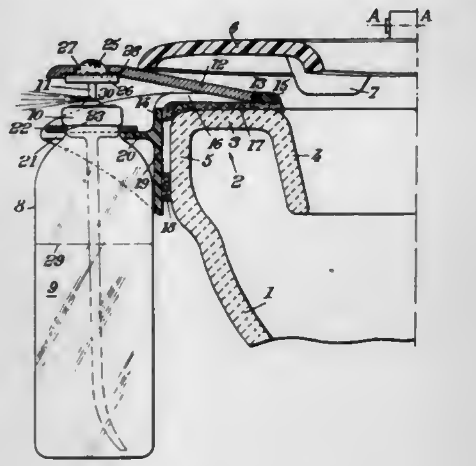
Marcel Quercia and Gilbert Andermont, Paris, France, assignors to Flaminaire Marcel Quercia, Paris, France

Filed Aug. 5, 1969, Ser. No. 847,552

Claims priority, application France, Aug. 6, 1968, 162,061

Int. Cl. E03d *9/02*

U.S. Cl. 4—231 **10 Claims**



A lavatory equipped with the subject spraying device of this invention offers many advantages, the main ones being the following:

The fact that no particular manual action, notably on the seat, is required in order to spray the liquid, such spraying occurring automatically when the person rises from the seat, there being nothing to stop the seat from being raised into a vertical position.

The fact that the invention can be applied to most existing lavatories without the need to modify them in any way, since the spraying device and its supporting member in particular serve to restrain the bottle containing the liquid, while the actuating lever can adapt to widely differing lavatory pan shapes, including pans with acutely curved surfaces.

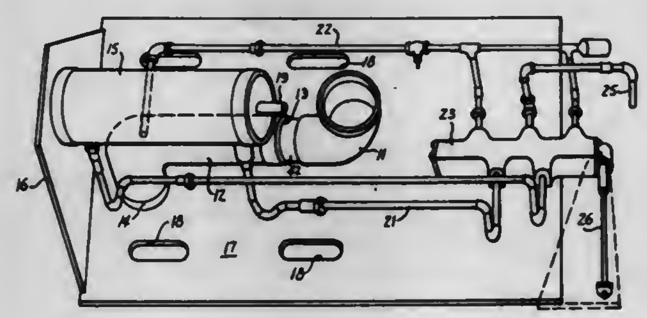
3,605,134
HYDRAULIC CLOSET AND SINK ELEVATOR

Floyd F. Haering, Minneapolis, Minn., assignor to American Sterilizer Company, Erie, Pa.

Filed Oct. 14, 1969, Ser. No. 866,330

Int. Cl. E03d *11/00*

U.S. Cl. 4—252 **4 Claims**



This disclosure describes a water closet support on which a water closet may be mounted. The water closet may be adjusted up and down by means of a hydraulic cylinder actuated by water from the water supply line. The closet and support are particularly suited for use by elderly, pediatric and physically impaired patients.

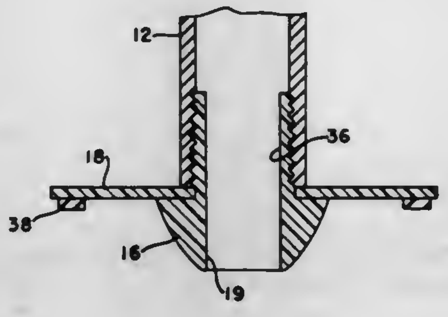
3,605,135
DRAIN FLUSHER

Louis P. Tan, 57 Walnut St., Lackawanna, N.Y. 14218

Filed Sept. 11, 1969, Ser. No. 857,007

Int. Cl. E03d *3/00*

U.S. Cl. 4—256 **1 Claim**



A device for unclogging drains by means of water under pressure including a flexible hose connectible at one end thereof to a source of water under pressure and terminating adjacent another end thereof in a tapered seat bounded by a radially extending flange. The tapered seat and flange are alternatively adapted to be employed to provide a fluid seal for relatively narrow and relatively wide drain openings, respectively; the flange in either case providing a convenient surface against which a user may place his hand in bearing engagement for the purpose of maintaining the device in fluid sealing engagement with respect to the drain opening.

3,605,136
POWERED LITTER RACK

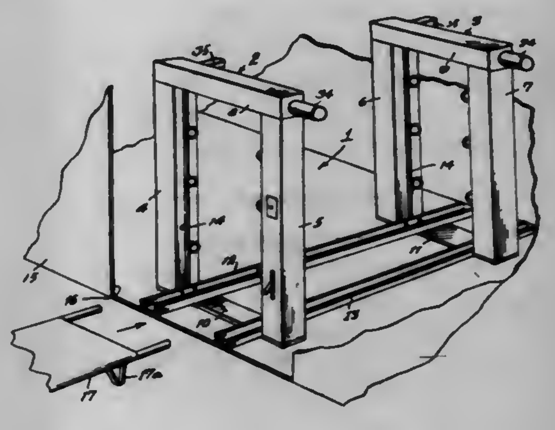
Jules A. Vichness, Newport News, and Richard E. Lane, Williamsburg, Va., assignors to the United States of America as represented by the Secretary of the Army

Filed Oct. 27, 1969, Ser. No. 869,573

Int. Cl. A47c *17/40;* **A61g** *7/00*

U.S. Cl. 5—8 **6 Claims**

A powered litter rack for quickly loading wounded combat personnel in a helicopter with a minimum of effort. A pair of upright and spaced frames are provided each with a pair of powered, upright, endless chains to lift litters bearing the wounded into stacked arrangement in an aircraft. Electric motors drive the chains which have clamps to engage the litters for lifting. A pair of rails fixed to the racks receive the legs of a litter in position for engagement with the clamps.



3,605,137
CARRYING POLES FOR STRETCHER-BEARING

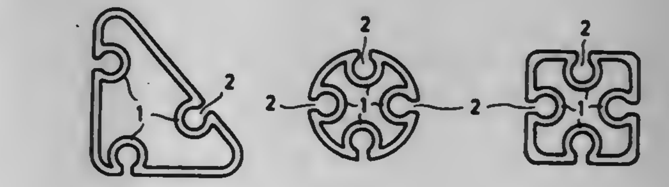
Hans Stollenwerk, Dellbrucker Hauptstrasse 197/201, Cologne-Dellbruck, Germany

Filed June 3, 1969, Ser. No. 830,051

Claims priority, application Germany, June 4, 1968, P 17 66 508.6–35

Int. Cl. A61g *7/10*

U.S. Cl. 5—82 **5 Claims**



A hollow stretcher carrying pole of reinforced synthetic plastics material having at least one longitudinal rib.

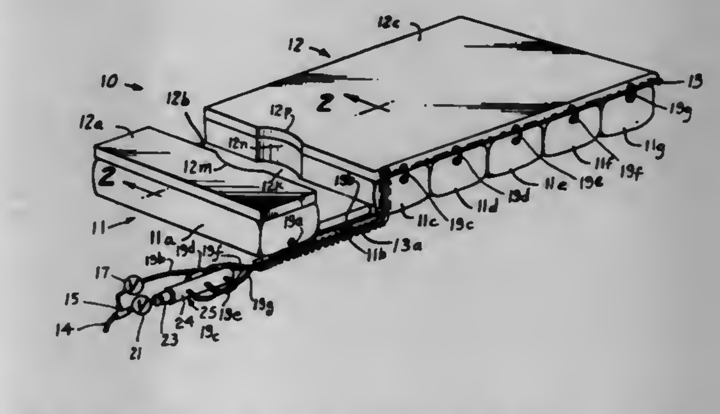
3,605,138
INFLATABLE BED PAD PROVIDING BED PAN SPACE

Samuel Morris Tucker, Waco, Tex., assignor to Wesley D. Ballard and John H. Staley, both of Waco, Tex., fractional part interest to each

Filed Jan. 5, 1970, Ser. No. 618

Int. Cl. A61g *7/02;* **A47c** *27/08*

U.S. Cl. 5—90 **8 Claims**

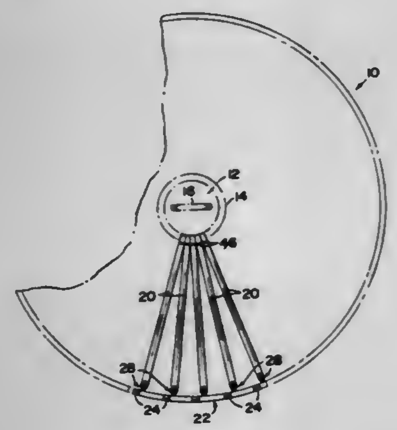


The disclosure is to a bed pad that ties together in abutment, under the pad cover, inflatable compartments occupying successive areas acros sthe pad from foot to head. A bed pan supporting compartment with cover thereupon separates compartment means with lower cover thereupon from a plurality of compartments with upper cover thereupon. A spool valve is provided selectively to be advanced to allow compressed air to pass successively through individual channels to inflate in succession the compartment means and then the compartments, preferably two at a time. The compressed air supply is split so that compressed air may be selectively directed to inflate the bed pan supporting compartment to the level of the other inflated compartments at times when it is not desired to have this compartment deflated to provide space for service insertion, as by a bed pan.

3,605,139

COLLAPSIBLE PLAYPEN

Herbert T. Lorentz, Jr., 234 Glenwood SW.,
North Canton, Ohio 44720
Filed Mar. 3, 1969, Ser. No. 803,929
Int. Cl. E03d *13/00*
U.S. Cl. 5—99R **2 Claims**

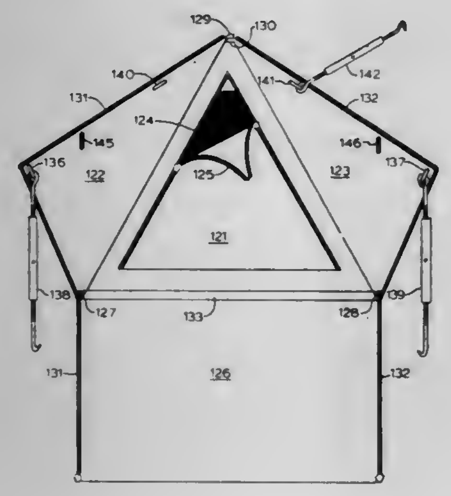


The container includes center support, an annular lazy tong enclosure unit positioned on a vertical axis and expandable and collapsible circumferentially, a plurality of support slats attached to the center support, and hinge means pivotally securing the outer ends of the slats to a lower portion of the annular enclosure unit.

3,605,140

PORTABLE BUNK TENT AND BUNK TENT COMBINATION

Vance R. Wanner, 8416 Tenly St.,
Alexandria, Va. 22308
Filed Mar. 10, 1969, Ser. No. 805,464
Int. Cl. A47c *29/00*
U.S. Cl. 5—113 **14 Claims**



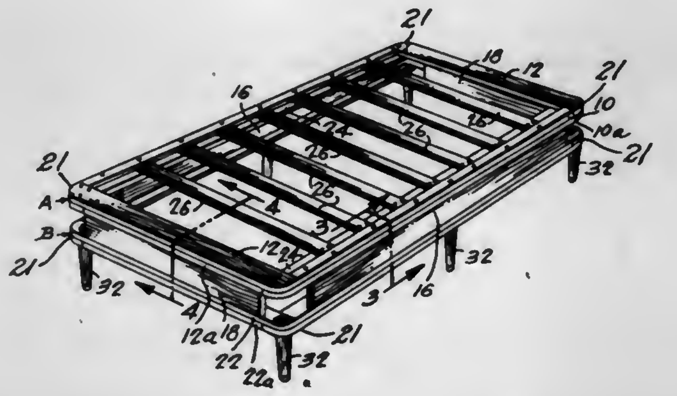
A novel portable bunk comprising two connected box-like portions, means for folding one of the portions onto the other to form a closed case for easy transportation, means for maintaining the bunk structure in the open position, and means for four individually removable and slidably adjustable legs to enable the bunk structure to be set up on irregular or sloping terrain or suspended between vertical supports. Also included is a novel foldable tent canopy preferably designed for the above portable bunk, having standing ends for support and lacking the usual ridgepole.

The tent-bunk combination comprises a foldable bunk frame provided with slidably adjustable legs for said bunk frame and a tent canopy removably attached to said bunk frame.

3,605,141

BOX CONSTRUCTION

Nordau Silverman, 89 Glenbrooke, Dollard-des-Ormeaux, Quebec, Canada
Filed Feb. 7, 1969, Ser. No. 797,546
Int. Cl. A47c *19/00*
U.S. Cl. 5—200 **7 Claims**

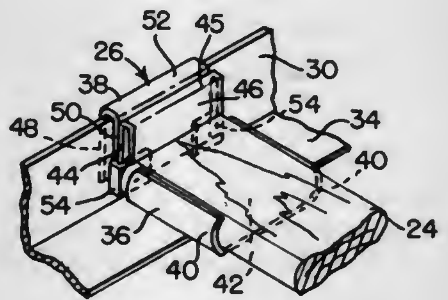


The invention provides a box frame or base for bedding equipment in which there is upper and lower spaced apart individual frame sections connected by supporting members on at least two sides of the frame sections. Such units are provided with the upper frame having a portion for providing a supporting surface on which mattress supporting means may be mounted. The units may be provided with suitable legs connected to the frame.

3,605,142

SAFETY BED SLAT BRACKETS

Maurice Weinhart, 18620 Ardmore St.,
Detroit, Mich. 48235
Filed Sept. 16, 1969, Ser. No. 858,407
Int. Cl. A47c *23/06*
U.S. Cl. 5—238 **14 Claims**

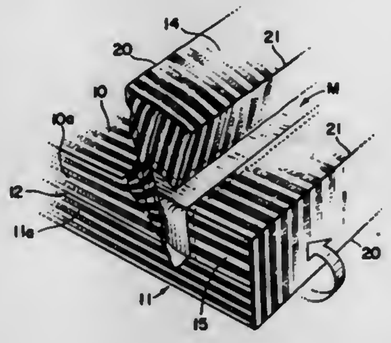


The invention relates to safety bed slat brackets for engagement upon supporting metal side rails of a bed frame, the brackets having adjustable features permitting engagement upon the vertical legs of side rails having different heights. The brackets are particularly adapted for use with wooden bed slats of conventional current cross-sectional configuration, but may be easily adapted to varying shapes of such bed slats. The brackets are also arranged to provide for positive engagement with the wooden bed slats so as to limit and substantially retard lateral movement between the side rails of the bed frame.

3,605,143

POCKET COVER FOR RECTANGULAR OBJECTS

Imre Jack Smith, 283 Hillhurst Blvd.,
Toronto, Ontario, Canada
Filed Apr. 23, 1969, Ser. No. 818,668
Int. Cl. A47g *9/00, 7/06, 13/09*
U.S. Cl. 5—335 **3 Claims**

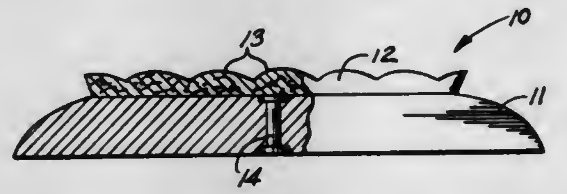


A cover for a rectangular object of compressible material such as a mattress, pillow or the like in which all fastening means such as buttons, zippers, etc. are dispensed, the cover being provided with two interfitting pockets at the open end of the cover which are designed to fit around one end of the core, and fit one on top of the other thereby closing the cover without the use of any extra fastening means.

3,605,144

HEAD PAD

Clinton E. Hayte, P.O. Box 114,
Neah Bay, Wash. 98357
Filed Oct. 21, 1968, Ser. No. 769,236
Int. Cl. A47c *7/48*
U.S. Cl. 5—338 **3 Claims**

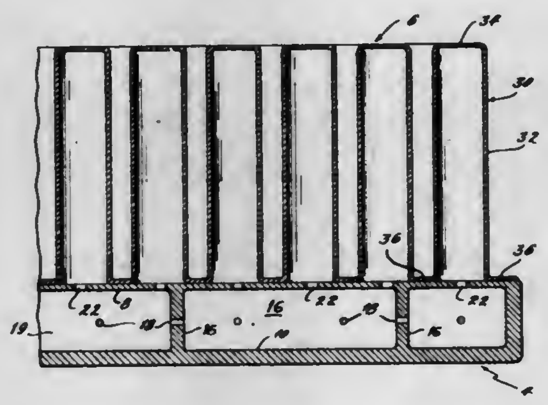


A circular disk with a cushion pivotable from the center for use by athletes in performing neck exercises with their heads on the floors. This device is also useful to weight lifters and wrestlers.

3,605,145

BODY SUPPORT

Robert H. Graebe, 4 Signal Hill Blvd.,
East St. Louis, Ill. 62203
Filed Dec. 5, 1968, Ser. No. 781,472
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 **11 Claims**

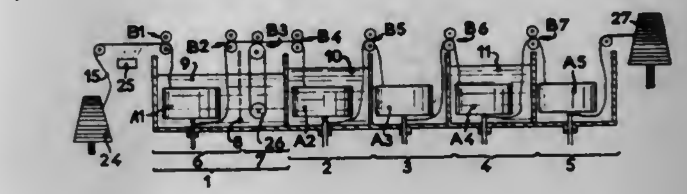


A body support including a plurality of pliant outwardly extending air cells which are in communication with one another through a base. When loaded the air cells support the load with substantially the same force per unit area irrespective of the amount they are deflected.

3,605,146

PROCESS AND APPARATUS FOR AUTOMATICALLY AND CONTINUOUSLY DYEING A TEXTILE THREAD

Jean Amengual, Chemin du Couter,
Saint-Cyr-au-Mont-d'Or, France
Filed Mar. 20, 1969, Ser. No. 808,911
Claims priority, application France, Mar. 20, 1968, 49,787, Feb. 27, 1969, Patent 5,509
Int. Cl. B05c *3/138*
U.S. Cl. 8—151.1 **8 Claims**

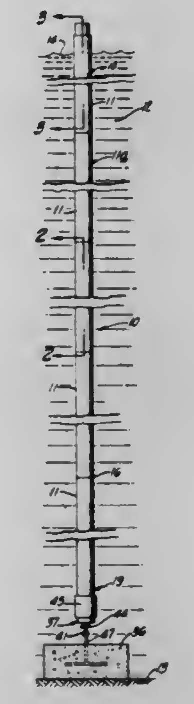


The invention provides processes and apparatus for the continuous liquid treatment of a textile thread, which enables the thread to be dyed before winding on to a package and thus avoids the more expensive package or fabric dyeing operations.

3,605,147

MARKING SYSTEM

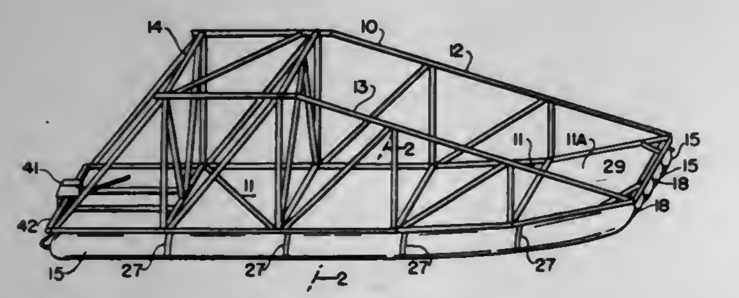
Vernon E. Shelton, 923 8th St.,
Manhattan Beach, Calif. 90266
Filed Mar. 3, 1970, Ser. No. 16,060
Int. Cl. G08b *17/00*
U.S. Cl. 9—8 **23 Claims**



A location is marked or an object is marked and maintained beneath, on or above the surface of a body of water, such as the ocean, by a semi-rigid, semi-flexible, self-suspending device which includes at least one or, preferably a plurality of individual pressure adjusting segments. The lower end of the device is secured to the bottom and thereby remains in a fixed position in the water, while the upper end is unsecured and extends a visible distance above the surface of the water, essentially in a position above the fixed end.

3,605,148
WATERCRAFT

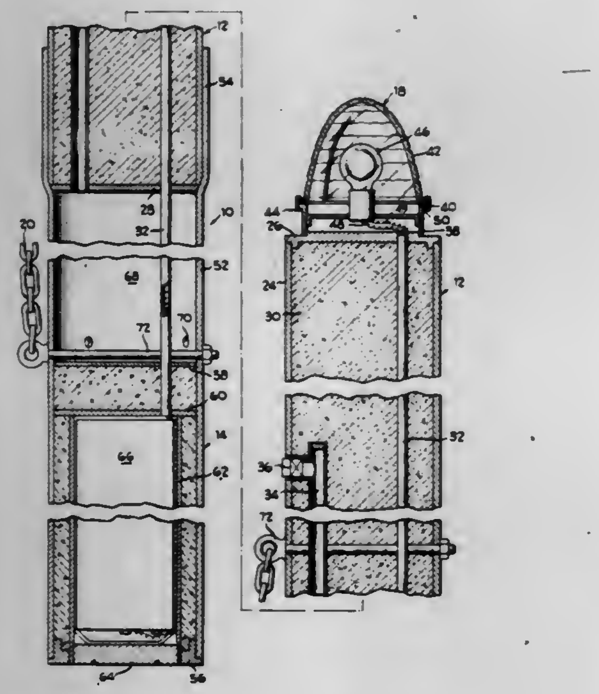
Peter L. Tailer, 323 E. 17th St.,
New York, N.Y. 10003
Continuation-in-part of application Ser. No. 765,499, Oct. 7, 1968. This application Mar. 3, 1970, Ser. No. 16,069
Int. Cl. B63b *35/00*
U.S. Cl. 9—1R **10 Claims**



A float boat has a flat bottom sloping upward at its forward end, and inflatable floats fixed below the flat bottom, the flat bottom being structurally braced and rigid, the floats being adjacent tubes extending longitudinally substantially completely below the area of the bottom, the floats having front ends held upward below the upward sloping forward end of the bottom.

3,605,149
SIGNAL BUOY

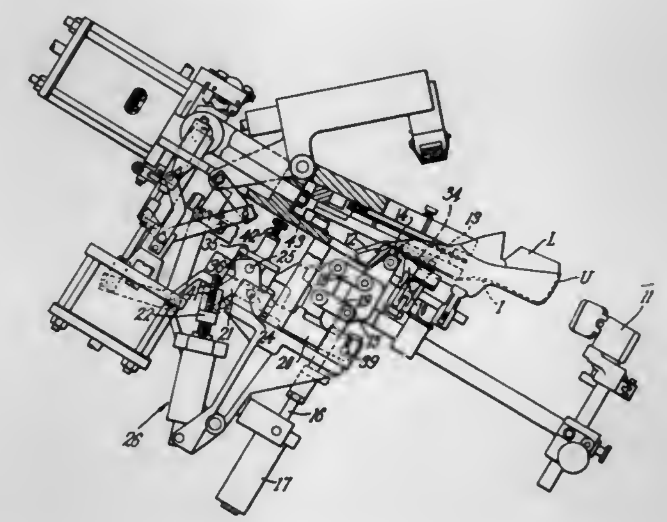
John B. Keats, Scottsburg, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 22, 1969, Ser. No. 852,389
Int. Cl. B63b *21/52, 51/02*
U.S. Cl. 9—8.3 **9 Claims**



A floatable signal buoy for marine use including an elongated body having a visible section defining a signal portion and a submergible section defining a weighted end providing a restoring force to maintain the body in an essentially vertical operating position. The body defines a ballast chamber adjacent the weighted end and a conduit is provided to introduce air into the ballast chamber to increase buoyancy to cause the buoy to assume an oblique attitude with respect to the surface of the water.

3,605,150
SHOE LASTING MACHINES

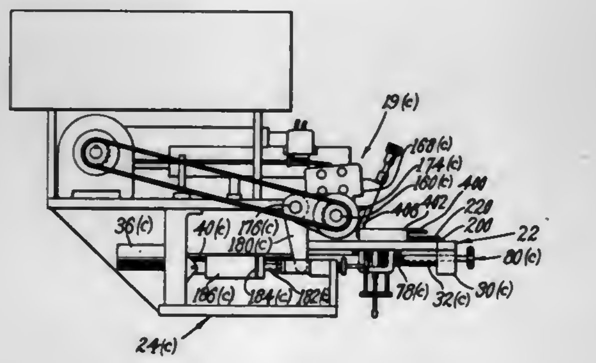
Raymond M. Bowler, Salem, N.H., and Leo F. Stanton, Newburyport, Mass., assignors to USM Corporation, Boston, Mass.
Filed June 8, 1970, Ser. No. 44,226
Int. Cl. A43d *75/00*
U.S. Cl. 12—10.8 **3 Claims**



An improved shoe forepart lasting machine in which registration of an insole and an upper with a last is provided by a mechanism for moving the last heelwardly into the lasted heel end of the shoe.

3,605,151
METHOD FOR APPLYING COATING MATERIAL

John R. Maifeld, Jr., Lynnfield, Mass., and Kenneth L. Rains, Murphysboro, Ill., assignors to USM Corporation, Boston, Mass.
Filed June 2, 1969, Ser. No. 829,308
Int. Cl. A43d
U.S. Cl. 12—146D **2 Claims**

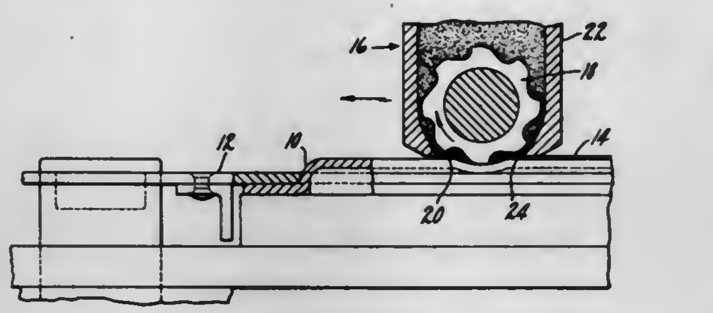


A method for providing a pervious article of commerce with a permanently stiffened three dimensional configuration comprising applying a coating of hot viscous synthetic polymeric material to one side of the article while subjecting the opposite side to a vacuum, cooling the article, and applying conforming pressure to shape the article.

3,605,152
METHOD FOR STIFFENING

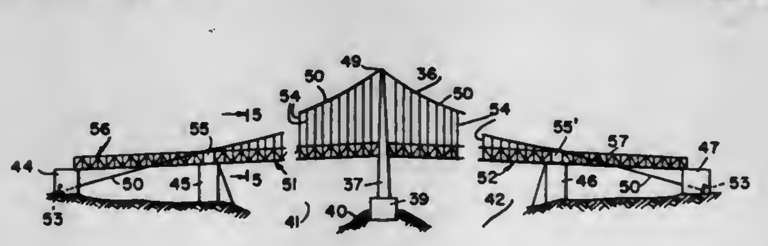
Karl V. Becker, Boxford, Mass., assignor to USM Corporation, Boston, Mass.
Filed Oct. 20, 1969, Ser. No. 867,642
Int. Cl. A43d
U.S. Cl. 12—146D **11 Claims**

A method for stiffening a selected area of sheet material, particularly areas of shoe components in which a first coating of molten resin is laid down on the area to be stiffened, a flexible fibrous reinforcement is laid down on the coating while exposed portions of the coating are in soft adhesive condition and thereafter a second coating of viscous molten resin is applied to cover the reinforcement and extend over the edges of the reinforcement to merge into the first coating.



3,605,153
SINGLE TOWER SUSPENSION BRIDGES

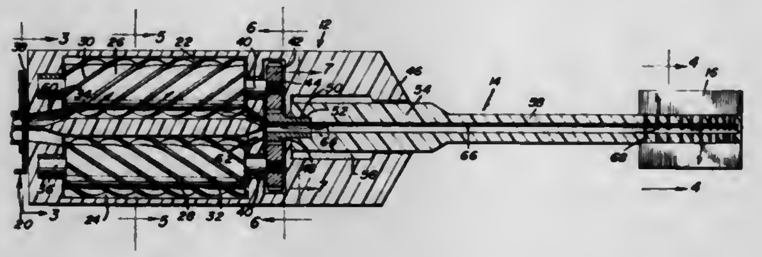
Dominick George Constantino, 196—43 49th Ave., Flushing, N.Y. 11365
Continuation of application Ser. No. 798,926, Feb. 13, 1969, which is a continuation-in-part of application Ser. No. 616,760, Feb. 14, 1967. This application Mar. 10, 1970, Ser. No. 17,042
Int. Cl. E01d *11/00*
U.S. Cl. 14—18 **5 Claims**



A single tower suspension bridge is constructed which comprises a tower, a fixed support for the tower, saddles supported on the tower, a plurality of main cables supported by said saddles and extending generally downwardly therefrom, two spans which together run the length of the bridge, a plurality of suspender cables extending from the main cables and supporting said spans and anchorage means for securing the cable ends.

3,605,154
MECHANICAL BRUSHING UNIT

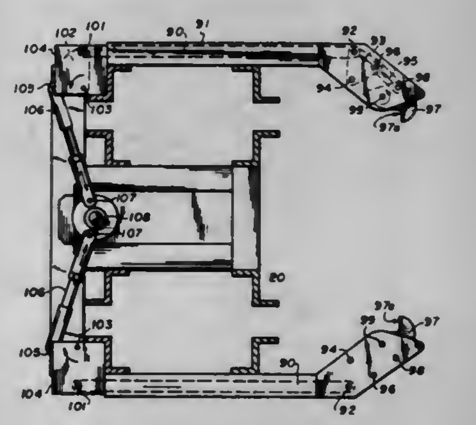
Thomas C. Dawkins, 132 W. Main, Anadarko, Okla. 73005
Filed Mar. 12, 1970, Ser. No. 18,906
Int. Cl. A46b *13/06*
U.S. Cl. 15—24 **6 Claims**



A rotary brush element is driven through gearing by one of a pair of turbine elements in an elongated body having inlet and outlet ports through which fluid under pressure is introduced to and exhausted from the turbine elements. The fluid is discharged from the brush element through orifice apertures between the brush bristles. A control valve blocks flow through a selected inlet port to determine the direction of rotation of the brush element.

3,605,155
LATCHING MECHANISM FOR APPARATUS UTILIZED IN CLEANING COKE OVEN DOORS

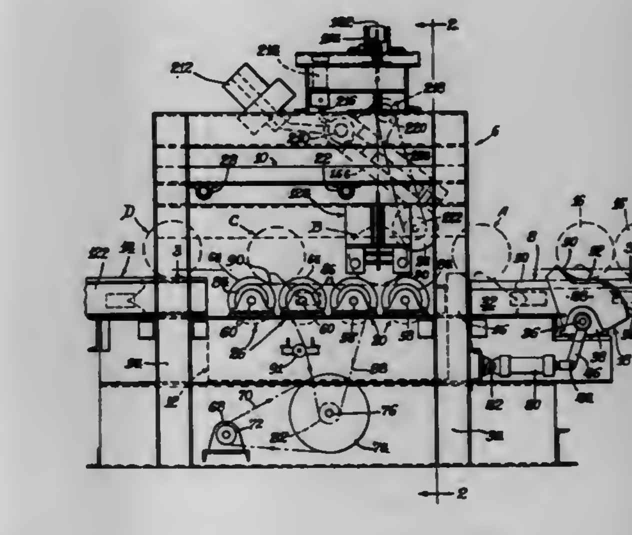
Charles D. McCullough, Metropolis, Ill., and Leo G. Schroeder, New Hyde Park, N.Y., assignors to Wilputte Corporation
Filed July 18, 1969, Ser. No. 842,856
Int. Cl. C10b *43/04*
U.S. Cl. 15—93 **7 Claims**



In apparatus for scraping undesired substances formed on the flange surface area of a coke oven door during a coking operation and which apparatus includes a door cleaner head having a scraping means thereon, a latching mechanism is provided for securely holding the cleaner head with the door to be cleaned in an oriented position. The latching mechanism includes a pair of latching links extending along opposing lateral surfaces of the door cleaner head, the far end of each latching link being provided with a pivotally mounted locking finger having a locking surface thereon for grasping the door flange and the near end of each latching link being provided with a pivotal means. Adjustable members interconnect each of the near end pivotal means to a crank-shaft which is operated by an actuating means for moving the fingers between locked and unlocked positions through the latching links, pivotal means and adjustable members.

3,605,156
APPARATUS FOR CLEANING CYLINDRICAL MEMBERS

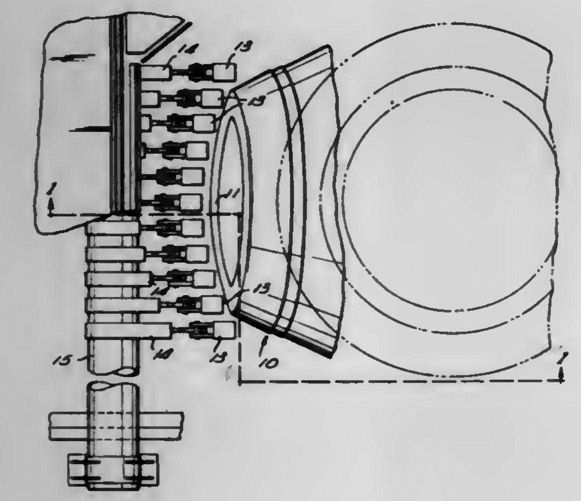
Howard E. George, Itasca, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Mar. 3, 1969, Ser. No. 803,592
Int. Cl. A46b *13/02*
U.S. Cl. 15—88 **10 Claims**



An apparatus is provided to remove chemical compounds from the bearing journals and wheel seats of railway axles. Axles are moved through the apparatus position by position by an escapement mechanism, conveyor arrangement and a movable transfer car. An axle is moved to a first position where it is rotated by rollers. The ends of the axle are soaked with heated solvent and then rubbed by rotating brushings. From there the axle is moved to a second position where it is rotated and flushed with heated solvent. During the removal operation, axles may be located at each of the positions and moved simultaneously to the next position by the transfer car. Means are also provided to center each axle within the apparatus relative to the various positions.

3,605,157
WASTE MATERIAL-REMOVING APPARATUS

Harvey E. Thompson, Jr., 9040 Newkirk Drive, Parma Heights, Ohio 44130; Otakar A. Kuby, 17533 Madison Ave., Lakewood, Ohio 44107; and Allan D. Taylor, 22486 Laramie Drive, Rocky River, Ohio 43458
Filed Aug. 25, 1969, Ser. No. 852,695
Int. Cl. C21c *5/46*
U.S. Cl. 15—93 **15 Claims**

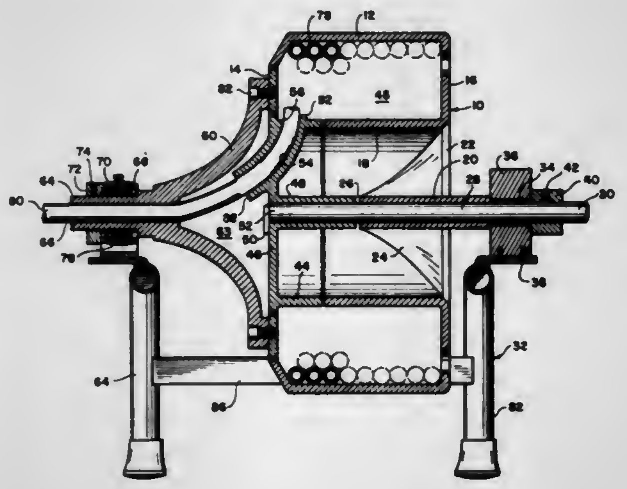


Apparatus for scraping slag, metal or other waste material from the mouth of a basic oxygen furnace converter when the converter is rotated downwardly from an upright position. The apparatus has individually pivoted scrapers with individual shear pins, each permitting the respective scraper to move to an out-of-the-way position when overloaded without affecting the operation of the other scrapers. The scrapers can pivot to out-of-the-way positions when the converter is moved back up. The foregoing abstract is merely a résumé of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,605,158
SINK AND DRAIN LINE CLEANING APPARATUS

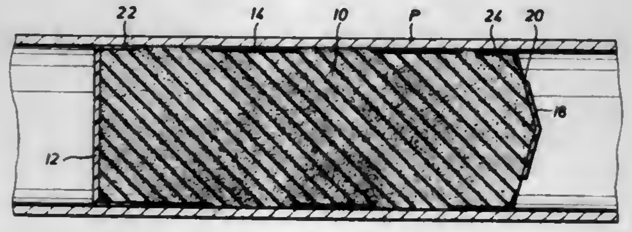
Ira F. Russell, 3333 E. Pine St., Tulsa, Okla. 74115
Filed Dec. 30, 1968, Ser. No. 787,868
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.3 **5 Claims**

A sink and drain line cleaning apparatus wherein a cleaning cable is stored in the annular space between an inner and outer drum. The outer drum is rotatably driven and the greater portion of the inner drum is integral with or rigidly secured to the outer drum for rotation simultaneously therewith. A small segment of the inner drum is independent of the greater portion thereof and is free wheeling or independently rotatable with respect thereto. The cable is wound around the inner drum with one end thereof being secured to the driven portion of the drum and the opposite or free end thereof extending axially outward from the annular space for insertion within the line being cleaned thereby. A suitable cutting tool is secured to the free end of the cable and rotation of the outer drum and integral portion of the inner drum causes the cable to rotate about its axis in a twisting motion whereby the cutting tool cuts or otherwise releases any obstruction within the line. The annular chamber housing the wound cable is particularly designed and constructed for substantially precluding kinking of the cable upon the sudden release of tension therein when an obstacle in the line is cut loose. In addition, the inner drum structure greatly reduces friction on the cable during a cleaning operation, thus reducing wear on the cable and prolonging the useful life thereof.



3,605,159
PIPE LINE PIG OR SWIPE

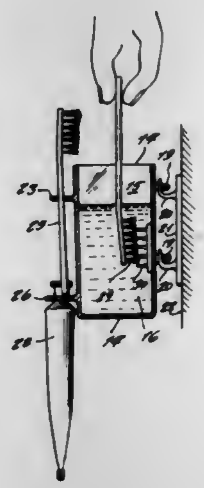
Harry J. Girard, 3202 Huntingdon, Houston, Tex. 77019
Filed Nov. 20, 1968, Ser. No. 777,448
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 **1 Claim**



A pig or swipe for use in cleaning pipe lines and for maintaining fluids separated while being transmitted through the line, and adapted to be propelled through the line by a pressure gradient therein. The pig includes a sponge-like body of foamed plastic material, having an external coating or cover of durable material, such as unfoamed plastic in which reenforcing material, such as wire mesh or glass fabric may be embedded to increase resistance to tearing and wear. The covering is applied to leave openings through which the sponge-like body may project into wiping contact with the surrounding internal surface of the pipe when a longitudinal compressive force is exerted on the pig by the fluid in the pipe in advance of and following the pig therein. The pig also has a barrier layer at one end positioned to close the sponge-like body against the passage of fluid therethrough and to form a fluid tight seal with the surrounding pipe.

3,605,160
COMBINED TOOTHBRUSH RACK AND CLEANER

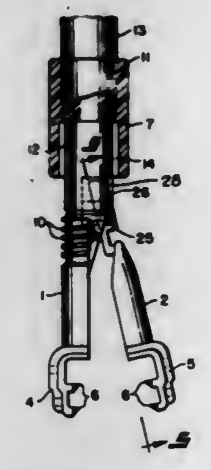
Rueben H. Maurer, 3733 Edgefield Ave. NW., Canton, Ohio 44709
Filed Mar. 25, 1969, Ser. No. 810,178
Int. Cl. A46b *11/00;* **A47g** *29/08;* **B08b** *1/00*
U.S. Cl. 15—105 **3 Claims**



A device for cleaning a toothbrush, the device comprising a plastic vessel or glass having a plastic brush secured to an inner side wall thereof, against which a tooth brush may be stroked during cleaning operation, the plastic vessel including means for supporting a plurality of tooth brushes and tooth paste tubes, the vessel further including means for mounting the same to a vertical wall of a bathroom.

3,605,161
ATTACHMENT DEVICE FOR MOPS AND THE LIKE

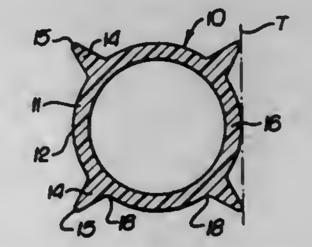
Theron V. Moss, 3175 Falmouth, Shaker Heights, Ohio 44120, and Austin T. Dalhart, Bay Village and Erwin Tomm, Cleveland, Ohio; said Dalhart and Tomm assignors to said Moss
Continuation of application Ser. No. 744,851, July 15, 1968. This application Nov. 10, 1969, Ser. No. 875,517
Int. Cl. A47l *13/20*
U.S. Cl. 15—150 **11 Claims**



An attachment device for mops and the like including a pair of movably interconnected clamping members adapted to secure a mop between the ends thereof. A collar surrounds the clamping members and is adapted for longitudinal movement to secure the clamping members in a closed position about a swab and for movement out of engagement with the clamping members to permit removal of the swab.

3,605,162
BRUSH FILAMENT AND CONSTRUCTION THEREFOR

Mace E. Long, Long Beach, Calif., assignor to Industrial Brush Company, Pomona, Calif.
Filed Mar. 14, 1969, Ser. No. 807,314
Int. Cl. A46d *1/00;* **D01d** *5/00;* **D01f** *1/00*
U.S. Cl. 15—159 **16 Claims**



A brush filament of polymeric material of novel composition and structure particularly adapted for use on nonuniform interrupted surfaces such as vehicle surfaces. A brush filament of light weight, low breaking strength, structural rigidity sufficient to provide full cylindrical brush configuration at relatively low rational speeds, resistance to wear and fraying or splitting, and freedom from curl and maintenance of separate discrete filament relationship, the filament including a tubular portion with spaced longitudinal ribs, the rib edges defining planes tangent to the convex surfaces of the tubular portion lying between said rib edges.

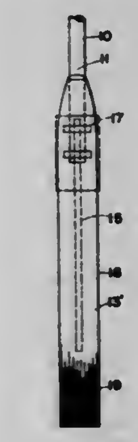
3,605,163
BACTERIOSTATIC TOOTHBRUSHES

Arthur W. Bechtold, Boonton, N.J., assignor to Chemway Corporation, Wayne, N.J.
No Drawing. Filed Jan. 10, 1969, Ser. No. 790,476
Int. Cl. A46d *1/00;* **A01n** *17/00*
U.S. Cl. 15—159 **6 Claims**

Toothbrushes having bacteriostatic nylon bristles are produced by immersing the bristles in an aqueous-alcoholic solution containing a bacteriostat selected from the group consisting of 2,2′-methylene bis[3,4,6-trichlorophenyl] and 2,4,4′ - trichloro-2′ - hydroxydiphenyl ether. Boric acid in small amounts may also be added to the solution to assist in the conditioning of the bristles.

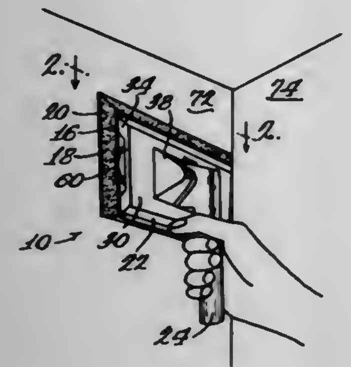
3,605,164
CURLING BROOM

George F. Harris, 13 Mager Drive, Winnipeg, Manitoba, Canada
Filed Mar. 7, 1969, Ser. No. 805,295
Int. Cl. A47l *25/00*
U.S. Cl. 15—210R **1 Claim**



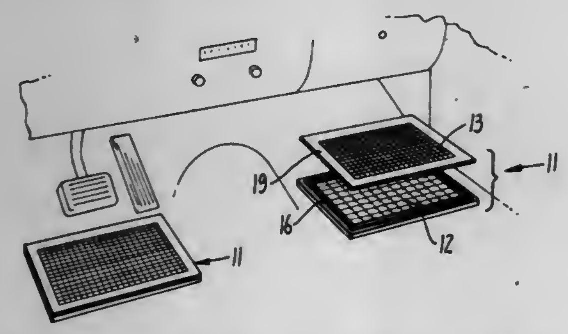
A curling broom compacted from polyurethane foam in a mould and covered with a latex skin. A flexible plastic strip is embedded in the foam to act as a spring.

3,605,165
PAINT APPLICATION WITH GUIDE MEANS
Frederick B. Burns, South Milwaukee, Wis., assignor to EZ Paintr Corporation
Filed Dec. 11, 1968, Ser. No. 782,974
Int. Cl. A46b *15/00*
U.S. Cl. 15—210 **7 Claims**



A paint applicator with guide means for painting a surface which abuts an intersecting surface, characterized in that the guide means, preferably in the form of rollers, project outwardly beyond opposite sides of the applicator and lie on either side of the handle. Preferably, the applicating surface is trapezoidal with the rollers overhanging nonparallel edges which converge toward each other.

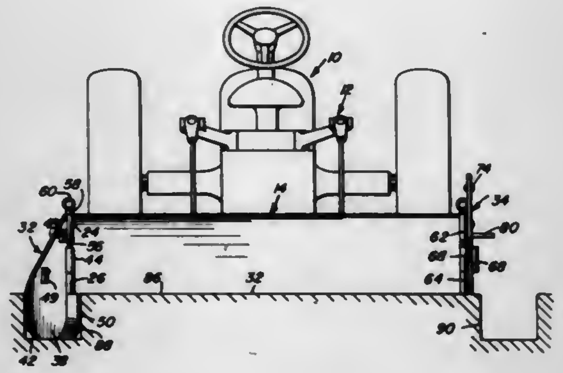
3,605,166
FLOOR MAT CONSTRUCTION
John W. Chen, 1168 Broadway, San Francisco, Calif. 94109
Filed Feb. 20, 1969, Ser. No. 801,117
Int. Cl. B62d *25/20*
U.S. Cl. 15—215 **7 Claims**



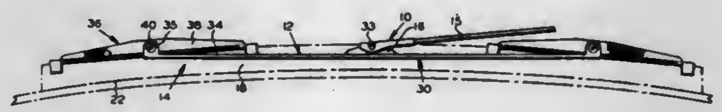
A floor mat construction especially suitable for use in the interior of automobiles comprising a tray, a grate and fastening means for removably securing the grate in a desired position over the tray; the tray being formed with internal partitions defining a plurality of open-top compartments formed to hold mud, water and the like in a fixed area against splashing; a grating formed to fit over the tray and completely cover the partitions therein, with the grate being formed with tapered sides and terminating in knife-like upper edges; the whole mat construction preferably being formed of tough, light-weight resilient material such as rubber or rubber compositions, and with the grating providing a larger number of small openings than is provided by the compartments but preferably of the same shape.

3,605,167
WING GUTTER CLEANER
Andre J. Martel and Jerome E. Martel, both of R.F.D. 2, Williston, Vt. 05495
Filed Mar. 12, 1969, Ser. No. 806,408
Int. Cl. A01k *1/00*
U.S. Cl. 15—236 **8 Claims**

An attachment for a rearwardly facing tractor lift arm mounted tractor blade. The attachment includes a pair of blade arms secured to and projecting rearwardly from the opposite ends of the blade for limited vertical floating relative thereto and one of the blades is disposed lower than the other and is slightly outwardly inclined toward its rear end and includes a ramp structure at its forward end for scooping manure upwardly out of a gutter in which the one blade is slidingly seated and along which the tractor blade is moving.



3,605,168
WINDSHIELD WIPER BLADE
John P. Moorhead, Valparaiso, and Leo J. Wubbe, Beverly Shores, Ind., assignors to The Anderson Company, Gary, Ind.
Filed Mar. 16, 1970, Ser. No. 19,923
Int. Cl. B60s *1/40;* **A47l** *1/02*
U.S. Cl. 15—250.42 **23 Claims**

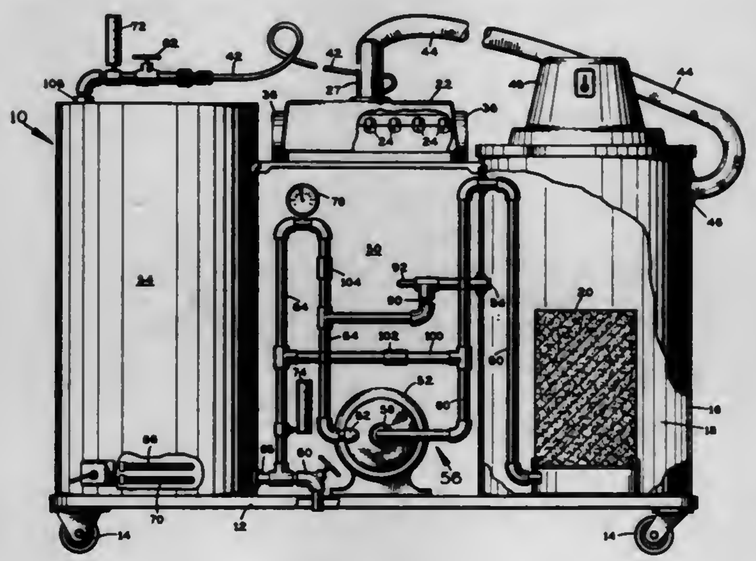


This invention relates to windshield wiper blade assemblies for wiping a curved or a flat windshield. The assembly includes a wiping element and a pressure distributing structure operatively connected together in such a way as to transmit pressure received by the pressure distributing structure from a wiper arm and to distribute said pressure along the length of the wiping element to conform the wiping element to the shape of the surface of the windshield for wiping same. A member or members of the pressure distributing structure is located laterally of the wiping element so as to reduce the height of the profile or silhouette of the structure, to minimize the effect of snow pack or ice pack on the wiper in wintry weather, and to reduce interference between each of the members of the structure and between such members and the wiping element during flexing of the wiper.

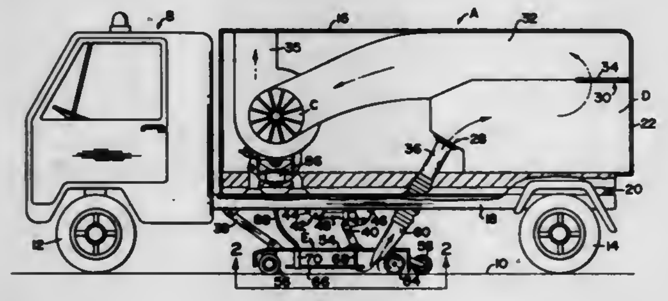
3,605,169
CLEANING MACHINE
Charles R. Howerin, 1631 NE. 57th St., Fort Lauderdale, Fla. 33308, and Marion W. Humphreys, Fort Lauderdale, Fla.; said Humphreys assignor to said Howerin
Filed Feb. 24, 1969, Ser. No. 801,432
Int. Cl. A47l *13/26*
U.S. Cl. 15—321 **3 Claims**

A cleaning machine which is particularly useful for cleaning carpets. A preferred embodiment of the machine includes a head for directing a cleaning liquid such as water or an aqueous cleaning solution onto a carpet or the like and for withdrawing soil and excess liquid from the carpet and supplying it to a chamber which contains a

filter. A blower may be utilized to suck the excess liquid and soil into the chamber or tank for containing liquid. The liquid is forced through the filter, for example by means of a pump, and the filter acts to remove contaminants from the liquid. The clean liquid flows from the exhaust side of the filter through a flow circuit back to the head where it is directed against the carpet, for example as a spray. A heater is provided to raise the temperature of the liquid so that it is very hot when sprayed, thereby improving its cleaning action. Thus, the machine involves a combination of recirculation, filtering and heating providing good cleaning and high efficiency.

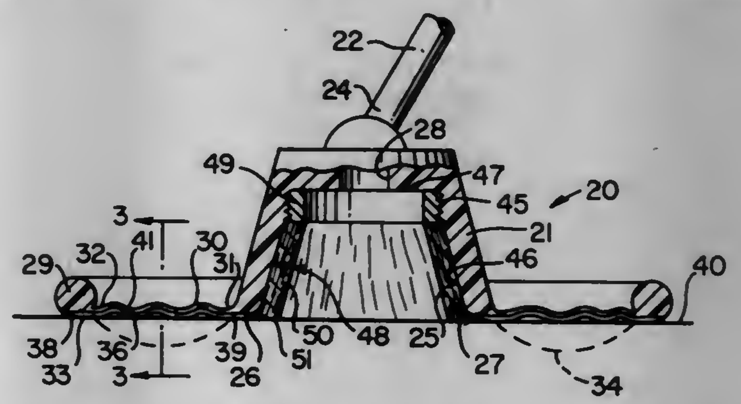


3,605,170
MOBILE SUCTION CLEANING DEVICE
Emil J. Hank, Minerva, and Henry D. Luther, Massillon, Ohio, assignors to Gulf + Western Industrial Products Company, Grand Rapids, Mich.
Filed Mar. 11, 1969, Ser. No. 806,202
Int. Cl. E01h *1/08*
U.S. Cl. 15—346 **10 Claims**



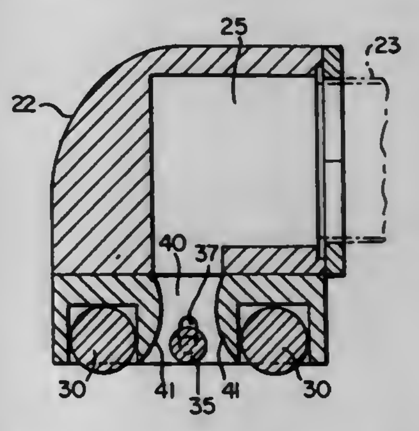
A suction cleaning device adapted to be moved in a forward direction over a surface to remove debris and other material therefrom, including a debris hopper, a suction duct leading to the hopper, fan means to draw air through the duct, and an improved pick-up chamber into which the duct extends removed from the hopper adjacent to the surface to be cleaned. The improved pick-up chamber is comprised of at least one suction nozzle inlet opening positioned within the pick-up chamber and in communication with the suction duct, and air jet means having a plurality of air outlet openings arranged in the chamber forward of and on opposite sides of the suction nozzle inlet openings, the air jet means possessing high impact characteristics to loosen the material from the surface and direct it toward the path of movement traversed by the suction nozzle inlet openings.

3,605,171
NOZZLE CONSTRUCTION FOR A VACUUM CLEANER OR THE LIKE
Robert R. Candor, Miami Township, Ohio (5940 Munger Road, Dayton, Ohio 45459), and James T. Candor, Washington Township, Ohio (5440 Cynthia Lane, Dayton, Ohio 45429)
Continuation-in-part of application Ser. No. 788,278, Dec. 31, 1968. This application Jan. 31, 1969, Ser. No. 795,453
Int. Cl. A47l *9/06*
U.S. Cl. 15—399 **7 Claims**



This disclosure relates to a nozzle construction for a vacuum cleaning apparatus or the like for applying a suction to a surface to be cleaned thereby, the nozzle construction comprising a support means having opening means therein provided with an outlet to be interconnected to a vacuum pump means and an inlet to be disposed adjacent to a surface means to be cleaned. A flexible wall surrounds the inlet so as to have one side thereof engaged against the surface means around said inlet to substantially seal the inlet of the support means to the surface means. The flexible wall is so constructed and arranged that a pressure differential acting across the same resulting from the vacuum pump means drawing fluid from the surface means into the inlet and out through the outlet of the opening means causes the flexible wall to be urged toward the surface means to substantially seal against the surface means around the inlet and substantially conform to the contour of the surface means outboard of the inlet.

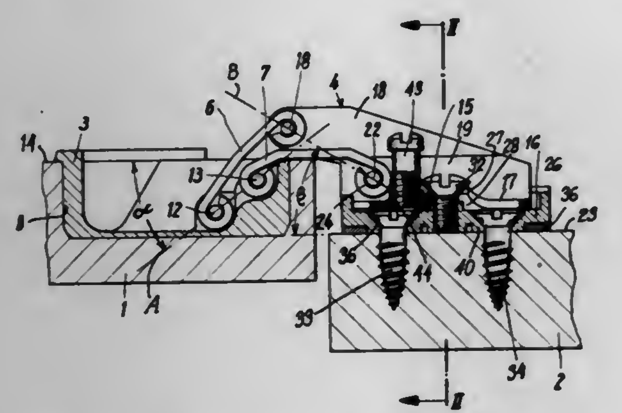
3,605,172
VACUUM CLEANER NOZZLE WITH VARIABLE VENTURI
Louis J. Damasco, 932 Marlyn Road, Philadelphia, Pa. 19151
Filed Apr. 6, 1970, Ser. No. 25,671
Int. Cl. A47l *9/02*
U.S. Cl. 15—419 **4 Claims**



A variable venturi nozzle for use with a vacuum cleaner or similar apparatus having a pair of fixed position parallel rollers with a channel therebetween communicating with a vacuum source, and a spring biased roller centrally placed between said fixed position rollers, and having its axis aligned in parallel with those of said fixed position rollers, said spring biased roller being movable within said channel and providing a varying channel opening according to its position. The channel sides are curved convex outward, such that a maximum cross-sectional outlet is provided when the moveable roller is in its lowest position, the outlet area decreasing as the roller is moved against the spring to higher positions.

3,605,173
HINGE WITH QUADRILATERAL SWING JOINT AND MOUNTING PLATE THEREFOR

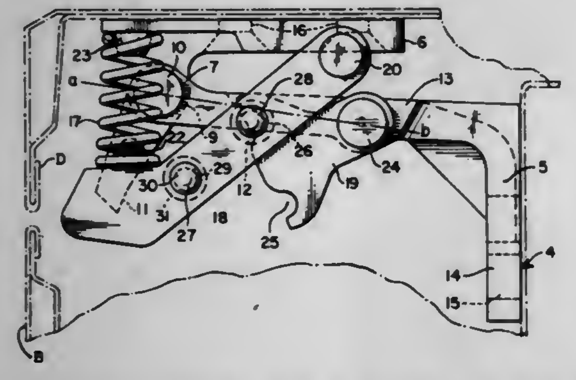
Karl Lautenschläger, Jr., Wersau, Odenwald, Germany, assignor to Karl Lautenschläger KG., Reinheim, Odenwald, Germany
Filed Mar. 11, 1969, Ser. No. 806,156
Claims priority, application Germany, Mar. 18, 1968, P 17 08 248.3
Int. Cl. E05d *3/06*
U.S. Cl. 16—163 **3 Claims**



A hinge of the type having a pair of pivot members forming a quadrilateral swing joint. Opposite end portions of the pivot members are pivotally connected to a holder mounted upon a door and a carrier arm removably mounted in a mounting member fastened to a carrier wall. An innermost one of the pivot members is pivotally connected to the carrier arm at a point overlying a fastening member securing the mounting plate to the carrier wall. Adjustment means pass through the carrier arm immediately adjacent the pivot point of the innermost pivot member and engages against the mounting plate. The carrier arm is further characterized by a substantially U-shaped cross section forming a base portion intermediate a pair of spaced leg portions and has a longitudinally elongated slot formed in the base portion for receiving an attachment member cooperating with the slot to spread the legs into firm engagement with opposed, confronting wall portions of the mounting plate.

3,605,174
TOGGLE TYPE HOLD OPEN HINGE

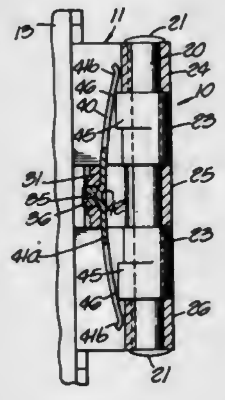
Joseph H. Marchione, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
Filed Aug. 12, 1969, Ser. No. 849,362
Int. Cl. E05d *11/10*
U.S. Cl. 16—145 **7 Claims**



A spring loaded toggle link is pivoted at one end to one hinge member and cooperates intermediate its ends with a second toggle link pivoted to the other hinge member to swing the second toggle link from one extreme position, in which the door is held open, to the other extreme position in which the door is held closed, the second toggle link being disposed in a neutral position in a mid-open position of the door in which the spring exerts the same resistance to dor movement in either direction. The second toggle link is the equivalent of a segmental gear, being provided with two spaced notches, equally spaced on opposite sides of a longitudinal center line, and these notches having rolling meshing engagement with two equally spaced pins provided on the first toggle link intermediate the ends thereof.

3,605,175
LATCHING HINGE

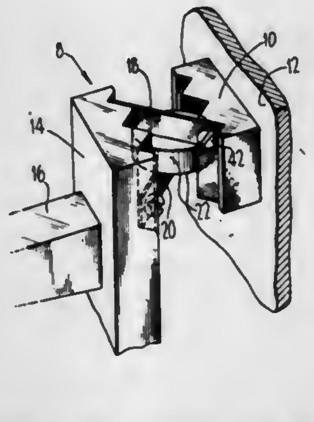
Harry C. Wilson, 15126 Rayneta Drive, Sherman Oaks, Calif. 91403
Filed Mar. 17, 1969, Ser. No. 807,796
Int. Cl. E05f *1/12*
U.S. Cl. 16—184 **21 Claims**



A paintable latching hinge having an adjustable leaf spring supported by a curl portion of one hinge leaf and cooperating with the specially shaped curl portions of the other hinge leaf to bias the hinge toward and away from closed position, and having no biasing effect in other positions hereof. The curl portions of both hinge leaves cooperate in the closed position to present the appearance of a gambrel roof as viewed from one end. Additionally, the biasing spring is so arranged as not to contact any exposed curl surface at any time.

3,605,176
CROSS FLEXURE HINGE

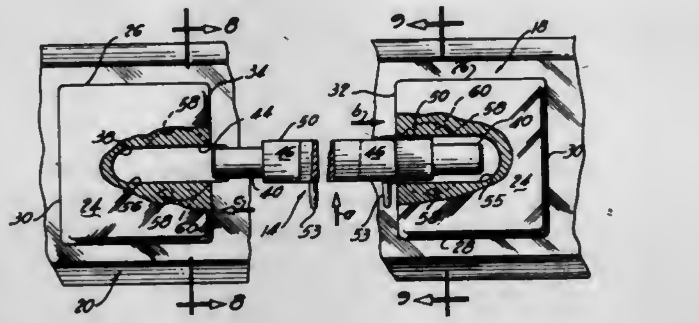
Henry W. Jones, Castro Valley, Calif., assignor to The Singer Company
Filed Feb. 20, 1969, Ser. No. 801,071
Int. Cl. E05f *1/12*
U.S. Cl. 16—180 **7 Claims**



A hinge using cross flexure leaf springs is assembled by holding the hinged members snug against a cylindrical gauge and fastening the flexure elements. Preferably, the center of the gauge is aligned with the crossed centers of the flexure elements, and is retained in the assembly.

3,605,177
PULL

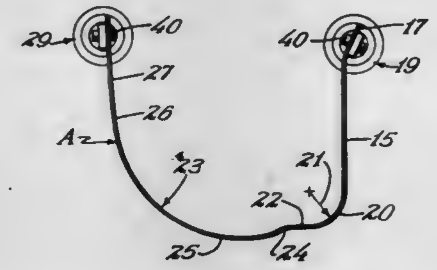
Robert S. Cartwright, Booneville, N.C., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed May 20, 1970, Ser. No. 39,113
Int. Cl. A07b *95/02*
U.S. Cl. 16—125 **11 Claims**



The following specification describes a pull in which a bail is pivotally supported by two spaced posts integrally formed on a common backplate with each post having concealed tangs formed therein to prevent disassembly of the bail.

3,605,178
LOIN PULLING KNIFE

Edwin E. Hoffmann, 44 Otis Ave., St. Paul, Minn. 55104
Filed Jan. 16, 1970, Ser. No. 3,339
Int. Cl. A22c *17/00*
U.S. Cl. 17—1G **4 Claims**

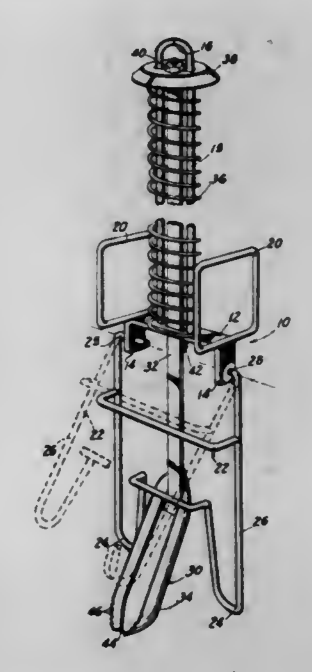


A blade is bent into generally U-shaped form to separate the loin from the belly and fatback of a hog. The blade is sharply bent along a short radius at its point of entry through the scribe line so as to cut through the serratus dorsalis muscle.

3,605,179
SHACKLE EVISCERATING MECHANISM

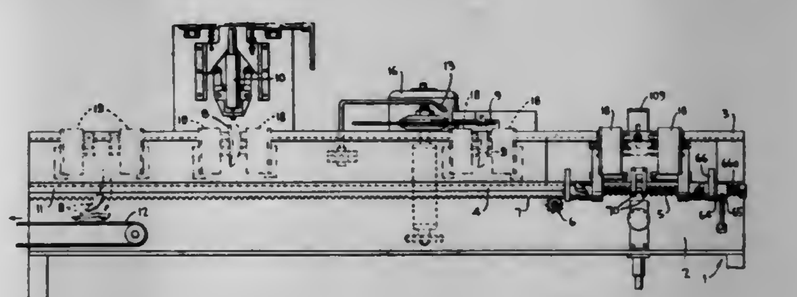
Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.
Filed Dec. 8, 1969, Ser. No. 883,201
Int. Cl. A22c *21/06*
U.S. Cl. 17—11 **10 Claims**

A mechanism combining a shackle for supporting a chicken or other fowl in a head lowermost position and a spoon-shaped member movably disposed thereon in a reciprocable path for being inserted into the abdomen of a chicken or other fowl suspended from the shackle and for withdrawing the viscera from the chicken or other fowl. The bird is suspended by its hocks from a hock-gripping member pivotally mounted on the shackle. The spoon-shaped member is biased toward a retracted or withdrawn position and is provided with a rearwardly pointing serrated forward edge for permitting easy insertion into the bird, yet gripping or pulling the viscera upon spoon withdrawal.



3,605,180
APPARATUS AND METHOD FOR SHUCKING OYSTERS

Sterling G. Harris, Beaufort, and Ben P. Zober, Charleston, S.C., assignors to Harris Automated Machinery Co., Dover, Del.
Filed Sept. 30, 1968, Ser. No. 763,816
Int. Cl. A22c *29/00*
U.S. Cl. 17—74 **19 Claims**

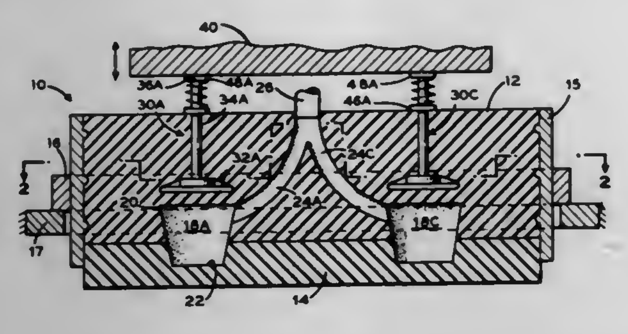


This invention pertains to shucking fresh bivalves and it encompasses both an apparatus and method which removes rapidly, and without damage, the edible portion of the bivalve. The invention consists of removing a portion of the shells of the bivalve (preferably after some of the fluids contained in the bivable cavity have been eliminated particularly in the case of oysters), thereafter severing muscles of the bivalve which connect the meat to the shells, and finally separating the meat and the shells, and the apparatus for accomplishing the foregoing operation. The invention pertains to bivables in general but is especially useful in the shucking of oysters and clams.

3,605,181
SPLIT-FACE MOLD WITH PLUNGER

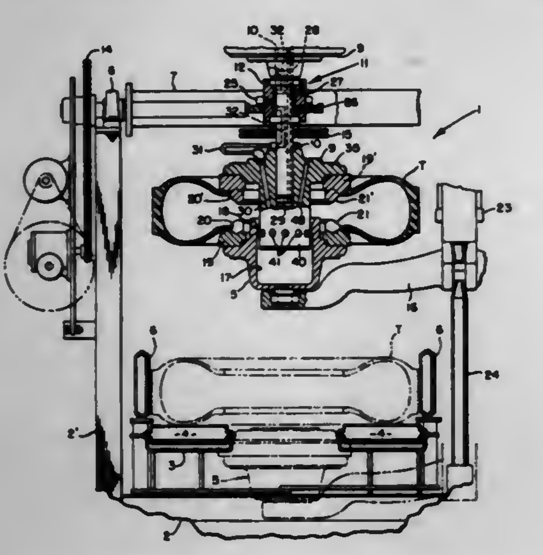
Richard Posner, East Northport, N.Y., assignor to Creative Polymer Products Corp., Long Island City, N.Y.
Filed Mar. 12, 1970, Ser. No. 18,880
Int. Cl. B29c *7/00*
U.S. Cl. 18—2RC **7 Claims**

A split-face mold includes at least one section of elastomeric material. Within this section is at least a portion of the mold cavity. Also, within this section is a rigid plunger with a face plate opposite the mold cavity and a shaft that extends away from the mold cavity to the outside of the mold section. The plunger is used to force molded articles out of the mold cavity.



3,605,182
LOCK MEANS FOR POST-CURE INFLATOR

Ernest S. Ulm, Stow, Ohio, assignor to
NRM Corporation, Akron, Ohio
Filed Aug. 25, 1969, Ser. No. 852,849
Int. Cl. B29h *5/02*
U.S. Cl. 18—2TP **9 Claims**

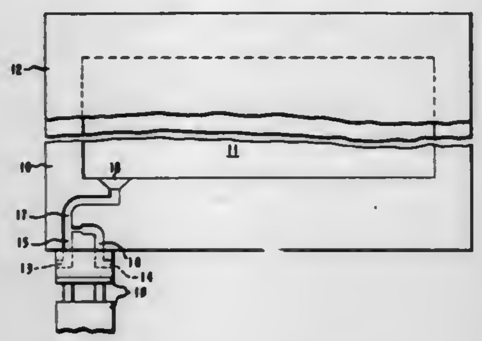


A post cure inflator lock embodying an air inlet valve which is automatically opened to admit air into a tire held between bead engaging members only when a lock plunger is moved by inlet pressure to a position effecting locking together of the bead engaging members against separation. The lock herein is also arranged so that when the inlet passage is vented, the tire deflates through the inlet valve to nearly ambient pressure before the lock plunger is permitted to move to unlocking position whereat the inlet valve is closed and another vent passage is opened.

3,605,183
MIXING AND CASTING LACTAM COMPOSITIONS

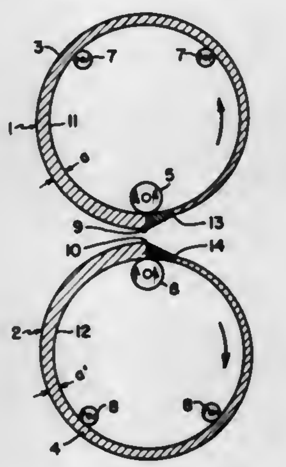
Robert S. Heckrotte, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Original application Dec. 8, 1966, Ser. No. 600,222, now Patent No. 3,494,999, dated Feb. 10, 1969. Divided and this application Feb. 12, 1969, Ser. No. 871,483
Int. Cl. B29b *1/06, 5/04;* **B01f** *5/04*
U.S. Cl. 18—5R **2 Claims**

In casting molten monomeric lactams to form solid polylactam objects, separate streams of a catalyst-containing lactam composition and promoter-containing lactam composition, respectively, are forced through channels, one lactam stream being laterally introduced into the other at an angle of about 90° and with a mass-velocity about 2.5 to 3 times the mass-velocity of the other lactam stream. The resulting uniform mixture is passed to a mold cavity for polymerization and shaping, and upon completion the mold is opened and the solid article removed. In a multipart casting mold, one part is a mold block and the other a cover plate. Two separate channels in the mold block, which convey separate streams of lactam containing catalyst and lactam containing promoter, respectively, meet at an angle of about 90°, the cross section of the side-entering channel is of such a predetermined size that the mass-velocity of the monomer stream issuing out of said channel is 2.5 to 3 times the mass-velocity of the other monomer stream, and a common channel conveys the mixture to the mold cavity.



3,605,184
ROLLING MILL FOR PRODUCING LONGITUDINALLY TAPERED SHEET, PLATE AND SECTIONS

Charles P. Mueller, Upper St. Clair Township, Allegheny County, Pa., and William A. McNeish, New Hartford, N.Y., assignors to Cyclops Corporation, Universal-Cyclops Specialty Steel Division, Pittsburgh, Pa.
Filed Mar. 14, 1969, Ser. No. 807,309
Int. Cl. B29d *7/10*
U.S. Cl. 18—9 **5 Claims**

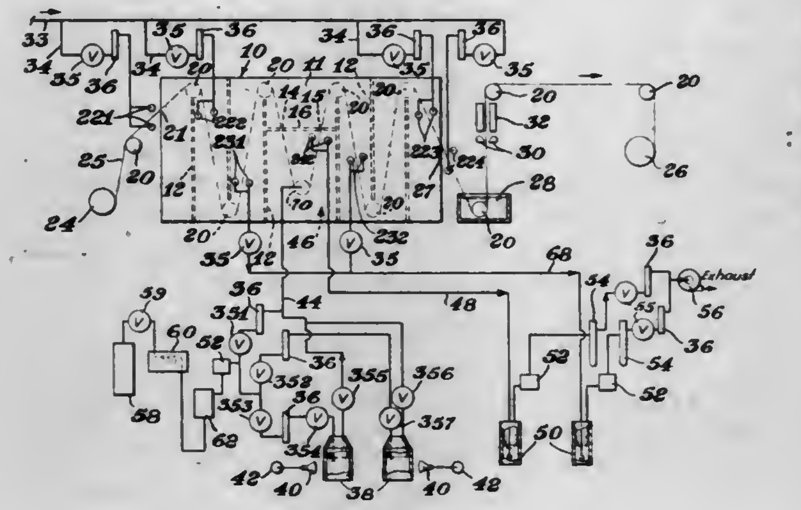


A rolling mill for rolling longitudinally tapered sheet, plate and sections whereby the work rolls are eccentric hollow sleeves. These eccentric hollow sleeves have a cylindrical inner surface and a tapered roll wall thickness around the periphery of the roll for rolling tapered sheets and plates and a tapered recess in a constant thickness roll wall for rolling tapered sections. The rolls are driven and supported by smaller rolls positioned within the hollow work rolls.

3,605,185
APPARATUS FOR PRODUCING A LATENT DECORATED EFFECT ON PLASTIC FILMS

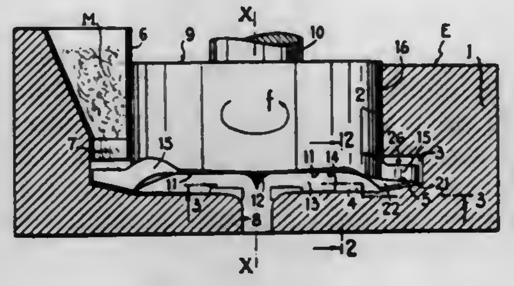
Lawrence J. Kyle, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 4, 1969, Ser. No. 882,134
Int. Cl. B29d *7/20, 7/22, 7/26*
U.S. Cl. 18—10 **10 Claims**

An apparatus for the rapid vapor phase sulfonation of plastic films wherein the film is treated with a jet of a gas containing sulfur trioxide to achieve a latent decorated effect. Subsequent dyeing of the treated film with water soluble dyes produces an attractively decorated, distinctive film useful as a wrapping material for edible and non-edible consumer goods.



3,605,186
PLATE EXTRUDER WITH IMPROVED FEED MEMBERS

Claude Wagner, Pont-a-Mousson, France, assignor to Societe Sidel, Le Havre, France
Filed Mar. 13, 1970, Ser. No. 19,288
Claims priority, application France, Mar. 21, 1969, 8,264
Int. Cl. B29f *3/01*
U.S. Cl. 18—12C **8 Claims**

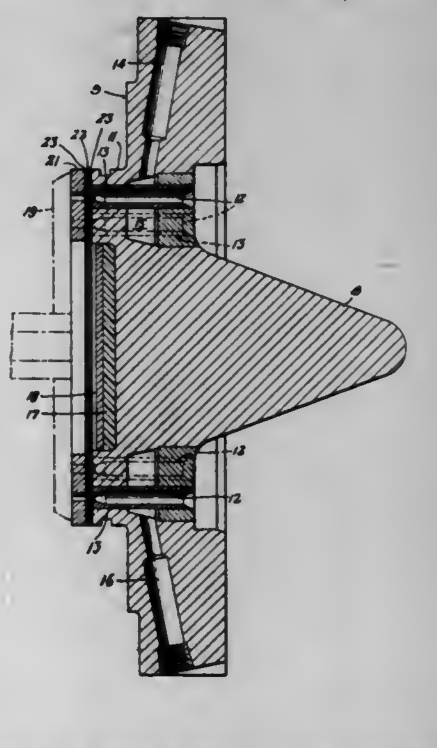


A plate extruder having a stator and a rotor mounted for rotational movement about a common axis and in spaced parallel relation with the stator to provide a gap in between with a feed inlet communicating with a peripheral portion of the stator and rotor and an extrusion die opening through an axial portion of the rotor, one or more teeth extending radially outwardly from the periphery of the rotor for positive displacement of plastic or rubber-like material from the feed opening into and through the gap between the plates to the extrusion die opening.

3,605,187
EXTRUDER STRUCTURES

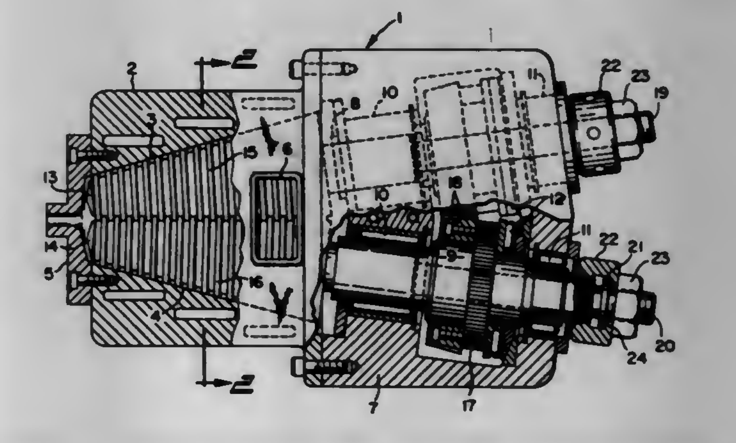
Alfred Wurster, Warrington, and Robert C. Tanner, Southampton, Pa., assignors to Andale Company, Lansdale, Pa.
Filed Feb. 13, 1969, Ser. No. 798,894
Int. Cl. B29f *3/04;* **B23k** *31/02*
U.S. Cl. 18—12A **20 Claims**

A metallic sandwich, or multiple plate assembly, is provided, for applications where structural strength is required and at the same time an exposed surface must be highly resistive to abrasive wear, a typical application being an extruder head for the extrusion of plastics. For such an extruder structure, having discharge openings at the exit face, which face is adapted to cooperate with a moving cut-off blade, and for other suitable applications, the invention provides an assembly comprising a series of at least three plate means, one of which is a pressure plate and another of which is a wear plate, between which one or more accommodation plates are located, the plates being secured together in series relationship and being respectively made of materials having successively progressing different coefficients of thermal expansion, at least under certain critical temperature conditions; and the plates are typically secured together by brazing material at the interfaces, the said progressing different coefficients of thermal expansion being characteristic of said plates at least at a temperature in the neighborhood of the freezing temperature range of the brazing material. The disclosure is inclusive, inter alia, of pressure plate means of stainless steel, wear plate means of tungsten carbide, and accommodation plate means variously embodying titanium, tantalum, iron, nickel, cobalt and chromium, some separately and some as alloys. To assure a firm brazed bonding of the several plate means, in typical embodiments of the invention the interfaces are given a rough finish. Supplemental securing means such as threaded devices may also be embedded in the assembly.



3,605,188
PLASTIC MIXER AND EXTRUDER

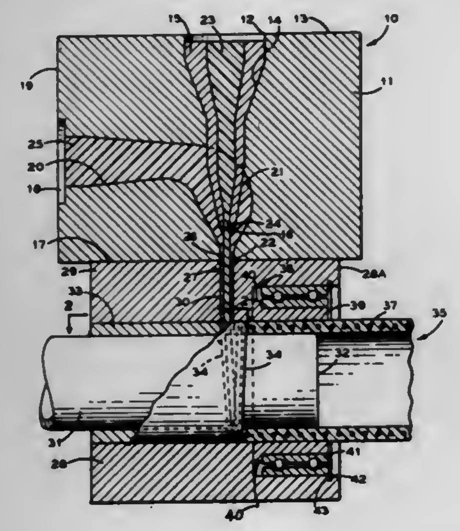
William S. McCormick, Cuyahoga Falls, Ohio, and William R. Topper, Newark, Del., assignors to NRM Corporation, Akron, Ohio
Filed Aug. 8, 1969, Ser. No. 848,633
Int. Cl. B29f *3/00, 3/06*
U.S. Cl. 18—12SP **6 Claims**



A twin conical screw plastic mixer and extruder having intermeshing conical screws rotatable within tapered, intersecting cylinder bores, and mechanism for axially adjusting the screws with respect to the tapered cylinder bores thus to vary the degree of mixing of the material according to the leakage flow of material over the screw flights. When the screw axes converge toward the die inlet, the adjusting mechanism also changes the degree of intermeshing of the screw flights to further influence the mixing action.

3,605,189
APPARATUS FOR FORMING PLASTIC TUBING

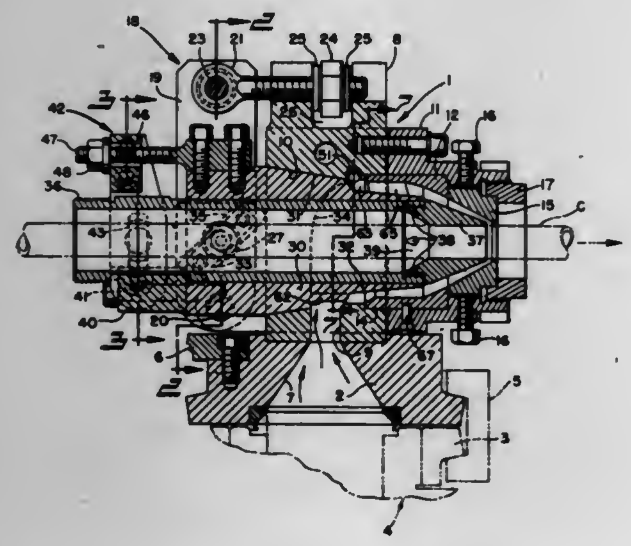
Joseph F. Bauman and Thomas A. Caserta, Trenton, N.J., assignors to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.
Filed Nov. 1, 1968, Ser. No. 772,502
Int. Cl. B29d *23/05*
U.S. Cl. 18—13P **11 Claims**



Apparatus for forming plastic tubing from continuously extruded plastic strip which may be of a homogeneous or composite nature, wherein the strip is passed to die means to convert the same into tubular form and including improved guide means for directing the moving strip into a helical path and to bring the successive convolutions of the strip into laterally abutting relation.

3,605,190
EXTRUDER CROSSHEAD

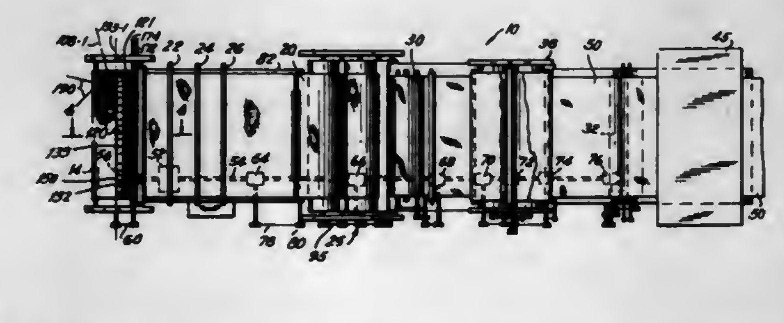
Raymond L. Christy, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio
Filed June 24, 1969, Ser. No. 835,982
Int. Cl. B29f *3/00*
U.S. Cl. 18—13H **9 Claims**



An extruder cross head for extruding plastic material onto a core which travels longitudinally through an annular die passage defined by inner and outer dies characterized in the provision of a lever actuated mandrel which is wedged into and released from a tapered bore in the crosshead body, and a lever-actuated core guide and inner die sleeve which is longitudinally slidable in the mandrel for adjustment of the inner die with respect to the outer die. The inner die has internal portions for wrench engagement to avoid marring or distortion of the die and core guide surfaces thereof during assembly and disassembly of the sleeve and inner die. The extruder crosshead herein also has controllable bleed means opposite the lateral material inlet and has a flow equalizer ring around the tip of the mandrel which includes concentric and eccentric bore portions to equalize the flow of material through the annular die passage.

3,605,191
APPARATUS FOR THE CONTINUOUS FORMATION OF FORAMINOUS ELASTOMERIC SHEET MATERIAL FROM A COAGULABLE LIQUID

Peter D. Kaspar, Dover, Del., assignor to International Playtex Corporation, Dover, Del.
Continuation-in-part of application Ser. No. 704,783, Feb. 12, 1968. This application Feb. 4, 1969, Ser. No. 796,536
Int. Cl. B29c *13/04;* **B29d** *7/00, 27/00*
U.S. Cl. 18—15F **46 Claims**

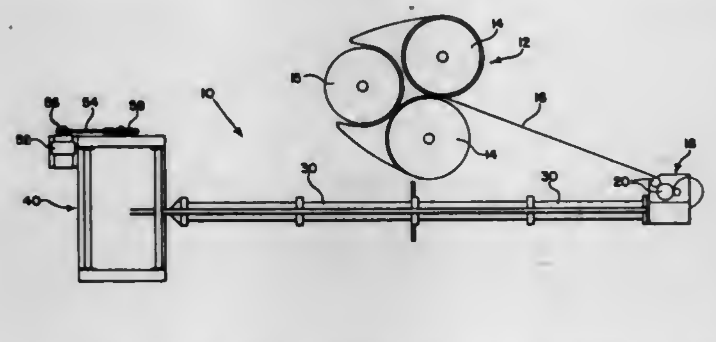


Apparatus and method are disclosed for the continuous formation of foraminous elastomeric sheet material from a coagulable liquid, such as a latex. The coagulable liquid is deposited on a forming means shown provided about the face of a rotatable cylinder, or alternatively along an endless conveyor belt. The liquid receiving surface of the forming means includes a space separated plurality of projections. The regions between these projections provide open faced locations for the reception of the coagulable liquid. A means for depositing the liquid as a layer on the forming surface is provided. This depositing means includes a spreading means at its exit which establishes the top surface of the liquid. An active gelling or coagulating agent is applied to the liquid layer immediately emerging from under the spreading means to prevent the formation of a gelled or coagulated film over the projection top surfaces, and form a hole in the deposited layer at each projection location. In the disclosed embodiments the spreading means is provided by a flexible blade member which wipes along the tops of the projections. The surface coagulant also serves to prevent the build-up of a coagulum along the blade spreading region. The liquid is coagulated and stripped from the forming surface as sheet material. In order to reduce the coagulation time, a heat-sensitive coagulable liquid may be used, with appropriate heat being applied to the forming surface.

3,605,192
CONTINUOUS MOTION CONTAINER MOLDING MACHINE

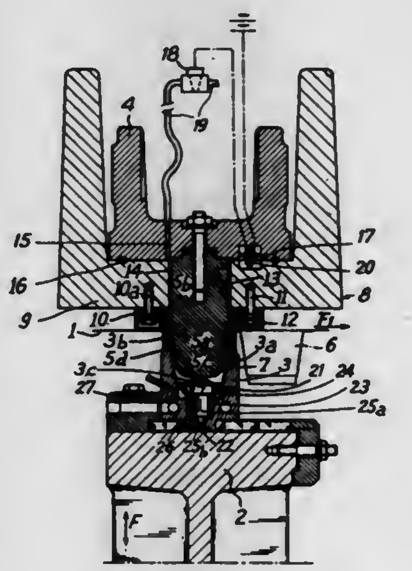
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed July 28, 1969, Ser. No. 845,270
Int. Cl. B29c *17/03, 3/04, 7/00*
U.S. Cl. 18—19R **27 Claims**

A continuous motion container molding machine is provided with cooperating molds which operate upon heated thermoplastic sheet or web material to form disposable containers. The heated sheet material web is continuously delivered to the cooperating molds, the transfer therebetween being accomplished by circumferential web clamping means along a coincidental path when synchronized with the speed of the moving web, thereby enabling the cooperating mold means to form thin-wall, substantially uniform-in-thickness, containers from the material clamped off from the remainder of the moving web. Unique substations of the continuous motion container molding machine including sheet delivery, web clamping, scrap removal, and cup ejection substations are also disclosed.



3,605,193
APPARATUS FOR FORMING HOLLOW ARTICLES MADE OF THERMOPLASTICS MATERIAL

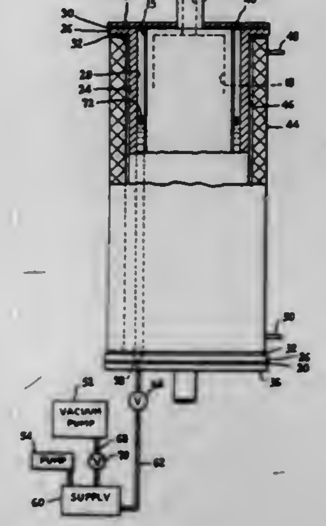
Etienne Marie Rogiers, Daknam, Belgium, assignor to Intercan S.A., Fribourg, Switzerland
Filed Jan. 14, 1970, Ser. No. 2,794
Claims priority, application Belgium, Jan. 14, 1969, 68,721
Int. Cl. B29c *17/03, 17/00, 11/00*
U.S. Cl. 18—19F **9 Claims**



This disclosure relates to an apparatus for forming hollow articles made of thermoplastics material, wherein the locking plate **8** comprises a bore **13** coaxial to the mould **3**, open at its two ends, the transverse section of which is equal to or slightly larger than that of the upper end of the hollow portion of the mould, the movable support **4** of the piston **5** is mounted so as to be able to move independently of the locking plate and rests, at the end of the piston stroke, on said locking plate, and a sealing joint is interposed between the locking plate and the movable support and surround the upper end of the bore. The disclosure is also applicable to installations for the large-scale manufacture of containers made from thermoplastics material.

3,605,194
RESILIENTLY FACED ROLLS

Jan P. Nauta, West Hartford, Conn., assignor to Rowland Products Incorporated, Kensington, Conn.
Original application Feb. 1, 1968, Ser. No. 702,470, now Patent No. 3,539,671. Divided and this application June 9, 1970, Ser. No. 44,762
Int. Cl. B29c *15/00*
U.S. Cl. 18—29 **6 Claims**

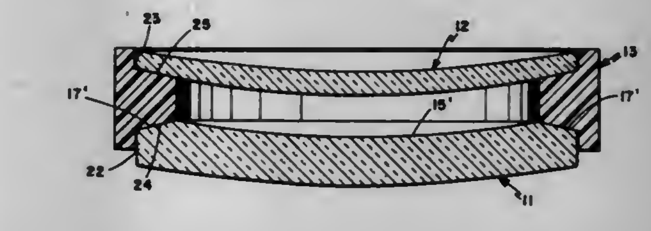


Rolls for producing a controlled surface finish upon synthetic thermoplastic sheet material are prepared by use of a support member which is inserted into a mold having an aperture or cavity of larger width and a synthetic plastic resin is introduced into the spacing therebetween in the form of a viscous fluid to form a coating on the support member. The coating of resin is oriented by relative rotation of mold and support member. The synthetic plastic is then cured and the resultant roll is used as at least one of a pair of rolls operating upon the surface of the heated thermoplastic sheet material so as to impress its surface characteristics thereupon.

Although the surface of the roll may be mirror-polished, the rolls most advantageously have solid particles dispersed in at least the surface portion of the coating for preparing a matte finish on the sheet material.

3,605,195
MOLD ASSEMBLY FOR CASTING PLASTIC OPTICAL LENSES

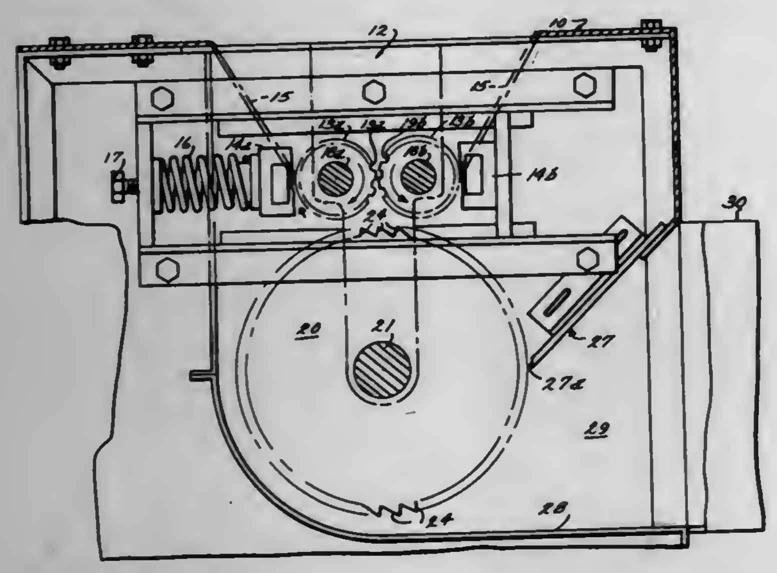
Charles D. Campbell, 3604 Bayonne Drive, Pacific Beach, Calif. 92109
Filed Aug. 24, 1970, Ser. No. 66,228
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. B29c *5/00;* **B29d** *11/00*
U.S. Cl. 18—39 **8 Claims**



A gasket ring and mold assembly for casting plastic concavo-convex lenses so designed that the gasket ring can be assembled interchangeably either end up without adverse effects. The ring is of T-shape in cross section with the opposite sides of its T-stem oppositely sloped to one another so that either seats against the inner convex surface of the convex upper mold member or against the similarly but oppositely beveled upper rim edge of the lower concave mold member.

3,605,196
FIBER OPENER

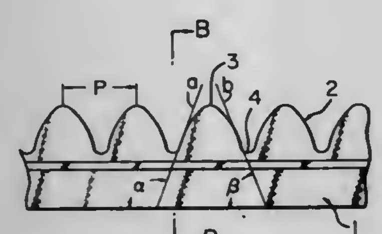
Cecil S. Wise, Dallas, and David F. Hullett, Belmont, N.C., assignors to Fiber Controls Corporation, Gastonia, N.C.
Filed Oct. 14, 1968, Ser. No. 786,523
Int. Cl. D01g *9/16*
U.S. Cl. 19—83 **5 Claims**



A machine for opening or grinding waste or new fibers or the like in which the fibers to be opened are fed between two oppositely rotating feed rolls, which are spring biased towards each other. If asbestos fibers are being opened, the surfaces of the feed rolls are fluted, otherwise the surfaces of the feed rolls have teeth for use with other types of fibers. The feed rolls serve to hold the fibers while moving them forward to be torn at and opened by the teeth on an opening cylinder of the licker-in type. In the case where teeth are used on the feed rolls, the teeth on one feed roll act to hold onto the fibers while the teeth on the other feed roll clean the spaces between the teeth on the first feed roll and the opening cylinder pulls the fibers apart. The teeth on the opening cylinder are at an angle which causes self-doffing to take place within one revolution of the opening cylinder. A cut-off bar is provided to aid removal of any fibers from the opening cylinder which are not self-doffed.

3,605,197
METALLIC WIRE FOR ROLLER COMB

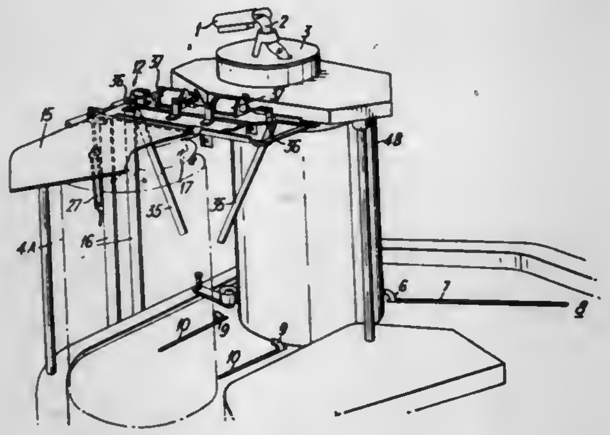
Moriichi Watanabe, Aichi-ken, Japan, assignor to Nagoya Metallic Card Clothing Co., Ltd., Nishikasugai-gun, Aichi-ken, Japan
Original application Aug. 26, 1968, Ser. No. 755,182. Divided and this application Oct. 20, 1969, Ser. No. 871,798
Claims priority, application Japan, Apr. 19, 1968, 43/25,822
Int. Cl. D01g *15/84*
U.S. Cl. 19—114 **5 Claims**



Metallic wire to be mounted on a roller comb for separating fibrous web from a doffer, which consists of an upper working section with saw teeth on the top and a base, the height and pitch of the saw teeth being, respectively, 1–10 mm. and 2–30 teeth per inch, and each tooth being of a configuration defined by a smoothly projecting curve which tangentially contacts with two straight lines meeting the horizontal line extending in the longitudinal direction of the metallic wire, at the angles (α) and (β) of, respectively, 90–150° and 30–90° C.

3,605,198
TEXTILE MACHINES

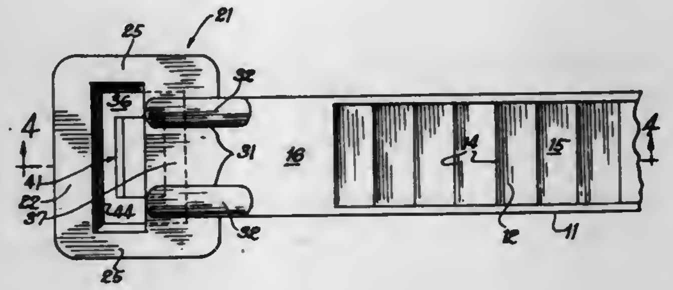
John K. P. Mackie, Belfast, Northern Ireland, assignor to James Mackie & Sons Limited, Belfast, Northern Ireland
Filed Mar. 20, 1969, Ser. No. 808,793
Claims priority, application Great Britain, Mar. 27, 1968, 14,796/68
Int. Cl. B65h *54/76*
U.S. Cl. 19—159 **7 Claims**



Apparatus for serving a length of sliver extending between a full can which has just been doffed and an empty can receiving sliver from the output of a sliver preparing machine includes means for clamping the sliver at two spaced points and a severing blade for severing the sliver held between these two points. The clamping means comprises cooperating members one of which is constituted by a horizontal plate formed with a pair of elongated slots and the other of which comprises a pair of pivoted arms movable upwardly into the respective slots so as to clamp the sliver. The severing blade operates through a third slot in the plate so as to move downwardly to sever the sliver.

3,605,199
BUNDLE TIE

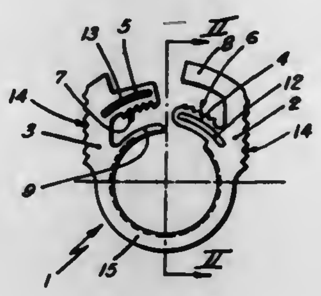
Robert Eberhardt, Chicago, Ill., assignor to All States Plastic Manufacturing Co., Inc., Chicago, Ill.
Filed Jan. 8, 1970, Ser. No. 6,013
Int. Cl. B65d *63/00*
U.S. Cl. 24—16PB **4 Claims**



A tie of the type comprising a toothed strap having an apertured head at one end, the other end of the strap being threaded through the head and locked therein by a pawl. The present disclosure relates to improvements in the pawl to obtain a more reliable locking action on the strap.

3,605,200
CLAMP FOR FASTENING TUBULAR ELEMENTS

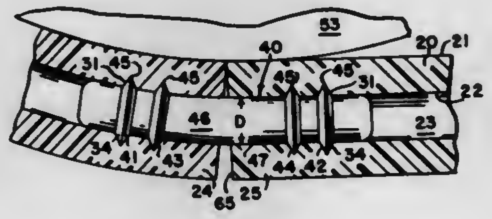
Michele Vallinotto, Strada San Michele 29, Testona, Moncalieri, Italy, and Luigi Villata, Viale Stazione 6, Moncalieri, Italy
Filed Nov. 21, 1969, Ser. No. 878,929
Claims priority, application Italy, Nov. 23, 1968, 20,059/68
Int. Cl. B65d *63/02*
U.S. Cl. 24—20TT **4 Claims**



A single-piece resilient clamp for fastening a sleeve or collar on a tubular pipe and shaped like a U. Each branch of the clamp has an inwardly projecting, center-slotted, toothed extension, as well as an inwardly projecting non-toothed extension. The outer surface of each branch is corrugated so as to enable a compression tool safely to cause the engagement of the toothed extensions with each other. Circumferential knurling on the clamp's inner surface ensures the positive fastening thereof on the elements to be tightened.

3,605,201
ENDLESS BELT ASSEMBLY WITH IMPROVED INSERT COUPLING

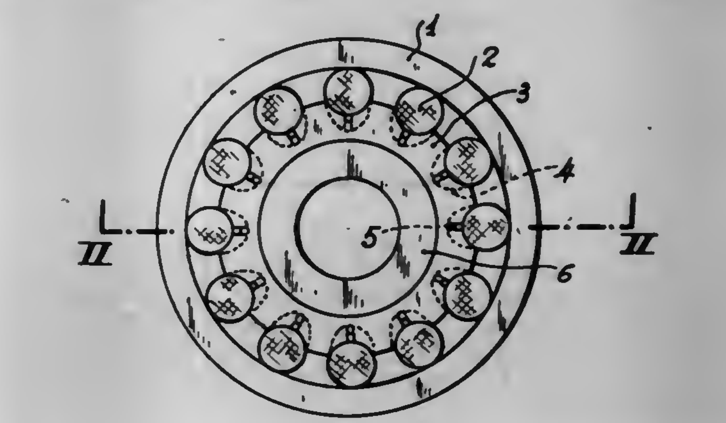
Arnold G. Peterson, Sunapee, N.H., assignor to L. M. & L. Corporation, Claremont, N.H.
Original application Mar. 25, 1968, Ser. No. 715,869, now Patent No. 3,501,971, dated Mar. 24, 1970. Divided and this application May 26, 1969, Ser. No. 847,759
Int. Cl. F16h *9/00;* **F16g** *3/07*
U.S. Cl. 24—31C **9 Claims**



An improved continuous belt assembly suitable for use in high velocity, moderate-load power transmission applications comprising, in combination, a novel internal coupling means and a tough extensible, flexible and tear resistant polymeric belting. The coupling means includes a cylindrical shank with a continuous, circular, external rib having an outer holding edge, proximate each opposite end thereof, such edges being adapted to cut into and grip the interior walls of the belting when the coupling means is inserted into hollow ends of the belting and the belting is subsequently mounted on machinery. When made of rigid material, the sharp edges are joined by a connector shank, or shaft of at least about 20% larger than the inside diameter of the hollow tubular belting, thus providing means for maintaining the outer diameter of the elastomeric belt uniform between the points at which the aforesaid sharp edges cut into the belt. When made of flexible material, the diameter of the connector shank or shaft may be equal to the inside diameter of the tubing.

3,605,202
SYSTEM FOR FIXING CABLES AND RODS SUBJECTED TO STRESS

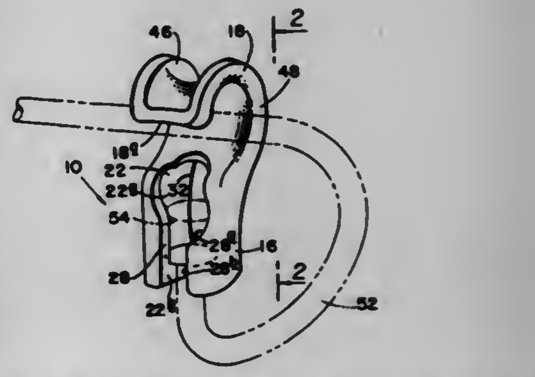
Ricardo Barredo de Valenzuela, Raimundo Fernandez, Villaverde 45, Madrid 3, Spain
Filed Dec. 11, 1968, Ser. No. 783,077
Int. Cl. F16g *11/00*
U.S. Cl. 24—122.6 **4 Claims**



A system for fixing tension members, such as cables and rods, to an anchor device, especially useful for supporting load-bearing tension members which are to be stressed by what is known as a post-stressing process. The basic components of the anchor device are an external crown and an internal crown, both being formed of a hard metal, hard enough to resist a plastic deformation. The two basic components cooperate to form a wedge to clamp the several tension members. A clamping action of the tension members is accomplished by the wedge action between the internal crown and the external crown. The internal crown is formed with a multiplicity of half-round channels to receive the various members which are to be fixed. In the bottom of the channels, grooves are formed in an axial direction in order to allow the internal crown to deflect under the pressure of stressing of the elements, thus imparting some elasticity to the internal crown, whereby, by the effect of the pressure of the wedging action, the channels conform to the lateral surface of the members to be fixed, bringing about an intimate contact. To avoid any undue distortion, due to the elasticity of the internal crown, a distortion limiting ring is inserted in the interior of the crown. In an alternate embodiment, the internal crown is uniformly thick in the axial direction of the tension members, the distortion limiting ring having its outer surface in the form of a cone section.

3,605,203
CLAW

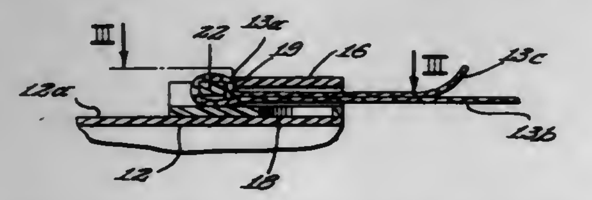
Charles C. Wallace, Portland, Oreg., assignor to West Coast Wire Rope and Rigging of Portland, Inc., Portland, Oreg.
Filed Mar. 14, 1969, Ser. No. 807,313
Int. Cl. F16g *11/14, 11/00;* **F16b** *45/00*
U.S. Cl. 24—123 **2 Claims**



A claw for use in hoisting and securing loads including an elongated base adapted to be secured to the end of a line, with the line extending axially outwardly from one end of the base, and a hook formed integrally with the base and extending axially outwardly from the other end of the base. The base has a line-receiving passage extending therethrough, a slot on one side of the claw which permits slipping a line into the passage, and means in the passage for securing the line. The hook joins the base on the side of the claw opposite the slot, curves over the axis of the claw to form a saddle, and then extends along a line parallelling the axis of the claw toward the base on the one side of the claw. The hook terminates at a free end which is spaced axially from the base. A pair of spaced-apart flanges extend along the side of the claw opposite the slot and continue in flanges throughout the curvature of the hook.

3,605,204
HEADBAND ADJUSTER

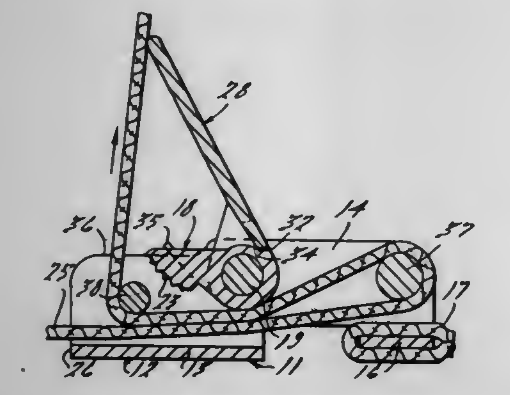
Paul D. Amundsen, Wonder Lake, Ill., assignor to Fendall Company, Chicago, Ill.
Filed Mar. 24, 1970, Ser. No. 22,239
Int. Cl. A44b *11/10;* A61f *9/04*
U.S. Cl. 24—171 **5 Claims**



A simple adjustment integrated with the frame of a goggle, or the like and providing means for adjustably attaching a flexible, stretchable, headband, or the like, to the goggle itself in a manner preventing loosening or detachment of the headband from the goggle. A single combination slidable wedge and retainer member is provided in slidable relation with the goggle into a position of tight, fixed, adjustment, or into, alternatively, a position in which relatively free movement of the elastic headband is accommodated. The parts are constructed for one-handed manipulation of the adjusting device while the goggle is on the head of the wearer.

3,605,205
LOW PROFILE BUCKLE

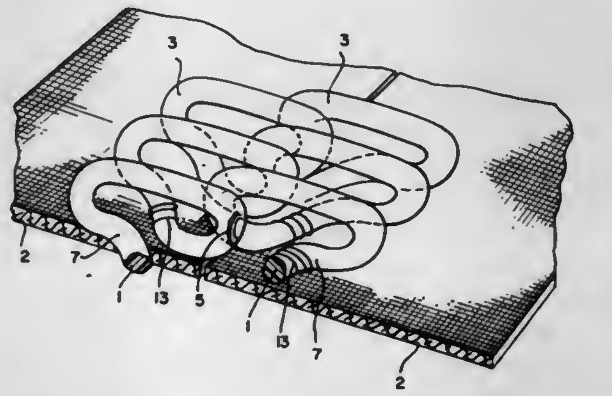
Charles F. Crissy, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed May 14, 1969, Ser. No. 824,465
Int. Cl. A44b *11/12*
U.S. Cl. 24—191 **1 Claim**



A buckle for securing webbing straps in systems such as are used to hold down cargo in common carriers. The buckle comprises a shallow generally channel-shaped body having a pivoted cam at a central portion thereof, a roller at one end and a restraining pin at the other end. A flat handle is pivoted coaxially with the cam and lifts it with a lost motion connection. The buckle is fastened to one strap and the other strap is fed under the restraining pin and the lifted cam, around the roller and back under the cam and restraining pin. The cam has rows of teeth with a spacing coordinated with the picks in the webbing and is spring-urged toward the strap, the handle being independently spring-urged to a flat position flush with the body. There is therefore no danger of accidentally releasing the buckle by striking the handle.

3,605,206
SLIDE-FASTENER

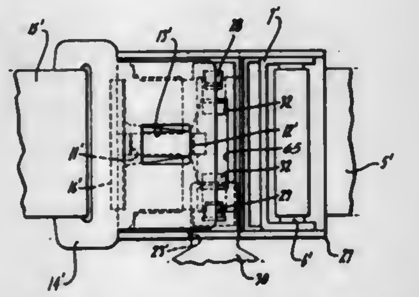
Alfons Fröhlich, Essen, Germany, assignor to Opti-Holding AG., Glarus, Switzerland
Filed Sept. 2, 1969, Ser. No. 854,432
Claims priority, application Germany, Dec. 27, 1968, P 18 17 134.1
Int. Cl. A44b *19/12*
U.S. Cl. 24—205.1C **10 Claims**



A slide fastener has a slide-fastener half consisting of a support tape and a coupling element in the form of a coil of synthetic resin mounted thereon. The coil has turns which each have a head next to an edge of the tape, a bight opposite the head, an upper shank extending between the head and bight and lying orthogonally to the coil axis, and a lower shank lying on and attached to the tape at an angle to the coil axis. The heads are flattened so that a head of a similar coil can be gripped between neighboring heads. The upper shank can be inclined to the tape so that the head is wider than the bight and the lower shank can be also flattened for better contact with the tape for bonding thereto or for creating a formation preventing shifting of the coupling element relative to the tape.

3,605,207
SAFETY BELT BUCKLE

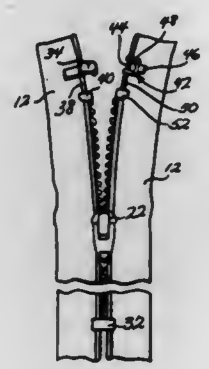
James E. Glauser, Santa Ana, and Don L. Frisk, Orange, Calif., assignors to Pacific Scientific Company, City of Commerce, Calif.
Original application Aug. 14, 1967, Ser. No. 660,335, now Patent No. 3,520,034, dated July 14, 1970. Divided and this application July 14, 1969, Ser. No. 859,220
Int. Cl. A44b *17/00, 11/26*
U.S. Cl. 24—205.17 **1 Claim**

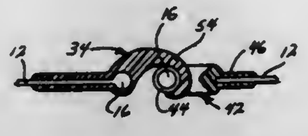


A safety belt having a buckle provided with latching means for intially interconnecting two seat belt sections and thereafter providing for connecting additional sections such as shoulder straps and crotch straps, the latching means automatically latching the sections when attached but permiting detachment of auxiliary sections without detaching the main seat belt sections.

3,605,208
MOLDED CLASP FOR SLIDE FASTENERS

Alfred E. Carlile, Meadville, Pa., assignor to Textron Inc.
Filed Mar. 10, 1969, Ser. No. 805,554
Int. Cl. A44b *19/36, 19/00, 13/00*
U.S. Cl. 24—205.11 **7 Claims**

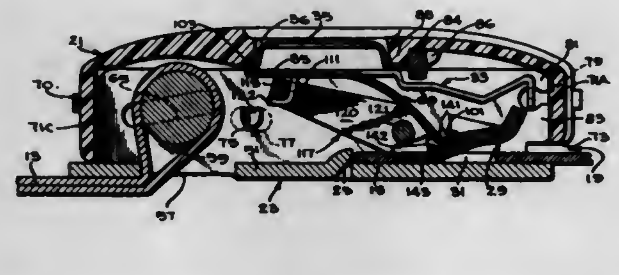




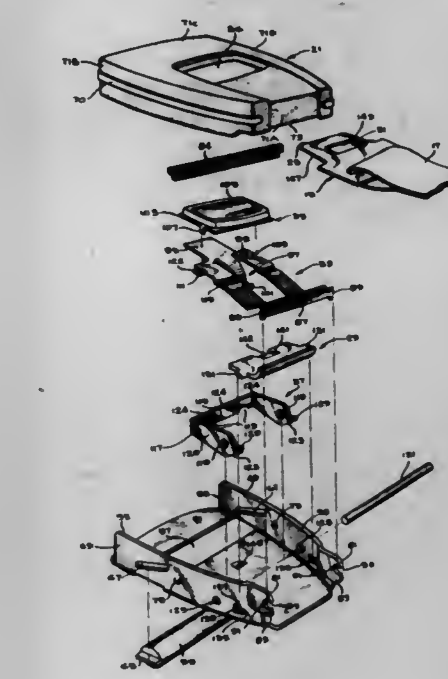
A molded hook and eye clasp and method of making the same for a slide fastener which includes a series of interengagable fastener elements carried at the opposed marginal edges of a pair of tapes. At gapped portions of the slide fastener chain, a hook member, an eye member, top stops and a bottom stop for successive slide fasteners are formed, with the beaded edges of the tapes intermediate the hook and eye members and their respective top stops being impregnated with mold material to provide a stiffened but pliable section for supporting the same. After the mold product is removed and the fastener is in the closed position, the impregnated beaded edges tend to be splayed apart when the slider of the slide fastener is in the closed position. Now, when the hook and eye members are engaged, they act against the forces tending to splay the tapes apart, and the free ends of the tapes of the fastener will lie substantially parallel to each other.

3,605,209
SAFETY BELT BUCKLE

Peter G. Alarcon, Colorado Springs, Colo., assignor to Gateway Industries, Inc.
Filed Feb. 24, 1970, Ser. No. 13,389
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 **9 Claims**

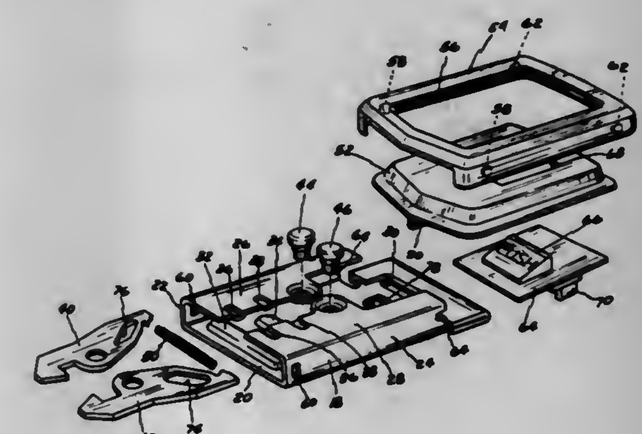


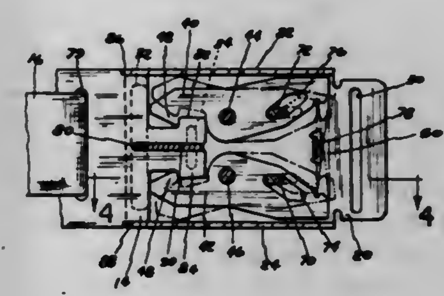
A push button safety belt buckle is provided with a latch dog operating mechanism which is coupled together to remain in working relationship should a cover be removed or broken. The push button operating mechanism is positioned in a cavity in the buckle to permit a considerable inward movement of the push button and to provide a good mechanical advantage so that the push button may be easily operated with a light operating force from women or children.



3,605,210
SIDE LOCKING SEAT BELT BUCKLE

Thomas E. Lohr, Warren, Mich., assignor to Jim Robbins Seat Belt Co., Mount Clemens, Mich.
Filed Apr. 21, 1969, Ser. No. 818,022
Int. Cl. A44b *11/25*
U.S. Cl. 24—230 **4 Claims**

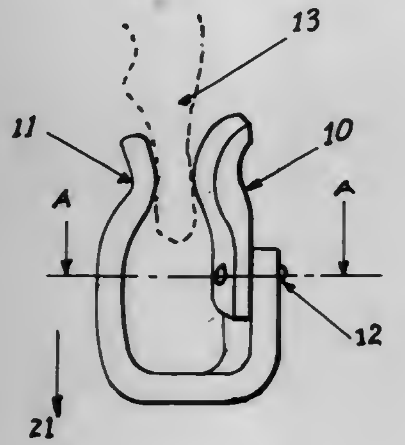




A safety seat belt buckle having a pair of locking members which engage opposite side edges of a plate-like tongue to prevent its removal from a latched position in the buckle. A release member on the buckle is connected to the locking members such that they can be moved toward release positions either by a motion of the release member, or by contact with the tongue as it is received toward its latched position.

3,605,211
EAR CLIP

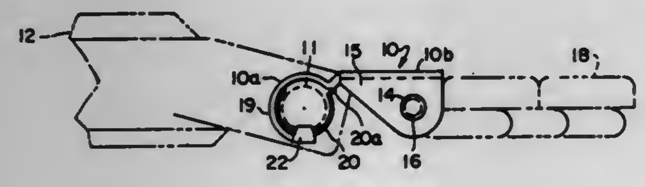
Eugene Grosz, 387 Grand St., New York, N.Y. 10002
Filed Nov. 24, 1969, Ser. No. 879,095
Int. Cl. A44c *7/00*
U.S. Cl. 24—248JE **1 Claim**



An ear clip for fastening the ear ring proper to the ear comprising no springs but having a clamping leg (of ordinary material, metal or others) which can be positioned to the desired clamping pressure where it can lock itself against accidental opening, by a construction which causes the clamping leg to exert its pressure indirectly, its movement being side ways instead of perpendicular.

3,605,212
COUPLING FOR WATCHBAND AND THE LIKE

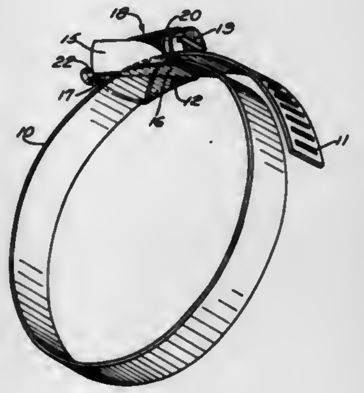
Mates A. Bruner, 1113 Wynnbrook Place, Secaue, Pa. 19018
Filed Oct. 14, 1969, Ser. No. 866,325
Int. Cl. A44c *5/18*
U.S. Cl. 24—265WS **8 Claims**



A coupling for releasably attaching a watchband or the like to a watch or other piece of jewelry comprises a first, generally cylindrical portion adapted to releasably engage an elongated pin on the watch and a second portion which may be fixed or releasably secured to the end of the band. The first portion has an inner partially cylindrical portion which is normally rotatable against the inner surface. In one position the inner cylindrical member and the first cylindrical member encircle the elongated pin whereas in its open position the coupling can be detached from the pin. The second portion is constructed with two ears having aligned apertures respectively located therein which engage a spring-loaded pin in the end of the watchband thereby enabling the coupling to be released from the band if desired.

3,605,213
BAND OR HOSE CLIPS

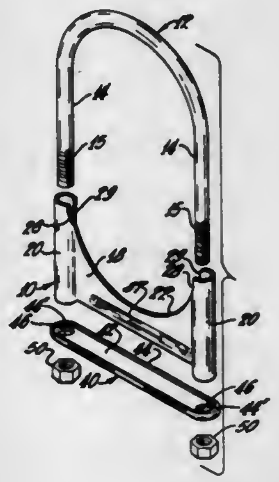
David Lilley Turner, Coventry, England, assignor to National Research Development Corporation, London, England
Filed Dec. 10, 1969, Ser. No. 883,835
Claims priority, application Great Britain, Dec. 11, 1968, 58,799/68
Int. Cl. B65d *63/02*
U.S. Cl. 24—274R **8 Claims**



A hose clip includes a band which is threaded adjacent one end and has a mounting for a screw at the other end. The mounting includes a pair of parallel side walls and an inclined face which extends across the band and the mounting is formed by deforming said other end of the band. The screw has a conical portion and a spigot extends from the apex thereof and engages in an aperture in the inclined face.

3,605,214
CLAMP FOR TUBING

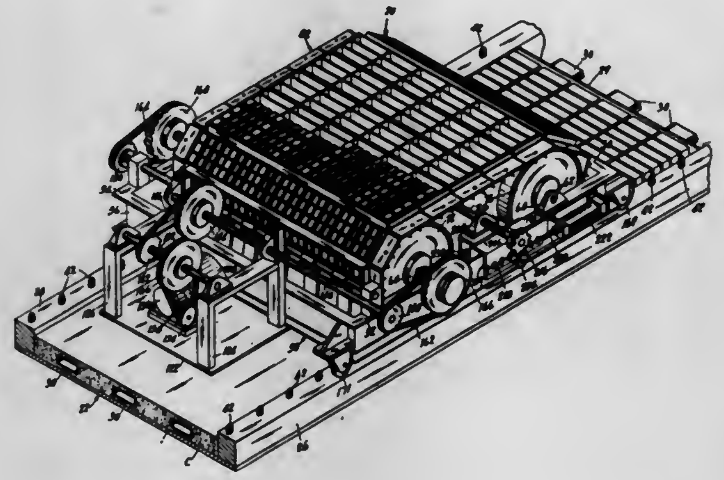
Kenneth L. Spotts, Ottawa Lake, Mich., and Richard W. Tabbert, Toledo, Ohio, assignors to Questor Corporation, Toledo, Ohio
Filed July 17, 1970, Ser. No. 55,755
Int. Cl. B65d *63/00*
U.S. Cl. 24—277 **15 Claims**



The disclosure embraces a U-bolt and saddle clamp construction of the character employed for clamping sections of tubing in telescoped relation, the clamp construction embodying a reinforcing tray or connector to resist distortion of the metal of the saddle member embracing legs of the U-bolt, the reinforcing member or tray having openings accommodating the legs of the U-bolt with the surface regions adjacent the openings having radially disposed indentations or recesses engaged by the securing nuts to resist loosening of the nuts.

3,605,215
SURFACING APPARATUS AND METHOD

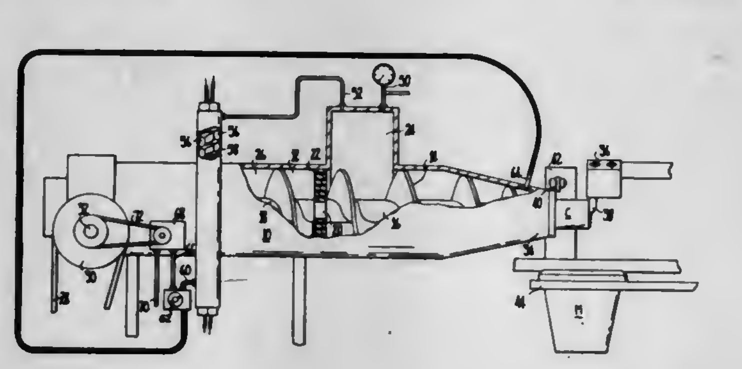
James Matson Young, 3402 W. Wells St. 53208, and George O. Whitney, 5141 N. 27th St. 53209, both of Milwaukee, Wis.
Flied Aug. 19, 1968, Ser. No. 753,500
Int. Cl. B28b *7/00*
U.S. Cl. 25—1R **29 Claims**



A surfacing machine is provided for embedding or implanting a plurality of objects in the exposed surface of a bed of cementitious material. The machine is coupled to a form in which the bed is formed and includes an endless track which moves in an orbital path above the exposed surface. The track is suitable for receiving the plurality of objects at one station along its orbital path and for depositing the objects in the exposed surface at a second station in the path. Means are provided to embed the objects in the surface of the bed.

3,605,216
MANUFACTURE OF POTTERY WARE

Arthur Bradshaw, Stoke-on-Trent, England, assignor to Service (Engineers) Limited, Stoke-on-Trent, England
Filed Mar. 6, 1968, Ser. No. 710,985
Claims priority, application Great Britain, Mar. 14, 1967, 11,786/67
Int. Cl. B28b *3/22*
U.S. Cl. 25—14 **4 Claims**

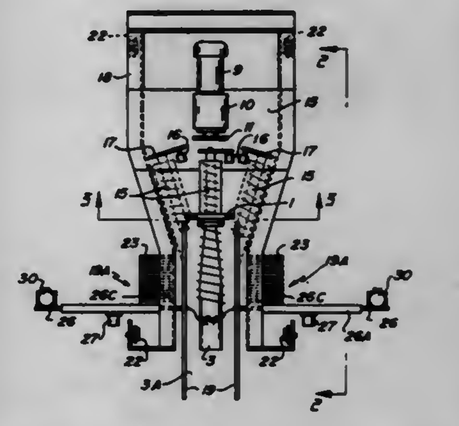


The invention relates to means and method for dispensing uniform pieces of clay from an intermittently operating extruding device to which superheated steam is introduced to raise the temperature of the clay. The quantity of clay extruded and cut-off to form each piece and the heat content of the steam introduced to the chamber can be varied independently, and temperature control means is provided to vary the heat content of the steam to compensate for variations in the temperature of the extruded clay.

The invention further relates to the incorporation of the extruding device in an automatic plant for the production of pottery articles, for example cups.

3,605,217
PILE EXTRUDER

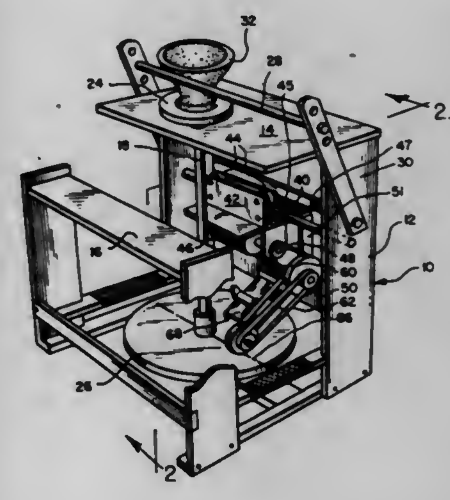
Ernest Martens, 75 Noble Ave.; Adalbert Groll, 346 Edward Ave.; and Frederick Maxwell Hewitt, 349 Kingston Crescent, all of Winnipeg, Manitoba, Canada; and Ambros Leithner, Manitoba, Canada
Filed Oct. 21, 1968, Ser. No. 801,214
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. B28b *3/22*
U.S. Cl. 25—14 **18 Claims**



A stapling attachment is secured upon each side of a pile extruding machine so that U-shaped reinforcing staples can be inserted upon each side of the pile at spaced intervals therealong, as the pile is being extruded. Also the extruding machine is in two portions, a power unit and an auger unit thus enabling the relatively expensive power unit to be used on different beds or pallets.

3,605,218
POTTER'S WHEEL WITH VARIABLE SPEED DRIVE ARRANGEMENT

Peter D. Rasmussen, 3608 W. Capitol Drive 53216, and Richard E. Schulze, 8842 W. Custer Ave. 53225, both of Milwaukee, Wis.
Filed Dec. 8, 1969, Ser. No. 883,023
Int. Cl. B28b *1/02*
U.S. Cl. 25—24 **10 Claims**

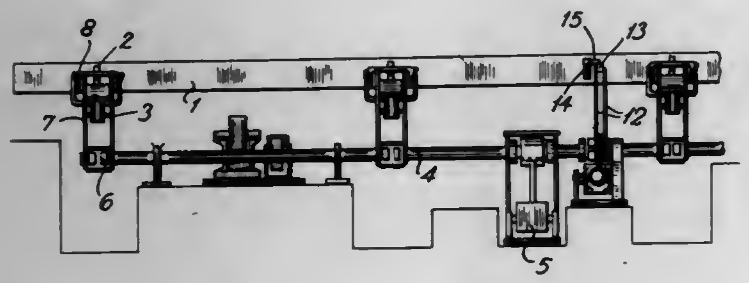


A potter's wheel having a motor connected through a friction drive in turn engageable with the kick wheel at various radial locations for providing a variable speed motor drive for the potter wheel.

3,605,219
PLANT FOR CASTING BUILDING COMPONENTS

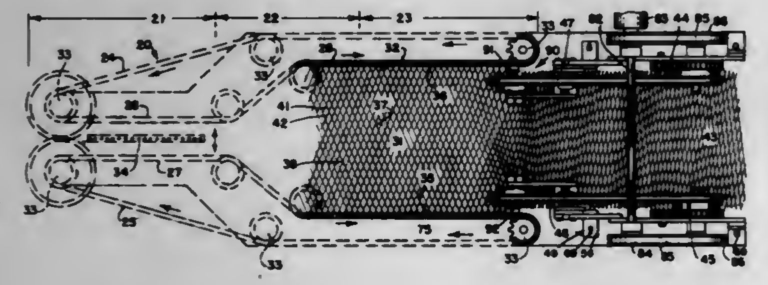
Bent Hauberg, Birkerod, Denmark, assignor to A. Jespersen & Son International A/S, Copenhagen, Denmark
Filed July 8, 1968, Ser. No. 743,247
Int. Cl. B28b *7/00*
U.S. Cl. 25—41R **18 Claims**

A semi-automatic plant for casting building components in which horizontal moulds having swingable side walls are conveyed past a number of stations for shuttering,



pouring, hardening, removing of the shuttering and cleaning. The shuttering station and the station for removing the shuttering are provided with swing arms driven by a common shaft and adapted to swing the side walls from a swung-out position into a swung-up position and vice versa. The swing arms are cooperating with swingable spring bows mounted on the mould bottom and adapted to lock the side walls in swung-up position and to carry them in swing-out position.

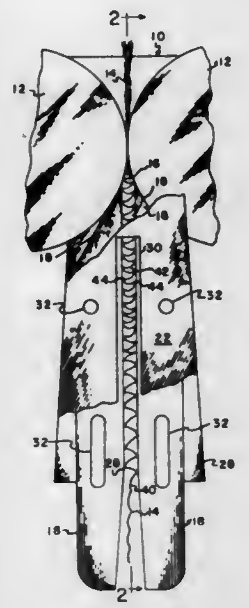
3,605,220
APPARATUS FOR CHANGING THE MESH SIZE OF NON-WOVEN NETTING
Lamar T. Atwood and Lester Gidge, Nashua, N.H., assignors to Union Carbide Corporation
Filed July 10, 1967, Ser. No. 652,337
Int. Cl. B32b *5/08, 31/00;* **D04b** *3/10*
U.S. Cl. 28—1 **9 Claims**



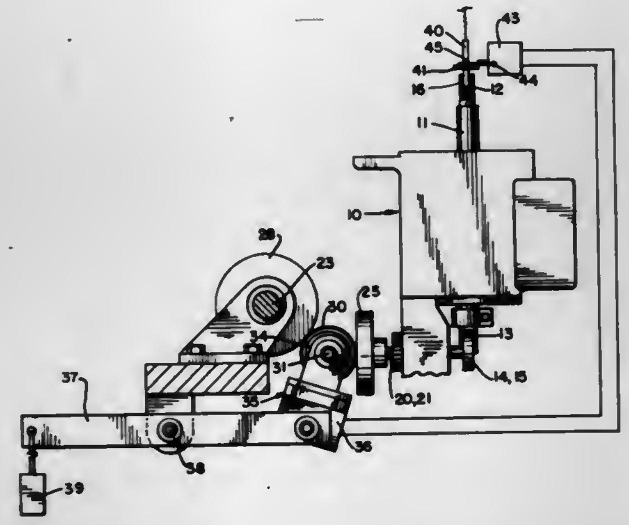
An apparatus and method for reducing the size of mesh in a non-woven, criss-cross, netting advancing along a path in a netting machine, the netting being carried by its selvedge loops on a pair of pin type carriers. A pair of endless transfer belts advance at a lesser speed than the netting, each positioned under one of the selvedge loop portions of the netting. The selvedge loop portions are either cut off the pin carrier and clamped against the transfer belts or lifted off the pins by elongated stripping fingers carried by the transfer belts, to advance therewith.

3,605,221
STUFFER BOX CRIMPING AND METHOD THEREFOR
Jack C. Binford, Fredrick A. Ethridge, and James R. Talbot, Charlotte, N.C., and Deryk W. Harrison, Greenville, S.C., assignors to Fiber Industries, Inc.
Filed Aug. 8, 1969, Ser. No. 848,495
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **12 Claims**

A stuffer box crimper and method for crimping filamentary material, particularly yarns of continuous synthetic organic filaments, wherein the yarn is crimped and uniformly withdrawn from the crimper with a minimum of tension variation. Yarn fed to the apparatus is compacted against doctor blades which form opposing sidewalls of the stuffer chamber and front and back plates which complete the stuffer chamber. The yarn proceeds through the chamber packed against the confining doctor blades. The doctor blades diverge a predetermined friction-reducing amount while back pressure producing means in the front and/or back plate called stabilizers, converge on the confined yarn in the chamber in a direction generally parallel to the doctor blades and at an angle of 45 to 135 degrees thereto, thereby changing the frictional impediment on the yarn from the doctor blades to the stabilizer. The co-action of the doctor blades and the stabilizer results in the free release of crimped yarn from the chamber in a smooth manner, theerby reducing variations in the yarn to a level suitable for the piece dyeing of products produced therefrom with a minimum of dye variability.



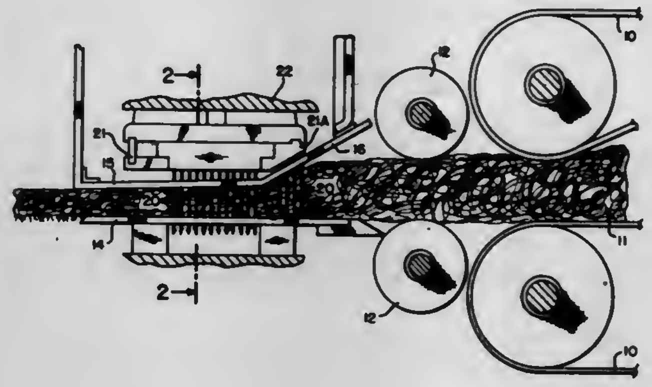
3,605,222
VARIABLE FRICTION DRIVE FOR STUFFER CRIMPER
Charles R. Cabello, Wilmington, Del., assignor to Joseph Bancroft & Sons Co., Wilmington, Del.
Filed Oct. 3, 1969, Ser. No. 863,514
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.7 **11 Claims**



A variable friction drive for the feed rolls or the winder rolls of a stuffer crimper including a driving roll driven at a constant speed, a driven member mounted to drive said rolls and having areas of different radii, an idler member inter-connecting the driving roll and the driven member and shiftable to engage the driven member at areas of different radii for varying the drive ratio.

A switch actuated by a member that senses the level of the core of crimped yarn in the crimper is connected to shift the position of the idler member to vary the drive ratio so as to maintain the core at a uniform level in the crimper.

3,605,223
APPARATUS FOR FELTING NON-WOVEN WEBS
Hermann Barth, Eberbach (Neckar), Germany, assignor to Richard Dilo, Eberbach (Neckar), Germany
Filed Nov. 26, 1969, Ser. No. 880,090
Int. Cl. D04h *18/00*
U.S. Cl. 28—4R **4 Claims**

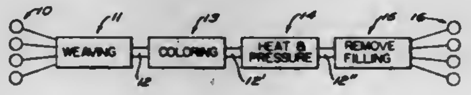


Felting apparatus for a non-woven web having a bed plate over which the web is fed and two banks of needles to penetrate the web for felting the fibers. An upper plate with a flared entrance guides the web in the felting station for reducing the web bulk as it enters. Both, stripper and bed plate have aligned holes to pass the needles of the main bar in their penetrating stroke, and a secondary needle bar in the flared entrance section, which does not penetrate the bed plate.

3,605,224
BULKING METHOD
Jesse L. Riley, William John Robert, and Walter C. Zybko, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed July 28, 1969, Ser. No. 845,503
Int. Cl. D02g *1/00*
U.S. Cl. 28—72.1 **22 Claims**

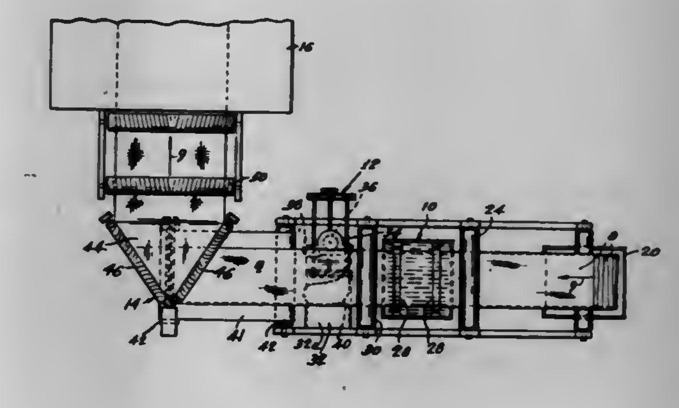
A process for crimping cellulose acetate/cellulose triacetate conjugate filaments by treatment with reagents which preferentially disrupt the molecular orientation and crystallinity of the cellulose acetate followed by reagent removal and drying under conditions of substrate relaxation.

3,605,225
METHOD OF TREATING YARNS TO PROVIDE KINKING AND/OR MOTTLED EFFECTS IN FABRIC
Kirkland H. Gibson, Pojac Point, North Kingstown, R.I. 02852, and Henry E. Protzmann, 941 Carr's Pond Road, East Greenwich, R.I. 02818
Filed Aug. 26, 1969, Ser. No. 853,042
Int. Cl. D04b *19/00*
U.S. Cl. 28—72.16 **6 Claims**



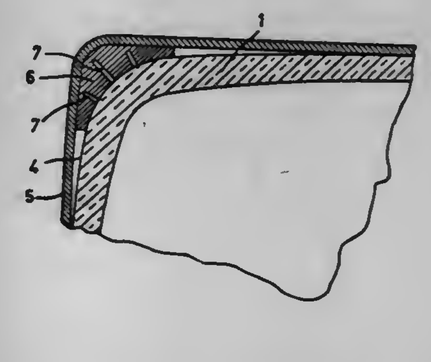
The placing of a plurality of yarns into a woven fabric form of a type where the filling yarn may be easily unwoven so as to treat the warp yarns either by means of a color, bulking, or setting into a kinked effect or all of them and then unweaving the woven fabric to provide a plurality of similarly treated yarns for reworking into various forms such as fabrics.

3,605,226
METHOD FOR TREATING TUBULAR FABRICS
Edward I. Aronoff, 605 Dorais St., St. Laurent, Quebec, Canada
Filed July 8, 1968, Ser. No. 743,179
Claims priority, application Great Britain, July 11, 1967, 31,897/67
Int. Cl. D06c *5/00, 27/00*
U.S. Cl. 28—74 **1 Claim**



A method of continuously treating a tubular fabric through an impregnating solution, then slitting the fabric, opening the slit fabric and drying it.

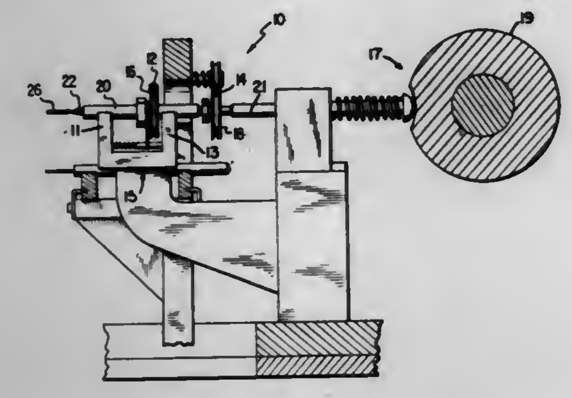
3,605,227
METHOD OF MANUFACTURING AN IMPLOSION-FREE DISPLAY TUBE
Willem Fokko Nienhuis, Georg Arnold Spanhoff, and Jacob Willem, Emmasingel, Eindhoven, Netherlands, and Klaus Böke, Brand am Hang, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Original application Sept. 15, 1967, Ser. No. 668,066. Divided and this application May 19, 1969, Ser. No. 850,275
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 **3 Claims**



A method of making an implosion-free display tube by fitting an annular clamping strap around the outer periphery of the bulb. The strap has an inner periphery equal to or greater than that of the bulb. By pressing wedge-shaped spacing members in the corners between the strap and the bulb to stretch the strap, uniform tensile stresses are provided within the strap. Securing the members and straps to the bulb by means of an adhesive completes the process. Other spacing members may be used to stretch the strap in the flat sections of the tube.

3,605,228
COMPOUND ROTARY INPUT TOOL

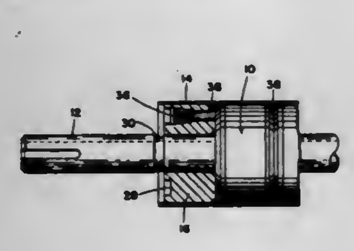
John A. Cupler II, 10 Cupler Drive, La Vale,
Cumberland, Md. 21502
Original application Mar. 25, 1968, Ser. No. 715,711, now Patent No. 3,478,419, dated Nov. 18, 1969. Divided and this application Oct. 27, 1969, Ser. No. 869,733
Int. Cl. B24b *39/00*
U.S. Cl. 29—90 2 Claims



The disclosure is directed to a jig boring and grinding tool having a compound rotary input.

3,605,229
MAGNETIC ROLL STRUCTURE AND METHOD OF CONSTRUCTING SAME

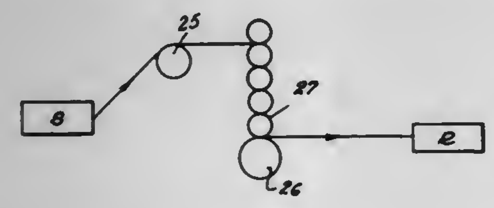
James E. O'Neal, Cecil R. Attaway, and Josef K. Gunter, Durham, N.C., assignors to Gunter & Cooke, Inc., Durham, N.C.
Filed Feb. 19, 1970, Ser. No. 12,818
Int. Cl. B21b *31/08*
U.S. Cl. 29—125 14 Claims



A magnetic roll structure incorporating permanent magnet modules disposed concentrically within a tubular shell and supporting the same solidly through a filling of hardened adhesive within the shell about each magnet module, the adhesive being characterized by low viscosity prior to hardening, by hardening without release of volatile products, and by insignificant shrinkage upon hardening.

3,605,230
DISPOSABLE SURFACE ROLL

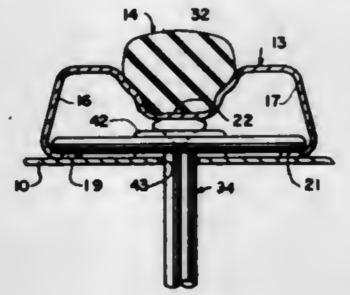
Mary L. Edwards, 201 Brookside Way,
Greenville, S.C. 29605
Filed Apr. 7, 1969, Ser. No. 813,988
Int. Cl. B21b *31/08*
U.S. Cl. 29—130 11 Claims



A roll structure having a plurality of removable layers closely fitting over a rigid core with means for removing the outer layers as they become abraded or soiled.

3,605,231
METHOD OF MAKING VEHICLE TRIM STRIP WITH ELASTOMERIC BUMPER INSERT

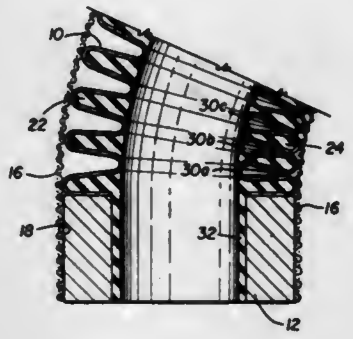
Charles R. Kistner, Pontiac, and Thomas W. Anderson, Troy, Mich., assignors to Textron Inc., Providence, R.I.
Original application Nov. 2, 1967, Ser. No. 680,125, now Patent No. 3,517,473, dated June 30, 1970. Divided and this application Jan. 19, 1970, Ser. No. 8,149
Int. Cl. B23p *17/00, 11/02*
U.S. Cl. 29—155 2 Claims



Method of forming and assembling a vehicle trim strip with elastomeric bumper insert and including an elongated body with a lengthwise groove and an elongated resilient member in the groove having an exposed head, the resilient member being formed as an elongated extrusion, parts of the extrusion being cut away to form feet, which are anchored in slots along the groove.

3,605,232
METHOD OF LINING FLEXIBLE METAL L'S

Vernon C. Hines, 2915 S. Lafayette Drive,
Denver, Colo. 80210
Filed Feb. 17, 1969, Ser. No. 799,618
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*
U.S. Cl. 29—157.4 10 Claims



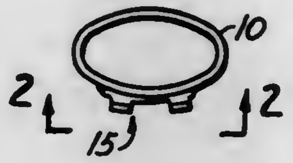
The method of lining a 90° elbow made of flexible, metal convolute tubing initially bends a length of flexible convolute tubing into a 90° L-shape, a wire braid covering is then stretched over the outside of the L and welded in place holding the tubing in the L-shape, filling the internal convolutes with the flexible resilient material, removing excess flexible material to expose the apex of the metal convolutes, inserting a removable mandrel in the L, filling the annulus around the mandrel with additional flexible resilient material, and then curing all the flexible material to bond the two materials together and to the metal.

3,605,233
PROCESS FOR MAKING ORTHODONTIC BRACKETS

Raymond S. Rosiello, Glendora, Calif., assignor to Radontic of California, Inc., Glendora, Calif.
Filed June 26, 1969, Ser. No. 836,837
Int. Cl. B21f *43/00;* **B23p** *13/00*
U.S. Cl. 29—160.6 10 Claims

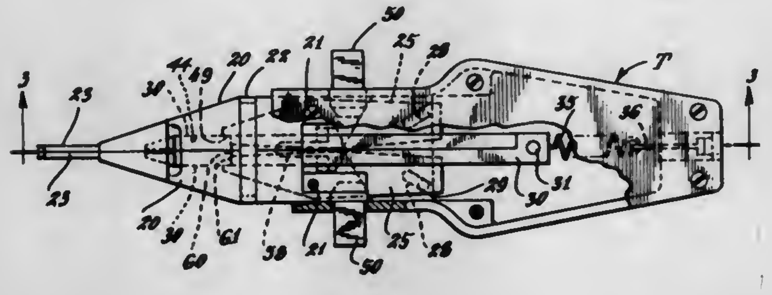
A process for making an edgewise orthodontic bracket having a rectangularly bottomed dimensionally critical longitudinal edgewise slot which in use receives a critically dimensioned rectangularly sectioned wire, a wing

extending laterally from the slot which in use is engaged by a ligature wire, and a base pad beneath the slot. The process includes casting a body in a mold having a parting line, the body including said slot formed to its critical dimension, the wings, the base pad, and a longitudinally extending flange. The flange is removed and the remainder of the body is abrasively treated such as by slide honing, to create the product. In a preferred embodiment of the process, a plurality of groups of said wings are formed, and the body is cut laterally to form a plurality of pieces which are then abrasively treated, and then the flange is removed in two steps. In the first said step the major proportion of the flange is removed, and in the second the remaining minor stem flange is removed by grinding to form a planar surface on the bottom of the base pad, after which the semi-finished strip is cut into segments which are metal-finished, such as by slide honing.



3,605,234
CONTACT INSERTION AND TESTING TOOL

Robert M. Bogursky, Milford, Conn., assignor to Burndy Corporation
Filed Nov. 24, 1969, Ser. No. 879,326
Int. Cl. H01r *43/00;* **B25b** *27/02*
U.S. Cl. 29—203H 17 Claims

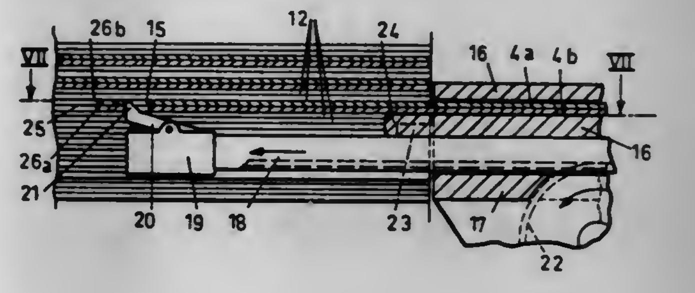


A tool for inserting a contact into a connector, and to test whether or not the insertion is complete. The tool has a pair of jaws for pushing the contact into the connector. It has also a pair of grippers for gripping the conductor. After the contact is inserted into the connector, the tool is pulled in a direction to pull the conductor and the contact away from the connector. The tool can move a short distance relatively to the grippers, while stressing a spring. This exerts a yielding pull on the conductor for a short distance, after which the grippers, if they have not already pulled the contact out of the connector, are released from the conductor automatically.

3,605,235
DEVICES TO INTERCONNECT PARTS OF A DIVISIBLE LAMINATED MAGNETIC CORE STRUCTURE FOR A TRANSFORMER OR A CHOKE COIL OF GREAT POWER

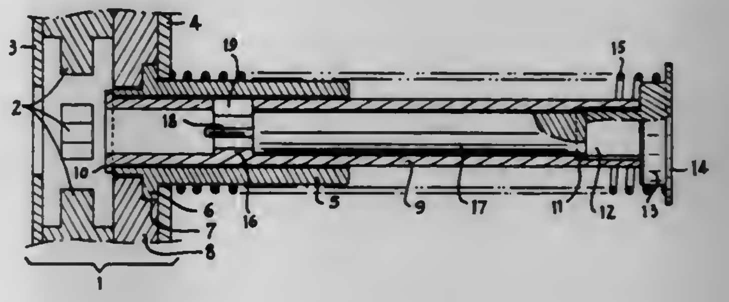
Gerardus W. C. van der Horst, Berg en Dal, Netherlands, assignor to Smit Nijmegen Electrotechnische Fabrieken N.V., Nijmegen, Netherlands
Filed Jan. 27, 1969, Ser. No. 794,295
Claims priority, application Netherlands, Feb. 19, 1968, 6802295
Int. Cl. H01r *19/04*
U.S. Cl. 29—203L 5 Claims

A device to drive strip-shaped coupling laminations home into the spaces left between laminations protruding towards each other and forming part of two parts to be interconnected of a magnetic core for a transformer or a choke coil, said device comprising a guiding shaft for guiding and a driving mechanism for moving said coupling laminations, said guiding shaft being provided with fixing members which are arranged in offset relation to the discharge opening of said shaft.



3,605,236
ASSEMBLING AND POSITIONING DEVICE FOR COAXIAL ELECTRICAL CONTACTS

Augustin Bouckaert, Oosterzele, Belgium, assignor to Burndy Corporation, Norwalk, Conn.
Filed Dec. 11, 1968, Ser. No. 782,967
Int. Cl. H01r *43/04;* **H05k** *13/00*
U.S. Cl. 29—203D 8 Claims

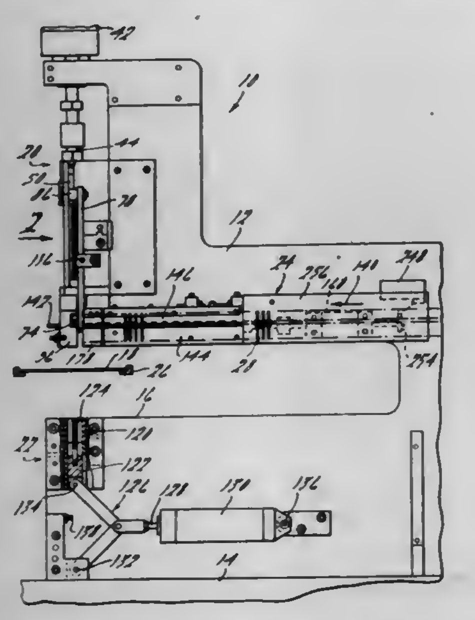


A device for positioning the inner and outer elements of a coaxial electrical contact assembly relative to one another, and for locating the assembled elements in proper position relative to a crimping die assembly. A tubular sleeve, fixed in position relative to a crimping device, serves as a guide for a slidable bushing which is spring-biased toward one end of the sleeve. Fixed, as well as removable, stop members within the bushing provide relative positioning for inner and outer contact elements which can be inserted coaxially into the bushing for assembly. A window aperture in the bushing wall permits visual examination for proper positioning, and the spring biasing allows displacement of the bushing between assembling and crimping positions.

3,605,237
APPLICATOR FOR MOUNTING WIRE WRAP PINS ON CIRCUIT BOARDS

Johannes C. W. Bakermans, Etters, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.
Filed Aug. 25, 1969, Ser. No. 862,591
Int. Cl. H01r *43/04*
U.S. Cl. 29—203D 13 Claims

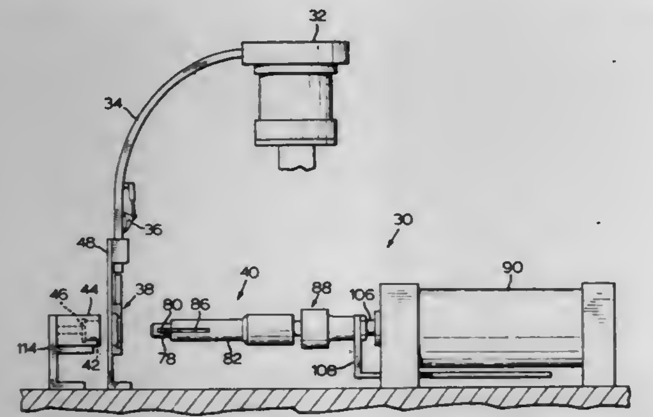
Apparatus for mounting a pin on a circuit board in which the pin is fed to a position in approximate alignment with a punch, following which the pin is aligned accurately with the punch by a pair of clamps and the punch is moved toward the pin to pick up the pin. The



clamps open and further movement of the punch secures the pin to the circuit board.

3,605,238
APPARATUS FOR INTERNAL INSTALLATION OF RESILIENT SEALS

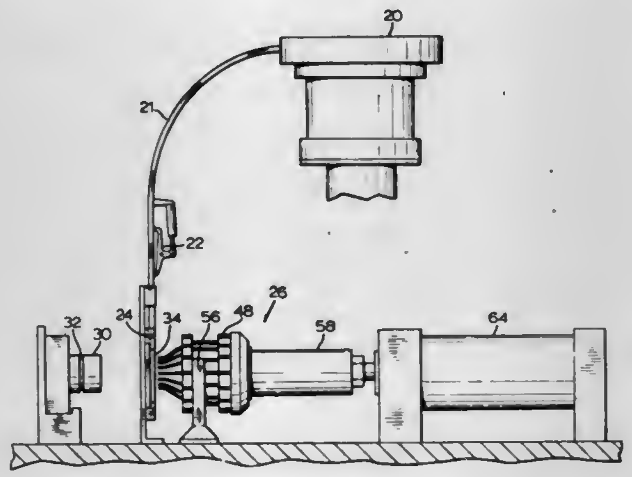
Harald Eschholz, Islington, Ontario, Canada, assignor to Dick Gordon Rockwell, King, Ontario, Canada
Filed Jan. 16, 1970, Ser. No. 3,542
Claims priority, application Great Britain, Jan. 18, 1969, 3,009/69
Int. Cl. B23p *19/02, 19/04*
U.S. Cl. 29—208C **12 Claims**



An apparatus for inserting annular resilient components such as seals into a groove formed in an internal opening. The apparatus includes a feeder mechanism which feeds the components to a positioning head to locate the components for an applicator mechanism. One component is picked up for each cycle of the applicator mechanism which carries the component on a pair of fingers into the opening. A sleeve then pushes the component off the fingers and into the groove into the opening.

3,605,239
APPARATUS FOR EXTERNAL INSTALLATION OF RESILIENT SEALS

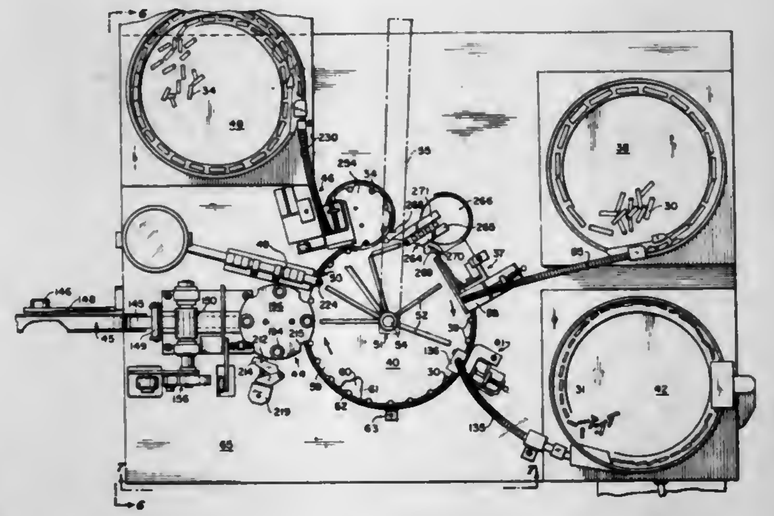
Harald Eschholz, Islington, Ontario, Canada, assignor to Dick Gordon Rockwell, King, Ontario, Canada
Filed Jan. 16, 1970, Ser. No. 3,544
Claims priority, application Great Britain, Jan. 18, 1969, 3,008/69
Int. Cl. B23p *19/02, 19/04*
U.S. Cl. 29—208C **11 Claims**



An apparatus for automatically installing distensible annular components such as O-rings seals onto a shaft or the like. A feeding mechanism transports the seal to a positioning head where it remains until an applicator mechanism picks it up and stretches it. The seal is then transported over the shaft and once it is in position it is stripped automatically from the applicator mechanism whereupon the seal contracts about the shaft in the required position.

3,605,240
SWAB CUTTING, FORMING, AND ASSEMBLING MECHANISM

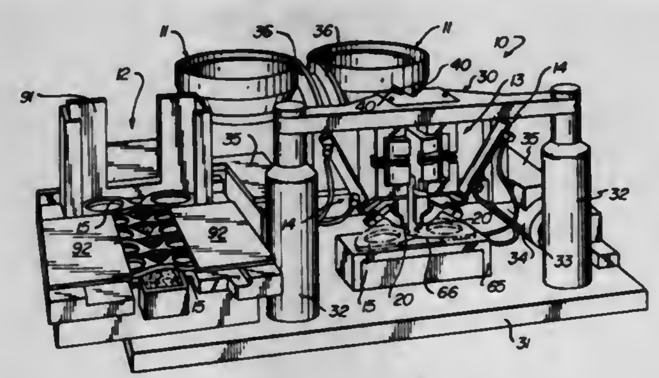
Carl F. Avery, Jr., Ernest A. Pearson, and Lloyd V. Winters, Rockford, Ill., assignors to Medical Supply Company, Rockford, Ill.
Original application Dec. 7, 1966, Ser. No. 599,841, now Patent No. 3,461,535, dated Aug. 19, 1969. Divided and this application Mar. 12, 1969, Ser. No. 806,591
Int. Cl. B23p *19/04;* **B23q** *7/10*
U.S. Cl. 29—208B **15 Claims**



This mechanism is shown incorporated in a rotary machine having a round table that is indexed from station to station, receiving at one station a tubular holder for a swab, into which is fed at another station a cylindrical swab, which, prior to the insertion, is cut to flat generally rectangular form from a strip of absorbent material fed from a reel to a predetermined length and, by movement against the center thereof of the rounded end of a cylindrical plunger into the bore of a tubular former, the strip is formed into a cylindrical shaped swab with a rounded dome at one end. The swab is later ejected directly into the bore of a tubular holder with the rounded dome end projecting. A droplet of liquid solvent is added at another station, which, before its evaporation, helps to cement the swab in place in the holder by rendering tacky a plastic coating on the inside of the holder at the open end. A tubular cap or cover is thereafter applied at a subsequent station, after which the completed article is discharged at another station.

3,605,241
METHOD AND APPARATUS FOR SECURING PADS TO EYEGLASS FRAMES

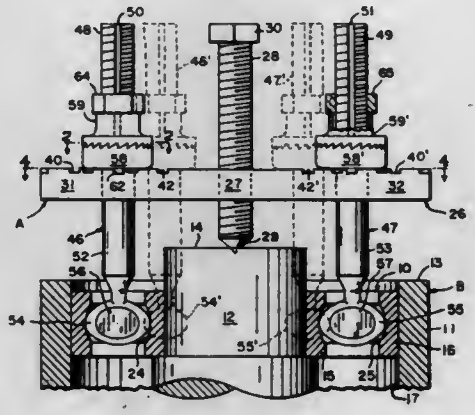
Stanley J. Fisk, Niagara Falls, Ontario, Canada, assignor to Automation Devices, Inc., Fairview, Pa.
Filed May 28, 1969, Ser. No. 828,539
Int. Cl. B23p *19/04;* **B29d** *12/02*
U.S. Cl. 29—208 **12 Claims**



A method for transporting and positioning the nose pads for an eyeglass frame at the proper angle for securement, subsequently rotating the same along the axis for centering the V-notch nose portion of the eyeglass frame, and then moving the eyeglass frame into position for gluing by moving the eyeglass frame to engage the nose pads. The apparatus contemplates a reciprocating sliding clamp assembly with rotatable pairs of jaws for holding the nose pads oriented for rotation on an axis perpendicular to that of reciprocation of the assembly. The jaws are actuated by a centering device when moved into engaged relationship therewith, the centering device positioning the jaws and their nose pads immediately above the eyeglass frames, the frames then being moved upwardly into contact with the nose pads and thereafter the nose pads are secured by gluing or other means to the eyeglass frame.

3,605,242
BALL BEARING PULLERS

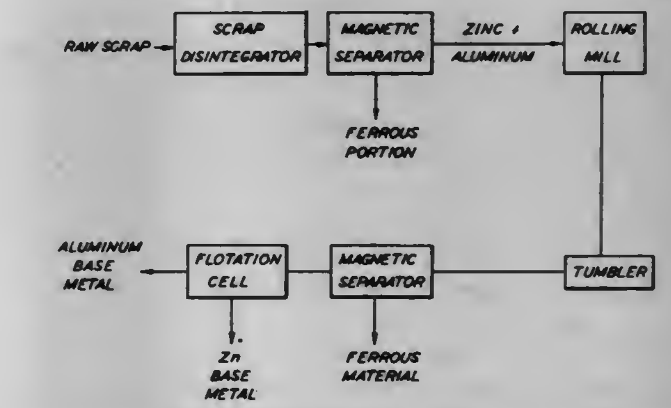
Otto E. Kuffner, Box 116, Glentworth, Saskatchewan, Canada
Filed Feb. 16, 1970, Ser. No. 11,523
Int. Cl. B23p *19/04*
U.S. Cl. 29—259 **2 Claims**



Disclosed is a pulling tool for removing ball bearing assemblages from shaft ends within tubular axles housings. The pulling tool includes a cross member through the central portion of which is threaded a bolt provided with a tip engageable with a shaft end coaxial with the tubular housing. The cross member has bifurcated opposite arm portions through which selected pull rods extend with provisions for adjustment radially and in the direction of the shaft axis. The pull rods are in sets of various sizes and have ellipsoidal knobs which may be brought into gripping engagement with the curved surfaces of inner and outer races of the ball bearing assemblages.

3,605,243
SCRAP RECOVERY PROCESS

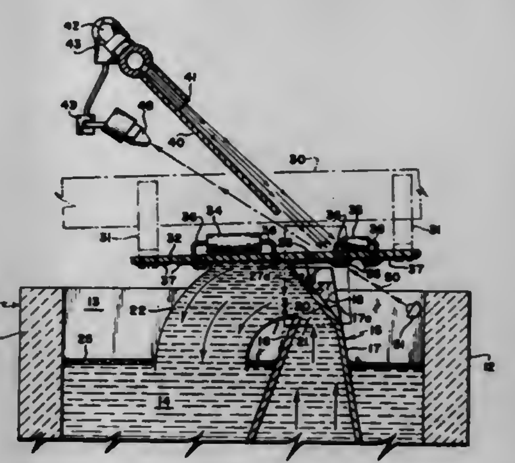
Thomas H. Oster, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Mar. 18, 1969, Ser. No. 808,204
Int. Cl. B23q *17/00*
U.S. Cl. 29—403 **4 Claims**



This disclosure is directed to a process for the separation of zinc and aluminum base scrap from the usual impurities accompanying such scrap. Such impurities are usually ferrous metal and copper base metals such as brass and bronze. Aluminum and zinc scrap is preferably first ground and so reduced in size and then flattened by passage through sturdy rolls to reduce it in thickness and simultaneously expedite its separation from ferrous and copper base impurities.

3,605,244
SOLDERING METHODS AND APPARATUS

Solomon C. Osborne, Orlando, and Joseph D. Keller, Winter Park, Fla., assignors to Electrovert Manufacturing Co. Ltd., Montreal, Quebec, Canada
Continuation of application Ser. No. 222,453, Sept. 10, 1962. This application Apr. 20, 1966, Ser. No. 551,475
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 **23 Claims**



This invention relates to an automatic soldering machine particularly designed for use in connection with the manufacture of printed circuit boards or the like, which utilizes nozzle means for projecting molten solder in a curvilinear stream having an upper surface presenting a crest above the level of the nozzle, and to one side thereof. Upon the undersurface of the item to be soldered being brought into contact with the stream of solder, the effective soldering of the components is brought about. Means are provided for applying a thin film of oxidization-preventing oil over the curved upper surface of the solder stream, and additionally, the arrangement may include means for subjecting the completed circuit board to a flow of refrigerated gas that serves to quickly extract heat, thus preventing formation of excessively crystalline or grainy solder joints.

3,605,245

PROCESS FOR MANUFACTURING HIGH DENSITY PRESS-FORMED ARTICLES

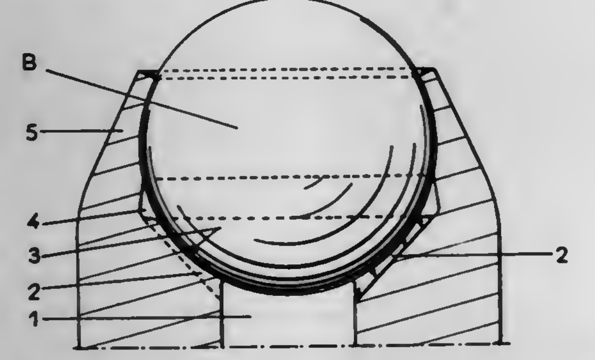
Gerhard Zapf, Krebsoge, Germany, assignor to Sintermetallwerk Krebsoge G.m.b.H., Krebsoge, Rhineland, Germany
No Drawing. Filed Oct. 8, 1969, Ser. No. 864,902
Claims priority, application Germany, Nov. 26, 1968, P 18 10 883.3
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **3 Claims**

High density press-formed articles may be formed from a powder mixture, consisting predominantly of high alloy metals, which can be forged only with difficulty, if at all. A prepressed workpiece is formed from the powder mixture at a pressure of about 6 t./cm.², and is then heated to between 800 and 1100° C. The heated workpiece is then compacted or deformed at a pressure of about 8 t./cm.² in a press tool which has been preheated to a temperature between 150 and 350° C. and which is held constant at this temperature during the compacting operation. There is no sintering of the workpiece in the press tool. The resultant press-formed article may then be annealed in a vacuum for 4 to 5 hours at 1250° C.

3,605,246

PROCESS FOR MAKING BALL-POINT WRITING INSTRUMENTS

Edmond Regnault, Valence, France, assignor to Etablissements Regnault S.A., Valence, Drome, France
Filed Feb. 14, 1969, Ser. No. 799,412
Claims priority, application France, Apr. 8, 1968, 22,234
Int. Cl. B23p *11/00*
U.S. Cl. 29—441 **7 Claims**

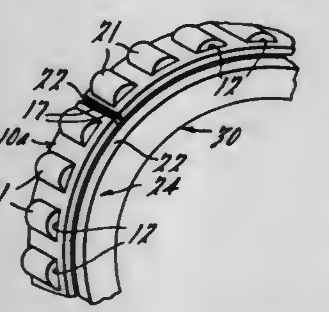


In the making of a ball-point writing instrument, the ball-point is inserted in the tip of the instrument by deforming the metal of the tip by high frequency hammering thereby simultaneously forming an ink chamber.

3,605,247

WELDED CAGE PROCESS

Gerald L. Bingle, St. Clair Shores, Henry G. Steil, Jr., Utica, and Carl A. von Essen, Westland, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.
Filed Sept. 9, 1968, Ser. No. 758,467
Int. Cl. B23k *31/02*
U.S. Cl. 29—477 **6 Claims**

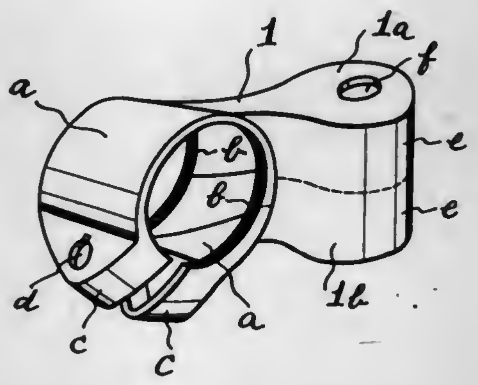


A process for making a cage for bearings in which the cage has a plurality of windows formed in a flat strip which is then cut to length and formed into a circular shape and welded by means of an electron beam.

3,605,248

METHOD OF PRODUCING BICYCLE LUGS

Saburo Yoshikawa, Tokyo, Japan, assignor to Nitto Handle Works Co., Ltd., Tokyo, Japan
Filed May 19, 1969, Ser. No. 825,535
Claims priority, application Japan, Feb. 21, 1969, 44/12,586
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—482 **5 Claims**

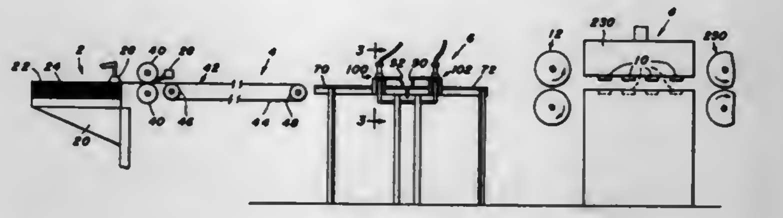


This disclosure is to produce various shapes of lugs for use in the handle of a bicycle by separately producing the upper and lower parts of a lug having substantially the same shape from a plate and electrically welding said parts at their joined portion and effect the automation of the manufacture of the lug by automatically introducing the stamped plates into the subsequent steps by providing metal molds in all process steps for stamping and a transfer unit in a press.

3,605,249

REGISTERED JOINDER OF SHEET

Howard R. Kutcher, Allison Park, and Robert M. Trimble and Selmer G. Von Stocker, Pittsburgh, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed July 22, 1969, Ser. No. 843,686
Int. Cl. B23g *3/00;* **B23p** *19/00, 19/04*
U.S. Cl. 29—429 **17 Claims**



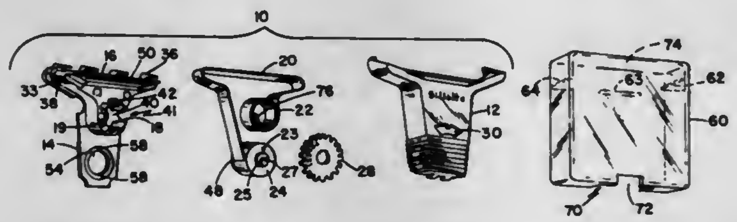
Apparatus for sequentially effecting registered joinder of sheets of material. Sheet transporting means for sequentially moving sheets to a joining station, registry means for raising the trailing end of a leading sheet and engaging the leading end of a trailing sheet. First sheet clamping means disposed rearwardly of the registry means and second sheet clamping means disposed forwardly of the registry means. Joining means for establishing the joint while the sheets are clamped in registered position and control means for coordinating operation of the clamping means and the joining means. The registry means has a vertically reciprocating registry bar provided with sheet engaging faces. Operating means connecting the clamping means with the registry bar to establish movement of the registry bar responsive to movement of the clamping means.

A method of effecting registered joinder of sheets of material. Automatically feeding a sheet forwardly into contact with registry means. Simultaneously raising the trailing end of a forwardly disposed sheet at the registry means. Clamping the sheets in registered position and securing fastening means to the clamped sheets. Unclamping the joined sheets and moving them forwardly to a position in which the trailing sheet becomes the leading sheet for the next cycle of operation.

3,605,250

METHOD FOR LOADING STRIP MATERIAL

Richard Joseph Maguire, Scituate, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of application Ser. No. 586,840, Oct. 14, 1966. Division of application Ser. No. 666,750, Sept. 11, 1967, now Patent No. 3,500,528. This application May 1, 1969, Ser. No. 844,692
Int. Cl. B23p *11/00, 19/00*
U.S. Cl. 29—429 **6 Claims**

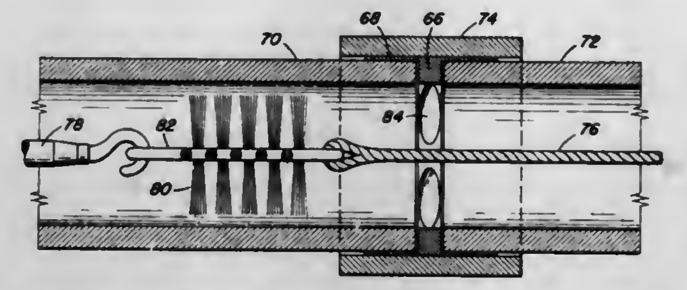


A method of loading an elongated strip in a cartridge component having a supply position, a take up position and an operative station through which the strip is to pass includes the steps of fastening a first portion of the strip at the supply position, gripping the strip at a point remote from the first portion, rotating the cartridge component in a direction to bring the operative station and the strip together, and continuing rotation until a second portion of the strip is at the take up position.

3,605,251

METHOD AND DEVICE USED IN INSTALLING CABLES IN CONDUITS

Phillip Salerno, Brooklyn, and Michael Sammaritano, Bayshore, N.Y., assignors of fractional part interest to Angelo Raffa
Filed Mar. 27, 1970, Ser. No. 23,346
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 **3 Claims**



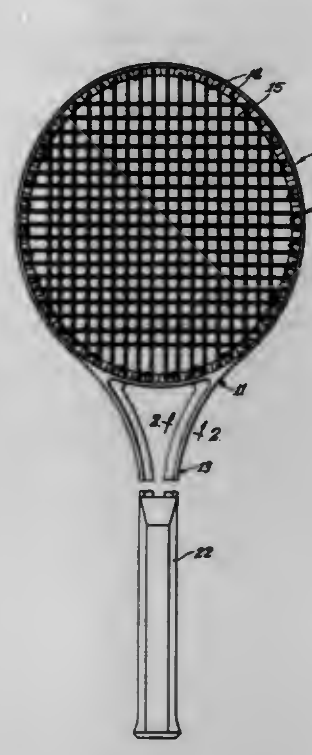
A conduit in which an electrical cable or the like is to be installed has rupturable containers of lubricant installed therein. The containers are broken as the electrical cable is passed through the conduit thereby to release the lubricant in the conduit and reduce the friction of the electrical cable and otherwise facilitate pulling of the cables through the conduit.

3,605,252

METHOD OF FORMING A TENNIS RACQUET

Samuel W. Landsman and Joseph A. Woltering, Chicago, Ill., assignors to Midland Sporting Goods Company, Inc.
Filed Feb. 7, 1969, Ser. No. 797,591
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 **5 Claims**

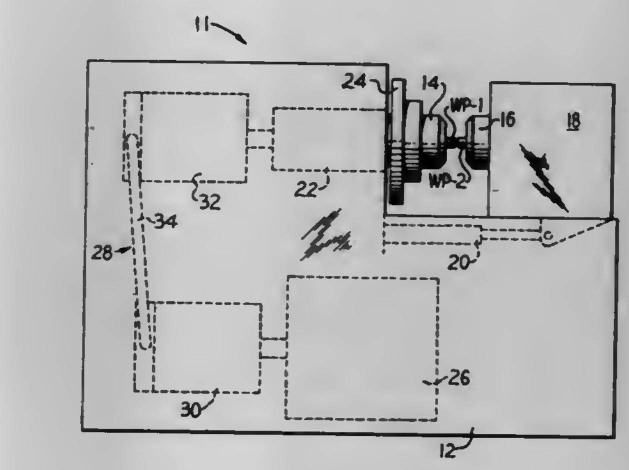
A method of forming a tennis racquet structure or the like by casting the structure from fused metal under a preselected high pressure suitable to densify the metal to have a strength at least substantially that of a conventional wooden tennis racquet frame structure. The frame may be suitably strung to complete the unit.



3,605,253

METHOD OF INERTIAL WELDING TO ELIMINATE CENTER DEFECTS

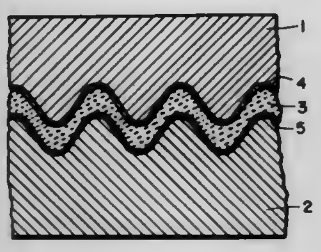
Marion R. Calton, East Peoria, Theodore L. Oberle, Washington, and Carl D. Weiss and Ralph W. Yocum, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 13, 1969, Ser. No. 824,066
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **8 Claims**



Defects at the center of inertial friction welded parts are prevented from forming during the welding process. The frictional heating is initiated near the center of the interface at the beginning of the welding process. The yielding of the parts is confined to a narrow band of material on either side of the interface throughout the weld process. This insures that the central portions of the end surfaces of the parts being welded are maintained in contact throughout the weld process and are adequately heated to produce the plasticity required to form a weld without defects.

3,605,254
METALLURGICAL BONDING

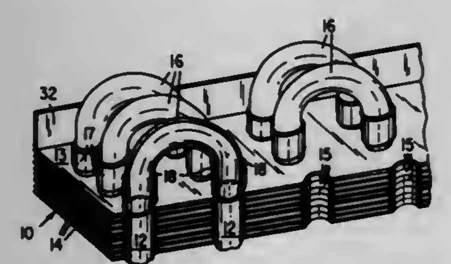
Marcel Armand, Michel Charveriat, and Jean-Pierre Givord, Albertville, France, assignors to Ugine Kuhlmann, Paris, France
Filed Sept. 6, 1968, Ser. No. 758,064
Int. Cl. B21d *39/04*
U.S. Cl. 29—473.7 **9 Claims**



A process for providing a metallurgical bond between a special metal piece of Ti, Zr, Hf, U, Nb, Ta or alloys of these metals and a steel piece. A mechanical junction is first prepared providing a slight clearance between both pieces. The surfaces of the pieces facing the junction are treated with a molten flux. Thereafter, the junction is filled with a brazing alloy consisting essentially of Al, Si, Fe and the special metal. After the junction is filled, it is allowed to cool.

3,605,255
METHOD FOR BRAZING

Benjamin A. Metzger, Shaker Heights, Ohio, and Harry E. Miller, Westmoreland, Pa., assignors to Carrier Corporation, Syracuse, N.Y.
Original application Jan. 19, 1966, Ser. No. 521,681. Divided and this application June 17, 1968, Ser. No. 753,301
Int. Cl. B23k *31/02, 35/38*
U.S. Cl. 29—494 **5 Claims**

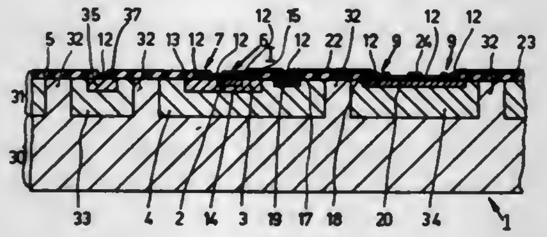


A method of brazing structural parts which includes the steps of pre-heating the parts to a temperature below the melting point of the brazing alloy and thereafter supplying heating at a temperature in excess of the melting point of the brazing alloy to accomplish unison of the parts.

3,605,256
METHOD OF MANUFACTURING A TRANSISTOR AND TRANSISTOR MANUFACTURED BY THIS METHOD

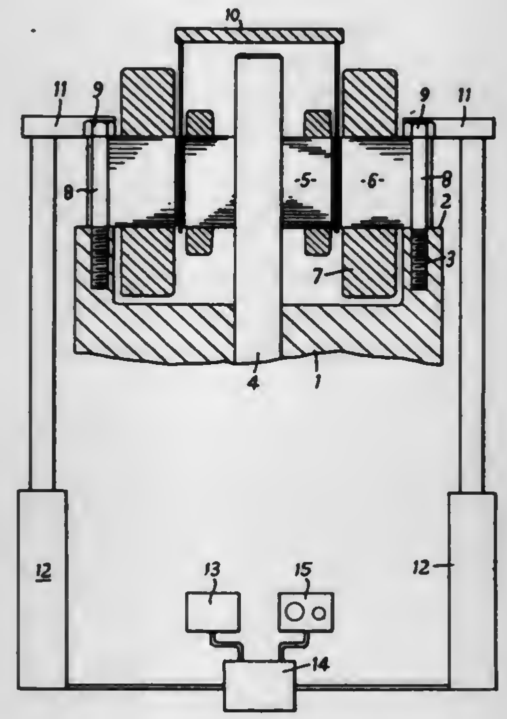
Albert Schmitz, Emmasingel, Eindhoven, Netherlands
Filed Oct. 2, 1968, Ser. No. 764,580
Claims priority, application Netherlands, Oct. 7, 1967, 6713666
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—578 **12 Claims**

A method of manufacturing a double-diffused transistor using an integral masking layer by the so-called planar process in which, after the emitter region is formed by diffusion through an emitter window in the masking layer, the earlier provided base window is entirely reopened exposing the emitter base junction at the surface, following which a second masking layer is provided on the exposed semiconductor surface and windows established therein for providing contacts to the emitter and base regions.



3,605,257
METHOD FOR MOUNTING LAMINATED STATORS

Gilbert Andrew McMahon, Motherwell, Scotland, assignor to Ranco Motors Limited, Glasgow, Scotland
Filed May 13, 1968, Ser. No. 728,428
Claims priority, application Great Britain, May 18, 1967, 23,258/67
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **10 Claims**

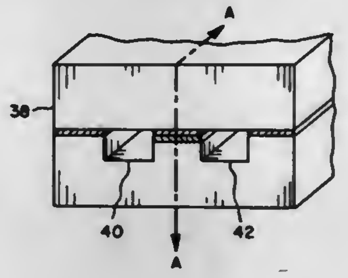


A method of assembly of an electric motor comprising a mounting block, a rotor mounted to rotate relative to the mounting block and a stator secured to the mounting block; the method consisting in applying a purely axial compressive force to the stator as it is secured to the block.

3,605,258
FABRICATION OF RECORDING HEADS

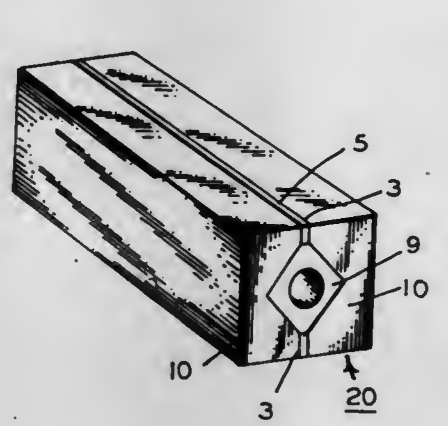
Robert D. Fisher, Woodstock, and George C. Puram, Saugerties, N.Y., and Thomas J. Tidd, Springfield, Del., assignors to Ferroxcube Corporation, Saugerties, N.Y.
Filed Nov. 21, 1968, Ser. No. 777,690
Int. Cl. H01f *7/06*
U.S. Cl. 29—603 **10 Claims**

A method of assembly and manufacturing micro gap transducing heads with operating gaps for recording or reading in a range from 1 to 150 μinches and bonded with sputter deposited glass and/or metal gap materials with a high material or head yield including the steps of machining a ferrite bar into a plurality of faced segments separated by grooves, R.F. sputtering a non-magnetic material such as glass or metal on the operating gap face and a metal on the back gap face, bonding a second mating bar to the said bar, and cutting and dicing the bonded bars as desired to form individual pole pieces for subsequent assembly into a transducing head. An alternative method sputter etches away non-desired gap face segments until a desired gap depth is reached, then R.F. sputter depositing a dielectric such as glass onto both faces, then bonding, cutting and dicing.



3,605,259
METHOD OF MANUFACTURING A PAIR OF POLE PIECES FOR A MAGNETIC HEAD

Yoshio Tawara and Yasumasa Komatsu, Osaka-fu, and Hozumi Hirota, Nara-ken, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 26, 1969, Ser. No. 802,409
Claims priority, application Japan, Mar. 6, 1968, 43/15,007
Int. Cl. H01f *7/06*
U.S. Cl. 29—603 **2 Claims**

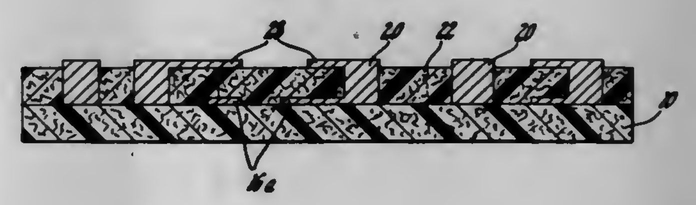


A pair of pole pieces having a magnetic head which have tips of a magnetic alloy with a spacer of non-magnetic metal between the tip end portions of said tips for forming a non-magnetic gap. The pole pieces are formed by grooving the flat surfaces of two magnetic alloy bars, depositing a non-magnetic metal film on the flat top surfaces of the bars and wetting the inside of the grooves with a soldering material. The thus prepared bars are brought together due to the flat surfaces abutting each other and then the soldering material is heated so as to adjoin the abutting bars. The thus joined bars are cut along a plane perpendicular to the abutting surfaces of the bars and then each of the cut surfaces is cut along a plane perpendicular in longitudinal axes of the parts to produce a plurality of pairs of pole pieces.

3,605,260
METHOD OF MAKING MULTILAYER PRINTED CIRCUITS

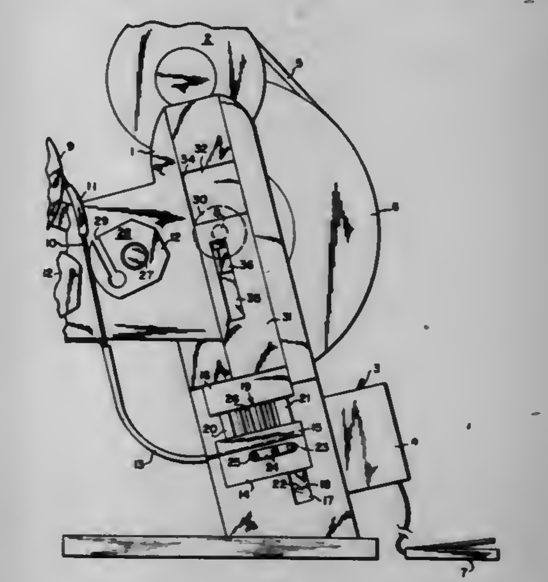
Jack P. Spridco, New Berlin, Wis., and Thomas A. Mancewicz, Lathrup Village, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 12, 1968, Ser. No. 774,705
Int. Cl. H01b *5/14, 17/62;* **H05k** *3/06*
U.S. Cl. 29—625 **2 Claims**

In a method of making printed circuits a thick conductive sheet carried by a substrate is etched to form circuit pathways. The pathways are reduced in thickness by partial etching except certain portions whose thickness is preserved to form interconnections. The etched away portions are filled with insulating material and a second set of conductors are formed thereon connecting with the interconnection points.



3,605,261
METHOD AND APPARATUS FOR MAKING TERMINALS AND FOR ATTACHING THE SAME TO CONDUCTORS

Irwin Zahn, Arthur Graf, and Irving W. Rosenbaum, New York, N.Y., assignors to Genstape, Inc., New York, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,400
Int. Cl. H01r *43/00, 43/04*
U.S. Cl. 29—628 **12 Claims**

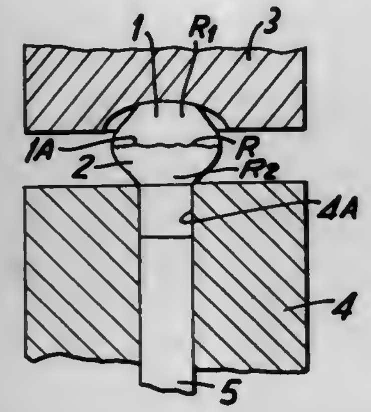


A metal strip is intermittently fed through an aperture forming station to an attaching station. Progressive tools at the forming station punch apertures in the strip to leave connected terminal blanks. At the attaching station, the blanks are sequentially severed from the strip, a portion of each blank is bent into an approximate U-shape, and then forced into a crimping die which clamps the bent blank portion over a conductor introduced into the die.

3,605,262
PRODUCTION OF RIVET-TYPE BIMETAL CONTACTS

Akira Shibata, Tokyo, Japan, assignor to Chugai Electric Industrial Co., Ltd., Tokyo, Japan
Filed Nov. 14, 1968, Ser. No. 775,649
Claims priority, application Japan, Aug. 2, 1968, 43/54,693
Int. Cl. H01r *9/16*
U.S. Cl. 29—630C **4 Claims**

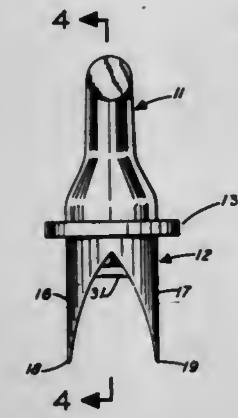
A rivet-type bimetal contact is produced by coaxially superposing a linear piece of a ductile precious contact metal onto the end face of a different ductile metal with its opposite end anchored in a die, the contact faces of the two metals being freshly cut. The contact metal is axially upset by applying impact pressure to deform and flatten the superposed metals at least 20% of their height, and preferably at least 30 or 50%, to bring the cut faces into intimate and crystallographic contact whereby the interface is increased in area and effect cold bonding of the two faces, and then immediately heating the two metals to an elevated temperature below the melting points of the metals but above the recrystallization temperaure while under pressure to complete the deformation and form a high strength bond at the bimetal interface.



3,605,263

HOLE CUTTER

William C. Simmonds, 6120 Elder Creek Road,
Sacramento, Calif. 95824
Filed May 29, 1969, Ser. No. 829,016
Int. Cl. B67b *7/24*
U.S. Cl. 30—6.4 **2 Claims**

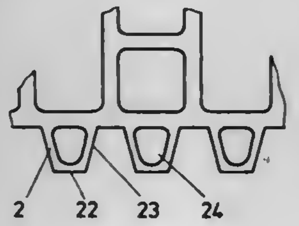


A hand-operated hole cutter with a pair of hardened cutting blades or prongs formed as portions of a surface of revolution and tapering slightly toward each other with gripping means at the rear thereof and a magnet therebetween.

3,605,264

SHAVER WITH A TWIN-FOIL CUTTING HEAD

Bodo Futterer, Schonbuhlring, Switzerland, assignor to
The Gillette Company, Boston, Mass.
Filed Sept. 18, 1968, Ser. No. 760,524
Claims priority, application Switzerland, Sept. 18, 1967,
13,057/67
Int. Cl. B26b *19/06, 19/10, 19/38*
U.S. Cl. 30—34.1 **3 Claims**

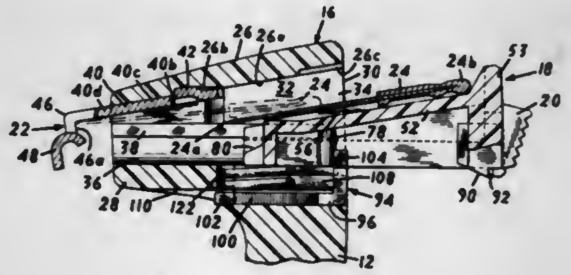


A two foil shaving head for dry shavers, the inner foil having projecting teeth for cutting long hairs. The projecting teeth form an acute angle with their corresponding cutting openings and have recesses therein for better abutment of the cutting teeth against the curved outer foil.

3,605,265

RAZOR HAVING MOVABLE BLADE-CARRYING DRAWER

Clemens A. Iten, Staunton, Va., assignor to Philip
Morris Incorporated, New York, N.Y.
Filed Mar. 18, 1969, Ser. No. 808,057
Int. Cl. B26b *21/14*
U.S. Cl. 30—64 **12 Claims**

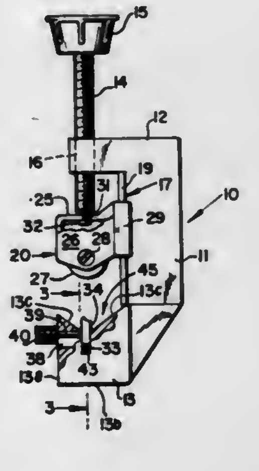


A safety razor assembly in which a blade-carrying drawer is slidably mounted in the razor head and is movable forwardly into a latch shaving position with associated guard means, and upon release of the latch means a spring is effective to move the drawer to a retracted position wherein a used blade may be readily replaced, the drawer having therein a spring means for urging the blade forwardly against blade stop means in appropriate shaving position adjacent the guard when the drawer is in its forward position.

3,605,266

DEVICE FOR SIMULTANEOUSLY CLEANING AND CUTTING PIPES

Martin A. Klapper, R.D. 6, Middletown, N.Y. 10940
Filed Oct. 2, 1969, Ser. No. 864,950
Int. Cl. B23d *21/10;* **B08b** *1/04*
U.S. Cl. 30—102 **2 Claims**



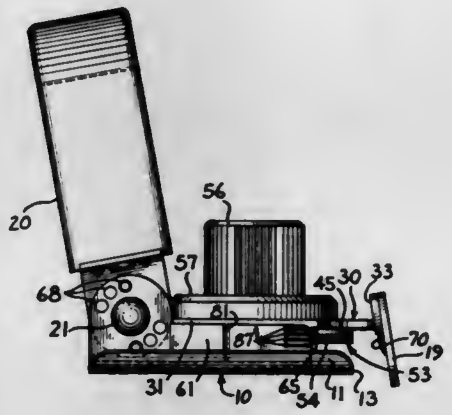
A tool for cutting a pipe and simultaneously cleaning the outer surface of the pipe about the cut comprising a pipe cutter combined with a scraping or abrasive member lying in a plane at right angles to a cutter wheel of the pipe cutter.

3,605,267

CARPET TRIMMING TOOL

Roy L. Brenner, Highland Park, Ill., assignor to Kinkead
Industries Incorporated, Chicago, Ill.
Filed Mar. 21, 1969, Ser. No. 809,238
Int. Cl. B26b *29/00*
U.S. Cl. 30—287 **8 Claims**

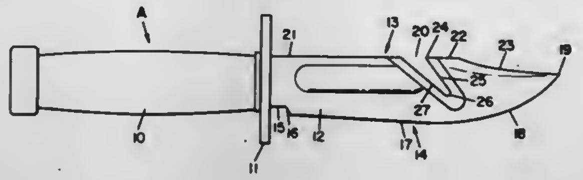
A tool for trimming carpet to fit against a wall or baseboard having a base plate for riding along the carpet and an assembly which includes a blade holder plate and reference plate mounted on a threaded post and having clamping nuts for clamping the assembly in a position of vertical adjustment to provide the desired cutting height. The blade holder plate has a relative horizontal adjustment to establish the width of an entry slot for confining carpet of different thickness as it is being cut. Improved means are provided for preventing relative rotational and in and out movement of the plates when clamped in working position.



3,605,268

HUNTING KNIFE

Clyde R. Cassell, Sr., 205 Lionville Road,
Downington, Pa. 19335
Filed Oct. 25, 1968, Ser. No. 770,536
Int. Cl. B26b *29/02*
U.S. Cl. 30—294 **1 Claim**



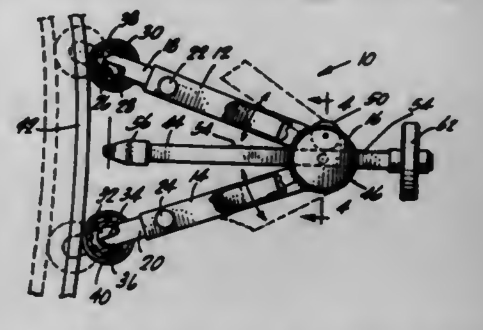
This specification discloses a knife intended primarily for use in the hunting of game and which comprises a handle, a hilt and a blade. The latter element is of steel and is defined by two edges, an inner edge and an outer edge, and which edges meet at a point. The inner edge includes a straight portion adjacent to the hilt and is formed with a notch that extends into the blade in the direction of the point. This notch leaves a straight heel portion extending to the hilt. The notch has a blunt point, a sharp under edge, a sharp round corner and an upper edge which is blunt.

3,605,269

DRAFTING AID

James C. Driskill, Long Beach, Calif.
(16291 Hawaii Lane, Huntington Beach, Calif. 92649)
Filed Apr. 24, 1969, Ser. No. 819,002
Int. Cl. B43l *13/02*
U.S. Cl. 33—42 **4 Claims**

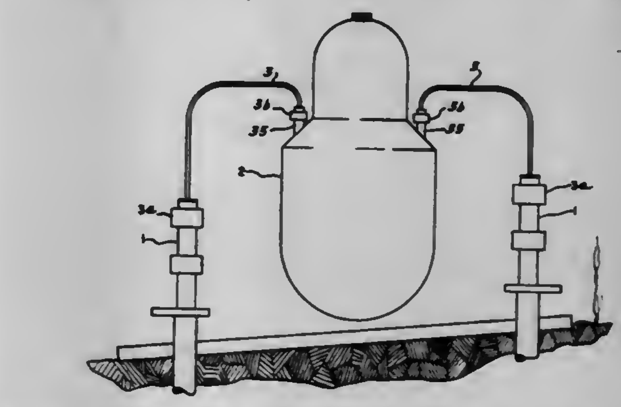
A drafting aid to assist in the drawing of parallel contours from a model contour comprising two leg elements depending from a central hub and adjustable with respect thereto, each leg element being individually longitudinally adjustable, each leg element terminating in a low-frictional device adapted to abut the model contour, each low-frictional device being adjustable with respect to the model contour, a third low-frictional device adjacent the hub to prevent dragging of the hub upon the working surface, a longitudinally adjustable shaft extending between the leg elements, the shaft being capable of being fixed in one position and to permit deployment of a drawing instrument to contact the working surface.



3,605,270

ART OF MEASURING DISTANCES BETWEEN TWO UNDERSEA POINTS REMOTELY

Walter Brown, Long Beach, Calif., assignor to
North American Rockwell Corporation
Filed Jan. 2, 1970, Ser. No. 339
Int. Cl. G01b *3/20, 5/14;* **G01d** *7/04*
U.S. Cl. 33—174 **8 Claims**



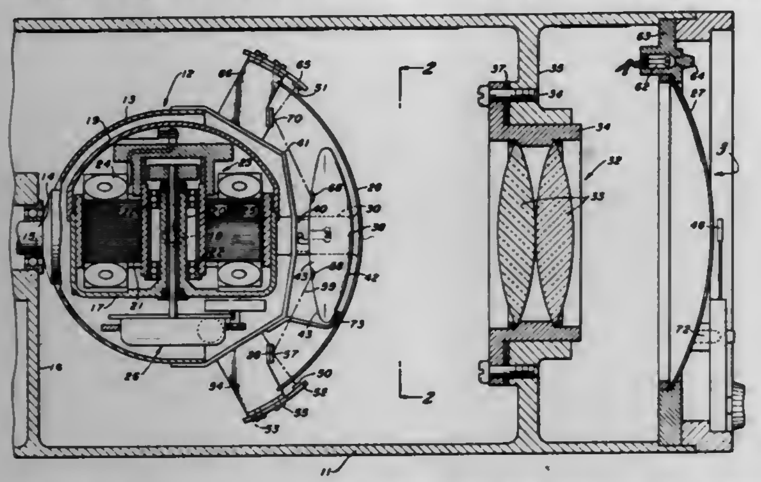
A gauge is disclosed capable of measuring distances between a vertically extending undersea wellhead and an upwardly extending undersea receiving pipe so that a connecting tubing loop could be fabricated to connect the two. The gauge has a connector which sits on the wellhead, and a feeler, for making contact with the pipe. The connector and feeler are connected by a frame that allows the feeler to move in two orthogonal directions relative to the connector. The gauge is lowered to the sea floor so that guide sleeves fixed to the connector engage vertical guide pins around the wellhead and so that guide sleeves fixed to the feeler engage other guide pins around the pipe. The connector engages the wellhead first and then an electric motor lowers the frame and feeler. When the feeler contacts the pipe, the motor is stopped and locked in place, providing an indication of the spacing in the vertical direction. A marker is provided to mark the frame with respect to the feeler to indicate the spacing between the connector and feeler in the horizontal direction and the angular deviation between center-lines of wellhead guide pins and the guide pins associated with the receiving pipe.

3,605,271

ATTITUDE INDICATING INSTRUMENT

Edgar R. Brastow, Monrovia, Raymond A. Stoer, Thousand Oaks, and John M. Leitch, Alhambra, Calif.,
assignors to Clary Corporation, San Gabriel, Calif.
Filed Dec. 9, 1968, Ser. No. 782,208
Int. Cl. G01c *15/14;* **G01d** *5/32, 5/34*
U.S. Cl. 33—204 **9 Claims**

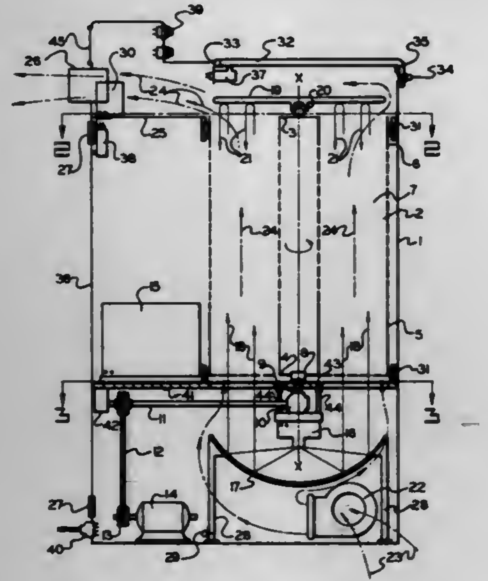
An artificial horizon instrument having a freely mounted vertical axis gyroscope, a mask carried by the gyroscope rotor housing and a light source carried by a gimbal supporting the rotor housing. One edge of the mask forms a horizon line which is optically projected onto a translucent reference screen. Light beams directed to photocells carried by another of the gyroscope gimbals are normally cut off by the mask but are uncovered when the aircraft assumes an abnormal "nose high" or "nose low" attitude whereby to energize respective alarm devices.



3,605,272
METHOD AND APPARATUS FOR DRYING AND STERILIZING FABRICS AND THE LIKE

Raymond Marcel Gut Boucher, Metuchen, N.J., assignor to Wave Energy Systems, Inc., New York, N.Y.
Filed July 28, 1969, Ser. No. 845,329
Int. Cl. B01k *5/00*

U.S. Cl. 34—1 **16 Claims**



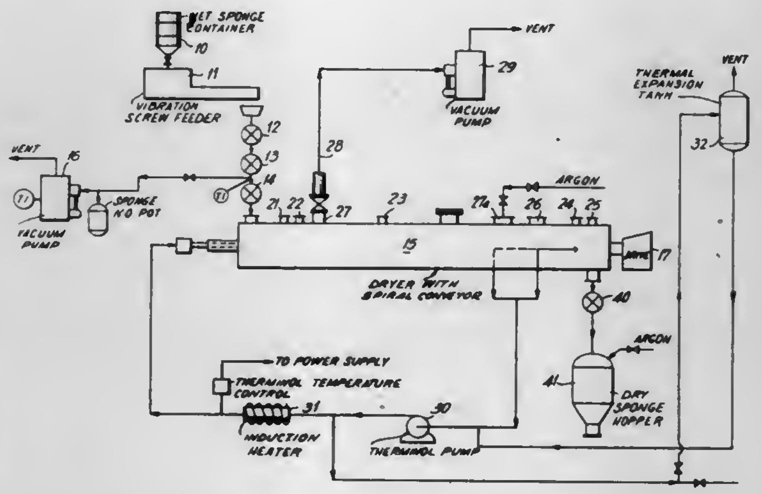
A method for rapid drying and sterilizing of clothes, fabrics, garments, textiles and the like in which electromagnetic waves (100 to 300,000 MHz.) are combined with a fast moving air stream while the irradiated material rotates slowly in the processing area in a direction transverse to the air stream and the propagated electromagnetic waves. The apparatus of the invention is the size of a conventional home dryer, is noiseless and can dry a 7-pound fabric workload in two to five minutes while destroying all household germs or microbiological contaminants. It is equipped for automatic operation for different kinds of fabrics and health hazards have been eliminated through the use of automatic safety devices.

3,605,273
CONTINUOUS PROCESS AND APPARATUS FOR DRYING TITANIUM SPONGE

Thor W. Andersen, Ashtabula, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.
Continuation of application Ser. No. 704,801, Feb. 12, 1968. This application Jan. 16, 1970, Ser. No. 4,465
Int. Cl. F26b *5/04*

U.S. Cl. 34—15 **9 Claims**

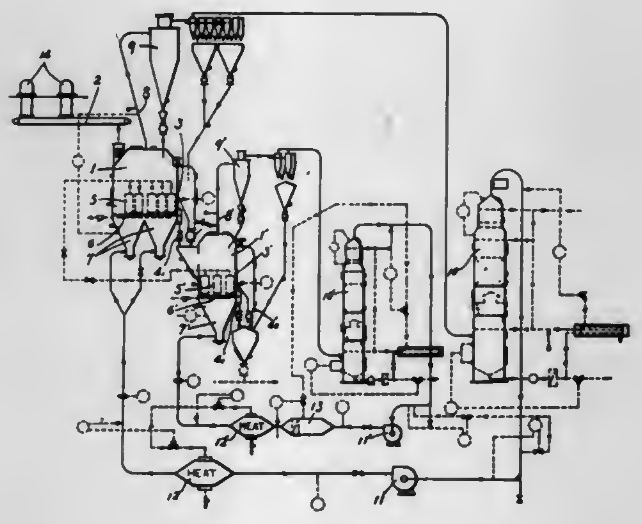
A continuous process for drying titanium sponge in which wet sponge is continuously conveyed to an evacuated drying chamber. A continuous conveyor in the drying chamber transports the wet sponge through a heated zone toward a discharge end. Vaporized moisture from the sponge is condensed in the vacuum pump which is a liquid jet pump which acts as a highly efficient condensor. The dried sponge is then continuously moved into storage hoppers.



3,605,274
MULTISTAGE FLUIDIZATION POWDER DRYING PLANT USING FLUIDIZING GASES HAVING DIFFERENT DEW POINTS

Jiyuichi Nara, 2-7-8 Higashi-ooi, Shinagawa-ku, Tokyo, Japan
Filed July 7, 1969, Ser. No. 839,249
Claims priority, application Japan, July 13, 1968, 43/49,537
Int. Cl. F26b *17/00*

U.S. Cl. 34—57A **3 Claims**

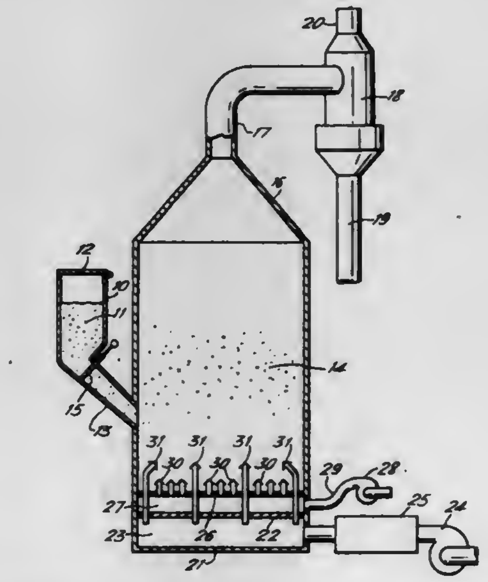


A multistage plant for fluidizing and drying powder by use of gas cooled at different dew points, said plant comprising a first stage flow system and a second stage flow system connected thereto, and if necessary, a third and more stages connected in succession by a similar connection system, said first stage flow system including a first stage gas circulating passageway to which are connected a cyclone collector adapted to purify fine powder mixed with exhaust gas of a first stage fluidization powder drying column and collect the fine powder, a means for purifying, cooling and drying said exhaust gas, and a means for heating said gas and forcedly feeding the gas to heated gas regulating chambers provided on the underside of a porous plate of said first stage fluidization powder drying column, said second stage flow system including a second gas circulating passageway in which a dried powder inlet of said second fluidization powder drying column is connected to a dried powder outlet of the first stage fluidization powder drying column of said first stage flow system and a gas drying means are disposed in said first stage gas circulating passageway.

3,605,275
FLUIDIZED BED DRYER

Joseph T. Enders, Berkeley, Ill., assignor to Struthers Wells Corporation
Filed July 24, 1969, Ser. No. 844,257
Claims priority, application Great Britain, July 29, 1968, 35,994/68
Int. Cl. F26b *17/10*

U.S. Cl. 34—57A **2 Claims**

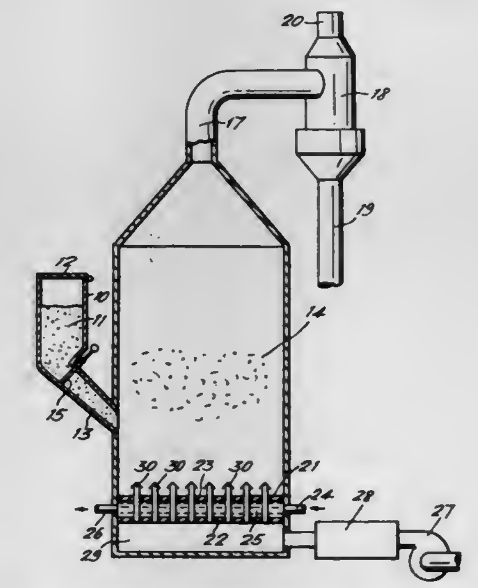


In a fluidized bed dryer, cold air is introduced into the bottom of the dryer and hot air is introduced at a higher level, the mixture of air at different temperatures fluidizing and drying material in the dryer.

3,605,276
FLUIDIZED BED DRYER

Joseph T. Enders, Berkeley, Ill., assignor to Struthers Wells Corporation
Filed July 25, 1969, Ser. No. 844,940
Claims priority, application Great Britain, July 29, 1968, 35,995/68
Int. Cl. F26b *17/10*

U.S. Cl. 34—57A **2 Claims**

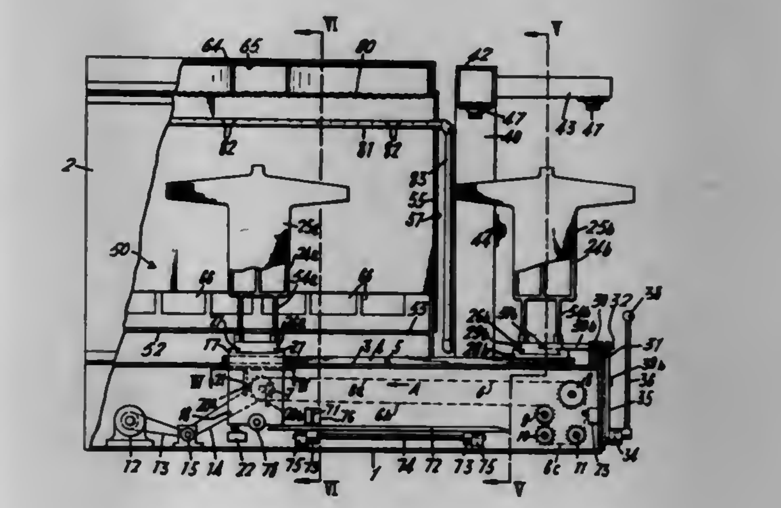


In a fluidized bed dryer hot air is introduced into the bottom of the dryer through nozzles fixed in a cooled distributor plate.

3,605,277
APPARATUS FOR FINISHING KNITTED GOODS

Heiji Kakutani, Osaka, Japan, assignor to Kakutani Seisakusho Ltd., Osaka, Japan
Filed Aug. 5, 1969, Ser. No. 847,605
Int. Cl. F26b *21/06*

U.S. Cl. 34—83 **4 Claims**

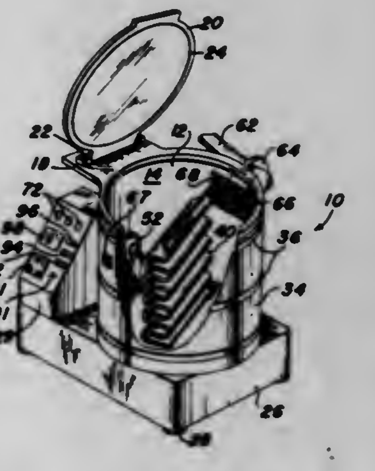


A treating chamber is disposed on a track for guiding forms on which articles to be treated are placed. Hot blast supplied into the chamber is dispersed by a wire netting and mixed with steam into hot humid gas near the ceiling portion. A carrier of the forms is sent into or out of the chamber by a chain driven in a definite direction and in operative relationship with the travel of carrier, the supply of hot air is effected, so that the articles are subjected to the hot humid air uniformly. After treatment, they are dried with a cold blast.

3,605,278
VACUUM DRYING APPARATUS

James M. Ramsay, Yuma, Ariz., assignor to the United States of America as represented by the Secretary of the Navy
Filed Sept. 25, 1969, Ser. No. 861,104
Int. Cl. F26b *13/30*

U.S. Cl. 34—92 **2 Claims**

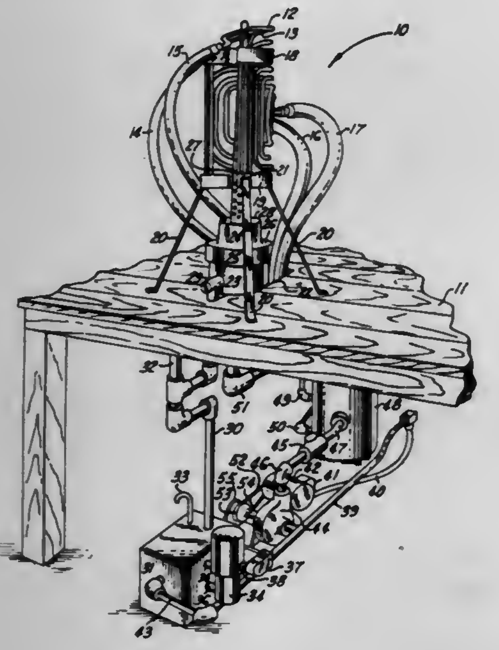


Vacuum drying apparatus having a stationary, hermetically sealable chamber to receive the article to be dried, the chamber being heated to a predetermined temperature the article can tolerate, the chamber also being subjected to a vacuum to reduce the boiling point of the moisture in the article below the predetermined temperature to boil-off of the moisture which is vented from the chamber.

3,605,279

APPARATUS FOR DEGREASING A ROCKET MOTOR CASE

William D. Fiser, Huntsville, Ala., and Allan E. Williams, Kingsland, Ga., assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed Aug. 1, 1969, Ser. No. 846,745
Int. Cl. B08b *9/12*
U.S. Cl. 34—104 9 Claims

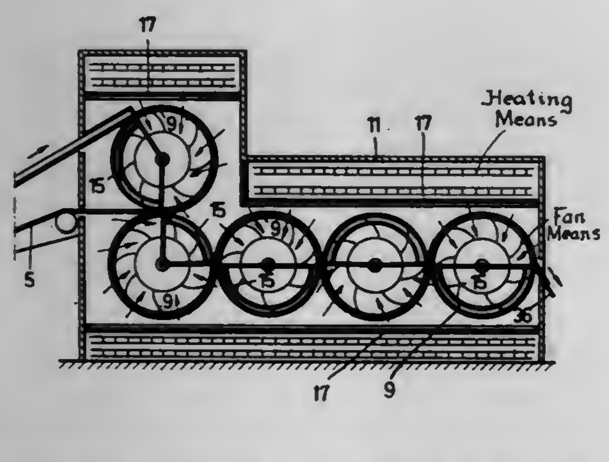


An apparatus that utilizes a vaporized solvent for degreasing a rocket motor case and having water cooling coils incorporated therein to chill the rocket motor case and thereby condense the vapor after it enters the rocket motor case so that the condensate will contact and flow down the interior wall surface of the rocket motor case to remove any contaminants therefrom.

3,605,280

COMBINATION DRYING AND TENTERING MACHINE

Heinz Fleissner, Egelsbach, near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland
Continuation-in-part of application Ser. No. 654,728, July 20, 1967. This application Feb. 14, 1969, Ser. No. 799,478
Claims priority, application Germany, Mar. 6, 1968, P 17 10 514.5; Mar. 13, 1968, P 17 10 515.6; Apr. 19, 1968, P 17 60 226.5; June 6, 1968, P 17 60 574.2; June 22, 1968, P 17 60 717.9; June 27, 1968, P 17 60 751.1
Int. Cl. F26b *13/10, 13/30*
U.S. Cl. 34—115 1 Claim

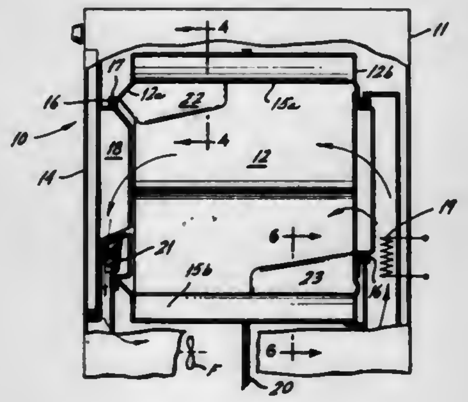


The present disclosure is directed to a process and apparatus for the treatment of materials which comprises a heat-insulated treatment chamber, a plurality of sieve drum means subjected to a suction draft rotatably disposed within said treatment chamber, fan means for producing a suction draft and for circulating the treatment medium in said treatment chamber, heating means provided in the circulation zone of the treatment medium, tentering means containing tensioning chains at least partially disposed outside of the treatment chamber as inlet means, said tentering means cooperating with the sieve drum means for the effective conveyance of the material being treated to said sieve drum means, and outlet means for removing the material being treated from the treatment chamber.

3,605,281

CLOTHES DRYER

James R. Hubbard, Moorestown, N.J., and Elmer W. Zearfoss, Jr., Philadelphia, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.
Filed Oct. 2, 1969, Ser. No. 863,195
Int. Cl. F26b *11/02*
U.S. Cl. 34—133 3 Claims

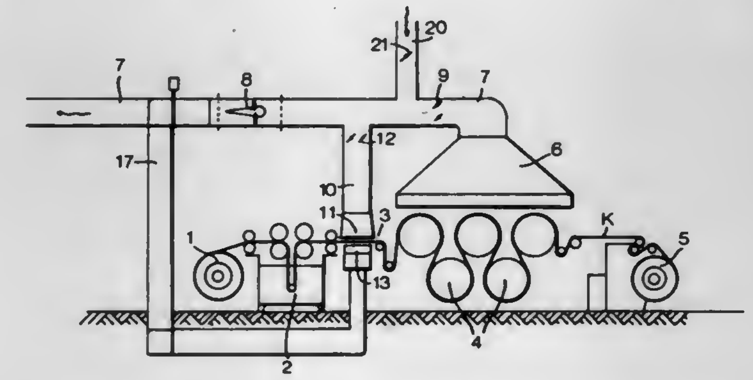


A clothes dryer having a drum provided with a plurality of clothes tumbling baffles extending parallel to the axis of the drum and substantially throughout the full length thereof. At least an opposed pair of baffles are provided with fins projecting from the baffle radially toward the axis of the drum and extending axially throughout substantially less than the length of the drum. The fin and baffle combination provides a desired tumbling effect.

3,605,282

APPARATUS FOR DRYING FABRIC

Max Wenger, Niederuzwil, Switzerland, assignor to Maschinenfabrik Benninger AG, Uzwil, Switzerland
Filed June 3, 1969, Ser. No. 830,033
Claims priority, application Switzerland, June 10, 1968, 8,607/68
Int. Cl. F26b *13/06*
U.S. Cl. 34—155 5 Claims

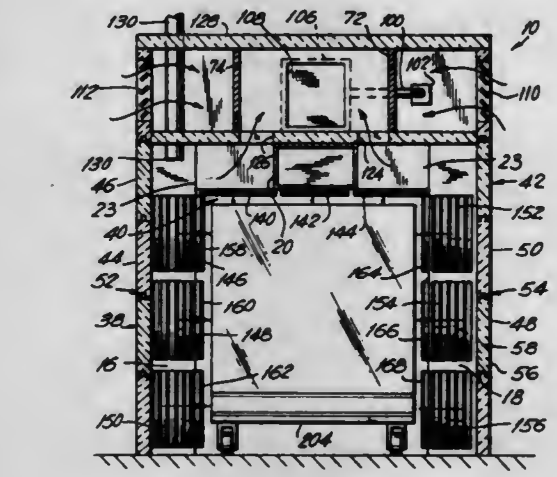


There is disclosed an apparatus which is adapted to be arranged in front of a contact cylinder dryer for predrying, by means of hot air, fabric warp continuously fed to the contact cylinder dryer. The inventive apparatus incorporates outlet slot means for a current of hot air, such outlet slot means extending throughout the entire width of the yarn field and being directed approximately perpendicular towards such yarn field. A suction slot means is situated at the opposite side of the yarn field in the extension of the outlet slot means. This suction slot means extends throughout the entire width of the yarn field and is directed approximately perpendicular thereto. Further, means are provided for producing an air current from the outlet slot means to the suction slot means such that the quantity of air sucked per unit of time through the suction slot means is at least equal to the quantity of air discharged per unit of time from the outlet slot means.

3,605,283

SHRINK TUNNEL

Seymour Zelnick, Orange, N.J., and Kelvin G. Anderson, Bronx, N.Y., assignors to Weldotron Corporation, Newark, N.J.
Filed Apr. 10, 1969, Ser. No. 814,934
Int. Cl. B65b *53/00*
U.S. Cl. 34—224 18 Claims

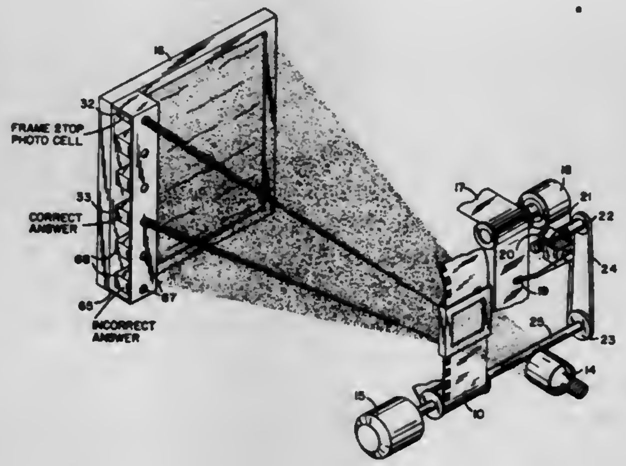


New and improved shrink tunnel comprising hot gas generating means for the shrink wrapping of thermoplastic load wrap materials is provided, and includes shrink tunnel support means which function to both support the said shrink tunnel and provide means for directing said hot gases generally tangentially of said thermoplastic load wrap materials to shrink-wrap the same.

3,605,284

EDUCATIONAL DEVICE

Andrew F. Kay, 340 Serpentine Drive, Del Mar, Calif. 92014
Filed Feb. 10, 1969, Ser. No. 806,337
Int. Cl. G09b *7/02*
U.S. Cl. 35—9 6 Claims

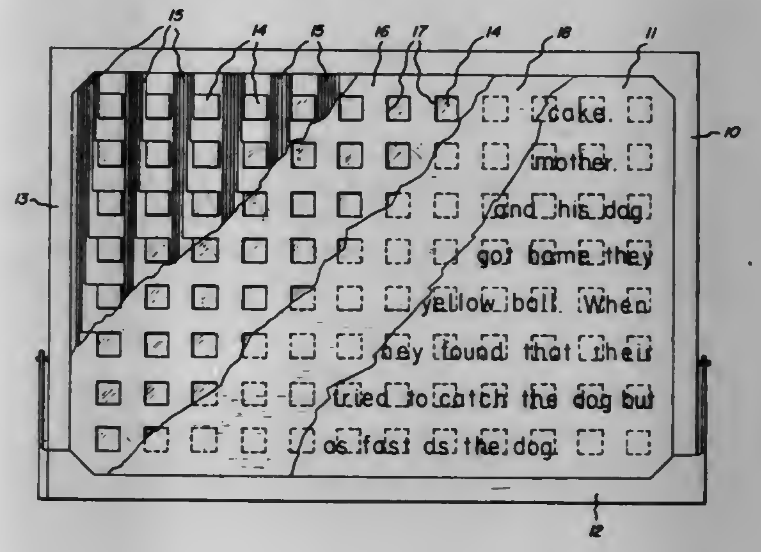


My invention comprises essentially an audio-visual educational device including optical means for displaying a series of questions and answers in alternating frames and an auditory system synchronized with and explaining the visual answers; the advancement of the successive frames being dependent upon the selection of a true or false answer, wherein a selection of a true answer advances the visual portion forward to the next question and the selection of a false answer advances said visual portion to the correct answer and causes the actuation of the auditory means.

3,605,285

RANDOM ACCESS AUDIO-VISUAL EDUCATIONAL APPARATUS

David J. BenDaniel and James B. Comly, Schenectady, N.Y., assignors to General Electric Company
Filed May 26, 1969, Ser. No. 827,608
Int. Cl. G09b *5/04;* **G11b** *17/00*
U.S. Cl. 35—8A 9 Claims



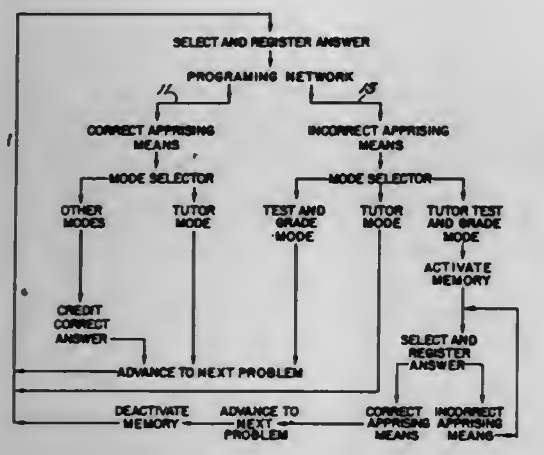
A system for providing an audio explanation as a supplement for any desired information printed on a sheet of paper comprises an array of flexible contacts over which the sheet is positioned. By depressing the sheet at the location of the information for which additional explanation is desired, a phonograph pickup is moved into a predetermined one of a plurality of grooves recorded in the form of nested spirals on a phonograph disk in order to reproduce audibly the corresponding information recorded thereon.

3,605,286

METHOD AND APPARATUS FOR PROGRAMED INSTRUCTION AND TESTING

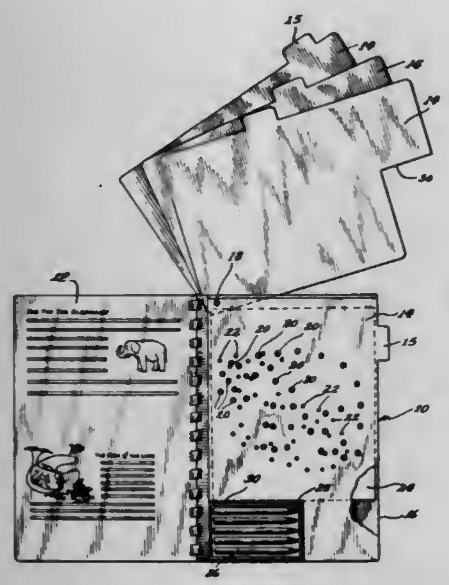
George W. Plumly, Fort Worth, Tex., assignor to Edu-Tronics Corporation, Fort Worth, Tex.
Filed May 8, 1969, Ser. No. 823,044
Int. Cl. G09b *7/08*
U.S. Cl. 35—9R 28 Claims

A method of, and system for, programed instruction characterized by providing a method of simultaneously teaching, testing and grading a student in which the student's first answer to a problem is scored as a correct answer and in which the student must ultimately select a correct answer before he can proceed to the next problem, although a later correct answer will not be given credit. In another aspect, a method and a system are afforded wherein the teacher selects a program and provides a series of problems arranged in accordance with the program; sets a programing network to effect the program and gives the test to the student; the student selects and registers answers in accordance with the problems and the mode selected by the teacher; in the tutor mode, the student is advised that his answer is incorrect until he selects and registers the correct answer and then is advanced to the next problem; in the test and grade mode, the student is advised that his answer is correct or incorrect, the correct answers are counted and he is advanced to the next problem; and the tutor, test and grade mode operates as described above. Also disclosed are the mechanical and electronic means, and details and embellishments of each of the means that facilitate use of the invention.



3,605,287
AMUSEMENT AND TEACHING DEVICE

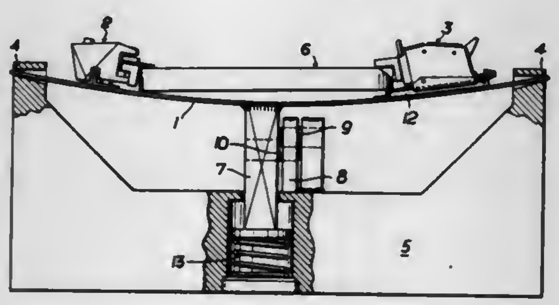
Howard Jonesi, 1526 W. Fargo Ave., Chicago, Ill. 60626
Filed July 14, 1969, Ser. No. 841,313
Int. Cl. G09b ***11/04***
U.S. Cl. 35—26 **4 Claims**



An amusement and teaching device for use in forming the outline of a character or figure comprising, a guide member provided with a first plurality of small openings arranged to form the outline of a first figure or character, a second plurality of small openings arranged to form the outline of a second character or figure, with the first and second plurality of openings each having different identifying means, and a marking surface adapted to be positioned under the guide member so that a series of dots forming the outline of the figure or character can be impressed on the marking surface through the plurality of openings on the guide member.

3,605,288
DEVICE FOR DEMONSTRATING SKI BINDINGS

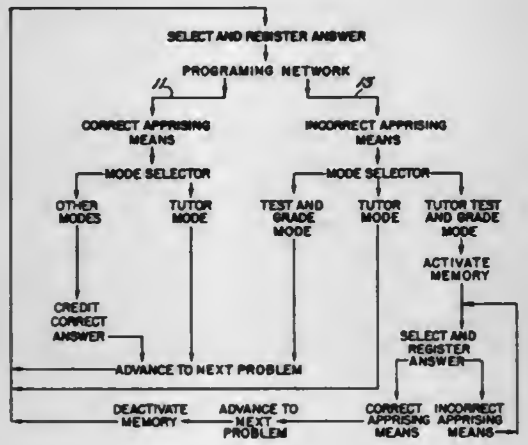
Thomas G. Smolka, Vienna-Mauer, Austria, assignor to Wiener Metallwarenfabrik Smolka & Company, Vienna-Mauer, Austria
Filed June 27, 1969, Ser. No. 837,122
Claims priority, application Austria, July 1, 1968, A 6,318/68
Int. Cl. G09b ***25/00***
U.S. Cl. 35—49 **6 Claims**



A device for demonstrating ski bindings in which the ski bindings are mounted on a base plate and a shoe or a model formed like a shoe sole in arranged between the binding parts. The plate is supported for flexing or the model is supported for longitudinal movement in order to demonstrate the longitudinal, or slide, elasticity of a binding part.

3,605,289
METHOD AND APPARATUS INCORPORATING ELECTRONIC COMPONENTS FOR PROGRAMED INSTRUCTION AND TESTING

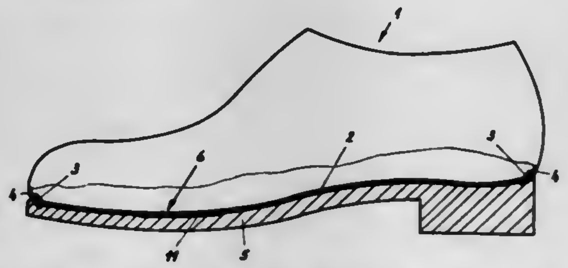
George W. Plumly and Jack B. Hunnicutt, Fort Worth, Tex., assignors to Edu-Tronics Corporation, Fort Worth, Tex.
Filed May 8, 1969, Ser. No. 823,124
Int. Cl. G09b ***7/08***
U.S. Cl. 35—9R **42 Claims**



A method of, and system for, programed instruction characterized by providing a method and a system in which the teacher selects a program and provides a series of problems arranged in accordance with the program; sets a programing network to effect the program and gives the test to the student; the student selects and registers answers in accordance with the problems and the mode selected by the teacher; in the tutor mode the student is advised that his answer is incorrect until he selects and registers the correct answer and then is advanced to the next problem; in the test and grade mode, the student is advised that his answer is correct or incorrect, the correct answers are counted and he is advanced to the next problem; and in the tutor, test and grade mode, the student is advised that each answer is correct or incorrect, his first answer to a problem is scored as a correct answer if it is correct and the student is required to utimately select a correct answer before he can proceed to the next problem, although a later correct answer will not be given credit. Also disclosed are the mechanical and electronic means, and details and embellishments of each of the means that facilitate use of the invention.

3,605,290
SHOE AND METHOD OF MANUFACTURING SAME

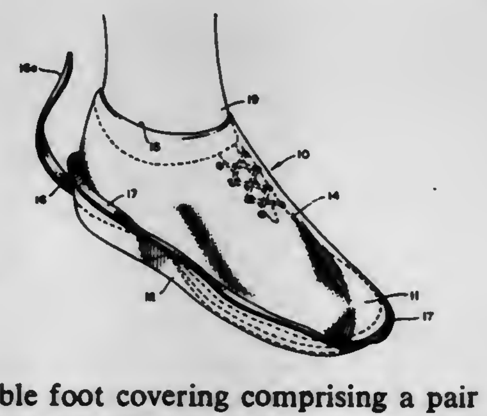
Otto Eder, Ternitz, and Wladimir Hascic, Maria Enzersdorf, Austria, assignors to Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria
Filed July 7, 1969, Ser. No. 839,728
Claims priority, application Austria, July 5, 1968, A 6,475/68
Int. Cl. A43b ***9/16***
U.S. Cl. 36—2.5 **8 Claims**



There is disclosed a shoe having an outsole of elastic material in which the connection between the outsole and the insole is interrupted at least in that area of the insole that underlies the ball portion of a wearer's foot. The interruption of the connection can be accomplished by applying a coating to the surface of the insole that is to be adjacent the outsole material, by applying a foil such as polyethylene or polypropylene to such insole surface, by applying silicone coated paper to such insole surface or by cutting out such area of such insole to leave an opening that is filled with elastic outsole forming material. There is further disclosed a method of making such a shoe in which an upper joined to an insole provided with an outsole connection interrupting means such as a cut out is pulled over a last, a mold cavity is closed by the last and outsole forming material introduced into such cavity to mold an outsole and bond same to said formed upper and insole except at the area provided with said connection interrupting means.

3,605,291
DISPOSABLE FOOT COVERING

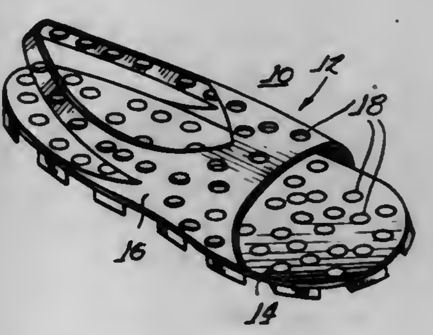
Francis C. Moore and Leon R. Perkinson, Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.
Filed July 27, 1970, Ser. No. 58,404
Int. Cl. A43b ***3/16***
U.S. Cl. 36—7.1R **21 Claims**



A disposable foot covering comprising a pair of superimposed layers of film or sheet material marginally sealed together, the upper of such layers being formed of a high elongation elastomer film and being provided with a small but greatly expandable opening for the insertion of a wearer's foot. A fused marginal bead about the opening prevents tearing as the material about the opening is stretched. Breathability of the cover, where necessary, is insured by forming the cover's lower layer from a porous moisture-resistant film or sheet.

3,605,292
SAFETY FOOTWEAR

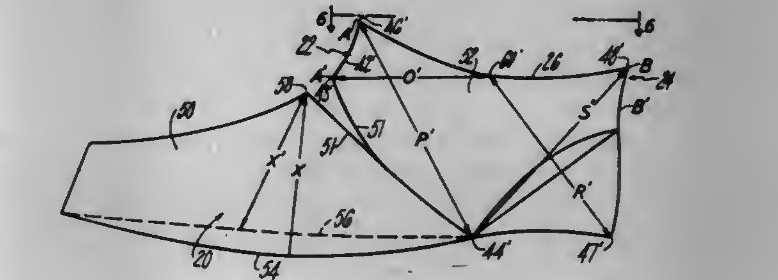
Lillian Goldblatt, 715 Ridge Road, Wilmette, Ill. 60091
Filed May 18, 1970, Ser. No. 38,389
Int. Cl. A43b ***5/08***
U.S. Cl. 36—8.1 **8 Claims**



An article of footwear adapted to be worn on the feet to prevent dangerous slipping and falling in the bath, shower or on other wet surfaces. The article includes a perforated body member, and a sponge rubber layer or sole attached to the bottom of the body member. The sponge rubber sole has openings or cut-out sections so that portions of the body member are exposed. The body member is provided with means to hold it on the wearer's foot.

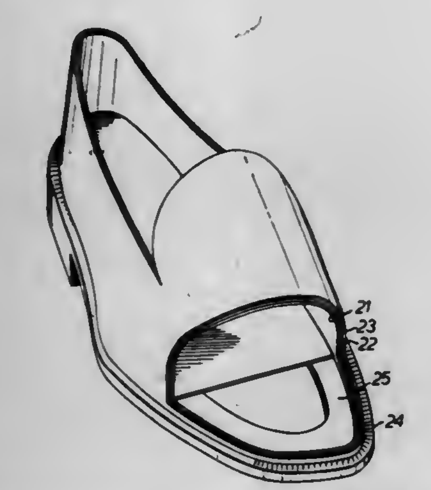
3,605,293
SOFT BOOT CONSTRUCTION

Douglas E. Getchell, Windsor Locks, Conn., John J. Korabowski, Springfield, Mass., and Michael A. Marroni, Jr., Weatogue, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 20, 1968, Ser. No. 785,616
Int. Cl. A43b ***1/02***
U.S. Cl. 36—9 **10 Claims**



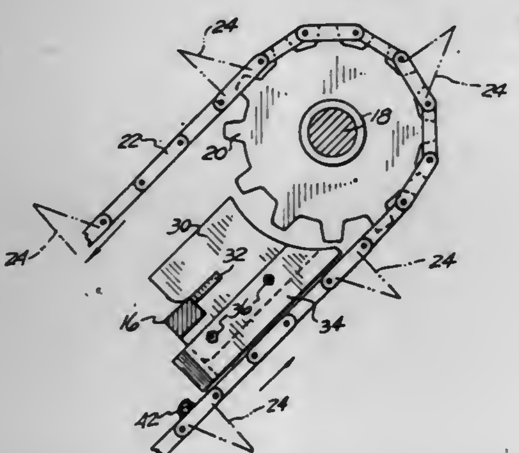
In a pressurized suit having a convoluted ankle joint and a fabric boot, the angle joint and boot are constructed to provide a comfortable and efficient ankle joint. The pattern for the boot has a particular geometry utilizing the pressure forces created within the boot fabric in such a way as to provide a vertical wall of sufficient rigidity, at least in the instep and heel areas, to avoid any pressure points at these locations.

3,605,294
SHAPED ARTICLES
Victor Ralph Cunningham, Hutton, and Graham Rodney Hull, Dagenham Dock, England, assignors to Porvair Limited, Dagenham Dock, Essex, England
Filed May 1, 1969, Ser. No. 820,850
Claims priority, application Great Britain, May 1, 1968, 20,737/68
Int. Cl. A43b *00/00, 21/00*
U.S. Cl. 36—45 7 Claims



A three dimensionally conformed article comprising sheet polymer material which is water vapour permeable, self-supporting, flexible and substantially resistant to loss of shape.

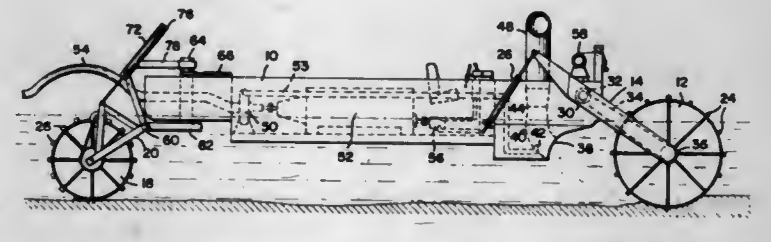
3,605,295
STONE GUARD FOR ELEVATOR SCRAPERS
Roman Joseph Walewski, 32631 Alvin St., Garden City, Mich. 48135
Filed July 7, 1969, Ser. No. 839,200
Int. Cl. B60p *1/36*
U.S. Cl. 37—8 2 Claims



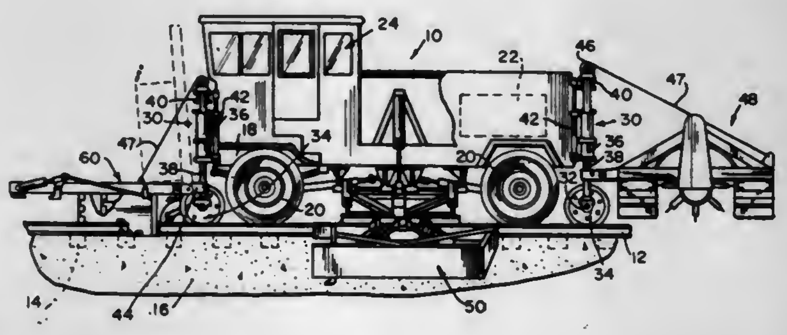
A guard for preventing damage to the endless chains and driving sprockets on elevator scrapers by rocks and stones. The guard consists of a vertically disposed plate aligned with each of the sprockets and having a replaceable wear shoe on the lower side in sliding engagement with its associated endless chain when the scraper is in operation. A deflector point on the forward end of each wear shoe diverts rocks and stones from the endless chains so as to prevent them from reaching the sprockets and damaging the chains.

3,605,296
AMPHIBIOUS DITCH EXCAVATOR
Ronald R. Dysart, Oakland, Calif., assignor to Wetland Engineering Co., Oakland, Calif.
Filed Sept. 20, 1968, Ser. No. 761,271
Int. Cl. E02f *3/88, 5/08*
U.S. Cl. 37—61 2 Claims

An amphibious vehicle for cutting material from the bottom of a water-filled ditch by means of a revolving cylindrical drum which is studded with projecting cutting elements. The drum, which is journalled to the front of a watertight body member, can be lowered into contact with the bottom of a water-filled ditch when the body member is floating in the ditch. The slurry produced by the rotary cutting action of the drum is drawn into an opening in the bottom of the body member by suction and is pumped out a T-shaped conduit which extends transversely beyond both sides of the body member. The suction at the bottom of the conduit is produced by a jet-pump system in which a stream of water is pumped into the conduit through a jet nozzle near the opening in the bottom of the body member. This stream of water flows through a venturi constriction in the conduit, draws the slurry into the conduit opening, and propels it through the T-shaped conduit for discharge beyond the edges of the ditch. A second cylindrical drum is journalled to supporting arms which project from the rear of the body member. This drum is studded with projecting traction elements and can be lowered into contact with the bottom of the ditch and rotated to propel the body member along the ditch. The rear drum can also be turned from side to side for steering purposes, and the entire vehicle can be driven over land, marsh, or paved roads to reach its destination.

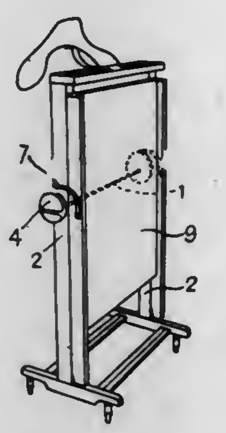


3,605,297
RAILROAD BALLAST PLOW
John Knox Kershaw, Southport, Ind., assignor to The Marmon Group, Inc., Chicago, Ill.
Filed Aug. 5, 1968, Ser. No. 750,101
Int. Cl. E01b *27/00*
U.S. Cl. 37—105 10 Claims



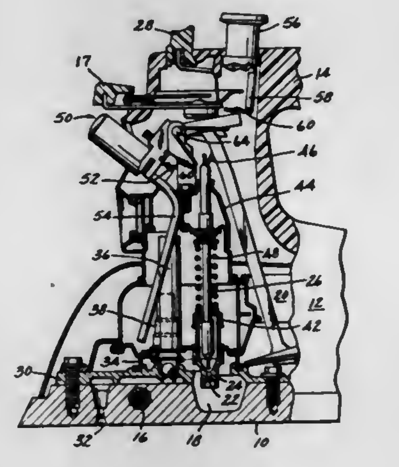
A railway ballast plow has a pair of divided plow or moldboard blades mounted on a frame carried at one end of a vehicle. Remote controls on the vehicle adjust the frame vertically and for steering, shift the blades between work positions, and actuate locking dogs to lock the blades in work positions independently of the shift mechanism. Each blade has lateral halves hinged to each other and to a central fixed hinge pin. The two half blades at each side are interconnected for simultaneous movement by a hydraulic swing cylinder, between forward and rearward operating positions where they are locked to the frame by the locking dogs. The plow frame is tiltably and swingably mounted on a lift carriage at one end of a railway vehicle, with a fixed pivot at one side and with an adjustable pivot at the opposite side which is movable longitudinally to swing the frame about the fixed pivot and hence to position the plow to follow a curved track.

3,605,298
ROOM-VALET PRESS
Giovanbattista Zigliani, Via Galilei 119, Brescia, Italy
Filed Aug. 11, 1970, Ser. No. 62,890
Claims priority, application Italy, Aug. 12, 1969, 2,798/69; Oct. 18, 1969, 2,814/69
Int. Cl. A47j *51/00*
U.S. Cl. 38—71 4 Claims



A device for controlling the displacement of the movable board of a room-valet trouser press, characterized by having a pair of arcuated elastic members pivotably connected to a pair of rotatable knobs, so that when the movable board is successively displaced toward and away from its mating fixed board of the press a perfect alignment of the boards with respect to each other and a perfect hold or pressing action on the article inserted between the two boards is at all times obtained.

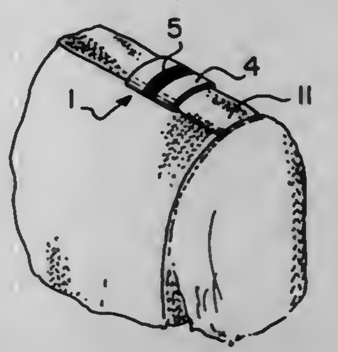
3,605,299
ADJUSTABLE SPRAYER IRON
Harold S. Foster, Ontario, and Wendell C. Walker, Alta Loma, Calif., assignors to General Electric Company
Filed May 14, 1969, Ser. No. 824,591
Int. Cl. D06f *75/06, 75/22*
U.S. Cl. 38—77.83 20 Claims



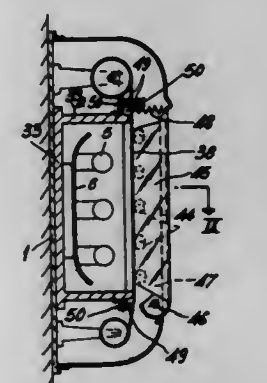
The disclosure shows a spray iron having an adjustable sprayer assembly with means to vary the liquid flow rate through a sprayer when the button that actuates the sprayer is manually operated.

3,605,300
EPAULET BADGE
Leo M. Moore, 8549 Richmond Highway, Apt. 203, Alexandria, Va. 22309
Filed Jan. 14, 1969, Ser. No. 791,080
Int. Cl. A44c *3/100*
U.S. Cl. 40—1.5 7 Claims

An epaulet badge to be worn on the shoulder epaulet of a uniform such as a military uniform is disclosed. The badge is made of one piece of formable ridged material and can readily be attached to or detached from the epaulet. A design or insignia can be printed on, attached to or painted on the badge. The badge can be made of any color, and the badge can be made to have a glossy finish, a mat finish or a fabric finish.



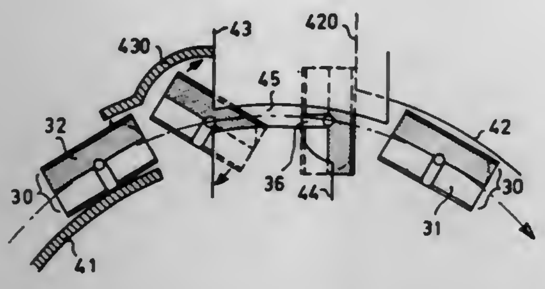
3,605,301
LIGHTING DEVICE
Michel J. Jacquot, Beynes, and Charles G. Amlcel, Carrieres-sur-Seine, France, assignors to Bertin et Cie, Plaisir, Yvelines, France
Filed Nov. 5, 1968, Ser. No. 773,388
Claims priority, application France, Nov. 6, 1967, 127,040; Oct. 4, 1968, 168,773
Int. Cl. G09f *11/12*
U.S. Cl. 40—31 1 Claim



The invention comprehends a lighting device having a light source means, one or more light transmitting layers in front of the light source means which is positioned to transmit light through a zone of the layer or layers, and means for continuously changing the zone of the layer or the zone of the last such layer through which the rays of light, transmitted by the light source means, pass before emerging from the lgihting device by which the light rays always pass through a clean zone of the layer of the last such layer. That layer may be endless and associated with a cleaning means operable to remove dirt from the layer between the time when it leaves the effective light transmitting field of the lighting device and the time when it returns to that field. Alternatively, the layer may comprise a film which passes in front of an illumination window and which is replaced by another film after use.

3,605,302
TRAVELING PLACARD CHARACTER DISPLAY APPARATUS
Werner Müller, Aarau, Switzerland, assignor to Contraves AG, Zurich, Switzerland
Filed Aug. 14, 1969, Ser. No. 850,170
Claims priority, application Switzerland, Aug. 19, 1968, 12,475/68
Int. Cl. G09f *11/28*
U.S. Cl. 40—32 12 Claims

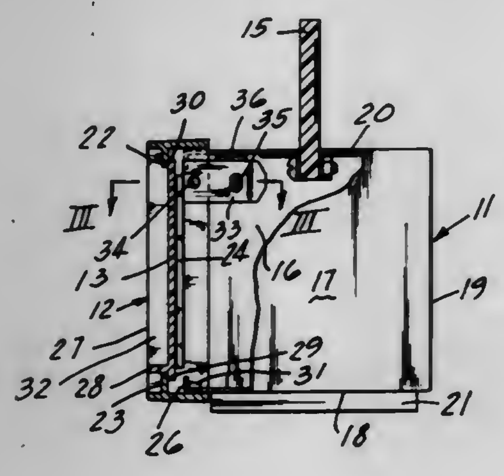
A novel traveling placard character display apparatus is disclosed, the apparatus being of the type wherein a plurality of adjacent columns of dual-faced indicating plates rotatably disposed about respective support shafts are movable over and behind an indicating surface which



provides an environment optically contrasting with both faces of the indicating plates. The two faces of each indicating plate are themselves optically contrasting and a predetermined character can be displayed on the indicating surface depending upon which face of the indicating plates in the plurality of columns are disposed toward the indicating surface. Extinguishing means are provided ensuring that each indicating plate is initially oriented such that a given face or side thereof faces the indicating surface. Read-in means then serve to rotate selective ones of the indicating plates so as to alter their orientation.

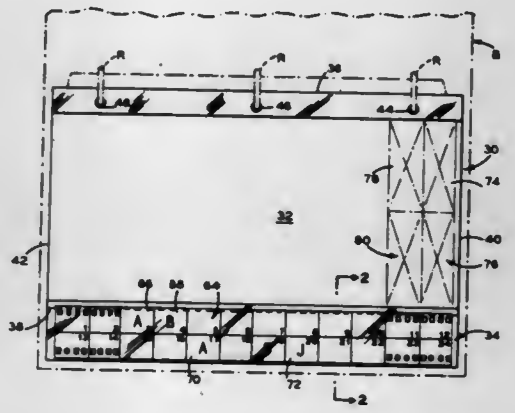
The indicating plates of the instant invention comprise two molded plastic face portions of optically contrasting color which are inserted together in surrounding relationship about collars formed on the support shafts between peripheral grooves. One of the plastic face portions of each indicating plate is provided with a reversing cam means which extends outwardly transverse both to the axis of the support shaft as well as to the visual face portion and cooperates with both the extinguishing means and the read-in means in a novel fashion so as to aid rotation of the associated indicating plate.

3,605,303
SIGN CONSTRUCTION
James R. Reichow, Minneapolis, Minn., assignor to
The Cornelius Company, Anoka, Minn.
Filed Jan. 27, 1969, Ser. No. 794,027
Int. Cl. G09f *7/08*
U.S. Cl. 40—63R **12 Claims**



A sign includes a casing and a bezel surrounding one side thereof, there being a manually removable message panel disposed between the bezel and the casing, a second message panel projecting from the casing and both message panels being illuminated from a lamp therein, and a pair of pin-and-hole connections between the bezel and the casing.

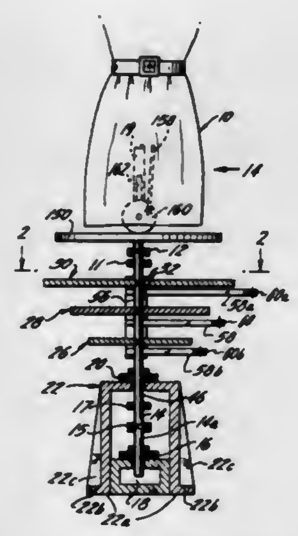
3,605,304
FILM STRIP EQUIPMENT
Marcel Broekman, Kew Gardens, N.Y., assignor to
Professional Film Services, Inc., New York, N.Y.
Filed Apr. 3, 1968, Ser. No. 718,563
Int. Cl. G09f *11/06*
U.S. Cl. 40—102 **8 Claims**



A combination of a film strip holder and information sheet therefor including a page which is adapted to be received in a loose-leaf binder or the like. A transparent pocket is affixed to one edge of the page and it receives a film strip having a plurality of frames. Respective pieces of data relating to the individual frames are on the page and keying means is provided to correlate each one of the pieces of data to the associated frame.

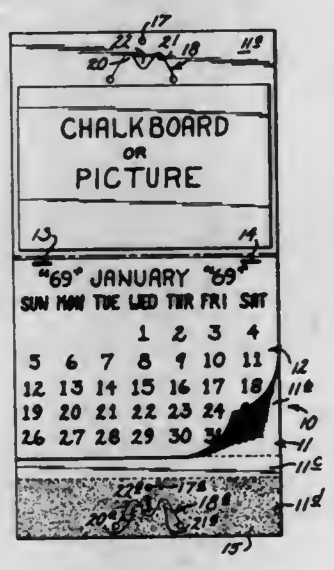
The invention further includes means for viewing the strip of film.

3,605,305
MANNEQUIN DISPLAY ARRANGEMENT
Raphael G. Grigorian, 90—60 53rd Ave.,
Elmhurst, N.Y. 11373
Filed Nov. 29, 1968, Ser. No. 779,788
Int. Cl. G09f *19/08*
U.S. Cl. 40—106.31 **13 Claims**



A mannequin display arrangement in which a number of mannequins are conveyed along a predetermined path. Each mannequin is mounted upon the conveyor through an individual rotational drive which rotates the mannequin in desired directions and at predetermined intervals along the path. The rotational movement of the mannequin, as well as its limbs with respect to the conveyor system which moves the mannequin along the path, is independent of the motion of the conveyor. A brake system holds the mannequin stationary with respect to the conveyor, when not being rotated through its individual rotational drive.

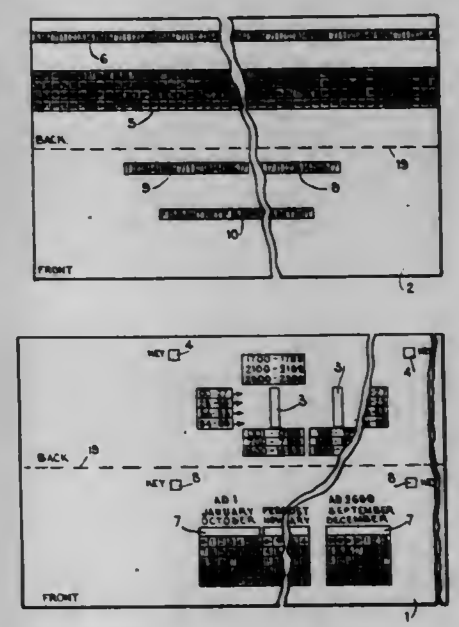
3,605,306
SELF-MAILING CALENDAR WITH INTEGRALLY FORMED PENCIL HOLDER
Raoul W. Diambra and Lloyd A. Klofanda, Eau Claire, Wis., assignors to Shedd-Brown, Inc., Minneapolis, Minn.
Filed Jan. 21, 1969, Ser. No. 792,441
Int. Cl. G09d *1/00*
U.S. Cl. 40—107 **4 Claims**



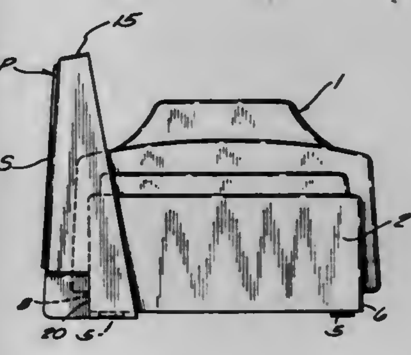
A calendar is shown having an upper panel, a backing panel, a removable panel and a reinforcing panel, with a plurality of calendar pages secured to the backing panel. The calendar has a mailing configuration wherein the upper panel is folded against the backing panel and the removable panel, with the pages between them, and the reinforcing panel is folded over the free edge of the upper panel and adhesively secured to the rear face thereof. The calendar also has a calendar configuration in which the removable panel is removed by means of perforated creases connecting it to the other panels, in which the upper panel and the backing panel lie in the same plane, and in which the reinforcing panel remains adhesively secured to the rear face of the upper panel. The adhesively secured together upper panel and reinforcing panel have a curved slot formed in them to act as a pencil holder. The slot defines a pair of tabs on one side and a single tab on the other side, under which a pencil can be inserted.

3,605,307
PERPETUAL CALENDARS
Albert Alexander Dickson, 4 Netherleigh Park,
Stormont, Belfast, Northern Ireland
Filed Mar. 14, 1969, Ser. No. 807,327
Claims priority, application Great Britain, May 23, 1968,
14,135/68
Int. Cl. G09d *3/04*
U.S. Cl. 40—109 **8 Claims**

A perpetual calendar is described which may be in the form of a slide rule, for example, in which two members are relatively moveable. One carries indexing positions, one for each day of the week, and the other carries an indicator, arranged in numerical sequence, of the years of a century. The indexing positions are allocated to centuries (according to the Julian and Gregorian centuries) by reference to the week-days on which they terminate, and the spacing between the positions is determined according to unit length multiples, in which a unit length is given a single-day significance and the pitch of the positions is a multiple of seven unit spaces, plus one unit. The year indicator is also spaced out, each common year indication being spaced by one unit from its predecessor in time and each leap year being spaced by two units. Thus the relative movement of the two members to associate a required year with a required century position indicates the terminal week-day of the required year. A calendar on one member with the day allocations omitted may then be completed by the assignment of days from a repetitive "day"-strip on the other member. The terminal day indications may, by predetermined association with code letters, be modified to show the dominical letter for the calculation of Easter Day in respect of the required year. A composite perpetual calendar and Easter calendar device may be formed by providing a further association of index points and indications. Taking into account epact and golden number cycles, the years of a century may be indicated at a regular spacing, and century index positions provided so that the relative movement of the two members to associate a required year with a required century will select a group of seven dates on which Easter Day might fall in the required year, and reference to the dominical letter then enables the particular date for Easter Day to be selected. The epact and golden number for the required year may also be displayed.



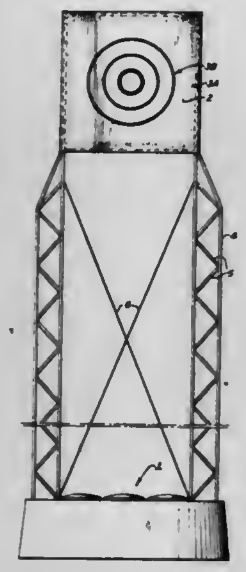
3,605,308
DISPLAY PANEL FOR IMPRINTERS
Daniel P. Novak, Parkridge, and David R. Main, Glenview, Ill., assignors to Frank Mayer & Associates, Grafton, Wis.
Filed Nov. 12, 1969, Ser. No. 875,922
Int. Cl. G09f *7/18*
U.S. Cl. 40—125 **2 Claims**



A display panel for association with an imprinter and which panel has engaging surfaces that insure proper abutment with the imprinter. The panel also includes an adhesive strip for being readily held by the imprinter, the weight of the imprinter acting to hold the panel firmly in place.

3,605,309
ILLUMINATED DISPLAY HAVING REMOTE LIGHT SOURCE

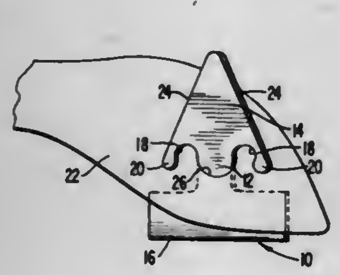
Gerald A. Beaty, Norristown, Pa., and Frederick L. Lynch, Andover, Mass., assignors to Elinore J. Beaty, Meadwood, Del., and American Cyanamid Company, Stamford, Conn.
Filed Sept. 19, 1966, Ser. No. 580,250
Int. Cl. G09f *13/00*
U.S. Cl. 40—130B **5 Claims**



In an illuminated display, useful for advertising and as a work of art, the face of the display is suspended above a remote source of substantially parallel light rays and comprises at least one light transmitting portion exterior to a body arranged to receive the parallel rays, including a deflector adapted to direct the parallel rays so that they impinge upon the interior of the light transmitting portion, the illuminated face possessing the esthetic effect, to an observer, of being suspended in air on rays of light. The deflector can be adjustable (e.g. tunable) and can comprise two hinged reflective faces which are capable of adjustment by raising or lowering a hinge linkage connecting the two faces. The deflector can have a corrugated surface comprising both primary and secondary reflective surfaces, the primary reflective surface being positioned so as to directly receive the parallel light rays and direct them toward the face and, the secondary surface being positioned so as to receive light reflected from the interior of the face and redirect it back on to the interior surface of the light-transmitting portion of the face.

3,605,310
ANIMAL IDENTIFICATION MARKER AND TOOL FOR APPLYING SAME

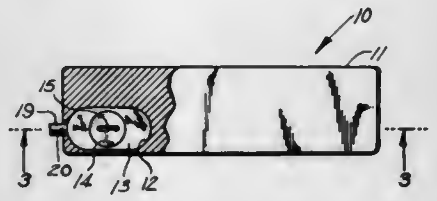
Edward A. Brown, 905 6th Ave., Dodge City, Kans. 67801
Filed May 13, 1968, Ser. No. 728,483
Int. Cl. G09f *3/00*
U.S. Cl. 40—301 **2 Claims**



An animal identification marker and a tool for inserting it through a hole in an animal's ear. The marker has a generally arrow shaped head, an intermediate stem portion of reduced width which extends through the hole in the animal's ear, and a generally rectangular tail portion which extends transversely of the stem. The tool has a punch for forming a hole in the animal's ear, and a means for inserting the marker through the hole.

3,605,311
REMOVABLE FIREARM LOCK INSERTABLE IN THE FIREARM EJECTION PORT

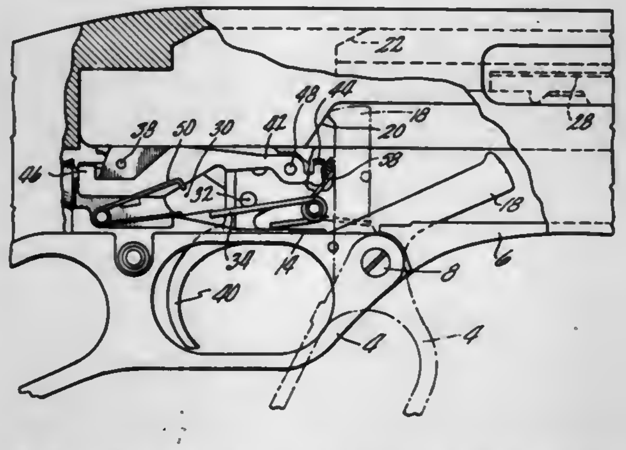
Robert Hermann, P.O. Box 114, Stronghurst, Ill. 61480
Filed Jan. 22, 1969, Ser. No. 793,006
Int. Cl. F41c *27/00*
U.S. Cl. 42—1N **1 Claim**



A device for placement into the ejection port or opening of a gun which will have a key for advancing a bolt that will prevent the removal of the device from the gun, thus rendering the gun unfireable.

3,605,312
LEVER ACTUATED SAFETY MECHANISM FOR A FIREARM

Robert E. Domian, Tolland, Conn., assignor to Colt's Inc., Hartford, Conn.
Filed July 15, 1969, Ser. No. 841,836
Int. Cl. F41c *17/02, 17/08*
U.S. Cl. 42—70E **11 Claims**

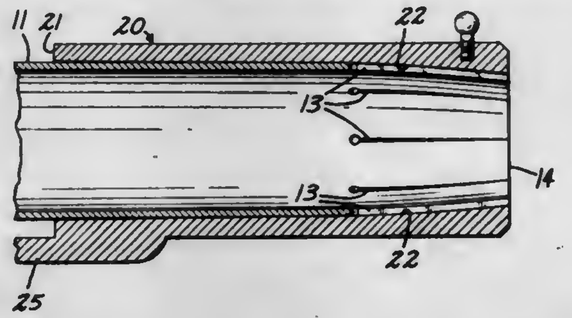


A lever actuated safety mechanism for a firearm of the general type having a bolt assembly reciprocatably operable responsive to arcuate movement of a cocking lever, and further having a trigger mechanism to release the hammer from the cocked position including a releasable member normally engaging the trigger mechanism to preclude the release by the trigger mechanism the hammer from the cocked position until the cocking lever engages the releasable member for a small arc of lever rotation to disengage the releasable member from the trigger mechanism, thereby permitting the operation of the trigger mechanism to release the hammer from the cocked position.

3,605,313
CHOKE MEANS

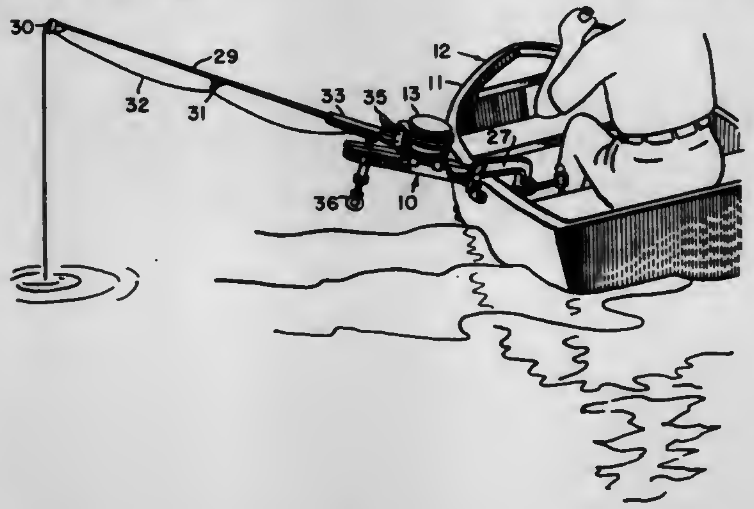
Jeremiah J. Kranz, 3620 Jefferson St., Rapid City, S. Dak. 57701
Filed Feb. 6, 1969, Ser. No. 797,149
Int. Cl. F41c *21/18;* **F41f** *17/12*
U.S. Cl. 42—79 **4 Claims**

A tubular member coaxially fitted over the muzzle and a slotted portion of a gun barrel in longitudinally sliding engagement therewith having an arcuately converging inner surface for forcing the slotted portions of the gun barrel inwardly to vary the choke thereof and supporting the slotted portions of the gun barrel along substantially every portion of the curve therein.



3,605,314
AUTOMATIC FISHING DEVICE

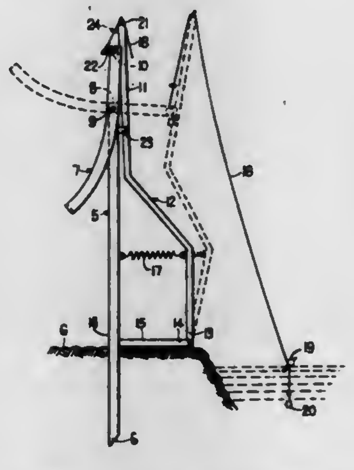
William M. Sarns, Rte. 2, Morley, Mich. 49336
Filed Oct. 29, 1969, Ser. No. 872,071
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **3 Claims**



An automatic fishing device in which a pole is operatively connected to the trigger of an automatic reel in a relationship such that downward deflection of the pole in response to the action of a fish will release the reel to the action of its spring mechanism, causing tension to be applied to the fish line.

3,605,315
AUTOMATIC FISH CATCHER

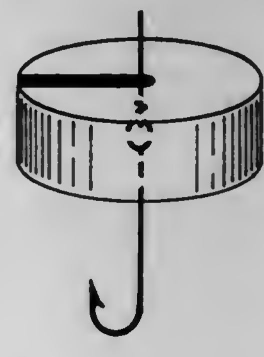
Lenard P. Adams and Roy S. Adams, both of 2126 56th St., Dallas, Tex. 75216
Filed July 18, 1969, Ser. No. 856,228
Int. Cl. A01k *97/12*
U.S. Cl. 43—16 **2 Claims**



An automatic fish catcher which embodies a spring-loaded structure having a vertically-disposed member in the form of a tube that has its lower end either inserted in the ground or secured to the gunwale of a boat. An elongated Z-shaped member is hinged at the end of a lower leg thereof to a member extending horizontally outwardly from the tube and has an upper leg spring-biased against the tube. A trigger is pivoted intermediate its ends on the tube and has a roller at one end biasing the Z-shaped member away from the tube in the set position of the device with a fishing line secured to the said one end of the trigger and freely passing through an eye on the upper end of the Z-shaped member. A pull on the line will release the trigger to set the hook and the trigger movement will notify the fisherman that he has a bite.

3,605,316
COTTONSEED FISH BAIT TABLETS

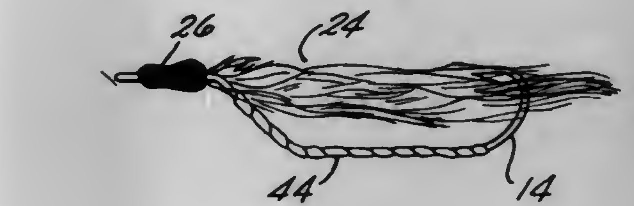
William P. Rogers, Box 1297, Little Rock, Ark. 72203
Filed Feb. 28, 1969, Ser. No. 803,486
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.06 **2 Claims**



This invention relates to the configuration and method of production of a fish bait material in tablet form.

3,605,317
WEIGHTLESS, WEEDLESS FISHING FLY

John R. Pobst, 2701 Forest Lake Drive, Jackson, Mich. 49203
Filed Sept. 4, 1968, Ser. No. 757,319
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.25 **7 Claims**

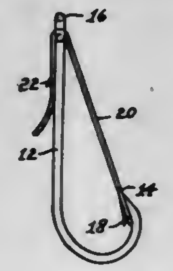


A fishing lure of the fly fishing type comprising a hook having a shank portion adjacent the hook eye to which the fly material is affixed. The barbed end of the hook is in general alignment with this shank portion and the fly material extends toward and shields the barb. The weight, shape and distribution of the fly material is so related to the hook configuration, that the majority of the weight of the hook and lure lies below the fly material causing the hook to function as a keel.

3,605,318
WEEDLESS FISHHOOK

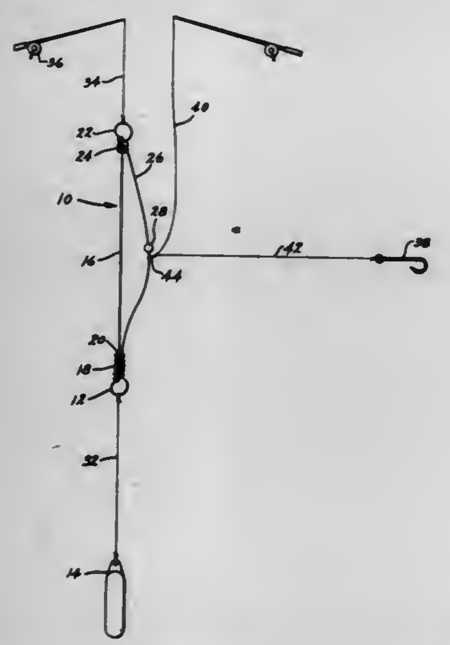
Mona Santo and Michael W. Santo III, both of 47 Lake Drive, Roosevelt, N.J. 08555
Filed Mar. 27, 1970, Ser. No. 23,224
Int. Cl. A01k *83/00*
U.S. Cl. 43—43.4 **4 Claims**

This invention relates to a fishhook in which the point is shielded by a resilient guard member looped over the barb at the point end of the hook and said guard member being extended to and through the eye of the hook and said guard member being further extended to and around a barb located on the shank portion of the hook to preclude snagging of the hook when drawn through weeds and the like.



3,605,319
CONNECTOR FOR RELEASABLY SECURING A FISHING LINE TO A WEIGHT LINE

James Robert Griffith, 1446 Melvin Drive,
Toledo, Ohio 43615
Filed Mar. 28, 1969, Ser. No. 811,552
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.12 **8 Claims**

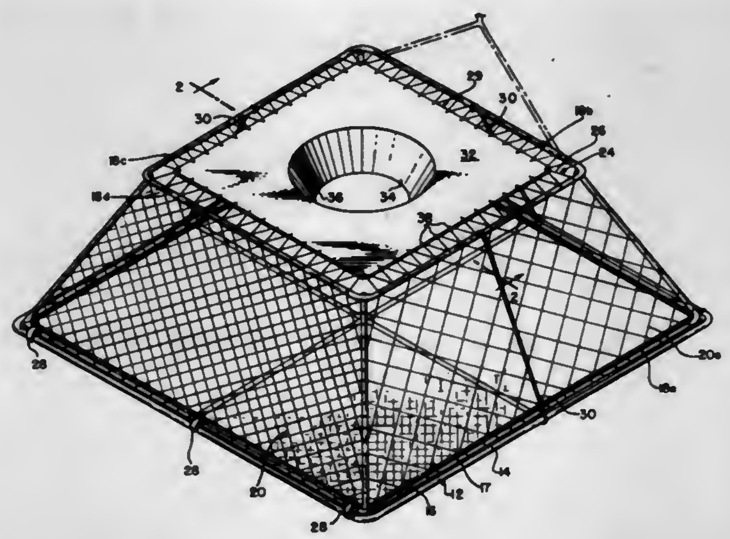


A connection device for releasably securing a fish line to a weight line comprising a body portion interposed in the weight line and having an elongated, bow-shaped spring portion secured at its upper end to the upper end of the body portion. The spring portion has a lower free end engaged in a coil ring structure at the lower end of the body portion. An intermediate portion of the fish line is slidably secured to the spring portion by a loop in the fish line. The fish line can be released from the spring portion by either a generally upward or right-angular pull on the fish line, which pulls the free end of the spring portion from the coil ring, but is prevented from release therefrom by a generally downward pull on the fish line.

3,605,320
CRAB TRAP

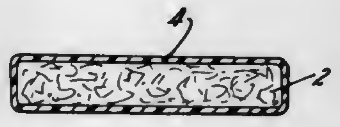
Charles S. Wells, Pier 56, Seattle, Wash. 98101
Filed Aug. 6, 1969, Ser. No. 848,023
Int. Cl. A01k *69/08;* **A01m** *23/08*
U.S. Cl. 43—65 **4 Claims**

Four upwardly converging side members of crab-restraining netting are joined to top and bottom members of like netting to form a container suitable for holding crab or the like. The top member is provided with a plastic shield having a substantially horizontal surface surrounding a downwardly sloping circular tunnel. The tunnel terminates in an entrance opening a substantial distance above the bottom member. The shield is of an imperforate low-friction plastic so that the crab cannot gain a claw-hold to climb back out through the tunnel.



3,605,321
INSECTICIDE VAPOR GENERATING ASSEMBLY

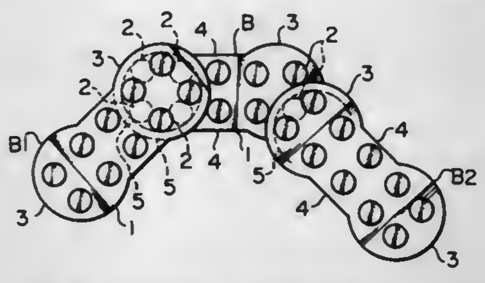
Stokes S. Lazarus, 4340 Crestview Road,
Harrisburg, Pa. 17112
Filed Aug. 19, 1969, Ser. No. 851,501
Int. Cl. A01m *1/20*
U.S. Cl. 43—131 **9 Claims**



In order to control the uniformity of vapor emission and to maximize the time during which an effective amount of vapor emission occurs, an absorbent body is impregnated with vaporizable material and is completely surrounded by a vapor-permeable plastic sheath which does not enter into a solubility relationship with the vaporized material and therefore controls the rate of vapor emission.

3,605,322
INTERLOCKING TOY BLOCKS

Takashi Matsubayashi and Hirozo Matsubayashi,
Habikino-shi, Osaka, Japan, assignors to Nintendo
Playing Card Co., Ltd., Kyoto-shi, Kyoto, Japan
Filed Apr. 22, 1969, Ser. No. 818,353
Claims priority, application Japan, May 13, 1968,
43/39,019
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **2 Claims**



Each block of the mutually couplable assembling toy has a plate the periphery of which is defined by two circles and two opposing lines parallel to a straight line joining the centers of the circles, the distance between the two lines being smaller than the diameter of the circles.

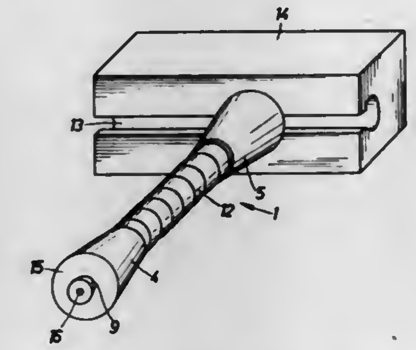
The upper surface of the plate is provided with a plurality of cylindrical projections equally spaced apart to one another and in two rows in parallel.

The lower surface of the plate are provided with two cylindrical walls positioned in alignment with the respective circles and two opposing walls positioned in alignment with the respective lines and ending to the cylindrical walls.

Preferably, all of the plate, projections, cylindrical walls and parallel walls are moulded with synthetic resin in an integral form.

3,605,323
ASSEMBLY KIT

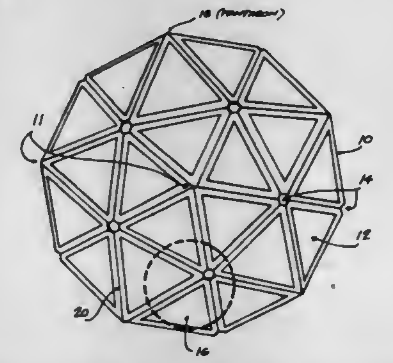
Artur Fischer, 219 Altheimer Str.,
D–7241 Tumlingen, Germany
Filed Aug. 19, 1969, Ser. No. 851,233
Claims priority, application Germany, Aug. 20, 1968,
P 17 28 064.7
Int. Cl. A63h *33/10*
U.S. Cl. 46—26 **9 Claims**



In an assembly kit are provided a plurality of structural components, and a coupling element for coupling respective ones of the structural components to one another. The coupling element comprises a helically convoluted spring member having opposite ends. Mating connecting portions are provided on the structural components and on opposite ends of the spring member.

3,605,324
POLYHEDRONS HAVING DEPRESSIBLE VERTICES AND INTERNAL MEANS FOR RESTORING SHAPE

Wilbur Henry Adams, 66 E. 83rd St.,
New York, N.Y. 10024
Filed Mar. 7, 1968, Ser. No. 711,263
Int. Cl. A63h *5/00, 29/08*
U.S. Cl. 46—42 **4 Claims**

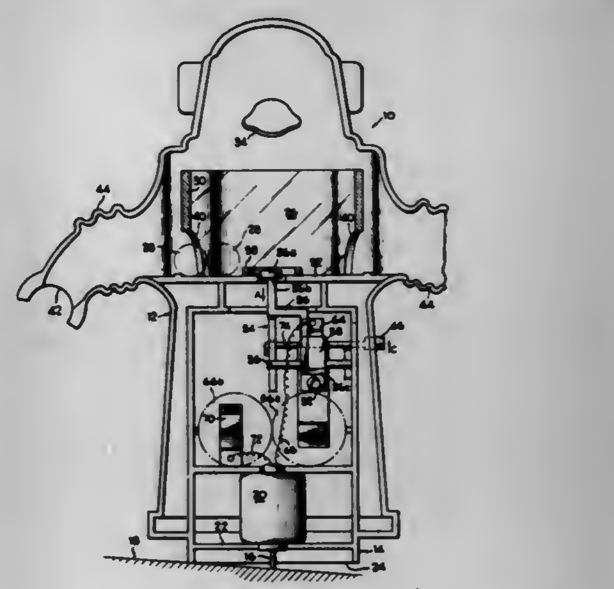


A sixty-sided hollow polyhedron structure is described for use as a toy. The polyhedron is provided with substantially stationary vertexes and radially movable vertexes. Inwardly-depressed vertexes may be popped outwardly with the use of a ball retained within the structure. The outward movement may be accompanied by a popping sound.

3,605,325
ANIMATED TOY

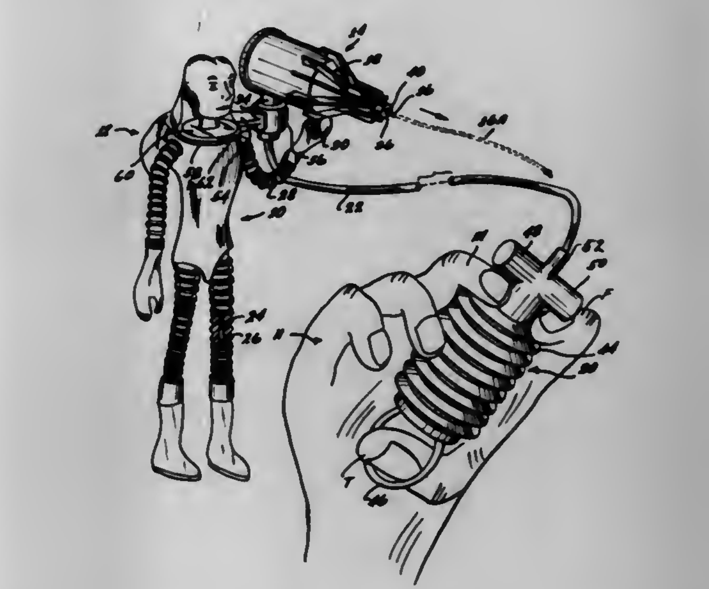
Jeffrey D. Breslow, Chicago, Ill., assignor to
Marvin Glass & Associates
Filed June 20, 1969, Ser. No. 835,154
Int. Cl. A63h *29/08*
U.S. Cl. 46—42 **9 Claims**

An animated toy which includes a hollow upper body portion, a lower base portion and a drive means for rotating the toy about a pin means which extends downwardly beyond the lower extremities of the base portion. The body portion has an interior receiving area with an access opening through the body portion, and an actuator is position in the receiving area to actuate the drive means to move the toy when an object is deposited in the receiving area through the access opening and the object comes in contact with the actuator. A discharge opening remote from the access opening extends through the body portion so that rotation of the toy has a tendency to discharge objects from the receiving area through the discharge opening. the actuator is of a relatively small size so that only those objects which are deposited in the area in such a manner as to contact the actuator will cause the toy to rotate. The toy will continue to rotate until a manual shut-off means on the exterior of the toy is engaged to stop the drive means. The lower marginal periphery of the base portion has an irregular shape to effect uneven movement of the toy as it rotates about the downwardly extending pin means.



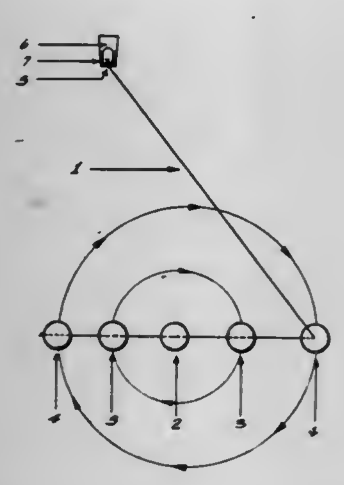
3,605,326
STRING PROJECTING TOY

Albert R. Baginski, Torrance, David T. Okada, Hermosa Beach, Floyd E. Schlau, Palos Verdes Peninsula, and Edwin O. Stastny, Santa Ana, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 30, 1969, Ser. No. 795,224
Int. Cl. A63h *29/16*
U.S. Cl. 46—44 **8 Claims**



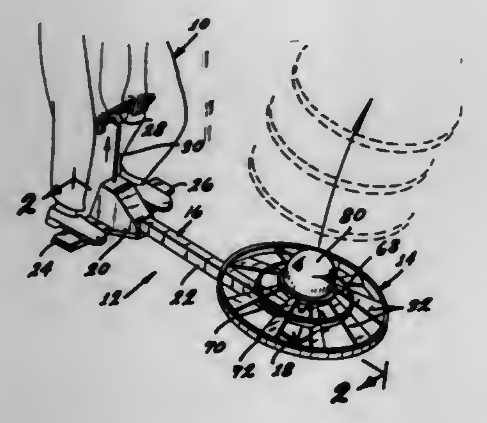
A spaceman toy comprising a spaceman figure and a pneumatically powered space probe or gun mounted on him, which projects and retracts a string. The gun includes a chamber with a long narrow passageway through which the string extends, and a hand pump is coupled by a tube to the chamber to apply compressed air or a vacuum to the chamber to project or retract the string.

3,605,327
WHIRLING BALLS TOY
Ronald A. Jones, Laval, Quebec, Canada (470 Cambridge St. 401 Ottawa, K1S4H8, Ontario, Canada)
Filed Mar. 3, 1969, Ser. No. 803,645
Claims priority, application Canada, Dec. 23, 1968, 38,608
Int. Cl. A63h *1/32*
U.S. Cl. 46—51 **8 Claims**



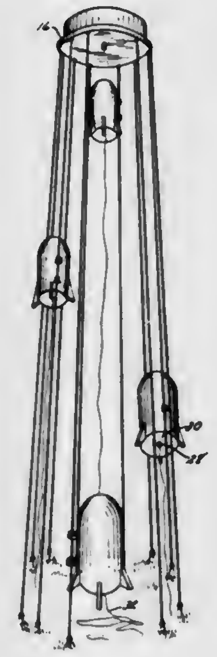
A toy for manual operation comprising a handle, a string to be supported at one end by the handle and a number of balls fixed to said string near the other end thereof such that a rotating wrist action imparted to the handle will cause the depending balls to whirl in a plane passing through the ball fixed closest to the handle lengthwise of the string.

3,605,328
ROTOR LAUNCHING TOY
Eugene J. Kilroy, Jr., Inglewood, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 10, 1969, Ser. No. 883,862
Int. Cl. A63b *27/00*
U.S. Cl. 46—83 **4 Claims**



A toy which facilitates the launching of a large rotor, comprising an elongated frame with a launching end having a drive dog for receiving the rotor and an operating end where a handle is located that can be pulled by a child to rotate the drive dog and launch the rotor. The axis of the drive dog is angled away from the vertical so that the rotor will not hit a child at the operating end. The launching mechanism includes a cable having one end normally wound around a spool fixed to the drive dog, and an opposite end extending through the frame to the operating end, where it is attached to a handle. A child launches a rotor by placing his feet on a pair of foot rests at the operating end of the frame, and pulling up on the handle which is attached to the cable.

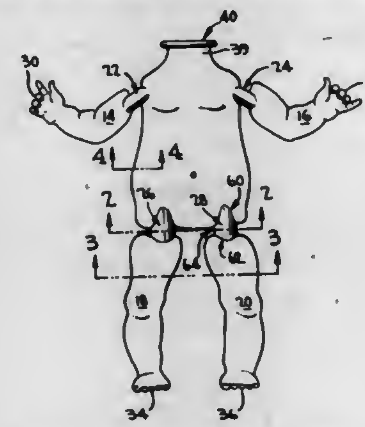
3,605,329
INFLATABLE TOY SIMULATING SPACE STATION AND SHIP
Aloysius Dalli, 37 Crescent St., Long Island City, N.Y. 11101
Filed Aug. 5, 1970, Ser. No. 61,146
Int. Cl. A63h *27/00, 3/06*
U.S. Cl. 46—87 **6 Claims**



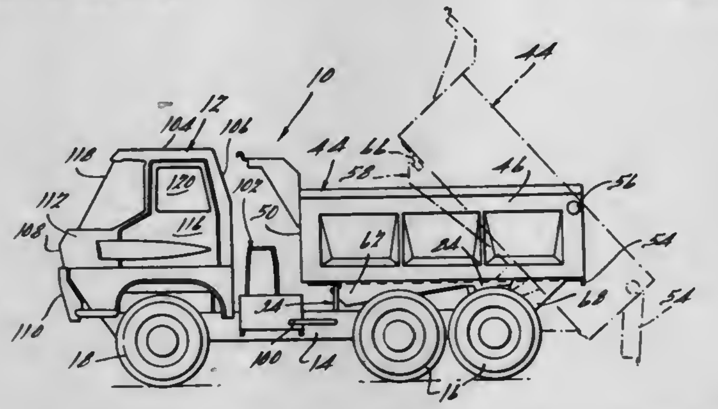
An aerial toy simulating a space station in a space ship. The space station element is inflated with a lighter than air gas and secured to the ground by means of guide strings. A ship element has two rings situated thereon, one near the nose and one near the base of the unit, one of the tie-lines passing through the rings, and a control string being attached to the base of the ship. Upon releasing the guide string, the lighter than air space ship will rise upwardly, being directed along the tie-line by the rings to the space ship; pulling on the control string will reverse the ascent of the ship.

3,605,330
FOAMED DOLL WITH APPENDAGES SECURED BY COLUMNAR, CELLULAR PORTIONS PROVIDING TORSIONAL AND UNIVERSAL ANGULAR MOVEMENT THERETO
Charles Sivelle, Huntington Station, and Mark M. Schaffer, Roslyn Heights, N.Y., assignors to Dublon, Incorporated, Newark, N.J.
Continuation of application Ser. No. 620,474, Mar. 3, 1967. This application Jan. 15, 1968, Ser. No. 698,049
Int. Cl. A63h *3/26*
U.S. Cl. 46—159 **3 Claims**

A shaped foamed article including a body and at least one appendage secured to the body by a connecting portion of columnar nature, in which the body, appendage and connecting portion are integrally formed with a smooth outer skin and a cellular interior in such manner that the connecting portion has the cellular nature of its interior maintained, and in which the connecting portion, by virtue of its columnar nature and structure permits movement of the appendage attached to the body thereby in a plurality of different directions about a plurality of different axes with substantially equal ease.



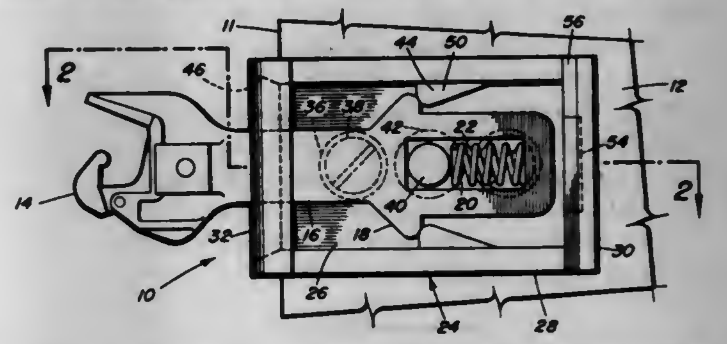
3,605,331
TOY VEHICLE
Robert S. Linstead, Rockford, Ill., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.
Filed Dec. 9, 1968, Ser. No. 782,113
Int. Cl. A63h *17/05*
U.S. Cl. 46—201 **13 Claims**



A toy vehicle comprising a chassis portion, a body portion and at least two steerable wheels; the chassis portion being provided with a steering mechanism including a tie rod extending generally laterally thereof, means supporting the tie rod for lateral sliding movement, a pair of kingpins disposed adjacent the opposite ends of the tie rod, means supporting the kingpins for pivotal movements about generally vertical axes, means rotatably supporting the steerable wheels on the kingpins, and pivot arm means pivotably connecting the laterally outer ends of the tie rod with the kingpins; the body portion being supported on the chassis portion for relative tilting movement about an axis extending generally longitudinally of the chassis portion, whereupon tilting of the body portion relative to the chassis portion effects lateral sliding movement of the tie rod, with the further result that the kingpins will be pivoted in a manner so as to effect steering movement of the vehicle wheels; the vehicle having the chassis and body portions initially, substantially preassembled and adapted to be operatively connected by merely snappingly engaging a pair of resilient bearing members provided on the body portion into engagement with a longitudinally extending pivot member or shaft provided on the chassis portion.

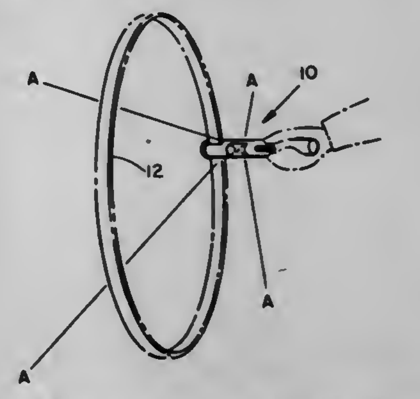
3,605,332
DRAFT GEAR ARRANGEMENT FOR MINIATURE RAILWAY ROLLING STOCK
Thaddeus Stepek, Rockville, Md., assignor to Atlas Tool Co., Inc., Hillside, N.J.
Filed Jan. 16, 1970, Ser. No. 3,337
Int. Cl. A63h *19/00*
U.S. Cl. 46—216 **3 Claims**

A draft gear box or coupler pocket arrangement is provided for permanent attachment at the lower ends of miniature railway rolling stock, such as boxcars, to receive couplers whose well known purpose it is to enable the coupling of cars into trains. A spring is provided to maintain the coupler in a centered position. This is a requisite when automatic coupling devices are employed.



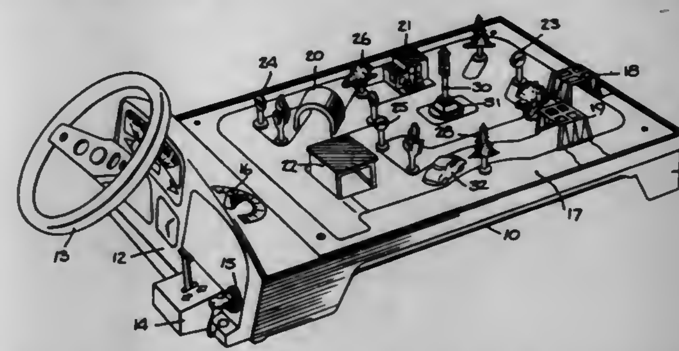
The coupler pocket or draft gear box arrangement is so arranged as to allow the rapid removal of its coverplate, for purposes of replacing broken couplers, without need for the removal of the entire draft gear system or any screws or other fastening devices.

3,605,333
HOOP TRUNDLERS WITH BUILT-IN ILLUMINATING MEANS
James D. Copeland, 148 Degrassi St., Toronto 8, Ontario, Canada
Filed Oct. 30, 1968, Ser. No. 771,833
Int. Cl. A63h *33/02*
U.S. Cl. 46—220 **1 Claim**



A trundler or propelling device for propelling a child's hoop is provided with a passage through which the hoop is slidingly received and with a built-in illuminating means, such as a battery-powered lamp, to provide an additional feature for diverting and amusing the child user, and also acting as a warning to the drivers of any motor vehicles approaching a child playing with the hoop on a roadway.

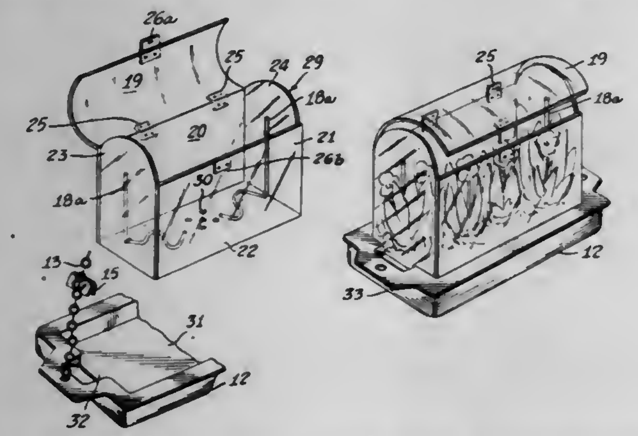
3,605,334
TOY AUTO DRIVE SIMULATOR
Robert Genin, Scarsdale, N.Y., assignor to Child Guidance Toys Inc., Bronx, N.Y.
Filed May 26, 1969, Ser. No. 827,545
Int. Cl. A63h *29/22*
U.S. Cl. 46—240 **5 Claims**



A toy auto drive simulator in which the movement of a miniature auto on a scenic board having various routes thereon is controlled by a hidden carriage underlying the board. The carriage is movable under the control of a driver in the X and Y coordinates, and carries a permanent magnet. The magnet is positioned adjacent the underside of the board and acts to attract a ball bearing held captive in a socket under the front end of the auto, whereby as the carriage moves in any direction, the auto is caused to follow suit. Inasmuch as the auto is magnetically coupled to the carriage, the linkage is invisible. In order, therefore, to make it possible to place an auto on the board so as to couple it to the magnet, regardless of carriage position, the carriage is provided with an illuminated arrow which points to the magnet. The arrow is visible through the board, which is made of semitranslucent material.

3,605,335
PLANTER KIT

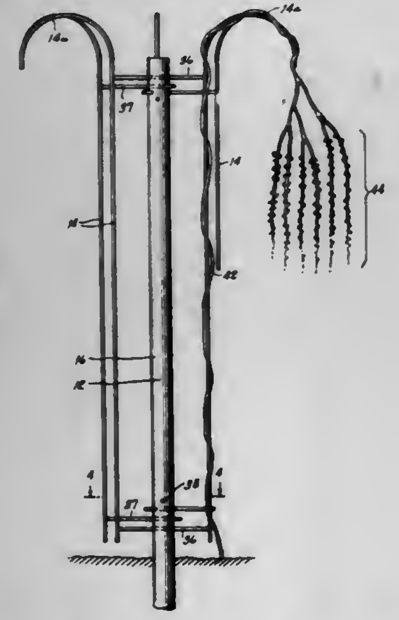
Elizabeth Anne Ulvang Maitland, 15709 Chatham, Detroit, Mich. 48223
Filed Dec. 2, 1968, Ser. No. 780,376
Int. Cl. A01g *9/22*
U.S. Cl. 47—17 1 Claim



A kit including parts for constructing a transparent pet plantation in which plants can be placed for growth in sunlight, the kit including several panels of clear Plexiglas which is assembled into a container, a plurality of hinges, a roll of tape, glue, two plastic tubings, a tray, metal rings, clips, a latch assembly, chain and a carton of cardboard within which the kit is contained.

3,605,336
FRAME FOR GROWING HOPS OR THE LIKE

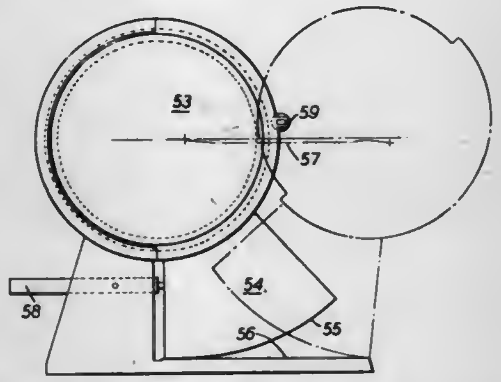
Sidney S. Meisler, 3702 Richey Road, Yakima, Wash. 98902
Filed Mar. 24, 1969, Ser. No. 809,532
Int. Cl. A01g *17/06*
U.S. Cl. 47—45 2 Claims



A frame for growing hops or the like comprises a number of standards disposed substantially perpendicular to the ground, the standards at their upper ends extending outwardly and preferably downwardly. As the vines grow upwardly on the standards, the vines reach the upper portion of the standards and continue their growth outwardly and downwardly, thus making the hops more readily harvestable. The frames may be arranged in a pattern conducive to mechanical treating and harvesting of the hops.

3,605,337
CLOSURE MEMBER ARRANGEMENTS

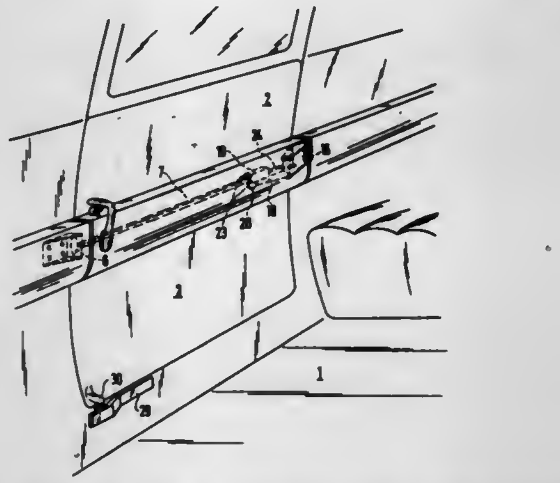
Wilfred Newrick Rodgers, Mickleover, England, assignor to International Combustion (Holdings) Limited, London, England
Filed May 15, 1969, Ser. No. 825,003
Int. Cl. E06b *3/34*
U.S. Cl. 49—41 11 Claims



This invention relates to coupling devices for forming a fluid tight seal between two parts, and has particular reference to quick release couplings for use in pipelines or for closure members.

3,605,338
SLIDING DOOR, PARTICULARLY FOR MOTOR VEHICLES

Alfred Grossbach, Tamm, Wurttemberg, Germany, assignor to Firma Lunke & Sohn, Witten (Ruhr), Germany
Filed Sept. 29, 1969, Ser. No. 861,770
Claims priority, application Germany, Sept. 30, 1968, P 17 80 577.5
Int. Cl. E05d *15/10*
U.S. Cl. 49—212 14 Claims

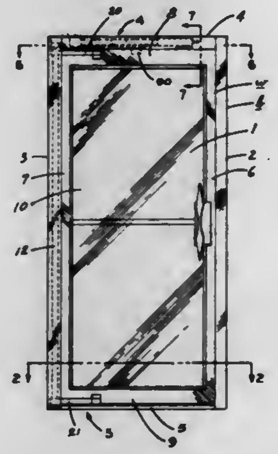


A sliding door for motor vehicles has a body comprising an outer skin and an inner lining. When opened, the door is first swingable into an intermediate position, by a carrier device including a carrier arm articulated on the vehicle body, for pivoting about a vertical axis, and the door is then slidable longitudinally of the vehicle body through the medium of a slide guide means. A single horizontally oriented slide guide extends the full length of the door on the inner lining and externally of the door body. The single slide guide is mounted on the door body by carrier parts. The slide guide has at least its upper and inner surfaces enclosed in a longitudinal cover which may

be upholstered to serve as an arm rest, forming a continuation of an arm rest adjacent a vehicle seat. The slide guide encloses door lock operating means effective at both the front and rear edges of the door. A slide is movable along the slide guide on suitable rollers and is connected to a carrier arm forming part of the carrier device.

3,605,339
MANUAL BALANCED DOOR

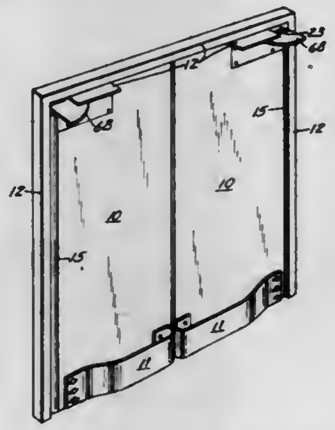
John C. Catlett and James R. Gilson, Memphis, Tenn., assignors to Gyro Tech, Incorporated, Memphis, Tenn.
Continuation-in-part of application Ser. No. 625,246, Mar. 22, 1967. This application May 6, 1969, Ser. No. 822,254
Int. Cl. E05l *11/24, 15/02, 15/10*
U.S. Cl. 49—340 13 Claims



A manually balanced door comprising a door having a balanced hinge arrangement wherein each hinge point is provided with a unique bearing assembly comprising, in combination, thrust bearings, needle bearings and self-aligning bearings; there being a door operator adapted for actuation pursuant to manually initiated swinging of the door which operator incorporates means for controlling the speed of swing through the opening and closing arcs of movement and further embodies a resilient member for storing of energy during opening movement to effectuate closing upon release thereof.

3,605,340
DOOR CHECKING AND CONTROLLING DEVICE

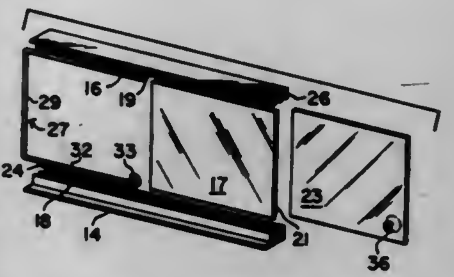
John E. Nolan and Rudolph J. Wiplinger, St. Paul, Minn., assignors to Minnnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 2, 1970, Ser. No. 7,802
Int. Cl. E05f *1/00*
U.S. Cl. 49—387 18 Claims



A door controlling apparatus incorporated in and designed to control the opening and closing of doors, particularly heavy doors of the types commonly used in factories. The apparatus performs several controlling functions, including holding the door in a closed position until a predetermined opening torque is applied to the door, allowing relative ease of continued opening of the door compared to the torque required to initiate opening, braking the opening swing of the door at a predetermined point, and maintaining the door in an open position for a predetermined period of time prior to closing the door in a controlled manner. All of these functions are performed utilizing the energy applied to open the door.

3,605,341
PORTABLE SLIDING WINDOWS FOR AUTOMOBILES

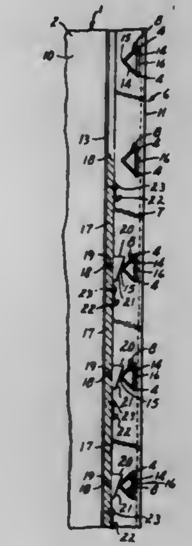
Glennis R. Puckett, Rte. 2, Box 850, Somerville, Ala. 35670
Filed July 24, 1969, Ser. No. 844,547
Int. Cl. E05b *13/00;* **E06b** *3/46*
U.S. Cl. 49—413 4 Claims



A portable sliding window device for automobiles formed of sliding window parts and top and bottom channel groove pieces serving to lock the device into the automobile door window opening and wherein the locking is effected by a simple U-shaped locking member adapted to be snapped into the channel grooves and its bight portions being locked into the groove of the window opening support at the rear edge of the door opening. The inner sliding door is slidable in the channel grooves and can be slid by the use of a knob on one of the wiindow pieces between open and closed positions.

3,605,342
CONTINUOUS DOOR COLUMN AND DOOR SYSTEM FOR SILOS

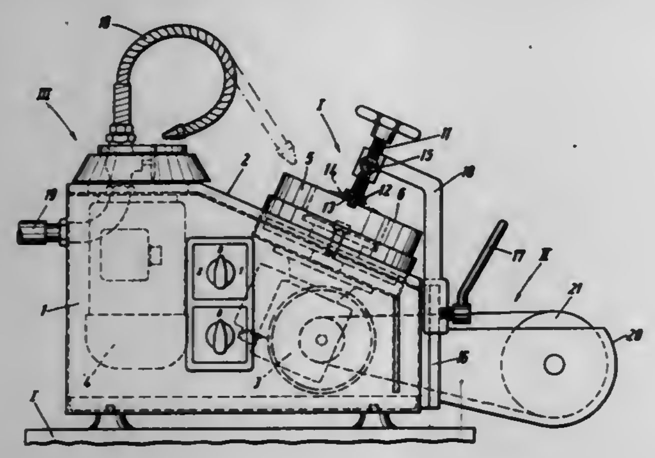
Robert F. Koser, Almena, Wis., assignor of fractional part interest to Ralph H. Koser, Almena, Wis.
Continuation of application Ser. No. 847,079, Aug. 4, 1969. This application July 27, 1970, Ser. No. 58,306
Int. Cl. E05c *21/02;* **E06b** *3/22*
U.S. Cl. 49—464 14 Claims



Frame structure for mounting in a door opening through a silo wall extending vertically for the greater portion of the height of the silo comprising vertically extending laterally spaced longitudinal frame members connected by vertically spaced horizontal cross frame members and opposed longitudinal stop flanges on the longitudinal frame members. A plurality of removable door sections are disposed in end-to-end abutting engagement and held against the stop flanges by wedge elements engaging the cross frame members.

3,605,343
MACHINE FOR PROCESSING OF KNIVES, IN PARTICULAR OF CUTTER KNIVES AND CARVING KNIVES

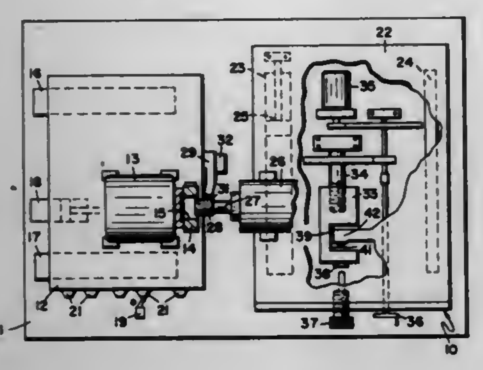
Fritz Knecht, Mottelinstrasse,
D–798 Ravensburg, Germany
Filed Dec. 11, 1969, Ser. No. 884,198
Claims priority, application Germany, Dec. 14, 1968, P 18 14 799.4
Int. Cl. B24b *7/00*
U.S. Cl. 51—3 **12 Claims**



A machine for processing of knives particularly of cutter knives and knife-blades having a handle, which comprises a housing including an inclined face and an upper horizontal face, as well as a vertical part. A grinding device, a band grinding device including a grinding band and a lap device are provided. The housing receives the devices and the grinding device is rotatably mounted on the inclined face of the housing. The lap device includes a lap disk and is disposed on the upper horizontal face of the housing. A drive shaft is mounted in the housing and the grinding band is disposed on the vertical housing part, and swingably mounted parallel to the wall of the housing about the axis of the drive shaft.

3,605,344
GRINDING MACHINE

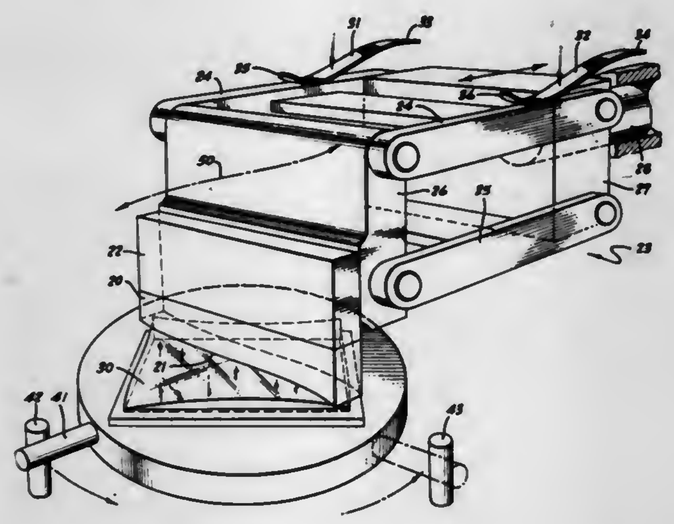
Robert S. Hahn, Northboro, Edward G. Robillard, Cherry Valley, and Richard P. Lindsay, Marlboro, Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed Nov. 24, 1969, Ser. No. 879,452
Int. Cl. B24b *53/04*
U.S. Cl. 51—5 **6 Claims**



This invention relates to a grinding machine and, more particularly, to apparatus for generating a surface of revolution by the abrasive process, wherein means is provided for assuring that the amount of material removed from an abrasive wheel during a dressing operation is the same, irrespective of variations in the amount of wear on the wheel.

3,605,345
LENS SURFACE GRINDING METHOD AND APPARATUS

William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.
Filed June 9, 1969, Ser. No. 831,437
Int. Cl. B24b *5/00*
U.S. Cl. 51—67 **18 Claims**



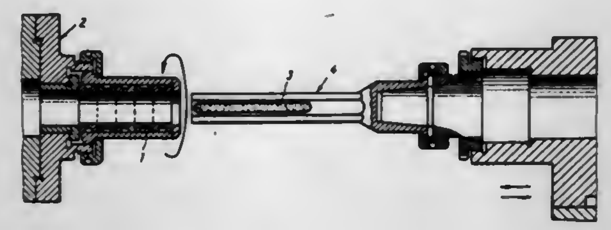
A method and apparatus for grinding a complex optical surface on a lens element to provide between the lens element surface and a reference surface, a lens thickness variation defined by the function Z (x, y) where x and y form a coordinate system in which the function Z (x, y) defines the lens element thickness at any point (x_n, y_m), the function Z (x, y) rotatable to a coordinate system of coodinates x' and y' in which the function

$$Z(x', y')=f(x')+f(y')$$

A grinding tool having a bearing surface defined by the function f is scraped across the lens element surface in the presence of an abrasive, in the direction of the coordinates of the $x'-y'$ coordinate system successively, with resilient pressure applied to the tool in the direction of the lens element surface.

3,605,346
METHOD OF ABRASIVE TREATMENT OF SURFACES OF BEARING RACES MADE OF HARDENED STEEL

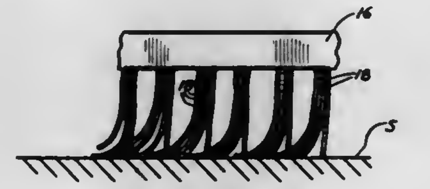
Alexandr Ivanovich Sprishevsky, Sharikopodshipnikovskaya ul. 32, kv. 30, Moscow, U.S.S.R; and Sergei Georgievich Redko, Naberezhnaya kosmonavtov 2, kv. 19; Venlamin Dmitrievich Gundorin, Nagorny proezd 2/1, kv. 20; and Jury Vladimirovich Dubrovsky, Ulitsa Sovetskaya 23, kv. 11, all of Saratov, U.S.S.R.
Filed Aug. 28, 1968, Ser. No. 756,049
Int. Cl. B24b *1/00*
U.S. Cl. 51—290 **1 Claim**



An abrasive tool in the form of radially adjustable bars is advanced in a longitudinal direction, at a speed of between 1 and 10 m./min., in advance and withdrawal strokes to machine a bearing race which is rotated at a peripheral speed of 180–200 m./min. The tool undergoes transverse movement, after each double stroke, in an amount of 5–10 μm. per longitudinal stroke of the tool.

3,605,347
FLOOR SCRUBBING BRUSH

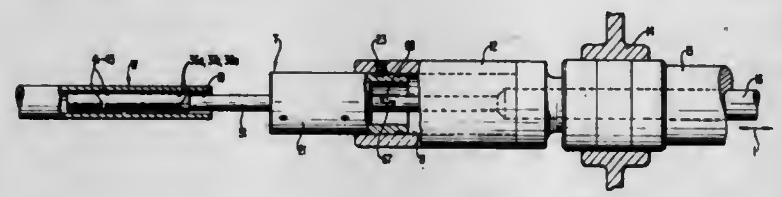
Robert M. Barry, St. Paul, Minn., assignor to Multi-Clean Products Incorporated, St. Paul, Minn.
Filed Mar. 27, 1970, Ser. No. 23,318
Int. Cl. B24b *23/02*
U.S. Cl. 51—330 **4 Claims**



A brush for use in a rotary type floor scrubbing machine comprising a flat backboard having bristles impregnated with an abrasive material attached to the backboard and extending therefrom at random lengths with the majority varying in the range of 10 percent to 25 percent from the median length.

3,605,348
HONING TOOL

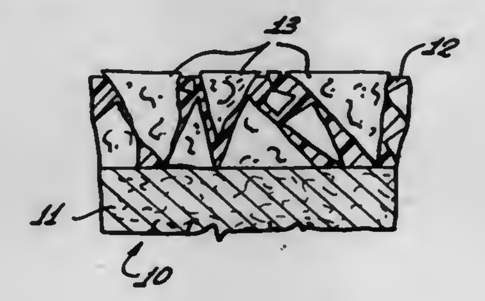
Charles W. McClure, 5992 Gardendale Ave., South Gate, Calif. 90280
Filed Sept. 17, 1969, Ser. No. 858,815
Int. Cl. B24b *9/02*
U.S. Cl. 51—338 **8 Claims**



A honing tool for attachment to a rotatable adapter on a honing machine which includes a slotted tubular mandrel for supporting honing stone assemblies for radial movement by the camming action of longitudinal ribs on a cam shaft rotatably disposed within the mandrel. Cam means are operatively associated with the cam shaft which are actuated by an axially reciprocating actuating element connected to the honing machine so as to rotate the cam shaft alternately in opposite directions during the stroking of the actuating element to expand and retract the honing stone assemblies as the honing tool is rotated by the honing machine adapter.

3,605,349
ABRASIVE FINISHING ARTICLE

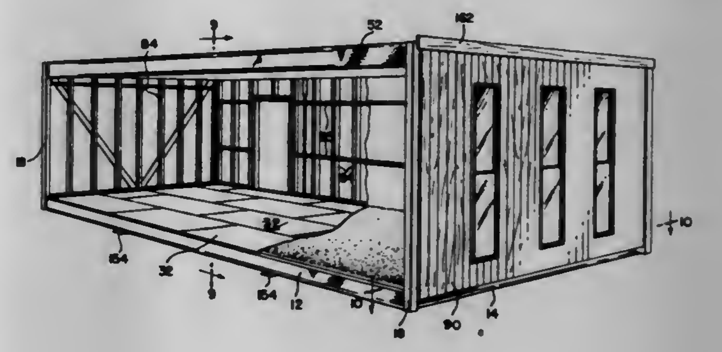
Frederick B. Anthon, Los Angeles, Calif.
(P.O. Box 1759, Beverly Hills, Calif. 90213)
Filed May 8, 1969, Ser. No. 823,084
Int. Cl. B24d *11/02*
U.S. Cl. 51—402 **9 Claims**



Discloses an abrasive polishing or finishing article consisting of a backing layer made of chamois leather, or equivalent, porous to slurries such as water or oil, and coated on the fornt surface with a matrix consisting of a thermoplastic, flexible binder, in which are embedded abrasive particles oriented in large part with plane faces thereof facing upwards to engage the surface to be polished. The abrasive incorporating thermoplastic coating is preferably disposed in a pattern of "islands," so as to leave channels therebetween for circulation of slurry.

3,605,350
MODULAR HOUSING STRUCTURE

William Stewart Bowers, 22800 76th W., Edmonds, Wash. 98020
Filed June 3, 1969, Ser. No. 829,887
Int. Cl. E04b *1/348*
U.S. Cl. 52—16 **17 Claims**

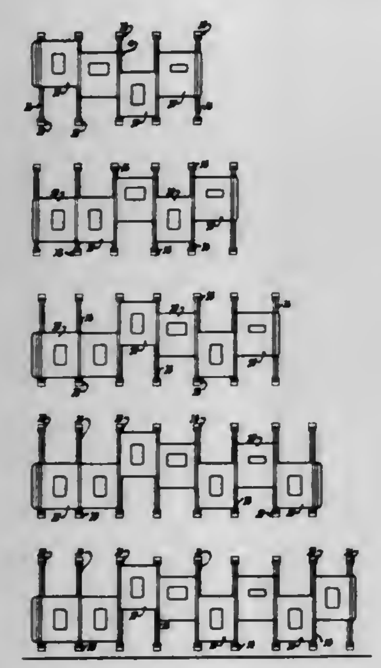


A modular structure specifically designed for use as portable school rooms comprises at least two modular end sections, each having a steel framework consisting of a base frame, corner posts secured to the base frame, a roof frame secured to the corner posts, prefabricated, non-load bearing side and end walls, and clamping means adapted to mechanically clamp the adjacent inner edges of the two modular end section roof frames, thus to butt the inner side of the adjacent base frames and the adjacent inner corner posts tightly together such that the section roofs, floors and side walls will be joined to provide an integral structure. Each modular section is specially adapted to be plant fabricated and transported to the site and there hoisted onto a peripheral foundation. The modular structures are designed such that an open-span relocatable structure is formed and construction tolerances are made not critical without sacrificing structural rigidity and weather-tightness. A diagonal framing member is provided to allow the module perimeter to overhang the foundation. Horizontal plates are welded to one module for supporting a side of the other. Other features include tubular posts concealing the downspouts, inset beams for ease of wall construction, steel pockets for receiving foundation posts, and the use of reinforcing rods welded to the steel structure at critical stress points to increase the strength and rigidity of the steel.

3,605,351
TELESCOPING AND LATERALLY-MOVABLE MOBILE HOME SYSTEM

Jon D. Vredevoogd, 314 Clinton Ave., Brooklyn, N.Y. 11205
Filed May 22, 1969, Ser. No. 826,927
Int. Cl. E04b *1/343*
U.S. Cl. 52—29 **7 Claims**

The present mobile home is transported on a standard flatbed truck and constitutes a number of segments which are adapted to be telescoping and have all components stored inside. Once the mobile home dwelling is on the selected site, the truck is pulled away and the entire mobile home is lowered to the desired level elevated from the ground by adjusting hydraulic cylinders inside vertical supports for the transverse girders. The transverse girders are provided so that the segments of the mobile house may be selectively moved laterally as well as being telescoped. This permits the staggering of the segments which opens up gaps along the exterior thereof into which window units may be inserted. Continuous tracks on the interior walls support the cabinets and other equipment in the mobile home, as well as functioning as electrical plug-in strips which serve all appliances and most lighting fixtures in the mobile home.



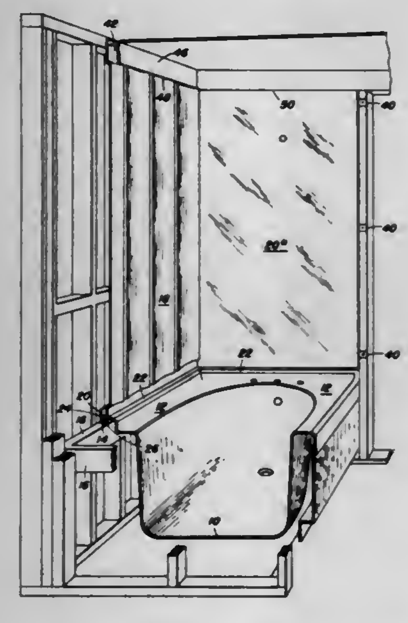
3,605,352
BATHTUB AND SHOWER SURROUND

Kay L. Ruggles and Norman van Skyhawk, Salt Lake City, Utah, assignors to American Standard Inc., New York, N.Y.

Continuation of application Ser. No. 741,679, July 1, 1968. This application Dec. 12, 1969, Ser. No. 874,663

Int. Cl. A47k *3/08, 3/23*

U.S. Cl. 52—35 **5 Claims**



This invention comprises making a tub from resin-bonded glass fibers or a resin with an inorganic filler, which is pre-dimensioned, and a shower surround adapted to be associated therewith to form a water-tight enclosure with the tub. The tub and shower surround are provided with improved joints which will be under tension when assembled as an integrated tub and shower unit to make it leak-proof and which will be free from any shearing stresses being exerted on any caulking or other adhesives used with the joints after the unit is assembled.

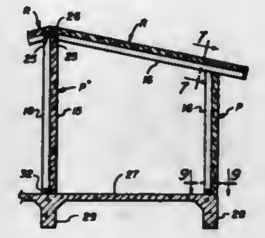
3,605,353
BUILDING PANEL AND BUILDING CONSTRUCTION

Gordon L. Marcott, 1365 Columbine St., Denver, Colo. 80206

Filed May 1, 1969, Ser. No. 828,073

Int. Cl. E04b *7/02, 5/02*

U.S. Cl. 52—91 **1 Claim**



A building construction panel is molded and formed primarily of relatively light weight material, having a planar first portion of uniform thickness and a second or beam portion along the lateral edge of the first portion, the beam being thicker than and offset at one side from the first portion and also having a notch in lateral alignment with the first portion to receive an edge of an abutting panel. The beam is provided with primary reinforcing rods extending longitudinally therewithin, while secondary reinforcing, such as wire mesh, is embedded within the first portion and extends laterally into the beam. The walls and/or roof and/or floor of a building may be constructed from such panels, with the longitudinal end or first portion of one panel being received in the notch of the beam of an adjacent panel. The wall panels may be notched at the upper ends to receive the beams of the roof panels, while narrower, rectangular panels may be utilized in walls or in the roof, with an I-channel connecting the edge of such a narrow panel with the edge of a first portion of one of the above panels. At a corner of the building wall, the first portion of one panel may fit into the notch in a beam of a panel of the adjacent wall, while special panels whose beams have a planar end surface, i.e. without the notch, may abut a first portion of an adjacent wall panel at the corner.

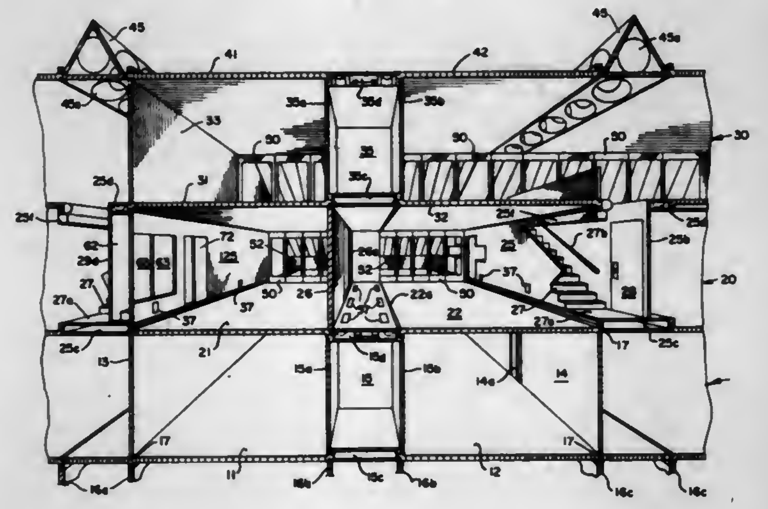
3,605,354
CONSTRUCTION UNIT

Craig Hodgetts, 201 W. 77th St., New York, N.Y. 10024

Continuation of application Ser. No. 695,990, Jan. 5, 1968. This application Oct. 24, 1969, Ser. No. 869,395

Int. Cl. E04c *1/34, 1/348;* **E04h** *1/04*

U.S. Cl. 52—73 **17 Claims**



A building construction system using a core which contains at least one passage for utility services. Floor and ceiling panels are connected to the core, which serves as one side wall of a living unit or the side walls of the two adjacent units, and a dwelling can be constructed using an offset configuration of cores on adjacent floors.

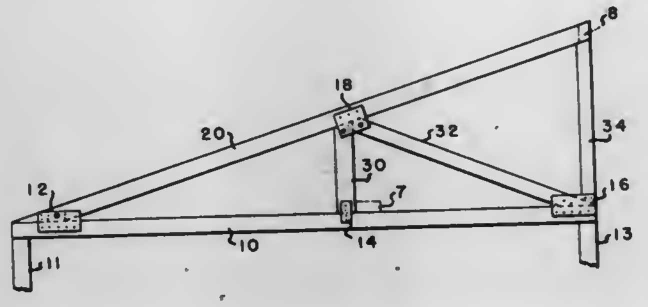
3,605,355
ROOF STRUCTURE

Bobby J. Solesbee, Spartanburg, S.C., assignor to Mobilcraft Industries, Inc., Spartanburg, S.C.

Filed Apr. 4, 1969, Ser. No. 813,471

Int. Cl. E04b *1/32, 7/16*

U.S. Cl. 52—90 **8 Claims**



A roof structure for a dwelling, building or module therefor that is at least partially fabricated and then transported to the ultimate construction site, the roof structure of which has an improved construction to permit it to be collapsed during transit and then easily erected to a predetermined pitch at the construction site.

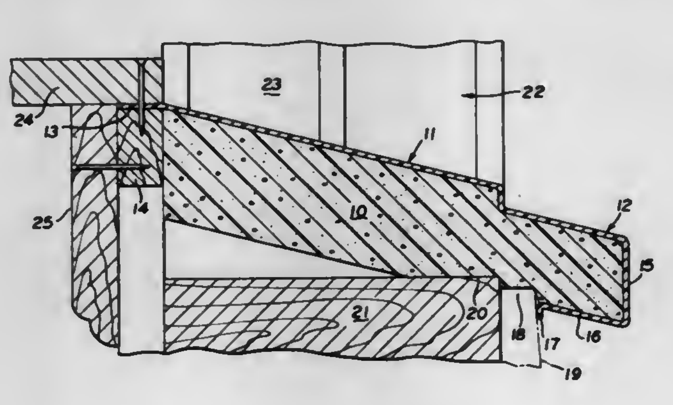
3,605,356
PREFABRICATED PLASTIC WINDOW SILL

Paul G. Bordner, Columbus, Ohio, assignor to Crane Plastics, Inc., Columbus, Ohio

Filed Apr. 6, 1970, Ser. No. 25,900

Int. Cl. E04d *13/00, 15/08*

U.S. Cl. 52—97 **4 Claims**



A prefabricated window sill of plural density, synthetic resin composition having a main body portion or core formed from a lightweight, expanded, cellular plastic material and a relatively thin, exterior skin or clad composed of a denser, rigid, weather-resistant plastic material. The window sill is sized and finished for installation in standard sizes of window openings without requiring cutting or other shaping thereof.

3,605,357
SEAL STRUCTURE WITH TEAR STRIP

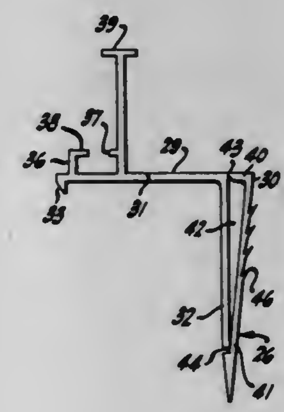
William J. Stegmeier, Walnut Creek, Calif. (1021 C Shary Circle, Concord, Calif. 94520)

Continuation-in-part of application Ser. No. 761,726, Sept. 23, 1968. This application Apr. 25, 1969, Ser. No. 819,173

Int. Cl. E04b *1/41;* **E04f** *15/14*

U.S. Cl. 52—98 **5 Claims**

A seal or water stop structure for use along a concrete coping at the upper edge of a swimming pool and a method of molding such coping utilizing the seal structure. The seal structure includes an elongated seal component forming a permanent part of such swimming pool, and which component has a barrier element interposed between the upper edges of the pool and concrete coping overlying the same. The seal structure further includes a tear strip component frangibly attached to the seal component along a line of weakness for separation therefrom with a mold form after the concrete coping has been constructed. In the method of molding concrete coping, the side walls of the pool are first covered with tile or other water-impervious finish, and a disposable mold form having a surface portion thereof configurated in the finished shape to be imposed thereby upon the coping and having also an attachment portion equipped with a double-faced pressure-sensitive tape is secured by means of such tape to the finished surface of the pool walls with the configurated surface portions of the mold form projecting thereabove. The seal structure is inserted between a part of the attachment portion of the mold form and pool wall, and is secured to each prior to a moldable mass of concrete being spread against the mold form. Upon curing of the concrete mass, the tear strip component of the seal structure is separated from the seal component thereof along such line of weakness, and such separation of the tear strip component is effective to strip the mold form from the pool walls and coping.



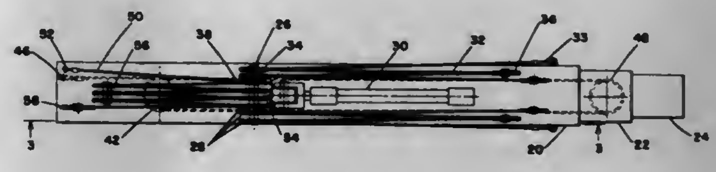
3,605,358
TELESCOPIC CRANE BOOM

Joseph T. Bentey, 5 Cliff St., West Orange, N.J. 07052

Filed Mar. 28, 1969, Ser. No. 811,564

Int. Cl. E04h *12/34*

U.S. Cl. 52—121 **3 Claims**



Outer tube having a cylinder thereon moving a carriage therealong, a multiple pulley system actuated by the carriage for propelling a middle tube out of the outer tube, and a pulley system on the middle tube actuated by propulsion thereof for propelling an inner tube out of the middle tube.

3,605,359
ANTENNA MAST CONSTRUCTION

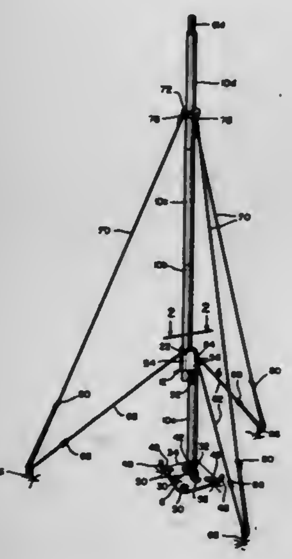
Frank Bader, Stony Brook, and Martin J. Berger, Lake Ronkonkoma, N.Y., assignors to New England Merchants National Bank, Boston, Mass.

Filed Dec. 12, 1968, Ser. No. 783,281

Int. Cl. E04h *12/08, 12/20*

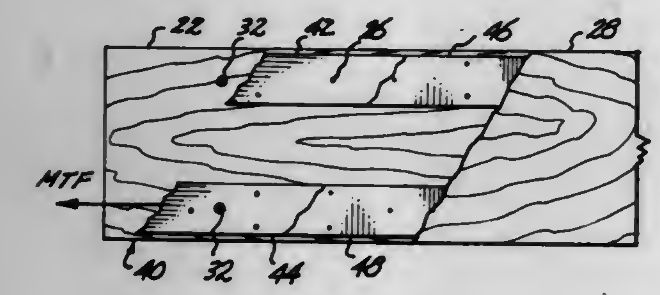
U.S. Cl. 52—146 **4 Claims**

An antenna mast including a plurality of tubular mast sections and a vertical launch attachment adapted to be installed upon the lowermost mast section. The attachment comprises a bracket through which the remaining mast sections are sequentially inserted and locked to vertically "launch" the mast to a desired height. These mast sections are held on the launch bracket.



3,605,360
PRESTRESSED VERTICALLY LAMINATED BEAM OF WOOD

Skuli Walter Lindal, 3138 Mountain View W.,
Tacoma, Wash. 98466
Filed Apr. 24, 1969, Ser. No. 818,990
Int. Cl. E04c *3/10, 3/292*
U.S. Cl. 52—223 **1 Claim**

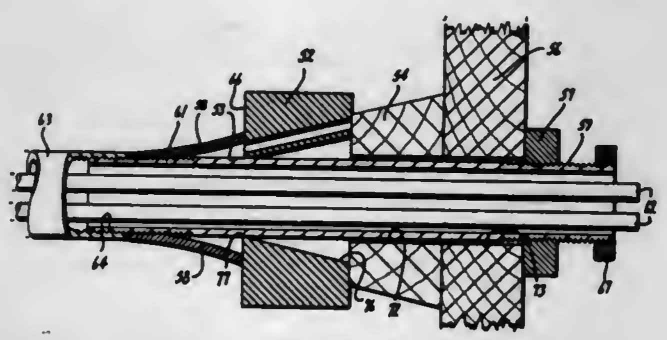


During the manufacture of beams, vertical laminations of wood are held securely in an opposite bending moment to that anticipated after their erection in a building. While so held, they are relatively moved to respective sides of a vertical metal lamination or laminations, which in turn are being optionally longitudinally pulled at the bottom of each of their respective ends. Then all vertical laminations are moved together under compressive forces and secured with fasteners. Optionally, the fasteners may be formed from and remain a part of the metal lamination or laminations. After securement by fasteners and then upon release from bending, pulling and compressive forces, the derived prestressed wood and metal beam is ready for inclusion in an overall structure.

3,605,361
TENDON ANCHORAGE

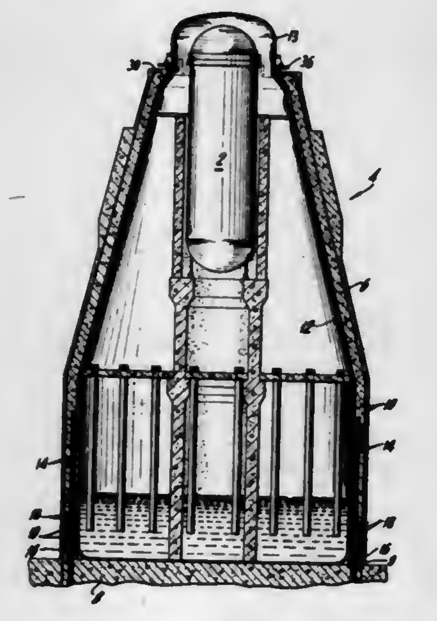
George H. Howlett, Oakland, and James W. Howlett, Richmond Annex, Calif., assignors to Howlett Machine Works
Filed Apr. 16, 1969, Ser. No. 816,583
Int. Cl. E04c *5/12;* **F16g** *11/02*
U.S. Cl. 52—223L **3 Claims**

A tendon anchorage for use in prestressing concrete members which preferably includes a tubular mounting means mounted to extend through a wedge supporting bore in the anchorage in order to secure the anchorage in fixed spaced relation to a concrete form for casting the anchorage into the concrete member is disclosed. The mounting tube is formed to secure the anchorage from the side thereof remote to the concrete form and urge the anchorage against a spacing means placed between the anchorage and the concrete form. Bearing plates may similarly be secured by the mounting means through a tendon receiving opening from the remote side thereof. Anchorage grouting apparatus and tendon containing conduits may be secured to the mounting tube. An anchorage wherein the wedges extend from the remote side of the anchorage and are unsupported and achieve gripping action through cantilever forces from the anchorage is also disclosed.



3,605,362
CONNECTION SYSTEM FOR RELIEVING STRESS IN CONCRETE STRUCTURES

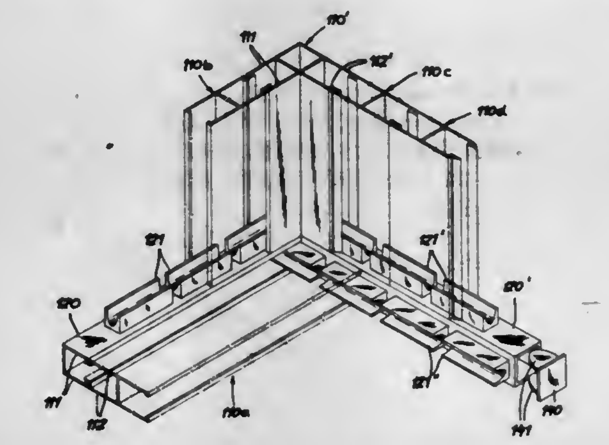
Edward A. Sweeney, Everett, Mass., assignor to Stone & Webster Engineering Corporation, Boston, Mass.
Filed June 10, 1969, Ser. No. 831,846
Int. Cl. E02d *27/38;* **F16j** *11/00;* **G21g** *13/02*
U.S. Cl. 52—224 **1 Claim**



A structural connection assembly of steel reinforcing bars and concrete adapted to relieve shear and bending stresses which are developed at geometric discontinuities in a concrete vessel structure and the method of fabricating this assembly. The wall of the vessel is comprised of a foundation section and an upper wall section with a zone of separation therebetween. The reinforcing bars extend from the foundation section to the upper wall section and transmit all loads through the zone of separation. Alternatively, the vessel dead weight load may be wholly or partly taken by a bearing. Cavities of a designed cross section and length are provided to allow for deflection of the reinforcing steel within this length.

3,605,363
ASSEMBLY OF STRUCTURE ELEMENTS

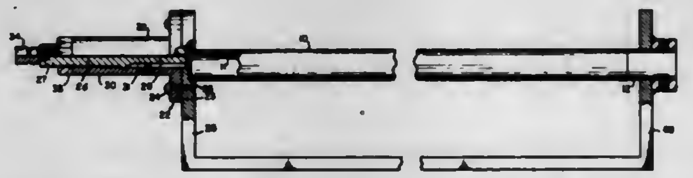
Martin Bard, 4318 8th Ave., Brooklyn, N.Y. 11232
Filed Mar. 14, 1969, Ser. No. 807,199
Int. Cl. E04b *1/348, 2/32*
U.S. Cl. 52-—241 **7 Claims**



Several profiled members of metal or other resilient material, each with one or more pairs of parallel flanges held together by a transverse web, are interconnectable by tongue-and-groove formations extending along the free edges of their flanges. The interconnected members are locked in position by a bar disposed transversely to these members and provided with tenons inserted endwise into the channel formed between the webs and flanges of adjoining members, thereby preventing their untimely disengagement while reinforcing the structure.

3,605,364
ANTI-SAG DEVICE FOR END SUPPORTED TUBULAR MEMBER

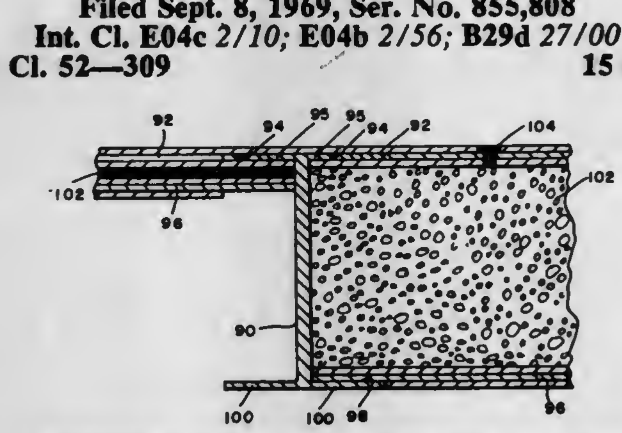
Richard D. Ford, Temple Hills, Md., assignor to the United States of America as represented by the Secretary of the Navy
Filed Apr. 4, 1969, Ser. No. 813,448
Int. Cl. E04c *3/10*
U.S. Cl. 52—291 **6 Claims**



This disclosure is directed to a means for preventing sag in an end supported elongated tube by use of spaced wire guides within the tube and a strong cable or wire which passes through the tube and is tensioned sufficiently to prevent sag.

3,605,365
PLASTIC FOAM BUILDING PANEL

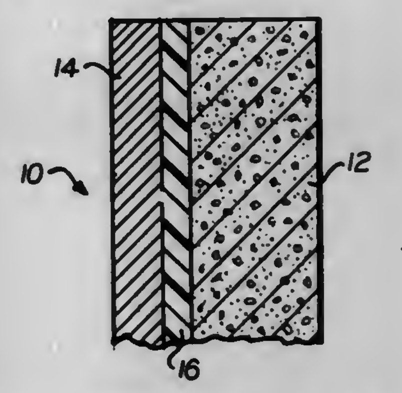
Allan J. Hastings, 2201 Dallas St.,
Royal Oaks, Mich. 48067
Filed Sept. 8, 1969, Ser. No. 855,808
Int. Cl. E04c *2/10;* **E04b** *2/56;* **B29d** *27/00*
U.S. Cl. 52—309 **15 Claims**



In a manufacturing plant a preformed or prefoamed sheet is formed of heat expandable plastic foam material with at least one face having a pattern of relatively raised and depressed portions forming steam channel and distribution means and with or without a face ply bonded to one face of the sheets; and at a building site the sheet is juxtaposed to planar building forms, or to planar face plies, depending on whether or not the wall is to be laminated, and steam is applied through the channel and distribution means to expand the plastic foam material to fabricate a building wall.

3,605,366
COMPOSITE LAMINATE PANEL CONSTRUCTION

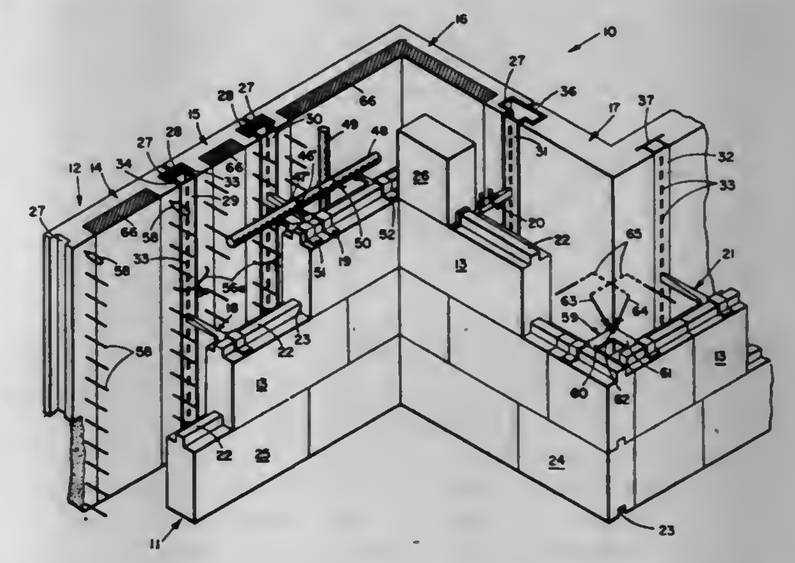
Gerald Zakim, 8 Nottingham Road, Preakness Station 824,
Wayne, N.J. 07470
Filed Nov. 28, 1969, Ser. No. 880,845
Int. Cl. E04b *1/16*
U.S. Cl. 52—378 **11 Claims**



A laminated panel construction having a supporting layer and a facing layer and a continuous quick-cure elastomer therebetween. Panels having connecting anchors secured to the supporting layer and the facing layer and having an intermediate portion in sealed relationship with the interlayer are also disclosed. A process for construction of the panels is also disclosed which includes the step of applying the elastomer in liquid form.

3,605,367
LATERALLY RELATED WALL STRUCTURES WITH TRANSVERSE TIE

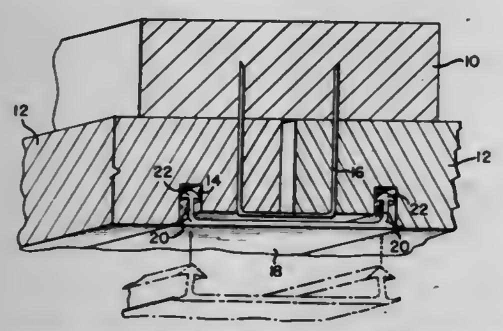
Thomas B. Crawley, 7 Deepglade Crescent,
Willowdale, Ontario, Canada
Filed May 27, 1969, Ser. No. 828,293
Int. Cl. E04b *2/40, 2/30, 2/32*
U.S. Cl. 52—426 **3 Claims**



A wall structure having a pair of spaced walls for receiving a structural material such as concrete therebetween has spacer members extending between the walls to maintain the required separation. The structure is designed so that each spacer may be secured to one wall at any of a plurality of positions along a first line and, to the second wall, at any of a plurality of positions along a second line angularly disposed to the first line. In erecting such a structure, each spacer can be disposed at the position where the first and second lines effectively intersect without requiring precise alignment of the two walls.

3,605,368
CEILING SYSTEM WITH MASKING STRIPS AT PANEL JOINTS

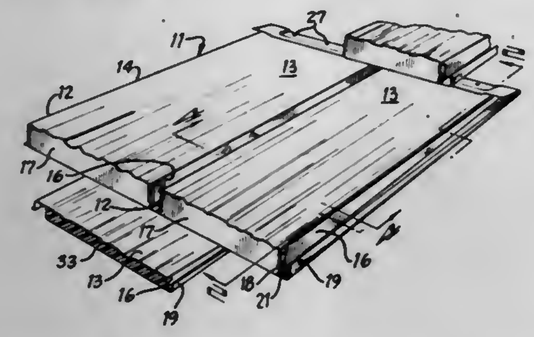
Elie G. Lalouche, Redmond, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed Sept. 22, 1969, Ser. No. 859,645
Int. Cl. E04c *1/38;* E04f *19/06*
U.S. Cl. 52—460 **2 Claims**



Ceiling panels made of wet or dry felted wood fiber with a decorative surface on the exposed surface thereof are installed by stapling the ceiling panels to ceiling support members at spaced intervals along grooves routed at intervals in the panels corresponding to the spacing of the ceiling support members, and along the lengthwise edges of the panels. To mask the staples, grooves and joints between the panels an elongated resilient plastic strip having protrusions thereon adapted to grip the sides of the grooves are inserted into the groove. The plastic strip lays flush with the exposed face of the ceiling panel giving the overall ceiling an aesthetically appealing appearance.

3,605,369
WOOD SIMULATING SHINGLE

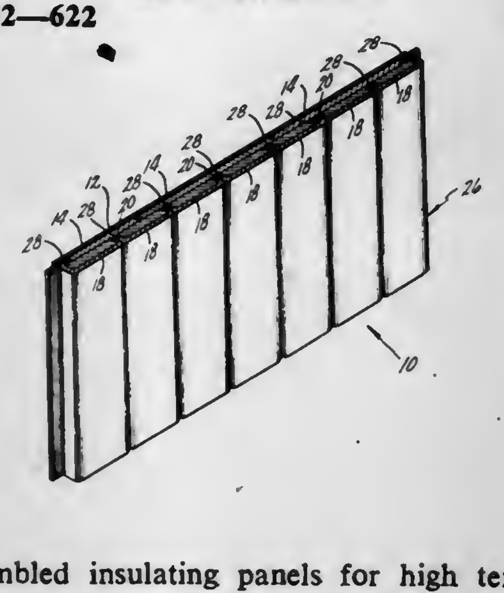
Clifford C. Merrill, Ferndale, Calif. (20541 Williams Highway, Williams, Oreg. 97544), and Carl E. Strombeck, P.O. Box 95, Loleta, Calif. 95551
Filed Mar. 5, 1969, Ser. No. 804,427
Int. Cl. E04d *1/20, 3/362*
U.S. Cl. 52—530 **5 Claims**



A shingle is described which simulates a wood shake shingle and has the incompressibility and insulation properties of conventional wood shake shingles. The shingle includes an outer metal shell defined by a rectangular body section of metal having downwardly depending wedge-shaped side walls and a rectangularly shaped end wall. A pad of a generally noncompressible material, such as a closed cell polyurethane rigid foam fills substantially the full cavity defined by the shell. The pad of material extends between the underneath surface of the body section of the shell and the roof base to which the shingle is secured so as to support the body section and prevent concentrated loads from bending the same. The shingle includes at its sides and ends structure for interlocking the same with similar shingles to provide a shingle roof arrangement. The interlocking structure at the sides of the shingles is designed to permit lateral shifting of the shingle relative to shingles laterally adjacent thereto, and the pad has a configuration permitting such adjustability.

3,605,370
PREASSEMBLED INSULATING PANELS FOR HIGH TEMPERATURE FURNACES

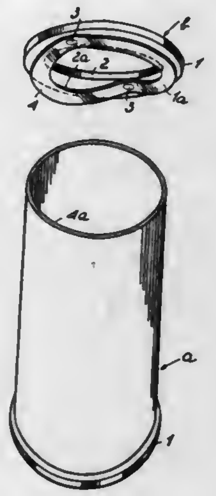
Glen V. Prible, Malvern, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Mar. 23, 1970, Ser. No. 21,703
Int. Cl. E04b *1/80*
U.S. Cl. 52—622 **5 Claims**



Preassembled insulating panels for high temperature furnaces having a nonexposed anchor for hot side refractory material. At least one layer of refractory block is fixed in rows to a metal backing so as to have transverse spaces between adjacent rows of the block. A high temperature insulating ceramic wool blanket is placed over the rows of refractory block and folded into the transverse spaces therebetween. The anchor mechanism for the ceramic blanket is placed in the folded portions of the blanket so as to be protected from direct furnace exposure.

3,605,371
STABILIZING SPACER FOR THE STEPS OF SPIRAL STAIRCASES WITH METAL NEWELS

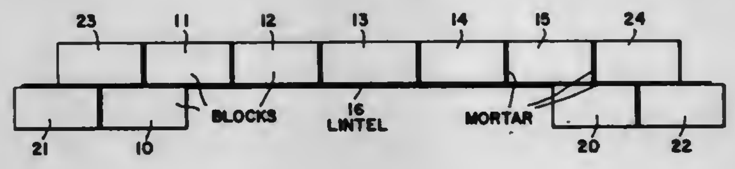
Giuseppe Verderio, Via Padana Superiore 1, Gessate, Milan, Italy
Filed Mar. 24, 1969, Ser. No. 809,756
Claims priority, application Italy, Mar. 26, 1968, 14,388/68
Int. Cl. E04f *11/00*
U.S. Cl. 52—720 **1 Claim**



An annular component securable to the end of a tubular element of a stabilizing spacer for the steps of a spiral staircase. The component has a first flat collar to which a second collar is welded at two diametrally opposite spots. The first and second collars have equal inside diameters to allow free passage of a step-supporting newel. The outside diameter of the second collar is slightly smaller than the inside diameter of the tubular element to permit engagement with the tubular element. The second collar is bent around the diameter extending through the welding spots to progressively diverge from the first collar and insertable the tubular element to center the latter.

3,605,372
METHOD OF MAKING A REINFORCED PLASTIC LINTEL

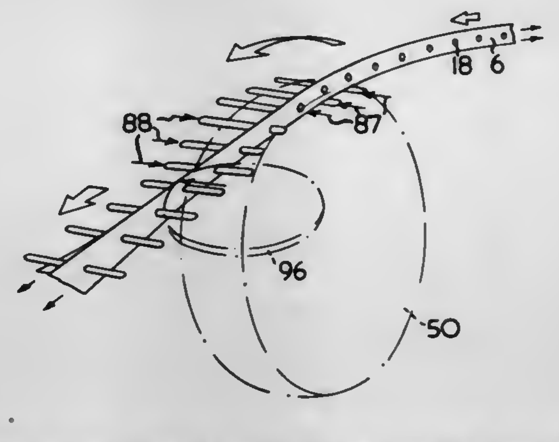
Arthur H. Wunderlich, Colonia, and Roman Slysh, Scotch Plains, N.J., assignors to Esso Research and Engineering Company
Filed Nov. 8, 1966, Ser. No. 592,861
Int. Cl. E04b *1/16;* E04c *2/10*
U.S. Cl. 52—747 **7 Claims**



An improved method of making in a masonry block wall a lintel over an opening wherein a plastic film is positioned across the lintel opening and adhering on said film a thin glue line after which the building blocks are adhered to the film thus forming the lintel.

3,605,373
STICK STRIP WINDING MACHINE

Jean Paul Beaudoin, Mount Royal, Quebec, and Hiral Hogue, Ville d'Anjou, Quebec, Canada, Jacques Larocque, deceased, late of Pierrefonds, Quebec, Canada, by Patricia Powers Larocque, executrix, Pierrefonds, Quebec, Canada; said Beaudoin and Hogue assignors to John Lewis, Inc., Montreal, Quebec, Canada
Filed Dec. 9, 1968, Ser. No. 785,854
Int. Cl. B65d *15/04*
U.S. Cl. 53—3 **4 Claims**

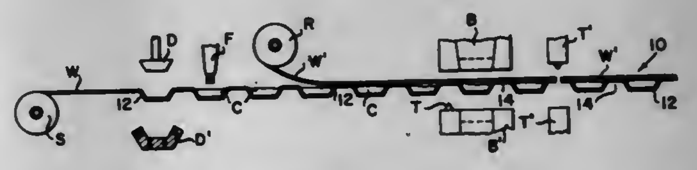


A tensioned tape having two corresponding series of circular pre-punched holes and a series of planar elongated articles each having a substantial width in relation to its thickness are provided. The plane of each elongated article is parallel to the axis of the tape so that the tape is flattened against the opposite faces of the articles.

3,605,374
METHOD OF MAKING MULTI-UNIT PACKAGES

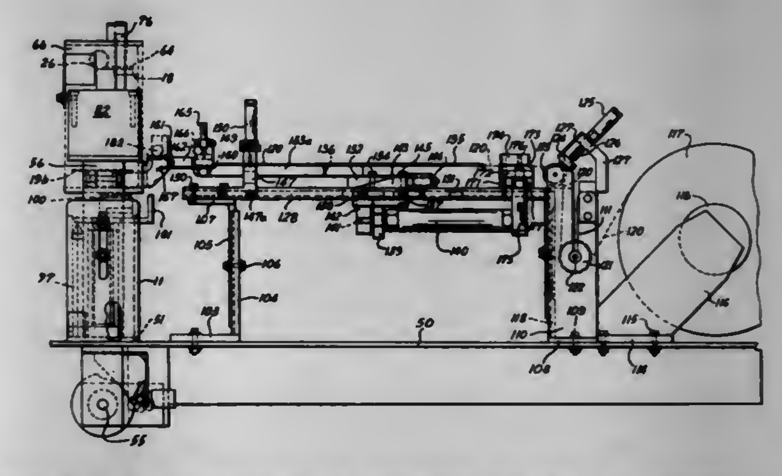
David Charles Mueller, Neenah, and Norman John Asman, Appleton, Wis., assignors to American Can Company, New York, N.Y.
Filed Apr. 2, 1969, Ser. No. 812,771
Int. Cl. B65b *43/00*
U.S. Cl. 53—3 **8 Claims**

Multi-unit packaging wherein the individual pocket portions of each package unit are separated from each other while the group of package units is maintained in contiguous relation by a thin cover web overlying and connecting all pockets, the cover web being readily torn to separate individual package units. The multi-unit package is initially formed with the pockets serially connected by weakened flanges which are fractured to separate the pocket portions after filling and closing thereof, and incident to the compact grouping for securing into a convenient merchantable package.



3,605,375
BANDING MACHINE AND METHODS

Richard C. Marshall, Kansas City, Mo., assignor to Automatic Bander Corporation, Kansas City, Mo.
Continuation-in-part of application Ser. No. 613,615, Feb. 2, 1967. This application Apr. 7, 1969, Ser. No. 813,915
Int. Cl. B65b *13/02, 13/20, 27/08*
U.S. Cl. 53—3 **7 Claims**

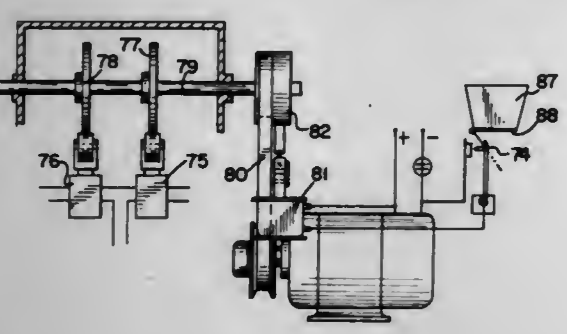


Method and apparatus for banding packets of commercial paper. A heat sealable banding strip is withdrawn from a continuous supply and positioned on a base plate. A stack of commercial paper is placed on the base plate and pressure plates then press the stack. Next, additional banding material is wrapped about the base plate, stack, and pressure plates, and heat sealed on itself to encircle the assembly. Finally, the banding strip is severed from the continuous supply and the pressure plates are released to permit removal of the banded packet.

3,605,376
PACKAGING SYSTEM EMPLOYING METAL TAB BAG OPENING, FILLING AND CLOSING APPARATUS

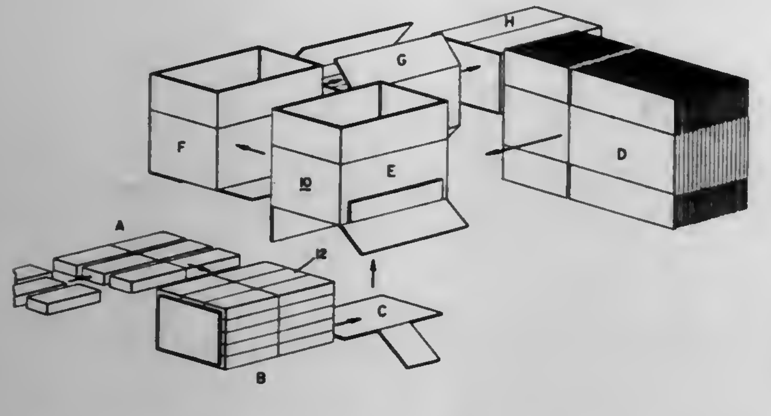
Thomas E. Piazze, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 5, 1970, Ser. No. 520
Int. Cl. B65b *43/36*
U.S. Cl. 53—29 **8 Claims**

A packaging system employing square bottom bags having tin tie closures in which the bags are stacked in a bag dispensing and opening apparatus which is in the form of a magazine accommodating a stack of the collapsed bags in generally upright position with the bottom edges resting on the top run of a conveyor in the forwardly sloping bottom of the magazine, which conveyor is operated intermittently in response to change in pressure at the front of the stack when the bottom of the foremost bag opens and moves past stop members in the bottom of a discharge opening in the upright, forwardly inclined front wall of the magazine so as to urge the bags toward the discharge opening, the foremost bag in the stack being held by stop members and co-operating releasable locking devices engaging beneath end portions of the tin tie strip while an air nozzle is actuated to direct a blast of air downwardly along a curved guide plate and into the bag mouth so as to blow open the bag which releases the bottom and permits the bag to swing forwardly to a vertical position for filling, with the tin tie



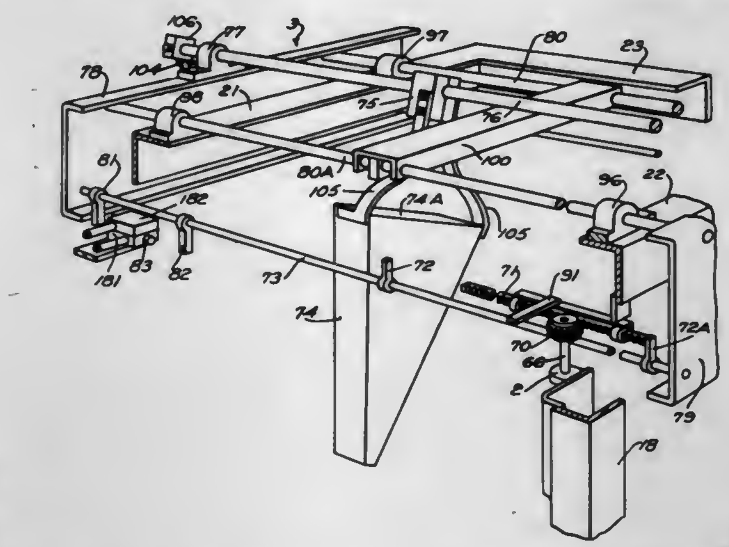
strip serving as a pivot support. A switch which may be actuated by a product feeding and counting or weighing apparatus controls the operation of the air nozzle and a means connected to the tin tie end locking devices for unlocking the same and releasing the bag, permitting it to drop free of the frame onto a conveyor which advances it to a top closing apparatus, with the next bag in the stack being opened up automatically by a succeeding blast of air and swinging to filling position.

3,605,377
CARTON LOADING MACHINE
Herbert J. Sabel, 7074 Sayre Drive,
Oakland, Calif. 94611
Filed Feb. 25, 1970, Ser. No. 13,922
Int. Cl. B65b *35/50, 43/18, 57/10*
U.S. Cl. 53—61 **14 Claims**



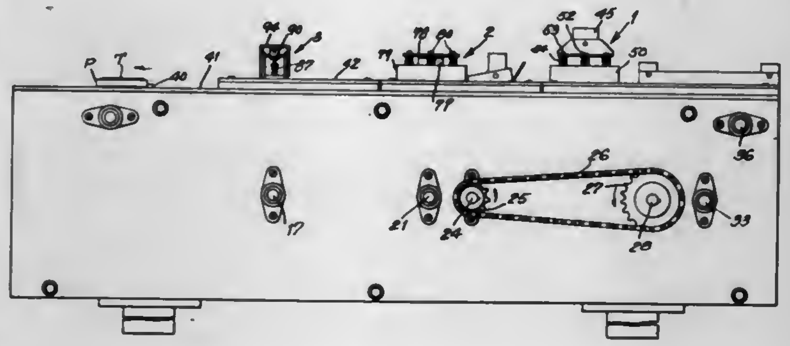
An automatic packaging machine is disclosed for continuously loading products into a shipping carton through its open bottom. In the embodiment described, products are received from a supply source and progressively guided into a single layer and arranged in a predetermined order. As completed, each layer is moved to a stacking station which loads itself to the desired number of layers or tiers. The accumulated products in the completed stack are then moved on to an elevator platform that raises the stack upwardly and into a carton which has previously been opened and positioned above the elevator. With the products held within the open carton, its bottom end flaps are closed around the ends of the elevator platform. The carton is then pushed free from the elevator platform onto an intermediate platform with its bottom end flaps still folded. Thereafter the carton is moved longitudinally to close the bottom side flaps and the top flaps while also applying closure or sealing means such as a glue.

3,605,378
TAPE LOADING APPARATUS
Owen Rodwell Read, 71 Orchard Drive,
Cumberland, R.I. 02864
Continuation-in-part of application Ser. No. 809,504, Mar. 24, 1969. This application Mar. 16, 1970, Ser. No. 19,940
Int. Cl. B65b *63/04*
U.S. Cl. 53—116 **7 Claims**



This specification discloses apparatus for loading tape into one or more boxes, simultaneously, through the open top thereof to achieve an orderly arrangement of the stored tape. The apparatus comprises a horizontal platform on which a box or boxes are received, a tape guide chute or chutes fastened to a rod, mechanism for oscillating the rod and chutes laterally above the boxes and independent mechanism for traversing the rod and chutes longitudinally of the boxes.

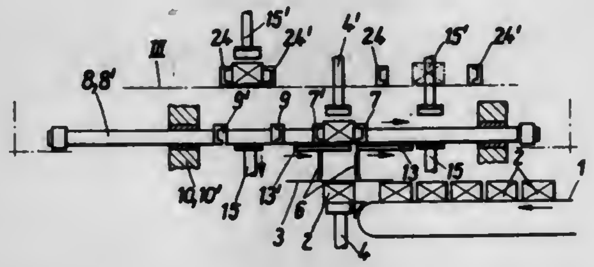
3,605,379
MACHINE FOR SECURING TAB TO PACKAGE
James Alexander, Belleville, N.J., assignor to Scandia Packaging Machinery Company, North Arlington, N.J.
Filed Apr. 16, 1968, Ser. No. 721,701
Int. Cl. B65b *61/14*
U.S. Cl. 53—134 **10 Claims**



This invention relates to a machine for securing a tab to a package, flattening the projecting tab and punching a hole through the tab. The package is intermittently fed along a table or support to three successive stations where the three operations are carried out.

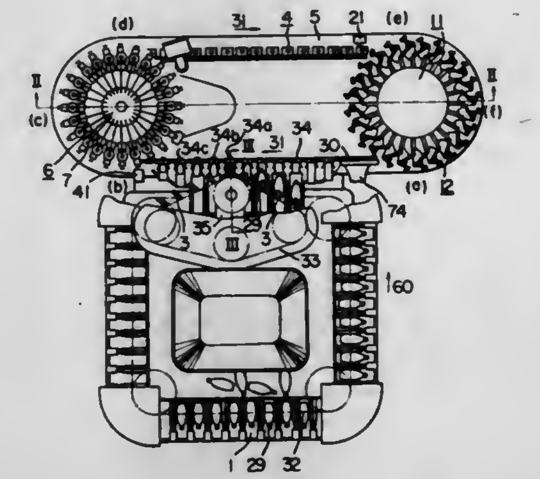
3,605,380
APPARATUS FOR WRAPPING UP GOODS
Alfred Dille, Hannover-Kleefeld, Germany, assignor to Otto Hansel GmbH, Hannover, Germany
Filed Sept. 9, 1968, Ser. No. 758,230
Claims priority, application Switzerland, Sept. 7, 1967, 12,745/67; Germany, Nov. 2, 1967, P 15 86 117.3
Int. Cl. B65b *11/22, 11/28*
U.S. Cl. 53—202 **29 Claims**

An apparatus for wrapping of goods, particularly of the sweets industry, into a wrapping material blank by use of a lifting piston which comprises the steps of pushing a piece of goods together with a blank of wrapping material disposed above the piece of goods through a folding shaft, thereby folding the blank around the piece of goods in U-shape, performing the bottom and end face fold of the blank by application of gripping and folding members,



the latter gripping the piece of goods jointly with the blank, shifting partly wrapped pieces of goods after passing through the folding shaft alternately into at least two folding paths formed by cooperating gripping and folding members, and intermittently moving through the latter for a final wrapping.

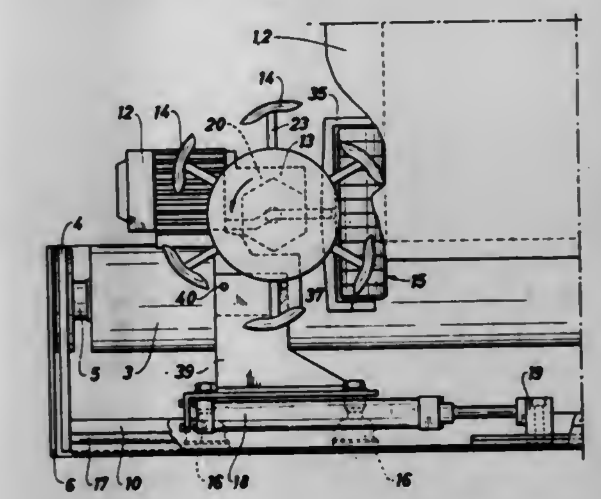
3,605,381
APPARATUS FOR FILLING AND SEALING SYNTHETIC RESIN CONTAINERS
Shinsuke Yoshikawa and Yuji Sawa, Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Jan. 12, 1970, Ser. No. 2,168
Int. Cl. B65b *3/00;* **B67c** *3/02*
U.S. Cl. 53—266 **4 Claims**



Fluid containers of a flexible synthetic resin are automatically filled and sealed in continuous succession by a filling rotary and a sealing rotary coupled by an endless holder conveyor which is passed around them and supports equally spaced holders for grasping and holding the neck parts of respective containers, the containers being fed to the conveyor by a pan conveyor and inserted into respective holders by pushing members mounted on an endless chain disposed at one part at an oblique angle relative to the holder conveyor to operate the pushing members.

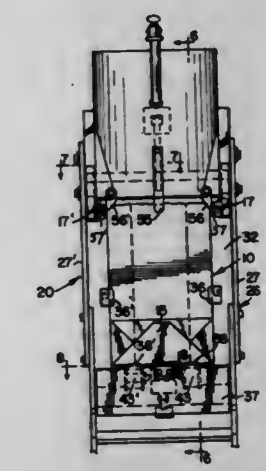
3,605,382
MACHINE FOR WRAPPING ROLLS
Erik Andersson, 666 OO Bengtsfors, Sweden
Filed May 6, 1969, Ser. No. 822,111
Int. Cl. B65b *7/10*
U.S. Cl. 53—380 **3 Claims**

A machine for wrapping rolls of, for example, paper in a wrapper, rotatably supports each roll with portions of the wrapper extending from end of the roll and folding means rotating about an axis at right angles to the axis of the roll engage and fold the wrapper extending portions



against the end of the roll after which a flattening member flattens said folds.

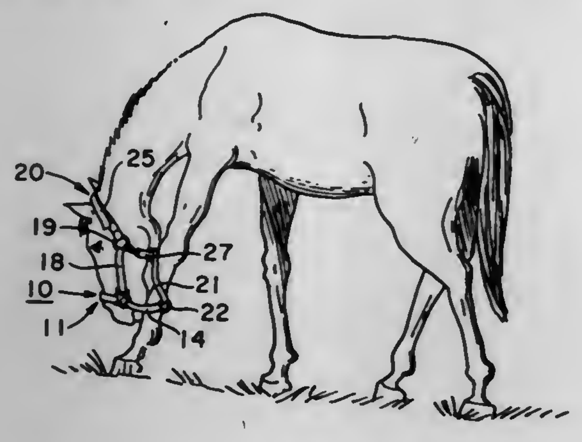
3,605,383
BAG DISPENSING AND OPENING APPARATUS
Thomas E. Piazze, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 5, 1970, Ser. No. 519
Int. Cl. B65b *43/36*
U.S. Cl. 53—385 **12 Claims**



An apparatus for dispensing and opening square bottom bags having tin tie closures which comprises an open top, generally rectangular magazine forming frame of a size to support a stack of the collapsed bags in generally upright position with the bottom edges resting on the top run of a belt conveyor in the forwardly sloping bottom of the frame, which conveyor is operated intermittently in response to change in pressure at the front of the stack when the bottom of the foremost bag opens and moves past stop members in the bottom of a discharge opening in the upright forwardly inclined front wall of the frame so as to urge the bags toward the discharge opening, the foremost bag in the stack being initially held by stop members and releasable locking devices which engage beneath laterally projecting end portions of the tin tie strip while an air nozzle is actuated to direct a blast of air downwardly along a curved guide plate and into the mouth of the bag so as to blow open the bag which releases the bottom and permits the bag to swing forwardly to a vertical position for filling, with the tin tie serving as a pivot support. A foot switch controls the operation of the air nozzle and a means connected to the tin tie end locking devices for unlocking the same and releasing the bag, permitting it to drop free of the frame, whereupon the next bag in the stack is opened up automatically by a succeeding blast of air and swings to position for filling.

3,605,384
BREAKAWAY HALTER

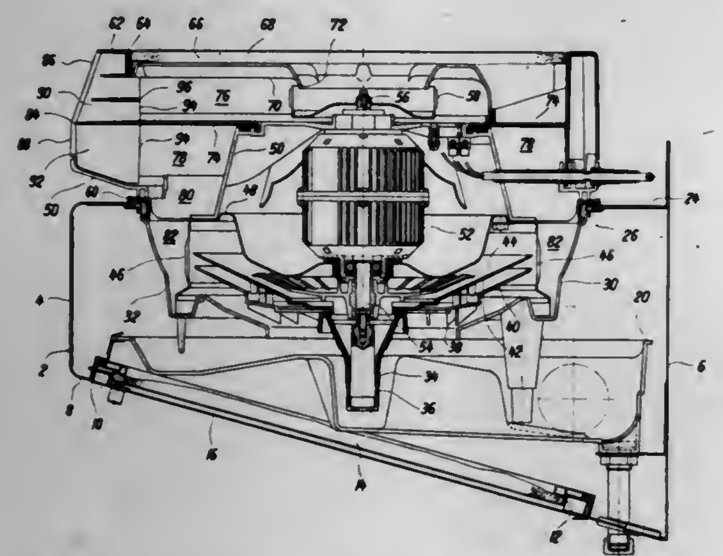
Edo Pacini, 17494 Eble St., Castro Valley, Calif. 94546
Filed July 17, 1969, Ser. No. 842,630
Int. Cl. B68b *1/02*
U.S. Cl. 54—24 **1 Claim**



A breakaway halter for a horse to enable the animal to free himself therefrom should the halter become entangled in a fence or tree branch, or should a leg of the animal become caught in the halter in making an effort to free himself from such entanglement. The halter includes both a nose strap and a neck strap respectively encircling the nose and neck of the animal, and the neck strap has free end portions adapted to overlie each other when encirling the animal's neck. These free end portions are equipped with stress-releasable means for detachably interconnecting the same; and such releasable means is generally effective to resist separation of the free end portions upon application of longitudinal tensile forces of ordinary value, but when the magnitude of any such force exceeds a predetermined value, separation occurs to free the animal from the halter.

3,605,385
ATOMIZER FOR LIQUIDS

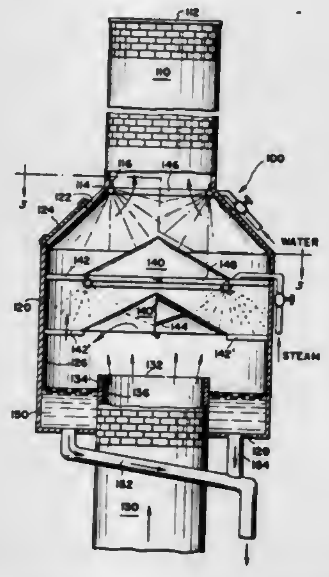
Hans Rudolf Stoop, Zug, Switzerland, assignor to Defensor AG, Zurich, Switzerland
Filed Sept. 29, 1969, Ser. No. 861,875
Claims priority, application Switzerland, Oct. 3, 1968, 14,808/68
Int. Cl. B01d *47/00*
U.S. Cl. 55—224 **6 Claims**



A novel atomizer for liquids is disclosed, the atomizer being of the type wherein a separate primary and secondary air stream is provided, the secondary air stream being utilized as a transportation air stream so as to aid the primary air flow containing the atomized liquid or mist. Both the primary and secondary air streams are discharged into the room approximately horizontally, with the secondary air stream being discharged at a level above the primary air stream. In this fashion, the secondary air stream further functions as a means to protect the ceiling of the room against spray and mist contained in the primary air stream.

3,605,386
FURNACE EXHAUST POLLUTION ELIMINATOR

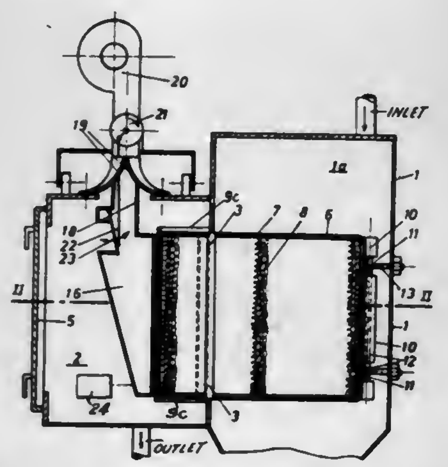
Jimmy R. Erwin, Catlettsburg, and Edward Ray Lockhart and Robert Lee Justice, Ashland, Ky., assignors to Air Pollution Research & Developing Corporation, West Ashland, Ky.
Filed June 16, 1970, Ser. No. 46,781
Int. Cl. B01d *47/02, 47/06*
U.S. Cl. 55—228 **5 Claims**



This furnace exhaust pollution eliminator is adapted to integral construction with a chimney stack or to installation between the respective input and exhaust ends thereof. The specific means include plural baffles confining the exhaust to ensure a saturation of the exhaust solids initially with steam and sequentially with cold water to effect oxidation and reduction of certain of the solids and the ultimate condensation of the steam for drainage, while ensuring unimpeded flow of the gases of combustion, less solids from the furnace stack or chimney. It is possible with this system to substantially decrease the common vertical dimension of exhaust stacks serving reaction plants, foundries, iron and steel mills and the like.

3,605,387
POCKET FILTER FOR PURIFYING DUST-LADEN GAS

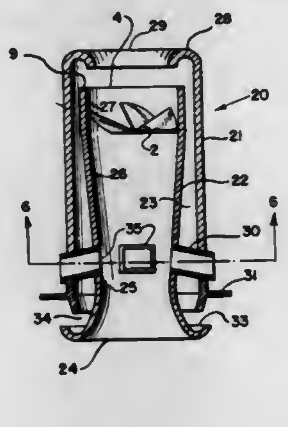
Adolf Margraf, 196 Wiesenstr., 4961 Wendthagen, Germany
Filed Sept. 29, 1969, Ser. No. 861,814
Claims priority, application Germany, June 10, 1969, P 19 29 312.0
Int. Cl. B01d *46/04*
U.S. Cl. 55—294 **9 Claims**



In a pocket filter for purifying dust-laden gas, comprising a filter chamber separated into a dust-laden gas compartment and a clean gas compartment by a wall with vertically extending slots formed therein in spaced parallel relation, and filter pockets extending through the slots into the dust-laden gas compartment secured to the slotted wall and supported by inner frames including a bridging formed by a mat of spiral springs inserted into the filter pockets and extending beyond the slotted wall into the clean gas compartment, the invention residing in that profile members are secured together with the filter pockets intermediate the slots of the slotted wall extending vertically continuously over the height of the slots and the filter pockets, the height of these profile members being such that their sides remote from the slotted wall are disposed in a common plane substantially coinciding with the plane of the vertical edges of the supporting frames within the clean gas compartment thereby forming individual passages each communicating with the interior of a filter pocket. A known cleansing gas nozzle communicating with a source of pressure gas and having a discharge opening extending over the length of the passages formed by the profiles substantially in the plane of their free sides is movable in lateral direction past the row of filter pockets. Whenever the mouth of the cleansing gas nozzle becomes aligned with a passage communicating with the interior of the respective filter pockets the flow of gas will be reversed thereby removing the dust accumulated at the outside of the filter pocket.

3,605,388
APPARATUS FOR CONTACTING LIQUIDS AND GASES

Frederik J. Zuiderweg and Hendrik J. Scheffer, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed July 19, 1968, Ser. No. 746,065
Claims priority, application Great Britain, Dec. 29, 1967, 59,245/67
Int. Cl. B01d *47/10*
U.S. Cl. 55—236 **1 Claim**

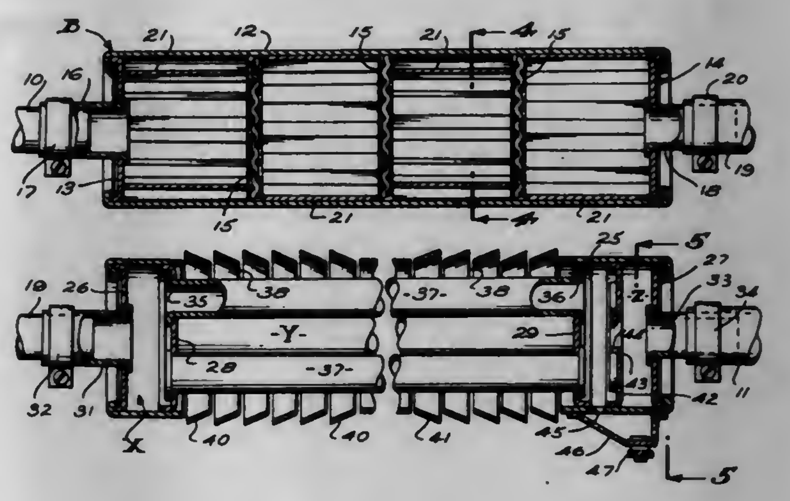


Apparatus for contacting liquids and gases comprising a hollow chamber having a vapor inlet and outlet and a liquid inlet communicating with the interior of the chamber. Rotational means is mounted in the chamber downstream of the vapor inlet for imparting rotary movement to a mixture of liquid and vapor within the apparatus. Constriction means is disposed downstream of the rotational means and upstream of the vapor inlet for constricting the flow through said chamber.

3,605,389
AUTO EXHAUST TREATING MEANS

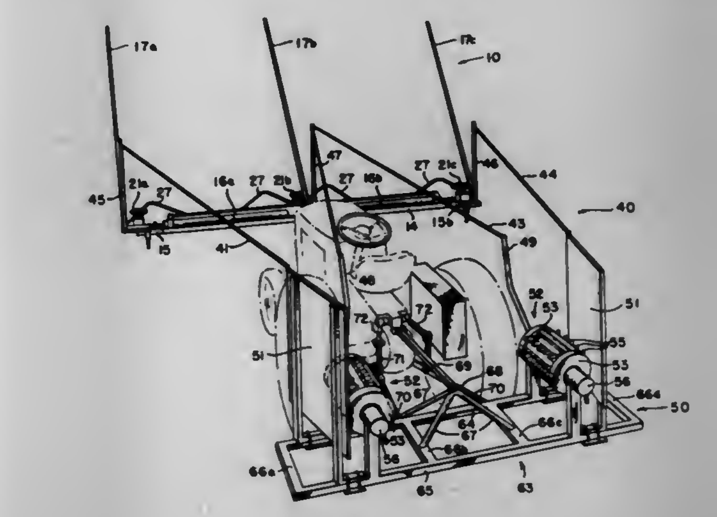
John Allen Buttler, deceased, late of Los Angeles, Calif., by James W. Allen, administrator, North Hollywood, Calif., assignor to Walhamlin, Inc.
Filed Mar. 24, 1969, Ser. No. 812,554
Int. Cl. F01n *3/02;* **F02b** *75/10*
U.S. Cl. 55—269 **8 Claims**

An auto exhaust treating means for removing unburned hydrocarbons from exhaust gases and prevent their being introduced into the atmosphere, which means collects solid matter carried by exhaust gases and holds it in the presence of high temperature, burning gases for incineration thereof, arrests combustion of gases; effects subsequent cooling of gases and condensation and precipitation of certain of the unburned hydrocarbons carried thereby; and separates the condensates and precipitates from the gases and collects them for subsequent disposal.



3,605,390
MACHINE FOR PREPARING HOPS FOR HARVESTING

Amos T. Gamache, 211 S. 24th St., Yakima, Wash. 98902, and Alvin Treneer, 512 Bolin Drive, Toppenish, Wash. 98948
Filed Dec. 5, 1968, Ser. No. 781,558
Int. Cl. A01d *41/08*
U.S. Cl. 56—16.5 **11 Claims**



A machine is disclosed for preparing vertically suspended hop vines for harvesting and includes a crossarm assembly attached to a power vehicle. On the crossarm assembly are mounted blades which project into the paths of the hop vines. The blades are spaced a distance apart essentially equal to the row spacing of the hop vines. The blades, as they are advanced through the hop vines sever the interconnecting hop vines and guide the hop vines to cutting zones where rotary cutters sever the hop vines near their base. The base-severed vines are then guided to a stripping zone where the foliage is stripped from the lower ends of the base-severed hop vines by rotary beaters coacting with baffle plates.

3,605,391

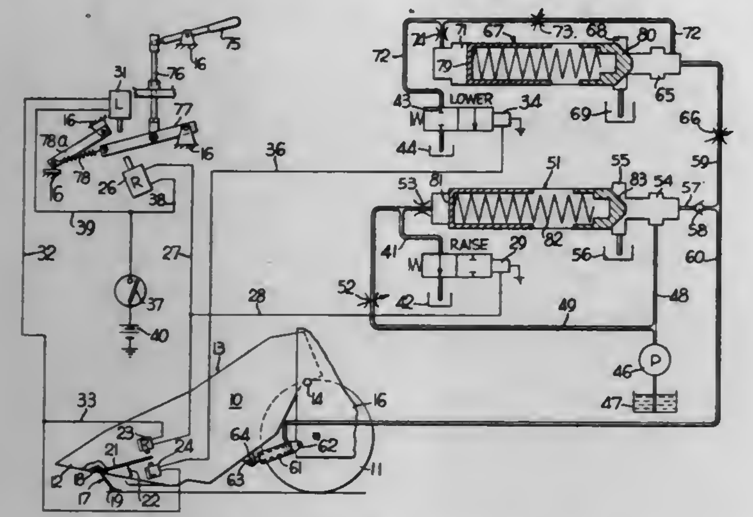
HEADER HEIGHT CONTROL

Robert E. Schott, New Berlin, Ind., and Ramkishan Khatti, Milwaukee, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 19, 1969, Ser. No. 825,878

Int. Cl. A01d *67/00*

U.S. Cl. 56—208 **9 Claims**



A combined electrical, mechanical and hydraulic mechanism for maintaining the height of a combine harvester header relative to the ground at a constant height and wherein hydraulic means are provided for controlling the acceleration and deceleration of such header as it is being moved upwardly or downwardly in response to a height signal.

3,605,392

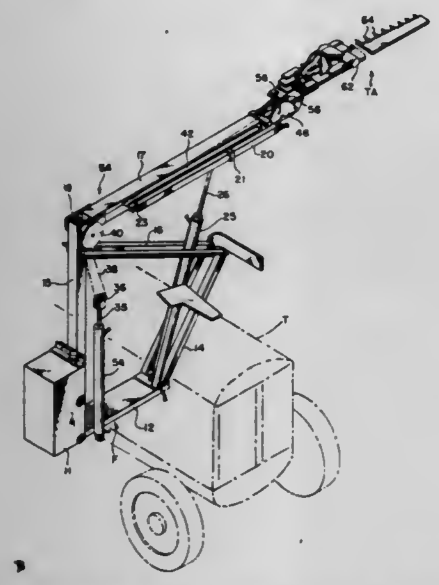
TREE TRIMMER

Martin C. Fossum, Yakima, Wash., assignor of fractional part interest to A. Thor Fossum, Yakima, Wash.

Filed Aug. 28, 1969, Ser. No. 853,862

Int. Cl. A01d *55/32*

U.S. Cl. 56—237 **7 Claims**



A mobile vehicle is provided with a boom assembly which comprises an upright mast and a telescopically extendable boom pivotably mounted on the mast. A trimmer assembly is mounted for pivotal movement on the outer end of the boom. Hydraulic actuators are provided for extending the boom, pivoting the boom in a vertical plane, and pivoting the trimmer assembly in a vertical plane about the end of the boom. The angular position of the trimmer assembly is related to the extension of the boom. In one embodiment a rotary saw is provided with a first manually adjustable pivotal mounting for rotating the saw about a transverse axis relative to the boom and is provided with a second manually adjustable pivotal mounting for rotating the rotary saw about the longitudinal axis of the boom.

3,605,393

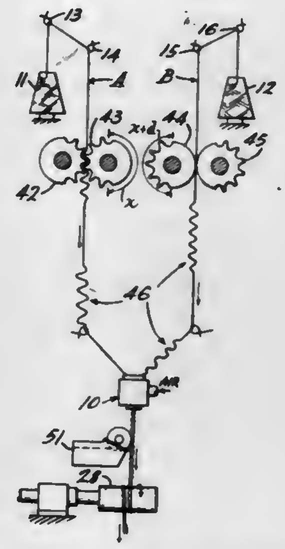
APPARATUS AND METHOD FOR MAKING BULKY YARN

Charles F. Schroeder, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation

Original application Jan. 3, 1967, Ser. No. 606,894, now Patent No. 3,496,714, dated Feb. 24, 1970. Divided and this application June 11, 1969, Ser. No. 832,398

Int. Cl. D02g *1/20*

U.S. Cl. 57—34 **7 Claims**



An apparatus for making a bulky textile yarn having at least two groups of filaments combined together with each group alternately forming core and effect filaments in the composite yarn. The apparatus includes means for alternating the feed speed of the filament groups passing to a fluid bulking apparatus which combines the groups in a pattern dependent upon the feed speed relationship, and a means for setting the filament pattern so that the composite yarn retains the filament pattern.

3,605,394

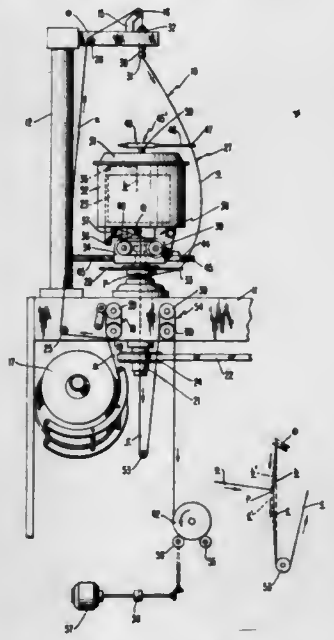
STRAND PLYING METHOD AND APPARATUS

Alfred W. Vibber, 350 5th Ave., Suite 6314, New York, N.Y. 10001

Filed Aug. 8, 1969, Ser. No. 848,491

Int. Cl. D01h *7/86;* **D02g** *3/00*

U.S. Cl. 57—58.3 **14 Claims**



A cord forming method and apparatus, the apparatus including a skip type stranding spindle employing a balloon generating disc and an idle flyer, the idle flyer being so disposed that the portion of the balloon formed between the idle flyer and the balloon apex always rotates in the first quadrant. The balloon is maintained under control by means responsive to changes in tension of the singles strand in the balloon, such means vary the tension and speed at which the plied strand or cord is withdrawn from the plying point of the spindle.

3,605,395

METHOD AND APPARATUS FOR SPINNING OF FIBROUS MATERIALS UTILIZING A ROTARY SPINNING CHAMBER

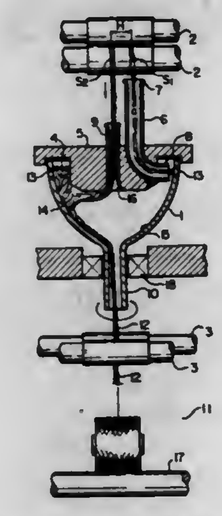
Takashi Morikawa, Amagasaki-shi, Tatuo Horiuchi, Hirakata-shi, Mitugi Sumi, Fukui-shi, and Tadanori Kurushima, Hirakata-shi, Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka, Japan

Filed June 3, 1968, Ser. No. 733,866

Claims priority, application Japan, June 5, 1967, 42/36,134; Aug. 9, 1967, 42/51,383

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 **5 Claims**



In the spinning method and apparatus wherein a sliver or roving is fed to a rotary spinning chamber to be rendered into a spun yarn by being imparted a draft and twist while passing therethrough, a method and apparatus characterized in that at least two ends of the sliver or roving are fed to the rotary spinning chamber, of which at least one of the sliver or roving is directly conducted to a portion other than the collecting surface of the rotary spinning chamber, that is, a locality close to the twisting point of the yarn bundle which is drawn thereto via the collecting surface, this sliver or roving thus passing through the spinning chamber to be imparted only a twist and draft without being broken, to be then combined with the other sliver or roving which has been delivered via the collecting surface.

3,605,396

DEVICE FOR INSERTING FILAMENT INTO A RADIALLY CLAMPING GRIP

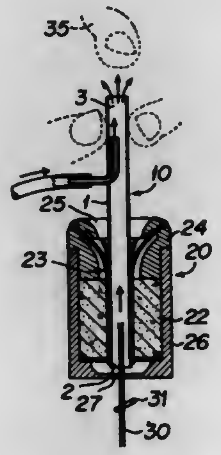
Claude Guignard, Ferney-Voltaire, France, and Jean Chatelaine Pellaton and Maurice Poull, Meyrin, Switzerland, assignors to Electrospin Corporation, Columbus, Ohio

Filed Dec. 2, 1969, Ser. No. 881,357

Claims priority, application Switzerland, Dec. 24, 1968, 19,255/68

Int. Cl. D01h *15/00, 13/04;* **D01g** *23/08*

U.S. Cl. 57—106 **14 Claims**



A tool for threading a radially clamping grip with a leader yarn by directing therethrough a fluid flow under pressure. A suction tube inserted into the grip separates the clamping members for removal of broken yarn and the insertion of the leader end of spun yarn.

3,605,397

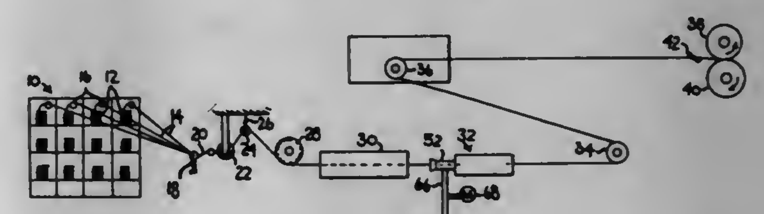
EXPANDED FIBER GLASS STRAND

Winfield T. Irwin, Pittsburgh, and Warren W. Drummond, Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Application Feb. 15, 1968, Ser. No. 705,666, now Patent No. 3,491,527, dated Jan. 27, 1970, which is a continuation of application Ser. No. 246,889, Dec. 26, 1962. Divided and this application July 1, 1969, Ser. No. 838,119

Int. Cl. D02g *3/18*

U.S. Cl. 57—140G **1 Claim**



A permanently crimped, multifilament fiber glass product produced by providing a multifilament bundle of untwisted, permanently crimped fiber glass strands and, thereafter, moving said filaments relative to one another.

3,605,398

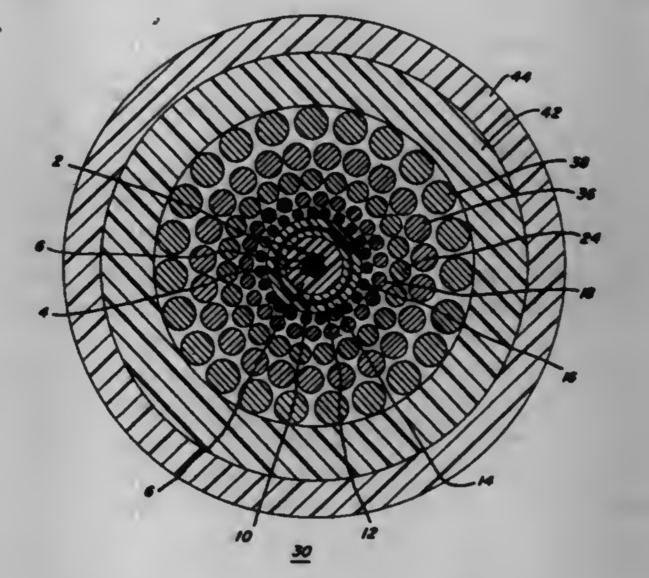
VARIABLE WEIGHT CABLE

Richard H. Carlson, North Grafton, and Edward M. Felkel, Worcester, Mass., assignors to United States Steel Corporation

Filed Mar. 23, 1970, Ser. No. 21,614

Int. Cl. D07b *1/16*

U.S. Cl. 57—149 **7 Claims**



A splice free tow cable, built up of layers of armor wire and plastics of different densities surrounding a conductor core, has variable weight and strength sections.

3,605,399

STRINGS

Jacob van Rijswijk, Vijverhofstraat 38–60, Rotterdam 1, Netherlands

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,457

Claims priority, application Great Britain, Apr. 6, 1967, 15,807/67

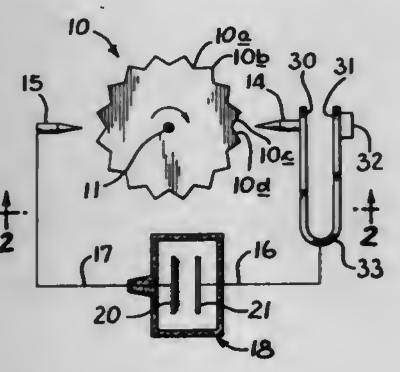
Int. Cl. D02g *3/36*

U.S. Cl. 57—149 **8 Claims**

Strings for games racquets are provided which comprise a core consisting of one or more monofilaments of a synthetic long chain polymeric material and one or more helical wrappings of a synthetic long chain polymeric material, and in which a lubricant is contained in the core or between the wrapping and the core.

3,605,400
DRIVE ARRANGEMENT FOR TIMEKEEPING SYSTEM

Frank W. Emerson, Peterborough, Ontario, Canada, assignor to General Time Corporation
Filed June 3, 1969, Ser. No. 830,063
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **5 Claims**

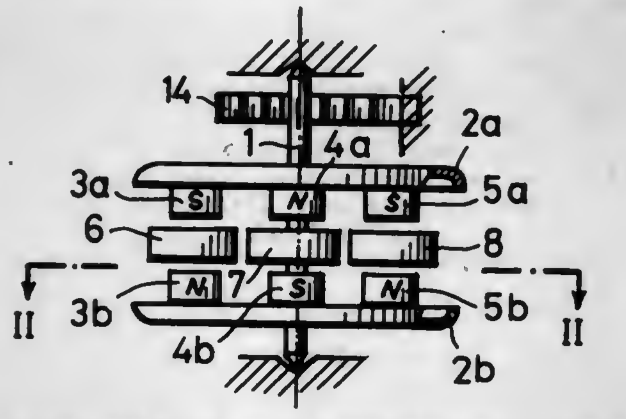


A drive arrangement for a timekeeping system comprising an electrostatic motor including a rotor having a dielectric surface and a pair of electrodes operatively associated with the rotor for driving the rotor in response to a D-C potential applied across the electrodes. In one embodiment, one of the electrodes is mounted on one of the tines of a tuning fork, and the dielectric rotor surface is serrated for impulsing the tuning fork to vibrate the same while synchronizing the speed of the rotor with the natural frequency of the tuning fork. In another embodiment, both electrodes are mounted on the two tines of a tuning fork, and the serrated rotor is mounted between the electrodes for impulsing both tines of the tuning fork. In a further embodiment, a rotor having a dielectric surface is associated with two pairs of electrodes, each pair being associated with a different circumferential band of the dielectric surface, with one of the electrodes in the first pair connected to one terminal of the D-C voltage source, one electrode in the second pair being connected to the other terminal, and the other two electrodes being interconnected to form a voltage divider across the voltage source. In still another embodiment, the rotor is provided with a discontinuous dielectric surface, and the electrodes are connected to an A-C power source, with a source of ionizing radiation being associated with each electrode for ionizing the gas in the space between each electrode and the dielectric surface to increase the driving force applied to the rotor surface.

3,605,401
ELECTRONICALLY POWERED CLOCK

Robert Walter Reich, Via Noseda 8,
CH-6977 Ruvigliana, Switzerland
Filed Sept. 8, 1969, Ser. No. 855,886
Claims priority, application Switzerland, Sept. 15, 1968, 13,931/68
Int. Cl. G04c *3/04*
U.S. Cl. 58—28A **4 Claims**

An electronically powered clock having three magnet means concentrically fixed to a balance wheel and three coils mounted respectively coaxially with the magnet means when said balance wheel is in its zero position. The series-connected outside coils serving as exciter coils for a transistor switching arrangement, the inside coil serving as drive coil for the balance wheel, and the magnet means have such dimensions and such positions with respect to each other that every magnet means coming away from one coil and simultaneously approaching neighboring coil will generate an excitation pulse and at the same time experience a drive pulse.



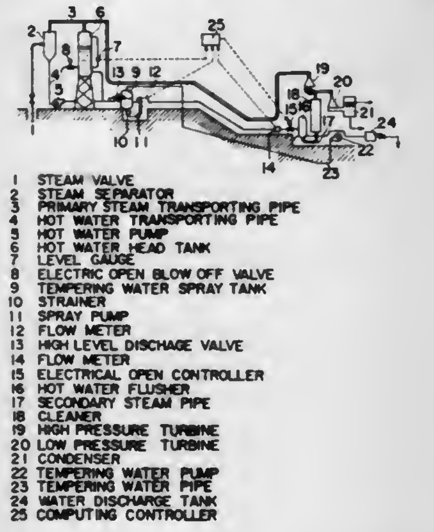
3,605,402
METHOD OF MANUFACTURE OF CURVED TIP STAPLES

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.
Filed Dec. 11, 1968, Ser. No. 782,940
Int. Cl. B21g *7/02*
U.S. Cl. 59—77 **7 Claims**

In accordance with the present disclosure an elongated piece of wire, of appropriate gauge, is severed diagonally at predetermined spaced points. Each wire length thus formed is then bent into staple form whereby to provide a staple the tines of which taper in opposite direction. The staple tines are then reshaped into symmetrical form, by suitably shaped dies; and in connection with this reshaping operation a predetermined curved shape may be imparted to the tine ends; whereby to provide a staple structure having similarly formed symmetrical tines, the ends of which have a predetermined curved smooth shaping. Barbs or the like may also be simultaneously formed on the staple tines.

3,605,403
TRANSPORTING MEANS AND EQUIPMENT FOR JET ENERGY OF GEOTHERMAL POWER PLANT

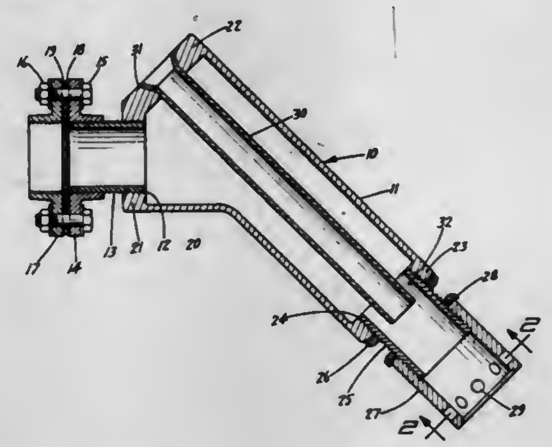
Kentaro Aikawa and Mamoru Tahara, Nagasaki-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 24, 1969, Ser. No. 860,476
Int. Cl. F03g *7/04*
U.S. Cl. 60—26 **2 Claims**



In a geothermal power plant which comprises a hot water type geothermal power plant, a mixed fluid of steam and hot water emerging from the bore of a steam well is transported directly to the power plant by means of steam-water mixed fluid carrying pipe lines. The steam-water mixture is separated by a steam separator into high pressure primary steam and hot water at the power station with the former steam being supplied to the primary steam inlet of a mixed pressure turbine, and the hot water being used for production of low pressure secondary steam by a hot water flasher which is then supplied to the secondary steam inlet of the same turbine for generating electric power.

3,605,404
POLLUTION AND NOISE REDUCING MUFFLER

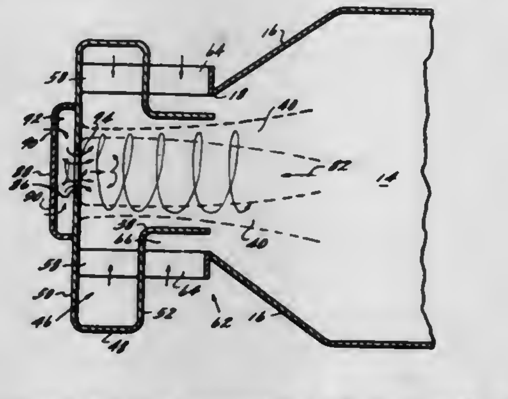
Gust H. Bjork, 2601 Parkview Blvd., Robbinsdale, Minn. 55422
Filed Sept. 29, 1969, Ser. No. 861,677
Int. Cl. F01n *3/10*
U.S. Cl. 60—30 **3 Claims**



A pollution and noise reducing muffler for internal combustion engines having a hollow tubular body having an exhaust gas inlet into one end and discharge from the other. The inlet end of the tubular body is preferably disposed with its axis at an obtuse angle relative to the longitudinal axis of the muffler and is desirably spanned with foraminous material, such as metal screening. The downstream end of the muffler body functions as an aspirator to draw air through the body to preheat the air before admixture with the exhaust fumes adjacent the discharge end of the muffler. The muffler reduces pollution by promoting further combustion of combustible constituents of the exhaust gases. For maximum noise reduction the muffler body is of rectangular cross-section.

3,605,405
CARBON ELIMINATION AND COOLING IMPROVEMENT TO SCROLL TYPE COMBUSTORS

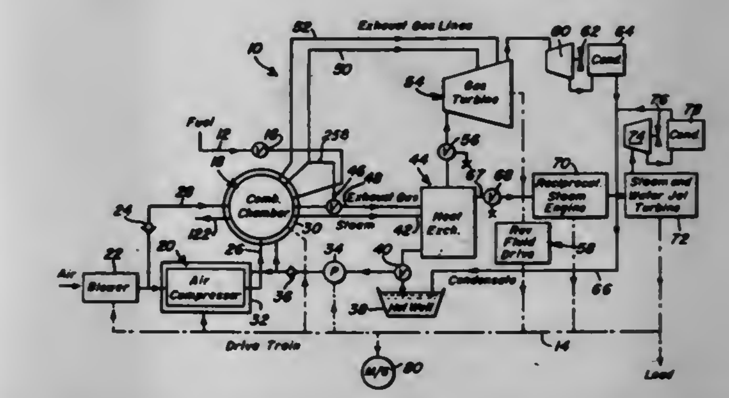
Thomas L. Du Bell and Barry Weinstein, Cincinnati, Ohio, assignors to General Electric Company
Filed Apr. 9, 1970, Ser. No. 27,023
Int. Cl. F02g *3/04;* **F23m** *9/02*
U.S. Cl. 60—39.65 **11 Claims**



An improvement for apparatus of the type adapted to premix air and fuel or carburet air prior to introduction thereof as a vortical flow into a primary zone of a combustor; the improvement comprises a purge air opening positioned within an upstream wall of a spin chamber and covered by a cap having a plurality of small openings located therein. Purge air flows from the compressor through the small openings into a chamber formed by the cap and thereafter into the spin chamber in such a manner as to prevent impingement of high temperature gases on the upstream wall of the spin chamber without detrimentally affecting generation of the primary vortical flow.

3,605,406
COMBINED GAS AND STEAM POWER PLANT

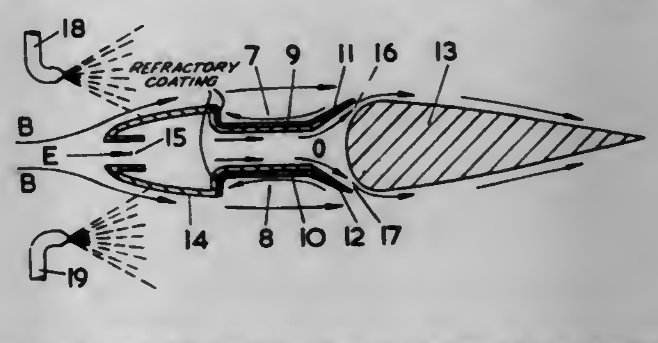
Raymond L. Woolley, 466 Magnolia Ave., Yuma, Ariz. 85364
Filed June 27, 1969, Ser. No. 837,283
Int. Cl. F02c *1/04, 5/08, 5/12*
U.S. Cl. 60—39.18B **15 Claims**



A combustion fuel type of gas generator sequentially supplies hot, pressurized gases to various stages of a gas turbine through separate flow paths, one of which passes in heat exchange relation to water stored in a heat exchanger. The water is circulated by a turbine driven pump through cooling jackets surrounding the gas generator and a reciprocating compressor supplying pressurized air thereto. Superheated steam from the heat exchanger is conducted in series through a reciprocating steam engine and a reversible steam and water jet turbine to augment the power output of the gas turbine.

3,605,407
COMBUSTION DEVICES

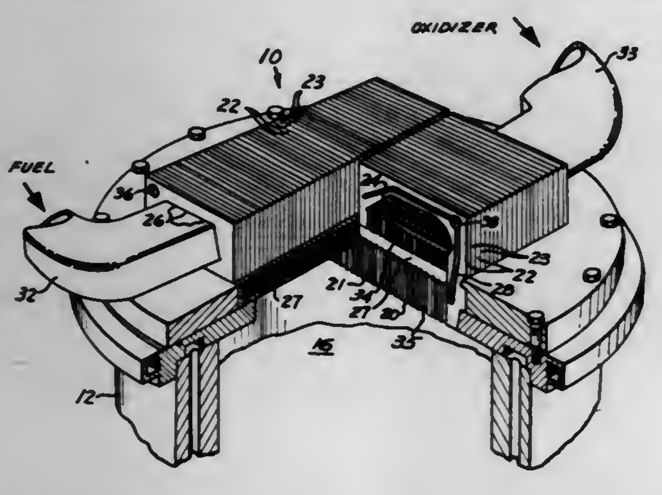
William Dean Bryce, Farnham, Surrey, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed June 4, 1969, Ser. No. 830,471
Claims priority, application Great Britain, June 10, 1968, 27,395/68
Int. Cl. F23r *1/04;* **F02k** *3/10*
U.S. Cl. 60—39.72 **14 Claims**



The vane of aerofoil section has recesses of generally elliptical shape in its side surfaces. Separation of flow round the vane occurs at the resultant discontinuities and causes recirculation within the recesses, the length of which ensures reduction in velocity compared with free stream flow to allow adequate mixing between unburnt fuel/air mixture and combustion gases. In one arrangement, an inlet is provided in the leading edge of the vane for gas which is discharged from slots positioned rearwardly of the recesses as a cooling film over the downstream surfaces of the vane. The surfaces of the recesses may be of ceramic (e.g., silicon nitride) or other refractory material.

3,605,408
COMBUSTION STABILIZED INJECTOR

Charles B. McGough, Fair Oaks, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Mar. 11, 1968, Ser. No. 712,124
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.74 **18 Claims**



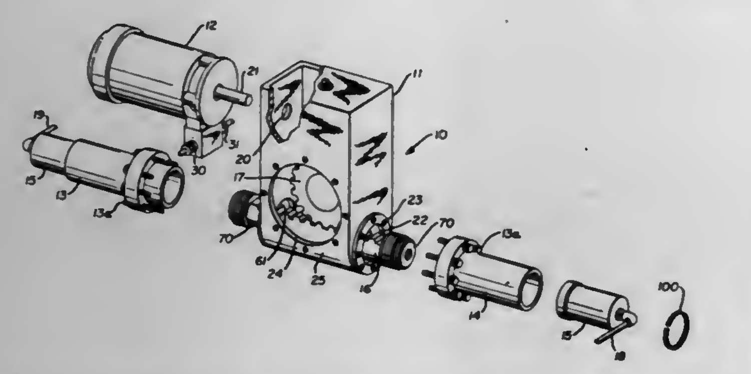
This disclosure relates to improvements in rocket engine injectors.

According to the present disclosure, a rocket engine injector is constructed from a plurality of discrete thin wafers, each having planar surfaces and edge surfaces. A controlled pattern of flow passages is formed in one planar surface of each wafer, each flow passage terminating at an edge surface of the wafer. The wafers are joined together in a stack and the passage terminating edge surfaces form the injector face of the injector. The flow passages are adapted to pass liquid propellant therethrough. To reduce high frequency combustion instability, short baffles or combustion stabilizers are provided as an integral part of the injector face.

According to one form of the invention, the liquid propellant is delivered to the injector face in such a manner that the fuel flows through passages on certain wafers and the oxidizer flows through passages on other wafers.

3,605,409
HYDRAULIC ACTUATOR

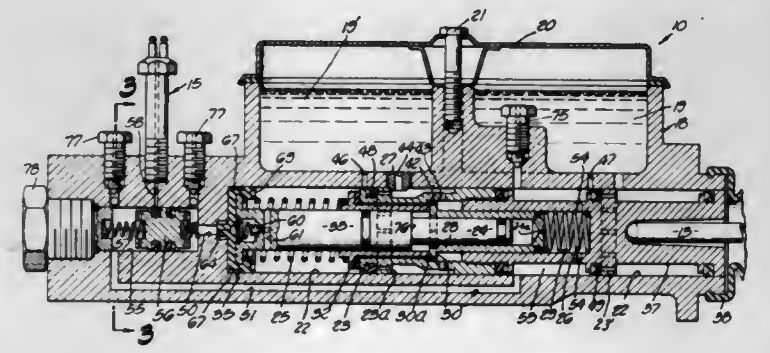
William E. Heese and Kenneth H. Meyer, Akron, Ohio, assignors to Hydra-Power, Inc., Wadsworth, Ohio
Filed Apr. 1, 1969, Ser. No. 812,176
Int. Cl. F15b *15/18*
U.S. Cl. 60—52R **6 Claims**



A hydraulic rotary actuator that is provided with integral relief valves in the pistons for protective purposes. The actuator also has a self-contained, hydraulic system that features an enlarged gear chamber that serves both as a mounting base for a pump or power source and as a sump or reservoir for the hydraulic component that, in turn, actuates the actuator. A further characteristic of the hydraulic actuator is the optional provision of a shock absorbing component adapted to cushion the actuated piston toward the end of its power stroke. Also, the rack supporting means are interconnected to the main housing so as to, at all times, provide improved support.

3,605,410
FAIL-SAFE VEHICLE BRAKING SYSTEM WITH INDEPENDENT FRONT AND REAR SUBASSEMBLIES

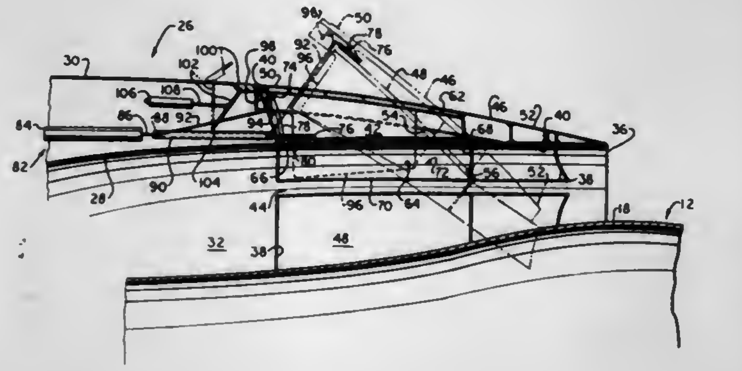
David R. Herriott, 1403 Verdugo Blvd., La Canada, Calif. 91011
Filed June 16, 1969, Ser. No. 833,361
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.5E **43 Claims**



A master cylinder assembly for controlling a hydraulic system, including a vehicle braking system, utilizing a plurality of master pistons of graduated size under the control of a common manually-operated actuator. The normally retracted master pistons cooperate when first actuated to charge the system quickly with fluid under low pressure, following which the larger piston is deactivated as the load is assumed by a smaller one of the pistons effective to continue pressurization of the fluid at a substantially higher ratio of applied force to the output hydraulic pressure.

3,605,411
THRUST REVERSING APPARATUS

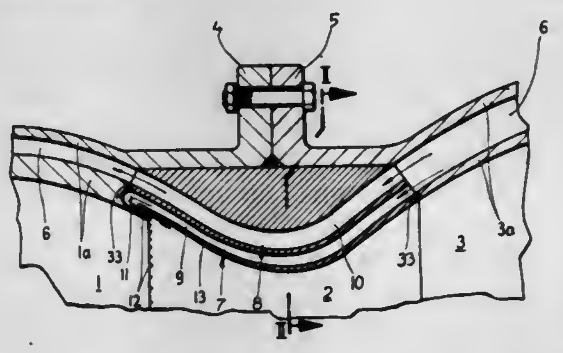
Richard L. Maison and George E. Medawar, San Diego, Calif., assignors to Rohr Corporation, Chula Vista, Calif.
Filed July 1, 1970, Ser. No. 51,587
Int. Cl. F02k *3/02*
U.S. Cl. 60—226 **15 Claims**



Front fan jet engine has cowl surrounding engine and terminating in jet exhaust nozzle. Elongate streamlined shroud with inner and outer walls surrounds cowl and is spaced radially therefrom to define annular fan air duct between cowl and shroud. Reverser includes outflow passage means comprising circumferentially arranged sets of openings in inner and outer walls of aft portion of shroud. A set of control doors is provided in each set of openings. Each door set includes an inner and an outer door swingable from stowed position closing openings in inner and outer shroud wall and conforming to shroud walls, to deployed, open position diverging forward from longitudinal axis of shroud with forward ends extending into free stream air, and aft ends of outer doors in blocking contact with engine cowl and each other, thereby blocking rearward flow of fan air and redirecting it outward and forward through passage means to produce reverse thrust. Forward ends of doors of each set approach each other during deployment to provide thinner overall leading edge and increase effective angle of divergence. Spoiler across leading edge of outer door opening swings open to prevent reingestion of reverser gases.

3,605,412
FLUID COOLED THRUST NOZZLE FOR A ROCKET

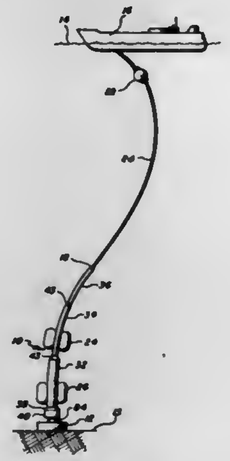
Karl Stockel, Ottobrunn, Germany, assignor to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn, near Munich, Germany
Filed July 9, 1968, Ser. No. 743,473
Int. Cl. F02k *11/02*
U.S. Cl. 60—260 **5 Claims**



A fluid cooled combustion chamber for a rocket engine is composed of walls forming a longitudinally extending convergent-divergent thrust nozzle having a neck portion at its narrowest section. A radially inner row and a radially outer row of cooling ducts encircle the interior surface of the thrust nozzle at its neck portion with the ducts extending longitudinally into the convergent and divergent portions. The outlet end of the inner row of cooling ducts may be arranged to direct coolant fluid into the thrust nozzle with means providing a twist to the fluid as it enters the nozzle.

3,605,413
RISER WITH A RIGIDITY VARYING LOWER PORTION

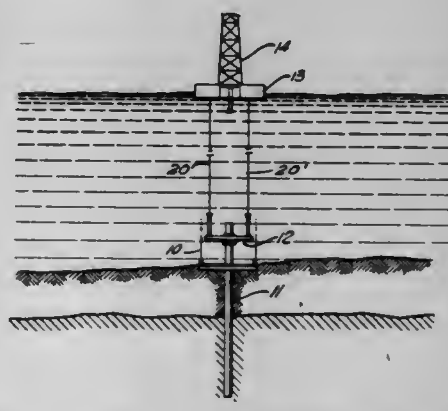
George W. Morgan, Anaheim, Calif., assignor to North American Rockwell Corporation
Filed Oct. 24, 1969, Ser. No. 869,313
Int. Cl. E21b *17/00*
U.S. Cl. 61—46 **13 Claims**



A riser, arranged for communication between a structure at the ocean floor and equipment on the surface where the water depth may be, for example, more than 600 feet, has a lower portion with a rigidity or stiffness sufficient to withstand the worst condition bending moment applied thereto. The stiffness of the upper portion is determined by the design requirements for efficient and economical piping and communication between the ocean floor and the ocean surface. In addition, the section modulus of the lower portion decreases at stations disposed further from the ocean bottom and where the upper and lower portions join the section modulus are substantially the same.

3,605,414
SUBMERGED WELL HEAD PLATFORM

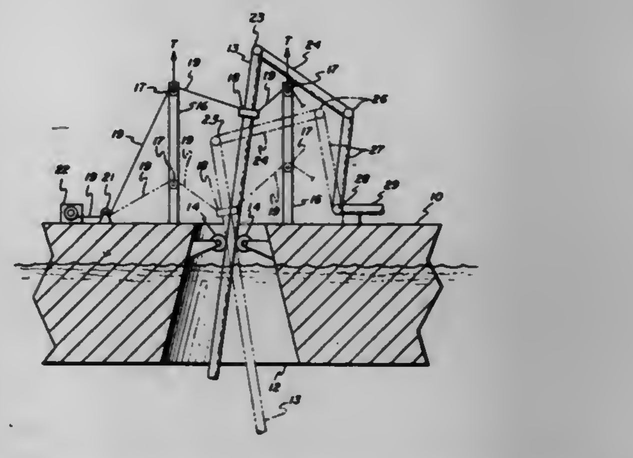
Joseph W. Westmoreland, Jr., Houston, Tex. (℅ Texaco, Inc., P.O. Box 430, Bellaire, Tex. 77401)
Filed Nov. 27, 1968, Ser. No. 779,412
Int. Cl. E02d *27/52;* **E21b** *15/02*
U.S. Cl. 61—46 **4 Claims**



The invention relates to an offshore platform adapted to be submerged and positioned on the floor of a body of water whereby to support an under water well head or similar equipment a predetermined distance above the floor. The platform is particularly adapted for use in a substratum characterized by an unconsolidated or muddy composition which would ordinarily be inadequate to stably support the well head as well as drilling casing and the like. A primary support factor is contributed by a foundation pad connected to, and depending from the conductor pipe, which pad is supported at the ocean floor thereby establishing a firm housing for the conductor pipe.

3,605,415
UNDERWATER RISER SUPPORT STRUCTURE

John W. Mohlman, Tarzana, Calif., assignor to North American Rockwell Corporation
Filed June 30, 1969, Ser. No. 837,503
Int. Cl. E21b *17/00*
U.S. Cl. 61—46 **7 Claims**



A ship mounted support for an underwater riser is described having a plurality of towers surrounding the upper end of the riser and connected thereto by constant tension winches. Cables from the winches pass over traveling idler pulleys which are urged upwardly on the towers to assist in maintaining a substantially constant upwardly directed force on the riser.

3,605,416

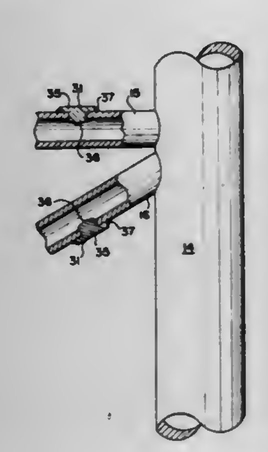
OFFSHORE PLATFORM WITH SACRIFICIAL PLUG MEANS

James W. Kubasta, Metairie, La., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,522

Int. Cl. E02b *17/00*

U.S. Cl. 61—46.5 **5 Claims**



Apparatus for carrying out operations with respect to an offshore platform adapted to be coated or launched over a preselected well site and positioned at said site. The platform includes hollow bracing elements for stabilizing legs on the platform. Sacrificial plugs are provided in operative association with the bracing elements to permit the entry of sea water into the interiors thereof after installation of the platform to eliminate collapse stresses.

3,605,417

DEVICE FOR PROTECTING DIVERS FROM STRONG UNDERWATER CURRENTS

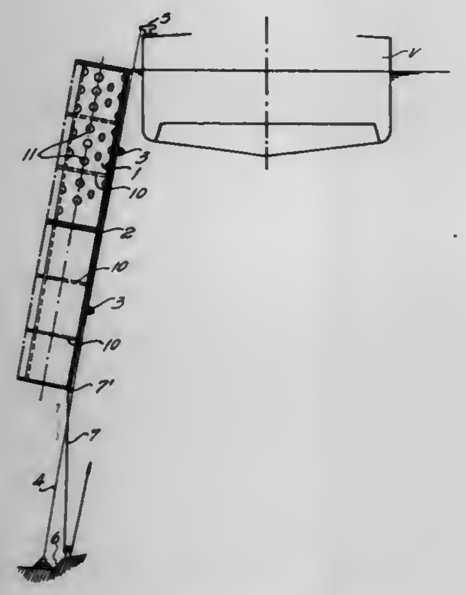
Marcelo Edmundo Wolf, 20 de Junio 1795, Bella Vista, Argentina

Filed June 3, 1969, Ser. No. 829,967

Claims priority, application Argentina, June 4, 1968, 214,537

Int. Cl. B63c *11/00*

U.S. Cl. 61—69 **15 Claims**



The invention relates to a device for protecting divers against the influence of underwater currents, the device comprising at least one substantially tubular member engaging a cable which is firmly connectable at the bottom of the body of water and to relatively stationary point adjacent the water surface, the tubular member being dimensioned to permit the movement therethrough of a diver and being at least partly perforate to permit the passage of water transversely therethrough.

3,605,418

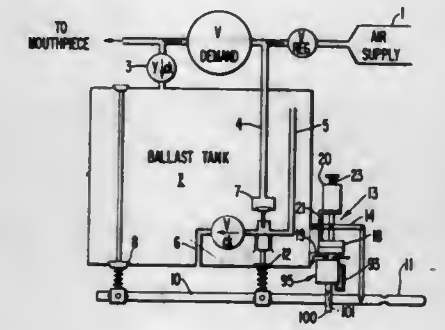
DEPTH CONTROL AND AUTOMATIC SURFACING DEVICE ACTUATED BY AIR DEPLETION IN AIR SUPPLY TANKS

Samuel Levine, Washington, D.C., assignor of fractional part interest to Abraham A. Saffitz, Arlington, Va.

Filed July 30, 1969, Ser. No. 846,183

Int. Cl. B63c *11/22, 11/30*

U.S. Cl. 61—69R **13 Claims**



Equipment for swimmers or divers comprising a control to maintain an adjustable constant level of submergence, and further providing a safety feature of forced surfacing of the diver when the breathing air supply gets dangerously low. The level control comprises a ballast tank with means to submerge it to a desired level, and water-depth pressure responsive means to control the ballast in the tank to maintain it at that level. The surfacing means comprises an emergency air tank which carries air under full working pressure and a valve connecting it to the ballast tank. The valve is responsive to the main air supply tank pressure, and when such pressure gets dangerously low, the valve is shifted to a position wherein the emergency air tank is connected to the ballast tank to force the water ballast therefrom and cause surfacing. In another embodiment, a biased piston is latched at an end of a cylindrical portion of the ballast tank. The latching means is responsive to the air pressure of the air supply tank. When the pressure gets dangerously low, the latch means releases the piston which moves under its biasing force to sweep sufficient water from the ballast tank to cause surfacing. The above surfacing means further incorporates timer means to initiate automatic surfacing operation after a selected period of submergence. Alarm means are also provided to indicate the approach of air pressure conditions which initiates surfacing.

3,605,419

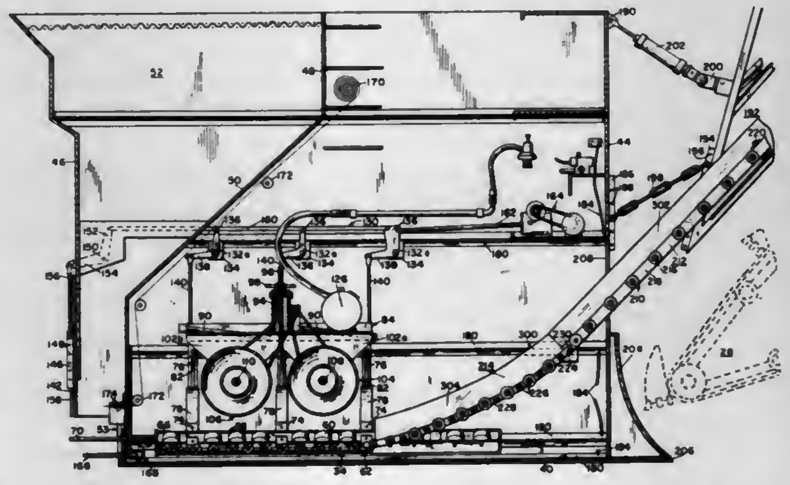
METHOD AND APPARATUS FOR LAYING PIPE

Marvin E. Wells, Caldwell, Idaho, assignor to J. A. Terteling & Sons, Inc., Boise, Idaho

Filed May 9, 1968, Ser. No. 727,979

Int. Cl. E02f *5/10, 5/22*

U.S. Cl. 61—72.5 **32 Claims**



An apparatus for installing a subterranean pipeline in an elongated earthen trench. The apparatus includes a mobile housing operable to be moved along and within the trench. Structure is provided for guiding individual sections of pipe into longitudinal alignment with the pipeline and mechanism is provided for shifting the sections into abutment with the pipeline and for maintaining the pipeline in compression to prevent the individual sections from moving substantially after they are emplaced. The structure and the mechanism are mounted for rectilinear vertical movement within the housing so that the grade of the pipeline may be closely controlled irrespective of the grade of the bottom of the trench. Also included is means for preventing development of suction between the housing and the trench when the latter is moist.

3,605,420

PIPING

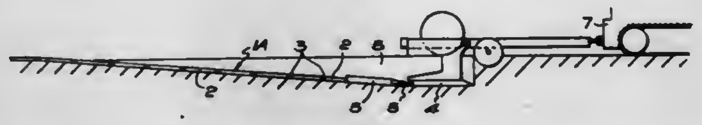
John F. Booth, Peter J. Hinchliff, and Walerian Miszka, Stocksbridge, Sheffield, England, assignors to The Hepworth Iron Company Limited

Filed July 14, 1970, Ser. No. 54,697

Claims priority, application Great Britain, Aug. 5, 1969, 39,261/69; Oct. 20, 1969, 51,282/69; May 22, 1970, 24,860/70

Int. Cl. F16l *1/00*

U.S. Cl. 61—72.7 **8 Claims**



Piping is mole-ploughed into the ground by inserting into a length of piping, in particular clayware pipe-lengths abutting end-to-end and preferably connected by slightly resilient plastics sleeves, an inflatable bag which is expanded into gripping contact along the length of the piping, to enable the pull to mole-plough the piping into the ground to be distributed along the length of the piping, and the bag may be reinforced so as to take the pull from the mole-plough or it may be inserted along with a wire to be connected to the mole-plough, with the wire inside or, advantageously, outside the bag.

3,605,421

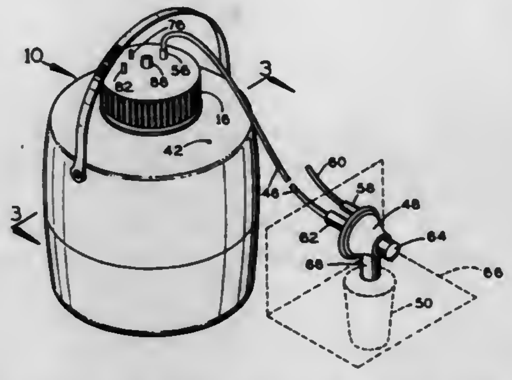
COOLER

Earnest H. Patrick, 1301 SW. 56th Ave., Fort Lauderdale, Fla. 33314

Filed Feb. 16, 1970, Ser. No. 11,550

Int. Cl. F25b *19/00*

U.S. Cl. 62—7 **19 Claims**



A cooler in which fluid may be cooled, and from which fluid may be dispensed by operation of a dispenser associated with the fuel intake of a gasoline engine in a car, truck, boat or other vehicle. The cooler includes a gasoline vaporizer in a container having a partition, preferably a cup, at least partly enclosing the vaporizer. The vaporizer includes a first tube and a second tube, preferably coiled, with the second tube being located inside the first tube. Preferably, there are: (1) a fluid inlet leading from the container into the partitioning cup, (2) a gasoline inlet leading into the second tube, (3) an air inlet leading into the first tube to supply air to an area therein where gasoline is vaporized, (4) an exhaust outlet for the first tube to draw a gasoline-air mixture through the first tube over the second tube for cooling purposes, and (5) a fluid outlet for suppling cooled fluid from the cup to the dispenser. Thus, fluid may be stored in the container, cooled in the partitioning cup or shell, and dispensed from the shell.

3,605,422

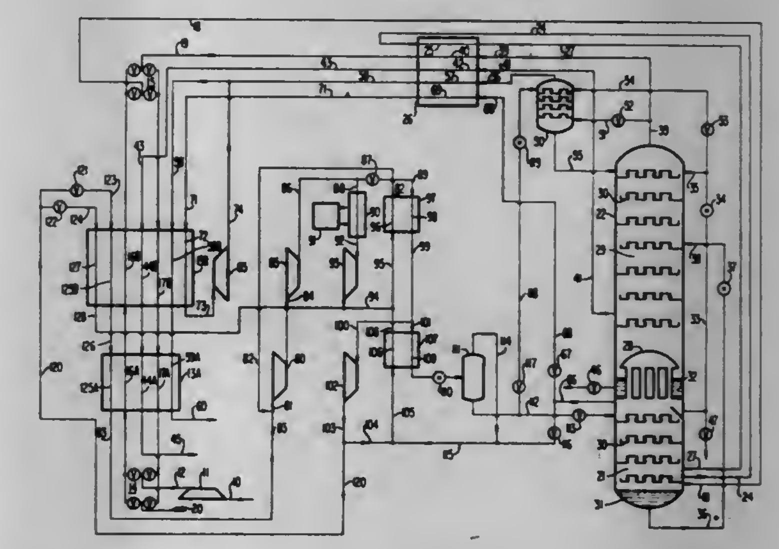
LOW TEMPERATURE PROCESS FOR THE SEPARATION OF GASEOUS MIXTURES

John A. Pryor, Emmaus, and Howard C. Rowles, Center Valley, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 28, 1968, Ser. No. 708,866

Int. Cl. F25j *3/04, 5/00*

U.S. Cl. 62—13 **12 Claims**



Process for the separation of a gas mixture under low pressure into components by a low temperature fractionating operation including an integrated refrigeration system which increases the liquid producing capabilities of the process for producing relatively large quantities of high purity products in liquid phase without decreasing efficiency of the fractionating operation and without sacrificing purity or yield of desired products.

3,605,423

AIR RECTIFICATION WITH MULTIPLE REBOILERS AND CONDENSERS

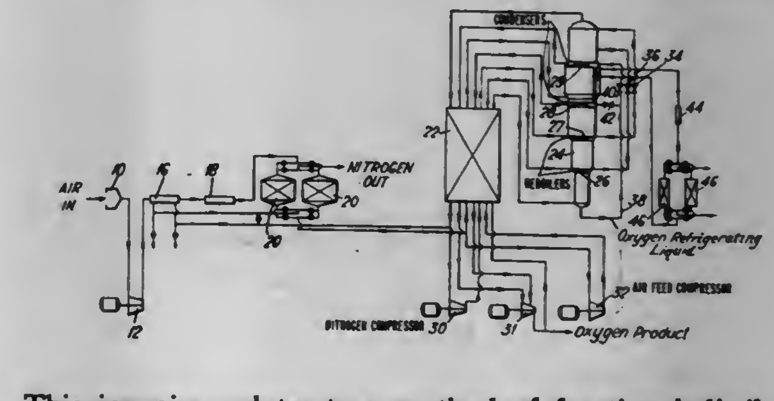
Roman Stoklosinski, 1 Lyncroft Gardens, London, W. 13, England

Filed May 28, 1968, Ser. No. 732,670

Claims priority, application Great Britain, June 1, 1967, 25,441/67

Int. Cl. F25j *3/00, 3/02, 3/04*

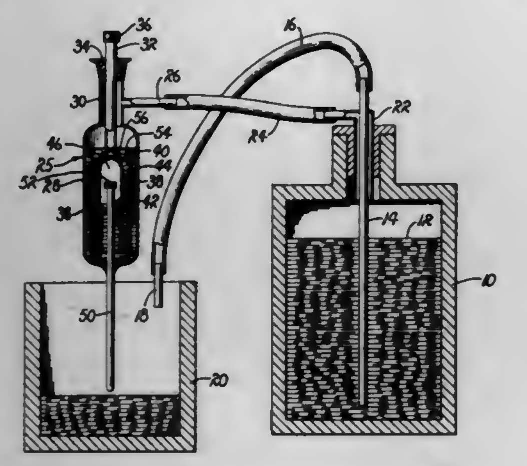
U.S. Cl. 62—28 **8 Claims**



This invenion relates to a method of fractional distillation in which a feed, preferably air, is introduced into a distillation column having distributed up its height a number of reboilers and condensers which are arranged so as to work the column approximately reversibly and obtain a liquid bottom fraction and a top gaseous fraction. At least a part of the gaseous top fraction and at least a part of the feed are used as the heating medium in reboilers, and at least part of the liquid bottom fraction is used as the cooling medium in at least one condenser positioned above the highest reboiler.

3,605,424
VALVING DEVICE FOR AUTOMATIC REFILLING IN CRYOGENIC LIQUID SYSTEMS

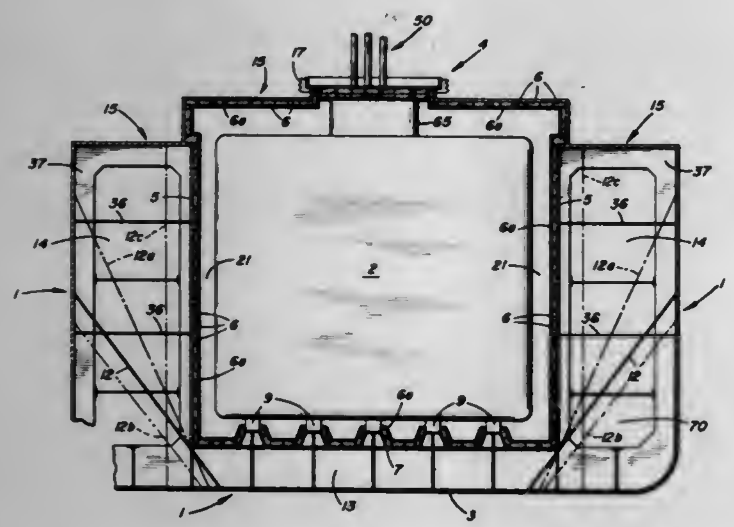
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Joe Liberotti, La Crescenta, Calif.
Filed Mar. 19, 1970, Ser. No. 20,960
Int. Cl. F17c *7/02*
U.S. Cl. 62—51 **8 Claims**



A mercury column, the level of which is varied by expansion and contraction of methane within a mercury-submerged bell and communicating fluid-level probe, is employed to valve the vent of a closed cryogenic liquid supply vessel and cause cryogenic liquid to be displaced therefrom into a cryogenic liquid consumption device.

3,605,425
SHIP SYSTEM FOR THE TRANSPORTATION OF HIGHLY TOXIC CARGOES

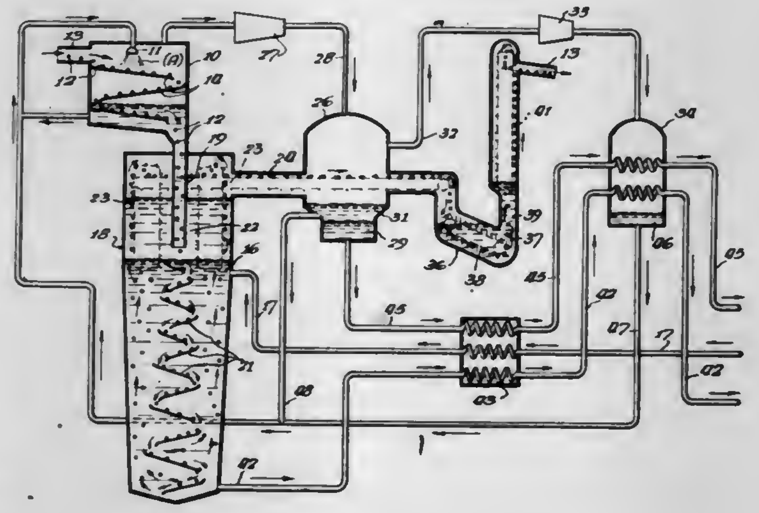
Joseph J. Cuneo, Scarsdale, Norman K. Basile, Hauppauge, George R. Knight, Port Washington, and Peter A. Lalangas, Riverdale, N.Y., assignors to John J. McMullen Associates, Inc., New York, N.Y.
Filed Feb. 7, 1969, Ser. No. 806,335
Int. Cl. B63j *2/14;* **F17c** *13/00*
U.S. Cl. 62—54 **19 Claims**



A ship system for transportation of highly toxic cargoes having liquid densities greater than water and gas densities greater than air, such as chlorine. The ship system combines a series of unique features to maximize safety of both human and aquatic life. The ship system consists of a series of cargo tanks arranged longitudinally along the centerline of the ship, each cargo tank isolated from the remainder of the ship by means of a secondary barrier space formed by insulated longitudinal and transverse bulkheads, inner bottom and upper deck. The system provides extensive unique collision protection features to minimize the probability of cargo liquid and/or gas release to the atmosphere, which may be caused by grounding or collision with another ship. Further, the system eliminates the need for handling cargo gas during transit, which also adds to personnel safety.

3,605,426
DESALINATION PROCESS BY CONTROLLED FREEZING

Bei T. Chao, 704 Brighton Drive, and Edward F. Janzow, 1108 N. Lincoln, both of Urbana, Ill. 61801
Filed Nov. 27, 1968, Ser. No. 779,430
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **8 Claims**

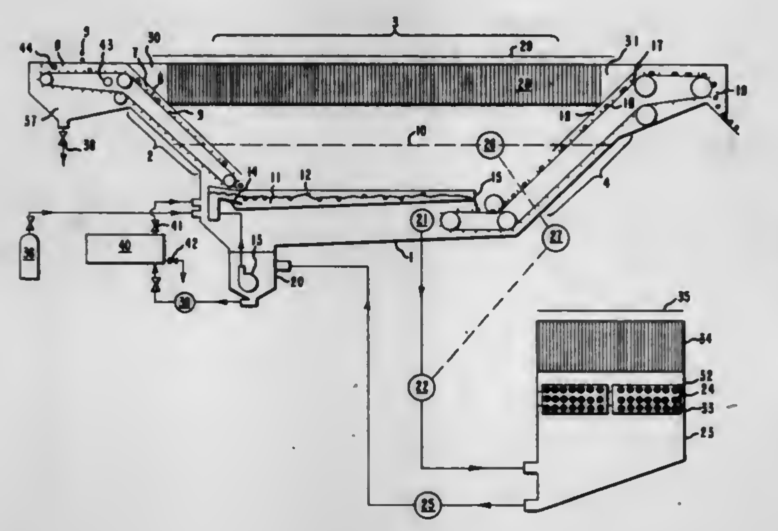


A process for recovery of fresh water from brine by formation of ice on the surface of chilled hollow pellets containing a liquid which is at least partially frozen and melts at a temperature below the freezing point of water. The heat of fusion of the frozen liquid absorbs the heat of crystallization evolved in the formation of said ice and provides the pellets with high effective heat capacity and high thermal efficiency. After separation of the ice covered pellets from the brine, the ice is melted and recovered as the product water.

3,605,427
METHOD AND APPARATUS FOR EXTRACTING HEAT FROM ARTICLES WITH AN EBULLIENT LIQUID FREEZANT

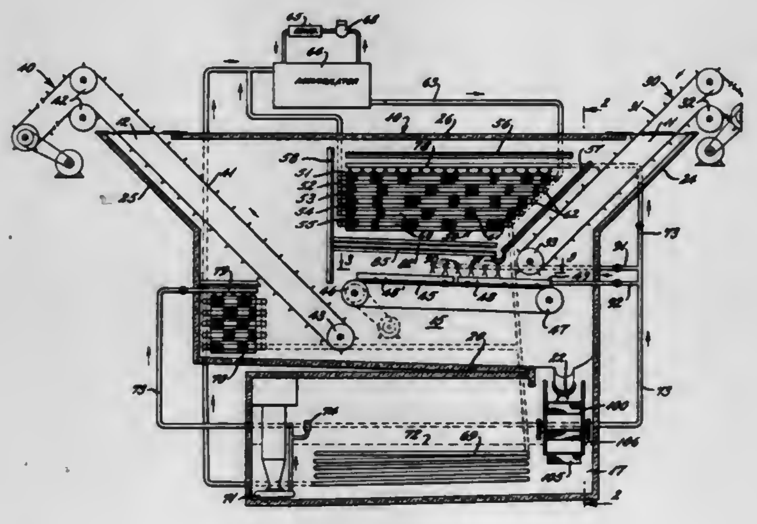
Dennis Dale Rudy, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 10, 1969, Ser. No. 883,789
Int. Cl. F25d *17/00*
U.S. Cl. 62—64 **21 Claims**

In a method, and apparatus, for extracting heat from articles, as in the freezing of food, which method comprises directly contacting the articles with an ebullient liquid freezant in an open vessel without significant loss of freezant vapor to the atmosphere, which method further comprises maintaining by means of a vapor condenser a non-condensable gas-freezant vapor interface within the vessel below the level of all paths to the outside atmosphere and above the level at which the articles come in direct contact with the liquid freezant, and introducing the articles into and removing the articles from the vessel without substantially disturbing the non-condensable gas such as air above the interface or introducing essentially any non-condensable gas below the interface, the improvement which comprises positioning said vapor condenser in an open housing remote from the vessel, conducting freezant vapor through a suitable conducting means from the vessel to the housing, maintaining a non-condensable gas-freezant vapor interface in the housing, and returning condensed freezant through a suitable conducting means to the vessel.



3,605,428
PRODUCT FREEZING WITH VAPOR CONDENSATION

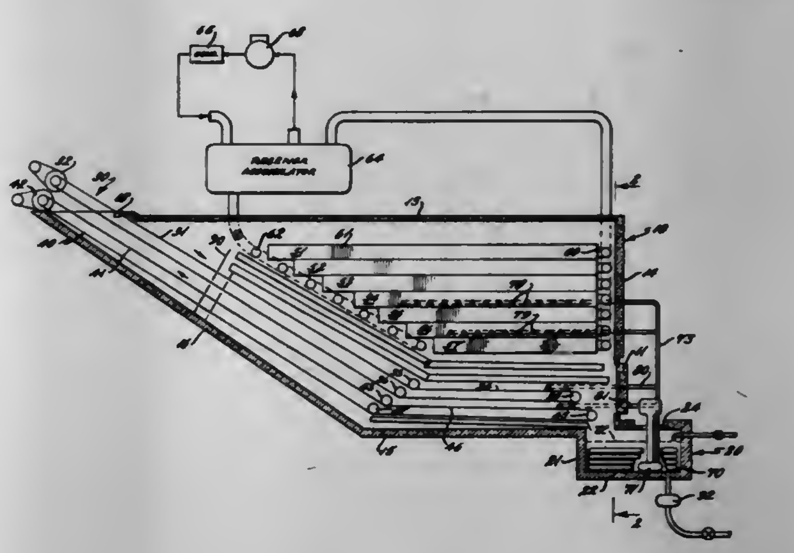
Malcolm C. Smith, Hagerstown, Md., and Milton W. Garland, Waynesboro, and Hollis C. Grubb, Chambersburg, Pa., assignors to Frick Company, Waynesboro, Pa.
Filed Mar. 5, 1970, Ser. No. 16,833
Int. Cl. F25d *17/00*
U.S. Cl. 62—64 **16 Claims**



Food or other product is introduced into a housing unsealed at the top in which the atmosphere is maintained at all times during product freezing at a temperature lower than the saturation temperature of the freezing refrigerant at atmospheric pressure. The temperature is maintained by constantly circulating the freezing refrigerant over a low temperature heat exchanger. The product may be sprayed and immersed in the freezing refrigerant whose supply is constantly circulated through a separator for removing product particles, ice and other foreign matter.

3,605,429
DIRECT REFRIGERANT FREEZING

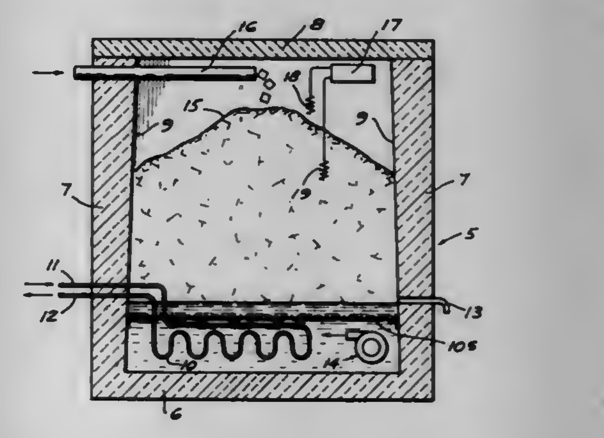
Malcolm Clinton Smith, Hagerstown, Md., and Milton W. Garland, Waynesboro, and Hollis Charles Grubb, Chambersburg, Pa., assignors to Frick Company, Waynesboro, Pa.
Filed Nov. 4, 1969, Ser. No. 873,877
Int. Cl. F25d *17/02*
U.S. Cl. 62—64 **6 Claims**



Food or other product is introduced into an unsealed housing having an atmosphere of circulating refrigerant vapor which rises through a descending liquid refrigerant curtain and which is continuously condensed on refrigerated surfaces within the housing. After the exterior of the product is frozen, liquid refrigerant may be sprayed directly thereon. Prior to use the surfaces within the housing are cooled from the lowermost progressively upwardly thereby driving out air and reducing condensation of moisture; after use the procedure is reversed in order to permit substantially complete recovery of the refrigerant.

3,605,430
SYSTEM FOR COOLING BEVERAGES

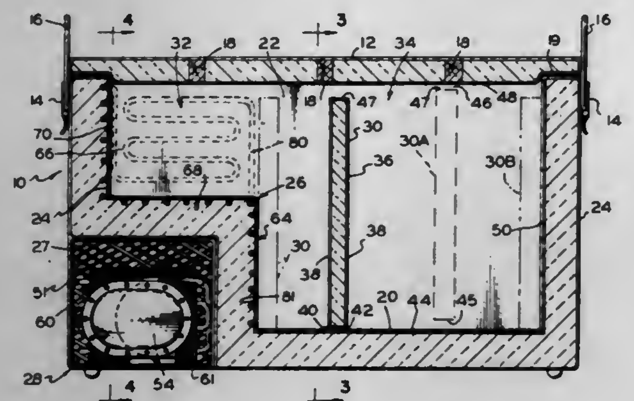
Robert F. Conti, Easton, Pa., assignor to Follett Corporation, Easton, Pa.
Filed May 22, 1969, Ser. No. 826,976
Int. Cl. F25c *1/00*
U.S. Cl. 62—137 **4 Claims**



This invention is directed to a cooler for post mix carbonated beverages and includes an insulated cabinet for retaining ice and at least one horizontal ingredient cooling coil located adjacent the bottom of the cabinet. The ice rests on a support screen above the coil and progressively melts to form a cold water bath around the coils. Excess water is drained off at a predetermined level above the support screen and the water bath is agitated. Bin level sensors may be used to control admission of ice to the cabinet.

3,605,431
PORTABLE REFRIGERATOR-FREEZER

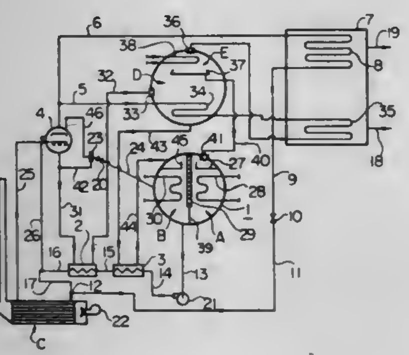
John L. Carson, P.O. Box 141, Woodburn, Oreg. 97071
Filed Sept. 10, 1969, Ser. No. 856,662
Int. Cl. F25b
U.S. Cl. 62—190 **5 Claims**



A portable two-temperature zone refrigerator having a movable partition disposed within a food receiving cabinet to divide the same into two adjustably sized food receiving sections. The partition is substantially equal to the width of the interior of the cabinet and has a depth less than the depth thereof selectively to permit refrigerated air to circulate vertically around the partition and thus between the two food receiving sections. The interior walls of the cabinet are made of metal. Refrigerating means are disposed within at least one of the food receiving sections and comprise a refrigerating coil attached to the metal interior wall of such food receiving section. Thermostatic control means are provided to adjust the temperature so as to achieve a temperature differential between the two food receiving sections. Vertical adjustment of the movable partition permits variation in the temperature differential between the two sections, while removal of the partition permits the entire cabinet to achieve one temperature which may selectively be below freezing.

3,605,432
ABSORPTION REFRIGERATING SYSTEM

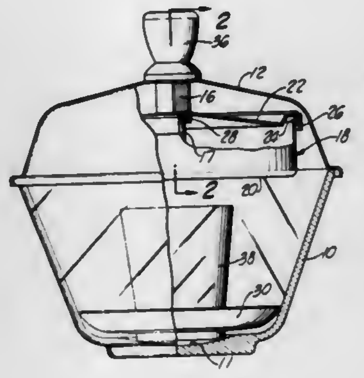
Masaji Wada, 682 Marukodori 2-chome,
Kawasaki-shi, Kanagawa-ken, Japan
Filed Jan. 23, 1969, Ser. No. 793,485
Claims priority, application Japan, Jan. 26, 1968, 43/4,724; Jan. 29, 1968, 43/5,314
Int. Cl. F25b *15/06*
U.S. Cl. 62—324 **12 Claims**



A direct fire type double-effect absorption refrigerating system comprising as its principal component devices an evaporator, an absorber, a generator, a condenser and two solution heat-exchangers and in which a hot water for service forming device is provided in parallel to a refrigerating cycle system or heat pump cycle system and refrigerant gas is directly or indirectly introduced from a generator which is heated from an external heating source or a liquid separator connected to said generator into said hot water forming device thereby to form a condensed refrigerant liquid which is to be recycled to said generator.

3,605,433
SALAD BOWL

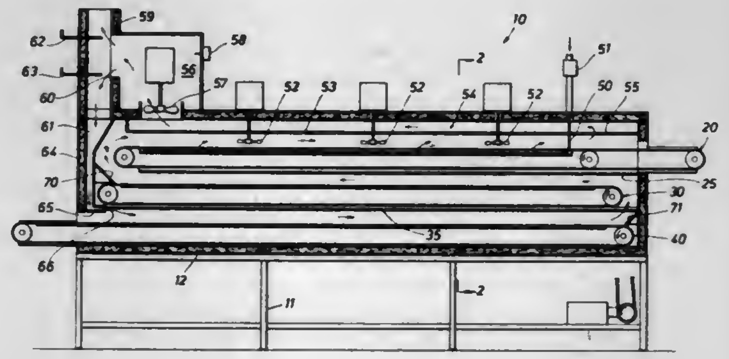
John Strathaus, 11835 Highwater Road,
Granada Hills, Calif. 91344
Filed Nov. 10, 1969, Ser. No. 875,451
Int. Cl. F25d *3/08*
U.S. Cl. 62—371 **4 Claims**



A salad bowl having a circular bottom bowl portion covered by a circular lid, the lid of the bowl having a refrigerant containing compartment detachably suspended from the lid of said bowl and thermally insulated therefrom to retain a cooler interior of said bowl and at the same time to prevent frosting of said bowl and lid as well as preventing the rapid loss of coolant media to the atmosphere.

3,605,434
REFRIGERATION APPARATUS INCLUDING A CONVEYOR AND EMPLOYING CRYOGENIC FLUID

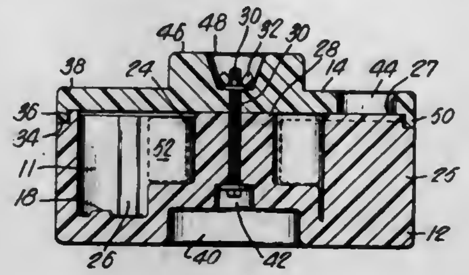
Harold L. Boese, Houston, Tex., assignor to James L. Foster and W. D. Boyd, Houston, Tex., fractional part interest to each
Filed Nov. 12, 1969, Ser. No. 875,825
Int. Cl. F25d *17/00*
U.S. Cl. 62—374 **7 Claims**



Refrigeration apparatus using a cryogenic liquid wherein the apparatus includes multiple segments of a conveyor system which are stacked one on top of the other in a single chamber and the cryogenic liquid is introduced approximately near the point where the food to be frozen is introduced to place a quick surface freeze thereon to protect the quality of the product, and wherein the cryogenic liquid evolves a cold gas which is drawn off and forced back along the conveyor system in a counter flow traveling along the length of the various conveyor segments and the apparatus further includes a chimney for conducting hot gases away from the apparatus, the chimney being connected with the gas flow system and the amount of gas deviated to the chimney and the amount directed to the gas flow system being controlled by louvers placed in the system.

3,605,435
COOLER

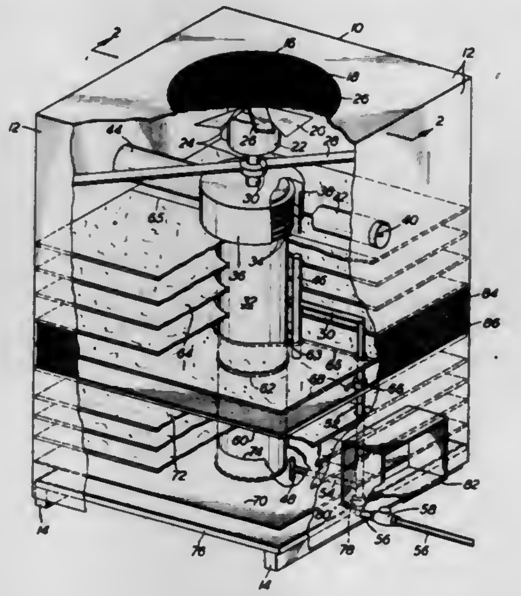
Frank Taylor, 1319 Bernie St., La Salle, Quebec, Canada
Filed Dec. 29, 1969, Ser. No. 888,563
Int. Cl. F25d *3/08*
U.S. Cl. 62—457 **10 Claims**



A cooler formed from a bottom and top section mounted for relative rotational movement, a plurality of compartments arranged in a circle in the bottom section, a coolant chamber positioned within the circle and individual passages connecting the coolant chamber with each withdrawn or dispensed individually by permitting access opening therein which opening may, by relative rotation of the two sections, be aligned with selected of said compartments.

3,605,436
CENTRIFUGAL ABSORPTION AIR CONDITIONER

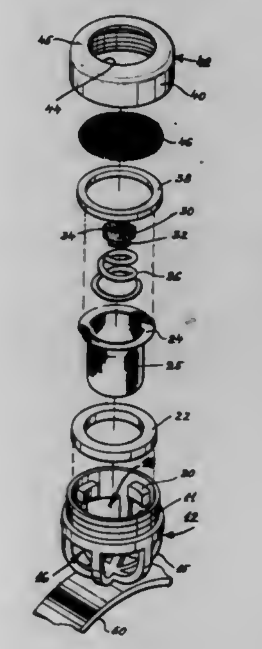
Oscar Elbridge Gammill, Jr., P.O. Box 52,
Skaneateles, N.Y. 13152
Continuation of application Ser. No. 711,037, Mar. 6, 1968. This application Aug. 29, 1969, Ser. No. 858,559
Int. Cl. F25f *15/04*
U.S. Cl. 62—476 **30 Claims**



In one exemplar embodiment, a gas heated absorption air conditioning system is disclosed, utilizing a rotating cylindrical vessel in which the functions essential to the absorption cycle are performed and heat rejection is effected between a heating or cooling medium and a portion of the outer wall of the cylindrical vessel. The cylindrical vessel, containing a predetermined quantity of an absorptive fluid, is evacuated and sealed and then rotated at a predetermined rotational velocity. The centrifugal and velocity forces created by the rotating vessel evenly distribute the absorptive fluid over the inner walls of the cylinder and provide the motive force to cause circulation of the fluid during the absorption cycle without the need for pumps to maintain such fluid circulation.

3,605,437
ARTICLE OF JEWELRY INCLUDING AN INCENSE BURNER

Garfield G. Litton, 1360 Ocean Parkway,
Brooklyn, N.Y. 11230
Filed Feb. 12, 1970, Ser. No. 10,946
Int. Cl. A44c *25/00*
U.S. Cl. 63—1A **10 Claims**



An article of jewelry includes an incense burner comprising an open casing or ring which supports an open mesh basket in which a pellet can be set and ignited to emit a strong fragrance. The basket is thermally insulated from the casing so that heat is conducted away from the casing by an air draft which passes through the basket. The air draft supports combustion and carries the emitted fragrance. A bracelet, ring, chain of beads, or the like, is secured to the casing so that the burner is wearable as an article of costume jewelry. Since the casing remains cool or, at most, moderately warm while the incense is burning, it can be worn safely in contact with a person's finger, arm, neck or other body part.

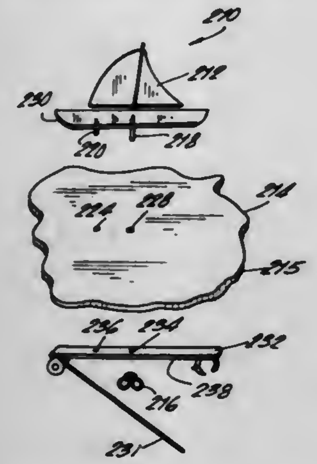
ERRATUM

For Class 63—15 see: —
Patent No. 3,605,442

3,605,438
BAR PIN WITH CHANGEABLE NON-ROTATABLY SECURED ORNAMENT AND INTERMEDIATE MEMBER

Bernard Chalson, Lawrence, N.Y., assignor to William Chalson & Co., Inc., New York, N.Y.
Filed Sept. 10, 1968, Ser. No. 758,792
Int. Cl. A44c *1/00*
U.S. Cl. 63—20 **2 Claims**

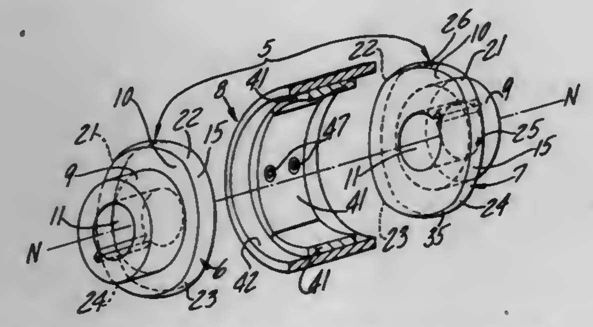
An article of jewelry having interchangeable ornamentation comprising interchangeable separate decorative elements and interchangeable separate bases with means depending from the decorative elements through the bases and locking means for holding the decorative elements and decorative bases in non-rotatable and superposed relation to each other. A bar pin is also provided



and a respective element and base may both be non-rotatably secured thereto by the previously mentioned means.

3,605,439
TORSION DRIVE COUPLING

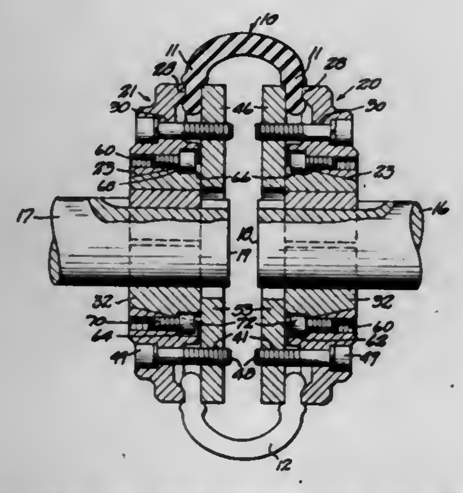
Leslie Filepp, Colts Neck, N.J., assignor to
Midland-Ross Corporation, Cleveland, Ohio
Filed May 8, 1970, Ser. No. 35,647
Int. Cl. F16d *3/18*
U.S. Cl. 64—9R **12 Claims**



A gear-type coupling for connecting in-line shafts in driving relationship. Basic parts of the coupling are a pair of shaft-receiving hubs and a double-ended sleeve or spacer for receiving the hubs. The cooperating external and internal tooth surfaces of the parts are based on a four-tooth configuration resulting in a somewhat quadratic pattern of radially-outwardly convex sides.

3,605,440
FLEXIBLE COUPLING

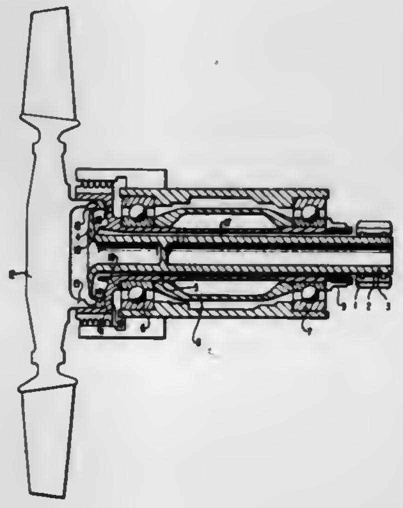
David Firth, 1441 E. Jefferson Blvd.,
South Bend, Ind. 46617
Filed May 4, 1970, Ser. No. 34,024
Int. Cl. F16d *3/52*
U.S. Cl. 64—11R **5 Claims**



A flexible coupling wherein a pair of hub members having tapered bores each encircles a split tapered bushing projecting axially from one side thereof and having a normal slide fit on a shaft. An annular clamp plate is carried by each hub member and has an inner marginal portion abutting the projecting end of the adjacent bushing and an outer marginal portion for clamping a margin of a flexible annular torque-transmitting member against a margin of the cooperating hub member when advanced toward said hub member, whereby to connect said bushing, hub and flexible member in drive-transmitting relation. Connector means are carried by each hub and engage the associated bushing to define a sub-assembly of a bushing, a hub and a clamp plate which accommodates limited relative axial movement of said hub and bushing and maintains the same in substantially coaxial relation at all times.

3,605,441
INSTALLATION FOR THE TRANSMISSION OF TORQUE BETWEEN A TURBINE ROTOR AND A TRANSMISSION AND METHOD OF MANUFACTURE THEREOF

Klaus Hagemeister, Munich, Germany, assignor to Motoren- und Turbinen-Union Muenchen GmbH, Munich, Germany
Filed July 23, 1969, Ser. No. 843,984
Claims priority, application Austria, July 24, 1968, A 7,168/68
Int. Cl. F16d *3/78*
U.S. Cl. 64—13 **11 Claims**

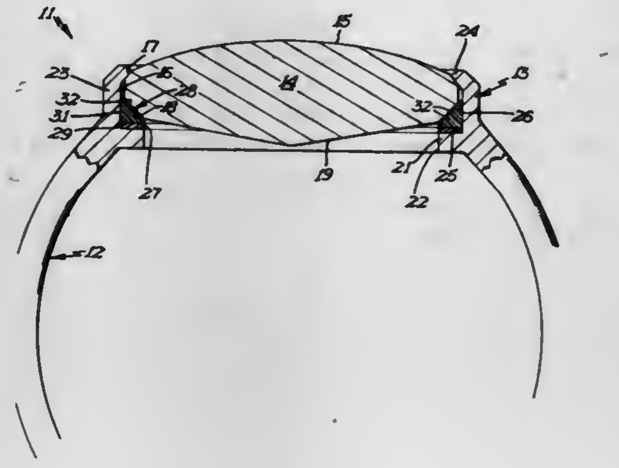


An installation for the transmission of the torque between a turbine rotor and a transmission which includes separate support and torque-transmitting shafts, and in which for the purpose of compensation of alignment errors between the transmission shaft and the turbine rotor the torque-transmitting shaft passes over at the rotor-end thereof into a flexible torsion-resistant diaphragm which is connected with the rotor and the support shaft. The connection of turbine rotor, support shaft and torque-transmitting shaft is realized by a brazed joint.

3,605,442
JEWELRY MOUNTING HAVING COMBINED CUSHION AND SEALING MEANS

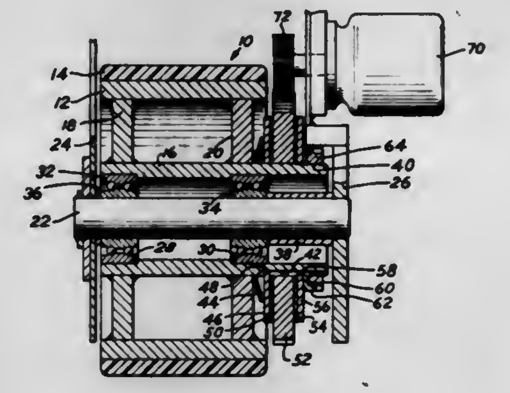
James E. Parker and John S. Titus, Jr., Owatonna, Minn., assignors to Jostens, Inc., Owatonna, Minn.
Filed May 26, 1969, Ser. No. 827,776
Int. Cl. A44c *9/00*
U.S. Cl. 63—15 **7 Claims**

An improved ring having a novel plastic cushion positioned in and extending completely around the ring bezel. The ring stone rests on and is supported in the bezel by an inwardly tapered seating surface formed on the plastic cushion so as to provide a relatively shock resistant setting for the ring stone. The surface of the plastic cushion is constructed and arranged so as to form a liquid seal between the ring stone and the plastic cushion and between the cushion and the bezel.



3,605,443
TORQUE LIMITER

Paul E. Redelman, South Holland, Ill., assignor to
Interlake Steel Corporation
Filed Aug. 4, 1969, Ser. No. 847,243
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 **5 Claims**

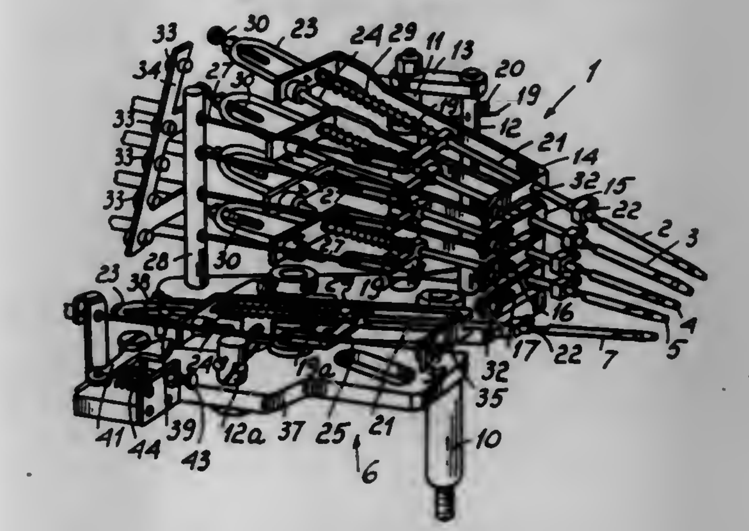


A torque limiter for preventing the transmission of excessive torque from the wheel of a vehicle to the vehicle in the event the wheel drive train becomes locked, which includes a pair of friction pads urged to frictional engagement with the opposite sides of the wheel drive gear so as to normally transmit driving torque to the wheel but enable the wheel to slip relative to the drive gear if the drive gear locks.

3,605,444
THREAD FEED UNIT FOR DOUBLE CYLINDER KNITTING MACHINES

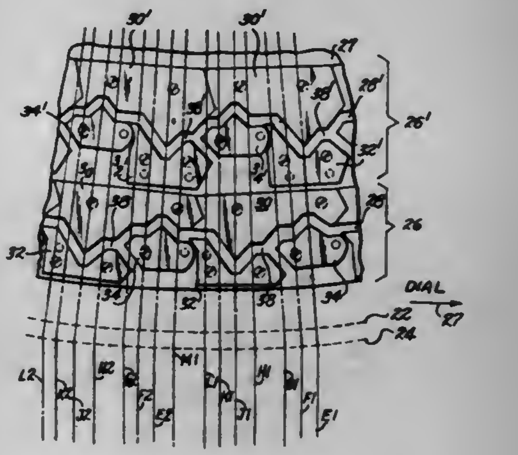
Francesco Lonati, Via S. Polo 11, Brescia, Italy
Filed Apr. 14, 1969, Ser. No. 815,669
Claims priority, application Italy, Apr. 19, 1968, 15,496/68
Int. Cl. D04b *9/10, 15/58*
U.S. Cl. 66—14 **4 Claims**

This disclosure relates to a feed unit for double cylinder knitting machines, comprising a plurality of guide supports mounted about a fixed vertical shaft for oscillation between a feed position and a rest position, a thread carrier mounted on each of said guide supports for longitudinal sliding to and from the needle cylinders, cable means being arranged eccentric to said fixed shaft for causing a thread carrier to slide away from said needle cylinders before the oscillation of the relative guide support towards the rest position.



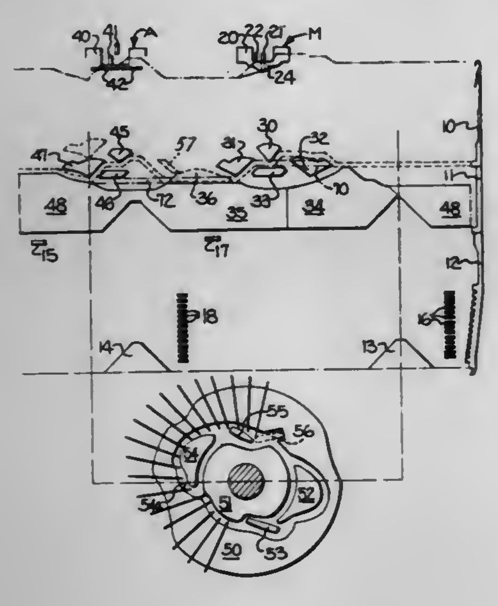
3,605,445
METHOD OF KNITTING AND CAMMING MECHANISM THEREFOR

Morris Philip, 2519 Grand Ave., Bronx, N.Y. 10468
Filed Dec. 12, 1968, Ser. No. 783,189
Int. Cl. D04b *9/00*
U.S. Cl. 66—17 **19 Claims**



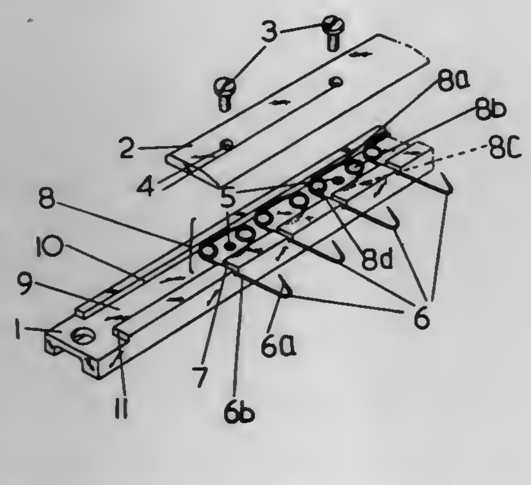
This invention relates to a method of knitting with a circular knitting machine having a first bank of needles and a second bank of needles, with the needles of at least the second bank being divided into a plurality of sets. A plurality of successive courses are knit with one of the sets of the second bank, each course being knit with a set of needles of the second bank different from the set used to knit the preceding course, and in each course the needles of the second bank are delayed in their knitting cycle at a position wherein the delayed needles have been pulled back at least sufficiently to clear the cooperating needles of the first bank but at a position where they have not been pulled back sufficiently for the old loops thereon to be cast off, so that during the delay the loops on the needles of the second bank remain on the outside of the closed latch. The delayed needles are pulled in to cast off their stitches about when the needles used in the next course reach their cleared point. The invention also provides a camming mechanism for performing the method.

3,605,446
RIB AND TERRY KNITTING MACHINE AND METHOD
Herman E. Crawford, Jr., and James H. Wells, Kernersville, N.C., assignors to H. E. Crawford Co., Inc., Kernersville, N.C.
Filed Jan. 23, 1969, Ser. No. 793,258
Int. Cl. D04b *9/06, 9/12*
U.S. Cl. 66—24 **9 Claims**



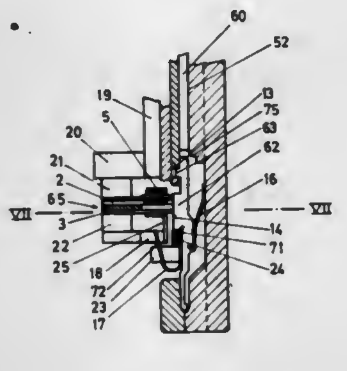
A multiple feed circular hosiery knitting machine is provided with means for forming terry loops at one knitting station and for forming a rib fabric at a subsequent knitting station. This invention is particularly adapted for use in forming socks wherein the upper cuff portion is knit of ribbed fabric while the sole portion is provided with terry loops. The present method permits the selected knitting of a ribbed fabric or a terry loop fabric in a single feed manner, as well as multiple feed plain or patterned knitting.

3,605,447
STRAIGHT BAR KNITTING MACHINE FABRIC DRAW-OFF MEANS
Raymond Blood and Alan John Pearson, Loughborough, England, assignors to William Cotton Limited, Loughborough, Leicestershire, England
Filed Oct. 17, 1969, Ser. No. 867,305
Claims priority, application Great Britain, Nov. 2, 1968, 52,039/68
Int. Cl. D04b *27/34*
U.S. Cl. 66—149R **4 Claims**



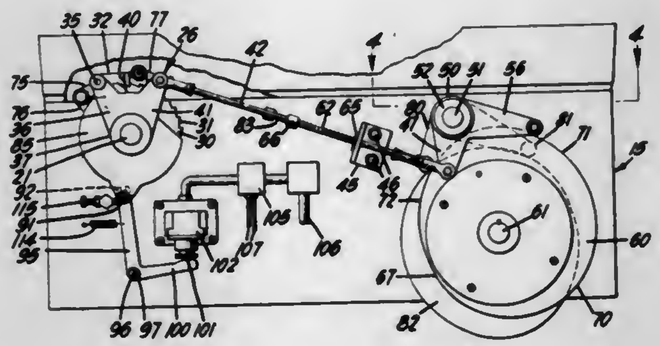
Straight bar knitting machine draw-off bar in which the draw-off hook elements are each individually spring mounted e.g. by tail portions of the elements being looped or coiled thus providing spring formations which are accommodated in a longitudinal groove in the bar, for the purpose of the elements being independently self-adjustable to a working load when applied.

3,605,448
MAGNETIC SELECTOR FOR TEXTILE MACHINES
Erich Ribler, 22 Neue Str., 7832 Kenzingen, Germany
Filed May 13, 1969, Ser. No. 824,126
Claims priority, application Germany, May 14, 1968, P 17 60 405.6
Int. Cl. D04b *15/72, 15/28*
U.S. Cl. 66—154A **14 Claims**



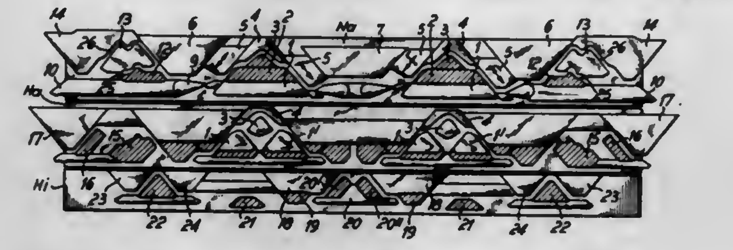
Jacks, sinkers, or like control elements are selectively moved between a first position sliding on a permanently magnetized slide surface, and a second position to which the control elements are moved by springs when a selector magnet is energized in accordance with a program to counteract the magnetic force of the slide surface in the region of a cutout in the same.

3,605,449
PATTERN MECHANISM FOR KNITTING MACHINES
James D. Moyer, Wyomissing, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Oct. 6, 1969, Ser. No. 864,140
Int. Cl. D04b *15/66*
U.S. Cl. 66—154 **8 Claims**



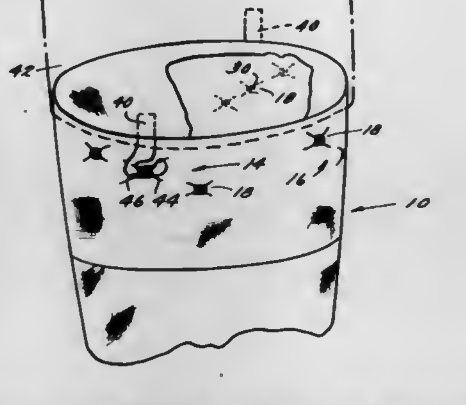
Pattern mechanism for a circular knitting machine, the pattern mechanism including a cam drum, first and second pawls for indexing the cam drum in steps of equal extent, and means for controlling the operation of the pawls whereby both pawls may be operated successively to index the cam drum during each rotation of a pair of rotations of the needle cylinder of the machine, or one of the pawls may be operated to index the cam drum in only one of a pair of cylinder rotations and the other of the pawls may be operated to index the cam drum in only the other of a pair of cylinder rotations.

3,605,450
CAM SYSTEM FOR AUTOMATIC JACQUARD FLAT KNITTING MACHINES
Ernst Goller, Pfullingen, and Karl Essig and Helmut Mutschler, Reutlingen, Germany, assignors to H. Stoll and Company, Reutlingen, Germany
Filed Mar. 24, 1969, Ser. No. 809,825
Claims priority, application Germany, Mar. 23, 1968, P 17 60 025.8
Int. Cl. D04b *7/04*
U.S. Cl. 66—78 **4 Claims**



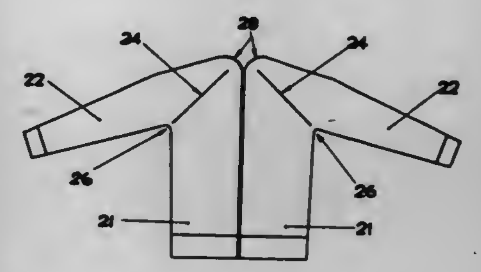
A cam assembly for a double lock system in a Jacquard flat knitting machine. The needles, the main jacks and the auxiliary jacks are guided by a needle guide plate, a main jack guide plate and an auxiliary jack guide plate, respectively. Guide cams for the transfer and receiving of stitches are located at each end of the main jack guide plate; the advancing cams of the main jack guide plate are constructed in two halves for stitch and loop formation; and the auxiliary jack guide plate includes at each end thereof run-in cams which permit additional selection of main jacks through the medium of the auxiliary jacks.

3,605,451
DETACHABLE HOSE WITH KNITTED FABRIC LOOPS
Aaron Burleson, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Continuation-in-part of application Ser. No. 742,082, July 2, 1968. This application Mar. 21, 1969, Ser. No. 809,354
Int. Cl. D04b *9/54*
U.S. Cl. 66—172 **6 Claims**



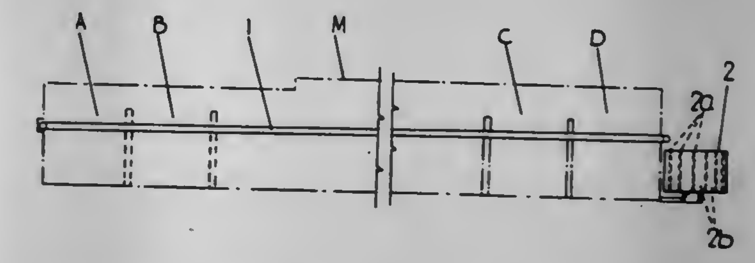
A stocking and usually the welt of the stocking is provided with integral, knitted fabric loops by which the stockings are attached to a panty, girdle or other support garment by a fastener of small and thin dimensions. The loops are formed by float stitching wherein a number of selected needles are pulled down to sinker level, where they do not take any yarn, kept there for a selected number of courses and then placed back in action with the needles again taking yarn. The needles pulled down to the sinker level to effect the formation of the loops, can be needles which knit the wales in which the loops are formed, the needles which knit the wales intermediate the loops or various combinations of these two sets of needles with the yarn being alternately floated for selected courses behind each set of needles while the other set of needles is knitting to thereby form the integral knitted fabric loops.

3,605,452
KNITTED GARMENT BLANKS
Richard James Carter, Wigston Magna, and Dennis Gell, Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England
Filed May 6, 1969, Ser. No. 822,226
Claims priority, application Great Britain, May 11, 1968, 22,490/68
Int. Cl. D04b *1/24, 9/20*
U.S. Cl. 66—176 **5 Claims**



A knitted garment blank, or seamless tubular form, consists of two integral tubular portions disposed at an angle to each other and connected by an integral fashioned pouch having opposed sutures, formed by narrowing and widening, extending from closely adjacent points in the inner corner of the angle towards the peak of the pouch.

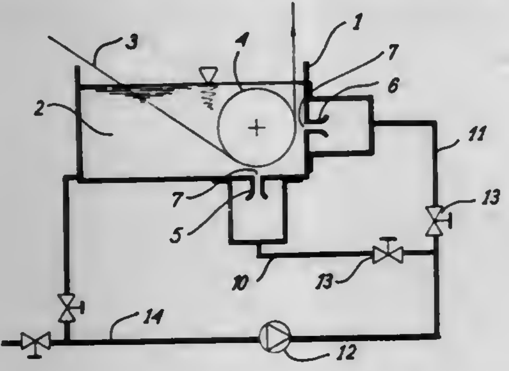
3,605,453
STRAIGHT BAR KNITTING MACHINES
Raymond Blood, Shepshed, near Loughborough, England, assignor to William Cotton Limited, Loughborough, England
Filed Feb. 28, 1969, Ser. No. 803,254
Claims priority, application Great Britain, Mar. 8, 1968, 11,541/68
Int. Cl. D04b *9/40*
U.S. Cl. 66—148 **7 Claims**



A method and means of collecting knitted blanks pressed off from a multi-section straight bar knitting machine in which a front endless conveyor delivers pressed off blanks from the respective knitting sections into respective compartments in an end receptacle, and electric motors driving the conveyor and the receptacle are under electric switch control including electric switches operable by switch operating members movable with the conveyor and the electric switch operable by movement of the receptacle, whereby sets of different shaped or sized blanks from the respective knitting sections are kept separate from each other.

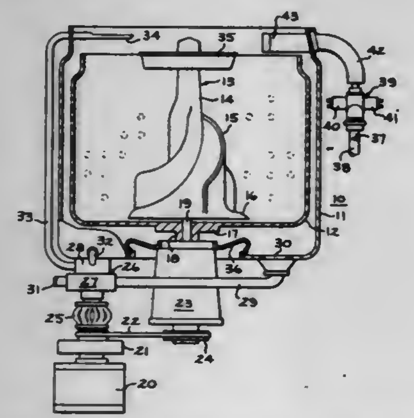
3,605,454
METHOD AND APPARATUS FOR THE CONTINUOUS WET TREATMENT OF TEXTILE FABRICS
Peter Schroeder, Arni, Switzerland, assignor to Paul Weber AG, Rothrist, Switzerland
Filed Dec. 3, 1968, Ser. No. 780,631
Claims priority, application Switzerland, Jan. 8, 1968, 232/68
Int. Cl. B05c *3/12, 8/04*
U.S. Cl. 68—62 **8 Claims**

A method and apparatus for the continuous wet treatment of fabrics involves leading the fabrics through a wet treatment zone extending over the entire width of the fabrics. In the wet treatment zone, the fabrics are subjected to jets of the treatment liquid, the jets being wide band jets which are laminar, dimensionally stable,



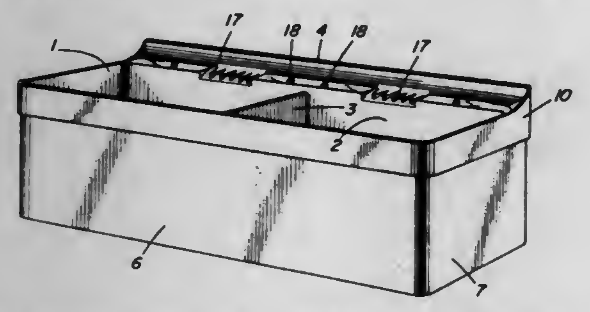
and fixed as to time and location. These jets are directed against the textile materials under pressure and at an angle of between 45 and 135° to the surface of the fabrics, the pressure being such that the jets press through the textile material.

3,605,455
WATER ADMISSION MEANS
Eugene G. Olthuis, Louisville, Ky., assignor to General Electric Company
Filed Nov. 14, 1968, Ser. No. 775,626
Int. Cl. D06f *37/00, 39/00*
U.S. Cl. 68—207 **9 Claims**



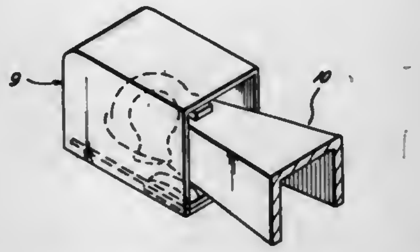
Water admission means particularly adapted for use in an automatic clothes washer is provided comprising a downwardly opening cup-shaped member having an upwardly directed inlet to direct a stream of water into the cup-shaped member. A plurality of projections depend from the cup-shaped member into the stream of water to break up and spread out the flow of water as it discharges into the washing basket.

3,605,456
TWIN LAUNDRY TUBS
Morris Klimboff, Wyoming, and Anthony Buonaura, Greenhills, Ohio, assignors to Formica Corporation, Cincinnati, Ohio
Filed Feb. 12, 1970, Ser. No. 10,897
Int. Cl. D06f *1/02*
U.S. Cl. 68—232 **3 Claims**



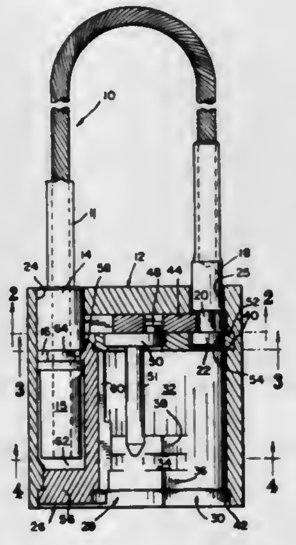
Twin laundry tubs are molded in a single piece of reinforced plastic with front, back, side and bottom walls in each tub and the dividing wall between the two tubs being solid and extending substantially to the bottom. The side walls are provided with rearward extensions or fins, and there is an integral molded rear piece and splash board extending across the back. This provides an opening in which a lighter and simplified wall bracket can be inserted. The tubs are provided with integrally molded holes on the four corners to receive legs when the tubs are to be supported on the floor, the holes being provided with splines fitting with grooves in the legs so that the latter on insertion cannot turn and become loose.

3,605,457
TRAILER HITCH LOCK
William D. Foster, 1414 Pirate's Cove, Houston, Tex. 77058
Filed Apr. 23, 1970, Ser. No. 31,128
Int. Cl. E05b *73/00*
U.S. Cl. 70—14 **10 Claims**



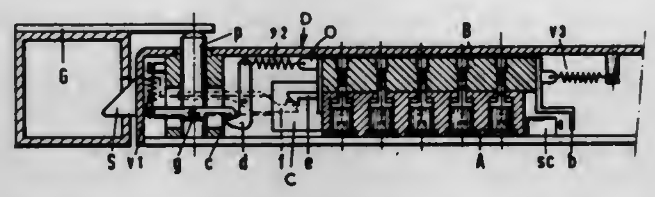
An apparatus for preventing access to a trailer hitch including an enclosure about the end of the hitch and a substitute towing ball carried on a wall segment of the enclosure for insertion into the ball socket of the hitch. A wall segment of the enclosure is pivotally connected to the enclosure to allow insertion and removal of the substitute ball and a concealed lock is provided to retain the enclosure about the hitch.

3,605,458
CABLE SHACKLE PADLOCK WITH PLUG-RETAINED CABLE
Walter E. Best, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.
Filed July 15, 1970, Ser. No. 54,974
Int. Cl. E05b *9/08, 35/10, 67/06, 67/22*
U.S. Cl. 70—49 **10 Claims**



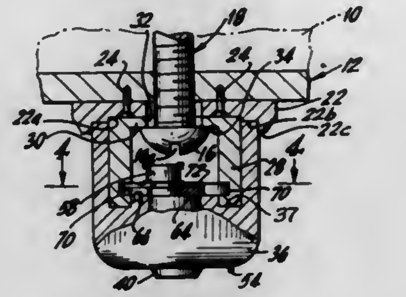
A padlock having a shackle in the form of a flexible cable of selected length. A secure construction and easy assembly is provided. The cable heel piece is permanently but rotatably secured in the lock case by interengagement inside the case with a shackle plug which is inserted with the heel piece from the rear and then turned to bayonet locked engagement with lugs in the case. Insertion of a lock core blocks release of the shackle plug. The cable toe piece is releasably secured by a slidable bolt. A bolt retaining plate is forced into, and retained in a supporting groove by a cam on the shackle plug as such plug is inserted, and the plate then braces the plug in secure engagement with the cable heel. To provide dead-bolt action, the bolt is actuated both for locking and release by a throw member controlled by key operation of the lock core.

3,605,459
DOOR-LOCK
Christiaan Johannes van Dalen, Voorburg, Netherlands, assignor to De Staat der Nederlanden, Ten Deze Vertegenwoordigd door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, Hague, Netherlands
Filed Dec. 11, 1969, Ser. No. 884,248
Claims priority, application Netherlands, Dec. 16, 1968, 6818018
Int. Cl. E05b *19/00, 35/00, 47/04*
U.S. Cl. 70—144 **6 Claims**



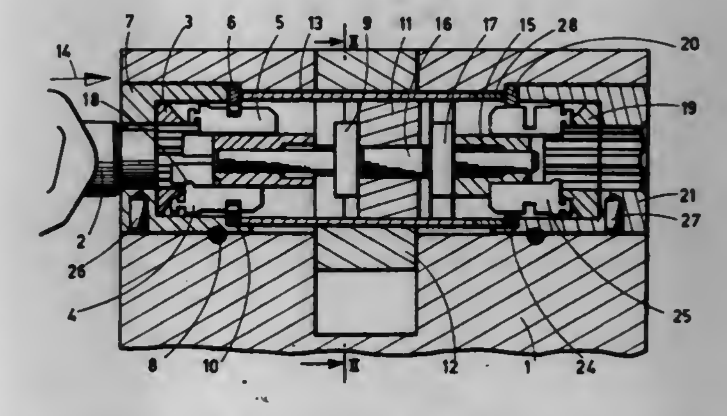
A door jamb and a door without a handle or keyhole containing a lock, which may be a magnetically operated tumbler type lock operated by a magnetic key, which when pressed against said door adjacent said lock, and mechanical means in the door initiated by pressing the door towards its jamb to move the relative parts of said lock to operate and retract the latch for the door and retain it retracted until the door is opened by a spring urged pin normally pressing against the door jamb.

3,605,460
BOLT HEAD LOCK
M. Leonard Singer, 1500 Cardinal Drive, Little Falls, N.J. 07424, and Robert M. Woletz, 294 Buttonwood Drive, Paramus, N.J. 07652
Filed Jan. 27, 1969, Ser. No. 794,047
Int. Cl. F16b *41/00;* **E05b** *73/00*
U.S. Cl. 70—232 **18 Claims**



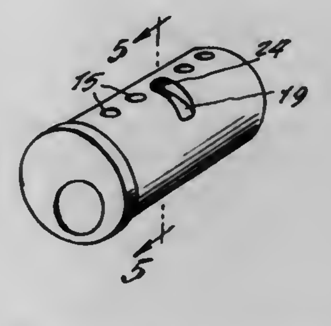
A device for locking typewriters and similar articles which are adapted to be positioned in a fixed location on a mounting platform or desk comprises an inner cylindrical member which includes a bore through its closed end which is adapted to receive a securing bolt which is provided for anchoring the article to the mounting location. The head of the securing bolt is adapted to engage over a ledge formed at the inner end of the inner cylindrical member and the head can be affixed to the cylindrical member such as by welding. The cylindrical member is carried on a flat plate or washer which includes means for fixing it to the mounting base for the article in a manner such that it will not rotate. When the lock is opened the cylindrical member is exposed to permit access to the head of the screw by a screw driver wrench so that it can be unthreaded to release the article. The inner cylindrical member is adapted to interengage with an outer cylindrical member or locking head which has an opened end into which the inner cylindrical member is directed and a closed end carrying a key engagement fitting. The key engagement fitting accommodates a key which may be rotated to shift a bolt member carried by the outer cylindrical member laterally to engage in a slot of the inner cylindrical member and to thus hold the assembly together. The assembly covers the bolt head so that the securing bolt cannot be rotated to effect disengagement from the article held thereby.

3,605,461
CYLINDER LOCK
Roger Felix Frank, Rue du General Ferrie, Haute-Savoie, France
Filed Jan. 14, 1970, Ser. No. 2,696
Claims priority, application France, Jan. 16, 1969, 6,900,800
Int. Cl. E05b *9/10, 17/04, 29/00*
U.S. Cl. 70—363 **6 Claims**



A cylinder type lock having a unitary body defining a cylindrical hole therein, a splined key entry channel inserted in each end of said hole, splines on said body projecting into said hole and engaging said splines on said key entry channels, a slotted barrel in each said key entry channel and rotatable therein by means of a key, a tumbler slidable in each of said barrel slots, a pair of crenulated washers fixed in said hole by engagement of said crenulations with said splines on said key entry channels and said body splines, a catch member located between said barrels, and a rectangular member associated with each barrel and adapted to couple said barrel with said catch member on insertion of said key in said barrel.

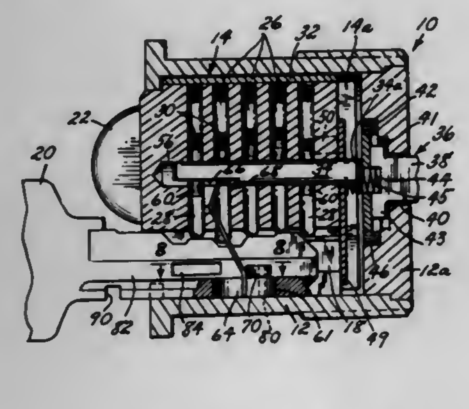
3,605,462
ONE WAY KEY OPERATED LOCKING MECHANISM
Robert Hermann, P.O. Box 114, Stronghurst, Ill. 61480
Filed Oct. 1, 1969, Ser. No. 862,726
Int. Cl. E05b *27/02*
U.S. Cl. 70—364A **2 Claims**



A locking mechanism which is one way key operated, the device comprising a lock consisting of a cylinder in which a core is inserted, the core being structurally modified so that when a regular operating key is inserted, the lock will rotate fully in either direction but wherein with a special key the core is rotatable only one way around in either direction to which it is designed.

3,605,463
PICKPROOF CYLINDER LOCK

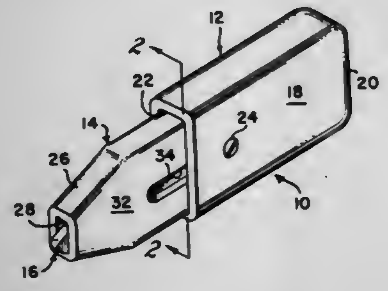
Norman Epstein, Rte. 301, Carmel, N.Y. 10512
Filed Oct. 31, 1969, Ser. No. 872,837
Int. Cl. E05b *15/14, 17/04, 27/00*
U.S. Cl. 70—364A **9 Claims**



A pickproof cylinder lock has a bolt mounted for sliding movement in the cylinder and a plurality of spring-tensioned pins associated with the bolt and normally blocking movement of the bolt so as to maintain the latter in a locked position. The pins are moved to a position in which they unblock the bolt when the proper key is inserted in the lock. Insertion of the key also tensions an actuating member which is remote from the pins and releases the actuating member when the key reaches its fully inserted position, the released actuating member thereupon imparting a sharp, instantaneous actuating stroke to the bolt to drive it to an unlocked position if the bolt has been unblocked by the pins.

3,605,464
SELF-EJECTING KEY HOLDER WITH RETRACTABLE SHIELD

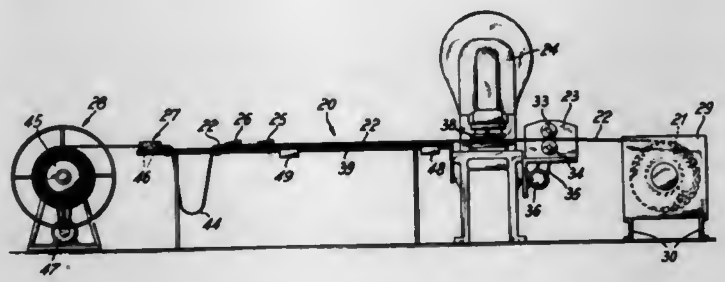
Seymour A. Ostrager, 1188 Grand Concourse,
Bronx, N.Y. 10457
Filed Dec. 22, 1969, Ser. No. 886,808
Int. Cl. E05b *19/00*
U.S. Cl. 70—414 **5 Claims**



A key holder that will automatically eject a key from a lock. The key holder includes a casing and a shield slidably mounted within the casing. A pin passes through the casing, a pair of aligned slots in the shield and the opening in a key which is mounted within the shield. The shield is urged from the casing by a spring positioned between the rear wall of the casing and the rear wall of the shield. The pin serves as a stop for the shield to prevent the shield from being displaced from the casing. The spring-urged shield serves to eject the key from the lock, by the bearing of the front of the shield against the face plate of the lock. The front of the shield is tapered toward the enclosed key to facilitate the sighting of the lock for the insertion of the key.

3,605,465
METHOD AND ARRANGEMENT FOR PRODUCING CONNECTING STRIPS OF BAND

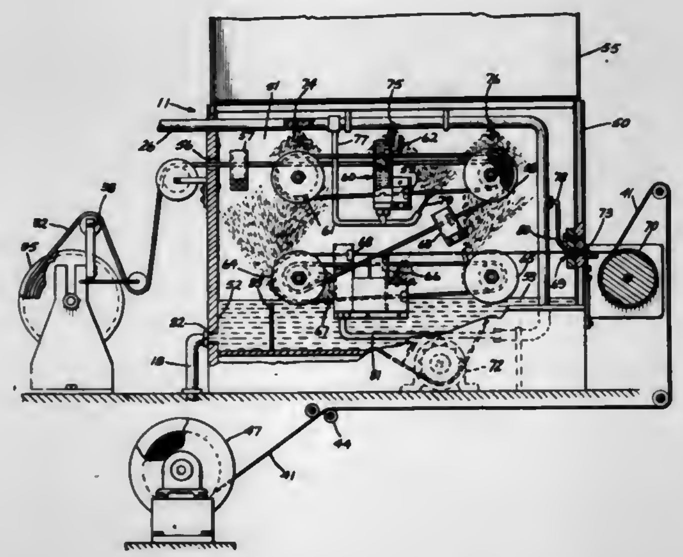
Hans Jochen Timmerbeil and Hugo Timmerbeil, Jr., Schwelm, Westphalia, Germany, assignors to Titan Eisenwarenfabrik G.m.b.H., Schwelm, Westphalia, Germany
Filed Nov. 21, 1968, Ser. No. 777,724
Int. Cl. B21d *43/28, 28/00;* **B26d** *3/00, 5/20, 5/38;* **G01n** *21/30;* **B65f** *23/18*
U.S. Cl. 72—10 **10 Claims**



A process for producing connecting strips of band for use in box strapping and baling applications. A blank band wound upon a reel is passed through a metal working machine which applies to the band a deformation at predetermined strip lengths. A sensing device spaced from the metal working machine at a distance equal to the desired length of the strip, detects the deformation applied to the band and in response actuates the metal working machine to apply a subsequent deformation.

3,605,466
APPARATUS FOR DRAWING METAL WIRE AND THE LIKE AND THE METHOD THEREOF

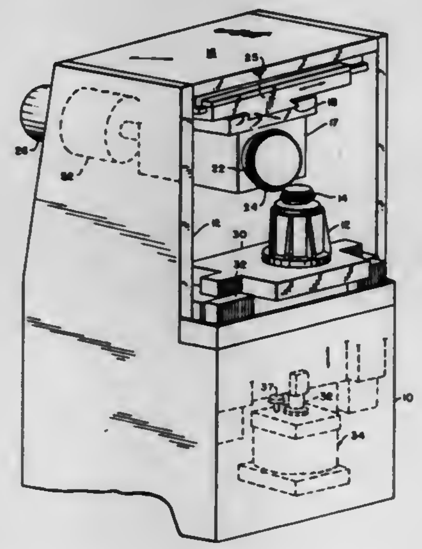
Frank B. Kilcoin, 4514 Beaver Ave.,
Fort Wayne, Ind. 46807
Continuation of application Ser. No. 674,537, Oct. 11, 1967. This application Nov. 26, 1969, Ser. No. 880,227
Int. Cl. B21b *45/02*
U.S. Cl. 72—43 **7 Claims**



An apparatus and method for drawing continuously moving aluminum wire. The apparatus includes one or more drawing machines having a housing that forms a drawing chamber and a reservoir for liquid drawing lubricant. Drawing dies are mounted within the drawing chamber in coaxial relationship with respect to the moving wire, and at least an upper and a lower tier of drawing blocks direct and pull the moving wire through the dies. The level of the drawing lubricant in the reservoir is maintained above a predetermined level so that the liquid lubricant wets at least one of the drawing blocks of the lower tier thereby to cause the liquid lubricant to be sprayed and cooled by the drawing block or blocks of the lower tier. The drawing machine is connected in a closed flow loop which includes a storage tank, a pump, a lubricant cooler and control valve.

3,605,467
ROLLING OF TAPERED GEARS

John M. White and Richard W. Tersch, Grosse Pointe Woods, and Raymond S. Kusz, Mount Clemens, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Oct. 30, 1969, Ser. No. 872,691
Int. Cl. B21d *53/28*
U.S. Cl. 72—84 **11 Claims**



A machine for finish rolling rough cut tapered gears such as hypoid gears, comprising means for meshing a tool or die in the form of a hypoid ring gear with a hypoid pinion in properly meshed relation, and establishing rolling pressure between the die and pinion by effecting advance of the die or pinion in a direction parallel to its axis.

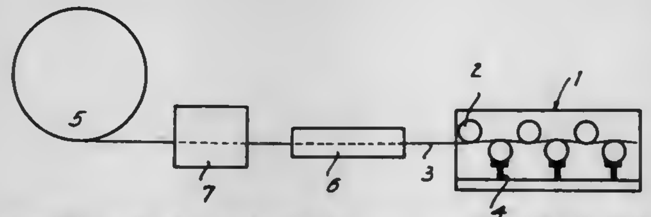
3,605,468
GEAR ROLLING

Raymond A. Okray, Detroit, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Aug. 4, 1969, Ser. No. 847,213
Int. Cl. B21h *5/02*
U.S. Cl. 72—108 **3 Claims**

Since forming gears by rolling, particularly from the solid, tends to displace material laterally at the ends of the teeth beyond the side of the blank, the ends of the rolled teeth may not be fully formed. To counteract this the blank has teeth partially formed thereon to provide excess material adjacent the ends of the teeth.

3,605,469
METHOD AND APPARATUS FOR IMPROVING THE PROPERTIES OF STEEL ROPE

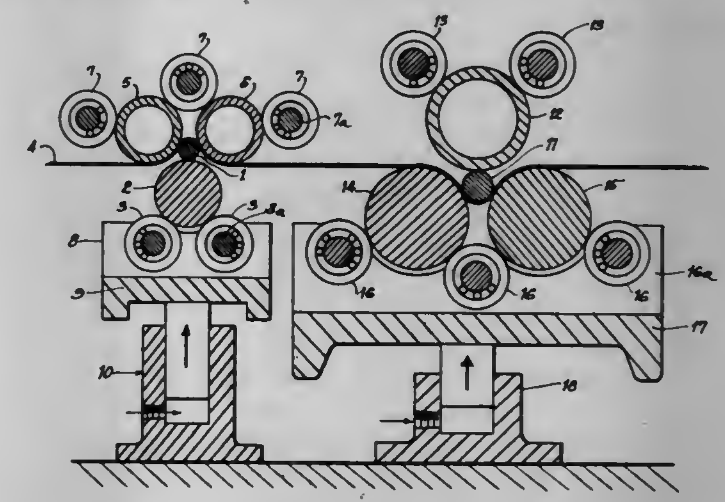
Martin T. Queralto, Calle Iborra 15,
Barcelona, Spain
Filed Sept. 23, 1968, Ser. No. 761,704
Claims priority, application Spain, Sept. 23, 1967, 345,790
Int. Cl. B21c *37/04;* **B21f** *9/00*
U.S. Cl. 72—128 **11 Claims**



A method and apparatus for improving the properties of steel rope. The steel rope is subjected to a force of traction which is less than the tension required to break the rope, and while under this tension the rope is passed through a heating zone so that a given degree of stretching will be imparted to the rope. Prior to reaching the heating zone, where a suitable heating means is located, the rope is directed through an undulatory path by an adjustable roller means causing the rope to be sequentially directed along opposed curves, so that in this way prior to reaching the heating means the rope is stressed and preliminarily heated to a given degree. The tension is applied to the rope by winding the latter onto a drum which pulls the rope through the undulatory path and the heating means, and between the heating means and the take-up drum the rope is cooled either by the ambient atmosphere or through forced cooling.

3,605,470
PRESSURE ASSISTED TENSION ROLLER LEVELER

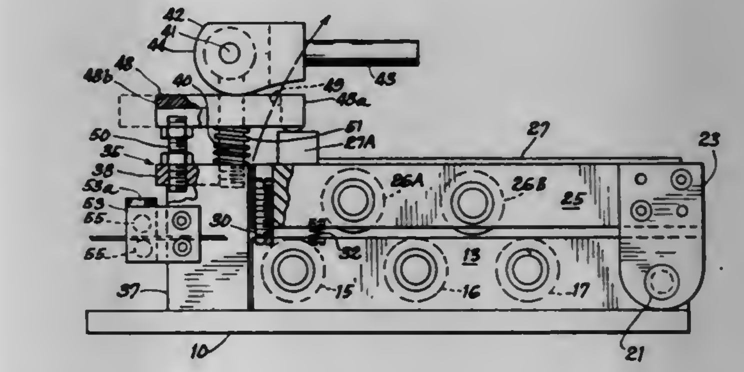
Natalis H. Polakowski, 226 Laurel Ave.,
Wilmette, Ill. 60091
Continuation-in-part of application Ser. No. 793,981, Jan. 27, 1969. This application Oct. 3, 1969, Ser. No. 863,657
Int. Cl. B21d *1/02*
U.S. Cl. 72—163 **9 Claims**



A pressure assisted tension roller leveler embodying means for applying pressure normal to the stip during passage between the work roll and the flexure rolls and for providing flexibility crosswise between the work roll and flexure rolls.

3,605,471
PULL-THROUGH STRAIGHTENER

Robert Gray Bodtke, 1308 E. Seiberling,
Peoria, Ill. 61614
Filed Mar. 30, 1970, Ser. No. 23,862
Int. Cl. B21d *1/02*
U.S. Cl. 72—165 **9 Claims**

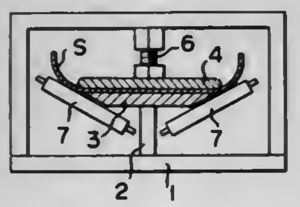


A straightener for metal strip stock from a stock supply reel so that the straightened stock may be handled by an automatic feed to a punch press has conventional top and bottom generally horizontal arrays of straightener rolls. The generally horizontal spacing between laterally offset adjacent roll axes is unusually great in comparison to current practice—in the order of two roll diameters. Such a roll spacing greatly reduces power requirements for pulling stock through a straightener, has other advantages set forth in detail including the ability to pivotally secure the top roll array, permitting the straightener to be readily opened with such a construction. The spacing between adjacent rolls toward the exit end is preferably reduced for obtaining desired operating characteristics as well as for geometrical reasons where the top roll array is pivotally mounted.

3,605,472

APPARATUS FOR FABRICATION OF STRUCTURES

Akihiro Saito and Takashi Nakamura, Kawasaki-shi, Kanagawa-ken, Japan, assignors to Kabushikikaisha Dengensha Seisakusho, Kanagawa-ken, Japan
Filed May 12, 1969, Ser. No. 823,884
Claims priority, application Japan, May 21, 1968, 43/34,172; June 28, 1968, 43/45,331; Sept. 25, 1968, 43/69,358; Oct. 7, 1968, 43/72,949; Jan. 30, 1969, 44/6,970
Int. Cl. B21d *5/08*
U.S. Cl. 72—176 2 Claims

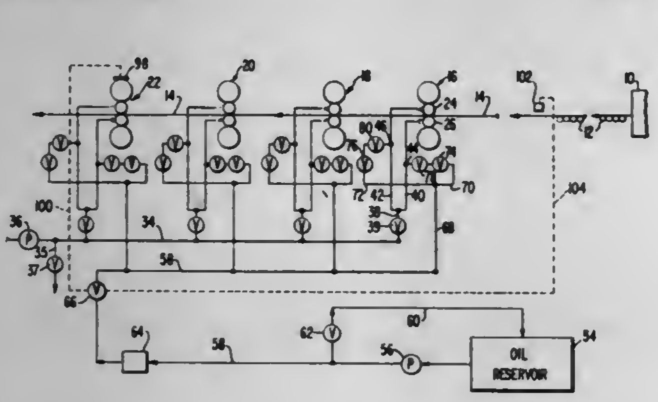


A base plate and a guide plate both having a planar shape of an isoceles triangle clamp and constrain between them a strip material advancing through the space between them from the base to the vertex of that triangle, thereby emerging from that space and successively contacting, from its laterally outermost edge part to its inner part, low-friction forming members which progressively bend and curl the material, ultimately into a tubular form.

3,605,473

METHOD AND APPARATUS FOR HOT ROLLING FERROUS METAL WORKPIECES

Lockwood Lyon, Bloomfield Hills, and William H. Rees, Dearborn, Mich., assignors to National Steel Corporation
Continuation-in-part of application Ser. No. 779,274, Nov. 26, 1968, which is a continuation-in-part of application Ser. No. 760,665, Sept. 18, 1968. This application Mar. 21, 1969, Ser. No. 809,125
Int. Cl. B21b *27/06, 45/02*
U.S. Cl. 72—201 31 Claims

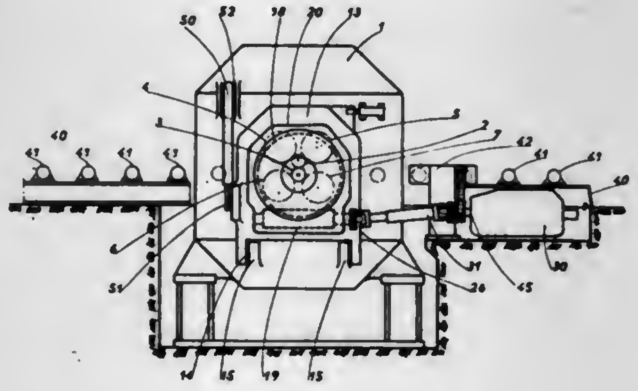


Ferrous metal workpieces are rolled at an elevated hot rolling temperature in a hot mill using an aqueous dispersion of an oily liquid as a coolant and lubricant for the work rolls of the rolling stands. The aqueous dispersion contains about 0.0005–0.05% by weight of an oily liquid having a high flash point which is capable of acting as a lubricant at the rolling temperatures and pressures. Preferred oily liquids include rapeseed oil and synthetic rapeseed oil. The oily liquid is injected under high pressure into a high-pressure water stream to form the dispersion and the dispersion is sprayed onto the work rolls. Flow of oily liquid is discontinued before the workpiece leaves the mill, for the tail end portion of the hot workpiece to remove oil on the rolls to avoid slippage when the next workpiece enters the roll bite. Flow of oily liquid is initiated only after the workpiece enters the roll bite.

3,605,474

ROLLING MILL DRIVE SYSTEM

Bernard Lhenry, Le Creusot, France, assignor to Creusot-Loire, Paris, France
Filed June 3, 1969, Ser. No. 830,022
Claims priority, application France, Nov. 15, 1968, 173,991
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 3 Claims

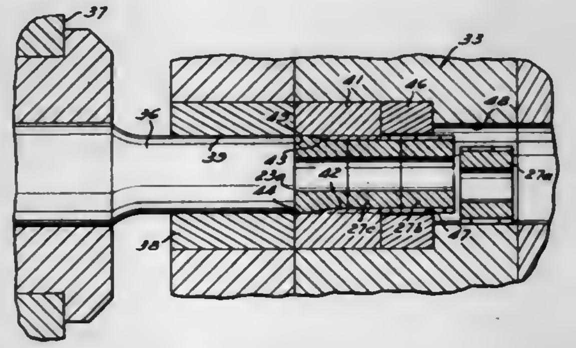


A rolling mill stand having a pair of small diameter work rolls each bearing against back-up rolls, each work roll being coupled to a drive mechanism therefor, the drive mechanisms being synchronised and being on opposite sides of the stand.

3,605,475

METHOD AND APPARATUS FOR EXTRUDING GEAR BLANKS

Gerald R. Eakin and George T. Payne, Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio
Filed June 19, 1969, Ser. No. 834,672
Int. Cl. B21c *23/14, 25/02*
U.S. Cl. 72—256 18 Claims

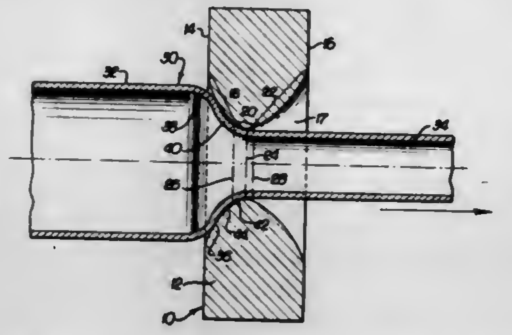


A forged blank for forming helical gears is disclosed. The blank is provided with shallow helical timing grooves formed by pressing the blank through an extrusion die having inwardly projecting helical teeth. The material displaced to form the groove flows inwardly toward an axial passage through the blank. The apparatus for forming the blank includes a non-rotating punch formed with a planar end face and a die assembly including a portion formed with inwardly extending helical teeth. The blank rotates around its axis and relative to the punch as it moves through the extrusion die. The punch does not enter the toothed portion of the die and a subsequent blank is utilized to press the preceding blank through the die. The blank is radially confined before extrusion loads are applied thereto and the end face of the blank is fully supported by the punch or a subsequent blank.

3,605,476

METAL DRAWING METHOD AND APPARATUS

John W. Hinshaw, Garden Grove, Calif., assignor to Battelle Development Corporation, Columbus, Ohio
Filed Feb. 17, 1969, Ser. No. 799,605
Int. Cl. B21c *1/00, 3/00*
U.S. Cl. 72—274 27 Claims



A method of drawing elongated metal articles and a novel die configuration which implements the method, assuring the establishment and optimum performance thereof. According to the invention, tube, bar, rod or sheet stock is drawn to a reduced diameter or wall thickness, or both, through the die or between the die and a mandrel or other supporting surface. The die in longitudinal section has entrance and land arcs, preferably segments of circles, which intersect with a common tangent, and has an outwardly flaring exit that is preferably an arc tangential with the land arc. The stock upon entering the die is deflected inwardly or laterally a large amount at a primary deflection point on the entrance arc, to be intercepted and further deflected a small, precisely controlled amount at a secondary deflection point on the land arc, thereby creating and perpetuating a natural serpentine bend in the stock as it moves under the die, greatly reducing redundant work and friction and providing a lubrication chamber between stock and die for improved lubrication, whereby the required drawing force is substantially reduced, and producing more uniform final dimensions, as well as improved quality of the material, both internally and externally.

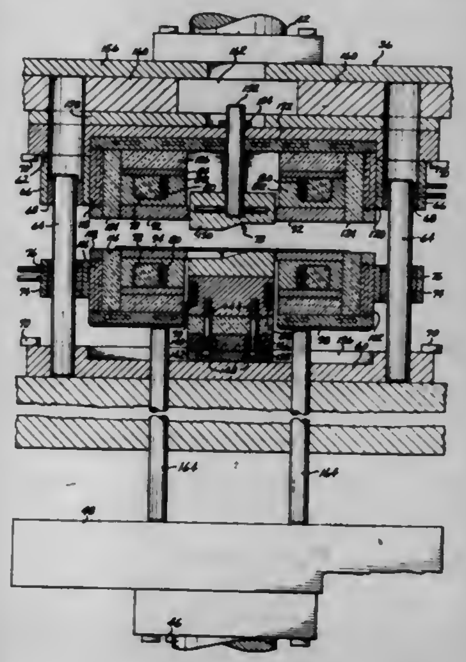
3,605,477

PRECISION FORMING OF TITANIUM ALLOYS AND THE LIKE BY USE OF INDUCTION HEATING

Arne H. Carlson, Seattle, Wash., assignor to Arne H. Carlson and S. P. Ozbolt, both of Renton, Wash.
Filed Feb. 2, 1968, Ser. No. 702,700
Int. Cl. B21d *37/16*
U.S. Cl. 72—342 10 Claims

Titanium alloy blanks or the like are successively coated with a high temperature lubricant; preheated in a preheat oven to a forming temperature (about 1000–1500° F.); precision formed into a desired shape in a press which includes inductively heated forming tools, serving to maintain the metal at the forming temperature throughout the forming operation; and slowly cooled, first in a postheat oven down to a lower elevated temperature (e.g. about 600° F.) and then under cover of an asbestos blanket down to ambient temperature.

The heat forming tools include a fixed die, a movable die and a movable clamping pad. The movable tools are mounted for precision movement by leader pins and bushings. Insulation and water jackets are interposed between the heated tools and the leader pins and bushings to prevent harmful heating of the latter. The forming tools comprise water cooled tubular conductors embedded in insulative material which in turn is embedded in ferromagnetic cores, and die parts of long life metals on which the forming surfaces are machined.



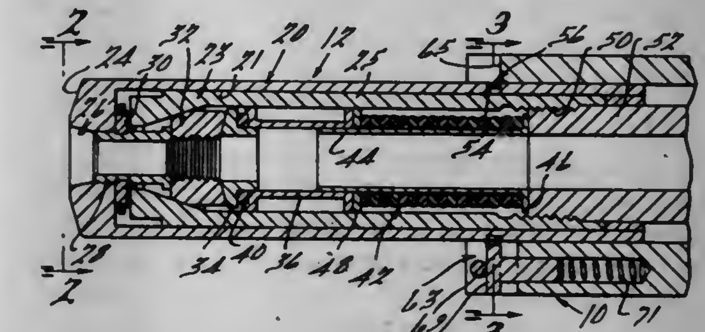
ERRATUM

For Class 72—345 see:
Patent No. 3,605,499

3,605,478

INTEGRAL ANVIL HOLDER

Peter R. Chirco, Utica, Mich., assignor to Huck Manufacturing Company, Detroit, Mich.
Filed Sept. 9, 1968, Ser. No. 758,468
Int. Cl. B21d *9/05*
U.S. Cl. 72—391 9 Claims



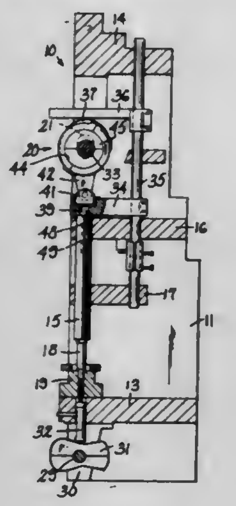
An anvil construction for a tool for setting fasteners with the anvil having a pair of diametrically opposed flats for clearance purposes and including means for attaching the anvil to the tool whereby the anvil can be rotated to move the flats into any desired position.

3,605,479

FORMING PRESS

Charles Robert Bradlee, Cheshire, Conn., assignor to Textron, Inc., Providence, R.I.
Filed May 8, 1968, Ser. No. 727,404
Int. Cl. B21j *9/18*
U.S. Cl. 72—450 15 Claims

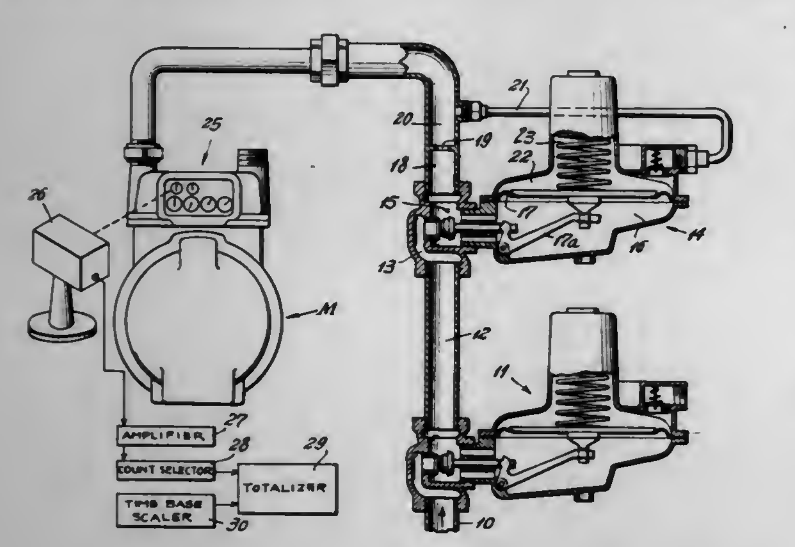
A forming press in which the forming elements are driven by a crank and connecting rod. The connecting rod is directly driven in a forming stroke by a crank and subsequently operates a lifting cam carried on the same



drive shaft. The crank acts through a bearing or slide to impart the driving force to the forming elements.

3,605,480
GAS METER PROVING OR CALIBRATING MEANS

Theodore A. St. Clair, Fairfield, Conn., assignor to Textron, Inc., Providence, R.I.
Filed Feb. 4, 1970, Ser. No. 8,469
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 **2 Claims**

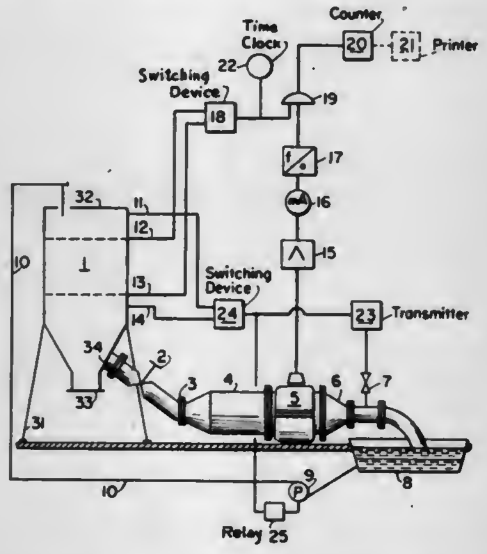


A device for improving the acuracy of the testing and calibrating of gas meters by means of the flow rate, rather than a static measurement, to reduce errors due to temperature variations in the gas. This is accomplished by connecting the meter to a pressure regulator through an orifice and connecting the upper chamber of the regulator to a point between the orifice and meter to control the regulator by sensing the pressure between the orifice and meter.

3,605,481
MEASURING THE ACCURACY OF FLOW VOLUME METERS

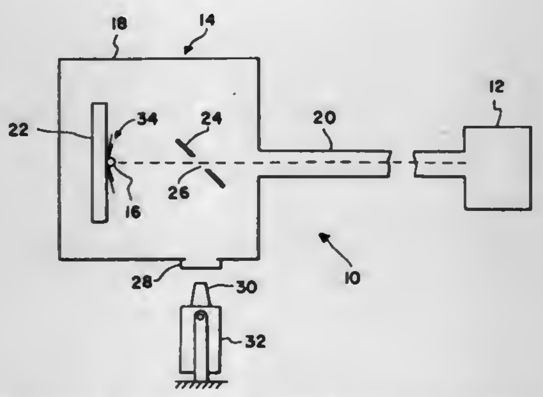
Walter Basler, Basel, Switzerland, assignor to Firma Rheometron G.m.b.H., Basel, Switzerland
Filed Oct. 21, 1969, Ser. No. 868,084
Claims priority, application Germany, Oct. 28, 1968, P 18 05 605.8
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 **9 Claims**

The accuracy for the purpose of calibration of flow volume meters, having flow rate indicators, is measured by providing a column of measuring liquid and delivering a certain or limited volume of the liquid, by gravity flow, from the column to the meter to be tested. The flow flows through the meter at a flow rate which decreases with the decrease in height of the column. During the flow of liquid the flow rate is measured by suitable means, and this actual flow rate is compared with the flow rate indicated by the rate indicator of the meter. An elevated gravity flow container is provided for the column of liquid and its outlet is connected, through a shut-off valve to the meter, with the meter discharge emptying into a suitable receptacle from which, after the test is completed, the measuring liquid is returned to the container by a relatively low capacity pump. The indicated flow rate of the meter preferably is integrated, and additional liquid level detectors initiate and terminate the flow of liquid through the meter. Vertically spaced level detectors in the container initiate and terminate the time measurement.



3,605,482
IMPACT MEASURING TECHNIQUE

Donald H. Humes, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 26, 1968, Ser. No. 779,160
Int. Cl. G01l *5/14*
U.S. Cl. 73—12 **6 Claims**

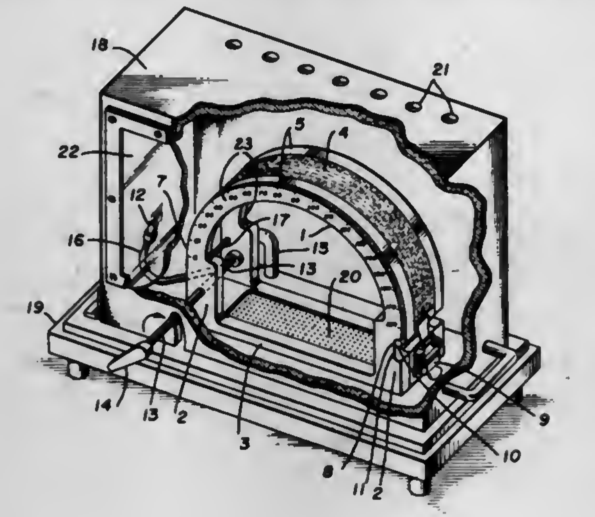


This disclosure relates to a method of measuring the size of hypervelocity projectiles at the time of impact upon a target. This is accomplished by photographing the silhouetted image formed of the projectile by the impact flash along a line of view at a small angle from its line of flight.

3,605,483
FLAMMABILITY TEST APPARATUS

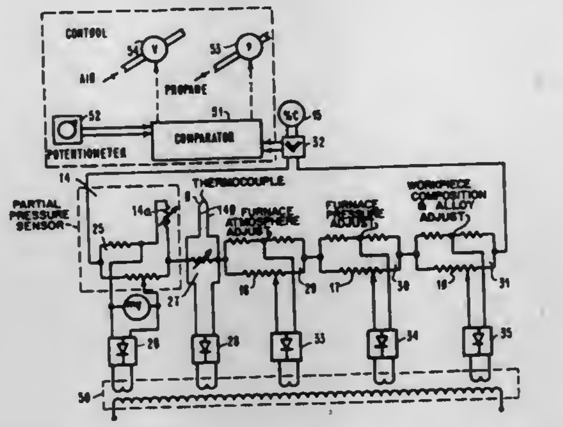
Eugene L. Ringwald, Cary, Mitchell T. Burden, Apex, and Henry L. King, Cary, N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed Oct. 29, 1968, Ser. No. 771,476
Int. Cl. G01n *25/01*
U.S. Cl. 73—15 **9 Claims**

An apparatus for testing the flammability of a sheeted material comprised of a noninflammable bifurcated semicircular frame with means for holding the sheeted material between the bifurcations and along the frame, and means to ignite the sheeted material near one end of the frame.



3,605,484
METHOD AND APPARATUS TO DETERMINE CARBON POTENTIAL IN THE ATMOSPHERE OF TREATMENT FURNACES

Joachim Wünning, 20 Bergstrasse, 7251 Warmbronn, Germany
Continuation-in-part of abandoned application Ser. No. 631,240, Apr. 17, 1967. This application Oct. 3, 1968, Ser. No. 784,496
Claims priority, application Germany, Apr. 21, 1966, W 41,390; Oct. 5, 1967, P 16 73 328.1
Int. Cl. G01n *7/00*
U.S. Cl. 73—23 **14 Claims**

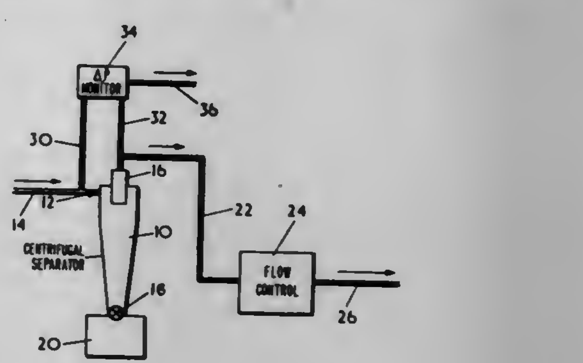


An electrical signal representative of the logarithm of the partial pressure of the component in the furnace is derived and to this logarithmic signal an electrical signal directly responsive to temperature is added to provide for a temperature correction factor; other signals representative of other correction factors, for example to compensate for drift of measuring instruments, may be added; the composite signal is then indicative of the carbon potential of the atmosphere within the furnace.

3,605,485
MONITORING DUST CONCENTRATION

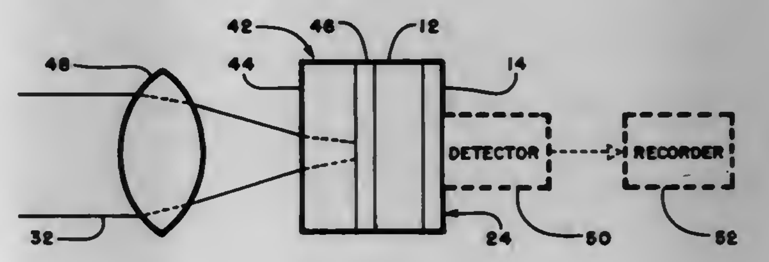
Stanislaw Badzloch and Peter G. W. Hawksley, London, England, assignors to Coal Industry (Patents) Limited, London, England
Filed May 8, 1970, Ser. No. 35,645
Claims priority, application Great Britain, May 16, 1969, 25,012/69
Int. Cl. B01d *45/12;* **G01n** *31/00*
U.S. Cl. 73—28 **10 Claims**

A method of monitoring dust includes passing a stream of gas containing dust into a centrifugal flow separating device. Whilst one characteristic of gas flow through the device is maintained constant and the dust concentration in the device is allowed to increase, another characteristic of gas flow through the device is monitored.



3,605,486
METHOD AND APPARATUS FOR MEASURING ADHESION OF MATERIAL BONDS

Nordin C. Anderholm and Albert Goodman, Albuquerque, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Jan. 21, 1970, Ser. No. 4,664
Int. Cl. G01n *3/30*
U.S. Cl. 73—95 **5 Claims**

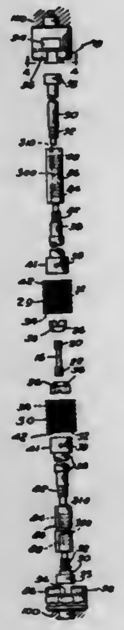


Measuring adhesion of one material to another and tensile strength of the bond between these materials by producing a pulse of tensile stress in the materials and subjecting the bond to the tensile stress such as by impinging a pulse of radiant energy against a surface of one of the materials to produce a compressive stress wave within the material, reflecting the stress wave from a free surface of the other material and subjecting the bond between the materials to the reflected tensile wave. The strength of the bond may be determined by incrementally increasing the tensile stress wave amplitude to effect bond failure and the tensile strength determined by measuring this amplitude.

3,605,487
ALIGNMENT OF SPECIMEN IN APPARATUS FOR TESTING MATERIAL FOR RESISTANCE TO STRESS

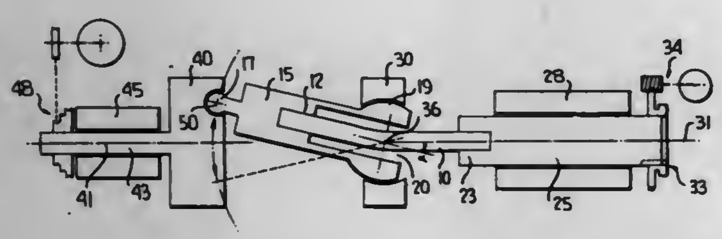
Robert B. Corbett, Mars, Pa., assignor to Corbett Associates, Inc., Mars, Pa.
Original application June 21, 1965, Ser. No. 465,675. Divided and this application Oct. 31, 1969, Ser. No. 873,773
Int. Cl. G01n *3/08*
U.S. Cl. 73—95 **5 Claims**

There is disclosed testing apparatus for determining accurately the creep properties of material, such as hot-tensile creep or creep-rupture or stress-relaxation. The apparatus includes a train for applying axial force to a specimen **16**. The force is applied aligned along the specimen, with a deviation not exceeding 5 percent from alignment. The alignment is achieved by suspending the specimen in the force-applying train from couplings **38** including bearings **300** assuring that the specimen is suspended and supported by the bearings and not the threads **84** of the couplings.



3,605,488
MACHINE FOR APPLYING LOADS TO A TEST SPECIMEN

Arland G. Foster, Rte. 9, Box 949, Tucson, Ariz. 85705
Filed Feb. 28, 1969, Ser. No. 803,333
Int. Cl. G01n *3/20*
U.S. Cl. 73—100 4 Claims

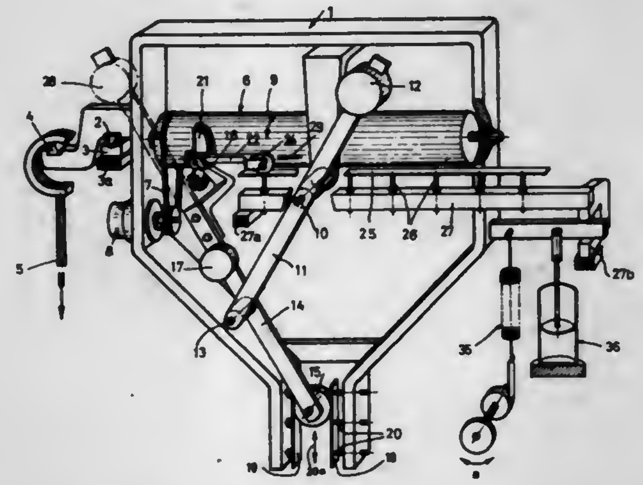


A test specimen is subjected to a pure bending load by applying to the specimen a rotating load transverse to the axis thereof, and holding the specimen against rotation during application of the rotating load while permitting the specimen to undergo wobble in reaction to the load. The specimen may also be subjected to axial loads (tension or compression) and torsional loading independently of one another and of the bending load, so that any combination of these loads may be applied to the specimen at will.

3,605,489
DYNAMOMETER FOR MEASURING FORCE, IN PARTICULAR A BEAM BALANCE

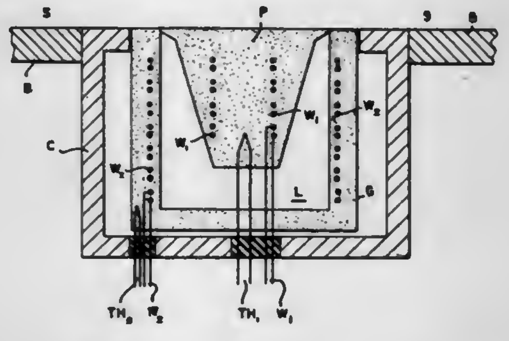
Werner Haack, Bondastrasse 83,
CH–7000 Chur, Switzerland
Filed Dec. 12, 1969, Ser. No. 884,579
Claims priority, application Germany, Dec. 12, 1968, P 18 14 161.2
Int. Cl. G01l *1/08*
U.S. Cl. 73—141R 11 Claims

A dynamometer comprising a beam balance having a motor-driven friction roller and a friction wheel in contact therewith, the wheel bearing via a guide bar against a rail extending parallel to the axis of the friction roller so that when a load is applied to the dynamometer the friction wheel is axially and linearly displaced with respect to the friction roller until a new point of balance is reached. The parallel motion of the friction wheel alongside the friction roller is achieved by means of a drive mechanism consisting of articulated levers.



3,605,490
HEAT SENSOR

Richard Carl Progelhof, Berkeley Heights, and Gerald George Govesky, Elizabeth, N.J., assignors to American Standard Inc., New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,795
Int. Cl. G01k *17/00*
U.S. Cl. 73—190H 8 Claims

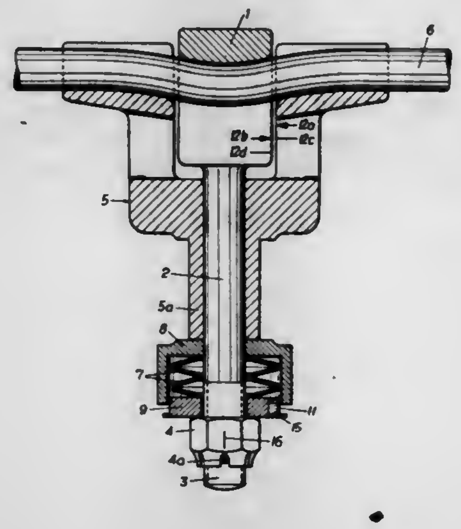


Covers a heat flux probe for observing or measuring the rate at which heat is dissipated to an external body or space. The probe includes two spaced units and a non-conductive case which confines both units except a face of one of the units which is to be exposed to the external body or space. Heat is supplied to both units so as to hold them continually at the same temperature.

3,605,491
CABLE CLAMP PARTICULARLY FOR CABLE CARS

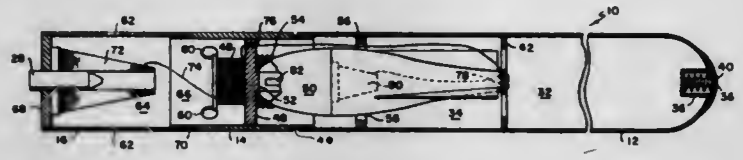
Eduard Senn, Hungerburg 46, Innnsbruck, Austria
Filed July 29, 1968, Ser. No. 748,434
Int. Cl. G01l *1/04;* **B61b**
U.S. Cl. 73—141A 7 Claims

A cable clamp, particularly for cable cars, comprising two clamping parts displaceable relative to each other. The clamping faces of the clamping parts being at least partly inclined to the axis of the cable and imparting to the cable a slight double S-curvature between the clamping parts, and a spring in the path of the clamping force between the two clamping parts. Means for measuring the extent of the deformation of the spring and means for measuring the extent of the relative displacement of the clamping parts are also provided.



3,605,492
PREASSEMBLED MODEL SXBT FLOTATION DEVICE

George D. Stohrer, John H. Cawley, Richard P. Berthiaume, and Daniel Schiff, Bowie, Md., assignors to the United States of America as represented by the Secretary of the Navy
Filed Mar. 26, 1970, Ser. No. 22,939
Int. Cl. G01n *33/18, 1/00*
U.S. Cl. 73—170A 9 Claims

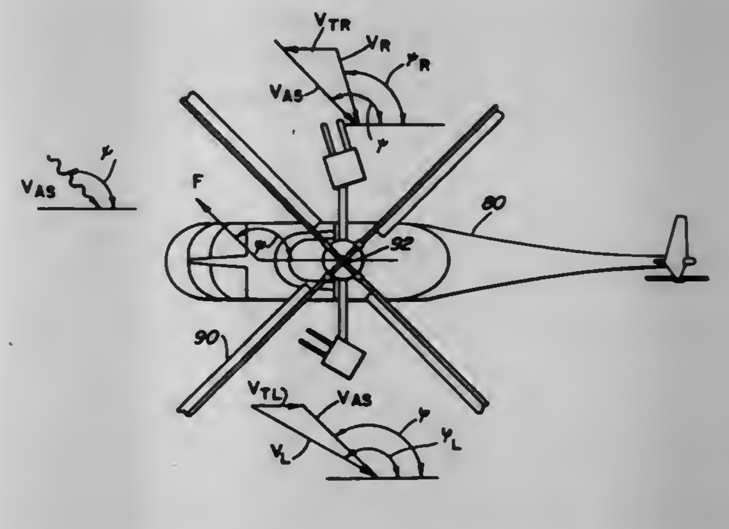


Apparatus for containing and releasing an expendable probe for measuring various properties of water. The probe is releasably attached to a buoyant cannister and contains sensing elements which are connected with instrumentation aboard a submerged launch vehicle.

3,605,493
DIRECTION AND VELOCITY DETERMINING APPARATUS

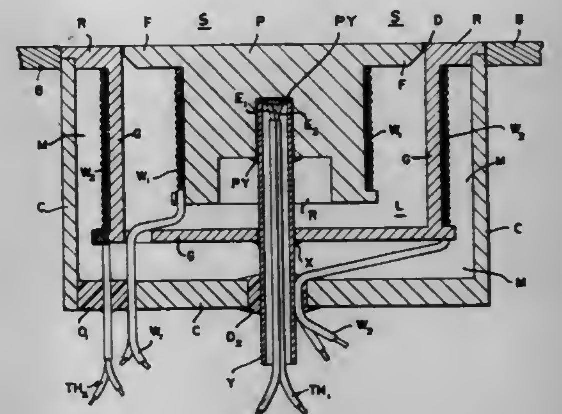
Victor B. Corey, Bellevue, Wash., assignor to United Control Corporation
Original application Mar. 24, 1969, Ser. No. 809,837. Divided and this application June 29, 1970, Ser. No. 50,369
Int. Cl. G01c *23/00*
U.S. Cl. 73—181 5 Claims

Detection apparatus for determining the direction and velocity of an incident fluid flow stream. A sonic vibration producing means axially spaced from a sonic vibration detection means is oriented parallel to the direction of flow of the incident fluid flow stream by servo means in order to determine the direction of fluid flow. A second sonic vibration producing means axially spaced from a second sonic detection means and having a common axis at 90° relative to the common axis of the first mentioned means is relatively moved by servo means to indicate velocity of fluid flow. The velocity and direction of flight of a helicopter are indicated by a pair of the above means using circuits which combine the signal outputs to eliminate rotor produced disturbances.



3,605,494
HEAT FLOW CALORIMETER

Richard Carl Progelhof, Berkeley Heights, and Norman Zethward Shilling, Lyndhurst, N.J., assignors to American Standard Inc., New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,581
Int. Cl. G01k *17/00*
U.S. Cl. 73—190H 8 Claims

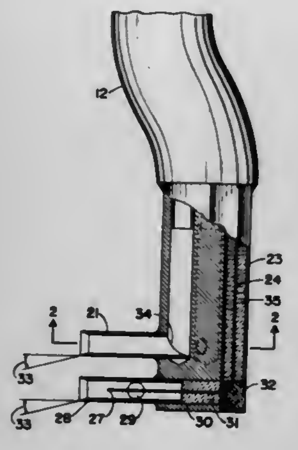


Covers a heat flux probe for measuring or determining the dissipation of heat to an external body or surface. The probe includes two coaxial cylindrical conductive units and a non-conductive housing which may also be coaxial with the two units, the housing exposing one face or side of the innermost unit to the external body or surface. Both units have peripheral heating coils which receive currents to maintain both units at a common temperature. Both units are supported by a common non-conductive member.

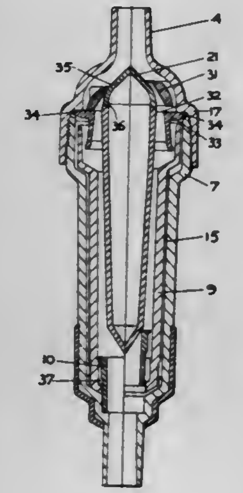
3,605,495
SENSING PROBE

Lloyd N. Krause, Westlake, and George E. Glawe, Berea, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 29, 1969, Ser. No. 861,649
Int. Cl. G01k *13/02*
U.S. Cl. 73—198 9 Claims

A probe having a sensing head in the form of a blunted wedge with flat sides. An orifice is provided in each wedge face and communicates with a respective longitudinal passageway in the sensing head. A total pressure sensing tube extends from the blunted edge and communicates with another longitudinal passageway in the sensing head. A thermocouple is disposed in a tubular housing which extends from the blunted edge below and parallel to the pressure sensing tube. Bleed orifices are provided in the housing which is retained in a transverse passageway in the sensing head. A longitudinal groove is formed in the rear surface of the sensing head to contain a conduit for thermocouple leads which are directed to the thermocouple through a ceramic plug in the transverse passage. A cementitious material is used to fill the groove below the thermocouple conduit. The leads in the thermocouple conduit are surrounded by a ceramic material which has been swaged into the conduit.

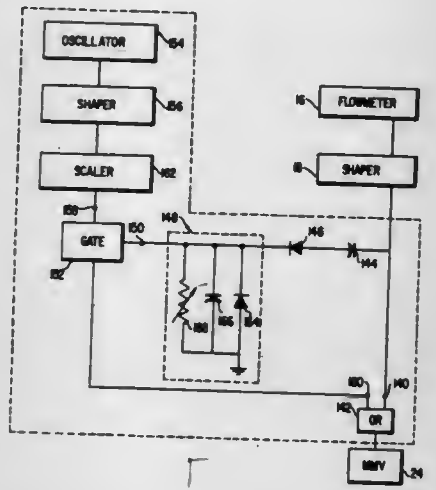


3,605,496
FLOW RATE GAUGES
Douglas L. Wenham, Hamilton, New Zealand, assignor to Plastic Products Limited, Hamilton, New Zealand
Filed Nov. 10, 1969, Ser. No. 875,385
Int. Cl. G01f *5/00*
U.S. Cl. 73—202 **5 Claims**



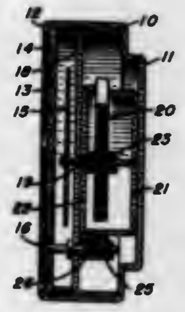
A flow rate gauge has a cylindrical body used vertically with a lower inlet and an upper outlet, a restriction to flow in the body and a liquid bypass bypassing the flow restricting means and including a sight glass, the level of liquid rising in the bypass indicating the rate of flow of liquid through the gauge. A non-return valve is provided to prevent the return flow of liquid and movable tubes within the body move when the gauge is laid on its side to permit cleaning liquid to pass through the bypass.

3,605,497
FLOWMETER BEARING FRICTION COMPENSATING METHOD AND SYSTEM
Carl W. Zimmerman and George V. Copland, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Application July 5, 1968, Ser. No. 750,675, now Patent No. 3,566,685, dated Mar. 2, 1971, which is a continuation-in-part of application Ser. No. 704,703, Feb. 9, 1968. Divided and this application Aug. 4, 1970, Ser. No. 60,851
Int. Cl. G01f *1/12*
U.S. Cl. 73—229 **5 Claims**



A flowmeter bearing friction compensating method and circuit for use in a fluid flow metering system using digital signals and logic for producing a compensated manifestation of fluid flow. Means are provided to prevent the generation of compensating pulses in the absence of fluid flow.

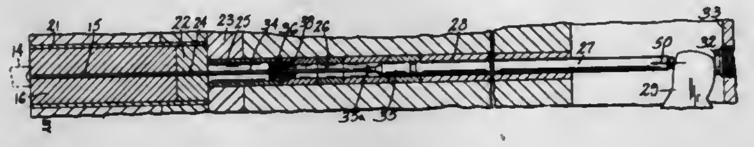
3,605,498
THERMOMETER FOR MEASURING SKIN TEMPERATURE
Anthony H. Lamb, 66 King St., Hillside, N.J. 07205
Filed July 18, 1969, Ser. No. 842,866
Int. Cl. G01k *5/62*
U.S. Cl. 73—363.7 **3 Claims**



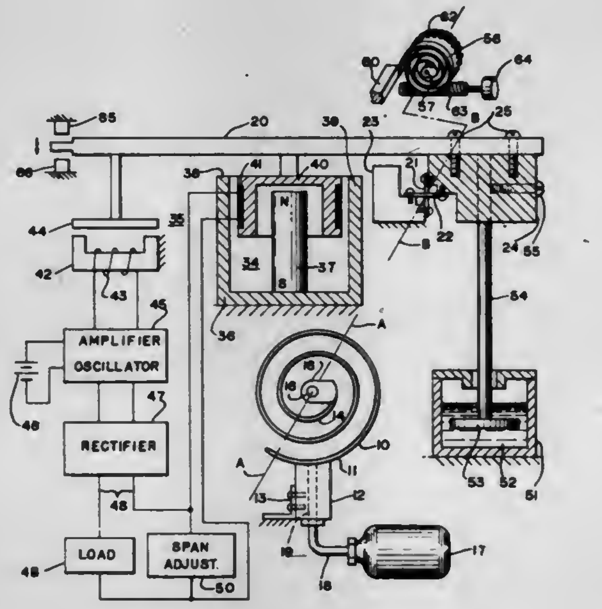
A bi-metallic thermometer particularly adapted for the measurement of the temperature of a selected area of the skin. The thermometer is affixed to the skin and the position of the pointer is adjusted relative to the scale by a screw-pinion arrangement while the thermometer is so affixed.

3,605,499
MECHANISM FOR EJECTING WORKPIECES FROM A DIE
Anthony M. Putetti, Waterbury, Conn., assignor to Textron, Inc., Providence, R.I.
Filed Apr. 22, 1969, Ser. No. 818,303
Int. Cl. B21d *45/00*
U.S. Cl. 72—345 **8 Claims**

A knockout mechanism for ejecting workpieces from a die which comprises a knockout pin slidably mounted in the die and slidably supported in a bore in the frame therefor, the knockout pin cooperating with a sleeve member having at least one arm pivotally mounted thereon and cooperating with a flange on the end of the forward section of the pin such that the end of the arm can pass over and grip the flange in order that the sleeve member be slidably retracted with said knockout pin.



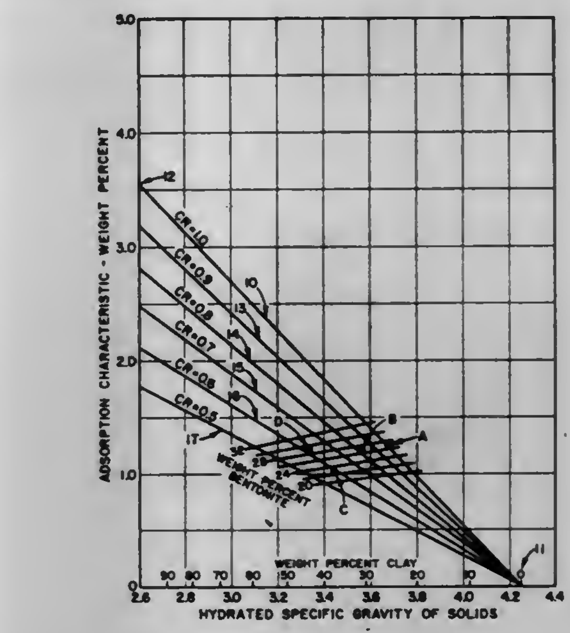
3,605,500
PRESSURE TRANSDUCER
Harold E. Trekell, Wakefield, Mass., assignor to General Electric Company
Filed Oct. 27, 1969, Ser. No. 869,739
Int. Cl. G01l *9/00, 7/04*
U.S. Cl. 73—398R **9 Claims**



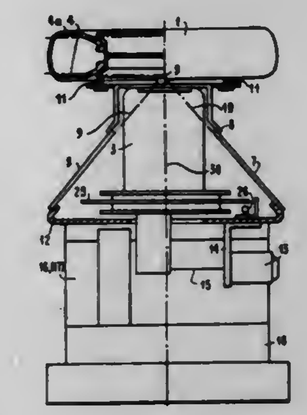
A pressure transducer using a Bourdon tube producing an output signal variable with input pressure. Measurement errors due to nonlinear elastic properties of the tube are largely eliminated by imposing lateral and rotary restraints on the deflection end of the tube with a force balance lever system. Stops limit movement of the lever system beyond the normal measurement range and thus prevent excessive deflection and stress of the tube in the event of overpressure. Differential or absolute pressure may be conveniently measured by the addition of a second Bourdon tube connected in opposed relation to the first tube.

3,605,501
METHOD FOR DETERMINING CLAY REACTIVITY
Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company
Filed Mar. 16, 1970, Ser. No. 20,003
Int. Cl. G01n *25/56*
U.S. Cl. 73—432 **10 Claims**

The capacity of a dehydrated drilling fluid sample to adsorb water under a fixed humidity environment is determined and compared to the capacity of a dehydrated standard material to adsorb water under the same environment. The ratio expresses the reactivity of the clay as related to the standard material.

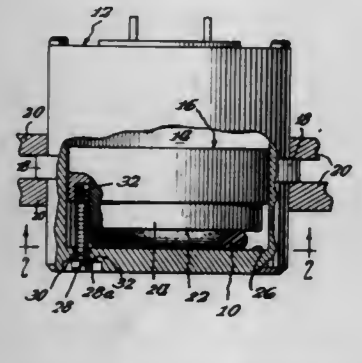


3,605,502
BALANCING MACHINE
Heinrich Hack, Spachbrucken, Germany, assignor to Carl Schenck Maschinenfabrik G.m.b.H., Darmstadt, Germany
Filed Mar. 12, 1969, Ser. No. 806,621
Claims priority, application Germany, Mar. 12, 1968, P 16 98 164.9
Int. Cl. G01m *1/22*
U.S. Cl. 73—471 **6 Claims**



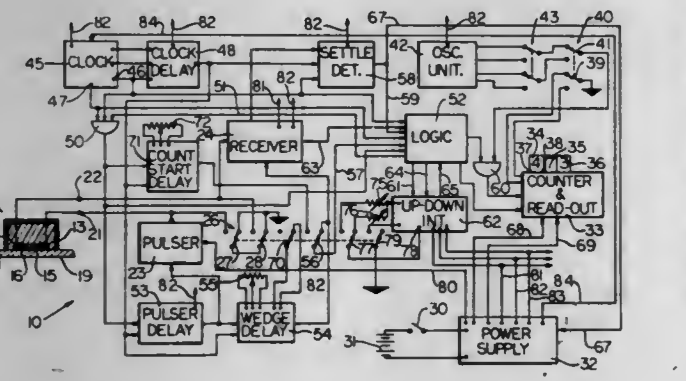
A machine is disclosed, having a spring-mounted mechanical frame for the dynamic balancing of bodies along at least two balancing planes thereof. The location and the measuring of imbalances independently in different planes of a body to be balanced, is accomplished by the provision of at least two sets of spring assemblies, wherein one spring assembly is disposed parallel to the rotational axis of the body to be balanced, permitting the parallel displacement of the axis, and the second assembly contains at least two elongated springs disposed with the extensions of their longitudinal axes intersecting in a given balancing plane of the body. Suitably each spring assembly contains leaf springs, torsion bars, or the like resilient members. When leaf springs are used, a pair of springs is disposed parallel to the rotational axis, and is suitably disposed at 90° from the position of a pair of springs inclined toward one another and the extensions of their longitudinal axes intersecting each other to bring about a corresponding 90° shift in the measurement of the oscillations caused by the imbalances in the different balancing planes.

3,605,503
TRANSDUCER ALIGNMENT MEANS
Jack A. Morrow, Bellevue, Wash., assignor to United Control Corporation
Filed Aug. 28, 1969, Ser. No. 853,805
Int. Cl. G01p *15/08*
U.S. Cl. 73—517R **14 Claims**



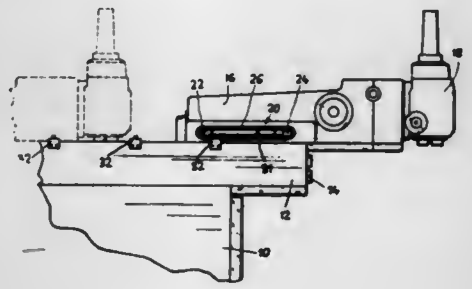
A means for aligning an accelerometer or other transducer relative to a support structure wherein the transducer and the support structure have opposed, spaced, generally planar surfaces. A resilient member is sandwiched between the surfaces and three threaded bolt members extend through openings in the support member at equally spaced points and are threaded into openings in an exterior portion of the transducer. The resilient member may be an elastic O-ring, a metallic elastic washer, or other elastic structure. Tightening of the bolt members for alignment purposes moves the transducer toward the support structure and compresses the resilient member. The opposed forces between the compressed resilient member and the tightened bolt members stabilize the transducer in its aligned position relative to the support structure.

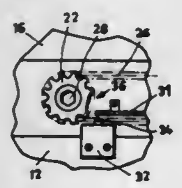
3,605,504
ULTRASONIC THICKNESS MEASURING SYSTEM
George L. Kummer, Jr., Mount Prospect, Ronald A. Straw, Aurora, and John A. Wendt, Park Ridge, Ill., assignors to Magnaflux Corporation, Chicago, Ill.
Filed Feb. 28, 1969, Ser. No. 803,165
Int. Cl. G01b *17/02*
U.S. Cl. 73—67.7 **19 Claims**



Ultrasonic thickness measuring system in which bursts of ultrasonic energy are transmitted into a front surface of a part with received signals being developed from reflections from the back surface of a part, the time interval between a transmitted burst and a corresponding received signal being measured electronically, preferably by digital means. An important feature is in the provision of means for automatically controlling the gain of an amplifier to develop amplified received signals of constant amplitude in response to back reflections of varying amplitude which permits much more accurate measurement. Another important feature is in the provision of an integrator for producing a control signal having a duration directly proportional to and at least several times larger than the time interval between a burst and the corresponding reflection, which permits much more accurate measurement with a practical design of time measuring means. The integrator may comprise a means for charging a capacitor at a uniform rate during the time interval between a burst and the corresponding reflection and for discharging the capacitor at a uniform but much slower rate. A further feature relates to the operation of the time interval measuring means periodically at a slow rate such that the maximum duration of the time interval measured is a small fraction of the time between operations of the measuring means, which conserves power and is otherwise advantageous.

3,605,505
DEVICE FOR MOVING HEAVY MACHINE PARTS IN THEIR GUIDE
Leonhard Gschwendtner, Munich, Germany, assignor to Friedrich Deckel Prazisions Mechanik & Maschinenbau, Munich, Germany
Filed May 23, 1969, Ser. No. 827,311
Claims priority, application Austria, June 4, 1968, A 5,314/68
Int. Cl. F16h *19/06*
U.S. Cl. 74—37 **2 Claims**

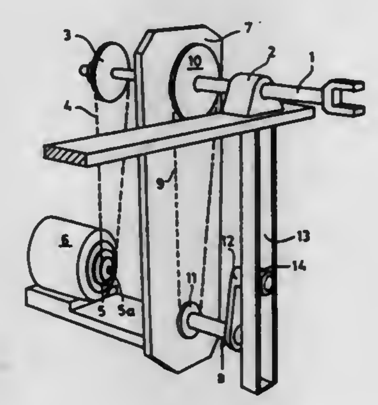




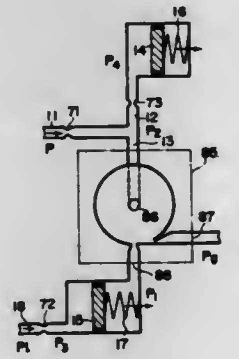
A device for permitting controlled relative movement between machine parts, particularly between a worktool spindle support member and its associated guideway. One of the parts is provided with an endless chain thereon, one reach of the chain being in driving engagement with a catch lug fixedly secured to the other part. The other part is preferably provided with a plurality of spaced catch lugs therealong adapted to intermittently engage the chain whereby the one part can be linearly moved relative to the other part through a distance substantially greater than the longitudinal length of the one reach of the chain.

3,605,506
DEVICE FOR OBTAINING A ROTATING MOTION WITH PERIODICALLY ALTERNATING INCREASING AND DECREASING ANGULAR VELOCITY
Kaspar Kuster, Basel, Switzerland, assignor to Willy A. Bachofen, Basel, Switzerland
Filed Sept. 23, 1969, Ser. No. 860,327
Claims priority, application Switzerland, Sept. 23, 1968, 14,189/68
Int. Cl. F16h *21/12*
U.S. Cl. 74—63 **6 Claims**

A device for producing a rotating motion with periodically alternating increasing and decreasing angular velocity includes a pendulum pivotally mounted on a driven shaft of the device and carrying a control member which is positively coupled to the driven shaft and which cooperates with a fixed point of the device to cause a periodic swinging movement of the pendulum dependent on the speed of the driven shaft.

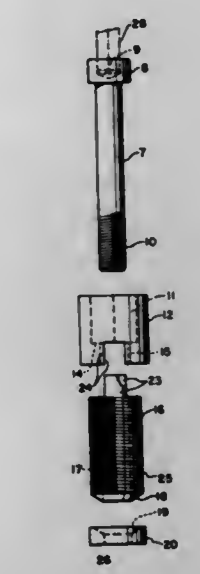


3,605,507
AUTOMATIC TRANSMISSION
Tomoo Ishihara, Tokyo, Katsuya Suzuki, Nagoya, and Hajime Arai, Hisaji Nishikawa, and Shin Ito, Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Toyota-shi, Aichi-ken, Japan
Filed Apr. 10, 1969, Ser. No. 815,070
Claims priority, application Japan, May 28, 1968, 43/35,689
Int. Cl. F15b *15/22;* **F16d** *67/04;* **F16h** *57/10*
U.S. Cl. 74—761 **4 Claims**



In general, in a fluid automatic transmission composed of a torque converter and a planetary gear system provided with a multiple disc clutch and a brake band, when the vehicle is running in drive range it is unable to avoid shock given to the driver at the time of automatic gear change for up-shift or down-shift of speed. The control system according to the present invention is intended to prevent occurrence of the above shock which gives the driver an uncomfortable feeling or uneasiness by means of comparatively simple methods. That is, a pure fluid element, for instance, a fluid amplifier is provided on one or both of the pipe-lines for applying or relieving hydraulic pressure to the multiple disc clutch servo piston and to the brake band servo piston and by utilizing the different resistance characteristics of this pure fluid element in the forward and reverse directions of the pressure oil, a difference of time constant is produced between engaging and disengaging of the clutch and the brake band, whereby it is contemplated that the multiple disc clutch is slowly engaged for shifting up the speed after the brake band has been disengaged and the brake band is slowly engaged for shifting down the speed after the multiple disc clutch has been disengaged, thus reducing the shock at time of automatic gear change to minimum. Moreover, the present invention contemplates that the governor pressure having relation to the vehicle speed is applied to the control port of said fluid amplifier and a difference of the shock at time of automatic gear change caused between high speed and low speed at which the vehicle is running in the drive range is also eliminated, so that a more comfortable and almost shockless automatic gear change can be accomplished.

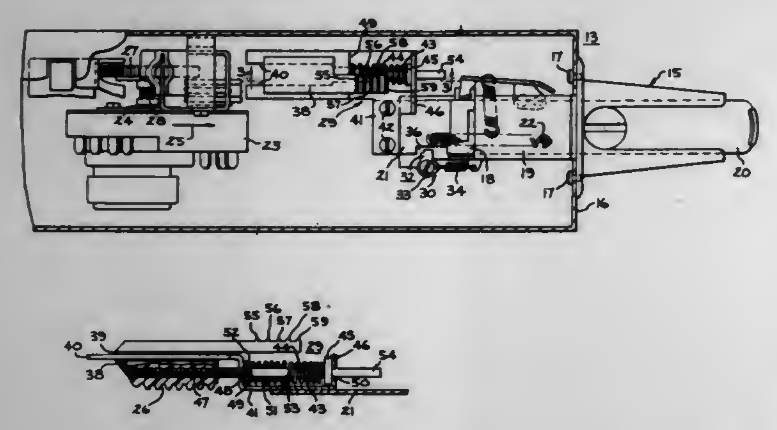
3,605,508
PRECISION THREADED ADJUSTMENT
William B. Fell, 320 McLain Ave., Rockford, Ill. 61102
Filed June 23, 1969, Ser. No. 835,477
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **5 Claims**



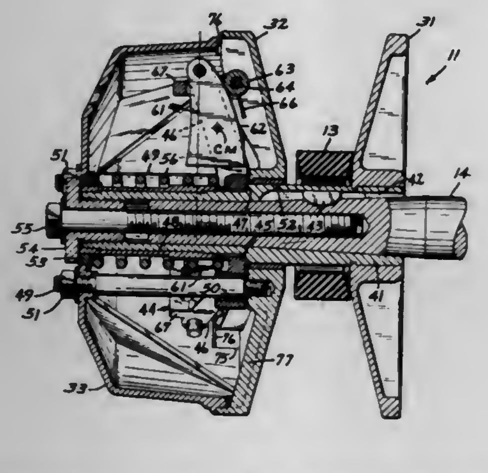
A hollow adjusting screw threads in a hole provided in one of two members and has a lost motion connection with a hollow adjusting head bearing on an annular shoulder at the upper end of the hole, this head having a hold-down screw extending through it and the first named screw and threading in a hole provided in the other member on which the lower end of the first named screw seats on a suitable washer. The head on the hold-down screw bears on an annular shoulder in the adjusting head and clamps the two members together. The adjusting screw and the hold-down screw have the same number of threads per inch but of opposite hand so after the members are roughtly adjusted by means of the adjusting head and adjusting screw to approximately the desired extent and the hold-down screw is tightened enough to insure its turning with the adjusting screw, any fine adjustment thereafter of the adjusting screw with the adjusting head results in the hold-down screw turning with the other parts without disturbing the clamping action.

3,605,509
LOST MOTION MECHANISM FOR COIN-OPERATED TIMER RUN TIME ACCUMULATOR
Robert D. Harris, Sr., Louisville, Ky., assignor to General Electric Company
Filed May 1, 1969, Ser. No. 820,907
Int. Cl. F16h *27/02;* **G07f** *5/00*
U.S. Cl. 74—130 **7 Claims**

A lost motion mechanism is provided for use in conjunction with a time accumulating means adapted to accumulate timer run time on a timer mechanism in response to an outward reciprocation of the slide of a coin-receiving mechanism from a fully inward position. The lost motion mechanism is associated with the slide to delay the operation of the time accumulating means during the initial outward reciprocation of the slide from the fully inward position.



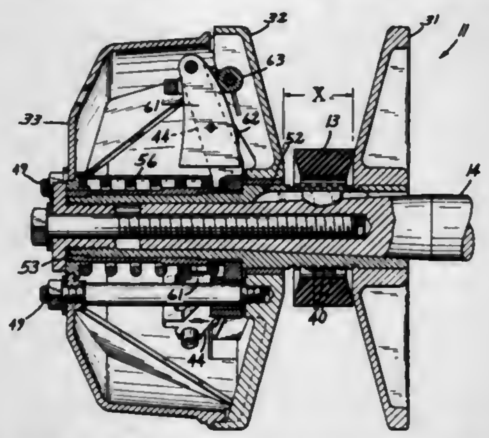
3,605,510
CENTRIFUGAL CLUTCH
Eugene W. Laughlin, Minneapolis, Minn., assignor to Textron Inc., Providence, R.I.
Filed Oct. 24, 1969, Ser. No. 869,165
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **16 Claims**



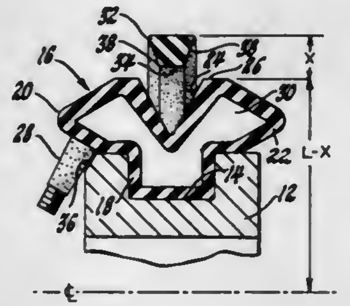
The disclosure is directed to a variable ratio centrifugal clutch having driving and driven assemblies connected by an endless belt. The driving assembly consists of a pair of sheaves affixed to a drive shaft, one being axially stationary and the other being axially movable with respect thereto. The movable sheave forms part of a closed housing which fully encloses a plurality of flyweights pivotally mounted on the shaft for rotation therewith. In response to increases in drive shaft speed, the flyweights swing outward and engage the housing, moving it in its entirety along the shaft to bring the sheaves together.

3,605,511
SELF-CLEANING CENTRIFUGAL CLUTCH
Clement F. Deschene, Roseau, Minn., assignor to Textron Inc., Providence, R.I.
Filed Oct. 24, 1969, Ser. No. 869,167
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **5 Claims**

A self-cleaning centrifugal clutch is disclosed that consists of driving and driven assemblies operatively connected by an endless rubber belt. The driving assembly includes a pair of sheaves affixed to a rotatable shaft, one of the sheaves being axially movable with respect to the other to control radial position of the belt on the sheaves and thereby effect a variable revolution ratio between the driving and driven assemblies. That portion of the shaft over which the movable sheave rides is formed with a plurality of circumferential grooves which prevent the buildup of burned rubber transferred from the belt to the shaft, thereby keeping the shaft clean and maintaining proper operation.

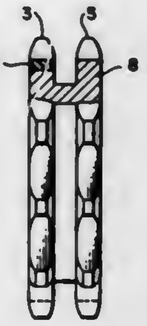


3,605,512
EXPANSIBLE PULLEY
John J. Wetzel II, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 20, 1969, Ser. No. 867,846
Int. Cl. F16h *55/54*
U.S. Cl. 74—230.18 **8 Claims**



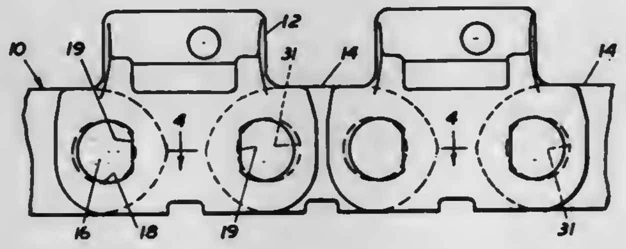
A molded rubber expansible pulley arrangement wherein the pulley is formed as a shaped endless tube and includes a valve and stem for filling the tube to a predetermined pressure. The pulley may be mounted in a groove on the drive hub or bonded thereto and is compressed for the mounting of a conventional V-belt in a groove formed thereon, thereby serving to continually tension the belt and to automatically continue the tensioning process should the belt stretch.

3,605,513
MULTIPLE CONTACT SPROCKETS
Yoshiaki Sugimoto, Tokorozawa, Saitama Prefecture, Japan, assignor to The Tsubakimoto Chain Mfg. Co., Ltd., Osaka, Japan
Filed Sept. 8, 1969, Ser. No. 856,059
Claims priority, application Japan, Sept. 17, 1968, 43/67,115, 43/67,116
Int. Cl. F16h *55/14, 55/18, 55/30*
U.S. Cl. 74—243PC **10 Claims**



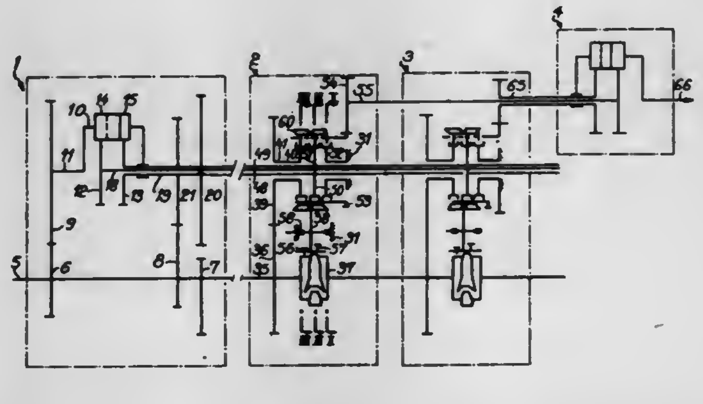
A sprocket wheel having two surfaces of contact for contacting the same roller of sprocket chain. One of the contact surfaces consists of an elastic material and contacts the roller before the other contact surfaces. This is because the one contact surface either is out of phase with the other contact surface or has a larger bottom diameter than the other contact surface. A chain drive system uses a driving wheel having one row of sprockets forwardly out of phase of another row and a driven wheel having one row of sprockets rearwardly out of phase with another row.

3,605,514
CUTTER CHAIN AND METHOD OF ASSEMBLY
Ralph W. Mitchell, % Wheeling Franklin Motel, 1421 Liberty St., Franklin, Pa. 16323
Filed Apr. 2, 1969, Ser. No. 812,760
Int. Cl. F16g *13/02*
U.S. Cl. 74—254 **5 Claims**



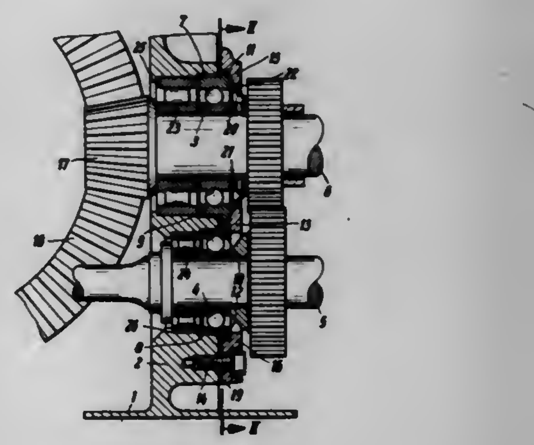
A cutter chain and method of assembly therefor employing pintles having portions non-rotatively retained within cutter carrying links and a recessed central portion along one side to allow space for greater than normal sprocket tooth size relative to a given pitch length.

3,605,515
VARIABLE-RATIO POSITIVE-DRIVE TRANSMISSION
Robert Eugène Jules Lecavelier, Paris, and Jean Tubeuf, Ville-d'Avray, France, assignors to Societe Anonyme dite: Societe d'Etude de la Propulsion par Reaction, Puteaux, France
Filed July 29, 1969, Ser. No. 845,708
Claims priority, application France, July 31, 1968, 161,415
Int. Cl. F16h *3/00, 35/02, 55/04*
U.S. Cl. 74—393 **3 Claims**



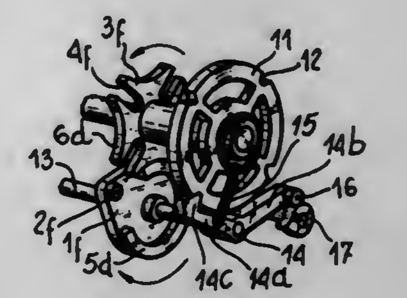
A variable speed positive-drive power transmission includes a power group of gears and at least two coupling groups, both of which are coupled to the power groups. The power groups each include a primary input shaft and at least two oscillatory shafts. The oscillatory shafts operate with periodic speed variations and therefore have variable reduction ratios in relation to the primary shaft of the group. Each coupling group has a secondary shaft and each secondary shaft is coupled to motion transfer points of the power groups. The transmission is intended for use with lathes and other machine tools where variable oscillatory speeds are required.

3,605,516
BEARING FOR THE SHAFTS OF A POWER TRANSMISSION COMBINED WITH A DIFFERENTIAL GEAR, ESPECIALLY FOR AUTOMOTIVE VEHICLES
Otto Hausinger, Gerlingen, Germany, assignor to Firma Dr.-Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany
Filed Mar. 13, 1970, Ser. No. 19,398
Claims priority, application Germany, Mar. 18, 1969, P 19 13 562.7
Int. Cl. F16c *21/00;* **F16h** *35/08*
U.S. Cl. 74—401 **31 Claims**



Bearing for the shafts of a change speed gear combined with a differential gear, especially for automotive vehicles, with several gear shafts disposed in adjacent relationship such as side-by-side or one above the other. The drive pinion of the crown wheel is fixedly connected to the gear output shaft of the change speed gear. The output shaft is supported in a radial ball bearing fashioned as a sliding bearing and in an axial bearing fashioned as a fixed bearing in a partition of the transmission case. Axial adjustment of the drive pinion is effected by shims.

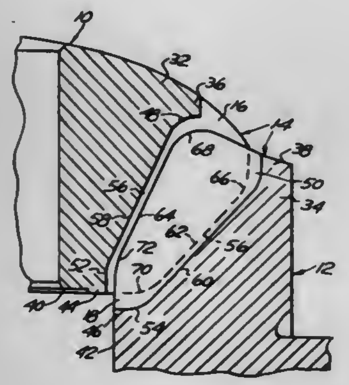
3,605,517
IMMEDIATE LOCKING OR STALLING GENEVA WHEEL DEVICE HAVING A HIGH POSITIONING DEGREE OR INDEX FOR THE INTERMITTENT MEMBER BY A PLURALITY OF LOCKING OR STALLING PARTS (CENTERING ELEMENTS)
Ariosto Seragnoli, Bologna, Italy, assignor to G.D. Societa in Accomandita Semplice di Enzo Seragnolie, Bologna, Italy
Filed July 17, 1969, Ser. No. 842,573
Int. Cl. F16h *55/04;* **B23b** *29/24*
U.S. Cl. 74—436 **3 Claims**



A Geneva wheel device comprises an evenly rotating driving wheel and a Geneva or driven wheel having radial spaces and being intermittently rotated by one or by each of a plurality of associated operating rollers, eccentrically angularly spaced apart with respect to said driving wheel. One or more cylindrical surface projections concentric (centering element) therewith and intended to co-operate with one of the concave surfaces conjugated thereto on the Geneva wheel periphery between one space and the other are provided. Said operating roller(s) are associated with the driving wheel so as to enter the corresponding radial space at the intersection between the paths as described by the respective circumferential travel and that of the terminal ends of said Geneva wheel, the corresponding radial forming with the median radial of said entering space an angle less than 90°. There is provided a moving member having at least one auxiliary cylindrical surface (centering element) conjugable with the peripheral concave surfaces of the Geneva or driven wheel, this moving member being moved in timed relationship with the movements of the driving wheel to bring said auxiliary cylindrical surface to co-operate with a corresponding conjugate concave surface of said driven wheel so as to lock or stop it at the position being reached at the time the operating roller associated with said driving wheel leaves its corresponding radial space.

3,605,518
REINFORCED-TOOTH GEAR

John Haller, Northville, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Nov. 12, 1969, Ser. No. 875,974
Int. Cl. F16h *55/04;* **B21d** *53/28*
U.S. Cl. 74—459.5 **8 Claims**

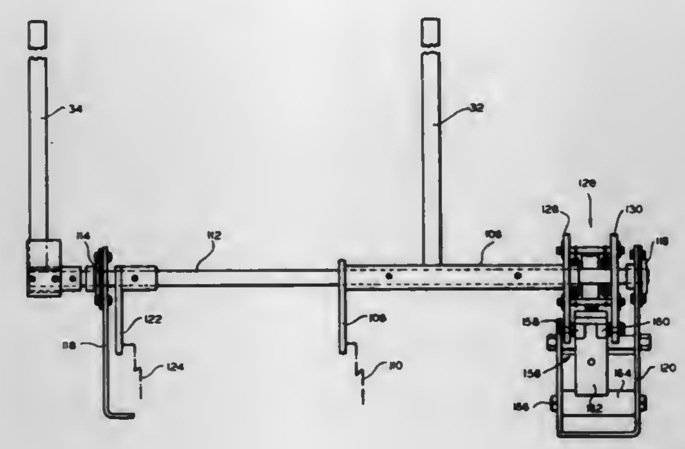


The roots of the teeth of a gear are interconnected at either or both of their opposite ends by reinforcement portions consisting of ribs extending between adjacent teeth and projecting outward from the bottoms of the spaces therebetween. The intermediate portions of the teeth of the gear have running contact and engagement between the reinforcement ribs at either or both ends of a similarly-reinforced meshing gear, so that the ribs strengthen the teeth without interfering with their rolling engagement or "run-off." Such gears with rib-connected teeth are made by sintered powder metallurgy as the outward projection of the ribs into the spaces between the teeth from the bottoms of said spaces prevents their manufacture by conventional gear-forming processes which require a run-through of the gear-forming tool between adjacent teeth.

3,605,519
CONTROL FOR DUAL HYDROSTATIC DRIVE

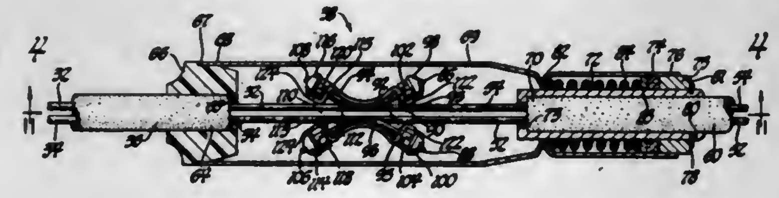
John P. Heggen, Lisbon, N. Dak., assignor to Clark Equipment Company
Filed Jan. 26, 1970, Ser. No. 5,459
Int. Cl. G05g *13/00*
U.S. Cl. 74—480R **8 Claims**

Mechanism for controlling two separate power outputs together or independently, including a pair of plates mounted for rotation, a pair of converging slots in each plate, a rod extending through each pair of corresponding slots in the plates and tension spring means connected between the pair of rods.



3,605,520
CABLE TRANSMISSION CONTROL

Harald H. Lorenz, Bloomfield Hills, and Roy S. Cataldo, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 9, 1970, Ser. No. 9,861
Int. Cl. F16c *1/22*
U.S. Cl. 74—501.5R **13 Claims**

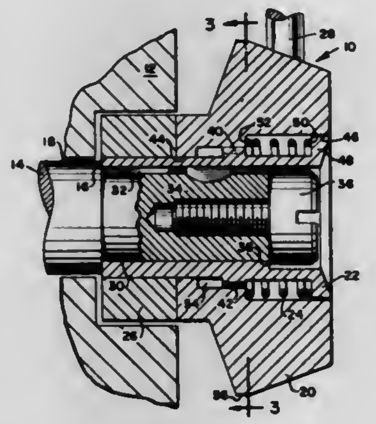


A shift control system having a first pulley operative in response to movement of a shift-selector mechanism, a second pulley operatively connected to an automatic transmission, a first cable portion connected to the first pulley, a second cable portion connected to the second pulley, and a centrally located spring-loaded cable-connector device, the latter including a bracket and a pair of fasteners for connecting each pair of opposing ends of the two cable portions at final assembly, and resilient means for maintaining the connected cable portions taut and for automatically compensating for any subsequent cable stretch and maintaining initial preload. The system may also include a ratchet arrangement for preventing collapse of the resilient means should the operational load exceed the installed resilient means load, thereby preventing a possibility of the operator experiencing a "spongy" pedal reaction.

3,605,521
INDEXING HANDLE FOR A TOOL

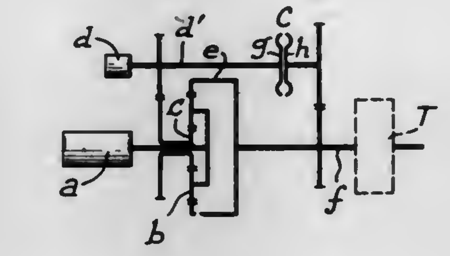
Charles A. Glenn, 92 Four Mile Road, West Hartford, Conn. 06107
Filed Mar. 26, 1970, Ser. No. 22,971
Int. Cl. G05g *1/04*
U.S. Cl. 74—548 **10 Claims**

A tool handle capable of being indexed while mounted on a machine tool. The handle may be mounted to machines such as drill presses or milling machines which have a quill that is advanced manually by rotation of the handle. The handle includes a hub which is manually rotated and a sleeve which is mounted to a rotatable control shaft in the machine. The sleeve and hub have mating splines and may be axially displaced with respect to one another to disengage the splines. When the splines are disengaged, the hub can be rotated to a new position with respect to the sleeve and the splines can be reengaged. A spring normally urges the hub into the axial position at which the splines are engaged for transmitting torque from the hub to the sleeve and the control shaft of the machine.



3,605,522
DRIVE UNITS

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Nov. 22, 1968, Ser. No. 778,259
Claims priority, application France, Nov. 22, 1967, 129,258
Int. Cl. F02b *33/00;* **F16h** *37/00*
U.S. Cl. 74—689 **5 Claims**

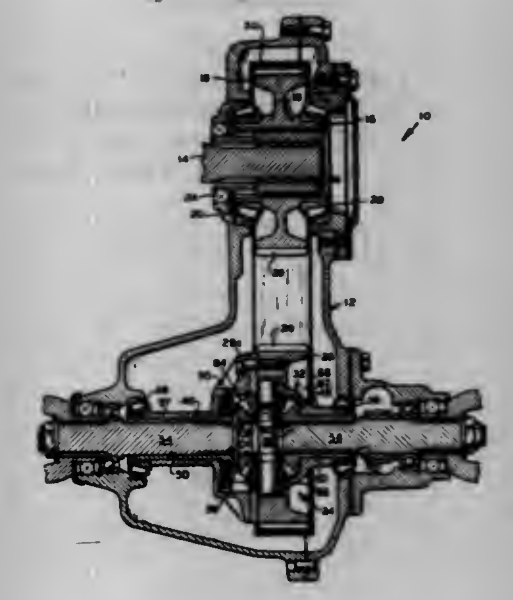


The present invention relates to drive units and according thereto such a unit comprises a two-stroke engine having a scavenging compressor, a speed regulator and a differential gear. One of the elements of the differential is coupled to a shaft of the compressor, a second of these elements is coupled to the output shaft of the engine and the third one of these elements is fixed to an input shaft of the speed regulator. The speed regulator may take the form of a hydrokinetic torque converter or it may be electrical or mechanical, in which latter case, it can conveniently comprise a pair of variable diameter pulleys interconnected by belt means.

3,605,523
TRANSFER CASE INCLUDING A TORQUE SPLITTING DIFFERENTIAL

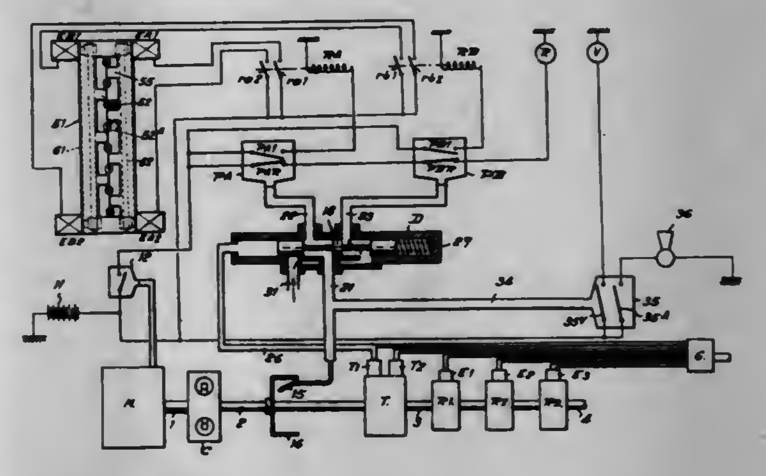
Loren J. O'Brien, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Sept. 15, 1969, Ser. No. 857,972
Int. Cl. F16h *1/40*
U.S. Cl. 74—711 **5 Claims**

A chain drive transfer case for a full time four-wheel drive vehicle including an inter-axle differential comprised of a standard differential plus a torque-responsive clutch introduced between coaxial output shafts for driving the front and rear axles of the vehicle. The torque-responsive clutch is designed to divide the engine torque unequally at the output shafts in such proportion that at all times sufficient torque is applied to the rear axle and relatively lesser torque to the front axle. Cooperating positive and friction clutch means make up the torque responsive clutch which is operative through driving engagement with one of the side gears of the differential to cause the unbalance in the drive system.



3,605,524
GEAR-BOX SYSTEM INCLUDING A TORQUE CONVERTER AND SPEED RESPONSIVE MEANS

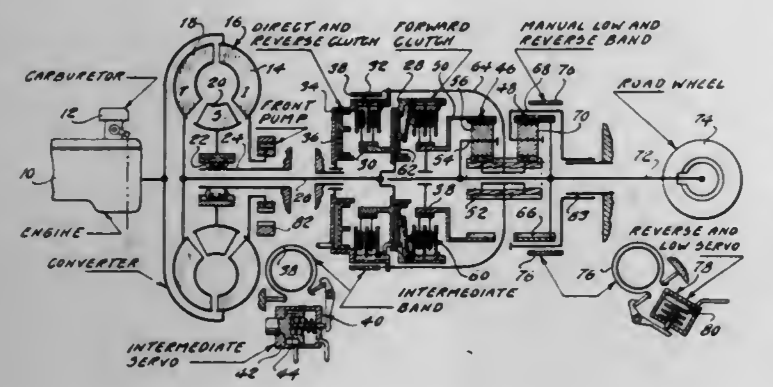
Charles J. Debeaud, Bougival, France, assignor to Etablissements Henri J. de Tabet, Nanterre, Hauts-de-Seine, France
Filed Apr. 16, 1969, Ser. No. 816,754
Claims priority, application France, May 14, 1968, 151,686
Int. Cl. F16h *47/00*
U.S. Cl. 74—731 **8 Claims**



A gear-box system comprising a hydraulic torque converter followed by mechanical stages, which provide different ratios, and equipped with indicating devices responsive to the rotational velocity of the output shaft of the torque converter, one device being maintained in the active position as long as the rotational velocity of the output shaft of the torque converter is lower than a predetermined value at which the slippage of the torque converter is considered excessive and calls for downshifting of the gear-box. A second indicating device is maintained in the active position when the rotational velocity of the output shaft of the torque converter exceeds a predetermined value which is higher than the aforesaid value and at which it is desirable to change to a higher ratio of the gear-box. The inactive state of each of said two indicating devices is representative of the normal operative state of the system as a whole.

3,605,525
SEMI-AUTOMATIC MULTIPLE SPEED RATIO TRANSMISSION

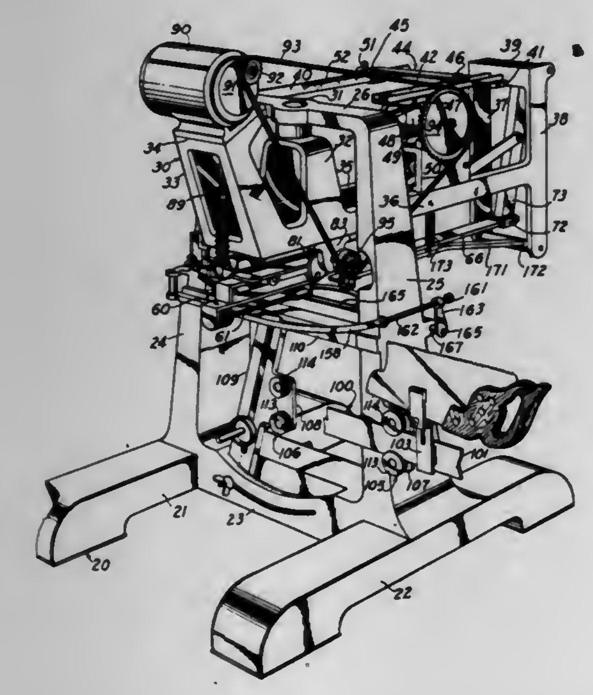
Stanley L. Pierce, Jr., Birmingham, and William C. Winn, Inkster, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 8, 1969, Ser. No. 856,528
Int. Cl. F16h *3/44;* **B60k** *17/10*
U.S. Cl. 74—753 **3 Claims**



A planetary gear transmission mechanism having a hydrokinetic torque converter, two simple planetary gear units and a semi-automatic ratio control valve system for controlling speed ratio changes in the gear units, said system including simplified shift valve components and timing valve elements for establishing proper shift points as manual transmission ratio selections are made.

3,605,526
SAW SHARPENING MACHINE

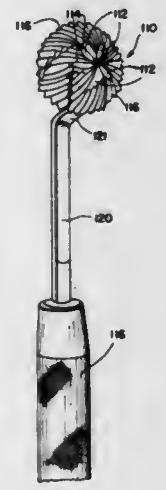
Jesse R. Crapo, Rte. 2, Duluth, Ga. 30136
Filed Oct. 7, 1969, Ser. No. 864,466
Int. Cl. B23d *63/08*
U.S. Cl. 76—35 **20 Claims**



This invention relates to an automatic sharpening device for use in sharpening a cutting tool having a series of cutting teeth such as carpenter's hand saws, key hole saws, compass saws and fine tooth circle saws. More particularly, this invention includes a base frame for supporting a cutting tool for lateral indexing movement, including controlled indexing means operative to serially present each tooth of the series of cutting teeth to a sharpening position. Mounted on the base frame is a sharpening means such as a file, detailed in supporting relationship relative to the cutting tool for orbital movement in a plane disposed at an angle with respect to the plane of the cutting tool. The sharpening means includes control means operatively associated therewith for effecting the orbital movement of the sharpening means in such a manner that a sharpening of the cutting tooth is accomplished during one portion of the orbital movement and wherein the sharpening means is separated from the cutting tooth during a second portion of the orbital movement. The sharpening means also includes control means for effecting automatic angular adjustment between the plane of the cutting tool and the plane of motion of the sharpening means for the purpose of adjusting the sharpening means to sharpen angular offset cutting edges. The control means for effecting the automatic angular adjustment is detailed to effect the angular adjustment during the second portion of the orbital movement of the sharpening means.

3,605,527
METHOD FOR MANUFACTURING HIP REAMERS

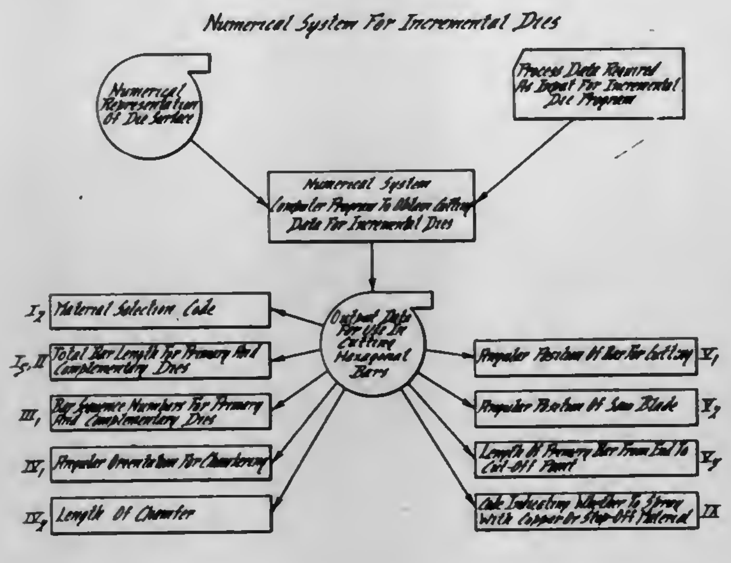
Charles E. Gambale, East Boston, Mass., assignor to Gambale and Merrill Corporation, Boston, Mass.
Filed June 3, 1969, Ser. No. 830,046
Int. Cl. B21k *21/00*
U.S. Cl. 76—101A **11 Claims**



Methods and apparatus are disclosed for manufacturing reamers for use in hip arthroplasty. A solid-type, center-cutting acetabular reamer is made by: milling a piece of cylindrical stock to a spherical dome; cutting recesses adjacent to the apex of the reamer by moving the dome-shaped blank rectilinearly into a frusto-conical rotary cutter having a flat upper surface which is located in the plane of, but offset from, the centerline of the dome-shaped blank; cutting radial teeth by engaging the blank with a rotary cutter and moving the blank in an arcuate path while in engagement with the rotary cutter; cutting chip-breaker grooves by moving the blank in an arc while in engagement with a rotating saw blade while the blank is tipped upwardly at an angle; and threadedly securing a shaft to a threaded boss provided on the rear side of the blank and welding it thereto with the use of special welding rig. Fenestrated head and acetabulum reamers are provided from a dome-shaped spherical blank which is formed by cold-pressing a circular blank by means of a spherical male die member and a spherical female die member. This blank is then squared off and placed in a special collet for rectilinear movement into engagement with frusto-conical cutting means which cuts openings adjacent to the center of the blank. In the case of head reamers, the blank is then provided with internal radial teeth by tipping it upwardly at an angle while it is held in a special collet and moving it rectilinearly into engagement with a frusto-conical rotary cutter. A concentric shaft may then be welded to the outer surface of the blank by the use of a special welding rig. Eccentric handles may also be welded to the peripheral edge of the blank by employing a special welding rig.

3,605,528
INCREMENTAL CONSTRUCTION OF THREE-DIMENSIONAL OBJECTS HAVING PRE-MACHINED ROD ELEMENTS AND METHOD FOR FORMING THE SAME

Foster E. Whitacre, Farmington, Archie A. Pearson, Dearborn, Harold N. Bogart, Farmington, and Norman W. Hopwood, Jr., Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 2, 1968, Ser. No. 749,685
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 **12 Claims**

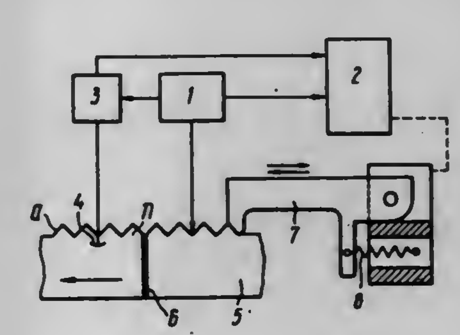

Numerical System For Incremental Dies
Numerical Representation Of Die Surface
Process Data Required As Input For Incremental Die Program
Numerical System Computer Program To Obtain Cutting Data For Incremental Dies
Output Data For Use In Cutting Hexagonal Bars
Material Selection Code
Total Bar Length For Primary And Complementary Dies
Bar Sequence Numbers For Primary And Complementary Dies
Angular Orientation For Chamfering
Length Of Chamfer
Angular Position Of Bar For Cutting
Angular Position Of Saw Blade
Length Of Primary Bar From End To Cut-Off Point
Code Indicating Whether To Spray With Copper Or Strip-Off Material
I_2
I_3, II
III,
IV,
IV_2
V_1
V_2
V_3
IX

A three-dimensional article and a method of manufacturing it, said article comprising individual increments in the form of rods that are premachined or preformed and assembled in registry, said rods being precut to discrete lengths, one end of each rod forming an increment of a precalibrated surface contour, each incremental surface being located in an optimum plane tangent to the precalibrated surface, the rod lengths and the cutting angles for the individual rods being determined by numerical control techniques.

3,605,529
METHOD OF STOPPING MACHINE FOR SHARPENING AND SETTING SAW TEETH

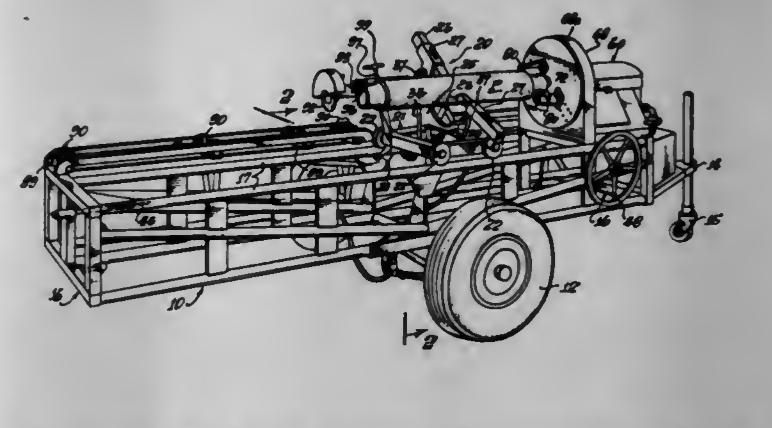
Vladimir Viktorovich Idel, Gorkovskoi oblast., ulitsa Graftio 15, kv. 6, Zavolzhie, U.S.S.R.
Filed Feb. 11, 1970, Ser. No. 10,393
Claims priority, application U.S.S.R., Feb. 19, 1969, 1,304,933
Int. Cl. B23d *63/00*
U.S. Cl. 76—112 **1 Claim**

A method of stopping the machine adapted for grinding and setting saw teeth, according to which an electrical-insulation coating is provided on the saw band, and the saw band is electrically connected between the power supply source of the machine drive and this drive, said electrical connection being effected by means of a slidable contact which, when encountering said insulation coating, interrupts the power supply circuit of the machine drive.



3,605,530
MOBILE FIELD LATHE

John T. Doty, 2238 E. 21st St., Long Beach, Calif.
Filed Nov. 29, 1968, Ser. No. 779,786
Int. Cl. B23b *5/16*
U.S. Cl. 82—4C **13 Claims**

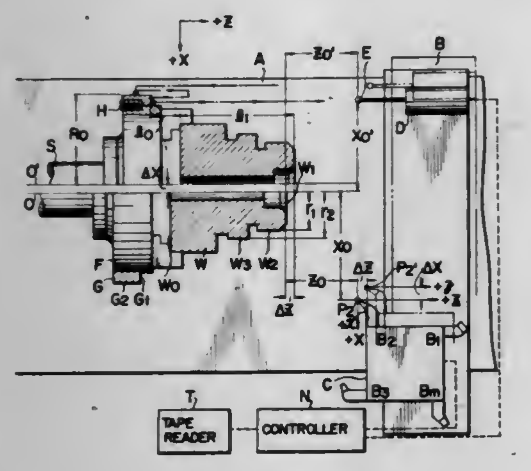


A mobile field lathe operated by compressed air has been designed particularly for cutting and machining operations on asbestos cement pipe. It has been found advantageous to cut pipe to length and to machine the ends on the pipe at the job site as this operation makes possible various economies in pipe layout, elimination of more expensive types of pipe, salvaging broken pipe, and so on. Mobility permits the unit to follow along as pipe is laid.

3,605,531
AUTOMATIC TOOL POSITION COMPENSATING SYSTEM FOR A NUMERICALLY CONTROLLED MACHINE TOOL

Tadayoshi Izumi and Hideo Hirokawa, Kawasaki, Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan
Filed May 12, 1969, Ser. No. 823,893
Claims priority, application Japan, Aug. 29, 1968, 43/61,447, 43/61,448
Int. Cl. B23b *3/28*
U.S. Cl. 82—14D **3 Claims**

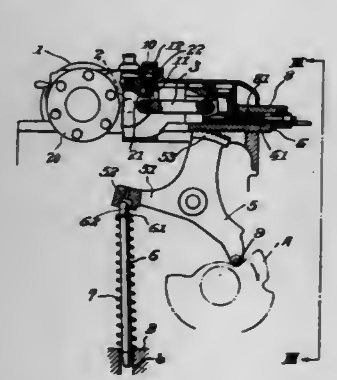
In a numerically controlled machine tool having a tool support slide, a multiple tool turret, a controller and a measuring element, a ring gauge is mounted on the main spindle of said machine tool coaxially thereto so that the deviations of said main spindle in X and Z directions may be accurately measured and compensated for. To do this, the measuring element utilizes the outer peripheral surface and the inwardly facing end surface of said ring gauge as the reference or standard positions in X and Z directions, respectively. The deviations are compensated in the succeeding cutting process for shifting the tools respectively, each in accordance with the error detected, by parallel shifting of the co-ordinate axis of the tools.



Alternately, the axes may be shifted angularly, or the parallel shift may be combined with the angular shift of the co-ordinate axes.

3,605,532
TURRET-SLIDE FEED MECHANISM FOR TURRET TYPE SINGLE-SPINDLE AUTOMATIC MACHINES

Kyushichiro Tanaka, Nagaoka-shi, Japan, assignor to Kabushiki Kaisha Tsugami Seisakusho, Tokyo, Japan
Filed Dec. 8, 1969, Ser. No. 883,177
Claims priority, application Japan, Dec. 19, 1968, 43/92,653
Int. Cl. B23b *21/00*
U.S. Cl. 82—21 **7 Claims**

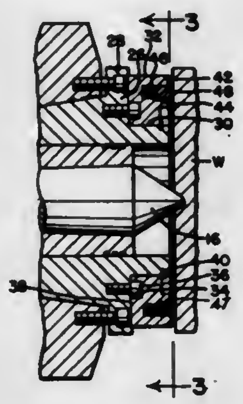


The positioning accuracy of the turret slide is much improved by use of a relatively strong slide-restoring spring acting directly upon the turret-actuating cam-follower lever and a relatively weak spring effective to eliminate backlash at connections between the cam follower lever and the turret index shaft. Such improvement is further ensured by a third spring enabling the index shaft to have a definite stop position.

3,605,533
WORKPIECE DRIVE MEANS FOR TURNING LATHES

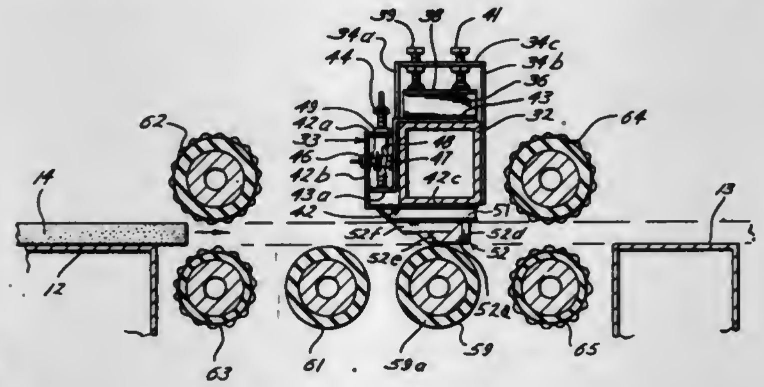
Thomas E. Dugle, Cincinnati, Ohio, assignor to Planet Products Corporation, Cincinnati, Ohio
Filed Mar. 4, 1968, Ser. No. 710,187
Int. Cl. B23b *33/00*
U.S. Cl. 82—40 **15 Claims**

The lathe includes opposed bodily shiftable headstocks each having a rotational spindle for engaging opposite ends of a workpiece as the headstocks are shifted toward one another. The spindles are rotated by means of two identical hydraulic pump-motors connected in a pressurized fluid piping system wherein fluid is kept in circulation by a third identical hydraulic pump-motor driven by a constant speed electric motor. By including the spindle-driving pump-motors in a common fluid system, said pump-motors are obliged to share equally the work of driving opposite ends of an elongate workpiece supported between centers on the spindles. The drive means between each spindle and one end face of the workpiece, is a purely frictional drive means the effectiveness of which is aided by a high-pressure auxiliary means to elevate and maintain the force of frictional contact between the workpiece end and a unique friction-ring assembly on the spindle involving hard and soft polyurethane transmission members. The pump-motors, two of which operate as spindle drivers, while one operates as a pump delivering operating fluid to the others, are all identical and interchangeable with one another in the interests of economical maintenance and speedy replacements.



3,605,534
BOARD CUTTING MACHINE

William H. Barr, 8418 Broadway, San Antonio, Tex. 78209
Filed May 24, 1967, Ser. No. 640,948
Int. Cl. B26d *3/06*
U.S. Cl. 83—5 **16 Claims**



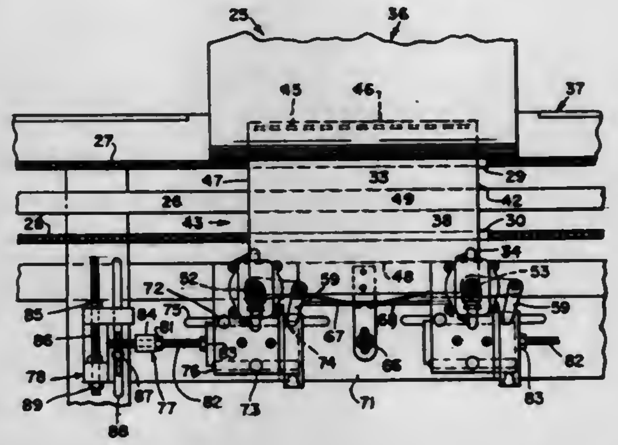
This invention relates to board cutting machines, and more particularly to machines for forming structures from fibrous board having an impermeable facing on one or both sides. The machine cuts grooves in a board of material which permits the board to be folded into a rectangular form to provide a duct. The board may also be wrapped around any structure for insulation, such as pipe or structural members.

3,605,535
COMBINED PUNCHING AND CORNERING APPARATUS AND METHOD

George D. Love, Saco, and Edson H. Stacy, East Baldwin, Maine, assignors to Southworth Machine Company, Portland, Maine
Filed Dec. 18, 1969, Ser. No. 886,124
Int. Cl. B26f *1/06*
U.S. Cl. 83—40 **8 Claims**

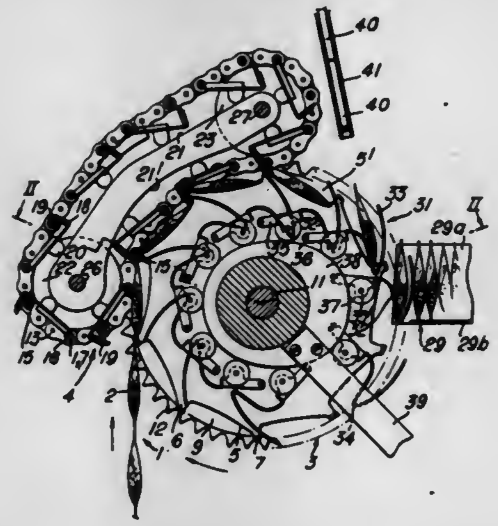
An automatic punching machine having a set of punches along one side of a punching station, includes a pair of independently operable die cutting heads detachably fixed on the other side of the punching station. Each individual and successive lift, or stack, of limp

sheets advances along a path and halts at the punching station while the binding apertures are punched and the outer corners rounded, straight cut, notched, etc., substantially simultaneously, and while the sheets of the lift are clamped onto the table and in registration with the back gauge.



3,605,536
ARTICLE HANDLING APPARATUS

Jacob Salomon, 10 Weizman Square, Holon, Israel
Filed Sept. 20, 1968, Ser. No. 761,112
Int. Cl. B26d *1/56, 7/06*
U.S. Cl. 83—96 **8 Claims**

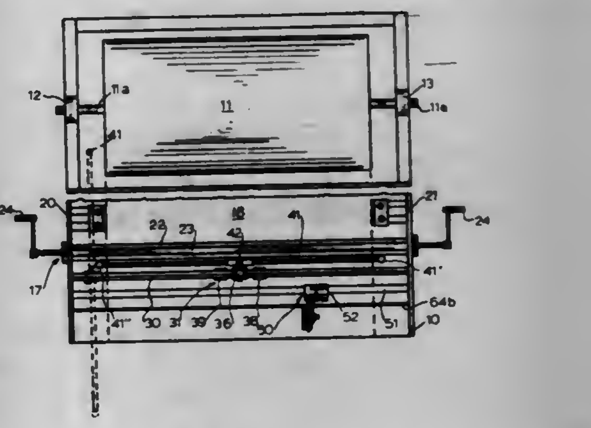


The specification discloses a star wheel apparatus used in the preparation of tea bags wherein a continuous web of bags may be fed to the star wheel for severance in the form of discrete bags in individual pockets of the wheel, the severing operation being performed by fixed knives on the star wheel co-operating with other relatively movable knife blades. Advantageously the severed tea bags may be displaced radially outwardly and angularly rearwardly as the rotation of the star wheel carries them round towards a delivery station so that they are deposited with reduced linear velocity on an extractor tooth of a delivery chute. Desirably the relatively movable co-operating knife blades may be mounted on a continuous chain element which has a run substantially coincident with part of the periphery of the star wheel.

3,605,537
INSULATION CUTTER

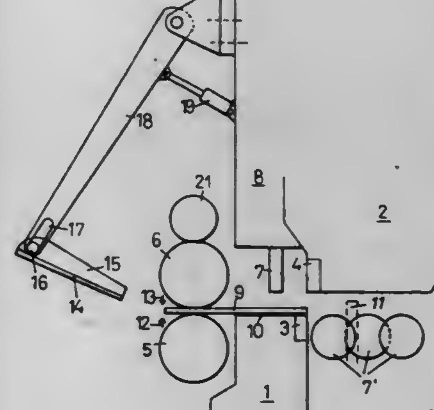
Lloyd P. Pickler, 634 McKee St., Albemarle, N.C. 28001
Filed Aug. 13, 1969, Ser. No. 849,687
Int. Cl. B26d *1/20, 19/00*
U.S. Cl. 83—121 **1 Claim**

An insulation cutter receives a supply roll of insulation material, unrolls and cuts the material to a preset width and length. Special handle arrangements allow the operator to perform the unrolling of the material and the cutting from either side of the machine and with minimum work aisle obstruction during periods of inactivity.



3,605,538
DEVICE FOR POSITIONING PLATE FOR CUTTING BY A CROSSCUT SHEAR

Bruno Bohmer, Dusseldorf, Josef Schiffers, Monchen Gladbach-Rheindahlen, and Rainer Kuhnpast, Dusseldorf, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed May 21, 1969, Ser. No. 826,483
Claims priority, application Germany, May 30, 1968, P 17 52 465.1; Oct. 8, 1968, P 18 01 689.2
Int. Cl. B26d *5/40*
U.S. Cl. 83—206 **19 Claims**

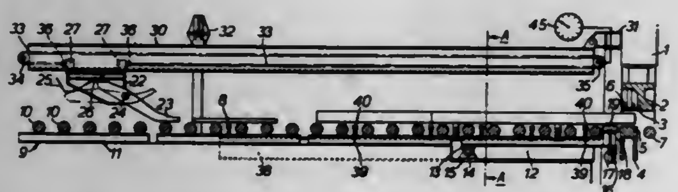


The invention relates to a device for advancing the end portion of a length of plate which is to be cut by a crosscut shear, the device comprising a primary conveying means for normally moving the plate, and a pushing means which moves from outside the path of movement of the plate to engage the end portion of the plate while the end portion is still entrained by the primary conveying means, and then to advance the plate.

3,605,539
APPARATUS FOR USE WITH CUTTING DEVICES FOR ELONGATE WORKPIECES

Ewan Christian Hewitt and William James Richmond, Sheffield, England, assignors to Davey and United Engineering Company Limited, Sheffield, England
Filed May 19, 1969, Ser. No. 825,509
Claims priority, application Great Britain, May 21, 1968, 24,106/68
Int. Cl. B26d *5/20*
U.S. Cl. 83—278 **12 Claims**

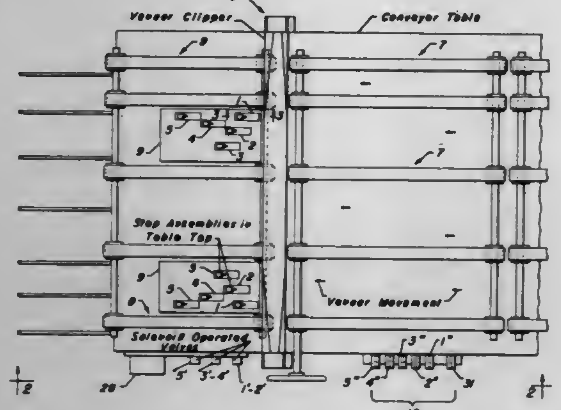
Apparatus for measuring off lengths of metal to be cut from a metal slab or bloom by a shear. The apparatus which is arranged wholly on the entry side of the shear includes a roller table for supporting a workpiece to be sheared, a pusher member engageable with the tail end of the workpiece and which is capable of displacing the workpiece under control towards the shear and an indicator means operatively coupled to the pusher member for indicating the precise position of the pusher member



relative to the shear. A weighing apparatus may be provided to ascertain the weight of the workpiece so that the weight per unit length of the workpiece can be calculated.

3,605,540
APPARATUS FOR DIMENSION CLIPPING OF VENEER

Allan E. Williams, Mellen, and Royal C. Cady, Highbridge, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed July 24, 1969, Ser. No. 844,409
Int. Cl. A26d *7/16*
U.S. Cl. 83—241 **3 Claims**

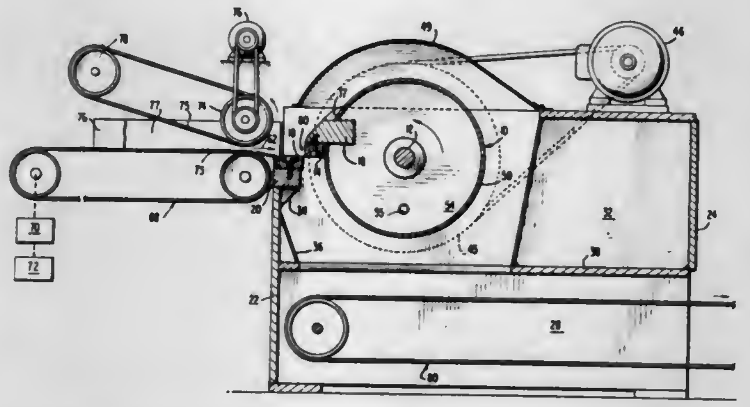


A veneer clipping system providing a plurality of vertically movable stop means that are positioned at varying spaced distances beyond a veneer clipper so as to effect a cutting of veneer into desired lengths. Each of the stop means is power operated from an operator's switch control station and each is mounted at a level just below that of the veneer conveyor means to thus be movable from just below the level of the latter to above the conveyor means to thereby provide for stopping the travel of the veneer at a selected distance beyond the clipper blade.

3,605,541
ROTARY SHEAR AND SCRAP PREPARATION METHOD

Melvin B. Ruben, Skokie, and Billy J. Weston, Chicago, Ill., assignors to Electronic Memories & Magnetics Corporation, Hawthorne, Calif.
Filed Apr. 11, 1969, Ser. No. 815,354
Int. Cl. B23d *17/04*
U.S. Cl. 83—355 **24 Claims**

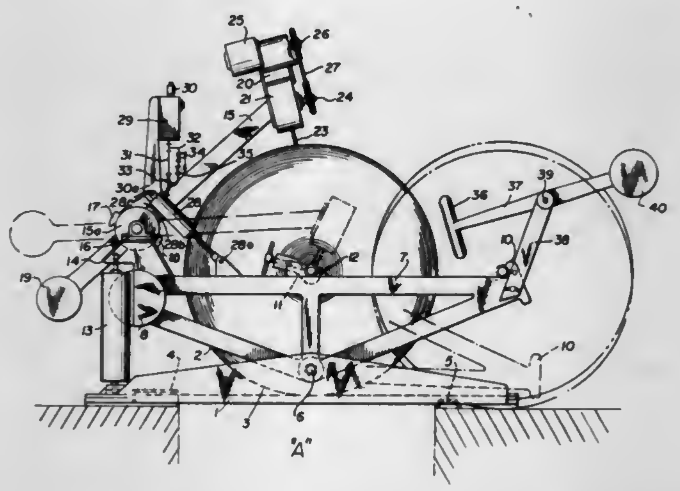
High capacity shearing to prescribed lengths of various materials from rigid rods to pliable wire is provided by a rotary drum shear, eccentrically weighted, with a cutting blade peripherally mounted so as to utilize the eccentric weighting to increase the force available for heavy-duty scrap cutting usage. Elongated scrap material to be cut to length is fed radially inwardly toward the axis of rotation of the drum between a fixed blade and the drum mounted blade. With this system cutting force is uniform across the full length of the cutting blades. Material feed is controlled both as to speed and presentation. Feed rate, coordinated with r.p.m. of the shear drum, controls length of cut. Conveying and hold down structures control presentation of material and hold material during cutting. The rotary drum sweeps cut material toward discharge



means. The principle of operation permitting positive control of feeding, shearing, and discharging minimizes safety hazards to personnel.

3,605,542
PAPER ROLL STRIPPER

William George Spear Smith, P.O. Box 10, Topsail C.B., Newfoundland, Canada, and William G. S. Smith, 333 Hamilton Ave., St. John's, Newfoundland, Canada
Filed Mar. 14, 1969, Ser. No. 842,413
(Filed under Rule 47(a) and 35 U.S.C. 116)
Claims priority, application Great Britain, Mar. 14, 1968, 12,502/68
Int. Cl. B26d *1/46*
U.S. Cl. 83—564 **7 Claims**

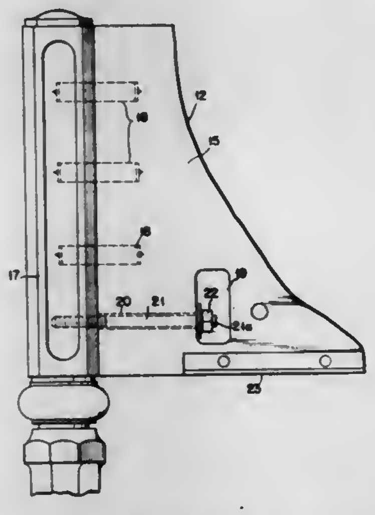


The paper roll stripper is contemplated which includes means for lifting and locating a paper roll, and plough means mounted on a belt which means are drawn along the roll of paper gradually removing the paper from the roll.

3,605,543
STRUCTURE FOR FIXING PIANO LEGS

Masaharu Ohara, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed July 16, 1970, Ser. No. 55,492
Claims priority, application Japan, July 21, 1969, 44/68,781, 44/68,782, 44/68,783
Int. Cl. G10c *3/02*
U.S. Cl. 84—177 **6 Claims**

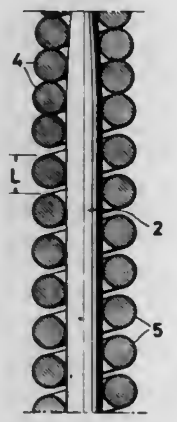
A structure for fixing piano legs comprising a pair of wooden side brackets supporting a keyboard, each bracket having grains running substantially in a horizontal direction and having a butt end, wooden end boards each bonded to said butt end and having grains running perpendicularly to the grain direction of said bracket, said bracket and said end board being covered and connected together by a decorative panel, and leg members fixed to said end boards by means of dowels and having grains directed substantially in the same direction as that of the grains of said end boards. The leg members may be fixed



to the brackets by means of bolt and nut members or keyboard-mounting metal plate members, in which cases the end boards may be omitted.

3,605,544
STRING FOR MUSICAL INSTRUMENTS

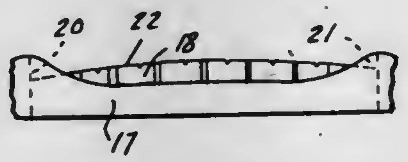
Masaru Kondo, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed June 25, 1969, Ser. No. 836,451
Claims priority, application Japan, June 27, 1968, 43/54,950
Int. Cl. G10c *3/06*
U.S. Cl. 84—199 **5 Claims**



A string for musical instruments comprising a core wire and a covering wire in which the pitch of winding said covering wire is larger than the diameter of said covering wire, and being characterized in that each turn of said covering wire does not make contact with each adjacent turn of said covering wire, and thus a sound with good tone quality and lasting vibration can be produced.

3,605,545
ADJUSTABLE BRIDGE FOR STRINGED MUSICAL INSTRUMENT

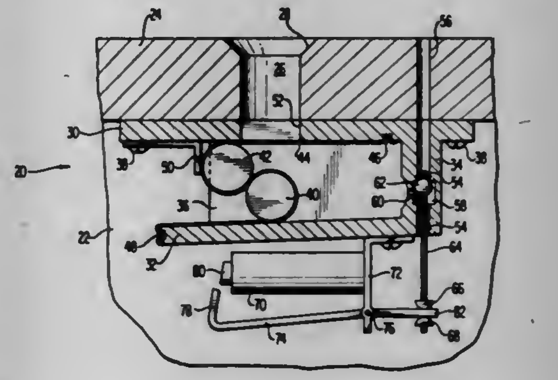
Stanley E. Rendell, Kalamazoo, Mich., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.
Filed May 18, 1970, Ser. No. 38,315
Int. Cl. G10d *3/04*
U.S. Cl. 84—307 **10 Claims**



A bridge, such as for a guitar, includes a rigid base that has an elongated recess in which there is slidably supported a saddle which supports the guitar strings. As the saddle is adjusted vertically, it is guided by a guide surface within the recess to preclude any rocking or cocking.

3,605,546
ROLLER VALVE DEVICE

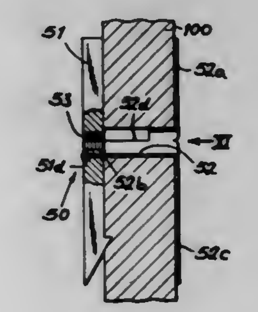
Paul A. Klann, P.O. Box 2398, Waynesboro, Va. 22980
Filed May 15, 1970, Ser. No. 37,619
Int. Cl. G10b *3/06*
U.S. Cl. 84—336 **10 Claims**



The roller valve device minimizes the sliding friction in the operation of the valve by locating two rollers between a pair of guide surfaces which are spaced apart a difference less than the sum of the diameters of said rollers and wrapping a flexible resilient band under tension about said rollers in an S-shaped configuration to define a freely rotatable cluster. One side of the cluster is exposed to air under pressure and the valve passage is located in one of the guide surfaces. Upon controlled movement of the cluster between the guide surfaces, the band may be selectively displaced between a non-sealing position with respect to the valve passage to control the flow of air pressure through said valve passage.

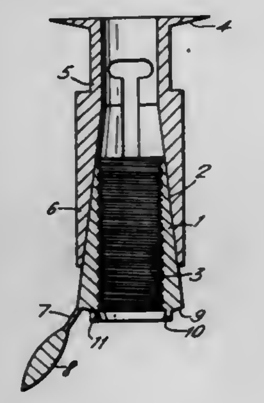
3,605,547
SELF-ALIGNING SCREW ANCHOR

David I. Millet, 155 E. 4th St., New York, N.Y. 10009
Filed Apr. 10, 1969, Ser. No. 815,114
Int. Cl. F16b *37/04*
U.S. Cl. 85—3S **2 Claims**



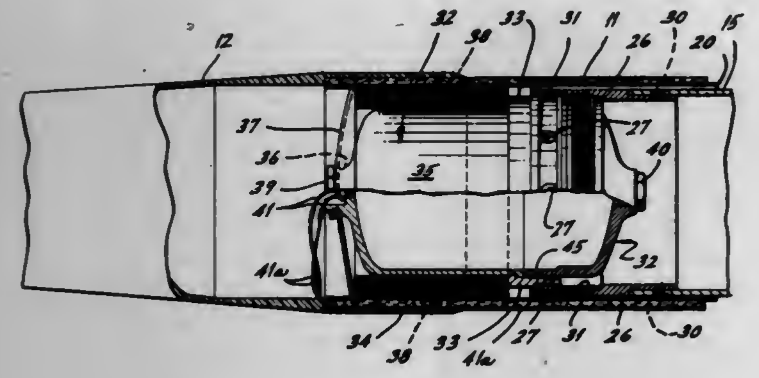
A screw anchor, to be engaged by a bolt traversing a wall, comprises a rigid bar alongside which a lanyard is entrained through a hole preformed in the wall or pierced in it by an enlarged, pointed head of the bar; the lanyard is attached to the bar in the vicinity of a threaded transverse bore thereof which aligns itself with the pierced hole when the bar is pulled flat against the remote wall surface after its trailing end or foot has cleared the hole, means being provided for swinging the bar out of alignment with the lanyard in order to prevent its foot from blocking the pullback.

3,605,548
FASTENING DEVICE
Louis Aackersberg Mortensen, Kongevejen 35, Birkerod, Denmark
Continuation of application Ser. No. 718,950, Apr. 4, 1968. This application Aug. 4, 1969, Ser. No. 849,266
Claims priority, application Denmark, Apr. 5, 1967, 1,943/67
Int. Cl. F16b *13/06*
U.S. Cl. 85—73 **1 Claim**



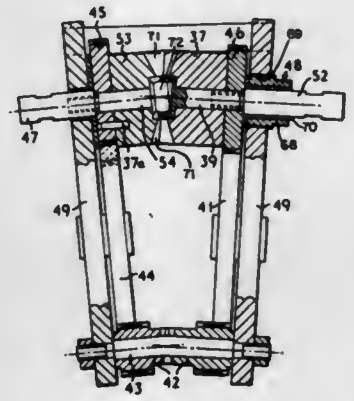
The plastic tubular portion of a fastening device is provided at one end with a closure disc which is swingably attached thereto, and which is held in a closing position by locking means interacting between adjacent surfaces of the disc and of the tubular portion. Displaced from its closing position by the forward motion of a screw, bolt or the like advanced through the tubular portion, the disc is swung out of the way into an open position and may be subsequently reset into the closing position.

3,605,549
MISSILE LAUNCHING APPARATUS
Arthur Moskowitz, Santa Ana, William F. MacInnes, Newport Beach, and Calhoun W. Sumrall, Costa Mesa, Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.
Filed Nov. 20, 1968, Ser. No. 777,250
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.806 **3 Claims**



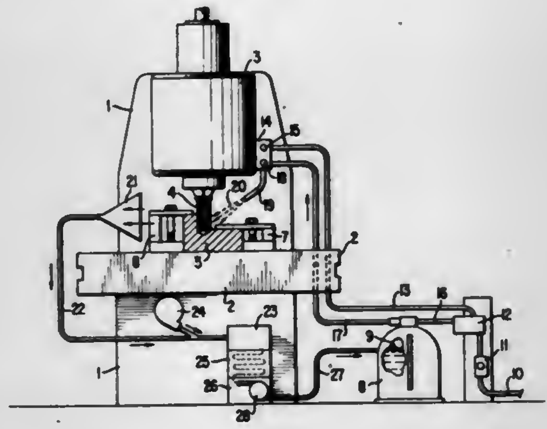
A rocket powered missile and cooperating launching tube from which the missile can be catapulted at high initial velocity. The missile includes a hollow fuselage section which is telescopingly fitted over a launching tube open at its forward end and closed at its rearward end. Stabilizing fins and rocket motors are provided on the fuselage section, and a gas generator is provided toward the forward end of the section to supply sufficient gas pressure within the launching tube to launch the missile. Prior to launching, the missile is held on the launching tube by shear pins. Ignition of the gas generator pressurizes the launching tube so that the resultant force on the shear pins exceeds their shear strength, whereupon the missile is launched, and the rocket motors are ignited to propel the missile in its flight.

3,605,550
METHOD AND APPARATUS FOR CUTTING GEARS USING A GEAR SHAPED CUTTER
William Charles Blything, 37 Pendragon Road, Perry Barr, Birmingham, England
Filed Aug. 28, 1969, Ser. No. 853,857
Claims priority, application Great Britain, Sept. 5, 1968, 42,174/68
Int. Cl. B23f *5/12*
U.S. Cl. 90—7 **8 Claims**



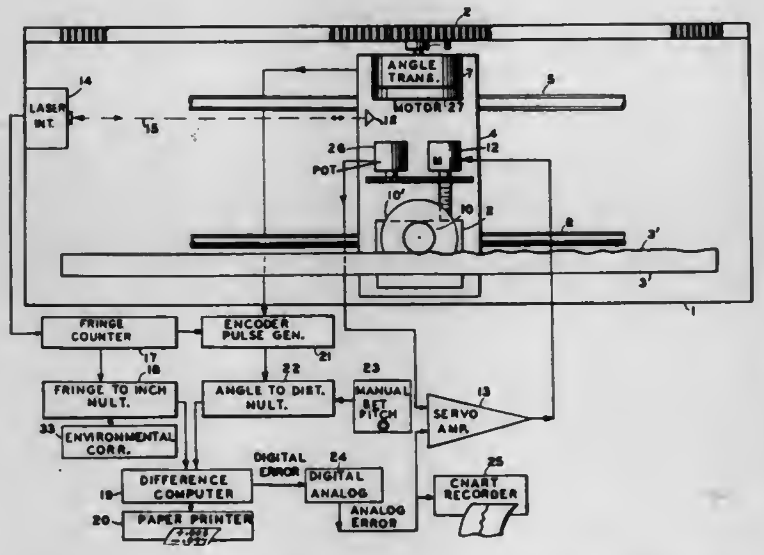
Method and apparatus for forming the teeth of a rotary positive displacement unit which enables production on a substantial scale. The unit comprises two members, each provided with teeth, one more tooth being provided on one member than on the other member. The method and apparatus involve employing a cutting tool cut to the same form as that of the first member and running the cutting tool in contact with a blank to form the second member such that the cutting tool and blank rotate relatively to each other while tilted relatively to each other with a swash plate motion corresponding exactly with the relative motion between the two members of the rotary positive displacement unit.

3,605,551
METHOD OF SUB-ZERO COOLING WHILE MACHINING SPACE-AGE MATERIALS
Richard B. Steward, 838 W. Mitchell St., Arlington, Tex. 76010
Filed Nov. 18, 1968, Ser. No. 776,700
Int. Cl. B23c *1/00;* **B23b** *3/00;* **F01m** *1/00*
U.S. Cl. 90—11 **3 Claims**



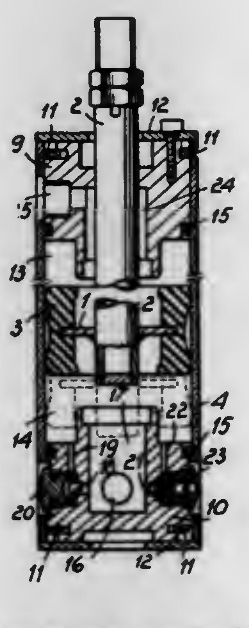
Sub-zero cooling while machine tooling work pieces formed of space-age metals and materials, including the steps of vaporizing by air pressure a mixture of a super evaporative coolant and cutting solution in a storage tank; conveying said vaporized mixture by air pressure and discharge same as a mist through a nozzle disposed adjacent the confluence of the machine tool and the work piece to sub-zero cool the machine tool and work piece by the rapid continuous evaporation of the super evaporative coolant; recovering at least a portion of the coolant for reuse beyond the confluence of the machine tool and work piece, and then filtering and condensing the recovered coolant and redirecting the condensed coolant back into the storage tank for reuse.

3,605,552
MEANS FOR GENERATING COMPENSATING MEANS
Anwar K. Chitayat, Plainview, N.Y., assignor to OPTOmechanisms, Inc., Plainview, N.Y.
Continuation-in-part of abandoned application Ser. No. 652,516, July 11, 1967. This application June 2, 1969, Ser. No. 835,873
Int. Cl. B23c *1/16*
U.S. Cl. 90—13C **18 Claims**



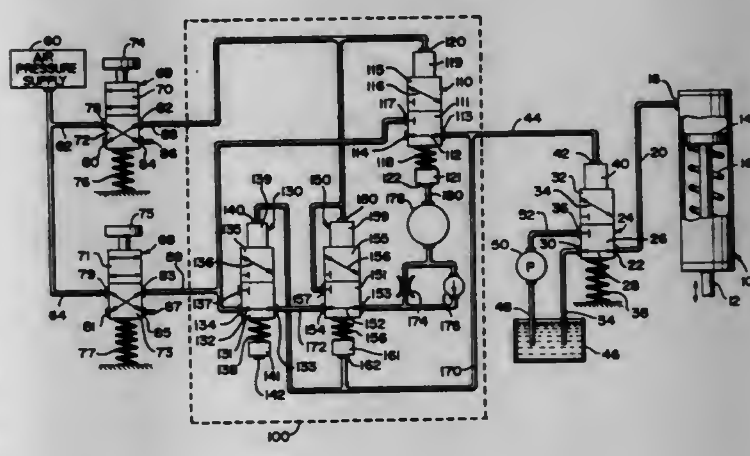
Automatic means for cutting compensating cams for long lead screw and racks such as those used in precision machine tools. The workpiece lead screw or rack is mounted parallel to the cam to be cut. A movable platform mounts a milling cutter. The platform is also connected to the lead screw by a nut or to the rack by a pinion. Angular motion of the lead screw or pinion is measured and transmitted to a computer. The linear motion of the platform is measured with an interferometer. The two measurements are compared in the computer and the output is fed to a servo mechanism which controls the milling cutter. Therefore, as the platform moves down along the workpiece, the cam is automatically cut. A chart or digital printed tape output may also be provided.

3,605,553
PRESSURE FLUID OPERATED CYLINDER
Pier Luigi Panigati, Via Cesare Battisti, 20042 Albiate Brianza, Milan, Italy
Filed May 5, 1969, Ser. No. 822,864
Int. Cl. F15b *15/22*
U.S. Cl. 91—26 **1 Claim**



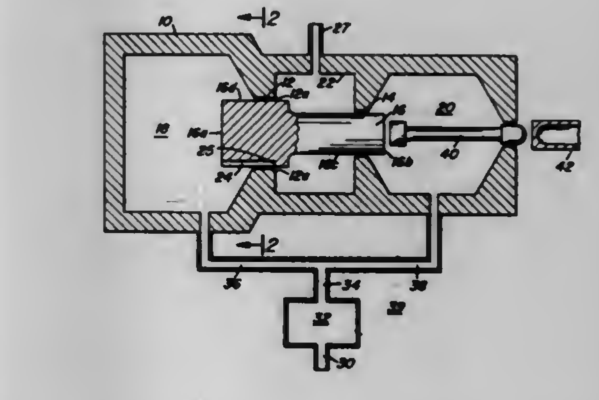
This disclosure relates to a piston for fluid dynamic cylinders which comprises a piston rod, a disc mounted on the piston rod and having a diameter less than the internal diameter of the cylinder in which said piston is arranged to slide, and a resilient sleeve mounted on said disc, the central portion of said resilient sleeve having a smaller diameter than the end portions thereof which engage the inner surface of said cylinder, said end portions of the resilient sleeve being arranged to enter annular seats provided in the ends of said cylinder in the stroke end positions of said piston.

3,605,554
FLUID CONTROL SAFETY SYSTEM
Daniel Philbrick, Phoenixville, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Mar. 5, 1970, Ser. No. 16,908
Int. Cl. F16p *3/22;* **F16b** *13/01*
U.S. Cl. 91—38 **10 Claims**



A fluid control system utilized in conjunction with a pair of manually operated fluid valves so spaced as to necessitate the use of both hands by an operator for causing actuation of a fluid motor, such as a hydraulic press. The two manually operated valves selectively apply pressurized fluid to a pair of fluid lines which are connected to a main flow valve and a pair of control valves. The control valves are connected through a pressure storage network to the main flow valve for preventing actuation of the main flow valve in the event that both of the manually operable valves are not actuated within a preset time interval.

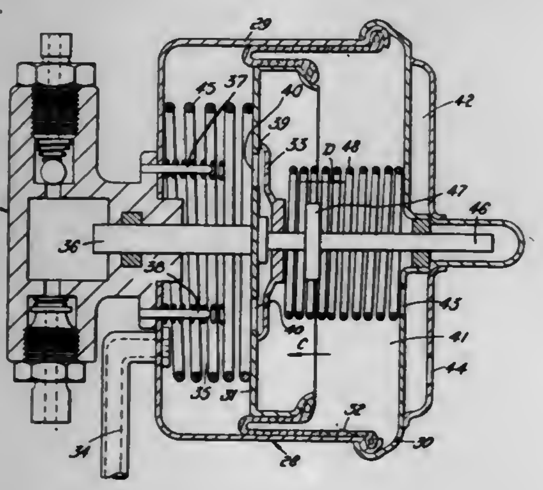
3,605,555
PNEUMATIC VIBRATION GENERATOR
Boyd A. Wise, Rochester, N.Y., assignor to General Dynamics Corporation
Filed Jan. 5, 1970, Ser. No. 668
Int. Cl. F01l *15/02, 21/02;* **F01b** *7/18*
U.S. Cl. 91—50 **10 Claims**



A self-excited pneumatic oscillator is described which includes a reciprocating valve member that is capable of high frequency operation. The valve member is disposed in a housing having a first active spring chamber, and a second spring chamber spaced therefrom. Both spring chambers are charged by a source of pressurized air and act upon opposite ends of the valve member. A discharge chamber is disposed so that it is brought periodically in communication with the first chamber as the valve reciprocates, whereby the oscillator converts the energy of the pressurized fluid flowing from the active chamber to the discharge chamber into self-sustained reciprocating motion of the valve. The oscillator includes a filter between the source of pressurized air and the spring chambers to minimize alternating pressure fluctuations in the air supply line, thereby enhancing efficiency. The filter and valving provide for automatic self-starting followed by a shift to a predetermined valve position for efficient operation at maximum load.

3,605,556
BOOSTER PUMP

Hans Erdmann, Schonbornring, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 14, 1969, Ser. No. 866,297
Claims priority, application Germany, Oct. 22, 1968, P 18 04 411.6
Int. Cl. F01l *15/02, 21/04*
U.S. Cl. 91—50 **3 Claims**

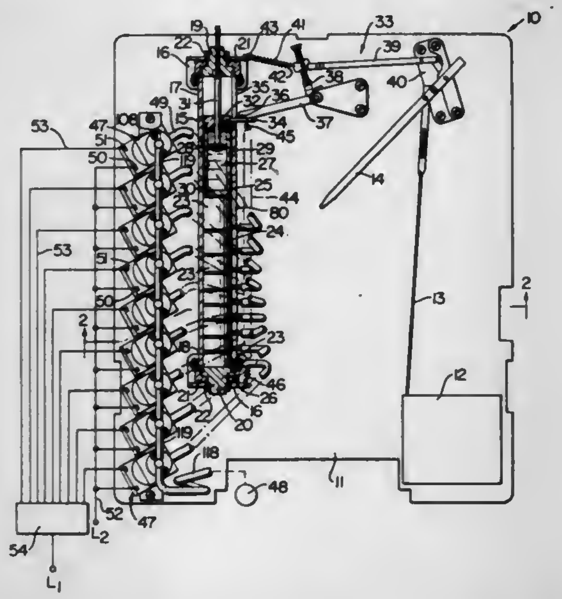


A reciprocating plunger pump for use as a booster in power assisted brakes in which a pump actuator directly coupled to the pump is driven by the difference between atmospheric pressure and engine vacuum acting across a piston which is sealed by a rolling membrane. The actuator may have a reversing valve in the piston which automatically switches the pressure on one side of the piston between the atmospheric and engine vacuum pressure at the end of each stroke while maintaining the other side at atmospheric pressure to cause the piston to oscillate. A spring acts against the atmospheric pressure on the piston.

3,605,557
PNEUMATIC DIGITAL POSITIONING MEANS

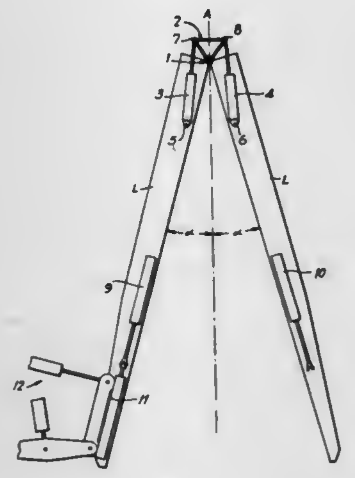
Louis M. Puster, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Oct. 9, 1969, Ser. No. 865,040
Int. Cl. F01b *31/00;* **F15b** *11/18, 15/22*
U.S. Cl. 91—167 **25 Claims**

A plurality of separate pneumatically operated actuators disposed in aligned and abutting relation to provide a linear positioning unit having opposed ends with each actuator being individually operable to linearly extend itself when actuated and thereafter to linearly collapse itself when deactuated whereby one end of the unit will be correspondingly linearly extended relative to the other end thereof and thereafter be linearly collapsed relative to the other end thereof. A control device being operatively interconnected to the one end of the positioning unit to be controlled in relation to the position of the one end relative to the other end thereof and control means for directing a source of pneumatic fluid to at least one of the actuators to extend the one end of the unit by the degree of actuation of the one actuator and for thereafter disconnecting the source from that one actuator to collapse the one end of the unit by the degree of deactuation of the one actuator.



3,605,558
SCISSORS WITH A HYDRAULIC GOVERNOR FEED MEANS FOR OPENING AND CLOSING THE SAME SYMMETRICALLY

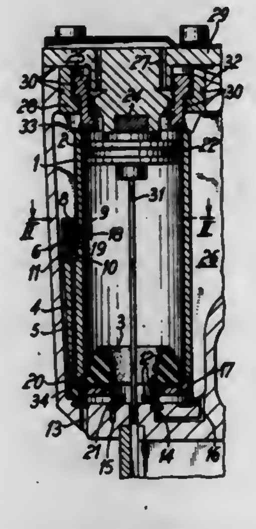
Claude Leclercq, Tarbes, France, assignor to French State, ℅ Ministere d'Etat Charge de la Defense Nationale, Paris, France
Filed Oct. 6, 1969, Ser. No. 863,838
Claims priority, application France, Oct. 4, 1968, 168,705
Int. Cl. F01b *25/04;* **F15b** *11/22*
U.S. Cl. 91—171 **9 Claims**



A pair of legs pivotably connected together as a scissors carry respective jacks which are connected to a linkage in turn connected to the pivot shaft of the legs such that by operating the jacks the legs can be opened and closed. The jacks are operated by a governor which includes a follower which responds to any unsymmetrical tilting of the linkage to regulate the flow to the jacks until the linkage and legs are symmetrical.

3,605,559
PNEUMATICALLY ACTUATED STAPLING DEVICE

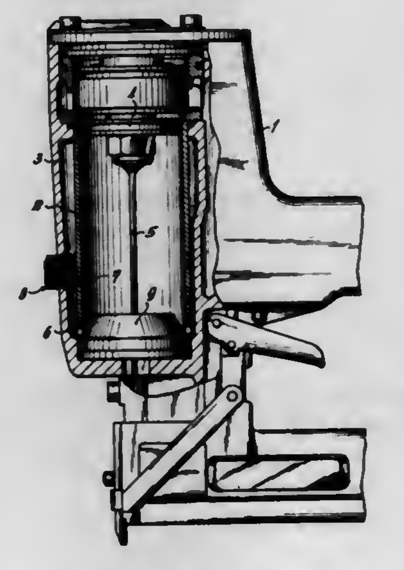
Jurgen Korth, 7 Birkenweg, 3001 Berenbostel, Germany
Filed Aug. 18, 1969, Ser. No. 851,000
Int. Cl. F15b *13/042;* **F01b** *11/02*
U.S. Cl. 91—398 **8 Claims**



In a portable pnuematically actuated stapling device an air chamber communicating with a source of compressed air is located around a cylinder which encloses a reciprocable piston. In an axial web of the side wall of the cylinder an air passage is provided the upper end of which has a connection with the air chamber of the device and is provided with control means which is alternatively responsive to air pressure in the air chamber and in the interior of the cylinder. The lower end of the air passage adjacent the cylinder bottom is controlled by an axially movable bumper which is provided with vent ports and kept under the pressure of the air chamber. During the piston working stroke the bumper closes the lower end of the air passage and opens the vent ports. At the end of its working stroke the piston abuts the bumper which is pressed downward and opens the air passage, whereby compressed air is admitted to the lower face of the piston, which returns it to its initial upper position.

3,605,560
PNEUMATICALLY ACTUATED STAPLING OR DRIVING TOOL FOR FASTENING MEANS

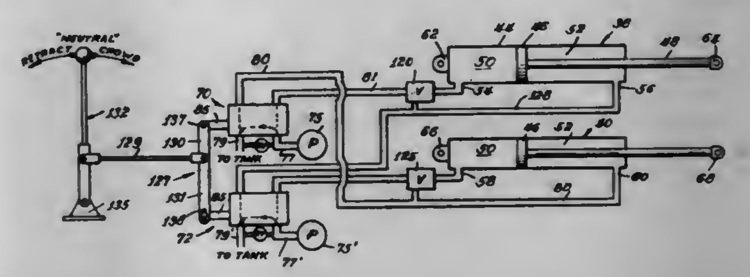
Adolf Bolte, 34 Boehmerstrasse, Hannover, Germany
Filed Sept. 30, 1969, Ser. No. 862,356
Claims priority, application Germany, Oct. 4, 1968, P 18 01 163.7
Int. Cl. F15b *15/22, 11/15, 13/042*
U.S. Cl. 91—399 **6 Claims**



In a pneumatically actuated stapling device in which the air displaced by the piston during its driving stroke is stored in an adjoining chamber of the working cylinder, the air pressure in said chamber is increased by additional compressed air from the interior of the cylinder, which air is admitted to the chamber at the end of said driving stroke. The air pressure in the adjoining chamber is limited by an adjustable pressure responsive valve, which controls the admission of additional compressed air to said chamber at the end of the driving stroke.

3,605,561
ONE HANDLE SEQUENCE SELECTING VALVING FOR CROWD CYLINDERS

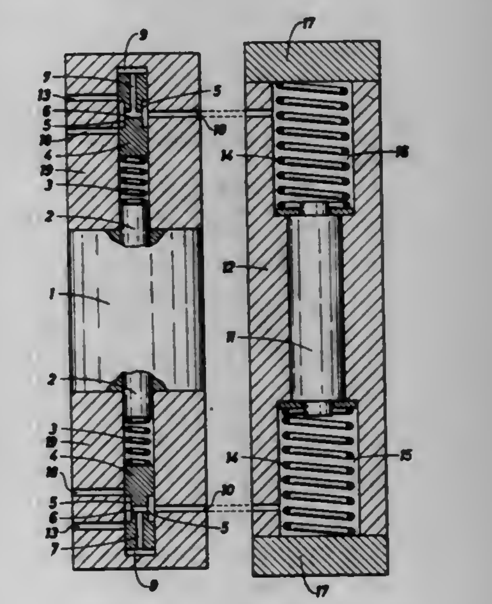
William J. Lado, Rome, N.Y., assignor to Pettibone Corporation, Chicago, Ill.
Filed Dec. 22, 1969, Ser. No. 887,465
Int. Cl. F15b *15/16*
U.S. Cl. 91—413 **6 Claims**



In connection with a three part crane boom having a lighter forward telescopic boom section and a heavier rearward telescopic boom section controlled by separate crowd cylinders, the action is selectively controlled manually by a single handle connected to the valves by a preference linkage. Moving the handle to its limit in either direction will either extend or retract both cylinders simultaneously. Moving the handle half-way in the crowd direction will extend only the cylinder for the larger intermediate section. Moving the handle halfway in the retracting direction will retract only the smaller forward section. The preference linkage prevents the wrong sequencing, i.e., having the lighter forward boom section extended out from the heavier section first, or more than the heavier section is extended out from the still heavier base section.

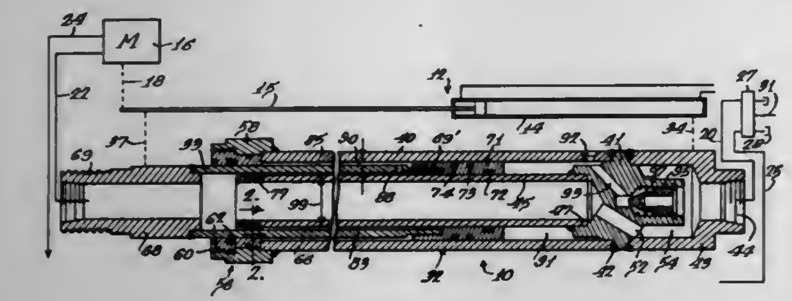
3,605,562
HYDRAULIC RELAY

Kai Ludvig Larsen, Hvidovre, Denmark (Valbygardsvej 70, Copenhagen, Denmark)
Filed Nov. 20, 1968, Ser. No. 777,225
Claims priority, application Denmark, Nov. 20, 1967, 5,777/67
Int. Cl. F15b *11/10, 13/044*
U.S. Cl. 91—433 **3 Claims**



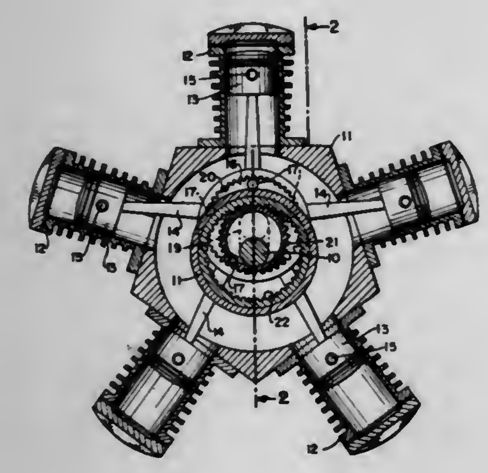
The hydraulic relay has a hydraulic control device operable by variable means and which device is constantly under the influence of the hydrostatic pressure of an operating cylinder connected thereto, in a direction opposite to the control force acting to open the pressure medium supplied to the operating cylinder.

3,605,563
TELESCOPIC FLUID FEED LINES
John T. Parrett, Benton Harbor, Mich., assignor to Koehring Company, Incorporated
Filed Apr. 25, 1969, Ser. No. 819,402
Int. Cl. F16l *27/12*
U.S. Cl. 91—462 6 Claims



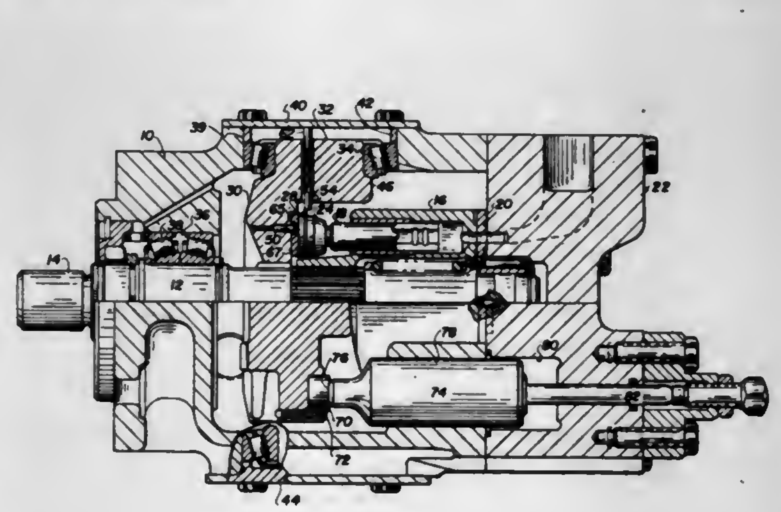
Telescopic fluid feed lines for conveying hydraulic fluid to and from a remote load consisting of an outer tube telescopically receiving an inner tube with an annular piston on the end thereof slidable on a rod sleeve fixed with respect to the outer tube, there being provided an area on the piston which is subjected to fluid under pressure for the purpose of minimizing the compressive forces on the inner tube with this area being equal to the area of the stationary sleeve for the purpose of balancing the hydraulic forces acting on the inner tube.

3,605,564
ROTARY PISTON DEVICE
Roger C. Shoemaker, 29 Boulevard Road, Cedar Knolls, N.J. 07927
Filed Dec. 22, 1969, Ser. No. 887,183
Int. Cl. F01b *13/04;* **F02b** *57/00*
U.S. Cl. 91—495 4 Claims



An improvement in a rotary piston device comprising a shaft, a housing rotatably mounted with respect to the shaft, a bank of cylinders radially arranged around the housing, pistons slidably mounted within the cylinders and link rods connected to the pistons, which improvement consists of (a) an internal throw portion of the shaft having an axis displaced from the axis of the end throw portions of the shaft; (b) the axis of the housing coinciding with the axis of the end throw portions of the shaft; (c) a center wheel rotatably mounted around the internal throw portion of the shaft, to which the link rods are attached; (d) a center wheel internal gear affixed to the center wheel, through which the shaft passes; (e) a housing internal gear affixed to the housing, through which the shaft passes; (f) said housing internal gear and said center wheel internal gear having a 1:1 gear ratio; and (g) a transfer external gear through which the shaft passes, the gear teeth of which mesh with the gear teeth of both the center wheel internal gear and the housing internal gear so that the center wheel internal gear, the housing internal gear and the transfer external gear all rotate in the same direction. The improved design avoids counterbalancing problems such as are encountered in designs utilizing master rods or segmentation of the crank throw bearings. The improved rotary piston device may be used in applications for which conventional piston-cylinder units or diaphragms are employed, such as air pressure pumps, vacuum pumps, hydraulic pumps, and steam, gasoline or diesel engines of two or four cycle design.

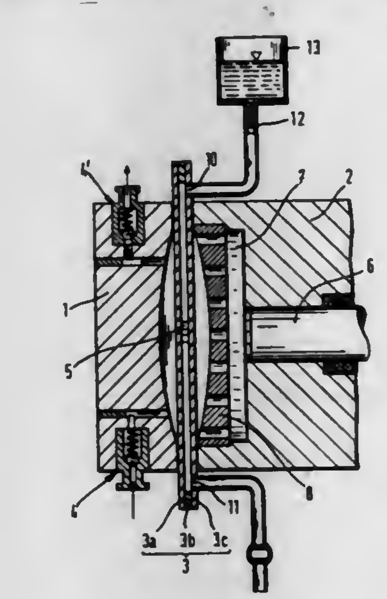
3,605,565
POWER TRANSMISSION
John G. Berezinski, Livonia, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Mar. 13, 1970, Ser. No. 19,191
Int. Cl. F04b *1/02*
U.S. Cl. 91—504 7 Claims



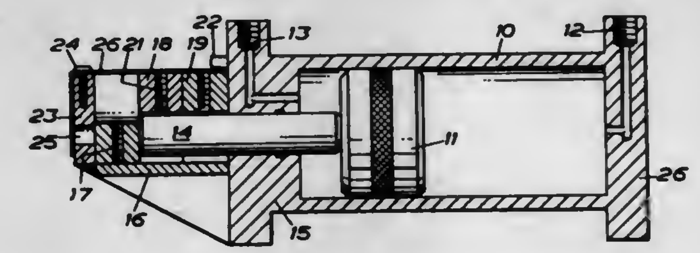
A hydraulic pump or motor unit of the axial piston type in which a swash plate yoke is carried on transverse bearings in a cup-shaped housing and the pistons have ball-jointed shoes sliding on the swash plate has an improved piston retraction means comprising a flat notched plate engaging all of the piston shoes and holding them in a common plane parallel to the swash plate. A second annular retention plate is held in position by a series of shoulders on the yoke and serves to prevent displacement of the first plate during start-up and under conditions of high speed and low pressure operation.

3,605,566
HYDRAULIC DIAPHRAGM PUMP
Gerhard Vetter, Niefern, Germany, assignor to LEWA Herbert Ott, Leonberg, near Stuttgart, Germany
Filed Dec. 9, 1968, Ser. No. 782,172
Claims priority, application France, Dec. 15, 1967, 132,488
Int. Cl. F16j *3/00*
U.S. Cl. 92—5 4 Claims

The invention relates to a diaphragm pump, in which the diaphragm consists of at least two individual diaphragms. A space between the two individual diaphragms is completely filled with a hydraulic medium. The space communicates with a hydraulic tank via a conduit containing a non-return valve opening towards the hydraulic tank.



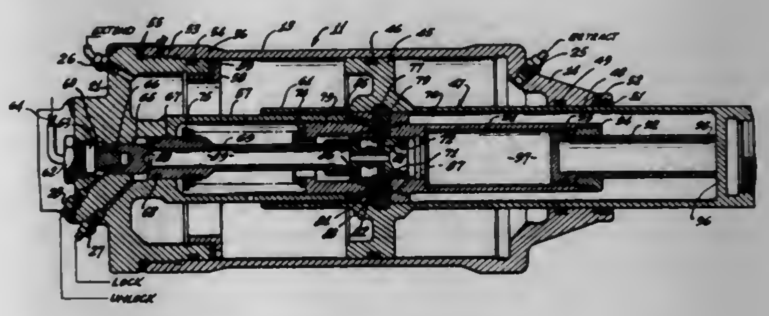
3,605,567
PISTON AND CYLINDER DEVICES
Kenneth Cooper, Orrell, near Wigan, England, assignor to Gullick Limited, Wigan, England
Filed Aug. 12, 1969, Ser. No. 849,309
Claims priority, application Great Britain, Sept. 10, 1968, 42,900/68
Int. Cl. F01b *31/14*
U.S. Cl. 92—13.4 4 Claims



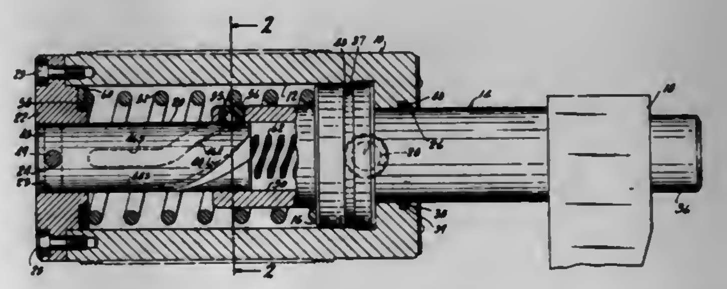
A piston and cylinder device has an adjustable stop arrangement for limiting the stroke of the piston. This adjustable stop arrangement comprises a casing and a plurality of stop elements located in said casing in alignment with each other and with a piston-rod-like member associated with the piston. The stop elements are removable from the casing and have two positions therein in one of which they embrace said piston-rod-like member so as not to obstruct movement of it and of the piston and in the other of which they obstruct movement of the piston-rod-like member. By re-arranging the stop elements in the casing the permitted stroke of the piston can be increased or decreased as required.

3,605,568
HYDRAULIC ACTUATOR WITH CENTER LOCK
Donald L. Nepp, San Pedro, Calif., assignor to Western Hydraulics, Inc., Anaheim, Calif.
Filed Sept. 15, 1969, Ser. No. 857,833
Int. Cl. F15b *15/26*
U.S. Cl. 92—24 10 Claims

A hydraulic actuator having a main piston movable to extended and retracted extreme positions of operation and provided with a center lock in a position intermediate the extreme positions. The lock is located internally of the piston for compactness and a locking-unlocking piston is provided to operate the locking elements. An auxiliary piston is provided for moving the main piston to its center locked position by abutting a part movable with the main piston, for movement in one direction only. Actuators may be mounted in face-to-face pairs to secure movement in opposite directions to the dead center position, or a single actuator may include a working surface on the main piston for moving it to its dead center locked position in the direction opposite to the direction of movement by the auxiliary piston. Spring biased detent means hold the locking elements in unlocked position against involuntary, random movements.



3,605,569
FLUID FORCE APPLYING DEVICE
Donald W. Sessody, Milwaukee, Wis., assignor to Allied Power Industries, Inc., Milwaukee, Wis.
Filed Jan. 6, 1970, Ser. No. 871
Int. Cl. F01b *3/00;* **F16h** *25/12*
U.S. Cl. 92—33 8 Claims



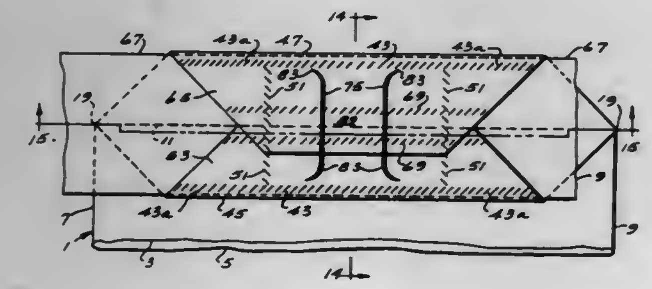
A force applying device having a piston and cylinder assembly, a guide member positioned in the cylinder and slidably engageable with a bore provided in the piston. A pair of non-intersecting cam slots provided in one of said guide member and piston assembly and a cam follower provided in the other of said guide member and piston assembly, the cam follower being selectively engageable with one of said cam slots to guide said piston assembly in its movement in said cylinder, and a first return spring provided between said cylinder and piston assembly and a second return spring provided between said guide member and said piston assembly. The first and second springs are seated on thrust bearings provided at one end of each spring.

ERRATUM

For Class 92—187 see:
Patent No. 3,605,602

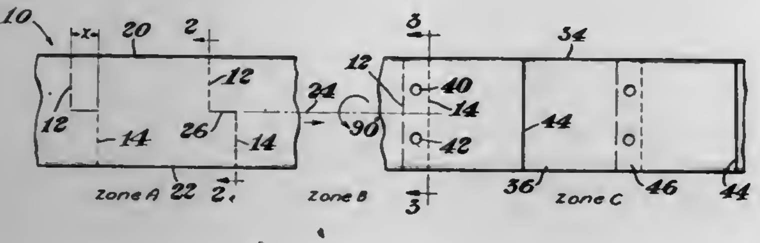
3,605,570
METHOD OF MAKING A PLASTIC BAG WITH HANDLE
Ralph C. Goodwin, Wayzata, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.
Original application Oct. 25, 1968, Ser. No. 770,708, now Patent No. 3,514,033, dated May 26, 1970. Divided and this application Dec. 29, 1969, Ser. No. 1,926
Int. Cl. B31b *49/04*
U.S. Cl. 93—35H 22 Claims

A plastic bag having a bottom closure which may be a valved diamond-fold or satchel bottom closure) and a diamond-fold or satchel top closure in which the side flaps of the top closure are provided with a pair of slits extending alongside one another, the portion of the side flaps between these slits being free of the underlying



portion of the top closure and constituting a handle, and a method of making such bags involving formation of the slits in the side flaps after they have been folded over and sealed together.

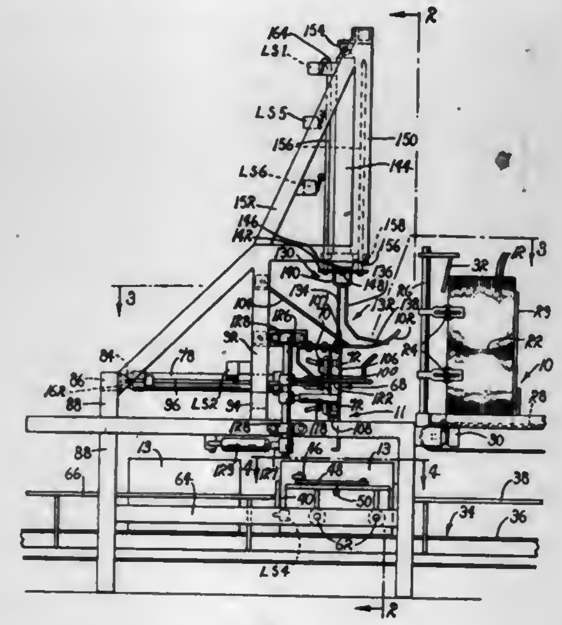
3,605,571
PROCESS FOR MANUFACTURING LIP BAGS
Oliver R. Titchenal, Berea, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 2, 1970, Ser. No. 15,453
Int. Cl. B31b *49/04*
U.S. Cl. 93—35R 10 Claims



A process for manufacturing lip bags from continuous lengths of flattened tubular film is disclosed. Exemplary of the process is where the film is perforated along first and second offset lines extending inwardly from opposite edges of the film, and which terminate at the film center line. In addition, a cut is made along the center line in the region between the offset lines. The film is then rotated or displaced 90 degrees such that the perforation lines now reside on opposed faces of the film, respectively, and the cuts are now located along the film edges. Cross-seals are subsequently formed, and the film separated into parts such as by tearing along the perforations. Each such part comprises a bag having an offset lip portion and a bottom end closed by the indicated cross-seal. The process is essentially scrapless and desirably permits the continuous manufacture of lip bags.

3,605,572
DIVIDER INSERTING MACHINE
Edward J. Derderian, 1735 Ventura, Fresno, Calif. 93721
Filed June 30, 1969, Ser. No. 837,670
Int. Cl. B31b *11/74*
U.S. Cl. 93—37 8 Claims

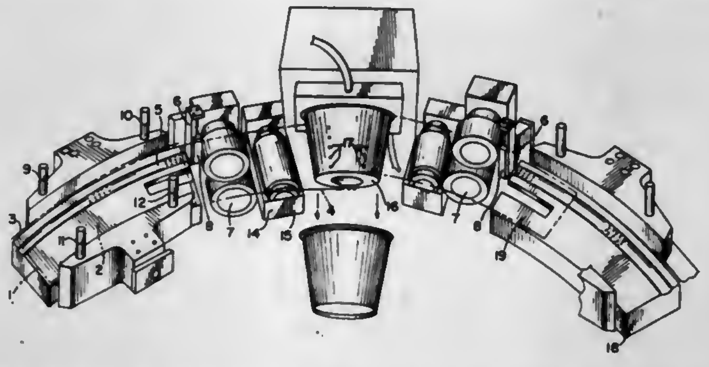
A divider inserting machine particularly suited for use in delivering, forming and inserting dividers of the type commonly called H-dividers into erected and open containers, a feature of the machine being the utilization of a divider inserting head which partially folds a prescored, partially folded blank into an H-shaped divider



and subsequently inserts the divider into an erected and open container.

ERRATUM
For Class 93—39 see:
Patent No. 3,605,578

3,605,573
TUB MANDREL
Russell C. Buhle, Clarendon Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed July 14, 1969, Ser. No. 841,332
Int. Cl. B31c *7/06, 11/04;* **B31b** *1/06*
U.S. Cl. 93—39.3 7 Claims

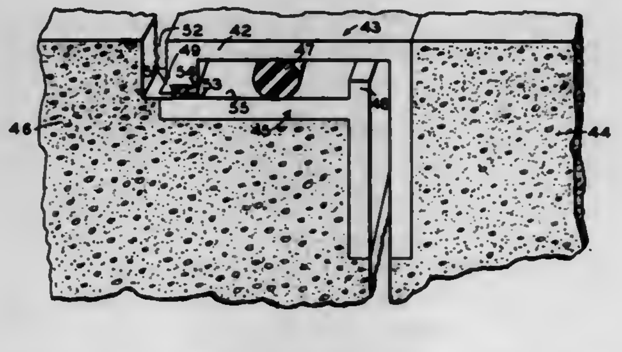


A paper tub is formed on a rotating mandrel by winding two sections of paper onto the mandrel, one over the other. The sections of paper are held to the mandrel by a vacuum which is applied to the paper sections through orifices in the mandrel. After the paper is wrapped around the mandrel and glued together, pressured air is sent through some of the air lines to the orifices in the mandrel. The pressured air forces the tub off the mandrel to another position.

ERRATA
For Classes 93—41 and 93—52 see:
Patent Nos. 3,605,576 and 3,605,585

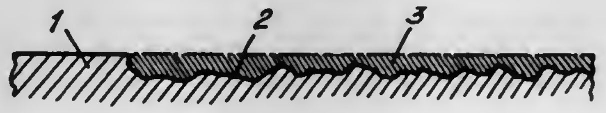
3,605,574
LIQUID IMPERVIOUS EXPANSION JOINT
Frank K. Hall, 1120 Country Club Drive, Findlay, Ohio 45840
Filed May 21, 1969, Ser. No. 826,409
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 17 Claims

An expansion joint assembly having a seal in the form of a resilient right-circular cylinder having a rolling contact with superposed surfaces of cooperating relatively moveable joint elements. The surfaces are advantageously planes oriented parallel to the direction of relative movement. Where the joint is subject to loads, as in roadway



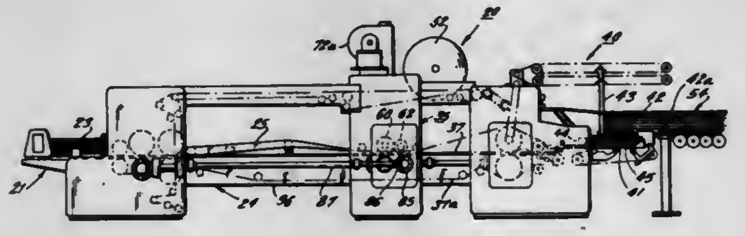
joints, the seal cylinder is preloaded to the order of the maximum anticipated loading to minimize its deflection when loaded by vehicles riding across its surface.

3,605,575
ROAD SURFACE MARKINGS
Hans Stevanon, 9030 Abtwil, Giessen, Switzerland
Filed Feb. 28, 1969, Ser. No. 803,331
Claims priority, application Switzerland, Mar. 1, 1968, 3,267/68
Int. Cl. E01c *21/00*
U.S. Cl. 94—22 1 Claim



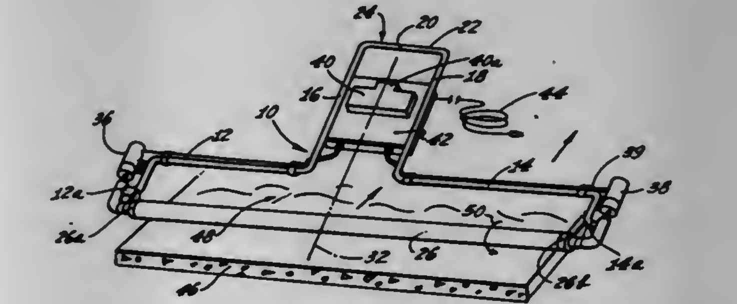
The present invention is a road surface marking, which is different from the markings hitherto known, by forming of a colored coating which, in the manner of a tattoo, is applied to a deep down-reaching adhesive or substrate area having a porous formation.

3,605,576
FOLDER-TAPER
Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.
Filed June 13, 1969, Ser. No. 832,976
Int. Cl. B31b *1/72*
U.S. Cl. 93—41 6 Claims



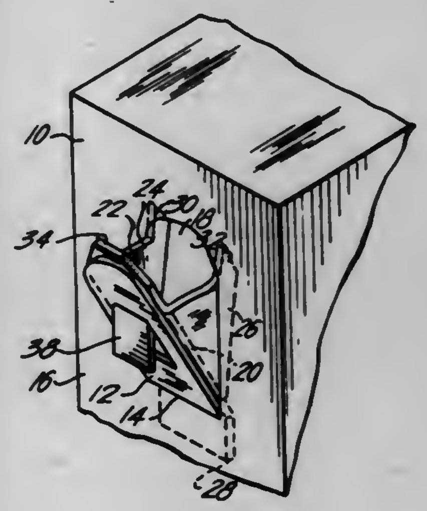
Apparatus for producing corrugated boxes is provided with continuous folding belts which convey a flat box blank forward and simultaneously, but gradually, fold the outer panels of the blank inward. After the outer panels are completely folded and while the folded blank is still being moved forward by the folding belts, tape is applied to the folded blank to produce a folded tubular box. Immediately after application of the tape, the folded tubular box is delivered to a squaring section, where a series of slaps or blows are directed against the trailing edge of the folded tubular box, with such slapping being done at a time before the glue on the tape has an opportunity to set to a condition where straightening will be impeded.

3,605,577
CONCRETE AND CEMENT PLANERS
Frank C. Bik, 7860 Michigan Drive, Citrus Heights, Calif. 95610
Filed June 2, 1969, Ser. No. 829,673
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 1 Claim



A concrete and cement planer comprised of a bifurcated frame between the extremities of the arms of which is rotatably disposed a roller member. Means are provided to apply substantially identical torque to each end of the roller member to cause rotation thereof in the same direction, the actuation of said means being controlled from a central location on the frame. The planer may be constructed small enough to be moved and operated by one person, or it may be made of such size for highway concrete laying as to acquire mounting on a vehicle frame.

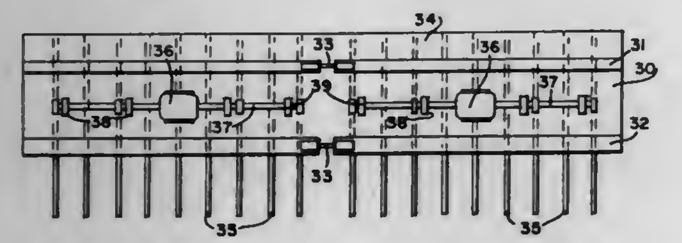
3,605,578
DISPENSING BOXES AND METHODS AND MEANS FOR MANUFACTURE THEREOF
Martin M. Sternau, Flushing, N.Y., assignor of fractional part interest to Leo Stanger, Summit, N.J.
Original application Oct. 21, 1966, Ser. No. 593,611, now Patent No. 3,484,034, dated Dec. 16, 1969. Divided and this application Nov. 10, 1969, Ser. No. 871,315
Int. Cl. B31b *49/02, 1/14, 1/90*
U.S. Cl. 93—39R 9 Claims



Methods and apparatus for making a container having a tab projecting downward from an upstanding flap defined by partly-penetrating perforations following an inverted U-shape cut made in the wall of the container.

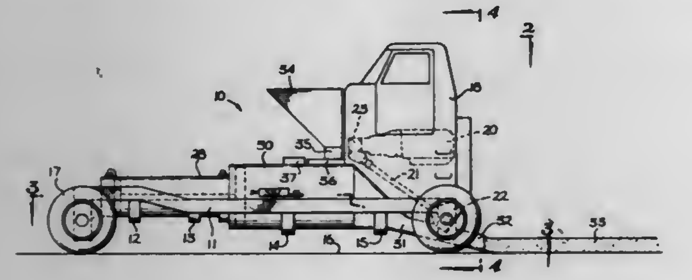
3,605,579
ANTI-SKID SURFACE TEXTURING AND GROOVE FORMING EQUIPMENT FOR USE IN CONCRETE ROADS
Carl J. Heltzel, 523 Country Club Drive, Warren, Ohio 44484
Filed Dec. 11, 1968, Ser. No. 782,898
Int. Cl. E01c *19/43*
U.S. Cl. 94—45 8 Claims

Laterally spaced freely-rotating or powered discs on a concrete road making machine displace the stones in the concrete mix from linear areas in the slab where non-skid grooves are to be subsequently formed while the concrete is still in a plastic state by the tines of a drag or float or the tines of a rotary brush, which drag, float or brush are carried on an independent vehicle following the conventional concrete road machine, which vehicle may have supporting wheels running on side forms or have caterpillar endless tracks in the case of formless pavers.



3,605,580
MOBILE EXTRUDER FOR FORMING STREET CURBS

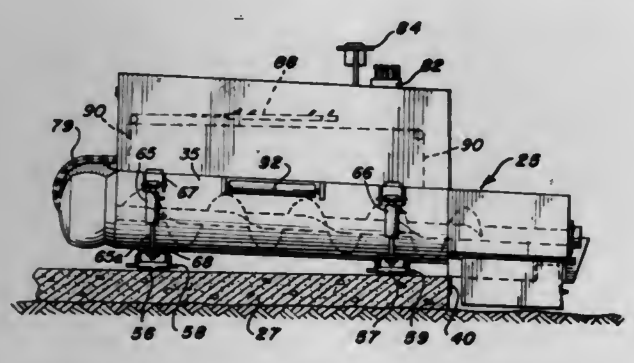
Bernard Miller, 1663 Veteran Ave.,
Los Angeles, Calif. 90024
Filed June 26, 1969, Ser. No. 836,764
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 **8 Claims**



A mobile extruder is disclosed herein for laying a continuous strip of concrete or cement product in the shape of a curb onto a street surface. Self-leveling mechanism is carried on the extruder maintaining the extruding orifice level with respect to the street surface and sensing devices are incorporated into the mechanism for detecting non-level surface conditions and for actuating the mechanism to compensate for such conditions.

3,605,581
CONCRETE FORMING MACHINE

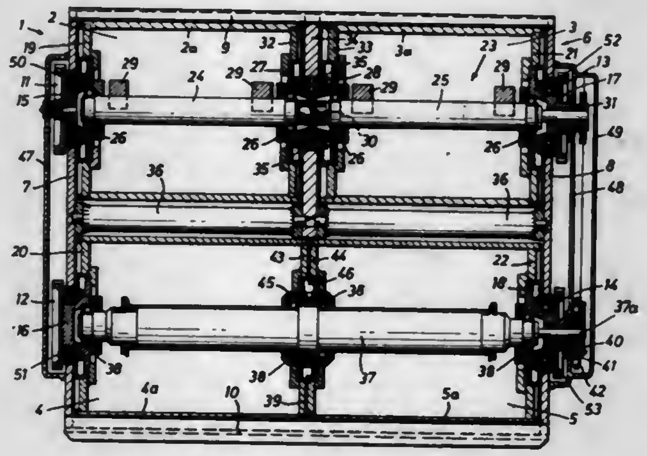
Blaine Heaton, 411 Keith Ave.,
Crystal Lake, Ill. 60014
Filed June 2, 1969, Ser. No. 829,185
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 **10 Claims**



A concrete distributing machine for slip forming curb and gutter along a slab, including a steerable, driven carrier frame with a trough for concrete at the forward end. A screw moves the concrete transversely from the trough into the open bottomed well at the side. A slip form extends rearwardly from the trailing edge of the well. Adjustable supports for the trough permit adjustment of the pitch and height of the slip form. The carrier frame for the machine has steerable drive wheels at each end to enable holding accurate width dimensions of the formed concrete, particularly around curves. The lateral position of the slip form at the bottom of the well is adjustable.

3,605,582
PAVEMENT ROLLING MACHINE

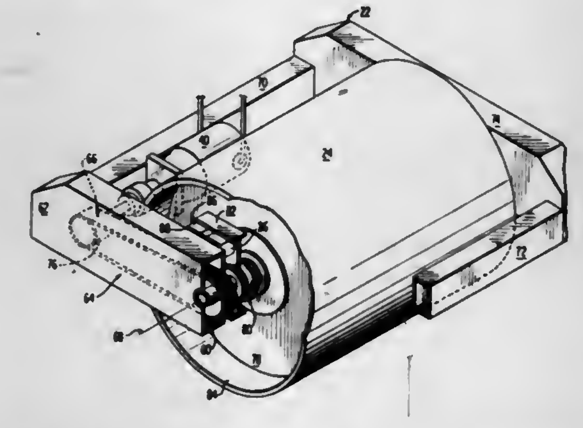
Benno Kaltenegger, 77/79 Kurhausstr.,
5202 Hennef (Sieg), Germany
Filed Feb. 26, 1970, Ser. No. 14,360
Claims priority, application Germany, Feb. 28, 1969,
P 19 10 407.5
Int. Cl. E01c *19/28*
U.S. Cl. 94—50V **7 Claims**



A pavement rolling machine has a pair of front rolls coaxially aligned with a frame member therebetween and centrally located unbalanced shafts in each of the front rolls which when driven cause vibration in the front rolls. A rear pair of rolls is coaxially mounted on a common shaft with a minimal gap therebetween. The left and right sets of rolls can be driven independently of each other and the strip of pavement which does not come in contact with the front rolls due to the gap therebetween caused by the centrally located frame member, does come in contact with the rear rolls having a minimal gap therebetween to produce a smoother pavement.

3,605,583
VIBRATORY ROLLER COMPACTING APPARATUS AND METHOD

John E. Keppler, San Antonio, Tex., assignor to Tampo Manufacturing Company, Inc., San Antonio, Tex.
Filed Apr. 1, 1969, Ser. No. 812,144
Int. Cl. E01c *19/28*
U.S. Cl. 94—50V **16 Claims**



A self-propelled vibratory machine including a frame resiliently mounting a compacting roller for rotation, and eccentric means, rotatable about the roller axis, for vibrating the roller. A variable speed hydrostatic transmission

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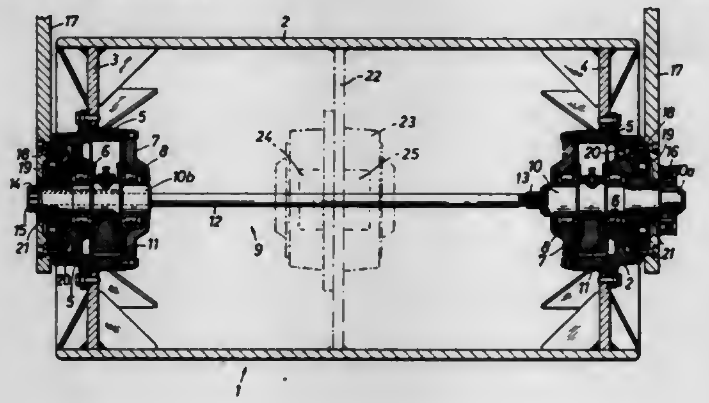
including a reversible, variable displacement pump in closed-loop fluid communication with a fixed displacement motor is in continuous driving relationship with the eccentric means and is operable to control the speed and direction of rotation thereof. A control linkage automatically correlates the direction of rotation of eccentric means with the translating direction of travel of the machine. Positive braking of the eccentric means, in approximately three revolutions thereof, minimizes the period of resonance between the frame and the vibrating roller.

3,605,584
VIBRATORY ROAD ROLLER

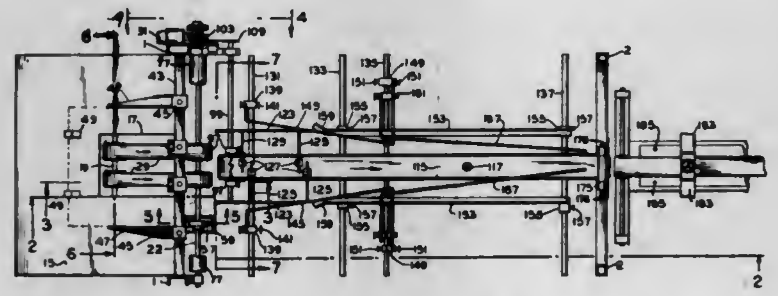
Benno Kaltenegger, Kurhausstrasse 77–79,
Hennef, Sieg, Germany
Filed Mar. 19, 1969, Ser. No. 808,497
Claims priority, application Germany, Mar. 22, 1968,
K 60,719
Int. Cl. E01c *19/28*
U.S. Cl. 94—50R **6 Claims**



This disclosure provides a vibratory road roller including a roller drum having transversely disposed walls located adjacent the ends thereof. Housings are fixedly mounted within centrally located openings of the transversely disposed walls. A short shaft extends coaxially through each of the housings and are rotatably mounted therein. An eccentric weight is mounted on each of the coaxially located shafts within the housings. Bearing members located on each side of the eccentric weights rotatably support the short shaft sections. A stub shaft section interconnects the short shaft sections with each other to effect movement in response to the means for driving the said road roller.

3,605,585
APPARATUS FOR THE MANUFACTURE OF BOXES

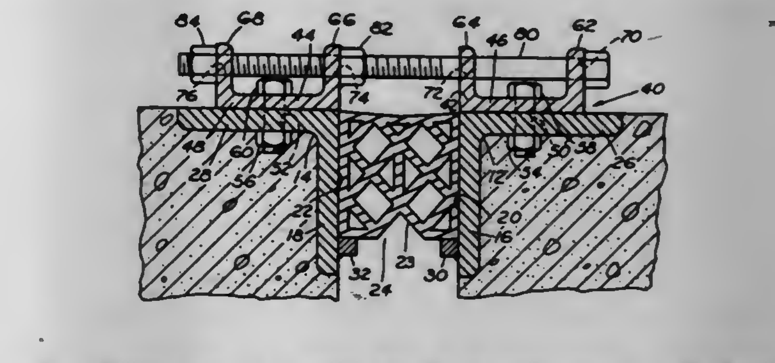
Fred Borders, 1415 Wadsworth,
Florissant, Mo. 63031
Filed June 11, 1969, Ser. No. 832,060
Int. Cl. B31b *1/36*
U.S. Cl. 93—52 **6 Claims**



Apparatus for folding and gluing cardboard box blanks of different sizes and of irregular die cut shape as well as those of regular slotted shape, including means for stream feeding the box blanks at a relatively slow speed, applying glue to the flaps, and then feeding the blanks into the folding section at higher speed, the folding section comprising a conveyor belt, a hold-down bar adjustably spaced vertically thereabove to accommodate various flute thicknesses while applying sufficient pressure to the blanks to prevent slipping of the latter on the belt, the folding section also comprising a first pair of upwardly and transversely inwardly sloping folding rods arranged to underlyingly engage the side panels of the box blank to fold them upwardly and a second pair of downwardly and transversely inwardly sloping folding rods to fold the outer panels downwardly against the inner panels, said rods being transversely adjustable to accommodate different sizes of boxes and to provide for sequential downfolding of the glue coated flap and the opposite panel, and a compression section comprising opposing vertically spaced belts supported against the box surfaces by opposing pressure rollers.

3,605,586
PREFABRICATED SEALING SYSTEM

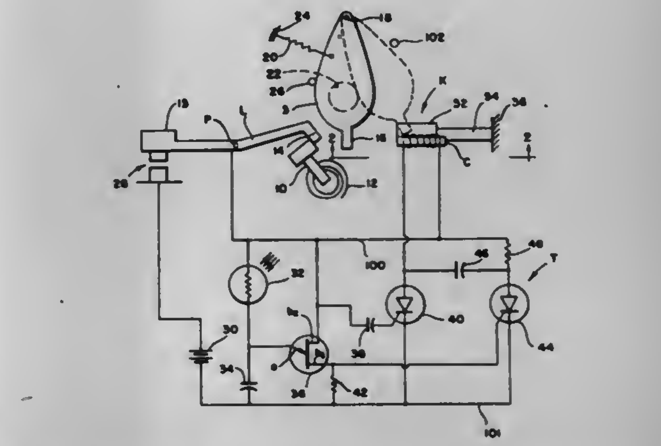
Thomas C. Bowman, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.
Filed Oct. 29, 1968, Ser. No. 771,439
Int. Cl. E01c *23/02*
U.S. Cl. 94—51 **4 Claims**



An apparatus for prestressing a resiliently yieldable seal adhesively bonded to opposed faces of a pair of angle members comprising a pair of spaced apart channel members detachably mounted on the angle members. Openings are provided in leg portions of the channel members are receiving a bolt extending therethrough and spaced above the angle members. A nut is secured to one of the legs in alignment with the openings for receiving the threaded portion of the bolt. Rotation of the bolt effects relative movement between the angle members to adjustably prestress the seal therebetween.

3,605,587
FRICTIONALLY HELD IMPACT TYPE SHUTTER

Frank Henry Speckhart, Knoxville, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 3, 1968, Ser. No. 742,385
Int. Cl. G03b *7/03, 9/10*
U.S. Cl. 95—10C **3 Claims**

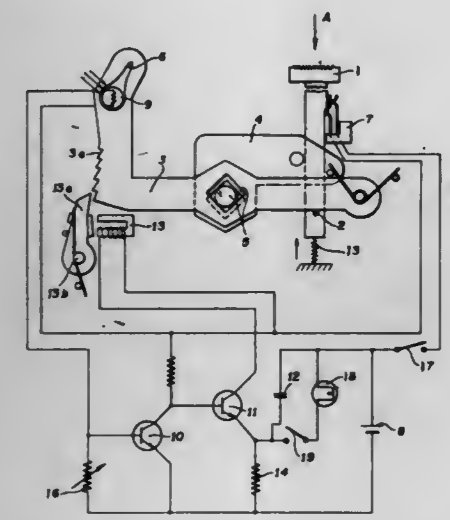


In an automatic shutter control arrangement for a camera, the shutter is opened by an impact imparted by a spring loaded driver controlled by a shutter release lever. The shutter is held open by frictional engagement with an electromagnetic keeper device. Actuation of the shutter release lever also energizes a timing circuit which causes timed de-energization of the keeper device to release the shutter. A photosensitive device in the timing circuit controls the exposure time in accordance with the scene brightness.

3,605,588

PHOTOGRAPHIC CAMERA WITH ELECTRONICALLY CONTROLLED LENS DIAPHRAGM

Wolfgang Ort, Stuttgart-Bad Cannstatt, and Clemens Höpfner, Stuttgart-Wanger, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 29, 1968, Ser. No. 779,945
Claims priority, application Germany, June 25, 1968, P 17 72 718.3
Int. Cl. G03b *7/08, 9/06*
U.S. Cl. 95—10 3 Claims

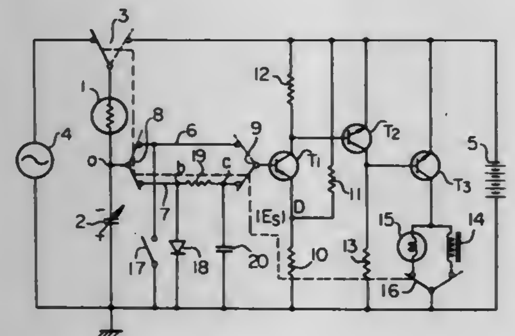


In order to minimize the size of the power supply for an electromagnetic exposure control, the pull-in solenoid current is supplied by a capacitor, while the holding current, which is substantially less than the pull-in current, is supplied conventionally.

3,605,589

WARNING CIRCUIT FOR AN ELECTRONIC SHUTTER

Masaji Minegishi, Yokohama-shi, and Asao Hayashi, Tokyo, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan
Filed Feb. 14, 1969, Ser. No. 799,340
Claims priority, application Japan, Feb. 20, 1968, 43/10,263
Int. Cl. G03b *7/08*
U.S. Cl. 95—10C 10 Claims



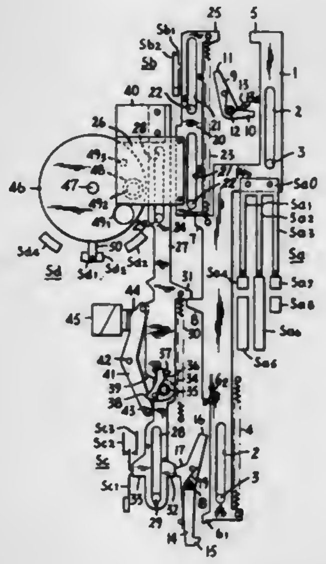
Warning circuit for an electronic shutter having an exposure time controlling circuit comprised of a series circuit consisting of a photoconductive element exposed to the light and a capacitor connected in series thereto, a switching circuit connected to the series circuit to be controlled thereby, shutter actuating means connected to the switching means, a D.C. source connected to the series circuit and the switching circuit, and warning means selectively connectable to the switching circuit in place of the shutter actuating means. An A.C. source is selectively connectable to the series circuit in place of the D.C. source when the warning means in connected to the switching circuit in place of the shutter actuating means.

A diode is connected in parallel to the capacitor when the A.C. source is connected to the series circuit so as to apply half wave A.C. voltage to the capacitor, and a smoothing circuit is connected to the capacitor for smoothing the half wave A.C. voltage supplied from the capacitor so that the switching circuit is controlled properly by comparing the smoothed voltage from the smoothing circuit with a reference voltage.

3,605,590

ELECTRONIC SHUTTER FOR AUTOMATIC EXPOSURE CONTROL

Kiyoshi Kitai, 54 Tomihisa-cho, Shinjuku-ku, Tokyo, Japan
Filed Dec. 19, 1969, Ser. No. 886,526
Claims priority, application Japan, Dec. 20, 1968, 43/93,017
Int. Cl. G03b *7/08, 17/18*
U.S. Cl. 95—10C 8 Claims



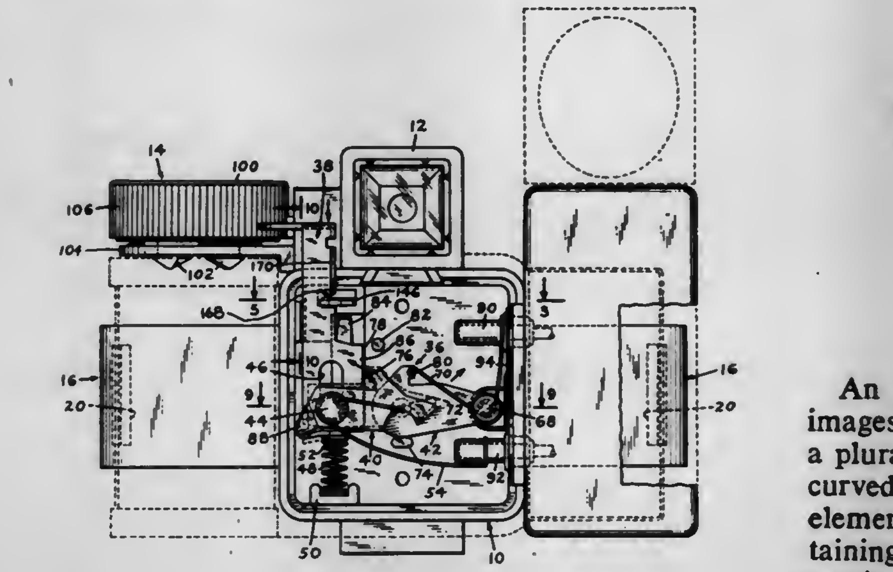
During an initial increment of movement of the operating member of an electronic shutter and before an exposure starts, an electric circuit senses the brightness of the subject to be photographed. If the brightness of the subject is too high or too low for satisfactorily taking a picture with the aperture that has been selected, further movement of the operating member is blocked and a corresponding lamp is lighted to indicate excessive or insufficient brightness. If the brightness is within allowable limits, movement of the operating member is permitted to proceed to make an exposure and a changeover switch operated by the operating member reconstitutes the circuit as a timing circuit to control the exposure time according to the brightness of the subject.

3,605,591

IMPACT SHUTTER HAVING THE TRIPPING AND SHUTTER MEMBERS IN THE FLASH CIRCUIT

Venerio J. Rigolini and Dino A. Liverano, Brooklyn, N.Y., assignors to Whitehouse Products, Inc., Brooklyn, N.Y.
Filed June 6, 1969, Ser. No. 831,016
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 14 Claims

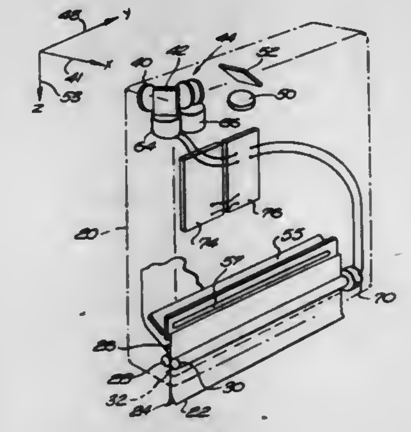
A photographic camera having an impact shutter mechanism including a tripping member, a shutter and a flash circuit in which both the tripping member and the shutter comprise flash contacts for closing the circuit a predetermined time prior to maximum shutter opening. The springs for operating both the tripping member and the shutter comprise electrical conductors in the flash circuit, and the circuit is closed when the tripping member is in contact with the shutter. Both members are coated with silver to insure good electrical conductivity. Additional conductors are also provided in certain portions of the circuit. The impact shutter mechanism also includes a shutter release member which coacts with a metering pawl to prevent double exposures and lock the film against further winding before each picture is taken after a predetermined amount of unexposed film has been suitably framed for the next picture.



3,605,592

CORRECTED OPTICAL SYSTEM FOR SHALLOW CAMERA OR THE LIKE, AND COMPONENTS THEREOF

James G. Baker, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed May 23, 1968, Ser. No. 731,558
Int. Cl. G03b *37/02*
U.S. Cl. 95—15 12 Claims

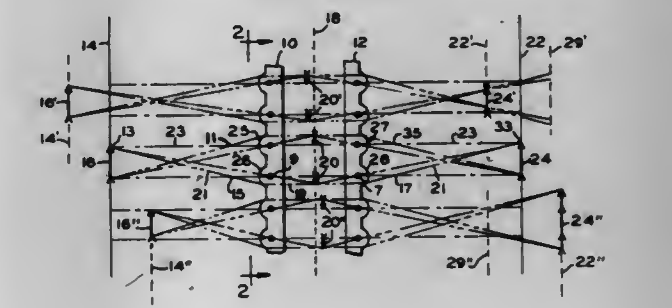


A compact scanning camera is disclosed. It has a short front-to-back dimension and is suitable for being carried in a clothing pocket. Both image and photographic film are moved synchronously past an exposure station. An optical system having a stationary shell lens and moving elements to provide for scanning and perspective distortion is incorporated into the camera. At least some of the moving elements pivot about the center of the shell lens. The shell lens provides certain optical corrections which, due to concentricity about the pivot point, are unaffected by movement of the pivoting components. Images are built up incrementally during scanning and are optically corrected throughout the scan.

3,605,593

OPTICAL APPARATUS INCLUDING A PAIR OF MOSAICS OF OPTICAL IMAGING ELEMENTS

Robert H. Anderson, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed July 3, 1967, Ser. No. 650,862
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 25 Claims

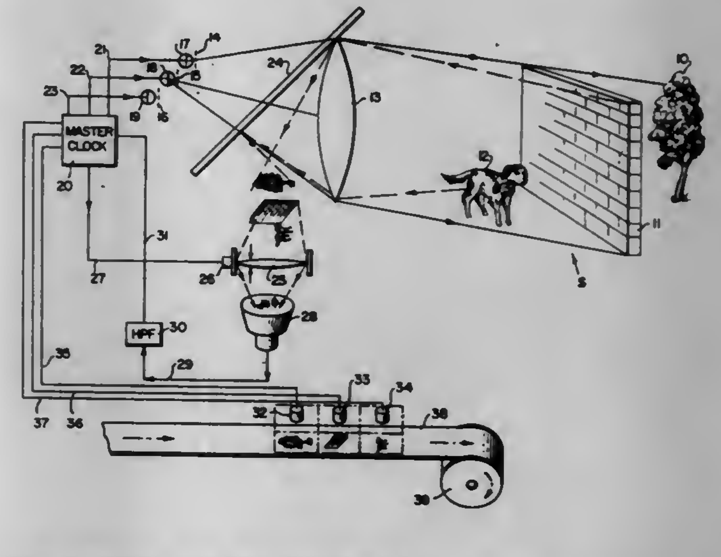


An optical apparatus for the transmission of light images is described including at least two mosiacs having a plurality of optical imaging elements, such as lenses or curved mirrors, supported in a two-dimensional array of elements and forming a plurality of light paths each containing image inverting and erecting elements in different mosiacs which transmit different portions of an image and recombine such image portions with their original relative orientation to reproduce the image of the viewed object. The optical elements may be lenses in a pair of lens mosaics including an inverting mosaic and an erecting mosaic which provide a plurality of lens pairs forming the light paths. A plurality of apertured plates are provided for preventing undesired light from reaching the composite image formed on the final image surface and the lens pairs are spaced so that adjacent image portions partially overlap and the overlapping areas coincide in the final image to provide a single, complete image. A cathode ray oscilloscope camera of extremely short length is formed using such an optical apparatus.

3,605,594

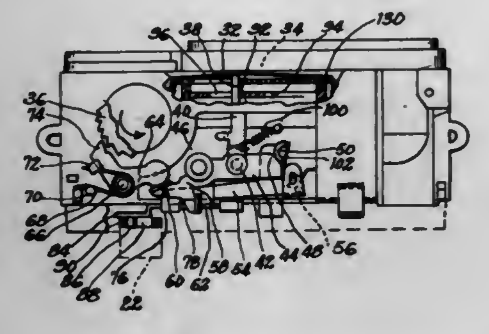
THREE DIMENSIONAL OPTICAL PHOTOGRAPHY PROJECTION SYSTEM

Hendrik Jurjen Gerritsen, 11 Halsey St., Providence, R.I. 02916
Filed Aug. 22, 1968, Ser. No. 754,543
Int. Cl. G03b *35/02, 35/16*
U.S. Cl. 95—18 15 Claims



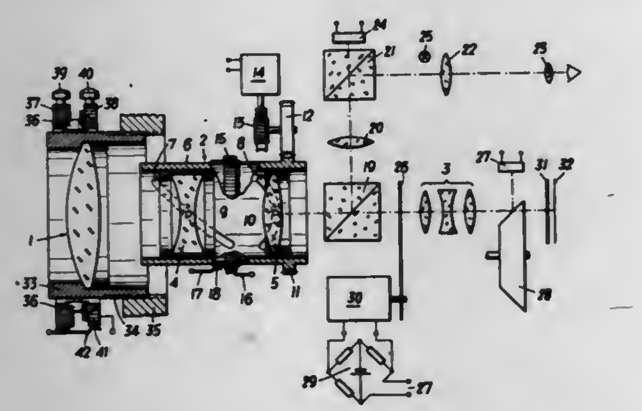
The present specification discloses a three dimensional optical projection system which comprises two basic components. The first is the apparatus for taking cross sectional areas of a scene at different distances from the picture taking equipment and recording these cross sections on a suitable medium such as a film. The second component is the apparatus for projecting the recorded images on a plurality of screens arranged in depth, with each screen having the capability of being either transparent or light scattering to the extent necessary to having an image reproduced thereon. The recorded images are projected on these screens in proper sequential order so that they reproduce the original scene in three dimensions.

3,605,595
CARTRIDGE TYPE CAMERA CONSTRUCTION
George Irwin, Highland Park, Ill., assignor to Imperial Camera Corp., Chicago, Ill.
Filed Apr. 17, 1969, Ser. No. 816,951
Int. Cl. G03b *1/14, 1/62, 15/04, 17/42*
U.S. Cl. 95—31FM **8 Claims**



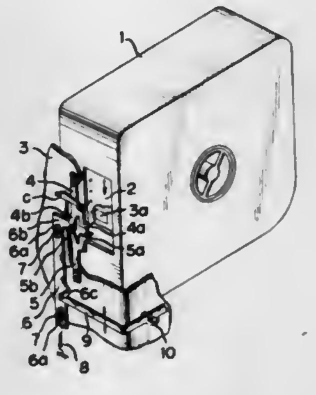
A camera construction of the type employing film usually contained in a cartridge and having perforations along its length for providing frame-by-frame indexing. The sensing finger is provided for engagement with the respective perforations, and upon engagement, the film winding means is locked. The camera shutter is unlocked to permit taking of a picture, and the picture taking action operates to disengage the finger from a film perforation to provide for indexing movement. The shutter actuating member is directly tied to a first pivoting member which moves a second pivoting member, the latter directly controlling both the finger and film advance locking means so that the movements of these elements are directly dependent upon each other.

3,605,596
CAMERA PROVIDED WITH A DEPTH-OF-FIELD CONTROLLER
Karl Vockenhuber, Otto Freudenschuss, and Eduard Keznickl, Vienna, Austria, assignors to Raimund Hauser, Vienna, Austria
Filed Nov. 4, 1969, Ser. No. 873,825
Claims priority, application Austria, Nov. 5, 1968, 10,763/68
Int. Cl. C03b *3/08, 3/12*
U.S. Cl. 95—44 **22 Claims**



A zoom lens has a varying depth of field for each focal length. Values are set corresponding to the near point and the far point of a desired object space. These values are set as resistances on either side of a bridge circuit. Connected on one side of the bridge circuit is a resistance value corresponding to the instant depth of field setting which is a combination of focal length and f-stop. Normally the bridge circuit is unbalanced in one direction but when the actual depth of field becomes smaller than the desired setting, the bridge circuit becomes balanced in the opposite direction thereby sending a circuit response which can be utilized by the operator or the camera.

3,605,597
DEVICE FOR PREVENTING THE REVERSE MOVEMENT OF FILM
Yoshihisa Katsuyama, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Jan. 8, 1969, Ser. No. 789,698
Claims priority, application Japan, Jan. 19, 1968, 43/3,242
Int. Cl. G03b *19/04, 1/42*
U.S. Cl. 95—31R **9 Claims**

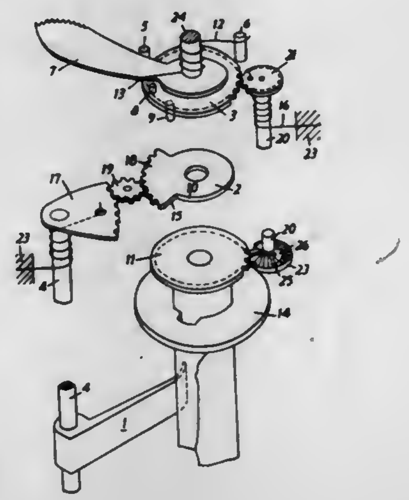


A device for regulating the rest position of film in a movie camera having claw means for intermittently feeding the film in forward and reverse directions employs a pair of oppositely arranged film locking members. Each film locking member has one end connected to the body of the camera and an opposite free end. The free end of each film locking member is formed to provide a pawl for entry into a film perforation and a laterally spaced portion which is cooperable with a slide member. The film locking members are biased so that their pawl members are normally urged toward the film for entry into the perforations. The slide member is movable to selectively engage one or the other film locking members at its slide member cooperable portion to selectively retract one pawl from a film perforation while the other pawl remains in a film perforation.

3,605,598
PHOTOGRAPHIC CAMERA WITH FILM TRANSPORT DEVICE
Hans Zimmet, Radebeul, Germany, assignor to Kombinat Veb Pentacon Dresden Kamera- und Kinowerke, Dresden, Germany
Filed Mar. 12, 1969, Ser. No. 806,652
Int. Cl. G03b *1/14*
U.S. Cl. 95—31R **5 Claims**

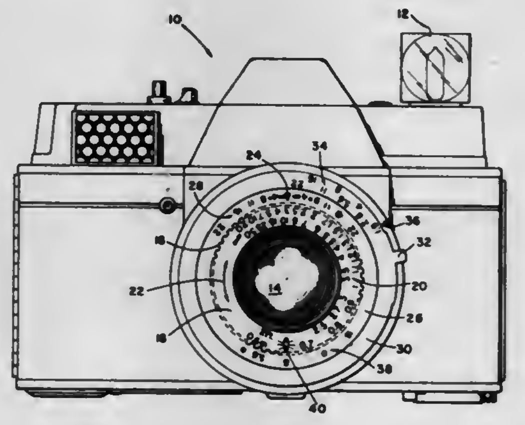
The housing of a photographic camera is provided with a film transport device having a film transport which moves the film a constant film length regardless of how much film has been wound onto the take up spool of the camera. The film transport lever can be moved in opposition to a restoring spring between an initial position determined by an initial stop mounted on the housing and a final position determined by an end stop mounted on the housing. A transport wheel is connected with a film key for the take up spool of the camera by way of a unidirectional drive means. The transport wheel is provided with a stroke control pin and a coupling pin each mounted near

its periphery. The coupling pin projects into the path of an edge of the film transport lever. A stop wheel is pivotally mounted and provided with a stop edge, the wheel is coupled with a scanning lever which scans the winding diameter of the take up spool and positions the stop wheel



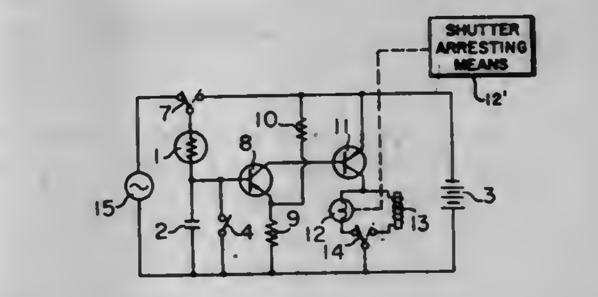
in accordance with the quantity of film on the spool. Spring means is provided which urges the stroke control pin of the transport wheel into contact with the stop edge of the stop wheel so that the distance between the coupling pin and the edge of the transport lever is adjusted.

3,605,599
CAMERA HAVING LENS APERTURE SETTING DEVICE
Carl Ort, Martin-Luther Str. 6, Stuttgart-Bad Cannstatt, Germany
Filed Mar. 21, 1969, Ser. No. 809,218
Claims priority, application Germany, July 31, 1969, K 61,913
Int. Cl. G03b *9/02*
U.S. Cl. 95—64 **1 Claim**



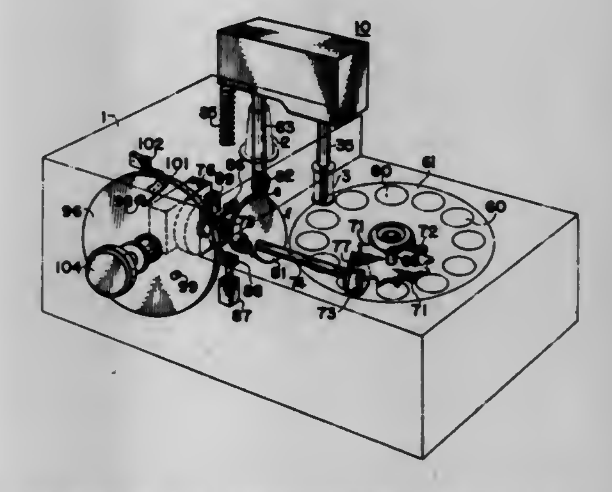
A camera adapted for flash photography having a diaphragm aperture setting ring with an index mark and aperture value scale associated therewith and a focus setting member. A second scale similar to the aperture value scale and a second index mark are associated with the focus setting member in such a manner that the proper aperture value will be shown on the second scale opposite the second index mark when the focus setting member is moved to the proper position corresponding to the distance between the camera and the subject. The aperture setting ring may then be positioned so that the first index mark is opposite the corresponding indicia upon the first scale.

3,605,600
COMBINATION WARNING AND SHUTTER TIMING CIRCUIT
Tadashi Morokuma, Tokyo, Japan, assignor to Olympia Optical Company, Ltd., Tokyo, Japan
Filed Oct. 21, 1968, Ser. No. 769,250
Claims priority, application Japan, Oct. 28, 1967, 42/69,276
Int. Cl. G03b *7/08*
U.S. Cl. 95—10C **6 Claims**



A camera shutter system having a control circuit capable of two operational modes. In one mode the control circuit responds to an A.C. signal that exceeds a threshold voltage representing excessive subject brightness as detected by a photoelectric device. The signal energizes a warning indicator. In a second mode the control circuit serves as a timing circuit which operates from a D.C. source for electromaguetically closing the camera shutter after a time constaut interval dependent upon the circuit resistance of the suoject monitoring photoelectric device.

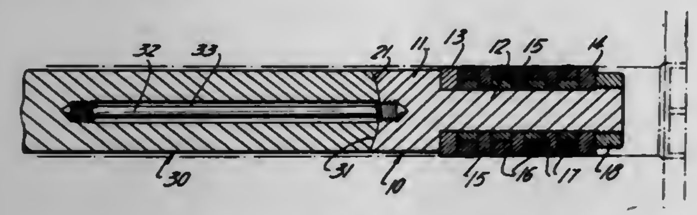
3,605,601
AUTOMATIC FILM DEVELOPING APPARATUS
Shigeru Okayama and Kunihiro Okayama, both of 4–11 Hanegi 2-chome, Setagaya-ku, and Hidehiko Takahashi, 952 Kita-machi, 3-chome, Kichijoji Musashino-shi, all of Tokyo, Japan
Filed Feb. 18, 1969, Ser. No. 800,232
Claims priority, application Japan, Feb. 27, 1968, 43/12,393; Mar. 6, 1968, 43/14,433
Int. Cl. G03d *3/08*
U.S. Cl. 95—89D **7 Claims**



An apparatus for automatically developing a roll of film within its cassette includes a vertical rotary shaft of a spool rotating device which is fitted to the cassette. Cup-shaped processing tanks, corresponding in number to the developing processing steps, are positioned on a turntable. The tanks contain developer or washing water arranged in the order of the developing steps and each one, in turn, is rotated to beneath the rotary shaft. An ascent and descent device raises and lowers the spool rotary device so that at its bottom dead point the cassette is fully immersed in the developer or washing water of a tank. The spool rotary device includes a rotary direction reversal mechanism whereby the spool is alternately and repeatedly rolled up and back.

3,605,602
PISTON ROD ASSEMBLY

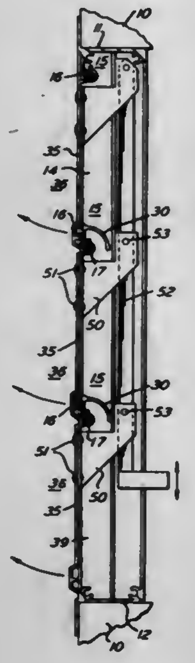
Henry K. Tyson and Karl W. Wikelski, Odessa, Tex., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Nov. 19, 1969, Ser. No. 877,962
Int. Cl. F16j *1/14*
U.S. Cl. 92—187 **2 Claims**



A piston rod assembly is described which reduces the operational stresses in the piston rod, piston rings and compressor cylinder thereby leading to longer operating lives for these parts. Briefly, the assembly comprises a piston segment and a piston rod segment, the piston segment having a plurality of piston rings mounted thereon along with two guide bushings which are in spaced apart relationship, and each of said piston segment and piston rod segment having mating substantially spherical end surfaces which are in end-to-end abutting relationship and connected by a threaded tension member.

3,605,603
DAMPER CONSTRUCTION

Francis J. McCabe, Penns Park, Pa. (% Prefco Products, Inc., P.O. Box 421, Rte. 413, Buckingham, Pa. 18912)
Filed Nov. 12, 1969, Ser. No. 875,982
Int. Cl. F24f *13/06*
U.S. Cl. 98—110 **8 Claims**

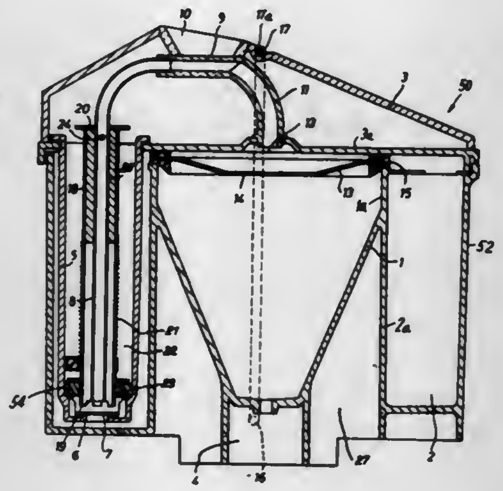


Damper construction for automatically operated dampers that utilizes shutters mounted on continuous horizontal hinges which are free from binding, provide positive sealing and provide stops for each shutter.

3,605,604
COFFEE MAKER WITH HEATER AND FILTER

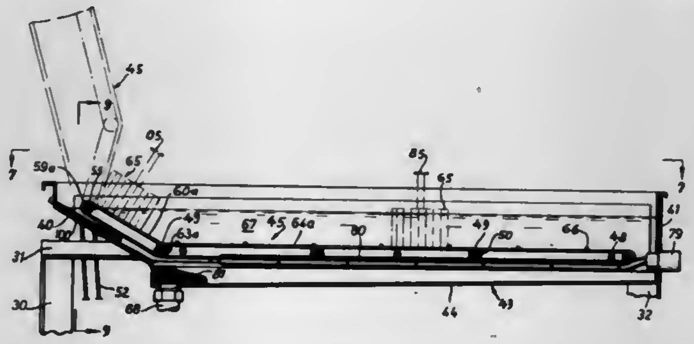
Max Diebold, Eberhard Menge, Rudolf Hanschitz, and Helmut Humm, Reichenbach (Fils), Germany, assignors to Electrostar G.m.b.H., Reichenbach (Fils), Germany
Filed Apr. 10, 1970, Ser. No. 27,284
Claims priority, application Germany, Apr. 25, 1969, P 19 21 052.7
Int. Cl. A47j *31/057*
U.S. Cl. 99—281 **20 Claims**

A coffee maker includes a centrally arranged filter support for receiving a filter element and a charge of coffee, with a container defining an annular space therearound for water which is closed by a cover which extends over the annular space and the top of the filter. A water heating tube is arranged within the annular space which includes a heater for heating the water which is delivered from the lower end of the tube through a relief valve connecting into the annular water space. The top of the tube extends from the annular space around the filter to an overhead discharge onto a screen arranged above the filter. The heated water which is discharged from the tube is distributed by the screen over the coffee and permitted to filter downwardly into a receptacle which is located below the device. The water heating tube includes an electric coil heater therearound and it is arranged in a sleeve and separated from the annular water space by an annular packing which surrounds the heating tube. Entrance to the sleeve and the heating tube is through a relief valve which closes when the pressure of the water within the heating tube reaches a predetermined amount, but which opens again once the charge of heated liquid is discharged upwardly and over and into the charge of coffee arranged above the filter.



3,605,605
MACHINE FOR CONVEYING RESTRAINED FOLDED TORTILLAS LONGITUDINALLY THROUGH HOT OIL BATH TO FORM TACOS SHELLS

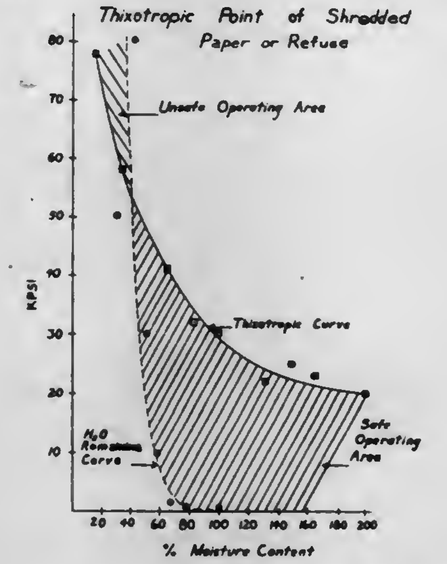
Edward L. Sanchez, Houston, Tex., assignor of a fractional part interest to Tony Villasana, Sr., Houston, Tex.
Filed June 24, 1969, Ser. No. 848,374
Int. Cl. A47j *37/12*
U.S. Cl. 99—386 **6 Claims**



The disclosure is for best purpose of producing tacos shells comprised of processed, thin, pliable, round tortillas that are pre-folded substantially in half and placed in baskets each framed and of length to receive a succession (5 or 6) of V-shaped, mold folded tortillas transversely across hot oil bath and upon horizontally, longitudinally moving conveyor therein, the bath in length permitting a substantial plurality, as six baskets (30 or 36 tortillas), to be fully immersed therein at any instance. Thus five (or six) processed tacos shells emerge for every basket width of conveyor travel.

3,605,606
METHOD OF COMPRESSION OF REFUSE

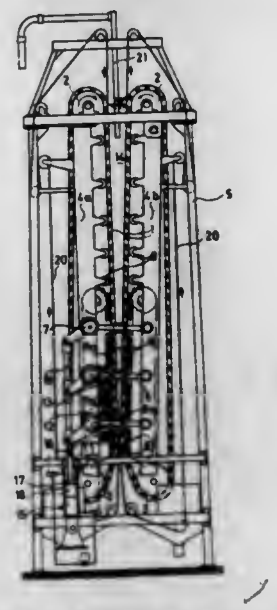
Lawrence Skendrovic, West Mifflin, and Victor F. Koontz, Fairview, Pa., assignors to Eriez Manufacturing Company, Erie, Pa.
Filed Oct. 23, 1968, Ser. No. 769,944
Int. Cl. B30b *13/00*
U.S. Cl. 100—35 **1 Claim**



A process of compressing domestic refuse that is made up predominantly of paper wherein the total refuse is compressed at a pressure below its thixotropic point and above a point that the "spring-back" of the refuse becomes approximately constant.

3,605,607
BAND FILTER PRESS

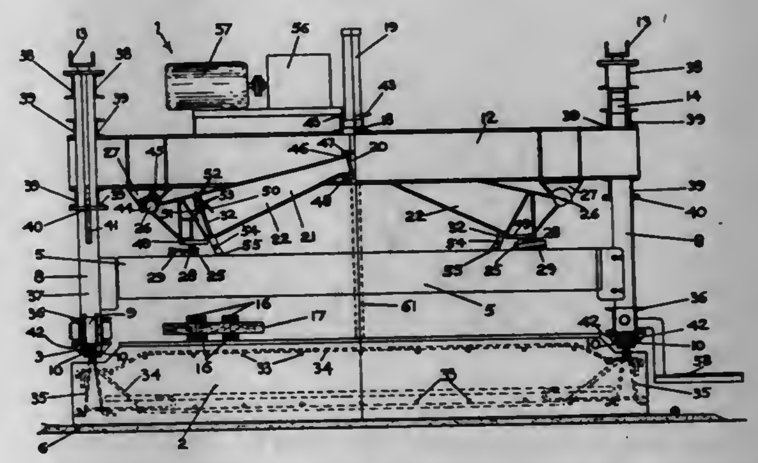
Hans Gujer, Glattalstrasse 149, Rumlang, Zurich, Switzerland
Filed May 14, 1970, Ser. No. 37,162
Claims priority, application Switzerland, May 14, 1969, 7,382/69
Int. Cl. B30b *9/24, 5/04*
U.S. Cl. 100—118 **17 Claims**



A band filter press of the type incorporating two revolving press bands, wherein at least one such press band is constructed as a filter press band. These press bands being arranged in such a manner that they form therebetween a filter press compartment which narrows or tapers in the feed direction of the press product undergoing treatment, this filter press compartment being laterally sealed by suitable sealing devices. Furthermore, the press bands are supported in a direction towards one another by suitable resilient or spring elements. According to important aspects of the invention, at least one of the press bands bears upon a support at least at the portion of the press region or zone which merges with the press-out gap located at the lower extremity of said filter press compartment. This support is subdivided into sections supported by the resilient elements and movable towards one another at least transverse to the feed direction of the aforesaid one press band, and wherein the resilient elements of each support section collectively are subjected to a pre-bias, the magnitude of which is always smaller than the forces exerted upon each support section by the press product during maximum permissible operating pressure.

3,605,608
PRESS MEANS

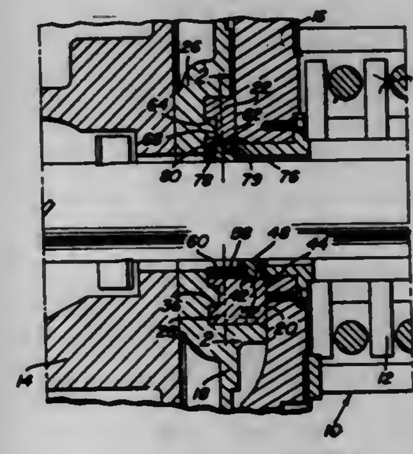
Edgar Edward Dagley, Birkenhead, North Island, Auckland, New Zealand, assignor to Automated Building Components (N.Z.) Limited, Glen Innes, Auckland, North Island, New Zealand
Filed July 7, 1969, Ser. No. 839,463
Int. Cl. B30b *1/08*
U.S. Cl. 100—226 **11 Claims**



A press in which a lower platen receives a truss or frame and associate multi-nail plates and an upper rectangular platen is pressed towards the lower platen by a single hydraulic platen and cylinder assembly which operates through a pair of lever assemblies which fulcrum on rollers on the upper platen towards the four corners thereof. The upper platen is movable on rails relative to the lower platen and has plates travelling under surfaces of the rails so that an uplift force during pressing is transmitted to such surfaces of the rails.

3,605,609
CHOKE JAW WITH REPLACEABLE WEAR SURFACE

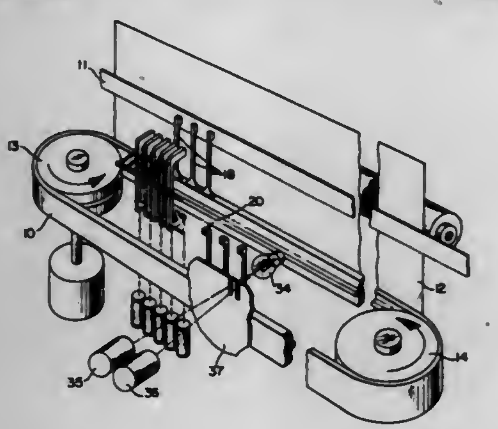
Walter K. Whitlock, P.O. Box 4021, Corpus Christi, Tex. 78408
Filed Sept. 5, 1969, Ser. No. 855,533
Int. Cl. B30b *15/00*
U.S. Cl. 100—148 **12 Claims**



A working face insert for the choke jaw of a material press of the type wherein material is forced through an outlet choke structure defining a passage therethrough with which a plurality of choke jaws are operatively associated for varying the effective cross-sectional area of the passage formed through the outlet choke structure. The working face insert is supported from one of the choke jaws in a manner whereby the working face insert comprises that part of the choke jaw defining a partial restriction of the throat structure passage. The working face insert is removably supported from the associated choke jaw in a manner such that the entire choke jaw need not be replaced or reconditioned when the working face thereof becomes worn. Instead, the working face insert may be removed and replaced by a new insert.

3,605,610
TYPE MEMBER POSITION SENSING SYSTEM IN A HIGH SPEED PRINTER

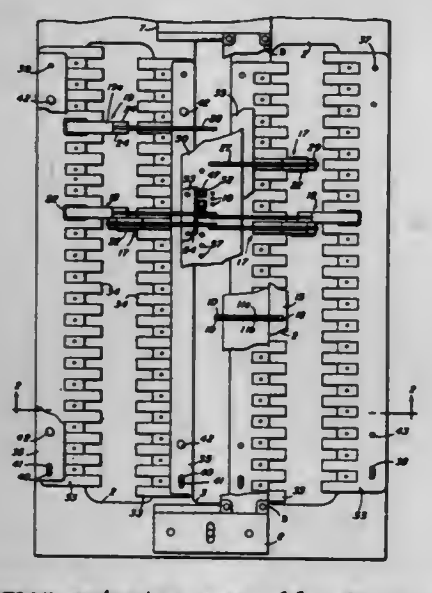
Earle B. McDowell, Clifford M. Jones, and Seymour M. De Puy, Waynesboro, Va., assignors to General Electric Company
Filed June 4, 1968, Ser. No. 734,500
Int. Cl. B41j *5/30*
U.S. Cl. 101—93 **15 Claims**



A position sensing system that detects the location of each element of a plurality of elements as they traverse a predetermined path. The system is disclosed in conjunction with a printing arrangement wherein the elements are the character bearing fingers on a continuous moving belt.

3,605,611
PRINT HAMMER AND ACTUATOR CONSTRUCTION FOR HIGH SPEED PRINTERS

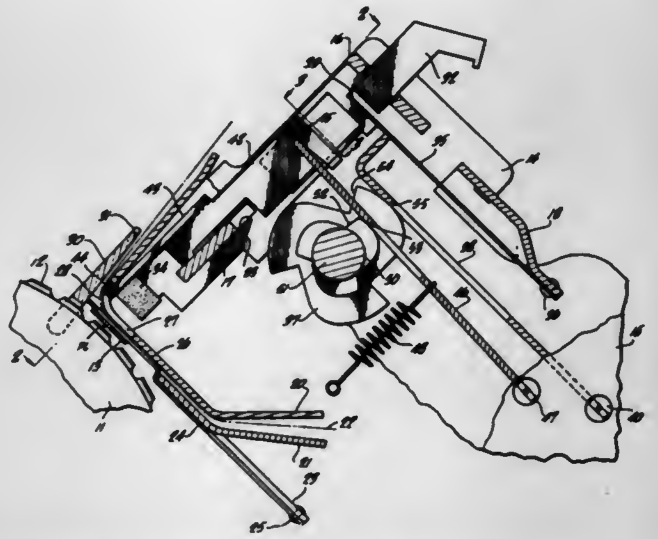
Joseph Konkel and Frank H. Schaller, Lynnfield, Mass., assignors to Data Printer Corp., Boston, Mass.
Filed May 8, 1969, Ser. No. 822,985
Int. Cl. B41j *9/02;* **H01f** *7/14*
U.S. Cl. 101—93C **14 Claims**



A print hammer actuator assembly for high speed printers. Two electromagnetically energized actuator constructions are provided, which are mechanically equivalent but of complementary geometry so that they can be located together in a manner facilitating individual removal of the actuators. The actuators are located in directions parallel to the line of print by alignment combs fastened to a base plate, and located in directions normal to the line of print by stop bars fastened to the base plate.

3,605,612
PRE-POSITIONING MEANS FOR PAPER AND RIBBON INKER IN SELECTIVE PRINTING MACHINES

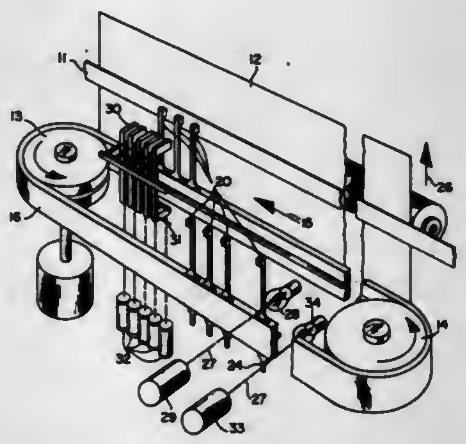
John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.
Filed Apr. 21, 1969, Ser. No. 817,767
Int. Cl. B41j *31/12;* **B41k** *1/40*
U.S. Cl. 101—96 **5 Claims**



A presser device for moving a paper strip and printing ribbon at a controlled rate of speed against type members prior to striking movement of printing hammers whereby to reduce printing noise.

3,605,613
REINFORCED TYPE CARRIER BELT FOR IMPACT PRINTING APPARATUS

Seymour M. De Puy, Waynesboro, Va., and Donald G. Hebert, Rochester, N.Y., assignors to General Electric Company
Filed June 4, 1968, Ser. No. 734,499
Int. Cl. B41j *1/20*
U.S. Cl. 101—111 **28 Claims**

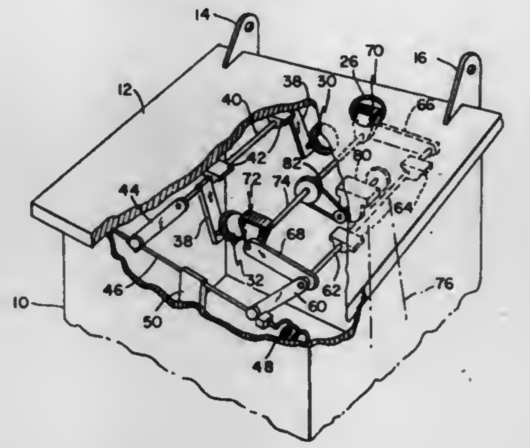


A belt of elastic material that is reinforced to provide a critical peripheral dimension. Precisely positioned, yet removable, type carrying members project from transverse slots in the belt.

3,605,614
WORK SUPPORT WITH INTERCHANGEABLE CLOSURE AND SHEET REMOVAL MEANS

David M. Gilman, Brookline, and Louis Gilman, Newtonville, Mass., assignors to Graphic Equipment of Boston, Inc., Boston, Mass.
Filed May 9, 1969, Ser. No. 823,397
Int. Cl. B41f *15/20*
U.S. Cl. 101—126 **12 Claims**

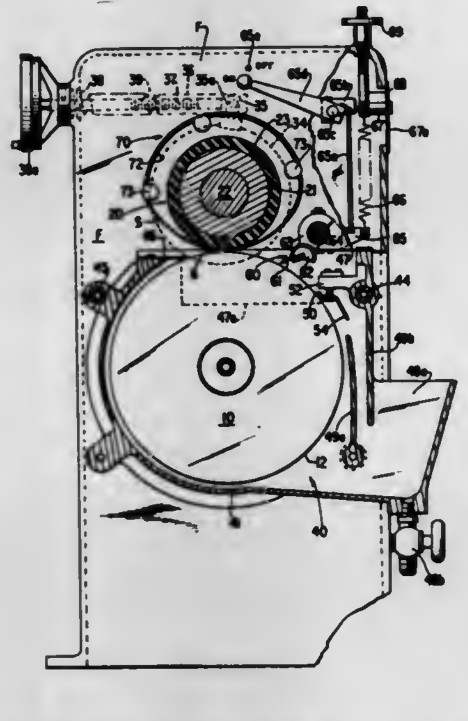
A silk screen process press has an aperture in its work surface on which the sheet to be printed is placed. A closure member is movable between a position closing the aperture and a second position remote from the aperture. A drive mechanism is movable between a position in the aperture and a position remote from the aperture



and the drive mechanism is positioned in the aperture after the printing operation is completed to engage the underside of the printed sheet and drive it laterally across the work surface in a removal operation.

3,605,615
PRINTABILITY TESTER

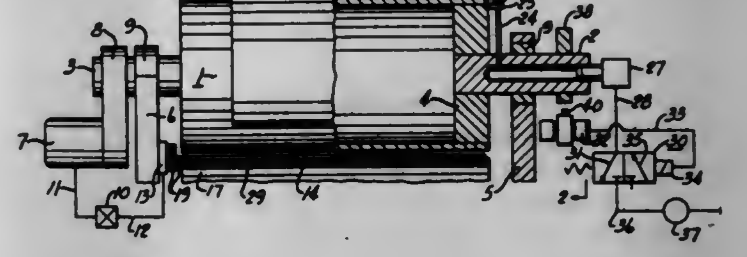
William F. Huck, 285 Gregory Road, Franklin Lakes, N.J. 07417
Filed June 25, 1969, Ser. No. 836,292
Int. Cl. B41f *9/04*
U.S. Cl. 101—153 **11 Claims**



A machine for testing the printability of papers, inks and printing patterns, especially in gravure printing, wherein a rotating impression roll is displaceable to press a looped paper sample briefly against a rotating printing cylinder so as to imprint a single pattern on the sample, is provided with an eccentric sleeve mounting for the impression roll shaft and with actuating and control mechanisms which act upon the sleeve to displace the roll in precise, speed-independent relationship to the rotational position of the pattern to be test printed. The sleeve mounting provides for precise adjustment of the impression roll pressure. A force-limiting coupling protects against pressure overloads. Controls assure a single imprint irrespective of the moment or the duration of manual initiation of a printing test.

3,605,616
METHOD AND APPARATUS FOR PRINTING SURFACES HAVING LINE DEPRESSIONS

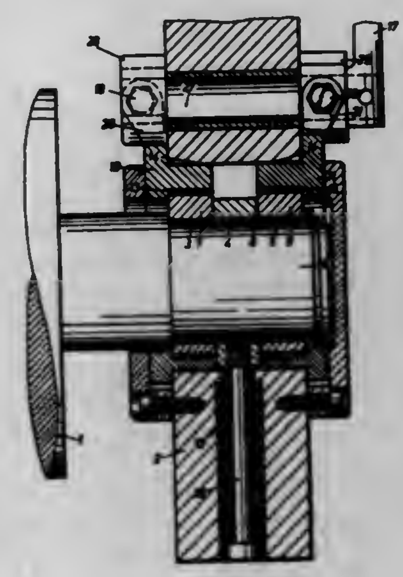
Ralph A. Pannier, McCandless Township, Allegheny County, Pa., assignor to The Pannier Corporation
Filed Sept. 8, 1969, Ser. No. 856,106
Int. Cl. B41f *13/10*
U.S. Cl. 101—216 **10 Claims**



A heavy paperboard score mark printer for inflation under a flexible printing die to carry the print into and across the score mark or depression then deflate for reinking the printing die when having a circular surface and synchronizing the inflating and deflating operations with the movement of the score mark under the inflated printer.

3,605,617
BLANKET CYLINDER BEARING FOR OFFSET PRINTING PRESSES

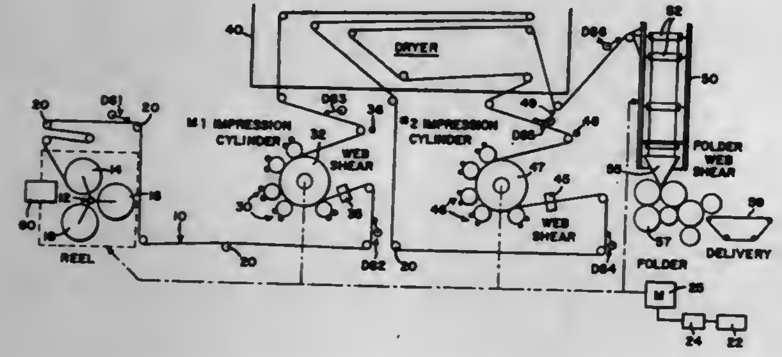
Erich Wieland, Wurzburg, Germany, assignor to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany
Filed Jan. 13, 1969, Ser. No. 790,756
Claims priority, application Germany, Jan. 27, 1968, P 16 11 302.3
Int. Cl. B41f *7/04, 13/28*
U.S. Cl. 101—218 **14 Claims**



The invention relates to a blanket cylinder bearing of an offset printing press for the alternate throwing on and off from one or two cylinders by mounting the axle of the blanket cylinder at both ends in eccentric bushings.

3,605,618
REFLEX DETECTOR COUNTER AND MONITORING SYSTEM

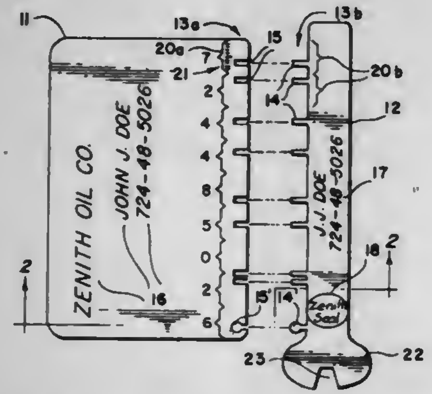
Herman F. Clasen, 636 N. Main St.,
Germantown, Ohio 45327
Filed Nov. 14, 1968, Ser. No. 775,620
Int. Cl. B41f *33/14*
U.S. Cl. 101—228 **9 Claims**



Apparatus for controlling web break detectors and associated components, and monitoring web breaks in moving web material, which detects the first break in a web and thereafter prevents detection of additional and subsequent web breaks until after the apparatus is reset, records each web break on a counter corresponding to its location along the web, and controls the web after a break has occurred.

3,605,619
CREDIT CARD WITH INFORMATION BEARING EDGES

James B. Gilstrap, 8440 Thames St.,
Springfield, Va. 22151
Filed Sept. 25, 1968, Ser. No. 762,421
Int. Cl. B41l *45/02;* **B41n** *1/00;* **G09f** *3/02*
U.S. Cl. 101—368 **5 Claims**

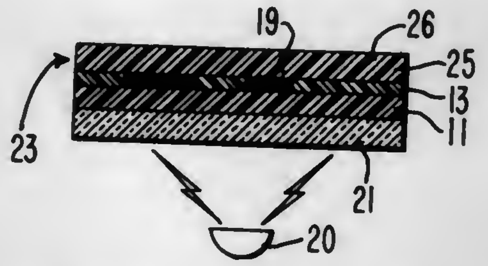


A credit card formed in two parts including a main part and a key part, each part having a specially formed field section, wherein the two field sections must be properly mated together for the credit card to appear correct and/or be operative for effecting a credit transaction.

3,605,620
METHOD OF MAKING RELIEF PRINTING PLATES EMPLOYING INFORMED ABSORBING PICK SHEET

William J. Mueller, Webster, N.Y., assignor to
Burroughs Corporation, Detroit, Mich.
Filed Aug. 4, 1969, Ser. No. 847,149
Int. Cl. B41c *3/06;* **B41n** *1/00*
U.S. Cl. 101—401.1 **5 Claims**

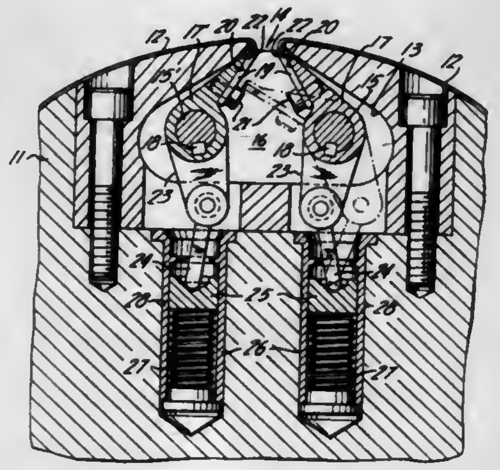
An improved method for processing a composing member having a heat sensitive polymer dispersion coating on a stable base such as plastic, using infrared radiation and no solvents or etchants to form a relief printing plate. Infrared absorbing indicia are placed in thermal contact with the coating and the coating is thereby selectively heated through the application of near infrared radiation. The coating, now having fused portions corresponding to the indicia, is placed in physical contact with a pick sheet and in thermal contact with a total infrared absorbing medium. The coating, the pick sheet and the total infrared absorbing medium are arranged successively outwardly from the infrared source.



The previously unfused portions of the coating fuse and adhere to the pick sheet. When the pick sheet is peeled off, the previously fused portions corresponding to the indicia, remain adhered to the base to form a relief printing member. The previously unfused portions are now fused to the pick sheet and may be used as an intaglio printing member, if desired.

3,605,621
PRINTING CYLINDER FOR HOLDING FLEXIBLE PLATES

Richard Woessner, Fairlawn, and Jack Bryer, Paramus, N.J., and Dominic Mascio, Bellrose, N.Y., assignors to Wood Industries, Inc., Plainfield, N.J.
Filed May 8, 1969, Ser. No. 822,872
Int. Cl. B41f *27/06*
U.S. Cl. 101—415.1 **1 Claim**



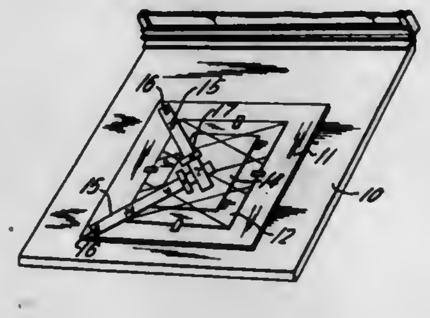
A clamping device for fastening a flexible printing plate on a plate cylinder of a printing machine as arranged in such a manner that the plates are as securely clamped and circumferentially registered for operation of the printing cylinder in both the clockwise and counterclockwise directions.

3,605,622
ALIGNMENT METHOD FOR PLATE AND OFFSET DUPLICATION PROCESSES

Ibraham E. R. Zarip, 41—42 42nd St.,
Long Island City, N.Y. 11104
Filed July 14, 1969, Ser. No. 841,327
Int. Cl. B41b *1/00;* **B41n** *3/00*
U.S. Cl. 101—426 **3 Claims**

A method for aligning a print in a photographic plate printing machine with respect to the edges of finished copy made in an offset duplicating machine is provided. This is achieved by fixing in place, photographing and making a printing plate of some arbitrary figure or art work, installing the plate in the offset duplicator and making at least one test print of smaller dimension than

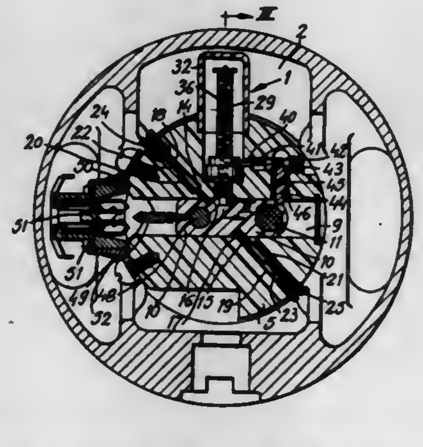
the original print. The test print is placed on the plate making machine and aligned with the original work. This represents the alignment of the edges of the copy paper with respect to the position of the work on the plate



making machine. A transparent grid lined sheet is then placed over the test print to record the alignment and new plates and copy made therefrom will be in alignment with the copy paper edges.

3,605,623
SAFETY MECHANISM FOR ROTARY PROJECTILES

Paul André Théate, Liege, Belgium, assignor to Fabrique Nationale d'Armes de Guerre, Societe Anonyme, Herstal-lez-Liege, Belgium
Filed June 25, 1968, Ser. No. 739,846
Claims priority, application Belgium, July 10, 1967, 701,110
Int. Cl. F42c *9/02, 15/22*
U.S. Cl. 102—79 **7 Claims**

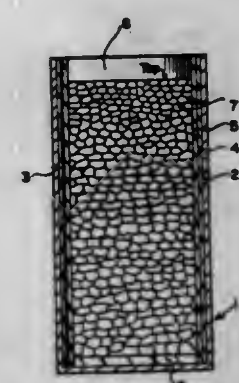


A safety mechanism for rotating projectiles comprising a member carrying a portion of the conventional pyrotechnic train and designed to be shifted, after being released by a locking device, under the action of the centrifugal force during the flight of the projectile.

3,605,624
CASTABLE ILLUMINANT FLARE COMPOSITION AND METHOD FOR MAKING FLARE BODY THEREWITH

Vern Thomas Dinsdale and Russell Reed, Jr., Brigham City, and Robert E. Meyer, North Ogden, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed Feb. 10, 1969, Ser. No. 797,906
Int. Cl. C06b *1/10*
U.S. Cl. 102—37.8 **14 Claims**

A flare body for a parachute type flare providing superior brilliance and sustained output of illumination even after 14 days of 24-hour temperature cycling between —65 and 165° F. is obtained by means of a novel, castable illuminant flare composition comprising an uncured, high oxygen content liquid polymeric binder material, particularly a liquid saturated polyester polymer/liquid epoxy resin system, which is loaded into a flare body casing lined on its inner bottom and side surfaces with at least partially cured liner material comprising the binder material and further comprising an anchor sheet material bonded completely on its inner surface to the outer surface of the liner and on its outer surface to the inner casing wall essentially only by a relatively



narrow anchor strip of material running from the top to the bottom of the casing. The loaded casing and its contents then are heated to cure the polymeric binder material in the composition, liner and anchor strip.

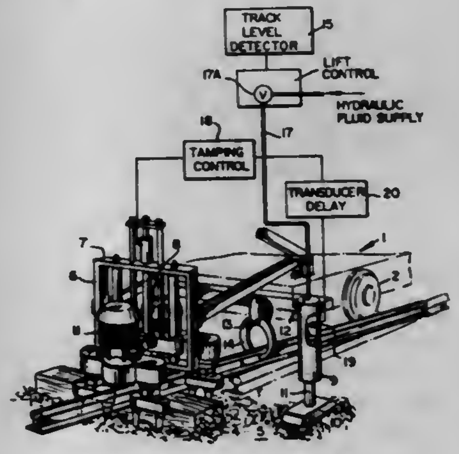
3,605,625
CURVE LINERS

Odon Steven Bencsics, Montreal, Quebec, Canada, assignor to Tamper Inc., West Columbia, S.C.
Filed Sept. 15, 1969, Ser. No. 857,902
Claims priority, application Great Britain, Sept. 27, 1968, 46,105/68
Int. Cl. E01b *35/02, 33/02*
U.S. Cl. 104—8 **17 Claims**

A method and apparatus for the alignment of railroad track which provides a smooth transition from tangent to circular curve track through a spiral curve and which enable the apparatus to be used in lining on a single pass through a section of track. The method comprises steps of measuring parameters of a length of track, establishing from the measured parameters a curve form to which the length of track approximates and which provides a constant rate of change of curvature and adjusting for some point in the length of track the position of the point to lie on the established curve form. According to a preferred embodiment disclosed the required curve form is determined by the measurement of parameters determinative of the curvature at two points in the length of track.

3,605,626
BALLAST SCARCITY INDICATOR

John Kenneth Stewart, Columbia, S.C., assignor to Tamper, Inc., West Columbia, S.C.
Filed Aug. 12, 1969, Ser. No. 849,428
Int. Cl. E01b *27/17*
U.S. Cl. 104—12 **1 Claim**

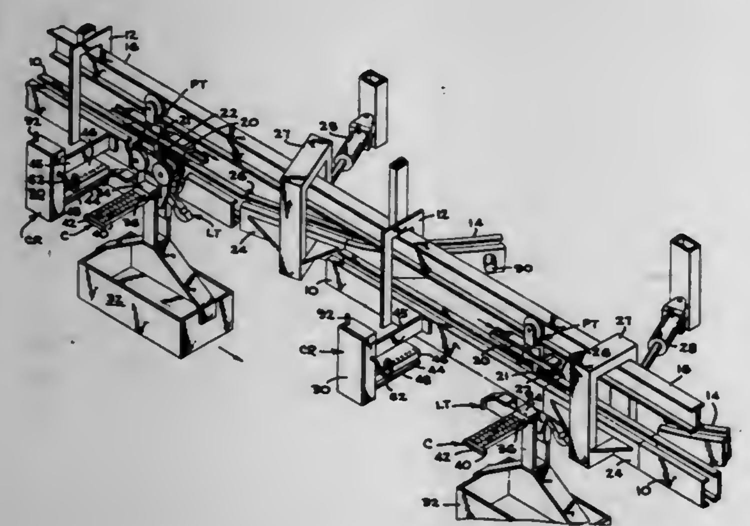


There is provided a method and apparatus for levelling railroad track to improve the packing of ballast under the ties of the track. The improvement comprises determining the weight of the track carried by the ballast at a point in the track and continuing to pack ballast under the tie at that point until substantially all the weight of the track at that point is carried by the ballast.

3,605,627

ESCORT MEMORY FOR TROLLEY CONVEYOR

Ronald F. Homeier, Plainfield, and William A. Simmons, Indianapolis, Ind., assignors to FMC Corporation, San Jose, Calif.
Filed July 23, 1969, Ser. No. 844,025
Int. Cl. B65g *17/42*
U.S. Cl. 104—88 **14 Claims**

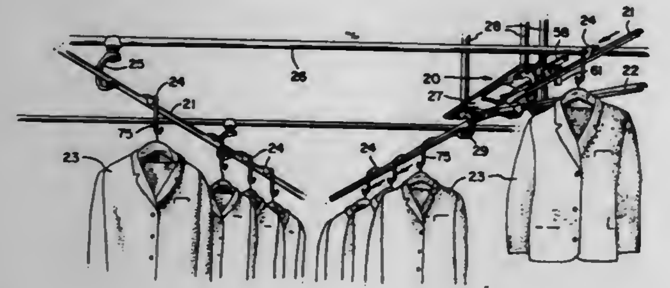


A trolley conveyor is provided with a fluid operated code reading unit adjacent each of a plurality of switch gates that are movable to divert a trolley from the main track to a spur track. Each trolley carries a destination coding or escort memory unit which is preset to match the code of one of the code reading units. Each code reading unit has its own fluidic sensing and logic circuit. When the destination code matches, the logic circuit of the code reading unit moves the adjacent switch gate to divert the trolley onto the spur track.

3,605,628

CONVEYOR TRACK SWITCH

John H. McElroy, 14 E. Roosevelt Circle,
Red Bank, N.J. 07701
Filed Mar. 22, 1968, Ser. No. 715,414
Int. Cl. B61f *3/00;* **B61l** *11/02*
U.S. Cl. 104—103 **7 Claims**

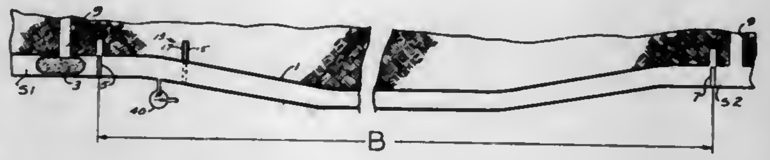


A semi-automatic switch mechanism particularly for monorail type trolley conveyor tracks which is characterized by extreme simplicity of construction and operation. The switch takes advantage of the operation of a spring-loaded toggle linkage and a pivoted shifter member struck by a trolley for shifting a flexible switching track section into alignment selectively with either of two angularly disposed track sections, such as a main track section and a branch section.

3,605,629

HIGH SPEED GROUND TRANSPORTATION SYSTEM

Lawrence K. Edwards, 301 Santa Rita Ave.,
Palo Alto, Calif. 94301
Filed Sept. 3, 1969, Ser. No. 854,887
Int. Cl. B61b *13/10;* **B65g** *51/04*
U.S. Cl. 104—138 **21 Claims**

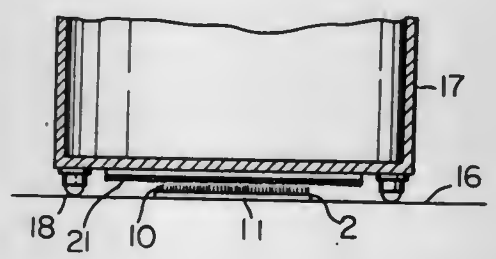


A high-speed ground transportation system comprises a duct through which a vehicle is adapted for propulsion as a free piston. Entrance and exit valves are provided adjacent the ends of the duct and the section of the duct between the valves is preevacuated. On opening the entrance valve, air pressure forces the vehicle into the section and after the vehicle has passed the entrance valve and a predetermined amount of propulsive air has entered the duct behind the vehicle, the valve is closed. A cut-off valve is provided in the duct downstream from the entrance valve for preventing the propulsive air admitted behind the vehicle from entering the main body of the duct. The exit valve opens when the pressure ahead of the vehicle reaches a predetermined pressure.

3,605,630

DEVICE FOR TRANSPORTING A CART

Teruya Tsuruzawa, Suita-shi, Osaka, Japan, assignor to Nihon Seal Co., Ltd., Osaka, Japan
Filed May 27, 1969, Ser. No. 828,312
Int. Cl. B61b *13/12*
U.S. Cl. 104—165 **4 Claims**



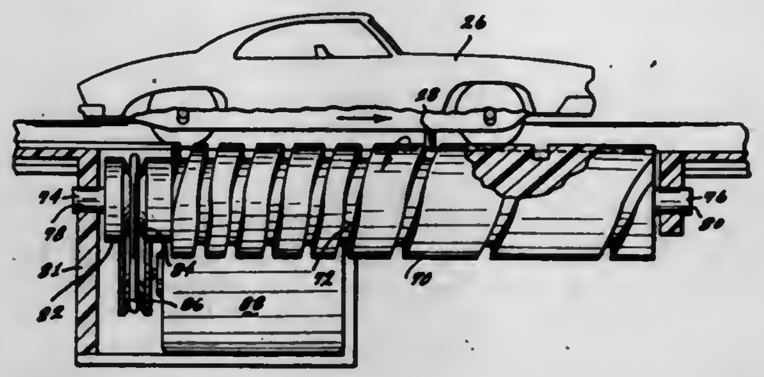
A device for transporting carts, provided on the bottom surface with pile, engaging pile provided on the top surface of a conveyor belt; supported by the surface of the working floor of a shop. The conveyor belt is a flexible, endless belt system with pulleys, guide rolls, drive pulleys and power source. The guide and driving systems provided two parallel tracks for transporting the carts in two directions opposite to each other. The drive guide systems are submerged below the floor level, so not to obstruct movement of the carts when off the conveyor belt tracks. As the carts are moved to straddle the conveyor belt, the pile on the carts will engage the upper pile of the conveyor belt. Carts are thus moved in one direction or the other.

3,605,631

MOVING APPARATUS FOR A TOY VEHICLE

Thomas E. See, Huntington Beach, Arthur S. Woodward, Sylmar, and Janos Beny, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 5, 1968, Ser. No. 781,571
Int. Cl. B61b *13/12;* **A63h** *29/00*
U.S. Cl. 104—167 **10 Claims**

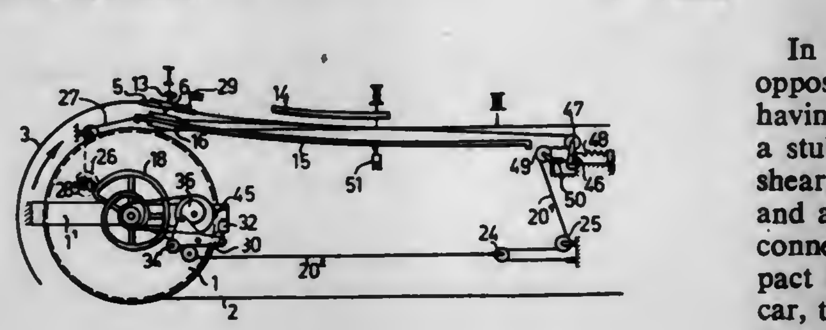
Apparatus for briefly propelling an unpowered toy vehicle so it can then coast around a track, comprising a rapidly rotating screw for engaging a projection on the vehicle to move it along the track. The screw has a variable pitch that is greatest at downpath portions, so the vehicle is accelerated even though the screw may turn at a constant speed.



3,605,632

OVERHEAD CABLEWAY

Ulrich Furrer, Kriens, Switzerland, assignor to Bell Maschinenfabrik AG, Kriens, Switzerland
Filed Apr. 22, 1970, Ser. No. 30,673
Claims priority, application Switzerland, Apr. 22, 1969, 6,039/69
Int. Cl. B61b *7/10*
U.S. Cl. 104—178 **5 Claims**

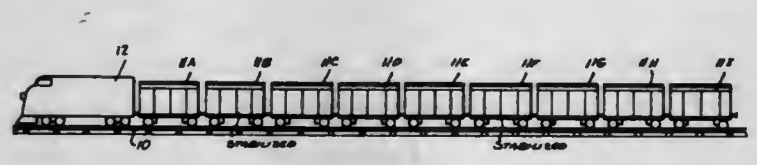


An overhead cableway with a circulating cable and carriages to be accelerated by a starting device and to be coupled to said circulating cable. With starting a carriage, said starting device being operatively coupled to said circulating cable and moving said carriage. A tensioning device in said starting device for measuring relative movement between said carriage and said circulating cable when the carriage is coupled both to the starting device and to the circulating cable.

3,605,633

STABILIZED UNIT TRAIN

William R. Townsend, Old Greenwich, Conn., assignor to Flume Stabilization Systems, Inc., Hoboken, N.J.
Filed Mar. 25, 1969, Ser. No. 810,221
Int. Cl. B61d *15/00*
U.S. Cl. 105—1 **8 Claims**

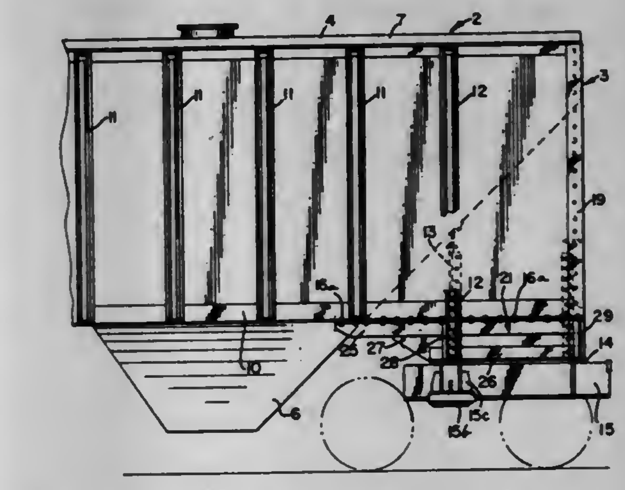


A unit railroad train having a series of like cars, the train being subject to resonance effects which make it difficult for the train to attain optimum speed. To overcome this drawback, two or more cars in the series thereof at separated points therein are provided with stabilizers which take the form of liquid storage tanks wherein liquid is transferred from one section of the tank to another in a direction transverse to the movement of the train, the rhythm of liquid transfer being out of phase with the undulation of the unit train at its natural period of vibration, thereby interrupting this period and making it possible for the train to reach higher speeds without resonance effects.

3,605,634

COVERED HOPPER CAR END CONSTRUCTION

Kent N. Johnson, South Holland, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 30, 1968, Ser. No. 787,942
Int. Cl. B61d *5/00, 7/00, 17/06*
U.S. Cl. 105—248 **13 Claims**

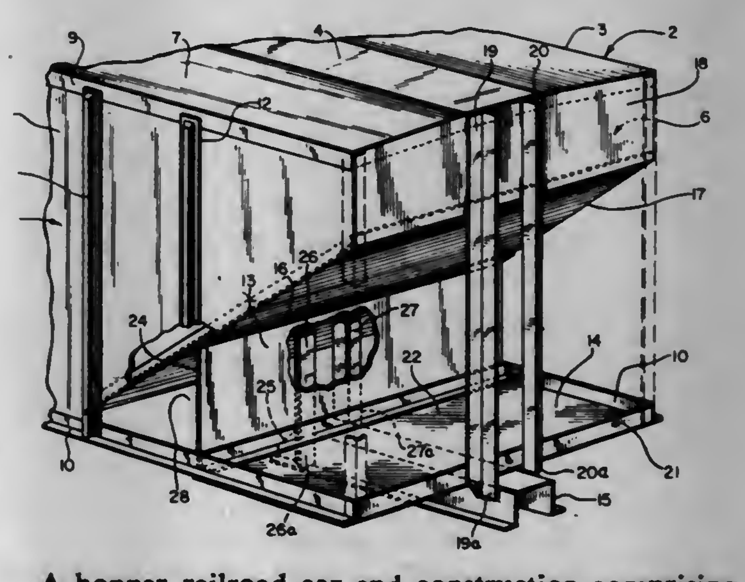


In a center sill-less railroad hopper car, a pair of opposed end structures and a central hopper portion having opposed slope sheets, each end portion comprising a stub center sill on which is mounted a flat horizontal shear plate attached to lateral vertical side skirt means and a bolster web beam mounted on the shear plate and connecting with the side skirt means for beaming the impact loads on the center sill into the side girders of the car, the bolster web beam being attached with the respective slope sheet of the center portion by gusset means mounted on the respective stub sill or an end beam being mounted on the outer end of the shear plate beam and connecting with the sides of the car.

3,605,635

COVERED HOPPER CAR END CONSTRUCTION

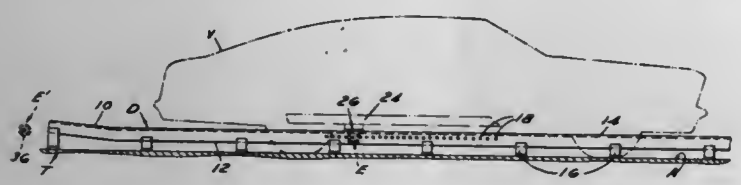
Marvin Stark, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 30, 1968, Ser. No. 787,943
Int. Cl. B61d *5/00, 7/00, 17/06*
U.S. Cl. 105—248 **11 Claims**



A hopper railroad car end construction comprising an end stub center sill spaced away from and outwardly of the hopper slope sheet, a car upper end beam attached to the slope sheet and to the end of the roof, a horizontal shear plate beam mounted on the stub sill, a transversely extending upright bolster web beam mounted on the shear plate and joining with the slope sheet, an upright end pitching structure connecting the roof upper end beam with the outer end of the shear plate beam and the outer end of the stub center sill, and an upright inner bolster pitching structure on the bolster web beam and attached to the stub sill and connecting the inner end of the shear plate beam and the upright bolster web plate beam with the sides of the car.

3,605,636
TIE-DOWN SYSTEM FOR VEHICLES

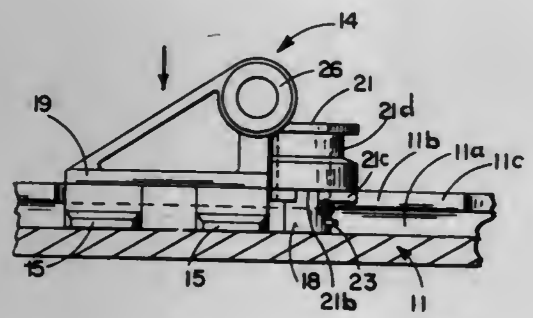
Donald J. Blunden, Southfield, Israel D. Peisner, Huntington Woods, and William R. Baker, Detroit, Mich., assignors to Whitehead & Kales Company, River Rouge, Mich.
Continuation of application Ser. No. 720,914, Apr. 12, 1968. This application Apr. 29, 1970, Ser. No. 33,070
Int. Cl. B60p *7/08;* **B61d** *45/00*
U.S. Cl. 105—368T 14 Claims



This invention relates to a tie-down system for vehicles. In the specific embodiment disclosed, a transverse beam is mounted on each vehicle, and laterally spaced rails on a transport are adapted to engage rollers on the ends of the beam to automatically depress the vehicle as it is moved onto the transport between the rails. Any suitable means may be provided to lock the vehicle while in depressed position, and preferably for this purpose locking pins are carried by the beam and are engageable in selected keeper openings in the rails. The beam in the disclosed embodiment is free to slide transversely of the vehicle, and guide rollers on the beam guide it between the rails.

3,605,637
ANCHOR FITTING FOR SECURING LOADS TO A RETAINER TRACK

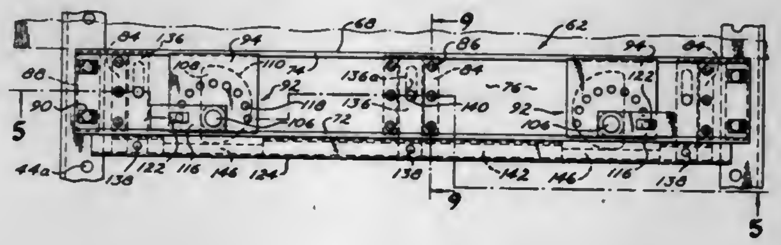
Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.
Filed Sept. 2, 1970, Ser. No. 68,942
Int. Cl. B61d *45/00;* **B60p** *7/08*
U.S. Cl. 105—369A 12 Claims



An anchor fitting has a body portion with flat surfaced pad means with shoulders extending therefrom, and a post portion extending along an axis substantially normal to the flat surfaces of the pad means. A latching plunger member is slidably mounted on the post portion for motion along the longitudinal axis thereof. The anchor fitting is removably retained in a selected position along a slotted track having a plurality of notched portions separated by narrow neck portions; with the shoulders of the pad means in the track slots underneath the neck portions and with the latching plunger member seated in one of the notched portions thereof.

3,605,638
EXPANDABLE LOAD BRACE

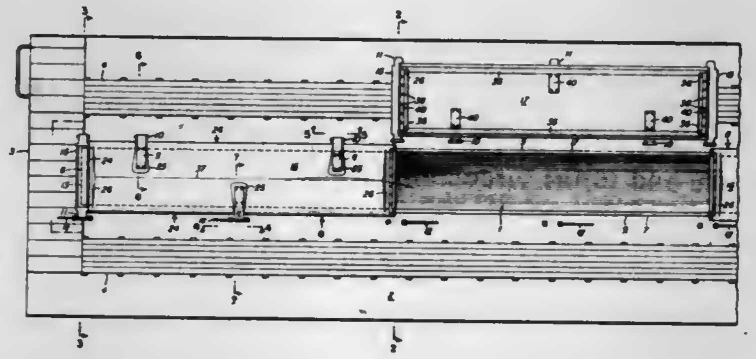
Robert E. James, Parma Heights, Ohio, assignor to The Shunk Manufacturing Company, Inc., Bucyrus, Ohio
Filed Jan. 10, 1969, Ser. No. 790,233
Int. Cl. B60p *7/16;* **B61d** *45/00*
U.S. Cl. 105—369B 8 Claims



An elongated load brace has a fixed portion adjustably positioned at selected fixed points along spaced, parallel rails. A movable portion is cammed laterally away from the fixed portion against the load and then locked in place. Cam means for moving the movable portion are mounted on axes disposed perpendicular to the plane of lateral movement of said movable portion.

3,605,639
FIBER GLASS HATCH COVER

Orville Ingram, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed July 23, 1968, Ser. No. 746,787
Int. Cl. B61d *39/00*
U.S. Cl. 105—377 9 Claims

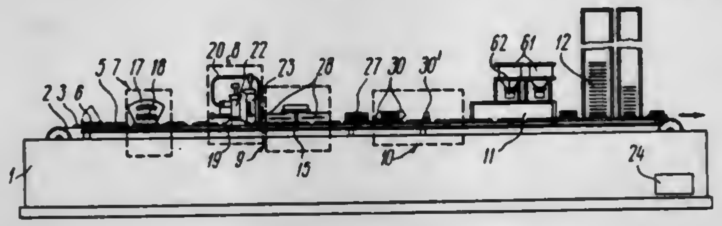


A molded fiber glass cover for roof hatches of covered railway hopper cars, the hatch cover being of a hollow, internally integral truss-reinforced construction combining great strength and durability with very light weight.

3,605,640
INSTALLATION FOR MAKING MULTILAYER CAKES

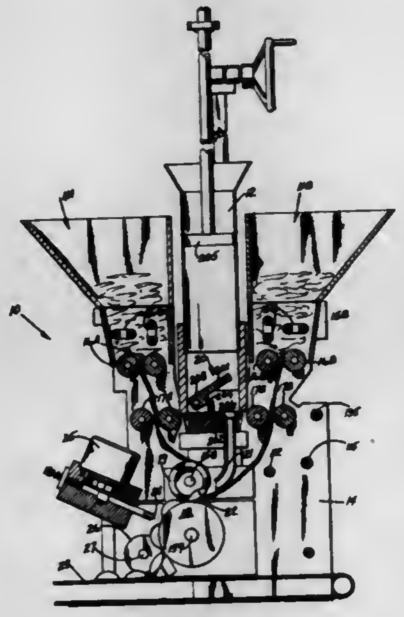
Oleg Grigorievich Lunin, Zeleny prospekt 10/32, korpus 27, kv. 17, Moscow, U.S.S.R.
Filed June 26, 1969, Ser. No. 836,902
Int. Cl. A23g *3/00*
U.S. Cl. 107—1 5 Claims

An installation for making multi-layer cakes comprises a plurality of mechanisms mounted in succession in the direction of the technological process for treating a cake block displaced by a periodically-actuated conveyor. One mechanism serves for distributing on the side faces of the multi-layer cake the pastry mass laid on the face of each cake block, and this mechanism is located before a mechanism for covering the side faces of the multi-layer cake with crumbs. To cover the face of each cake block with pastry mass, the slit of a slit-shaped nozzle of a mechanism for covering the cake block with pastry mass has a length exceeding the transverse dimensions of the cake block, and the feeding of the pastry mass through the slit of the nozzle is started before the nozzle reaches the cake block and is discontinued after the nozzle has passed above the cake block.



3,605,641
RAVIOLI MAKING MACHINE

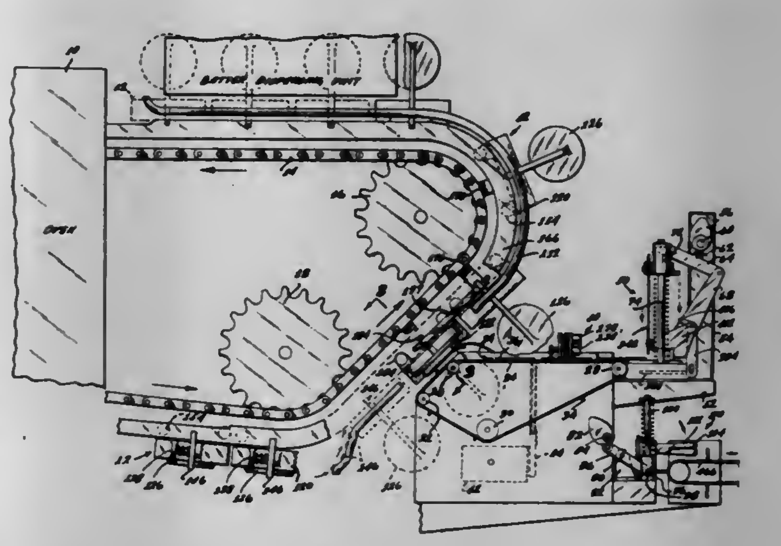
Philip Shuster, Monsey, N.Y., assignor to Power Mount Corporation, Passaic, N.J.
Filed July 22, 1969, Ser. No. 843,329
Int. Cl. A21c *11/08*
U.S. Cl. 107—1A 4 Claims



This disclosure is directed to a machine for producing ravioli featuring readily interchangeable assembly of guide tubes through which the fill material is dispensed to form consecutive rows of ravioli, an adjustable stroke metering pump for controlling the amount of the individual portions of fill material, means for interchanging various crimping dies and for adjusting the stroke frequency of the pump in relation to particular crimping dies for enclosing such portions of fill material between two moving dough sheets for producing various sizes of ravioli. For each size or shape of crimping die adapted to be interchangeably used on the machine, the stroke of the metering pump is rendered readily adjustable to synchronize the frequency thereof to a given size crimping die.

3,605,642
FORTUNE COOKIE MACHINE

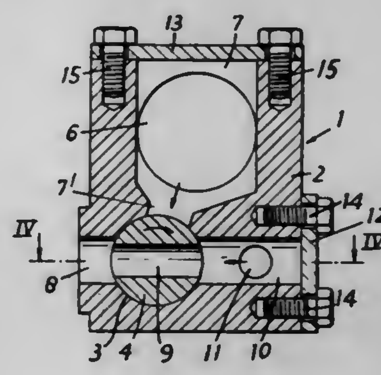
Robert E. Brown, Pasadena, Calif., assignor to Sam Ward Company, Inc., Los Angeles, Calif.
Filed Nov. 27, 1968, Ser. No. 779,384
Int. Cl. A21b *5/00;* **A21c** *9/00*
U.S. Cl. 107—4A 10 Claims



The invention is a fortune cookie making machine. The batter is cooked in cooking units that are carried through an oven on a conveyor. The cooked batter units are ejected from the cooking unit and conveyed to a unit which places a fortune cookie slip on them and then to a folding unit which folds the fortune cookie about the fortune cookie slip. The folded fortune cookie is removed from the folding unit by a take-away unit which places it on a final conveyor.

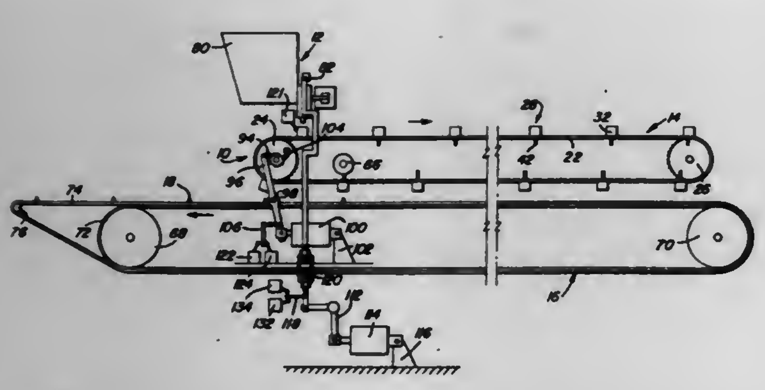
3,605,643
APPARATUS FOR THE TREATMENT OF PASTY SUBSTANCES

Peter Joachim Barr, London, England, assignor to Barr & Murphy Limited, London, England
Filed Feb. 3, 1970, Ser. No. 8,265
Claims priority, application Great Britain, Feb. 20, 1969, 9,342/69
Int. Cl. A21c *5/00;* **B29c** *7/00*
U.S. Cl. 107—8DA 4 Claims



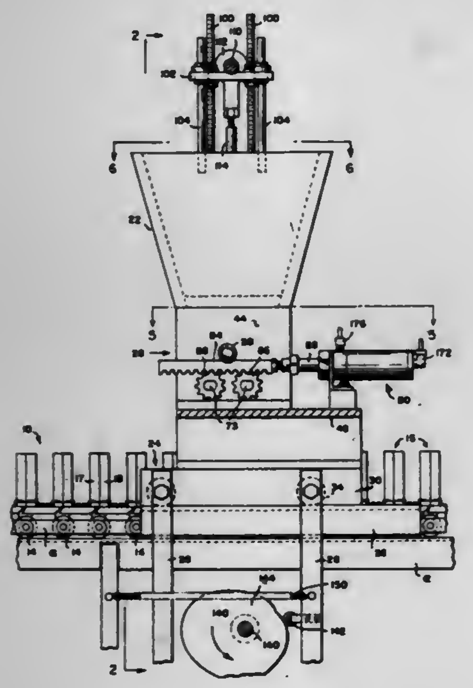
An apparatus for forming pasty substances such as wheat gluten into pellets having means for forming the pellets in a mould cavity in a rotating member and positively expelling the pellets thus formed by compressed air pressure. The apparatus is employed in a process for the drying of such substances wherein the substance in the form of pellets is introduced into a stream of heated air circulating in a closed path and is subjected to disintegration action whilst suspended in the air stream.

3,605,644
CHOCOLATE DROP MAKING MACHINE
Charles C. Cartia and William H. Shaw, Elizabeth, Pa., assignors to Thurman's Inc.
Filed Feb. 18, 1969, Ser. No. 800,132
Int. Cl. A23g *1/22*
U.S. Cl. 107—8 **2 Claims**



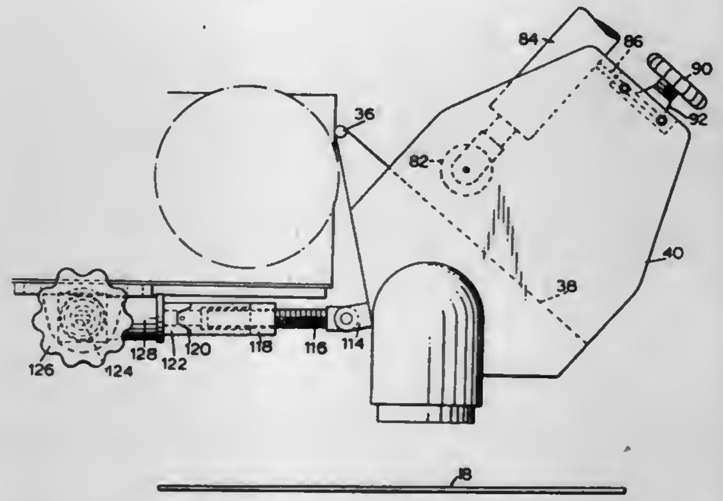
An endless conveyor belt having a plurality of molds thereon for receiving a flowable and hardenable confection material from a supply hopper and dispensing mechanism with each mold having an ejector pin inserted into the bottom of the mold by an actuator for ejecting the hardened confection from the mold onto a conveyor for carrying the hardened confections to another station for coating with chocolate or the like.

3,605,645
LIQUID MOLDING MACHINE
Heinz A. Herrmann, Pennsburg, Pa., assignor to Shelly Bros., Inc., Lansdale, Pa.
Filed Oct. 30, 1969, Ser. No. 872,614
Int. Cl. A23g *3/20;* **B67c** *3/20*
U.S. Cl. 107—8 **10 Claims**



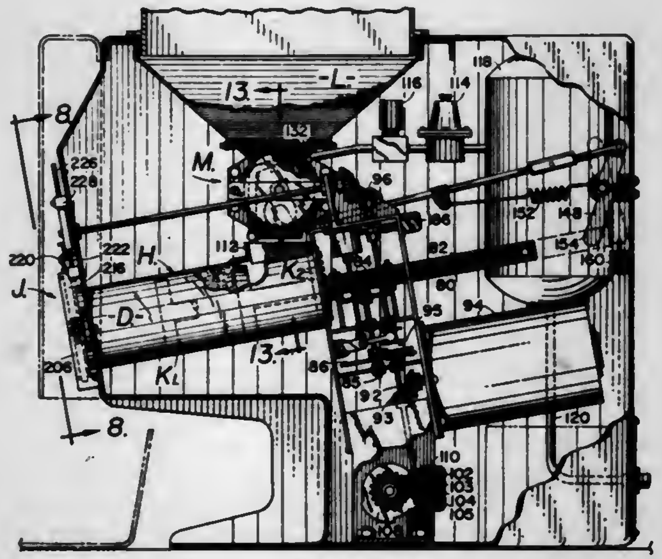
A machine for dispensing hot candy syrup into molds carried by a conveyor involving a valve means for controlling the flow of a measured amount of syrup from a supply bucket to a dispensing chamber from which it is dispensed into the conveyor molds.

3,605,646
DOUGH MANIPULATION
John Jolly, Nelson, near Burnley, and Neil Clyde, Pike Hill, Burnley, England, assignors to Tweedy of Burnley Limited, Burnley, England
Filed Feb. 3, 1969, Ser. No. 795,937
Int. Cl. A21c *11/00*
U.S. Cl. 107—9 **13 Claims**



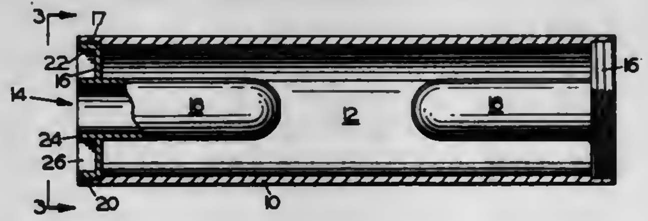
Apparatus for folding an elongated cylindrically dough shaped mass into a sinuous formation comprising means for peripherally scoring the mass at periodic intervals at its length, a conveyor for carrying the dough mass beneath the scoring means to a conveyor discharge end for cross-panning the dough comprising a sloping, fluidised bed over which the dough mass passes in lengthwise fashion, and dough mass retarding means comprising a rotatable wheel having a fluidised surface for slowing movement of the dough mass at its center and fluidised end wall surfaces arranged to retard movement of the mass at its ends whereby portions of the dough mass intermediate its center and ends fold inwardly to produce a mass of compressed W-shaped configuration.

3,605,647
FRENCH FRY POTATO BODIES AND METHOD AND APPARATUS FOR FORMING SUCH BODIES
Roderick G. Beck, James F. Harmon, and Mounir A. Shatila, Blackfoot, Idaho, David A. Richins, Bountiful, Utah, and John H. Lach, Blackfoot, Idaho, assignors to American Potato Company, San Francisco, Calif.
Filed Apr. 16, 1969, Ser. No. 816,675
Int. Cl. A21c *11/18*
U.S. Cl. 107—14 **15 Claims**



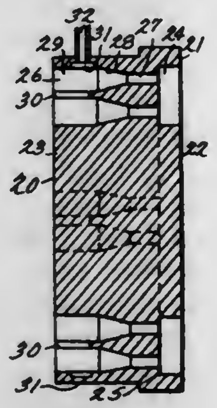
A machine for forming from potato dough elongate bodies that resembled potato pieces suitable for french frying. The machine is arranged to move the dough through spaces between a set of parallel wires, which wires are spaced from one another by amount corresponding to the width of the piece. The length of the spaces determines the length of the potato piece. A second set of parallel wires is supported in registry with the first mentioned set during dough movement; after the dough is moved by an amount corresponding to the thickness of a french fry body, the wires of the second set are moved across the dough to separate potato pieces suitable for french frying. A machine for automatically synchronizing the movement of the dough and the movement of the second set of wires. A french fry potato piece formed by the apparatus which piece is characterized by an uncompressed surface.

3,605,648
ROLLING PIN
Robert F. Petix, 1449 SE. Birch, Beaverton, Oreg. 97005; Joseph A. Aquino, 10856 Wolcott Place, Mission Hills, Calif. 94901; and Frank J. Aquino, 6078 Dovetail Drive, Agoura, Calif. 91301
Filed Mar. 6, 1969, Ser. No. 804,824
Int. Cl. A47j *43/00*
U.S. Cl. 107—50 **1 Claim**



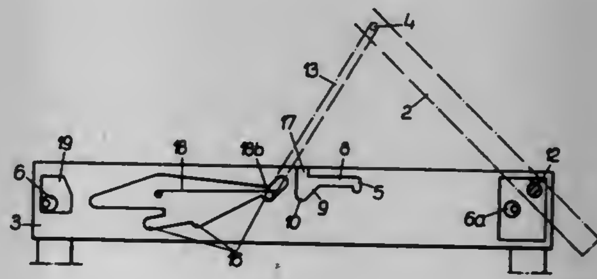
A rolling pin has a body portion of tubuar construction forming a compartment therein. The rolling pin includes end handle members each having a disc-like base portion and a projecting gripping portion. The base portion of the handle members has exterior screw threads engageable with interior screws threads at the ends of the tubular body portion for removably attaching said handle members to the body portion. By means of such threaded engagement, one or both of such handles may be temporarily removed for the purpose of placing ice cubes or water in the body portion of the rolling pin. The handle members are adapted to be inverted so that the gripping portions thereof can be turned inwardly to project into the body portion of the rolling pin for compactness in storage.

3,605,649
CONTROLLED EXPANSION OF PUFFED SNACKS
Robert H. Bundus, Riverside, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Filed July 22, 1969, Ser. No. 843,662
Int. Cl. A23l *1/18;* **B29f** *3/00*
U.S. Cl. 107—54 **4 Claims**



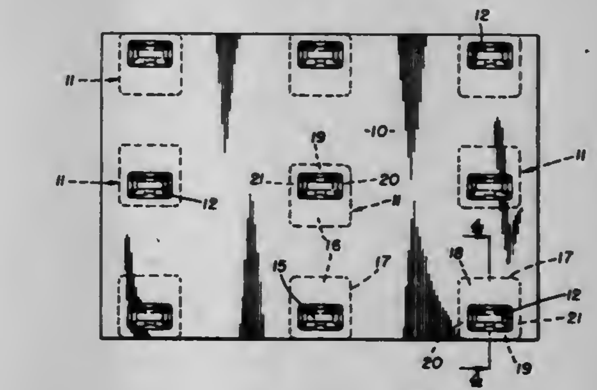
Uniformly expanded extrudant is obtained by passing the extrudant of extruder through a shaping portion, an expanding portion and a stabilizing portion of a bore in a die plate. Shaping with no expansion takes place in the shaping portion, a gradual expansion takes place in the tapered expanding portion and no expansion takes place in the stabilizing portion.

3,605,650
DRAFTING TABLE
Walter Hebel and Ulrich Hebel, both of 4 Bruckenstrasse, 5242 Kirchen (Sieg), Germany
Filed Feb. 19, 1969, Ser. No. 800,577
Claims priority, application Germany, May 9, 1968, P 17 78 532.9
Int. Cl. A47f *5/12*
U.S. Cl. 108—9 **9 Claims**



This invention has to do with a drafting table and, more particularly, to such a table having a top that may be used horizontally and which can be readily changed to an inclined position.

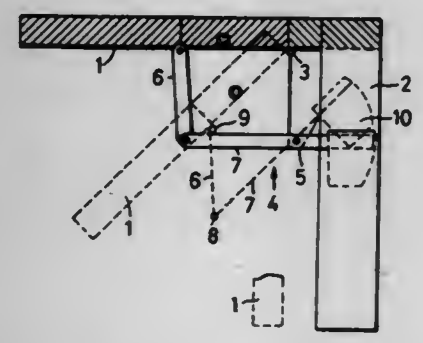
3,605,651
PALLET OF LOW-COST DISPOSABLE TYPE
Charles T. Stewart, P.O. Box 2486, Zanesville, Ohio 43701
Filed May 28, 1969, Ser. No. 828,564
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **8 Claims**



A low-cost disposable type pallet including a load-supporting deck panel of inexpensive material having a plurality of sockets in which are locked separately-produced, inexpensive, hollow, molded legs which project below the panel and support it and which are properly distributed throughout its area to provide spaces for receiving the tines of a fork-lift truck.

3,605,652
FOLDING TABLE FOR CONNECTION TO THE WORKTABLE OF PAPER CUTTING MACHINES

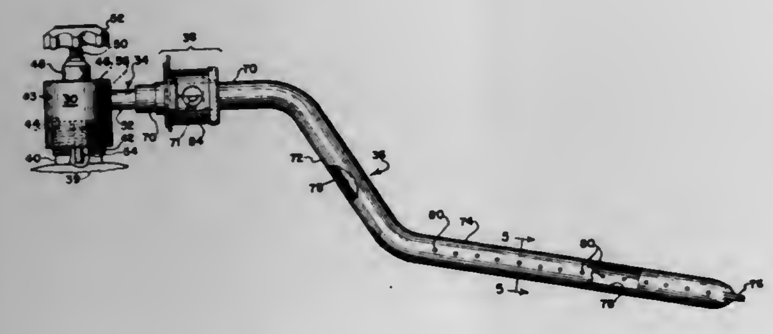
Rudolf Mohr, Hattersheimerstrasse,
6238 Hofheim, Taunus, Germany
Filed Mar. 25, 1969, Ser. No. 810,109
Claims priority, application Germany, Mar. 30, 1968,
P 17 61 075.2
Int. Cl. A47b *5/00*
U.S. Cl. 108—152 **4 Claims**



A folding table, for connection to the worktable of a paper cutting machine, one end of which is pivotally mounted on the side table of the machine and in which the movement of the folding table from the in-service position to the out-of-service position, and vice versa, takes place by means of an articulated lever linkage.

3,605,653
GAS-FIRED CHARCOAL LIGHTER AND METHOD OF CHARCOAL IGNITION

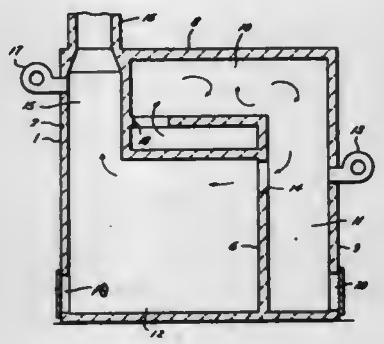
Fred Donnell, 332 Maplewood, Bridgman, Mich. 49106
Filed Nov. 14, 1969, Ser. No. 876,970
Int. Cl. F23b *1/02*
U.S. Cl. 110—1F **7 Claims**



A lighter for igniting any loosely piled combustible material and particularly adapted for lighting charcoal in any of the pans, bowls or hibachis of various shapes in common use for barbecuing. The lighter is adapted for connection to a portable propane or other high pressure fuel tank and incorporates a small diameter orifice feeding into a chamber designed to utilize the high velocity gas as a jet pump to provide a forced draft of air for rapid ignition of the combustible material, a movable member being provided to regulate the amount of air admitted to the jet pump and a conduit member being provided to conduct the gas and air to a burner member submerged in the loosely piled charcoal or other combustible material. In use, the lighter affords a novel method of ignition wherein the lighter functions as a forge to aerate the partially ignited pieces of charcoal.

3,605,654
THERMAL DUCT RECIRCULATING INCINERATOR

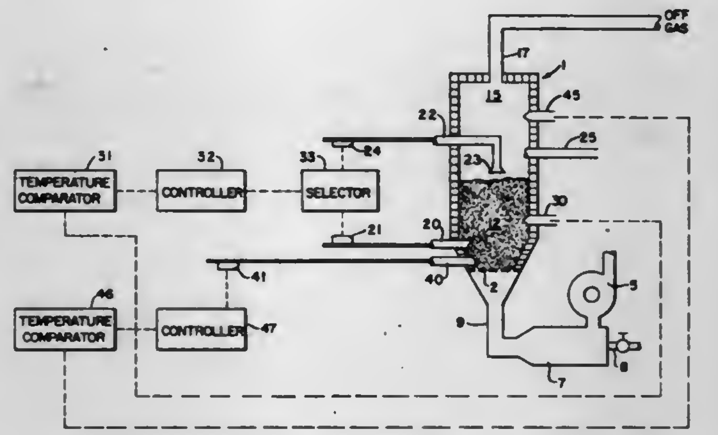
Henry L. Bowles, Jr., 4106 Center St.,
Houston, Tex. 77007
Filed May 4, 1970, Ser. No. 34,276
Int. Cl. F23g *5/12*
U.S. Cl. 110—8A **5 Claims**



An incinerator for destroying waste material having a recirculating duct that maintains a high temperature causing fly ash spin out and complete oxidation of residual matter, maintaining the high temperature of the flue stream to the point of exit.

3,605,655
METHOD AND APPARATUS FOR INCINERATING COMBUSTIBLE WASTES

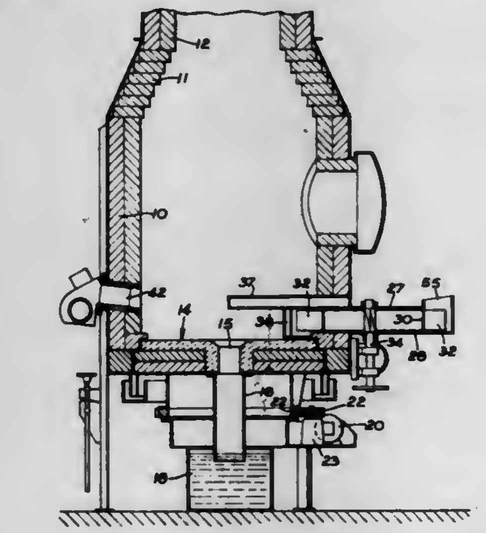
Jay Warshawsky, Allentown, Pa., and Louis H. Piper, Tucson, Ariz., assignors to Fuller Company
Filed May 5, 1970, Ser. No. 34,829
Int. Cl. F23g *5/08*
U.S. Cl. 110—8R **12 Claims**



A control system for a fluidized bed reactor which is used for treating material. Although the control system is primarily designed for use with a reactor which is used for incinerating combustible wastes such as sewage sludge, oily wastes such as oily wastes from an oil refining operation or other combustible wastes, it may also be used with a reactor which is being used for other high temperature operations such as calcining operations. Fuel and quench water are supplied to the reactor to maintain a desired temperature within the fluidized bed. The temperature of the fluidized bed is measured and compared to a set temperature. The difference between the actual temperature of the fluidized bed and the desired temperature controls the supply of either fuel or quench water to the reactor to maintain the actual temperature of the bed equal to the desired temperature. The temperature of the freeboard area above the fluid bed is also measured and compared with a desired temperature. A controller responsive to the difference between the desired temperature of the freeboard area and the actual temperature controls the volume of wastes supplied to the reactor.

3,605,656
FURNACES

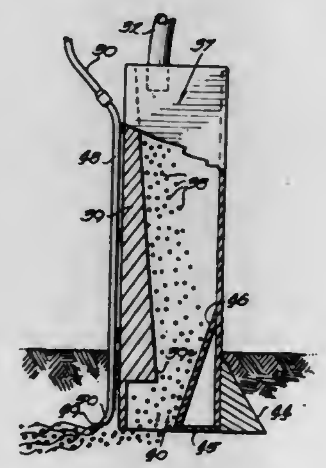
John Brian Stribling, Sutton Coldfield, England, assignor to Calval Developments Limited, Wednesbury, England
Filed May 22, 1969, Ser. No. 826,863
Claims priority, application Great Britain, June 8, 1968, 27,361/68
Int. Cl. F23g *5/00*
U.S. Cl. 110—13 **10 Claims**



The invention provides a fully automatic furnace for burning waste materials, having a rotatable hearth, auxiliary burners and combustion air inlets directed tangentially on to the hearth, and a plough for deflecting waste material deposited on to the hearth from one to another of the concentric paths so that the residue after combustion is directed into an axial ash chute.

3,605,657
METHOD AND APPARATUS FOR APPLYING DRY FERTILIZER AND ANHYDROUS AMMONIA IN A COMMON BAND

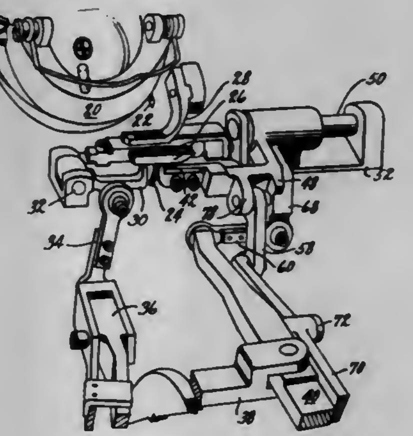
Leonard M. Brannan, 3008 Paddock Road, Apt. 211C, Omaha, Nebr. 68124
Filed Apr. 7, 1969, Ser. No. 813,968
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **6 Claims**



Method and apparatus is disclosed for chemically combining a dry fertilizer and anhydrous ammonia in a band at a predetermined depth beneath the soil surface. A plowing knife is introduced into the soil and pulled by a surface traction vehicle to form a channel of predetermined depth. A band of dry fertilizer is deposited in the bottom of the channel by the plow via a conduit extending longitudinally of the knife; and anhydrous ammonia contacts the deposited dry fertilizer at a location behind the deposited dry fertilizer. The anhydrous ammonia is carried by means of a closed conduit attached to the rear of the knife and slight rearwardly inclined at its lower end so that the point of application of ammonia to the band is at a location rearward of the shank. Attached to one side of the plow knife is an inverted moldboard for gathering soil from the side of the knife and routing it behind the knife over the point of application of ammonia rearward of the knife to cover the ammonia and prevent its escape in gaseous form into the atmosphere. A second inverted packing moldboard is attached to the other side of the knife for gathering soil and routing it behind the knife and packing it down above the point of application of the ammonia.

3,605,658
SEWING MACHINES

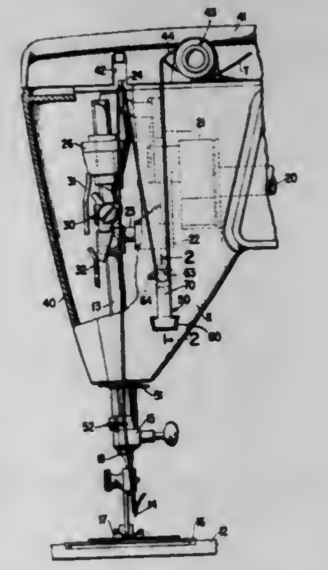
Joseph R. Ioannilli, Beverly, Mass., assignor to USM Corporation, Boston, Mass.
Filed July 8, 1970, Ser. No. 53,173
Int. Cl. D05b *15/00*
U.S. Cl. 112—54 **11 Claims**



A sewing machine for uniting by a seam work pieces of unequal lengths by puckering the longer work piece so that its length matches that of the shorter as the insertion of the seam progresses. The puckering, which is particularly useful in sewing a moccasin vamp to a moccasin plug, is accomplished by a mechanism including a puckering awl which engages the longer of the two parts, typically the vamp, ahead of a sewing plane. The awl is advanced in a straight line toward the sewing plane to a greater extent than the plug thereby causing the vamp to pucker.

3,605,659
THREAD GUIDE FOR SEWING MACHINES

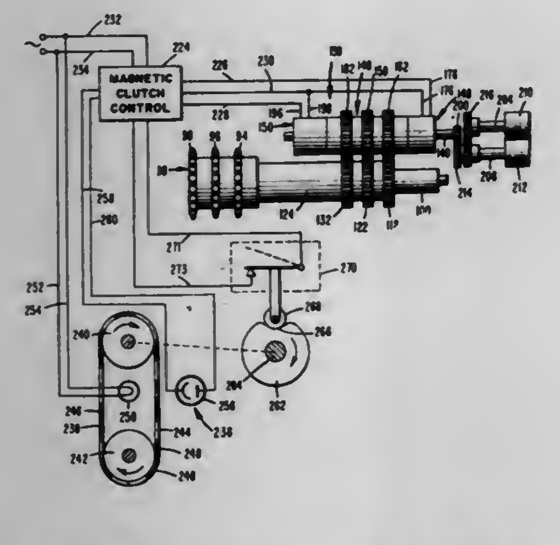
Stephen J. Illes, Summit, N.J., and Salvatore A. D'Orio, Staten Island, N.Y., assignors to The Singer Company, New York, N.Y.
Filed July 16, 1970, Ser. No. 55,329
Int. Cl. D05b *1/00, 3/02, 49/00*
U.S. Cl. 112—154 **6 Claims**



A thread guide for directing thread to the take-up of a sewing machine with a needle bar interrupting mechanism for enabling the sewing machine to skip stitches. The thread guide is constructed and arranged with thread retaining means to prevent the surplus thread occasioned by operation of the skip-stitch mechanism from disengaging the thread guide or from becoming snarled or entangled therewith.

3,605,660
YARN FEEDING MECHANISM FOR A PILE LOOP-FORMING MACHINE

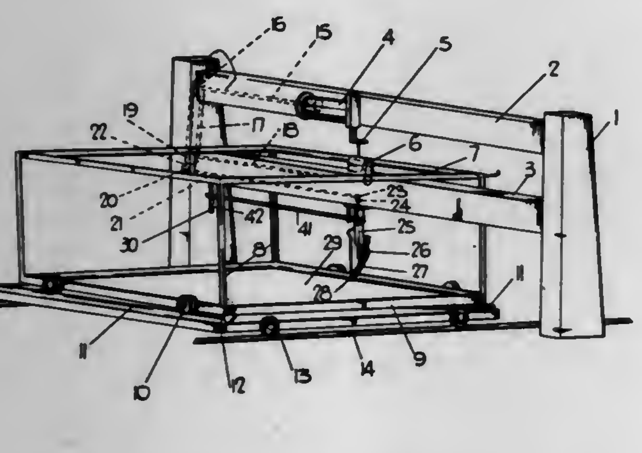
Joe T. Short, West Point, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed May 13, 1969, Ser. No. 824,054
Int. Cl. D05c *15/32*
U.S. Cl. 112—79A **24 Claims**



A yarn feeding mechanism for a pile loop-forming machine comprising a central drive unit and a plurality of yarn feed modules positioned about the drive unit, each of the modules including a yarn feed drive shaft, a plurality of selectively engageable clutches mounted on the drive shaft and drivably connected to the drive unit for selectively rotating the shaft at different rotational velocities, and yarn feed means drivably connected to the drive shaft and operable to feed different lengths of yarn depending upon which of the clutches rotates the drive shaft.

3,605,661
GUIDE TRACK MEANS FOR QUILTING MACHINES

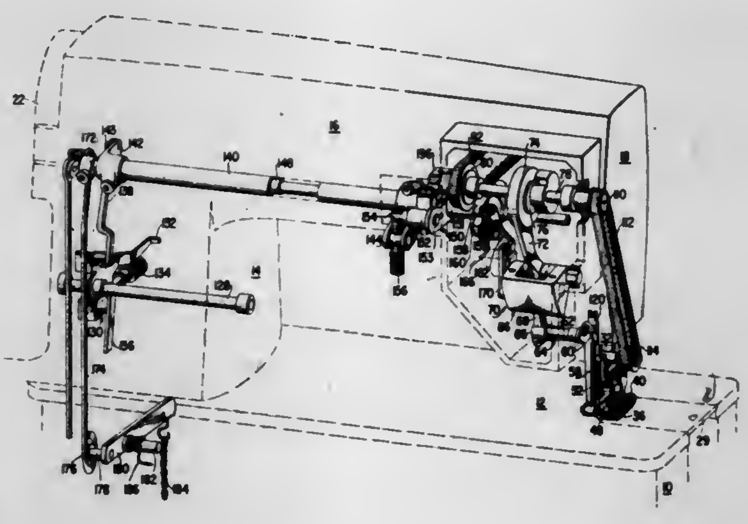
John Cooper, West Bridgford, England, assignor to J. C. Attachments Limited, Nottingham, England
Filed Feb. 19, 1969, Ser. No. 800,480
Claims priority, application Great Britain, Feb. 20, 1968, 8,094/68
Int. Cl. D05b *11/00, 35/00*
U.S. Cl. 112—118 **1 Claim**



A machine for forming a preformed pattern on a substantially flat object, as for example, a sewing pattern on a mattress or the like, said machine having a novel guide track means for a follower including a groove formed in a substantially flat member and a corrugated strip located at the bottom of said groove.

3,605,662
UPPER FEED MECHANISM

Erich M. Willenbacher and Karl-Heinz Michel, Karlsruhe-Hagsfeld, and Werner J. Mayer, Karlsruhe-Durlach, Germany, assignors to The Singer Company, New York, N.Y.
Filed May 1, 1970, Ser. No. 33,751
Int. Cl. D05b *27/04*
U.S. Cl. 112—212 **19 Claims**



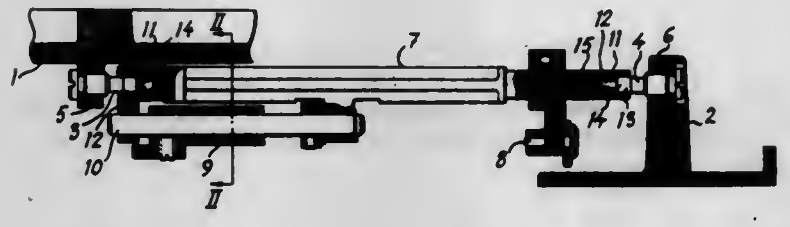
A sewing machine having an upper feed mechanism adapted to be used independent of or in conjunction with a conventional lower feed. The upper feed dog is given advance and return movement through a quadratic linkage which is rocked by a pair of rocker arms driven through a regulating member from an eccentrically oscillated pitman. A timing belt transmits motion from the shaft to a shaft on which the pitman eccentric is mounted. This latter shaft also mounts a second timing belt which drives a second eccentric to give lift and dropping movement to the upper feed dog. The regulating member may be adjusted to change the upper feed either simultaneously or independently of the lower feed mechanism by either of two regulating screws operating through a plurality of cranks and couples mounted on a pair of concentric shafts. A foot pedal operated linkage turns the inner of the two shafts, independently of the two regulating screws, to effect a quick change of the upper feed only for as long as the pedal is depressed, returning the upper feed to its present amount upon release thereof. An indicator scale and pointer show the difference in feeds between bottom and top feed dogs as set by the regulating screw that changes the upper feed only.

3,605,663
BEARING ARRANGEMENT FOR A FEED BAR OF A SEWING MACHINE

Sven Theodor Roberg, Huskvarna, Sweden, assignor to Husqvarna Vapenfabriks Aktiebolag, Huskvarna, Sweden
Filed Mar. 7, 1969, Ser. No. 805,186
Claims priority, application Sweden, Mar. 8, 1968, 3,077/68
Int. Cl. B65h *54/18*
U.S. Cl. 112—218 **6 Claims**

A bearing arrangement for the feed bar of a sewing machine including frame means, the feed bar having op-

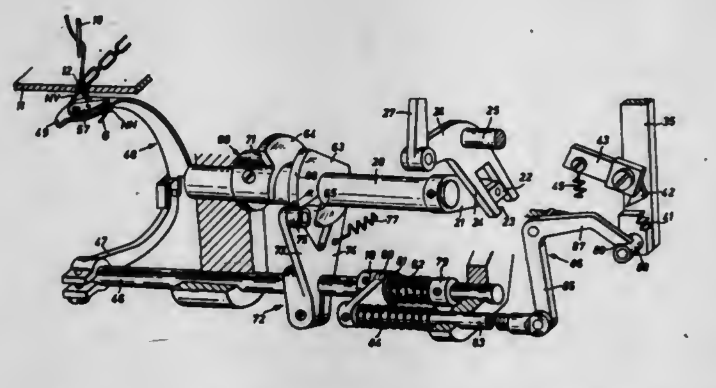
posite ends each having an axial bore having a bottom and a cylindrical wall surface, there being a journal spindle within each bore, supported by the frame means, having an end surface and a geometrical envelope surface applied against the cylindrical wall surface of the



associated bore and a spherical body is interposed between the bottom of each bore and the end surface of the associated spindle; if desired, a helical spring can be interposed between the bottom of one bore and the associated spherical body.

3,605,664
THREAD CUTTING MECHANISM FOR LOCKSTITCH SEWING MACHINES WITH OSCILLATING LOOPTAKER

Kristen Hedegaard, Gentofte, Denmark, assignor to G. M. Pfaff AG., Kaiserslautern am Pfalz, Germany
Filed Sept. 24, 1969, Ser. No. 860,706
Claims priority, application Germany, May 13, 1969, P 19 24 281.0
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 **8 Claims**

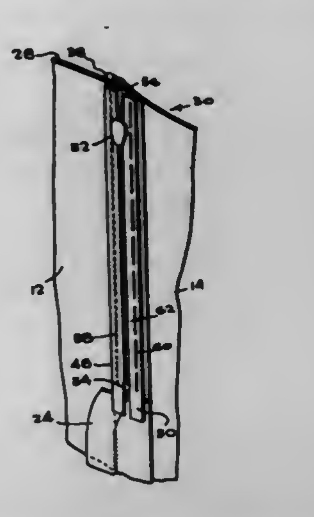


Thread cutting mechanism for a lockstitch sewing machine with oscillating looptaker comprises a curved thread catcher carrying a flat cutting knife and being mounted for oscillating movement in the direction of movement of the looptaker. The thread catcher is operated by an auxiliary shaft parallel to and operably connected with the looptaker rockshaft via a multiple motion-transmitting cam mechanism designed to effect a two-step thread catching and cutting operation during a looptaker oscillating cycle by first operating the thread catcher axially to a favorable position for separating the bobbin thread and the work limb of the needle thread loop and subsequent cutting of the separated threads by the cutting knife.

3,605,665
INSTALLATION OF SLIDE FASTENERS

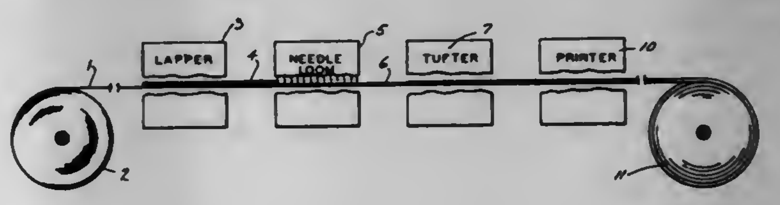
Florence O. Donald, 7333 New Hampshire Ave., Apt. 517, Hyattsville, Md. 20783
Filed Sept. 29, 1969, Ser. No. 861,919
Int. Cl. D05b *97/10*
U.S. Cl. 112—265 **3 Claims**

A slide fastener is installed by a process wherein meeting fabric panels are temporarily basted to one another and the seam allowances slit to mark the fastener location. Thereafter the seam allowances are doubled at such locations, and the fastener tapes are affixed to the doubled seam allowances. The temporary basting is then removed.



3,605,666
TUFTED CARPET WITH COMPATIBLY DYABLE NEEDLEBONDED SUBFACE AND METHOD OF MANUFACTURING SAME

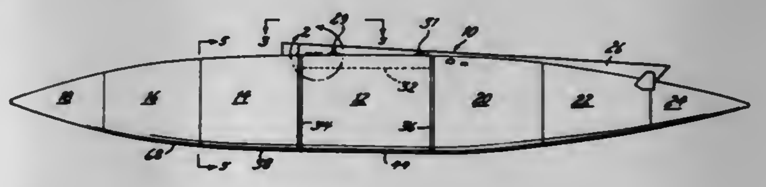
Richard Kimmel, Libertyville, and Robert G. Rowan, Arlington Heights, Ill., and Arthur R. Hild, Tustin, Calif., assignors to Ozite Corporation, Libertyville, Ill.
Filed June 13, 1969, Ser. No. 833,087
Int. Cl. D05c *17/02*
U.S. Cl. 112—410 **2 Claims**



A patterned tufted carpet includes a thin needlebonded subface which visually masks the scrim and the bases of the tufts, and the tufts and subface fibers are equally, compatibly dyable so that the coloration and light reflectance are uniform. The carpet is made by needling the subface onto the scrim, tufting through the scrim and subface, and then dying or printing.

3,605,667
AIRCRAFT FUEL TANK AND METHOD OF MAKING SAME

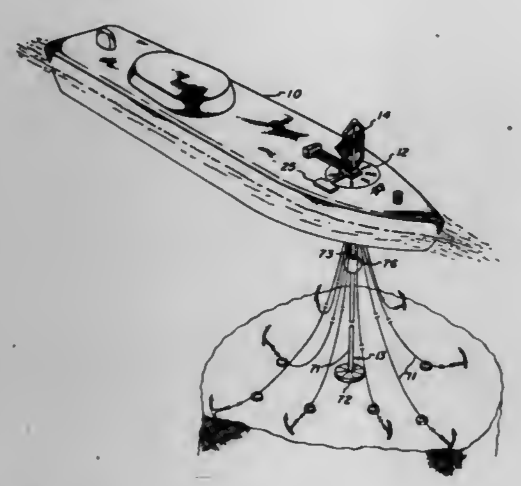
Ronald Wilks, Berwyn, and Emil C. Wojcik, Brookhaven, Pa., assignors to Day & Zimmermann, Inc., Philadelphia, Pa.
Filed Oct. 21, 1968, Ser. No. 769,244
Int. Cl. B21d *51/00*
U.S. Cl. 113—120R **3 Claims**



An aircraft fuel tank is provided which need not be jettisoned when flying over Mach I and which is aerodynamically stable. Tank sections are conical spun sections except for the center cylindrical section containing all of the plumbing. Each spun section has an integral reinforcement frame at one end. Unassembled tanks can be stacked and assembly time in the field is substantially less than ninety man minutes.

3,605,668
UNDERWATER RISER AND SHIP CONNECTION

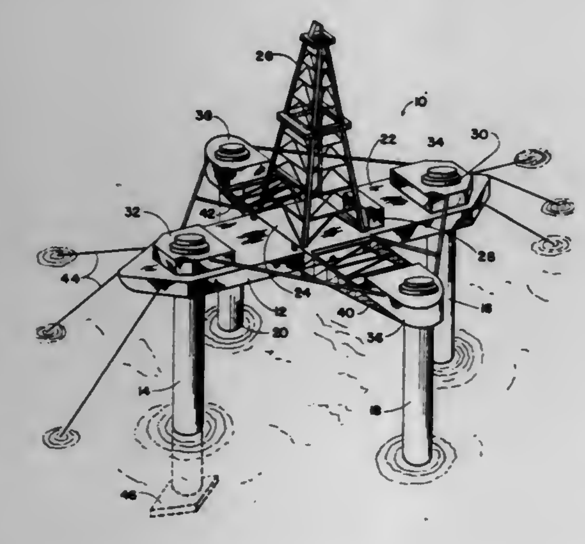
George W. Morgan, Anaheim, Calif., assignor to
North American Rockwell Corporation
Filed July 2, 1969, Ser. No. 838,489
Int. Cl. B63b *35/00;* E21b *43/01*
U.S. Cl. 114—.5 14 Claims



A connection between a relatively rigid underwater riser and the deck of a ship is described. A tiltable tower on the ship accommodates ship motion while maintaining a tension in the riser. A buoyant body below the ship also applies tension to the riser. Articulated piping having rigid sections and swivel joints between the end of the riser and the lower base, accommodates heave of the ship relative to the riser and flexible piping between the tower base and the ship accommodates pitch and roll of the ship relative to the riser.

3,605,669
FLOATING SELF-ELEVATING PLATFORM

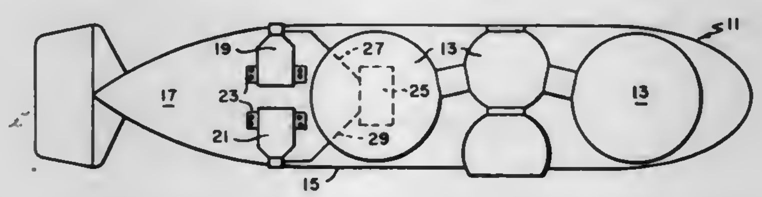
Tsi V. Yu, Oklahoma City, Okla., assignor to
Kerr-McGee Corporation
Substituted for abandoned application Ser. No. 678,878, Oct. 31, 1967. This application Dec. 1, 1969, Ser. No. 881,315
Int. Cl. B63b *35/00, 35/44*
U.S. Cl. 114—.5 9 Claims



A floating vessel for marine operations such as well drilling in deep offshore waters. Buoyancy and stability in the operating position are provided by a plurality of elongated columns located in a stabilizing pattern about the vessel, and a barge or ship supporting a working platform vertically movable relative to the columns is provided. The barge supporting the working platform provides additional buoyancy and stability during relocation of the vessel.

3,605,670
USE OF SOLIDS FOR BUOYANCY CONTROL IN DEEP SUBMERGENCE APPLICATIONS

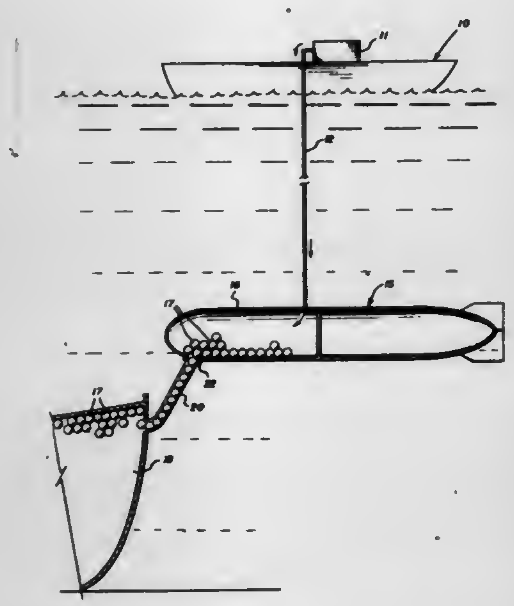
Richard J. Dzikowski, Bethesda, Md., assignor to the United States of America as represented by the Secretary of the Navy
Filed July 25, 1969, Ser. No. 844,766
Int. Cl. B63g *8/00;* B63b *21/52*
U.S. Cl. 114—16 8 Claims



A low energy buoyancy control system for a deep submersible vehicle employing a plurality of discrete buoyant bodies in a non-pressurized, ambient water-containing tank, with means for controllably releasing the buoyant bodies to decrease buoyancy of the vehicle.

3,605,671
APPARATUS FOR SALVAGING SUBMERGED VESSELS AND OTHER OBJECTS

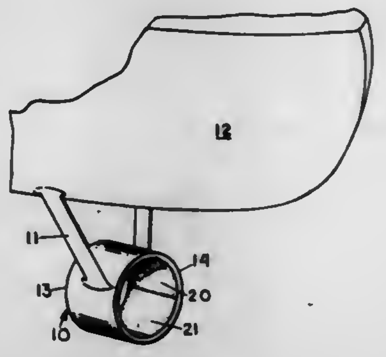
Jim D. Helbig, Brighton, Colo., assignor to Cyclo Manufacturing Company, Denver, Colo.
Filed Aug. 15, 1969, Ser. No. 850,469
Int. Cl. B63c *7/12*
U.S. Cl. 114—50 3 Claims



Apparatus for salvaging sunken vessels and other objects comprising pressurized buoyant elements conveyed to the submerged vessel or object through a conduit having an internal diameter less than twice the diameter of any of the buoyant elements. When employed in deep waters, the apparatus includes a submarine boat provided with means for pressurizing buoyant elements therein, and a conduit shorter than the distance between the surface of the water and the submerged vessel conveying the pressurized buoyant elements from the submarine boat to the submerged vessel.

3,605,672
DIRECTIONAL CONTROL APPARATUS

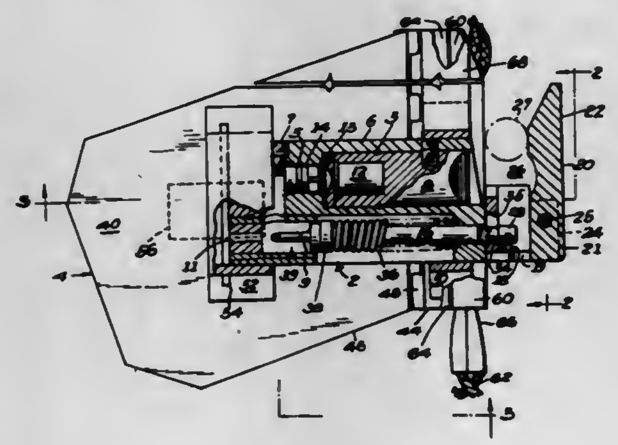
William P. Strumbos, 85 Middleville Road,
Northport, N.Y. 11768
Filed Dec. 2, 1968, Ser. No. 781,303
Int. Cl. B63h *5/14, 25/06*
U.S. Cl. 114—166 50 Claims



Directional control apparatus having a stationary open-centered steering or direction controller which uses the dynamics of a fluid flow over extensible portions of the controller wall rather than a bodily displacement of the controller itself to produce steering forces in a fluid medium. The controller comprises an open-ended structure having either an open or closed periphery and inflatable sector means associated with the controller walls to vary the configuration thereof. Means are provided to inflate the sectors in predetermined portions of the wall selectively to vary the configuration of the controller, thus changing the characteristics of the fluid flow thereover such that a force that can be used for directional control is produced. Inasmuch as this force can be produced in any quadrant of the open-centered controller, control of the vehicle can be effected in pitch and roll, as well as yaw. If an annular shaped controller is used, it can be employed as the duct for a ducted fan or ducted screw propulsion system. Because the controller uses the dynamics of a fluid flow to produce a force on it perpendicular to its direction of travel, it thus can also be utilized as an airfoil or hydrofoil.

3,605,673
EXPLOSIVELY OPERATED CABLE CUTTER

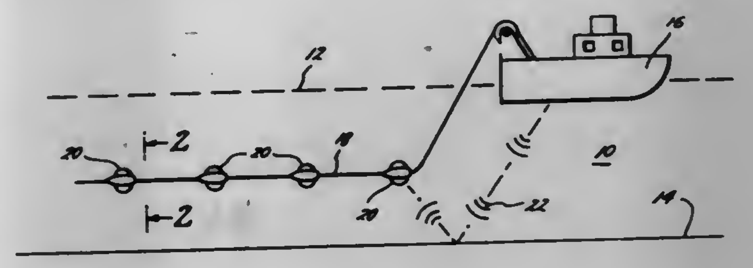
Robert Temple, Pittsburgh, Ernest E. Temple, Murrysville, and Joseph L. Giebel, Pittsburgh, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Sept. 30, 1968, Ser. No. 763,790
Int. Cl. B63g *7/04, 7/00, 13/00*
U.S. Cl. 114—221 17 Claims



An expendable cable cutter which is explosively fired to cut cable. A trigger mechanism is actuated by the cable and comprises a key-hole slot for retaining and releasing a hydraulic firing mechanism to propel the chisel to sever the cable. The cutter is mounted on a stabilizing fin by a releasable connection which releases the cutter from the fin in response to the recoil of the cutter frame when the cutter is fired. The fin comprises a hinged or sliding clamping device for receiving the sweep line and clamping the fin to the line.

3,605,674
UNDERWATER CABLE CONTROLLER

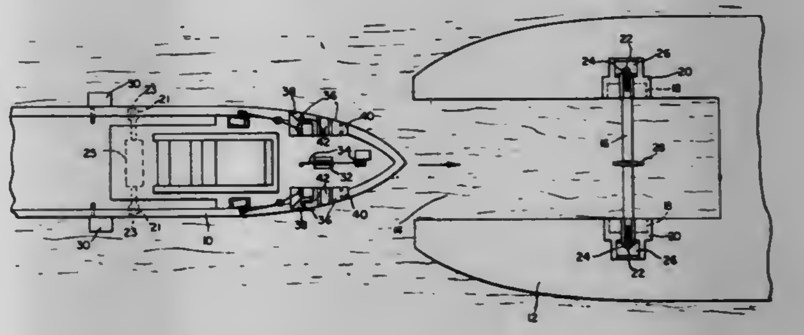
Raymond C. Weese, Houston, Tex., assignor to
Dresser Industries, Inc., Dallas, Tex.
Filed Sept. 8, 1969, Ser. No. 855,939
Int. Cl. B63b *21/00*
U.S. Cl. 114—235B 9 Claims



The present invention is directed to controllers for use in connection with cables that are towed beneath a body of water in order to maintain the cable in a desired position. The controller employs control planes or vanes vertically disposed on opposite sides of the controller for maintaining position in a horizontal plane, and vanes horizontally disposed on opposite sides to maintain position in a vertical plane. Standard reversible D.C. motors or D.C. torque motors are used to control the position of the vanes in response to signals transmitted from the towing or other vessel. A yoke arrangement allows simultaneous operation of each pair of vanes.

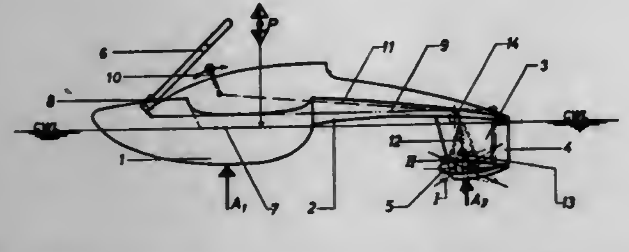
3,605,675
VERTICALLY ADJUSTABLE AND ARTICULATED COUPLING FOR PUSH TUG AND BARGE COMBINATIONS

Elliott I. Clemence, Jr., Devon, Pa., assignor to Interstate Oil Transport Company, Philadelphia, Pa.
Filed Jan. 13, 1970, Ser. No. 2,526
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 12 Claims



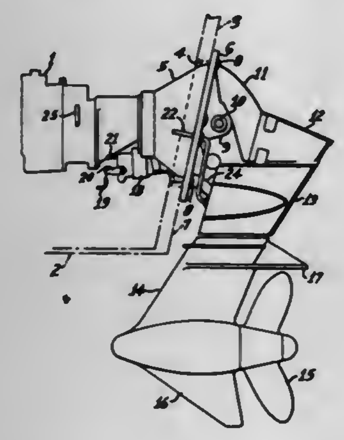
A push tug-barge coupling means for transmitting thrust from the tug to the barge while permitting independent pitching of the two units in a vertical plane about the coupling and restraining all other independent movement of the two units. Said coupling comprises an axle member mounted on the barge extending across a notch in the rear section thereof and mating with laterally spaced thrust bearing members mounted on the front section of a tug which fits into the notch. The axle is secured to vertically movable members in vertical channels on either side of the notch in the rear section of the barge so that the vertical position of the axle may be adjusted depending on the draft of both the tug and the barge in the water. Retractable rollers are mounted on the side of the tug aft of the tug's thrust bearing members thereby preventing uneven loading on the coupling members by keeping the centerlines of the tug and barge parallel.

3,605,676
MOTORLESS WATER-BORNE VEHICLES
Joachim Spangenberg, Andechsstrasse 6,
Gauting, Germany
Filed Jan. 23, 1969, Ser. No. 793,386
Claims priority, application Germany, Jan. 30, 1968,
P 15 56 494.0
Int. Cl. B63h *1/30, 19/02*
U.S. Cl. 115—21 14 Claims



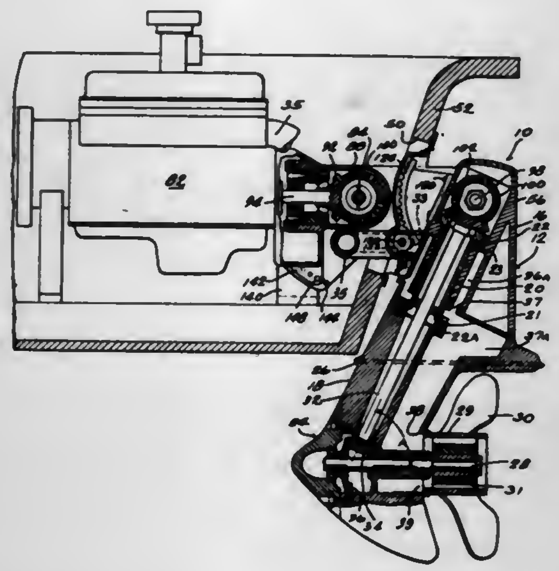
A water-borne amusement craft having a large front float, and a smaller rear float connected by a spar, the rear float carrying a horizontal fin which can flex about a horizontal axis as the craft is rocked to propel the craft by a fish-tail effect. The fin may be pivoted on an axis or may be flexible or the spar may be flexible and two separate spars and rear floats may be used.

3,605,677
BOAT DRIVE ARRANGEMENT
Karl Abdon Bergstedt, Goteborg, Sweden, assignor to
AB Volvo Penta, Goteborg, Sweden
Filed Jan. 6, 1970, Ser. No. 907
Int. Cl. B63h *1/14, 5/06*
U.S. Cl. 115—35 11 Claims



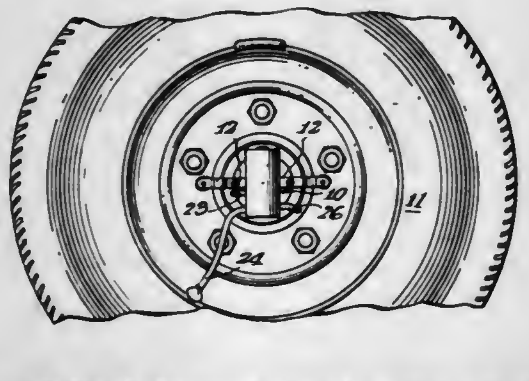
An inboard-outboard drive for a boat wherein the outboard leg is of a generally Z configuration, is mounted on a horizontal tilt axis rearwardly adjacent to the transom and includes a downwardly and forwardly inclined drive shaft coupled at its lower end to a generally horizontal propeller shaft. The connection between the drive shaft and the propeller shaft is through gearing having a ratio equal to substantially the cosine of the angle between the drive shaft and propeller shaft. The lower portion of the outboard housing is arranged to rotate for steering about the axis of the drive shaft. Hydraulic steering means are provided for rotating the lower housing, including a double acting hydraulic cylinder and piston means, the piston means being provided with ports and check valves which open automatically at each extreme of the steering movement to permit a flow of hydraulic fluid through the piston means to scavenge air from the system.

3,605,678
MARINE PROPULSION DEVICE WITH ACUTE ANGLE DRIVE
William J. Shimanckas, Waukegan, Ill., assignor to
Outboard Marine Corporation, Waukegan, Ill.
Filed July 24, 1969, Ser. No. 844,457
Int. Cl. B63h *5/12, 25/42*
U.S. Cl. 115—35 15 Claims



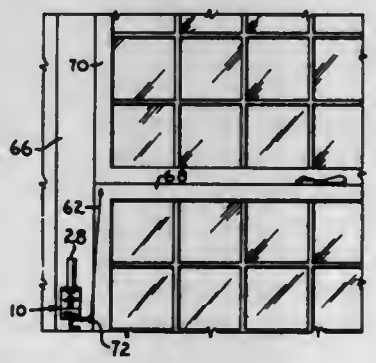
Disclosed herein is a marine propulsion device which includes a drive shaft housing having upper and lower housing sections. The upper drive shaft housing is rotatably supported aft of the boat transom by a pair of opposed laterally extending trunnions which are supported on the boat hull and which extend into coaxial apertures in the upper end of the drive shaft housing to provide a horizontal tilt axis. The drive shaft housing includes a drive shaft and a propeller shaft which form an acute angle measured on the aftward side of the drive shaft and the upper side of the axis of the propeller shaft. Means are provided for selectively tilting the drive shaft housing about the horizontal tilt axis relative to a normal operating position with the drive shaft extending downwardly and forwardly and with the propeller shaft being generally horizontal. Steering is afforded by rotating the lower housing section about the drive shaft axis. The interior of the lower housing section is in communication with the interior of the upper housing section to afford underwater discharge of exhaust through a passage in the propeller hub.

3,605,679
TIRE PRESSURE WARNING DEVICE
George W. Voland, 1035 Gomo Court,
Peoria, Ill. 61605
Filed Sept. 30, 1969, Ser. No. 862,432
Int. Cl. B60c *23/02*
U.S. Cl. 116—34 7 Claims



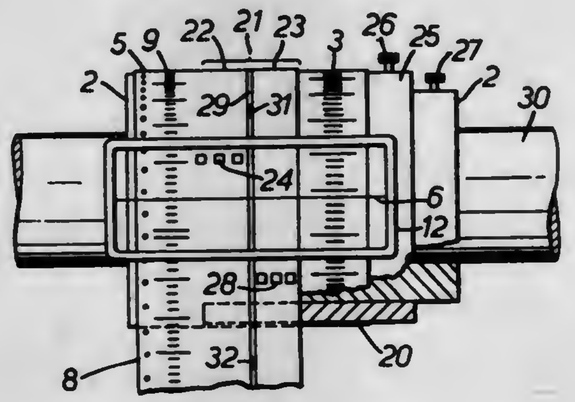
A tire pressure warning device which includes an enclosure having a movable wall dividing the interior thereof into first and second chambers. An actuator is operatively connected to the wall for movement in response to movement of the wall to actuate the warning device which, preferably, comprises a blank cartridge which is fired. Fluid pressure is admitted to the first chamber at a given pressure corresponding to the desired tire pressure so that the given pressure acts against one side of the movable wall. The second chamber is maintained in fluid communication with the interior of the tire so that the actual tire pressure acts on the other side of the movable wall whereby a change in the actual tire pressure moves the wall to thereby move the actuator to actuate the warning device. The pressure in the first chamber may be varied or preset to equalize the actual tire pressure in the second chamber when the tire is properly inflated to accommodate various sizes and types of tires having various operating pressures.

3,605,680
ANTIBURGLAR DEVICE
Frank E. Bortzfield, L-14 Lake Lotawana,
Lee's Summit, Mo. 64063
Filed Jan. 26, 1970, Ser. No. 5,762
Int. Cl. G08b *13/08*
U.S. Cl. 116—87 5 Claims



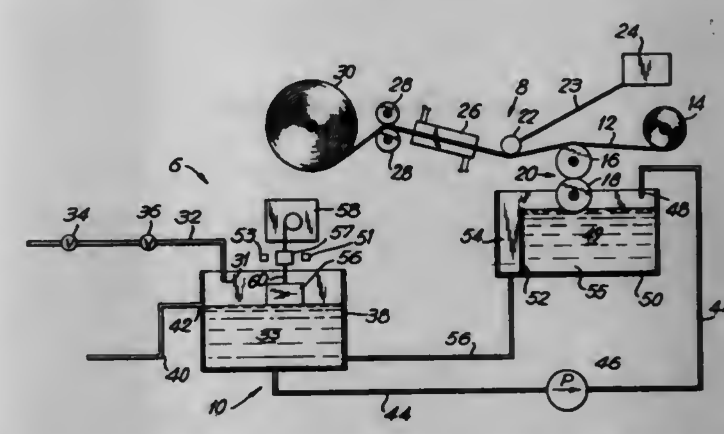
A mechanism for firing a gas cartridge comprising a frame adapted for fixed attachment in the premises to be protected, and a spring actuated firing mechanism. A trigger releasably holds the mechanism in its cocked position until released by either an increase or decrease in tension on a trip element disposed to be manipulated by movement of an intruder about the premises. An alternate embodiment includes a solenoid for releasing the trigger responsive to an intruder initiated change in a circuit supplying energy to the solenoid.

3,605,681
SCALE CONVERSION DEVICE
Beaumont John Davies, Putnoe, Bedford, England, assignor to George Richards & Company Limited, Broadheath, Altrincham, England
Filed May 29, 1969, Ser. No. 828,952
Claims priority, application Great Britain, May 29, 1968,
25,769/68
Int. Cl. B23q *17/00*
U.S. Cl. 116—115.5 12 Claims



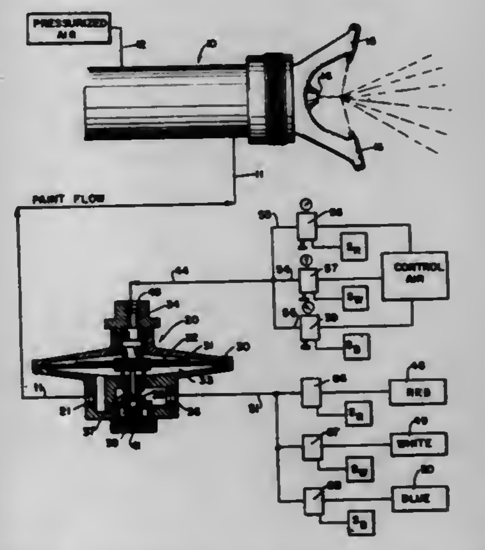
This invention is a device for fitting to machine tools enabling graduations in inches to be converted into graduations on the metric system by use of a belt which runs over the drum carrying the inch graduations as a pulley.

3,605,682
COATING COMPUTER
Raymond Groce, Mamaroneck, Arnold J. Eisenberg, East Setauket, Winton S. Loveland, Fort Salonga, and Saul Warshaw, New York, N.Y., assignors to The Loveshaw Corporation, Farmingdale, N.Y.
Filed June 23, 1969, Ser. No. 835,368
Int. Cl. B05c *11/10*
U.S. Cl. 118—7 12 Claims



A coating computer which may be used with apparatus for applying a coating material to a continuous moving substrate to determine the quantity of coating material applied to the substrate per unit area of the substrate. The computer utilizes an intermediate or buffering tank to meter coating material to the coating station and the change in coating material level in the metering tank is determined for a fixed area of substrate by digital read out means to correlate the quantity of coating material applied per unit area of substrate.

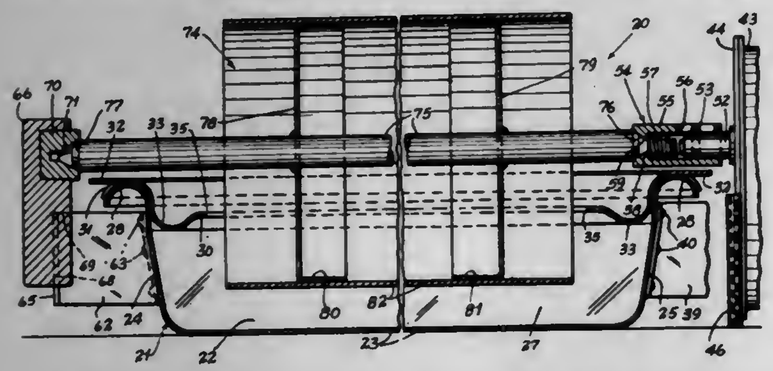
3,605,683
PAINT SPRAY SYSTEM
Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratford, Conn.
Filed Apr. 3, 1969, Ser. No. 813,083
Int. Cl. B05c *5/00, 11/00*
U.S. Cl. 118—8 4 Claims



The disclosure relates to a system for delivering a spray coating material, such as paint, to spray guns at any one of several fixed rates controlled by predetermined pressures, which predetermined pressures are selected for optimum coating performance of a specific spray coating material on a specific article. The spray rates of each of the guns at a spray station on a coating line processing a variety of articles with a variety of coatings is controlled by a paint regulator at the gun, which paint regulator is itself remotely controlled by a selected one of several preset pressure regulators associated therewith. The pressure of each of the remotely located, individual pressure regulators is fixed in advance for optimum performance of the gun with a specific type or color coating material and/or with a specific coating condition determined by the shapes and sizes of the articles.

3,605,684
MOTOR-DRIVEN BUTTER ROLL

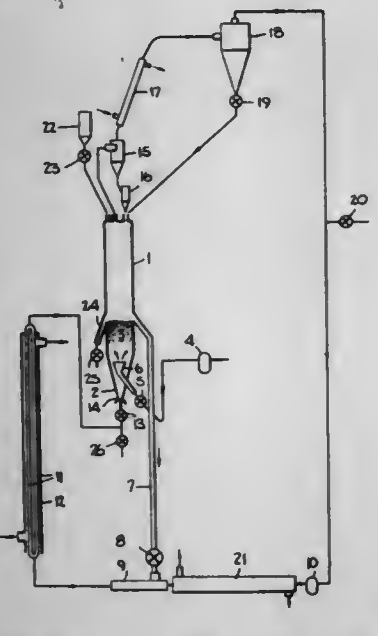
William L. McGinley, Dallas, Tex., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 18, 1969, Ser. No. 850,868
Int. Cl. B05c *1/02*
U.S. Cl. 118—13 **3 Claims**



A motor-driven butter roll comprising a pan for containing butter, a drum rotatable through the pan for keeping the roll coated with liquid butter, a motor for rotating the drum, a slip-clutch drive between the motor and the roll, the butter being kept in liquid state by the heat from the motor, the parts being removable for easy cleaning and being separable from the motor to keep the motor free of cleaning liquid.

3,605,685
APPARATUS FOR FLUIDIZING AND COATING A PARTICULATE MATERIAL

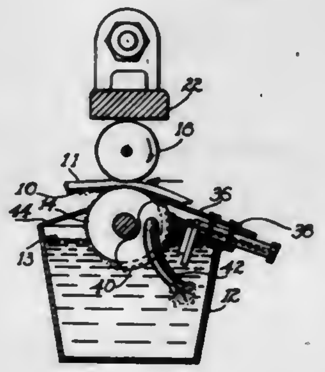
DeWitt Henry West, Alexander Bowen Simpson, and Ross Lowndes Simms, Swansea, Wales, assignors to The International Nickel Company, Inc., New York, N.Y.
Original application Aug. 18, 1966, Ser. No. 573,358. Divided and this application Nov. 5, 1969, Ser. No. 871,086
Claims priority, application Great Britain, Aug. 25, 1965, 36,534/65
Int. Cl. C23c *11/02*
U.S. Cl. 118—48 **6 Claims**



Particulate materials are coated with a metal by decomposing metal carbonyls in a fluidized bed of the particulate materials. A fluid bed reactor with at least one venturi inlet for introducing a fluidizing suspension and a metal carbonyl inlet placed away from the walls of the reactor is employed.

3,605,686
COATING MACHINE

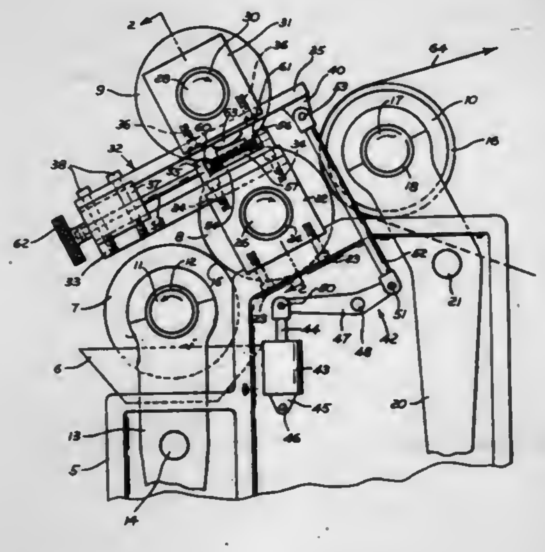
Alton R. Copithorne, Rowley, Mass., assignor to Boston Machine Works Company, Lynn, Mass.
Filed May 26, 1969, Ser. No. 827,572
Int. Cl. B05c *1/02*
U.S. Cl. 118—249 **9 Claims**



A machine is provided for applying an even coating of liquid to a workpiece fed through the machine. The machine is particularly suitable for applying liquid bonding cement to shoe soles and is comprised of a resilient roll drivingly mounted in a trough containing a quantity of the cement. An arcuate pressure plate of slightly larger curvature than the roll is mounted in close proximity to the roll surface and defines an arcuate wedge-shaped gap in which the liquid develops a pressure upon rotation of the roll to thereby control the thickness of the film on the roll and prevent distortion of the roll when a workpiece bears against the roll.

3,605,687
ADJUSTABLE ROLL MOUNTING APPARATUS

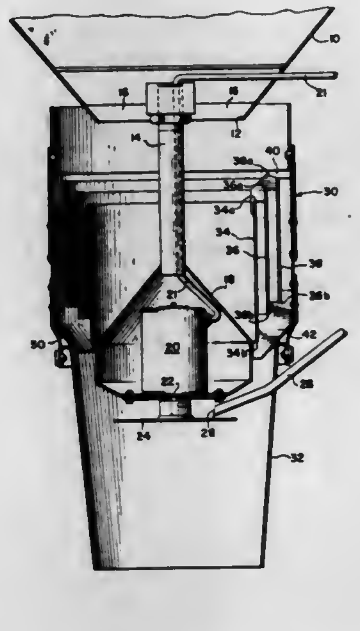
Alfred G. Russell, Martinsville, N.J., assignor to Egan Machinery Company, Somerville, N.J.
Filed Oct. 7, 1968, Ser. No. 765,525
Int. Cl. B05c *1/08*
U.S. Cl. 118—262 **6 Claims**



A coating machine having a frame and a pair of rolls that are rotatable about parallel axes and that are spaced apart to define a gap, one of the rolls being supported at its ends by the machine frame while the other roll is supported at each end by a corresponding beam unit arm that is directly or indirectly anchored at one end to the machine frame. An actuating mechanism is connected to the other end of each arm to effect predetermined bending thereof whereby to adjustably vary and set the size of the gap, as desired.

3,605,688
SEED TREATING MACHINE

Åke E. Hedén, Saltsjo-Boo, and Ulf Ö. Ulfvarson Lidingo, Sweden, assignors to AB Casco, Stockholm, Sweden
Filed Jan. 24, 1969, Ser. No. 793,674
Claims priority, application Sweden, Jan. 26, 1968, 1,042/68
Int. Cl. B05c *5/00*
U.S. Cl. 118—303 **5 Claims**

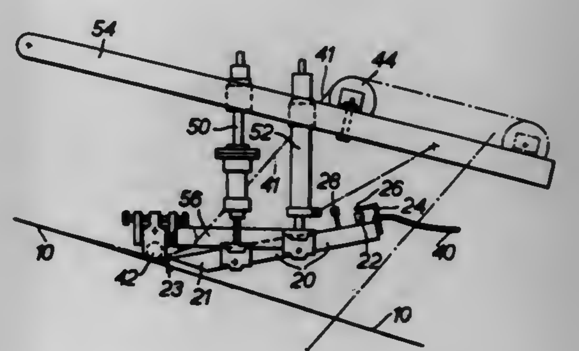


A feed hopper includes a bottom discharge opening which discharges seeds into a tubular body means. A seed distributing cone is disposed at a central part of the body means beneath the hopper discharge. A disc is rotatably supported beneath the cone and means is provided for feeding treating fluid onto such disc. Flow control means is disposed outwardly of the cone and includes a plurality of spaced generally cylindrical concentric tubular members, the upper edges of the outer cylindrical members being disposed vertically above the upper edges of the cylindrical members disposed inwardly thereof. These cylindrical members are spaced from the cone and from one another so as to provide uniform flow of seeds around said disc at varying rates of feed.

3,605,689
DEVICE FOR EVENLY DISTRIBUTING A FLOWABLE MASS

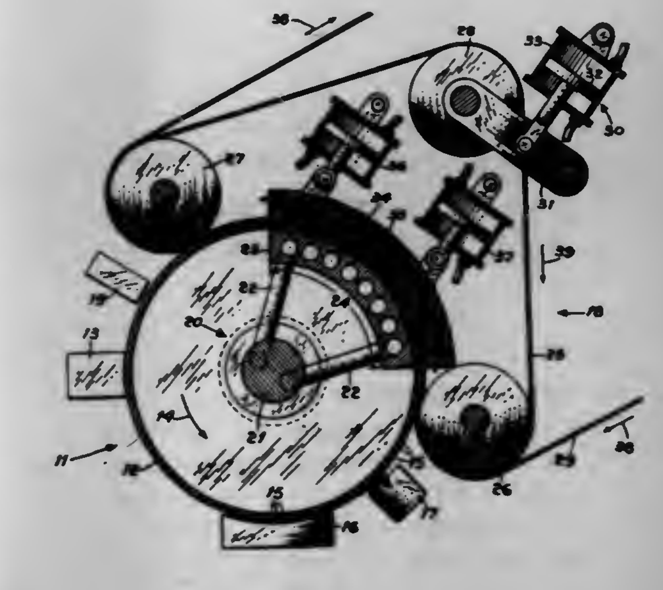
Robert E. Sherwood, Cincinnati, Ohio, assignor to W. R. Grace & Co., Cambridge, Mass.
Filed Aug. 12, 1969, Ser. No. 849,396
Claims priority, application Germany, Aug. 13, 1968, P 17 79 450.2
Int. Cl. B05c *3/00*
U.S. Cl. 118—407 **11 Claims**

A device for overcoming difficulties in the continuous distribution of a relatively quickly solidifying flowable mass over a relatively broad surface where a layer of uniform thickness is required and no air or gas bubbles should be produced in the mass. In prior art devices damming by a distributor causes a greater hydrostatic pressure at the centre with consequent thickening of the centre portion of the distributed layer. A large container with a discharge slit cannot be used where the mass solidifies too quickly to be wholly discharged before solidification. The device comprises a distributor plate having a surface inclined in the direction of flow, a feed line for discharging the flowable mass onto the inclined surface of the distribution plate, a predistributor narrower than the desired final extent of spreading located downstream of the feed line and spaced from the surface of the plate for initially spreading the flowable mass widthwise of the plate, and a main distributor arranged downstream of the predistributor and spaced from the surface of the plate for distributing to the full width the initially distributed mass, and means for varying the spacing of the distributors from the plate surface for controlling the thickness of the layer to be formed.



3,605,690
PRINTING APPARATUS FOR TRANSFERRING MAGNETIC PARTICLES TO A PAPER

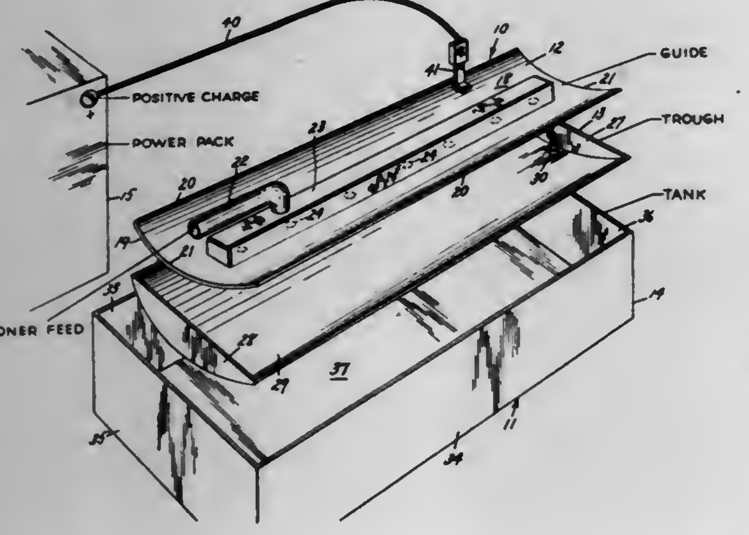
Karel J. Staller, Rutherford, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Mar. 18, 1970, Ser. No. 20,712
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **10 Claims**



A printing apparatus is provided to transfer attaching plastic magnetic particles to a paper, wherein the particles are squeezed between a magnetic drum and a paper using a stretched metallic belt. The metallic belt is heated and moved at the same speed as the paper such that the combination of pressure and heat decreases the melting point of the plastic particles and causes them to be transferred from the drum to the paper.

3,605,691
MEANS FOR CHARGING ELECTROSTATIC LIQUID TONER

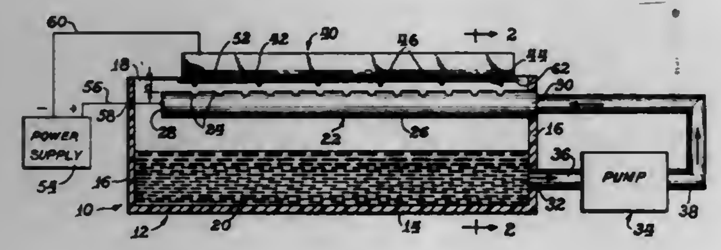
David L. Herman, Scarsdale, N.Y.
(801 E. 136th St., New York, N.Y. 10454)
Filed June 18, 1969, Ser. No. 834,274
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 2 Claims



Means for imparting a positive charge to liquid toner as the same is sprayed upon exposed sensitized paper, the toner having a charge opposite that of the unexposed areas on the paper to which the toner is to be attracted.

3,605,692
ELECTROSTATIC LIQUID DEVELOPING APPARATUS

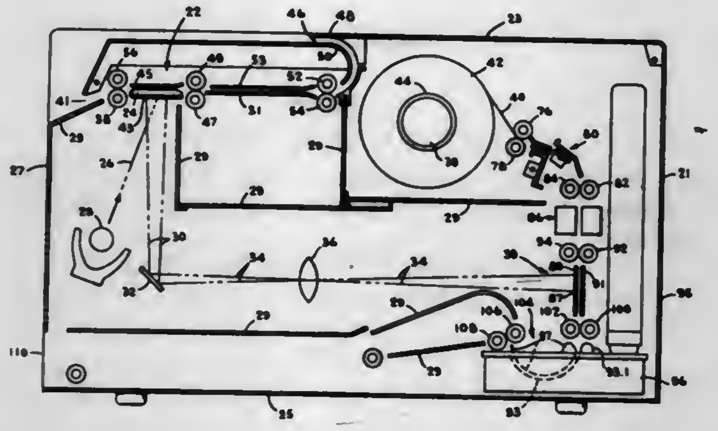
William R. Maloney, Deerfield, and Richard J. Pleitt, Chicago, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed July 2, 1969, Ser. No. 838,396
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 6 Claims



Liquid developing apparatus includes a reservoir of developer fluid connected by means of a pump to a feed tube adjacent which electrostatically imaged copy material is passed for development. Developer liquid is pumped from the reservoir to the tube whereat the liquid is expelled from apertures formed in the tube wall. A knife edge electrode is spaced from the feed tube opposite the apertures. The feed tube and knife edge electrode are connected to a voltage source to provide a biasing effect, causing toner particles to be attracted toward the knife edge electrode and to accumulate within the developer liquid near the copy material thereby to aid in the development thereof without wetting the copy material excessively.

3,605,693
DEVELOPMENT ELECTRODE

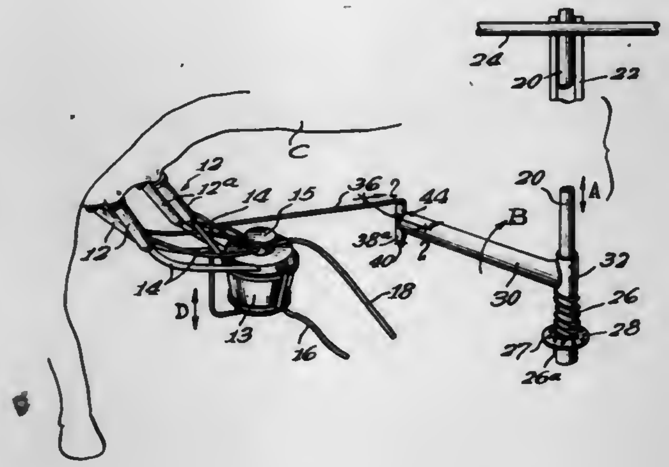
Gilbert Zweig, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Sept. 9, 1969, Ser. No. 856,441
Int. Cl. B05b *5/02;* G03g *13/10*
U.S. Cl. 118—637 8 Claims



A porous, electrically floating electrode, such as a metal screen, is employed in a liquid toner process for electrostatic image development.

3,605,694
MILKER SUPPORT WITH SLACK TAKE UP

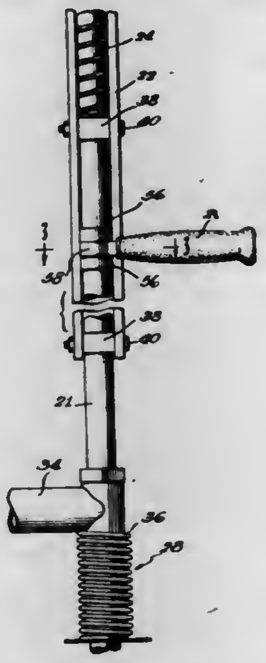
Chester A. Thomas, Lake Forest, and Robert J. Shulick, St. Charles, Ill., assignors to Babson Bros. Co.
Filed Aug. 20, 1969, Ser. No. 851,630
Int. Cl. A01j *7/00*
U.S. Cl. 119—14.1 5 Claims



A supporting mechanism for a milking apparatus which includes a vertically adjustable member having a generally horizontally disposed arm member mounted thereon, the arm having a free end operatively connected to and supporting a milk receiving receptacle beneath a cow. The arm is of a strength sufficient to support the receptacle when disconnected from the cow's teats. A loose connection means is provided between the arm and the adjustable member to permit limited vertical movement of the arm relative to the member between upper and lower limit positions with the receptacle hanging substantially by gravity from the cow's teats only when the arm is between those positions. Stops are provided to prevent movement of the arm above the upper limit position to prevent the teat cups of the milking apparatus from riding up the cow's teats and to prevent movement of the arm below the lower limit position to support the receptacle if the cups are disconnected from the cow's teats.

3,605,695
MILKER SUPPORT WITH CAM LOCK

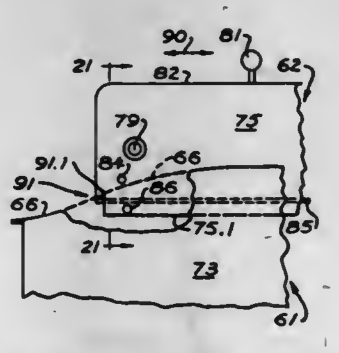
Chester A. Thomas, Lake Forest, and Robert J. Shulick, St. Charles, Ill., assignors to Babson Bros. Co.
Filed Aug. 20, 1969, Ser. No. 851,640
Int. Cl. A01j *7/00*
U.S. Cl. 119—14.1 6 Claims



A mechanism for adjustably supporting a milking apparatus, including a vertically disposed elongated member which is constrained for longitudinal movement in a vertical channel member and which carries the milking apparatus for vertical movement therewith beneath a cow. A lever is movable with the elongated member and has an eccentric cam portion which cooperates operatively with a cam means associated with the elongated member and the channel member to retain the elongated member in any one of a plurality of different elevational positions in response to movement of the lever.

3,605,696
AVIARY STRUCTURE

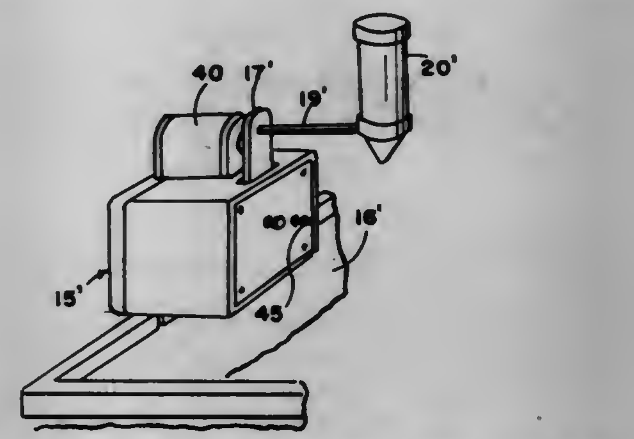
Benjamin R. Minness, 543 E. 10th Ave., Vancouver 10, British Columbia, Canada
Filed Nov. 24, 1969, Ser. No. 879,456
Int. Cl. A01k *31/06*
U.S. Cl. 119—17 10 Claims



A large aviary structure adapted to protect against a creature attempting to molest a bird, aviary walls having grills of thin flat strips assembled to bars with their flat edges parallel and closely spaced. Strips are at least about half an inch in width and spaced apart a maximum distance of seven sixteenths of an inch. This construction and spacing protects the birds against, for instance, paws and claws of a cat. An additional removable sub-cage is supported on top of the aviary, a bottom opening of the sub-cage in register with a top opening of the large aviary providing access to the sub-cage, the bottom opening being closable by a sliding plate forming, when closed, a base for the sub-cage. Difficulty in catching the birds in the large aviary is reduced as the disturbed birds generally fly upwards—into the sub-cage.

3,605,697
AUTOMATIC FEEDERS FOR AQUARIUMS

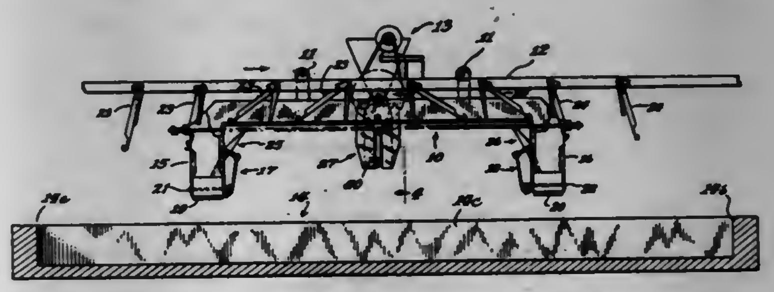
George Szekely, 3123 Bailey Ave., New York, N.Y. 10463
Filed July 24, 1969, Ser. No. 844,393
Int. Cl. A01k *5/00*
U.S. Cl. 119—51.11 6 Claims



A container of granular food is suspended over a fish tank, from that member of an alarm clock mechanism which vibrates to make a noise at alarm time; the duration of the alarm being a fraction of a minute. Either the clock operates in this manner, or an ordinary electric alarm clock, whose alarm duration is usually about forty minutes, is modified to reduce such interval to about ten to fifteen seconds. The discharge orifice at the bottom of the container may be changed to accommodate a food supply of different fineness. The container may be replaceable, refillable, or constitute a cartridge to be received in an adaptor. When the clock is of the electrically operated type, said vibrating member is the armature of a buzzer, upon the operation of which, the container is shaken.

3,605,698
SWEEP SHUTTLE FEEDER WITH AUTOMATIC LATERAL DIVERTER

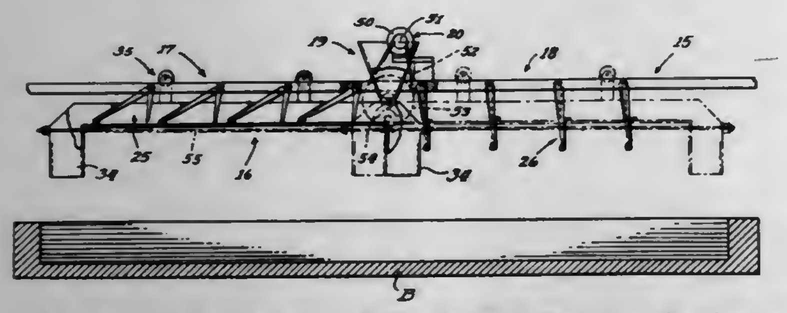
Michael M. Thyberg, Walworth, Wis., assignor to Starline, Inc.
Filed Mar. 4, 1970, Ser. No. 16,435
Int. Cl. A01k *5/00;* B65g *47/44*
U.S. Cl. 119—52 11 Claims



An animal feeding device, commonly known as a sweep shuttle feeder, has a trough with a discharge chute at each end which reciprocates longitudinally in a path of travel beneath a feed supply source and above a feed bunk, and sweep means causes feed received in the trough from the supply source to be discharged through one chute or the other and scattered along the feed bunk as the trough reciprocates. The feed bunk is provided with a longitudinal partition, and lateral diverter panels are pivotally mounted in the discharge chutes for movement between first and second inclined positions to direct feed toward one side or the other of the partition. Pivoted control arms and linkage means on the chutes move the diverter panels from one position to the other in response to the operation of actuating means which are remotely controllable by an operator.

3,605,699
SWEEP SHUTTLE FEEDER

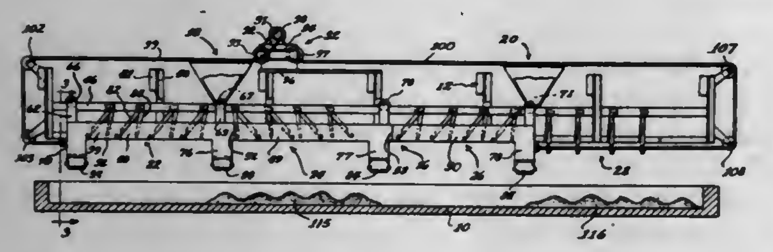
Robert G. Ferris, Harvard, and Allen K. Gillette, Belvidere, Ill., assignors to Starline, Inc.
Filed Mar. 4, 1970, Ser. No. 16,436
Int. Cl. A01k *5/00;* **B65g** *25/04*
U.S. Cl. 119—56R **10 Claims**



A sweep shuttle animal feeder of the type having a feed trough which reciprocates above a feed bunk that is about twice the length of the trough so that feed deposited in the reciprocating trough from a feed supply station above the mid point of the bunk may be dropped from the trough along the bunk by the action of two sets of sweep means that are pivoted above the path of travel of the trough with a set on each side of the feed supply station to selectively control relative movement between the deposited feed and the trough. The sweep means of the set through which the leading end of the trough is passing at any given time pass over the feed in the trough, while the sweep means of the set through which the trailing end of the trough is passing at any given time arrest the feed in the trough so that it drops off the trailing end. Each of the sweep means in each set includes a solid sweep panel pivotally mounted and engageable with the bottom of the trough for arresting the movement of free flowing granular material and also including sweep tines pivotally mounted about the same axis as the sweep panel for arresting the movement of dense material which the panel may not penetrate, both the sweep panels and the sweep tines being permitted free movement through a vertical plane when the trough is not under the sweep means to minimize material squeezing between the sweep panel and the sweep tines. There being further provided an interconnection between the sweep tines and the sweep panel to limit the maximum annular movement therebetween so that when the sweep panel rides in the trough on either the trough floor or feed thereon, the sweep tines are prevented from rotating through a vertical plane and are maintained in an operative sweeping position.

3,605,700
SWEEP SHUTTLE FEEDER

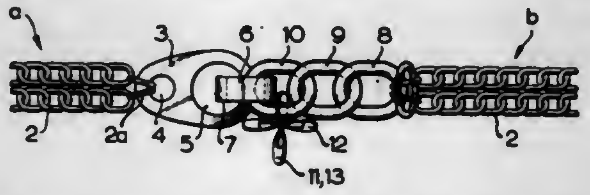
Allen K. Gillette, Belvidere, Ill., assignor to Starline Inc.
Filed May 11, 1970, Ser. No. 36,062
Int. Cl. A01k *39/00;* **B65g** *25/04*
U.S. Cl. 119—56R **7 Claims**



A sweep shuttle animal feeder having the capability of delivering more than two feed lots or rations to a longitudinally partitioned feed bunk including a feed trough having four discharge chutes which reciprocates above the feed bunk with at least two feed supply stations above the feed trough to deposit feed in the trough with the feed supply stations being spaced a distance approximately equal to the discharge chute spacing, there being provided a set of sweep means on each side of each of the feed supply stations. The sweep means of the sweep sets adjacent one side of each of the feed supply stations being constructed to discharge feed through two of the discharge chutes while the trough moves in one direction, and the sweep means associated with the other side of each of the supply stations being effective to discharge feed from the other two discharge chutes while the trough moves in the opposite direction. There is further provided a selectively positionable diverter panel in each of the feed discharge chutes on the trough to selectively direct feed to either side of the partition in the bunk, which gives the entire feeder the capability of depositing four separate feed lots in the feed bunk.

3,605,701
LINK CHAIN COLLAR FOR ANIMALS, ESPECIALLY DOGS

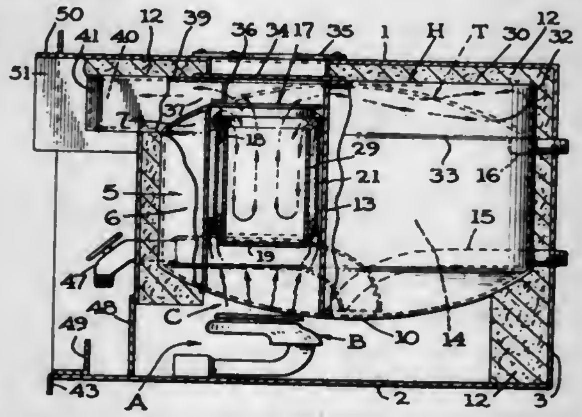
Herbert Alfred Sprenger, Iserlohn, Germany, assignor to Herm. Sprenger, Iserlohn, Germany
Filed May 5, 1969, Ser. No. 821,744
Claims priority, application Germany, May 11, 1968, S 64,933
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **4 Claims**



A link chain collar for animals, especially dogs, which comprises a first link chain having its end portions secured to a hook-shaped fastener and to a second link chain, respectively. Any desired link of the second link chain can be brought into and out of engagement with the hook-shaped fastener so as to adjust the length of the collar to the circumference of the neck of an animal.

3,605,702
HOT WATER HEATER

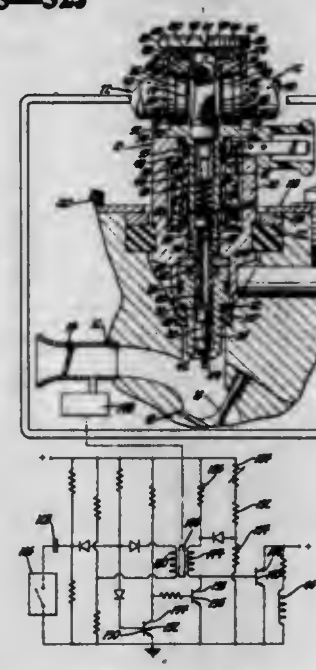
Harry E. Thompson, Steubenville, Ohio, assignor to Peerless Division, Dover Corporation, Louisville, Ky.
Filed July 1, 1969, Ser. No. 838,218
Int. Cl. F22b *7/00*
U.S. Cl. 122—234 **16 Claims**



A heating device having a vertical flue tube extending through a water tank. Baffle means are disposed within the flue tube and includes flue gas directing elements serving to both retain and radiate absorbed heat. A flue collector surrounding the tank top receives the gases from the tube and directs the gases over the tank top wall before discharge through a vent duct.

3,605,703
FUEL INJECTION

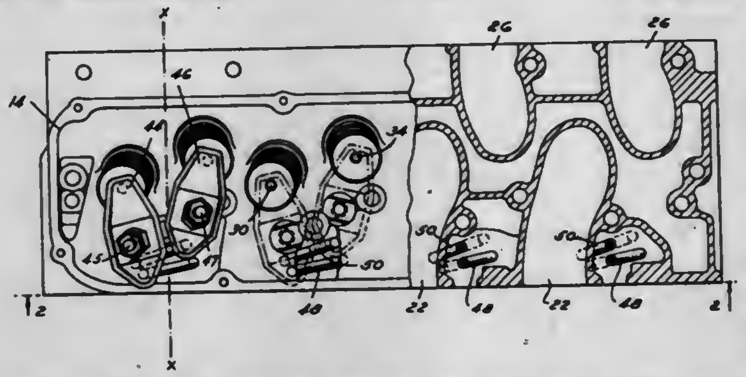
John W. Moulds, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed May 22, 1970, Ser. No. 39,627
Int. Cl. F02m *51/00*
U.S. Cl. 123—32J **1 Claim**



A solenoid operated fuel injector discharges into an internal combustion engine induction passage adjacent the combustion chamber intake port. Fuel is supplied to the injector through a tubular fuel rail which is received by and clamped in a recess at the top of the injector. A thermistor senses injector tip temperature and controls the duration of energization of the solenoid to compensate for a reduction in fuel delivery at high temperatures.

3,605,704
VALVE ACTUATION MECHANISM WITH CROSSED AXES PUSHRODS

Robert C. Gardner, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 30, 1970, Ser. No. 33,394
Int. Cl. F02b *75/22;* **F01l** *1/14, 1/18*
U.S. Cl. 123—55VE **5 Claims**

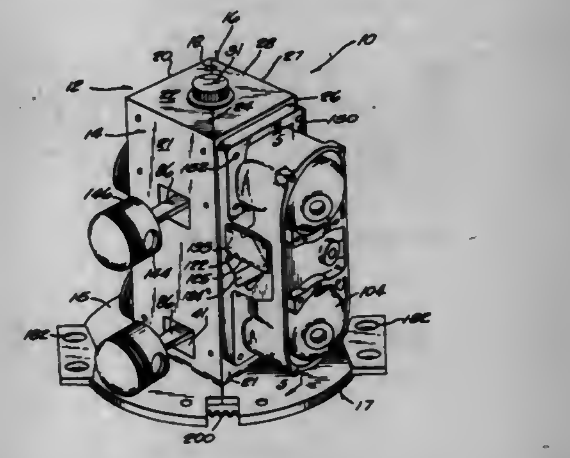


An internal combustion engine having pairs of intake and exhaust pushrods in which the axes of each pair of pushrods are crossed when the engine is viewed laterally and positioned both to one side of the corresponding intake passage. This permits the intake passages formed within the cylinder head to be more effectively directed and significantly increased in cross-sectional area and engine performance to be correspondingly improved.

3,605,705
OPPOSED PISTON MULTICYLINDER ENGINE

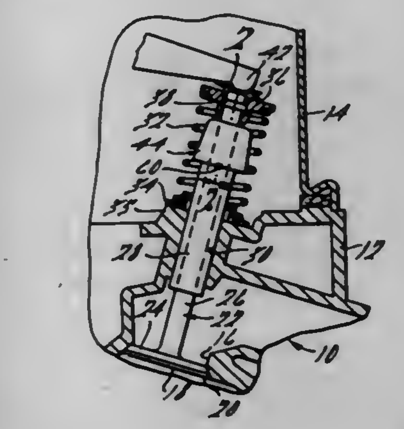
Kurt F. Ziegler, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed July 8, 1969, Ser. No. 839,832
Int. Cl. F02b *75/22, 75/24;* **F01b** *1/06*
U.S. Cl. 123—55A **15 Claims**

Disclosed herein is an engine construction for a family of lightweight and compact internal combustion engines which can have 4 or 8 or more cylinders. The engine crankcase is generally in a form of a square prism with two crankcase sections which are cast from the same mold, and which abut along a diagonal interface which extends through the axis of rotation of the crankshaft. Pairs of oppositely acting pistons are arranged around the four faces of the prism. The pistons reciprocate in cylinders which are secured to the crankcase faces.



3,605,706
VALVE STEM OIL DEFLECTOR

Jack A. Bush, Birmingham, Mich., assignor to Microdot Inc., New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,554
Int. Cl. F01l *3/06;* **F16j** *15/32, 9/04*
U.S. Cl. 123—90.37 **3 Claims**

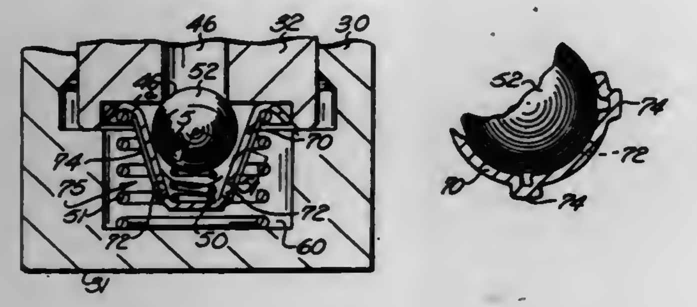


An oil deflector adapted to be mounted on the stem of a valve of an internal combustion engine comprises a generally cup-shaped molded thermoplastic member having a radially extending wall section and an integral axially extending ribbed skirt section; the wall section including an interiorly extending thickened neck section defining a tapered bore adapted to receive the valve stem therewithin.

3,605,707
HYDRAULIC VALVE LIFTER WITH PUMP-UP PREVENTION MEANS

Gerald D. Line, Saginaw, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Dec. 4, 1969, Ser. No. 882,224
Int. Cl. F01l *1/24*
U.S. Cl. 123—90.57 **1 Claim**

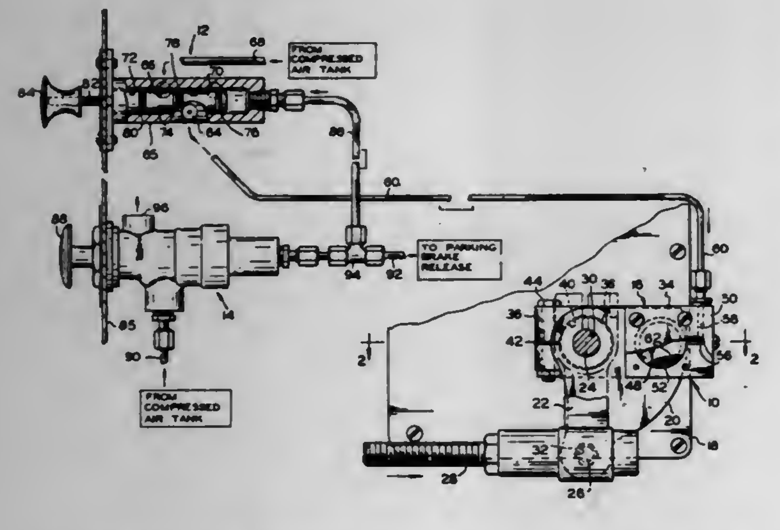
A hydraulic valve lifter includes body and plunger members which cooperate to define a pressure chamber. The hydraulic valve lifter includes means for preventing "pump-up" of the lifter under the influence of surging of an engine valve spring and for minimizing lash in the valve train at cold engine starting conditions. The means for preventing "pump-up" includes a check valve member, movable between a first limit position in which the valve member blocks a flow of fluid to the pressure chamber and a second limit position in which there is a restricted flow of fluid to the pressure chamber. This restricted flow of fluid prevents "pump-up" of the lifter during surging of the engine valve train and also prevents lash in the valve train during cold engine starting conditions.



3,605,708

THROTTLE LOCKING SYSTEM

Wilbert F. Jordan, 2148 SE. Salmon St.,
Portland, Oreg. 97214
Filed Oct. 29, 1969, Ser. No. 872,243
Int. Cl. F02d *11/02;* **F02b** *77/00;* **F16d** *55/00*
U.S. Cl. 123—98 9 Claims



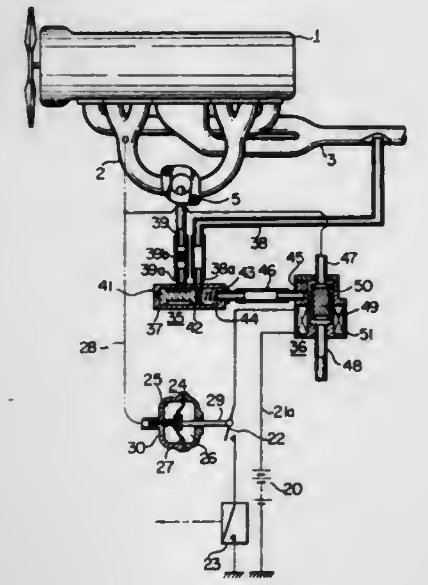
A throttle lock system has a metal plate connected to and moved by the throttle linkage of a truck engine in a direction parallel to the faces of the plate. Plungers positioned on opposite sides of the plate and mounted in stationary cylinders are moved toward the opposite faces of the plate by compressed air under control of a manually actuated valve to clamp the plate and lock the throttle in selected position. The system is used to set the speed of the engine of a freight truck to maintain air conditioning or heating equipment and the like in operation when the truck is parked. The system includes an automatic release for the throttle lock whenever the spring brakes employed on such trucks are released so that the throttle will not be locked when the truck is in motion.

3,605,709

VEHICULAR AIR-POLLUTION PREVENTIVE SYSTEM

Yasuo Nakajima, Yokosuka, and Yoshimasa Hayashi, Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Mar. 11, 1970, Ser. No. 18,662
Claims priority, application Japan, Mar. 19, 1969, 44/20,596
Int. Cl. F02m *25/06;* **F02d** *19/00*
U.S. Cl. 123—119A 5 Claims

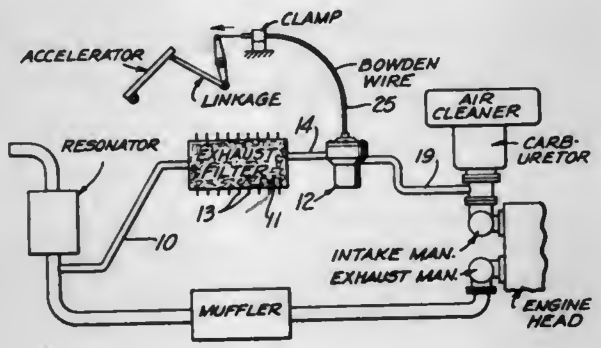
A vehicular air-pollution preventive system for use with an internal combustion engine, which system is adapted to reduce the quantity of nitrogen oxides produced during acceleration or hill-climbing in such quantities as to cause a serious air-pollution problem especially when the vehicle is driven in urban areas, having two switches closing when the vehicle is driven at a speed falling within a predetermined range and with the intake manifold vacuum lower than a predetermined level providing acceleration or hill-climbing and an exhaust recirculation control valve assembly which is adapted to pass the exhaust gases to the intake manifold when both of the two switches are closed concurrently.



3,605,710

APPARATUS AND METHOD FOR IMPROVING GASOLINE COMBUSTION IN INTERNAL COMBUSTION ENGINES

Carl W. Helwig, 906 Crestview Ave.,
Glendale, Calif. 91202
Filed June 1, 1970, Ser. No. 42,379
Int. Cl. F02m *25/06*
U.S. Cl. 123—119A 4 Claims

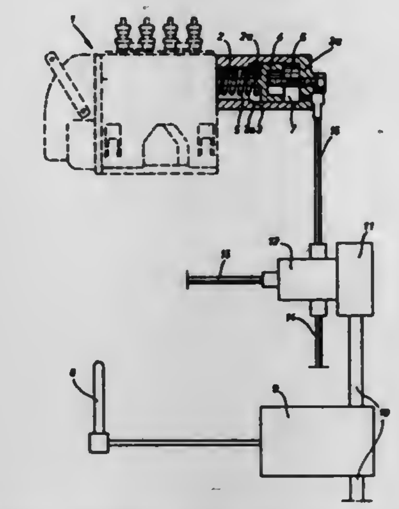


An apparatus and method for improving gasoline combustion in internal combustion engines. Lead is now added to gasoline to retard its combustion. The present invention eliminates lead and utilizes a deliberate feedback of exhaust fumes to the intake manifold to improve the combustion through slower burning of the gasoline. Exhaust fumes pass through an exhaust filter and cooler to a control valve assembly. Depression of the accelerator automatically controls the flow of exhaust fumes from the control valve assembly to the intake manifold, where such fumes are mixed with the gasoline.

3,605,711

DEVICE FOR LIMITING THE SUPPLY OF FUEL TO A DIESEL ENGINE AS A FUNCTION OF THE ENGINE EXHAUST TEMPERATURE

Oscar Fuso, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Sept. 9, 1969, Ser. No. 856,291
Claims priority, application Italy, Sept. 19, 1968, 53,200/68
Int. Cl. F02d *7/00*
U.S. Cl. 123—140MC 3 Claims

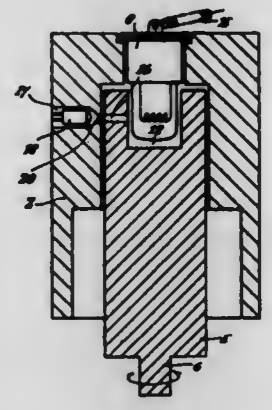


This invention provides a device which is effective automatically to limit the range of permitted movement of a fuel supply control element in response to a temperature sensed in the engine exhaust gases when said temperature exceeds a given threshold value. Overheating of the engine when working in rarefied air is thereby avoided.

3,605,712

IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Eric Harold Ford, London, England, assignor to Lumenition Limited, London, England
Filed Feb. 24, 1969, Ser. No. 801,721
Claims priority, application Great Britain, Feb. 29, 1968, 946/68; Oct. 22, 1968, 50,102/68; Nov. 19, 1968, 54,775/68
Int. Cl. F02p *3/02*
U.S. Cl. 123—146.5A 9 Claims

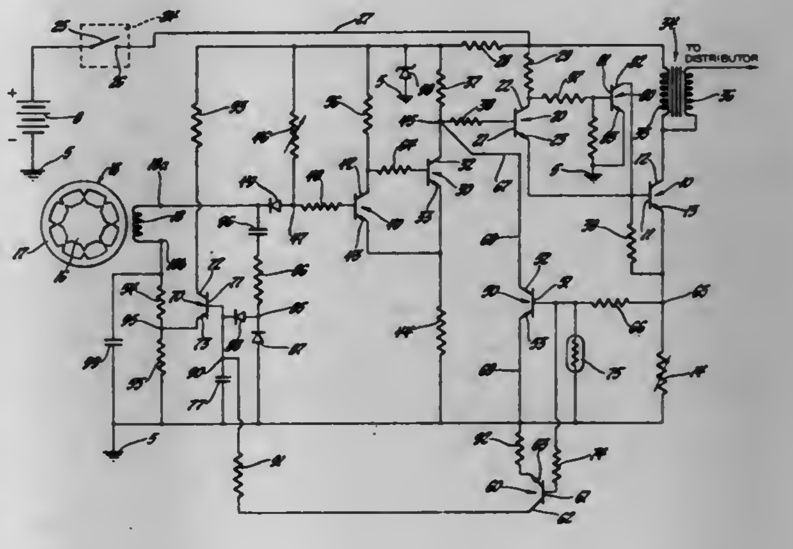


In an ignition system of an internal combustion engine the provision of a device for fast switching the primary circuit, this device including an infra-red radiation source and an infra-red radiation sensitive element, the radiation path being interrupted in timed relation to the engine revolutions whereby switching current is provided which is amplified for fast switching transistorized elements and applied to the primary winding of the ignition coil. Advance or retard of the ignition system can be achieved in relation to speed and/or load conditions on the engine by altering the line of sight between the radiation source and the radiation sensitive element in relation to a device which interrupts the radiation in timed relation to the engine revolutions.

3,605,713

INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Paul D. Le Masters and James E. Shearer, Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 18, 1970, Ser. No. 38,351
Int. Cl. F02p *3/02*
U.S. Cl. 123—148E 9 Claims



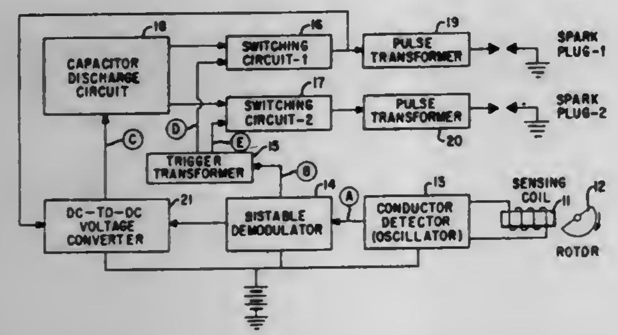
An internal combustion engine ignition system of the type responsive to alternating current ignition signals produced in time relationship with the engine. The ignition coil primary winding, the collector-emitter electrodes of an ignition coil primary winding switching transistor and a control resistor are connected in series across the battery and forward base-emitter current is supplied to the switching transistor through the collector-emitter electrodes of a coil primary winding switching transistor and a control normally conducting control transistor. A trigger circuit is responsive to each selected half cycle of the alternating current ignition signals to establish a shunt circuit which shunts base-emitter current from the control transistor to extinguish this device and, consequently, the switching transistor whereby the switching transistor is operated conductive and not conductive in timed relationship with the engine. Another transistor, responsive to the potential developed across the control resistor, shunts base-emitter current from the control transistor to limit ignition coil primary winding energizing current to a predetermined magnitude and another transistor, also responsive to the control potential, establishes the electrical angle of each cycle of the alternating current ignition signals at which the control transistor conducts to determine the length of time energizing current flows through the ignition coil primary winding.

3,605,714

CONTACTLESS IGNITION SYSTEM

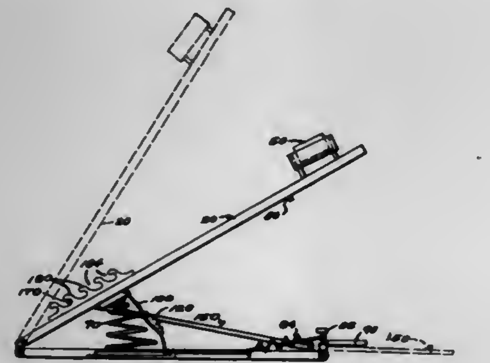
James T. Hardin, Lambertville, Mich., and William J. Roberts and Maximillian Kusz, Toledo, Ohio, assignors to Eltra Corporation, Toledo, Ohio
Filed June 11, 1969, Ser. No. 832,217
Int. Cl. F02p *3/02*
U.S. Cl. 123—148E 7 Claims

An ignition system for alternately firing two spark plugs in an internal combustion engine. A rotor is used to modulate the output signal of an oscillator, which in turn triggers a bistable demodulator to produce a square wave synchronized with the engine. The square wave is used to alternately fire two silicon controlled rectifiers for alternately discharging a storage capacitor through the primary windings of two ignition transformers, eliminating the need for a high voltage distributor. A charging circuit is triggered to recharge the capacitor each time it is discharged. The maximum rate at which the charging circuit can operate is limited, thereby acting as a governor to limit maximum engine speed.



3,605,715
SPRING-BASED TARGET THROWING MACHINE HAVING SAFETY LEVER

Dale K. Welbourn, Box 26, Neola, Iowa 51559
Filed Sept. 19, 1969, Ser. No. 859,429
Int. Cl. F41b *3/02*
U.S. Cl. 124—7 **5 Claims**

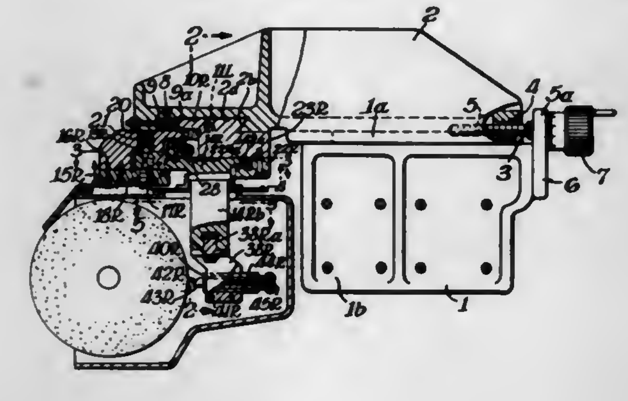


A target throwing machine of a catapult type having a throwing arm arresting means comprising a safety lever and a row of spaced detents arranged along the throwing arm and engageable by the safety lever as the throwing arm is depressed for preventing the throwing arm from springing up at an undesired time and perhaps causing serious injury.

3,605,716
DOUBLE CIRCULAR GRINDSTONE DRESSING APPARATUS

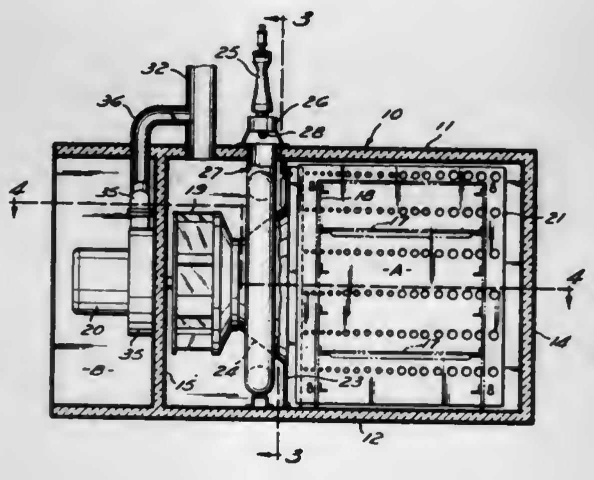
Makoto Kikuchi, Asahimachi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Aichi Prefecture, Japan
Filed Feb. 27, 1970, Ser. No. 15,026
Claims priority, application Japan, Feb. 27, 1969, 44/14,960
Int. Cl. B24b *53/04*
U.S. Cl. 125—11A **6 Claims**

Apparatus for dressing pair of closely spaced adjacent grindstones of type having circular peripheral faces with different centers comprises framework with cutting table slidably mounted thereon for movement normal to axis of rotation of grindstones. Two swinging members are pivotally connected relative to cutting table and each member has arm depending therefrom with dressing tool connected to free end of each arm. Swinging members swing in plane parallel to horizontal plane defined by axis of rotation of grindstones and tip of each tool. Driving mechanism synchronously swings swinging members. Dressing tool on each swinging arm is positioned so that axis of one dressing tool and axis of rotation of grindstones are at right angles to each other when one of tools is midway between two closely spaced adjacent grindstones.



3,605,717
CONVECTION OVEN

Paul H. Sauer, Burg-Dillkreis, Germany, assignor to Crown-X, Inc., Cleveland, Ohio
Filed Nov. 10, 1969, Ser. No. 875,370
Int. Cl. F24c *15/32*
U.S. Cl. 126—21A **12 Claims**

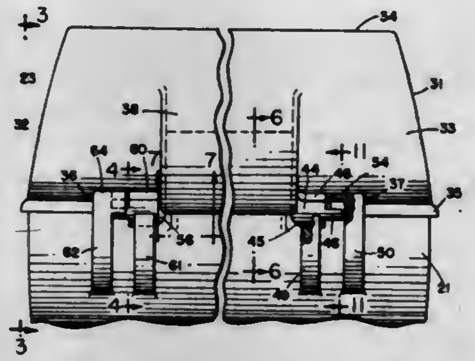


A gas-fired convection oven for processing food, for example, having a fan for moving air along a circulatory path over, along and about the food to be processed. A gun-type gas burner outside the oven is directed into a burner tube of substantial length extending into the oven. High-temperature exhaust gases are discharged from the burner to be directed into the circulatory path of air adjacent the exhaust side of the fan. The burner tube also provides substantial heat-exchange exposure to the circulating air.

3,605,718
VENT AND HINGE FOR GAS GRILL

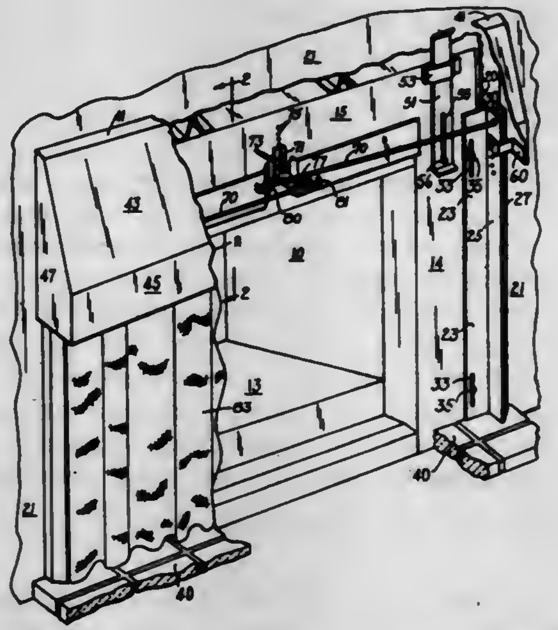
Mellie E. Winters, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed June 30, 1969, Ser. No. 837,612
Int. Cl. A47j *37/00;* **B65d** *43/16;* **E05d** *1/06*
U.S. Cl. 126—25 **12 Claims**

A gas grill is provided with a flue vent and hinge means which are integrally formed with the grill by casting. The vent curves outwardly from the rear of the grill cover, and a pair of hinge pins extend laterally from the vent. The hinge pins are rotatably supported by hinge brackets which extend outwardly from the rear of the grill casing, and each hinge pin includes a retainer bar portion which extends under an arcuate retainer wall on the grill casing. Each retainer wall is provided with a slot therethrough, and the retainer walls acting against the retainer bar portions maintain the hinge pins on the support brackets to prevent inadvertent separation of the cover from the grill casing. The grill cover can be removed when desired by aligning the retainer bar portions with the slots in the retainer wall and by lifting the cover to pass the retainer bars through the slots.



3,605,719
FIREPLACE HOOD AND TRIM STRUCTURE

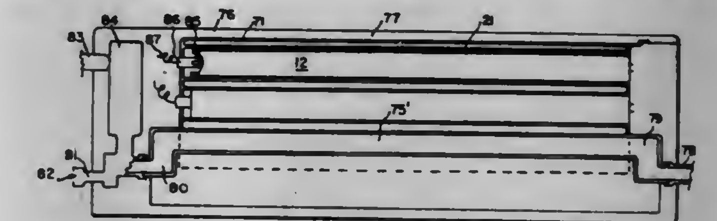
George M. Andrews, Syracuse, N.Y., assignor to Vega Industries, Inc., Syracuse, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,110
Int. Cl. F24c *15/06*
U.S. Cl. 126—139 **7 Claims**



The hood and trim structure is used in conjunction with prefabricated metal fireplaces installed in building walls. The trim structure includes a trim strip detachably mounted along the outer edge of each side column of the fireplace and overlaps the spaces between the sides of the fireplace and the sides of the wall opening. These strips are conveniently adjustable vertically to accommodate hearth extensions of different thicknesses. The hood overlies the header of the fireplace and the top of the hood is cammed tightly against the wall surface by locking bars which may be conveniently moved downwardly to unlocking position to permit outward movement of the hood for removal when a lintel, or a mantel, is erected directly above the hood. Means is provided for attaching the ends of the hood to the vertical trim strips regardless of the vertical position to which they have been adjusted.

3,605,720
HEAT SOURCE SYSTEMS

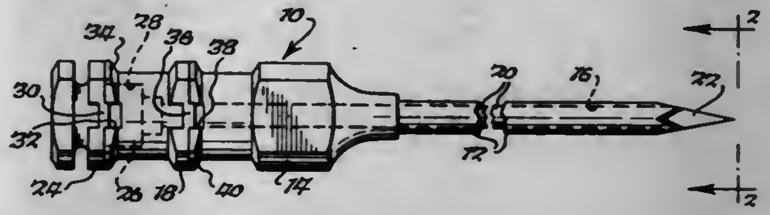
Kenneth E. Mayo, Nashau, N.H., assignor to Sanders Nuclear Corp., Nashua, N.H.
Filed Mar. 16, 1970, Ser. No. 19,879
Int. Cl. B63c *11/28;* **F24h** *7/02;* **F24j** *1/00*
U.S. Cl. 126—263 **24 Claims**



High thermal energy density rate controlled heat source systems particularly suitable for use in heated underwater diver suits and portable thermal conditioning jackets are provided. The heat source system has a mass of chemical reactants selected to provide a highly exothermic chemical reaction devoid of gaseous by-products. A high heat of fusion material surrounds the mass of reactants and acts as a heat storage unit for dissipating heat at a controlled rate which heat is obtained from the exothermic reaction. Preferably means are provided in operative relationship to the high heat of fusion material for transferring the heat from the material to a moving fluid such as a liquid which is heated at a controlled rate and passed into a body heating suit of an underwater diver. Preferably the last-mentioned means comprises a boiler and a steam injector which is useful for providing pumping action as well as regulating the temperature of the fluid so that batteries or electric power are not required to provide either heat or pumping (circulation power).

3,605,721
BIOPSY NEEDLE

Ismet Hallac, 94 Sudbury Lane, Williamsville, N.Y. 14221
Filed Nov. 3, 1969, Ser. No. 873,343
Int. Cl. A61b *5/10*
U.S. Cl. 128—2B **10 Claims**



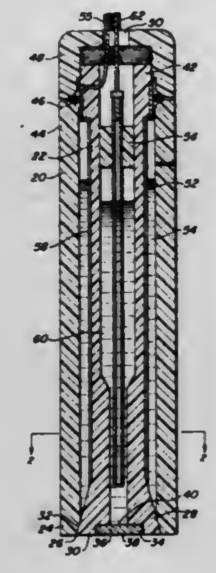
A composite disposable biopsy needle comprising an inner needle disposed within an outer needle and fixedly secured thereto. The distal ends of the needles are provided with coextensive sets of prongs terminating in tissue piercing apexes. The distal end of the inner needle is joined to the body portion thereof by a weakened wall portion adapted to collapse upon relative rotational movement between the inner and outer needles to sever and capture a biopsy specimen in the inner needle.

3,605,722
METHOD OF DIAGNOSING CYSTIC FIBROSIS

John H. Riseman, Cambridge, and Stanley Shiller, Needham, Mass., assignors to Orion Research Incorporated, Cambridge, Mass.
Continuation-in-part of application Ser. No. 621,895, Mar. 9, 1967. This application Nov. 18, 1969, Ser. No. 877,708
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1R **1 Claim**

A method for electrochemically diagnosing cystic fibrosis by wetting the cleansed skin of a patient with a solution containing chloride ions in a concentration of about forty (40) milliequivalents per liter and then determining the direction of drift of a signal developed by a chloride response electrode in contact with the patient's skin.

This technique is advantageously carried out with an electrochemical electrode structure having an elongated body with an axial chamber and an annular chamber, both separated from one another. Both chambers contain a reference electrode and a reference electrolyte. One end of the structure includes an inset, flat, membrane sensitive to specific ions of one polarity forming a wall for the axial chamber.

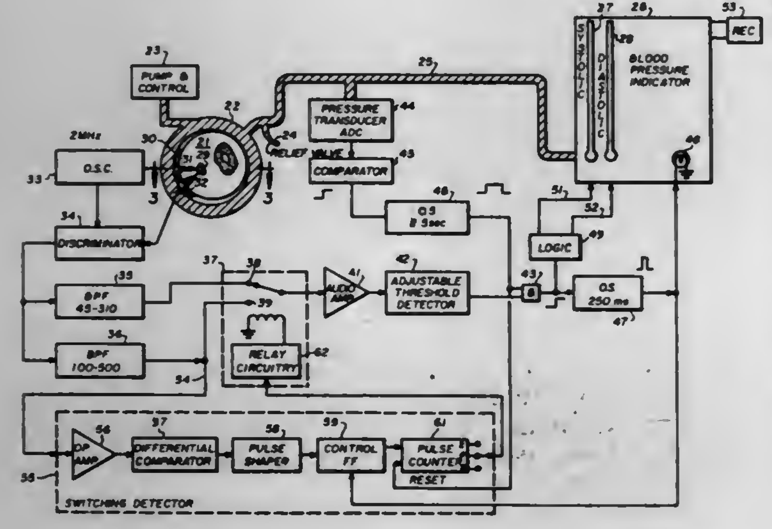


In one form of the electrode, an annular leak, communicating with the annular chamber, surrounds and is spaced from the membrane surface, that end of the structure therefore providing a substantially flat, ridgeless surface. In another form, a ring-shaped membrane, sensitive to ions of opposite polarity, surrounds and is spaced from the central membrane, and no leak is used.

3,605,723

BLOOD PRESSURE MONITOR

Eugene King, Yardley, Pa., and Harold Lee Massie, Trenton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Sept. 3, 1969, Ser. No. 854,847
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05M **15 Claims**

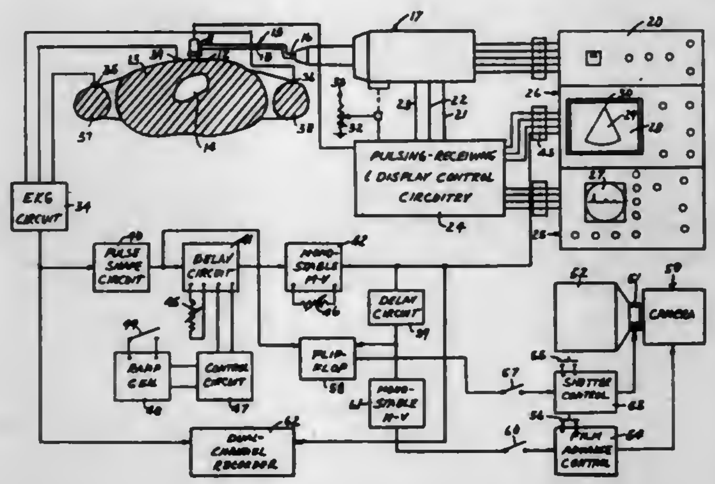


Apparatus for automatically implementing indirect arterial blood pressure measurement with a transmitter-receiver operation for deriving Doppler shifted information due to arterial wall movement under external pressure, by observing and selectively monitoring electrical Doppler signals representative of the information through a filter arrangement operating in a first and second band pass frequency range, where the second band pass frequency range is employed instead of the first on the basis of certain criterion observed in monitoring the arterial movement.

3,605,724

HEART MOTION IMAGING SYSTEM

John J. Flaherty, Elk Grove Village, Ill., assignor to Magnaflux Corporation, Chicago, Ill.
Filed Nov. 10, 1969, Ser. No. 875,312
Int. Cl. A61b *5/10, 5/02, 5/04*
U.S. Cl. 128—2R **15 Claims**

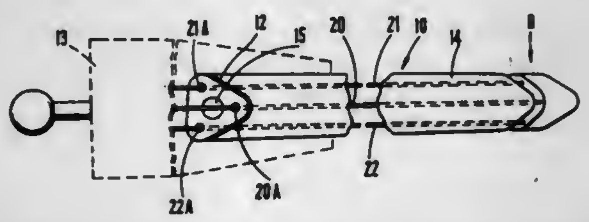


Heart motion imaging system in which a rapidly moving ultrasonic beam transversely scans a beating heart and in which a complete image corresponding to a cross-section of the beating heart is produced on an oscilloscope screen during a time interval which is a small fraction of the duration of the heart cycle and which corresponds to a specific portion of the heart cycle, the time and duration of the time interval being continuously variable. In one mode of operation, a single image is produced during a specific portion of one heart cycle, which may be recorded on film. In a second mode, multiple images are produced during the same specific portions of successive heart cycles to produce images which are integrated on the oscilloscope screen and/or on a single section or frame of film. In this mode, compound scanning may be used. In a third mode, multiple images are produced during progressively different portions of successive heart cycles to produce a slow motion showing of movement of the heart and valves thereof. Such multiple images may be recorded on successive frames of film to be projected at a desired speed for examination.

3,605,725

CONTROLLED MOTION DEVICES

Itzhak E. Bentov, Belmont, Mass., assignor to Medi-Tech Incorporated, Belmont, Mass.
Continuation-in-part of application Ser. No. 667,296, Sept. 12, 1967. This application Aug. 7, 1968, Ser. No. 756,714
Int. Cl. A61m *25/00*
U.S. Cl. 128—2.05R **8 Claims**

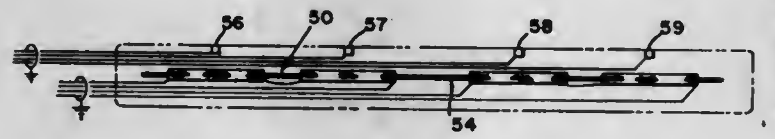


Controlled motion devices are provided, which may be in the form of a controlled catheter for use in the body, having an elongated flexible tube member with a rear end and a central axis. A forward section of the tube forms a catheter tip and control means extend through the member from the rear end to the tip to cause bending of the tip at selected angles with respect to the central axis upon suitable actuation. A control mechanism is designed for use in controlling movement of the catheter tip. Preferably the catheter has a non-cylindrical, varying diameter along its length and carries means for rapid connection with the control mechanism.

3,605,726

FLEXIBLE, EXTRA VASCULAR ELECTROMAGNETIC BLOOD FLOW PROBE

Bryn T. Williams, 164 Dorchester Road, Kenmore, N.Y. 14217, and Charles A. Barefoot, 3800 Cash Drive, Winston-Salem, N.C. 27107
Filed Apr. 14, 1969, Ser. No. 815,918
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05F **10 Claims**

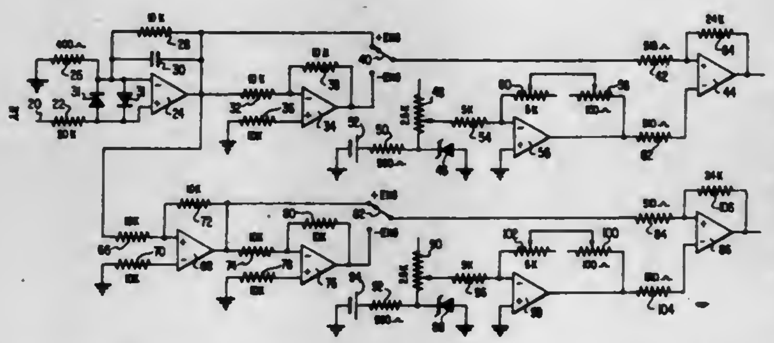


A flexible and non-surgically removable electromagnetic blood flow probe suitable for introduction into living creatures to measure relatively and quantitatively the velocity, volume or change of blood flow through selective blood vessels and organs. The probe is positioned at the time of surgery for use operatively and post-operatively, and because of its flexibility, size and shape, it can be removed from the living creature without further surgery. It is formed by enclosing a flux forming coil having cooperating electrodes for sensing a voltage generated by conductive blood with a flexible cover.

3,605,727

APPARATUS AND METHOD OF MONITORING AND EVALUATING ELECTROCARDIAC TRACES

George Zenevich, 246 Hillcrest Ave., Hubbard, Ohio 44425, and Leonard P. Caccamo, 45 Redfern Drive, Youngstown, Ohio 44505
Filed Sept. 4, 1968, Ser. No. 757,346
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06A **14 Claims**

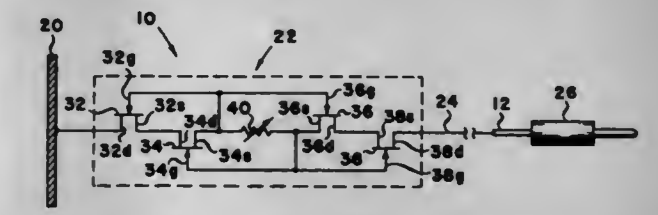


An apparatus for and a method of evaluating electrocardiac traces to determine heart conditions. The trace is applied to first and second comparison means which provide respectively first and second output indications when the trace exceeds first and second comparison levels. One comparison level is set, for example, to detect the R wave in each electrocardiac complex within the trace. The other comparison level is set to detect, by way of examples, each ectopic R wave of an abnormally high magnitude, or each P wave, each R wave, and each T wave, or after inversion each Q wave and each S wave. From counts of the numbers of detected waves, various ectopics heart conditions can be determined and evaluated.

3,605,728

CURRENT LIMITING SAFETY ELECTRODE LEAD

John S. Ogle, Sunnyvale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed June 19, 1969, Ser. No. 834,775
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06R **3 Claims**

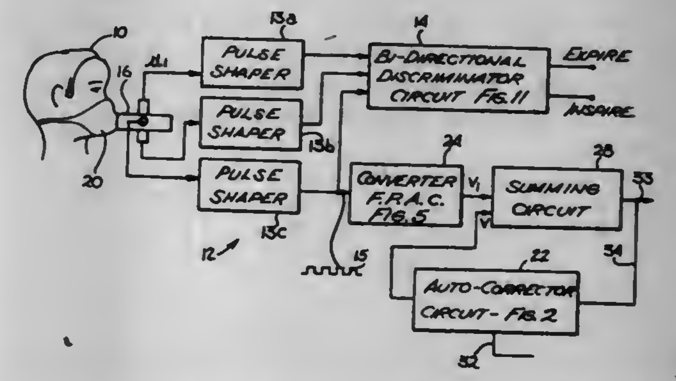


A safety lead system for the transmission of bioelectrical signals from a patient to biomedical electronic equipment and for patient grounding. Each lead has an integral unpowered semiconductor current limiting circuit at the electrode which provides linear low impedance transmission of the bioelectrical signal but limits current flow through the lead to a preset maximum level below that which is harmful to the patient, regardless of the polarity and intensity of accidentally applied currents and voltages.

3,605,729

FLUID FLOW METER SYSTEM

Frederick F. Liu, Northridge, Ted W. Berwin, Los Angeles, and Marvin Q. Lee, Granada Hills, Calif., assignors to Respiratory Bioelectronics Systems, Inc., Tarzana, Calif.
Filed Apr. 13, 1970, Ser. No. 27,667
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **18 Claims**


PULSE SHAPER
PULSE SHAPER
PULSE SHAPER
BI-DIRECTIONAL DISCRIMINATOR CIRCUIT FIG. 11
EXPIRE
INSPIRE
CONVERTER F.R.A.C. FIG. 5
SUMMING CIRCUIT
AUTO-CORRECTOR CIRCUIT-FIG. 2

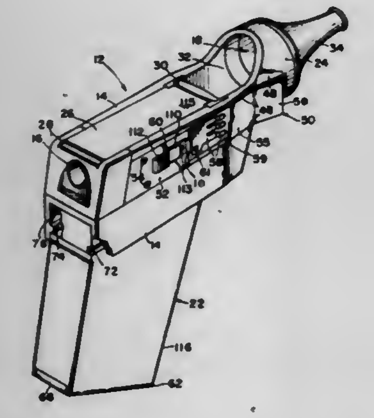
A turbine flow meter system is disclosed which responds to respiratory flow rate of a patient. The flow meter system includes apparatus for indicating the direction of flow in the flow meter to distinguish inspiration from expiration. An electronic correlation scheme performs on line electronic correction of dynamic errors created in the turbine associated flow meter system. The correction scheme makes adjustment to the output of the flow meter system so that accurate simulation of the dynamic characteristic corrects the output therefrom.

3,605,730

ILLUMINATING ENDOSCOPE WITH IMPROVED GRIPPING MEANS

John E. Hotchkiss, Corte Madera, Calif., assignor to Hotchkiss Instruments, Inc.
Continuation-in-part of application Ser. No. 675,811, Oct. 17, 1967. This application Aug. 27, 1968, Ser. No. 755,661
Int. Cl. A61b *1/22*
U.S. Cl. 128—9 **8 Claims**

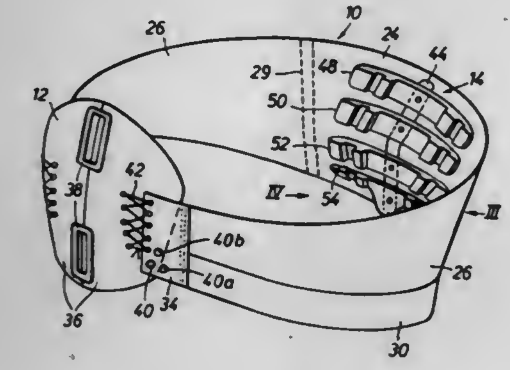
An endoscope for illuminating and viewing an area of an organ, having a housing with aligned viewing and sight apertures and a pair of oppositely disposed holding surfaces on the exterior of the housing adjacent the sight aperture enabling the holding of the housing with the thumb and a finger of a holding hand so that remaining fingers of that hand are positioned to manipulate and move the organ. The housing includes an interface for mechanically mounting an electrical power source to the housing which energizes a light source in the housing. A pressure-sensitive switch is disposed adjacent the sight aperture for actuation by a finger holding the housing. The



power source is located on the side of the holding thumb generally opposite the remaining fingers of the holding hand to prevent the power source from interfering with the use of the remaining fingers for manipulation of the organ. The power source is selected from conventional batteries, rechargeable batteries, and household current drawing transformers. Terminals electrically connecting the light source with the power source are constructed to simultaneously releasably secure the latter to the housing.

3,605,731
DEVICE FOR SUPPORT, CORRECTION AND TREATMENT OF THE HUMAN SPINAL COLUMN

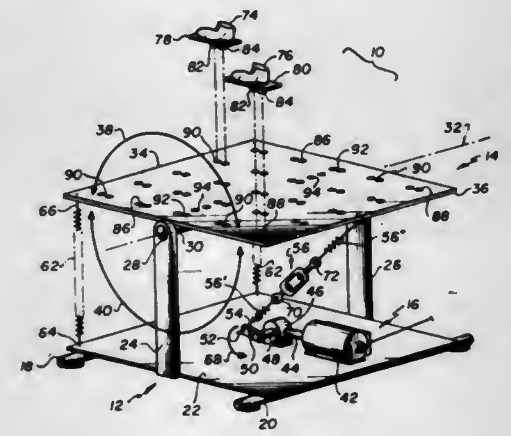
Wilhelm Tigges, Fischenich, near Cologne, Germany, assignor to Manfred Tigges, Fischenich, near Cologne, Germany
Filed Nov. 3, 1969, Ser. No. 870,541
Claims priority, application Germany, Nov. 2, 1968, P 18 06 685.8; Dec. 23, 1968, P 18 16 588.3
Int. Cl. A61h *1/00*
U.S. Cl. 128—24 **15 Claims**



As an abdominal and back supporting belt, an elastic band with ends respectively adjustably secured to disconnectable halves of a shield-like abdominal plate; and, on the inside of a central back region defined between two sewn-in, flexible vertical stiffening ribs, an array of elongated body contact support elements pivotally carried and extending transversely to a vertical spring strip centrally secured on the back region. The vertical spacing of the elements, corresponds to the inter-vertebral disc spacing, with some freedom to change spacing as well as pivoting with body movement. Each element has at opposite ends contact pads adapted to engage the musculature on either side of individual vertebra. Back spacing lace adjustment and pad shape varying means are disclosed.

3,605,732
EXERCISING DEVICE

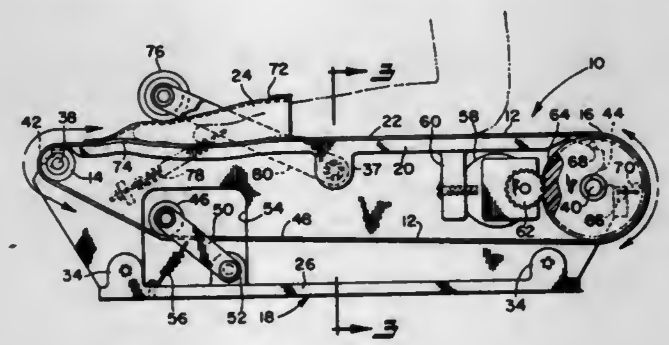
Joseph A. Rapoza, 148 De Kalb Ave., Jersey City, N.J. 07306
Filed Sept. 10, 1969, Ser. No. 856,569
Int. Cl. A61h *29/00*
U.S. Cl. 128—25B **9 Claims**



An exercising device which includes a base and a planar support surface pivotally supported above the base on an axis which permits the planar support surface to experience oscillatory motion when driven by an electric motive system positioned therebeneath. Foot retaining members are removably securable to the planar support surface at any one of a plurality of locations disposed thereon whereby with proper placement, preselected areas and muscles of a patient's feet and legs may be exercised. Preferably one or more of such locations straddles the oscillatory axis of the planar support surface whereby true dorsiflexion action of the human foot can be achieved. Additionally, one or more of such locations lie on the oscillatory axis of the planar support surface whereby with the aid of additional brackets, the foot may be subjected to an eversion-inversion action or the arm of the patient may be subjected to reciprocating rotative movement about the shoulder.

3,605,733
THERAPEUTIC DEVICE

Vincent F. Sukle, 26210 Columbus Road, Oakwood Village, Ohio 44146
Filed Oct. 10, 1969, Ser. No. 865,264
Int. Cl. A61h *1/02*
U.S. Cl. 128—26 **12 Claims**



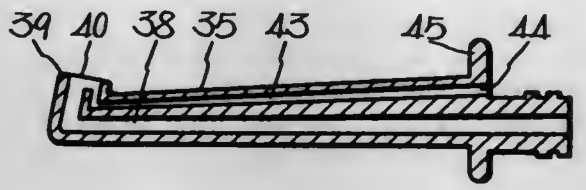
A therapeutic device for exercising the hand and arm. The device comprises a continuous belt extrained over a pair of spaced apart rolls, and a hand engaging glove is affixed to the belt. A firm supporting surface is provided beneath the belt upper run, and the belt is positioned

initially so that the glove is on the upper run and the patient's lower arm is supported by the surface. The belt is driven in a reciprocating manner causing the glove and patient's hand to curve around one of the rolls and return, this movement also exercising the elbow and shoulder of the patient.

The supporting surface may be provided with an undulating portion which is traversed by the glove, the device including means to press the glove into engagement with said portion to further exercise the hand.

3,605,734
MOUTH CLEANER

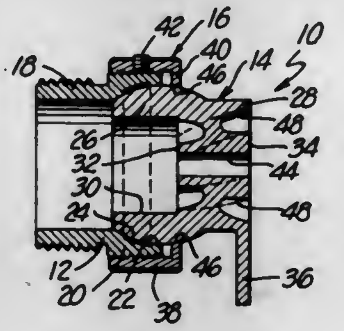
Teiji Igarashi and Kinji Ando, Tokyo, Japan, assignors to Cosmo Denshi Kabushikikaisha (Cosmo Electronics Corporation), Tokyo, Japan
Filed Dec. 24, 1968, Ser. No. 786,607
Claims priority, application Japan, Dec. 30, 1967, 42/110,872, 42/110,873
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **3 Claims**



A mouth cleaner comprising a mouthpiece or a tube to be inserted into the mouth and a conduit pipe for supplying the tube with liquid, the tube being equipped at one end nozzles for jetting the liquid inward into the mouth and with an air inlet for mixing air bubbles with the liquid.

3,605,735
NOZZLE, AND POOL INCORPORATING SAME

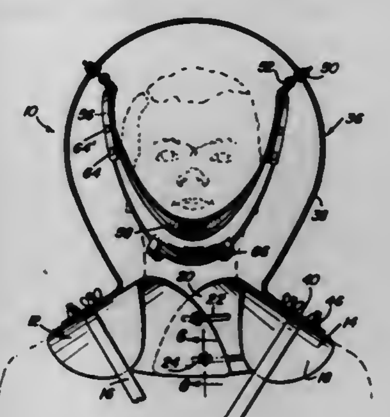
Jacob Clyde Soden, 3851 Chapman Place, Riverside, Calif. 92506
Filed Jan. 9, 1969, Ser. No. 790,126
Int. Cl. A61h *33/00*
U.S. Cl. 128—66 **6 Claims**



A nozzle for ejecting warm water into a water exerciser pool in a pattern of expanding, swirling turbulence for body massaging purposes, and an exerciser pool system incorporating the nozzle. The nozzle is of the swivel-ball type, having a movable ball member with several water passageways spaced equidistantly apart around its axis. The passageways diverge, and spiral at a common angle of twist, between their inner and outer ends, so that water is discharged from the nozzle in streams moving in conically diverging and twisting pathways to create a condition of widespread turbulence in the pool water.

3,605,736
CERVICAL TRACTION DEVICE

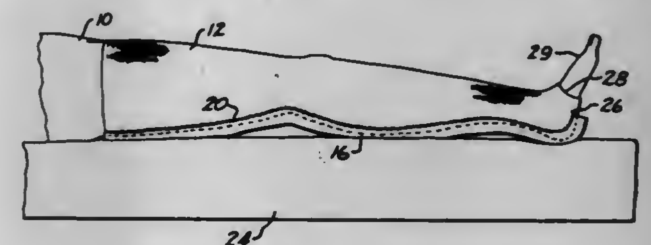
Sabatino S. D'Amico, 17 Lewis Lane, Port Washington, N.Y. 11050, and Benito Tino D'Amico, Via Venturini, Fano, Pesaro, Italy
Filed Feb. 18, 1969, Ser. No. 800,134
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **9 Claims**



A traction device supported on the shoulders of a person and surrounding the head for immobilizing and supporting the same in connection with cervical defects. Shoulder saddles mount a supporting arch from which chin and neck suspension loops are pivotally suspended. Adjustment of suspension loops and suspension point locations as well as the position of the arch on the shoulder saddles, accommodates variations in size and proportions of different persons.

3,605,737
APPARATUS FOR PREVENTING BLOOD CLOTS IN THE LEGS OF HOSPITAL PATIENTS AND THE LIKE

Bernard H. Berman, 685 N. Wade Ave. Ext., Washington, Pa. 15301
Filed May 28, 1969, Ser. No. 828,540
Int. Cl. A61f *13/06*
U.S. Cl. 128—132 **6 Claims**

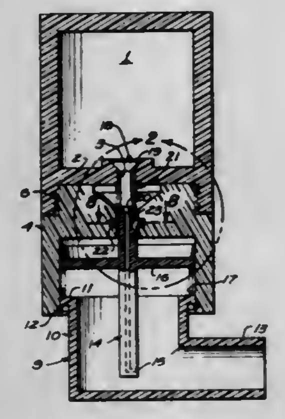


Described is a device, in the form of an elastic legging extending along the length of the leg for minimizing the possibility of forming clots in the legs of a bedridden patient. The legging is provided with elongated cushioning means, preferably a pair of spaced resilient cushions formed from foam rubber or inflatable balloon members which extend along the backside of the leg on either side of the center thereof whereby no pressure is exerted on the central posterior arteries or veins of the leg where blood clots are likely to occur.

3,605,738
MEDICINAL SPRAY DEVICE

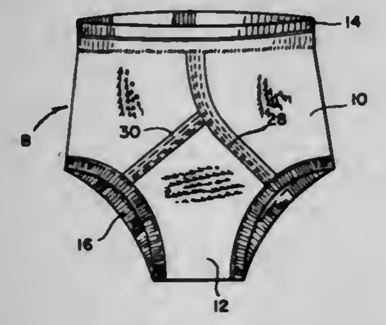
Paul J. Ciranna, 1556 N. Euclid Ave., Upland, Calif. 91780
Filed June 20, 1969, Ser. No. 835,131
Int. Cl. A61m *11/08*
U.S. Cl. 128—173 **2 Claims**

A device for producing from a pressure vessel a predetermined spray charge containing an inhalant medicine and a pressurizing aerosol, the vessel communicating with a metering chamber which, in turn, communicates with a nozzle tube located within an ejection tube intended to be placed in suction inducing relation with a patient's mouth or nose. A first valve controls flow into the metering chamber and a second valve attached thereto controls flow through the nozzle tube and the ejection or suction tube. The first valve is manually operated to cause a predetermined quantity of the medicine-aerosol fluid to fill the metering chamber. A piston of large area supports the nozzle tube and is operable, in response to suction applied by the patient to the discharge tube, to close the first valve and open the second valve and thereby cause delivery of the medicine-aerosol charge to the patient's mouth or nose simultaneously with inhalation. By means of a third valve, the metering chamber may also communicate momentarily with a chamber closed by the piston at its side opposite from the side exposed to suction pressure so as to supplement the force exerted by the patient.



3,605,739
BRIEF CONSTRUCTION

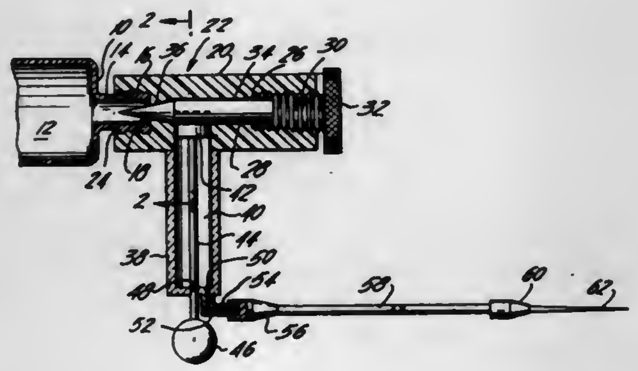
Ralph Lowery Beard and James Fred Hester, Winston-Salem, N.C., assignors to Hanes Corporation, Winston-Salem, N.C.
Filed Mar. 21, 1968, Ser. No. 714,876
Int. Cl. A61f *5/40;* **A41b** *9/02*
U.S. Cl. 128—159 **3 Claims**



A brief is formed with a crotch portion constructed of material which is stretchable in a longitudinal direction to provide a supporting pouch for the body of a male wearer. The body portion of the garment is formed directly from a tubular section of material with a separate crotch portion being sewn thereto. Elongate binding strips for the leg openings of the brief are folded along their lengths to produce inner and outer layers which are themselves folded to produce reinforcing layers. An elastic strip is disposed between the reinforcing layers of the inner layer and captured between a double stitching arrangement used to join the binding strip to the leg openings.

3,605,740
INTRAVENOUS INJECTION APPARATUS

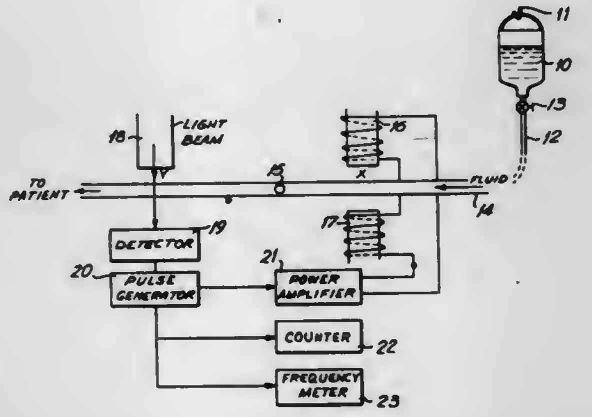
Howard Price, Whitestone, N.Y., and Dudley Wallick, Clifton, N.J., assignors to International Patents & Development Corporation
Filed Aug. 30, 1968, Ser. No. 756,521
Int. Cl. A61m *5/00;* **A61j** *1/00*
U.S. Cl. 128—214 **9 Claims**



An intravenous injection arrangement or apparatus in which the fluid to be injected is contained under pressure within a bottle. The fluid is forced from the bottle into an evacuated chamber, by way of a needle valve. The hypodermic needle for injecting purposes communicates with the evacuated chamber through a flexible tube. The chamber is evacuated in a manner which insures that no air remains within the fluids being injected.

3,605,741
INTRAVENOUS FLOW CONTROL SYSTEM

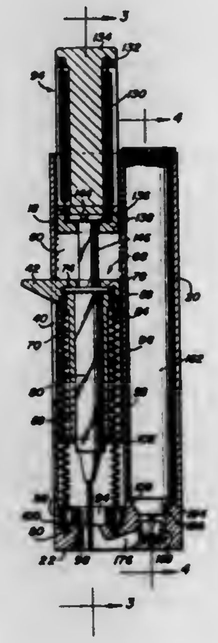
Jordan L. Spencer, 560 Riverside Drive, New York, N.Y. 10027
Filed June 9, 1969, Ser. No. 831,351
Int. Cl. A61m *5/00*
U.S. Cl. 128—214 **13 Claims**



The present invention deals with an improved method and apparatus for measuring flow in an intravenous feeding system or other fluid flow system characterized by its low flow rate. The invention utilizes the transit time or oscillatory frequency of a ball or float which moves along the direction of fluid flow and is returned to its original position by actuating a magnetic return system as it breaks a light beam or other sensing system. The cycle is repeated, with the transit time or oscillatory frequency being related to rate of fluid flow, and thus serving to indicate same for control purposes. The flow tube-ball measuring unit preferably takes the form of a disposable and preferably sterile insert into an intravenous feeding system.

3,605,742
PAINLESS INJECTION DEVICE

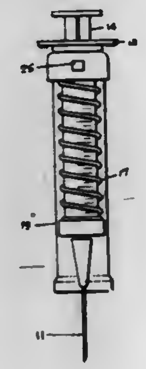
Robert C. Tibbs, Cleveland, Miss., assignor of fractional part interest to Eugene E. Tibbs, Cleveland, Miss.
Filed Feb. 3, 1970, Ser. No. 8,366
Int. Cl. A61m *5/20*
U.S. Cl. 128—218F **14 Claims**



An injecting device for a hypodermic syringe rapidly projects the syringe needle through a surface engaging end of a housing adapted to fit within the hand. An injector bar actuates the syringe plunger after the needle has penetrated the skin and tissues. Prior desensitizing of the skin by discharge of coolant from a pressurized container in the housing, may be utilized to reduce pain and irritation. The needle projecting mechanism may also be conditioned to produce aspiration for detecting whether the needle has penetrated a blood vessel, before medication is injected by the plunger.

3,605,743
HYPODERMIC SYRINGE

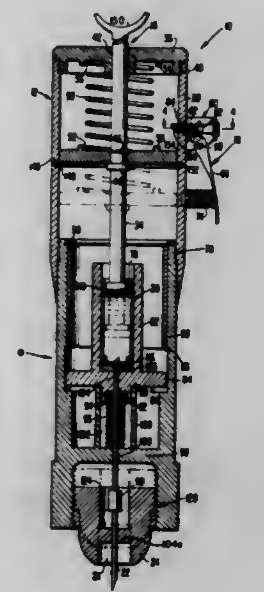
Raul Olvera Arce, Cordobanes 25, Mexico City 19, D.F. Mexico
Filed Oct. 14, 1968, Ser. No. 767,271
Int. Cl. A61m *5/00*
U.S. Cl. 128—218F **4 Claims**



A spring loaded hypodermic syringe mounted within a cylinder and instantaneously releasable by manipulation of a release member for entrance of the hypodermic needle portion to a predetermined depth by use of an adjustable preset needle means preparatory to normal manipulation of the syringe.

3,605,744
INJECTION APPARATUS AND METHOD OF INJECTING

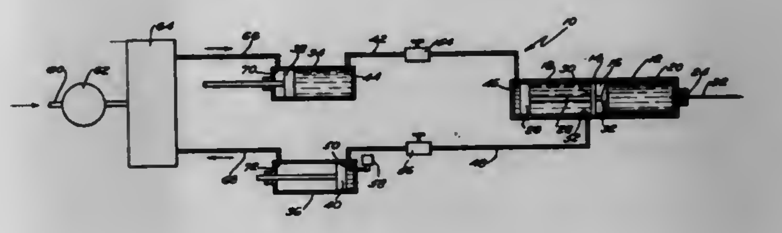
Edward M. Dwyer, 53 Church St., Plymouth, Pa. 18651
Filed Apr. 22, 1969, Ser. No. 818,237
Int. Cl. A61m *5/20*
U.S. Cl. 128—218F **15 Claims**



An injection apparatus useable for both pre-injection and completing the injection of an anesthetic, and a method of pre-injecting and completing the injection. Pre-injection is accomplished at a high pressure and thereafter the injection is completed at a lower pressure under manual control. Both injection stages utilize a needle. The apparatus also includes a spring loaded plunger movable to inject anesthetic through the needle at a high pressure and further movable for manual injection of anesthetic through the needle at the lower pressure. The needle is adjustable relative to the injector housing for deeper tissue penetration during the low pressure injection.

3,605,745
DENTAL INJECTION APPARATUS

Milton Hodosh, 72 Overhill Road, Providence, R.I. 02906
Filed Dec. 15, 1969, Ser. No. 884,962
Int. Cl. A61m *5/20*
U.S. Cl. 128—218A **5 Claims**

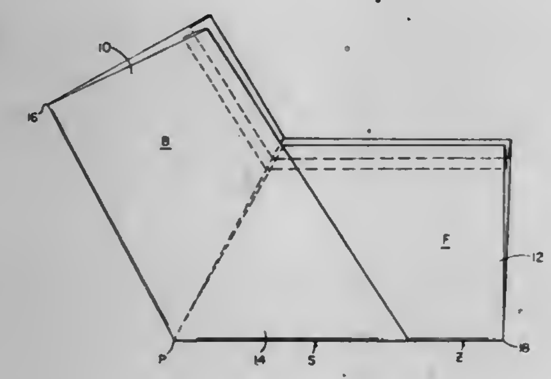


Apparatus for slowly and uniformly injecting liquid anesthesia and the like comprising a syringe having a compressible cartridge therein containing the anesthesia, and piston and cylinder means for effecting compression of the cartridge to cause the desired dispensing of the anesthesia, said apparatus comprising a supply of a viscous fluid, such as hydraulic oil, which is forced into said cylinder through a port located on one side of the piston and is forced out of the cylinder through a port located on the opposite side of the piston, whereupon movement of the piston is cushioned by the viscous fluid.

3,605,746

DIAPERING OF INFANTS

Charles H. Schaar, Lake Zurich, Ill., assignor to
The Kendall Company, Boston, Mass.
Filed Dec. 10, 1969, Ser. No. 883,749
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **5 Claims**

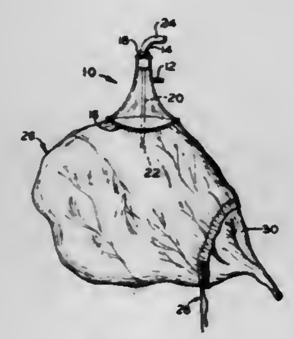


A diaper comprising a base piece, which is constructed by cutting a notch in a rectangular piece of diaper material and then sealing one edge of the notch to the other to form a seam, and a flap piece secured to the base piece in the region of the seam; wherein, when the diaper is folded along its sole line of symmetry, the fold comprises two line segments which intersect in an obtuse angle.

3,605,747

SURGICAL DRAIN

Fredric J. Pashkow, 3423B Maize Road,
Columbus, Ohio 43224
Filed Dec. 19, 1969, Ser. No. 886,652
Int. Cl. A61b *17/00;* **A61m** *1/00*
U.S. Cl. 128—303 **9 Claims**

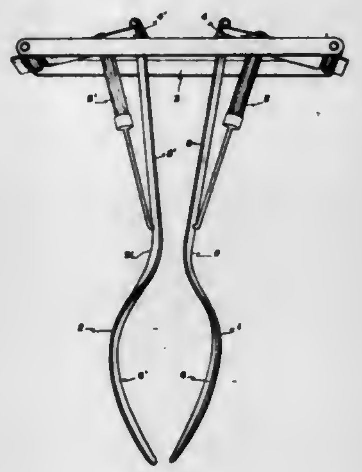


A surgical drain to collect the spilling of the contents of peritoneal masses during surgical excision by providing drainage means for gas and fluid and simultaneously encapsulating the excised tissue being removed thereof.

3,605,748

OBSTETRICAL FORCEPS

Hector Salinas-Benavides, Ensenada, 231, Colonia Mitras,
Monterrey, Nuevo Leon, Mexico
Filed Nov. 21, 1969, Ser. No. 878,741
Claims priority, application Mexico, Apr. 29, 1969,
110,777/69
Int. Cl. A61b *17/44;* **B25b** *7/04;* **B66c** *1/62*
U.S. Cl. 128—323 **9 Claims**

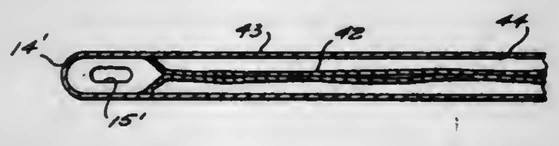


The specification discloses an improved obstetrical forceps in which a pair of limbs have scoops formed on one end and extend to a frame at the other end which joins the limbs together. The limbs are pivotally connected to the frame and each limb is formed of two parts hinged together and supported at about right angles to each other by a spring device which limits the force to be exerted on the forceps.

3,605,749

URINARY DRAINAGE APPARATUS

Henry J. Heimlich, 650 Main St.,
New Rochelle, N.Y. 10801
Filed Nov. 18, 1968, Ser. No. 776,591
Int. Cl. A61m *25/00*
U.S. Cl. 128—349R **9 Claims**

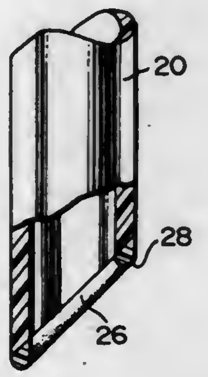


Catheter for insertion into patient's bladder connected to tubing which terminates at a urine collection receptacle. Tubing formed of limp material so that it normally assumes a collapsed condition. Portion of catheter may also be formed of limp material, and stiff, flexible rod extends longitudinally along catheter but is separable from it.

3,605,750

X-RAY TIP CATHETER

David S. Sheridan, Argyle, and Isaac S. Jackson, Greenwich, N.Y., assignors to David S. Sheridan, Argyle, N.Y.
Filed Apr. 7, 1969, Ser. No. 814,061
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 **9 Claims**

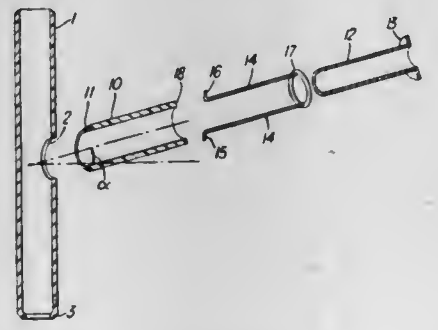


Catheters of the disposable, seamless, extruded plastic type are made with distal end portions that are X-ray opaque by fusing a plastic annulus containing X-ray opaque pigment onto the preformed tube. The catheter may have one or more of such X-ray opaque outlined openings in the distal end portion and where a plurality are provided, their spacing may be proportioned to the size and type of the catheter. Such X-ray outline portions permit the position of the distal end portion of the catheter within a patient to be determined by X-ray methods.

3,605,751

TRACHEOTOMY TUBE ASSEMBLY

Roger Gulling, Saint-Fons, France, assignor to
Rhone-Poulenc S.A., Paris, France
Filed Oct. 10, 1969, Ser. No. 865,447
Claims priority, application France, Oct. 10, 1968,
169,502
Int. Cl. A61b *17/24;* **A61m** *25/00;* **F16l** *41/00*
U.S. Cl. 128—351 **6 Claims**

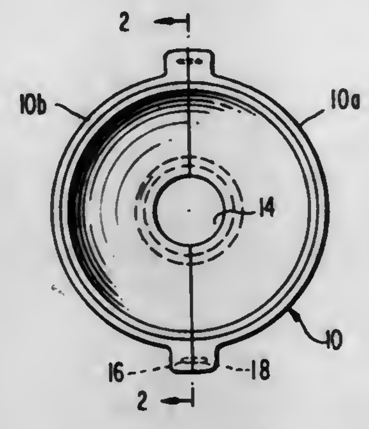


A tracheal device, for use in tracheotomy in which a main tube is inserted in the trachea. A lateral orifice therein accommodates the reduced end portion of an external lateral tube which is fitted after the tracheotomy. A clip having hooks thereon passes through the external tube and an internal tube is pushed in to force the hooks to engage on the interior of the main tube, thus holding the two tubes and the clip in place.

3,605,752

CATHETER GUARD

Robert M. Schlesinger, 650 Huntington Ave.,
Boston, Mass.
Filed Mar. 4, 1969, Ser. No. 804,225
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 **4 Claims**

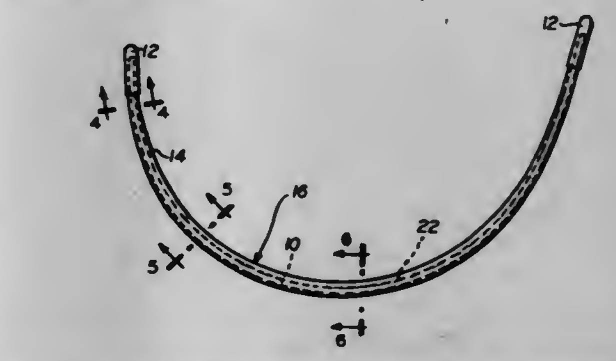


A device for retaining an in-dwelling penile catheter is formed from mating hemispherical shell segments having a bore extending through the shell for passing a catheter through it. A liquid-absorbent lining is secured to the inner surfaces of the shell and bore to snugly hold the catheter in place while applying liquid medication to the catheter-body interface. The device is in the form of a cup which is made in two mating segments which are separable from each other. A bore is formed in the cup when the segments are joined together, and the bore receives the catheter.

3,605,753

BREAST SUPPORTING FRAMES

Herbert L. Schwartz, Kew Garden Hills, N.Y., assignor to S. & S. Industries Inc., Bronx, N.Y.
Filed Apr. 3, 1970, Ser. No. 25,383
Int. Cl. A41c *1/14*
U.S. Cl. 128—476 **4 Claims**

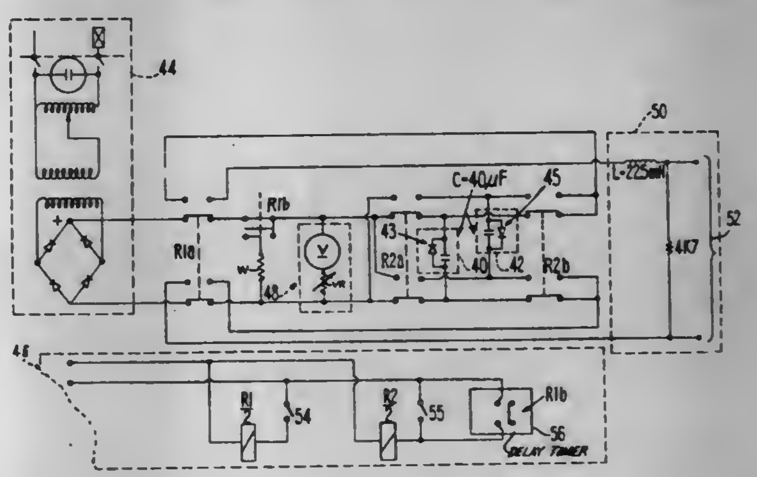


A breast supporting frame including an arcuate shaped resilient wire and a sleeve-like member encasing the wire; said sleeve-like member having a pear-shape cross section with the bulbous portion thereof disposed along the concave edge of the wire.

3,605,754

DOUBLE PULSE HEART DEFIBRILLATOR AND METHOD OF USE

George Gustav Jaros, Johannes Petrus Gous, and Johan Samuel Loubser, Pretoria, Republic of South Africa, assignors to South African Inventions Development Corporation, Scientia, Pretoria, Transvaal Province, Republic of South Africa
Filed Sept. 25, 1968, Ser. No. 776,843
Claims priority, application Republic of South Africa, Nov. 23, 1967, 67/7,057
Int. Cl. A61n *1/36*
U.S. Cl. 128—419D **5 Claims**



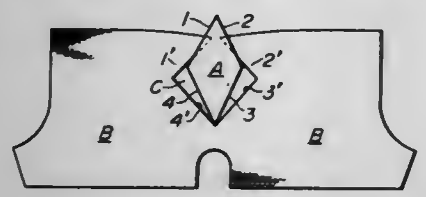
A method of defibrillating a heart, which includes depolarizing by a first electrical pulse, those heart muscle fibres which are in a receptive state, and of later depolarizing heart muscle fibres by a second electrical pulse at a time interval after the first pulse, sufficient to permit all the heart muscle fibres to be simultaneously in a receptive state. The apparatus has energy storage capacitors which are charged from a variable power supply via a capacitor charge and impulse discharge inverter and discharged when desired under the control of a stored energy monitor via damping and safety circuits to energize electrodes.

3,605,755

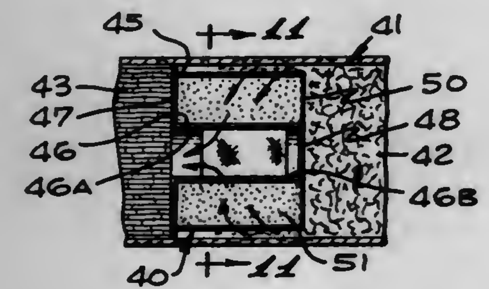
PANTY GIRDLE AND METHOD OF MAKING

Echiko Kugitani, Kyoto, Japan, assignor to
Wacoal, Inc., Kyoto, Japan
Filed Mar. 5, 1969, Ser. No. 804,462
Int. Cl. A41c *1/04*
U.S. Cl. 128—528 **9 Claims**

A girdle or a panty girdle comprises a girdle body made of a material stretchable in two directions and formed on its front side corresponding to the abdominal region of a wearer with a window of a diamond, honeycomb cell, elliptical or similarly curved shape, and a front piece made of the same material as the girdle body and similar in shape to the window, is connected by sewing to the girdle body to close the window. Each side of the front piece is of the same length as the corresponding side of the window and the area of the front piece is smaller than the area of the window before the front piece is connected by sewing to the girdle body.

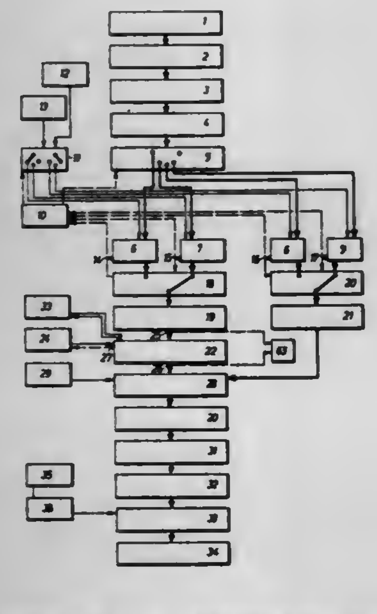


3,605,756
ADJUSTABLE FILTER CIGARETTE
Herman V. D. Stewart, 1721 Royal Blvd., Glendale, Calif. 91207
Filed Oct. 9, 1967, Ser. No. 673,631
Int. Cl. A24d *1/04*
U.S. Cl. 131—10.5 **3 Claims**



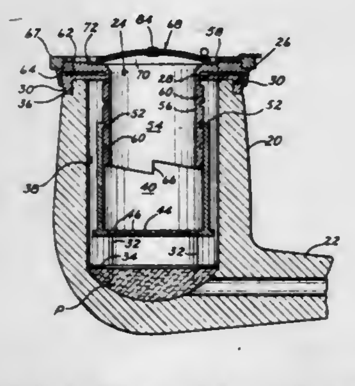
The application discloses a cigarette containing a finely divided filter medium capable of being shifted to vary or adjust the degree of filtering action.

3,605,757
CONTINUOUS PROCESS FOR THE MANUFACTURE OF REGENERATED TOBACCO
Paul Buchmann, Basel, Switzerland, and Monique Beringer, St. Louis, France, assignors to Tamag Basel AG, Basel, Switzerland
Filed July 30, 1969, Ser. No. 846,038
Claims priority, application Switzerland, Aug. 23, 1968, 12,704/68; Mar. 11, 1969, 3,663/69
Int. Cl. A24b *13/00*
U.S. Cl. 131—140 **8 Claims**



In order to manufacture regenerated tobacco, a mash is formed from reduced (pulverized) basic tobacco constituents. To this end, the reduced tobacco is admixed with a liquid to form a slurry which is forced through a glass grain body which is stirred at the same time. This homogenizes the slurry to form a mash. The glass grains are worn during the process. The glass grains which have been worn down to an unusable size are discharged from the body along with the tobacco mash. New glass grains are used to replenish the glass grain body continuously and thus make good the loss to the glass grain body caused by wear and removal of the unusable glass grains.

3,605,758
TOBACCO PIPE WITH MAGAZINE
Jay K. Patterson, P.O. Box 454, Laramie, Wyo. 82070
Filed Apr. 21, 1970, Ser. No. 30,384
Int. Cl. A24f *5/06*
U.S. Cl. 131—181 **9 Claims**



A tobacco pipe having a tobacco magazine operable to progressively advance unburned tobacco upwardly to a combustion zone located adjacent the upper end of the pipe bowl. The upper end of the bowl is normally closed by a draft control assembly which controls the distribution of air through the combustion zone to achieve even combustion and to provide a self-tamping action to the ashes and coal as fresh tobacco is fed to the combustion zone.

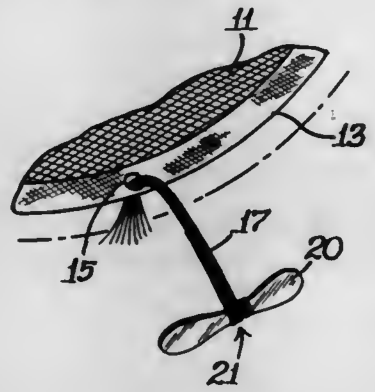
3,605,759
FILTER FOR TOBACCO SMOKE
William F. Owens, Jr., Pisgah Forest, and Bruce G. Woodard, East Flat Rock, N.C., assignors to Olin Corporation, Pisgah Forest, N.C.
No Drawing. Filed Dec. 22, 1969, Ser. No. 887,306
Int. Cl. A24b *15/02;* **A24d** *1/06*
U.S. Cl. 131—265 **9 Claims**

A filter is provided for removing hydrogen cyanide from tobacco smoke by incorporating a synergistic mixture of additives in smoke filtering material. The novel additive combination comprises an alkaline metal bicarbonate, such as sodium or potassium bicarbonate, and a water soluble poly(oxyalkylene) compound. Suitable poly(oxyalkylene) compounds are the high molecular weight polyethylene glycols and adducts of ethylene oxide and an alcohol or alkylated phenol.

3,605,760
TOBACCO COMPOSITION CONTAINING 3,5-DISUBSTITUTED-2-HYDROXYACETOPHENONES
Andrew G. Kallianos, Albert H. Warfield, and Melvyn I. Simpson, Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,211
Int. Cl. A24b *3/12, 15/04*
U.S. Cl. 131—17 **11 Claims**

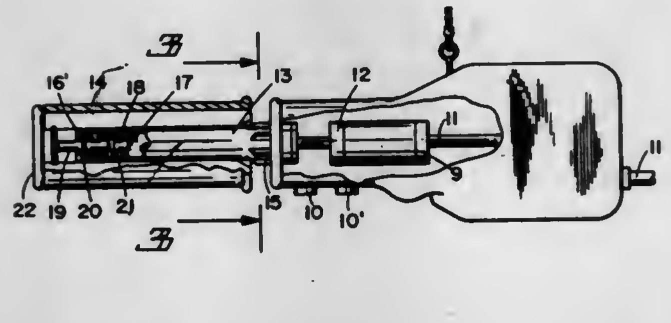
3,5 - disubstituted - 2 - hydroxyacetophenones, such as 3,5 - diisopropyl - 2 - hydroxyacetophenone, are prepared by the base-catalyzed reaction of a 2,4-disubstituted-2-butenal, e.g., 2,4 - diisopropyl - 2 - butenal, with an ester of acetoacetic acid. The thus-produced substituted 2-hydroxyacetophenones are useful as tobacco flavorants.

3,605,761
METHOD OF FASTENING HAIRPIECE
Ronald A. Magro, 538 Street Road, South Hampton, Pa. 17330
Filed Jan. 13, 1970, Ser. No. 2,637
Int. Cl. A41g *3/00*
U.S. Cl. 132—5 **10 Claims**



A method of attaching a hairpiece with a base cap to cover a bald area on the head of a person includes passing a number of tufts of the person's own hair through peripheral holes in the base. The holes are spaced about the bald area. An anchor member is permanently secured to each tuft either before or after it is passed through the cap. The anchor members are located at a distance from the scalp sufficient to permit loosening of the hairpiece for cleaning the scalp. The original registration of the base on the bald area is retained upon re-tightening of the hairpiece. The hair between the anchor member and the scalp is then taken up until the cap is tightened to the scalp; and the anchor member is then releasably secured to the cap to hold it in place.

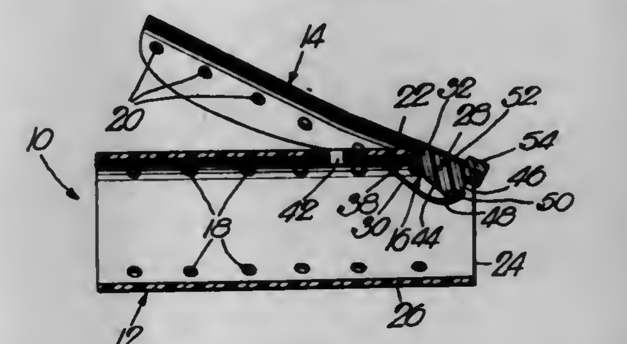
3,605,762
ELECTRIC HAIR ROLLER
Arthur R. A. Fromman, Phoenix, Ariz., assignor of fractional part interest to Dennis L. Taelman, Phoenix, Ariz.
Filed Aug. 17, 1970, Ser. No. 64,497
Int. Cl. A45d *2/12*
U.S. Cl. 132—9 **7 Claims**



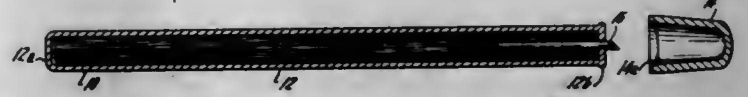
Apparatus for curling hair including a power driven roller which makes and breaks connection with an actuating means by hand pressure of an operator.

3,605,763
HAIR CURLER
Ralph M. Fusco, 299 Johnson St., Naugatuck, Conn. 06770
Filed July 29, 1970, Ser. No. 59,236
Int. Cl. A45d *2/26*
U.S. Cl. 132—41A **9 Claims**

A tubular hair curler body is provided with an end notch for reception of a depending end lug on a clamp which in closed position on the body is in substantial form-fit therewith, with the lug also having side shoulders engaging the inner body periphery in closed clamp position, so that removal of the clamp from the body is only by way of endwise retraction of the lug from the notch which, however, is normally prevented by a spring in the body which yieldingly holds the lug in the notch and normally closes the clamp on the body, with the notch, lug and spring forming a releasable hinge connection between the clamp and body.

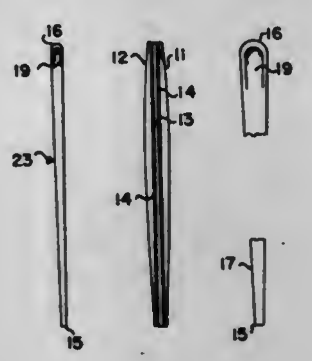


3,605,764
EYELINER, APPLICATOR AND CASING
Joseph R. Ehrlich, New York, N.Y., assignor to Melvin J. Davidson and Bernard M. Zitomer, both of New York, N.Y.
Filed June 6, 1969, Ser. No. 831,069
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **10 Claims**



A cosmetic for use as an eyelid liner. A low viscosity coloring liquid, free of pigments, solvents, oils, waxes, gums or thickening agents, is held within parallelly oriented fibers such as cellulose acetate or acrylic fibers, etc. A felt or nylon tip pressed between the fibers doles out the colored liquid as required during application on the eyelid. A casing encloses the impregnated fibers, at the same time allowing handling of the device. The coloring liquid consists essentially of a concentrated solution of urea in water, with the addition of a water-soluble dye substance, manufactured in compliance with the Food, Drug and Cosmetic Act.

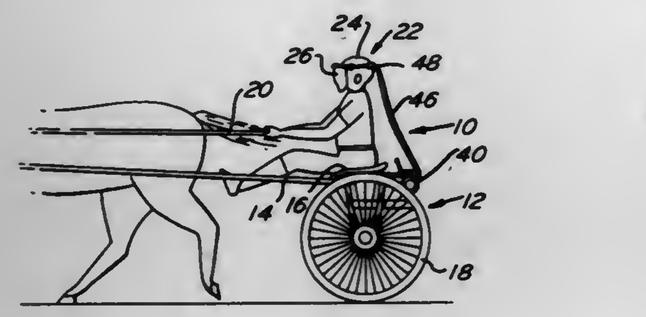
3,605,765
INTERPROXIMAL DENTAL STIMULATOR
Clarence P. Canby, 122 Medford Drive, San Antonio, Tex. 78209
Filed Oct. 16, 1969, Ser. No. 866,975
Int. Cl. A61c *15/00*
U.S. Cl. 132—93 **6 Claims**



A pick type, interproximal dental stimulator having a wood exterior surface bonded to and surrounding a fiber filament core the size, external contour, flexibility and resulting tensile strength particularly adapting the instrument to removing dental plaque stimulating gingival tissue and promoting oral health.

3,605,766
PROTECTIVE HEAD GEAR HAVING SELF-CLEANING FEATURE

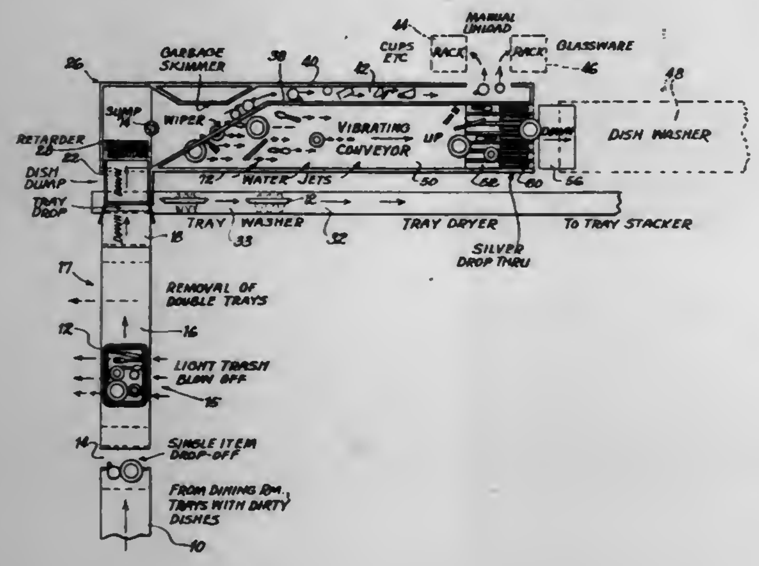
Joseph A. Carlani, Jr., 47 E. 5th and Pope Sts.,
Burlington, N.J. 08016
Filed Mar. 17, 1969, Ser. No. 807,694
Int. Cl. A61f *9/02;* **B08b** *3/02*
U.S. Cl. 134—47 4 Claims



Protective head gear is disclosed, comprising a head receiving member and a face shield, and fluid distribution means associated with the face shield for applying a cleaning fluid to the shield. In one form of the invention, a fluid reservoir is provided on a wheeled vehicle, and a wheel-driven pump provided to convey cleaning fluid from the reservoir to the distribution means.

3,605,767
VIBRATING SORTER FOR SOILED TABLEWARE

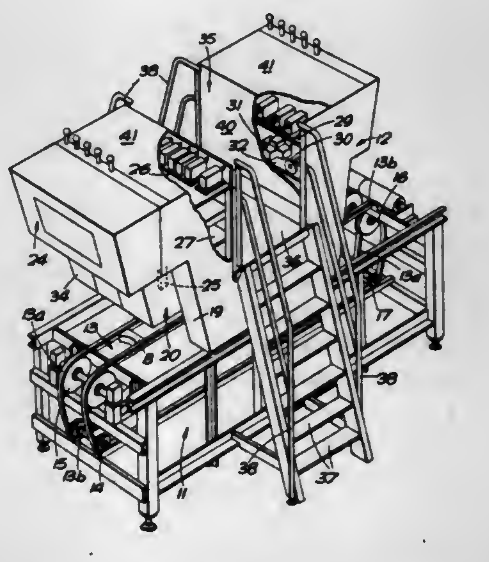
Ralph Ettlinger, Jr., Highland Park, and Walter M. Schneider, Chicago, Ill., assignors to Avant Industries, Inc., Wheeling, Ill.
Filed May 28, 1969, Ser. No. 828,510
Int. Cl. B08b *3/04*
U.S. Cl. 134—62 15 Claims



A construction for handling soiled tableware so that the tableware can be automatically sorted prior to placement into holders used for supporting the tableware as it passes through a dishwashing machine. A vibrating conveyor is provided for receiving the tableware, and a barrier extends across the conveyor bed to separate flatware comprising plates and silverware from pieces of greater height such as cups and glasses. The separated tableware is delivered along separate paths to the end of the vibrating bed for placement in appropriate racks or other dishwashing equipment holding means. The flatware is divided by providing slots in a corrugated section of the bed so that the silverware is collected apart from plates. Means are also provided for separating soiled dishes from cafeteria trays where the dishes are initially delivered on such trays.

3,605,768
APPARATUS FOR WASHING AND FILLING CONTAINERS FOR LIQUIDS

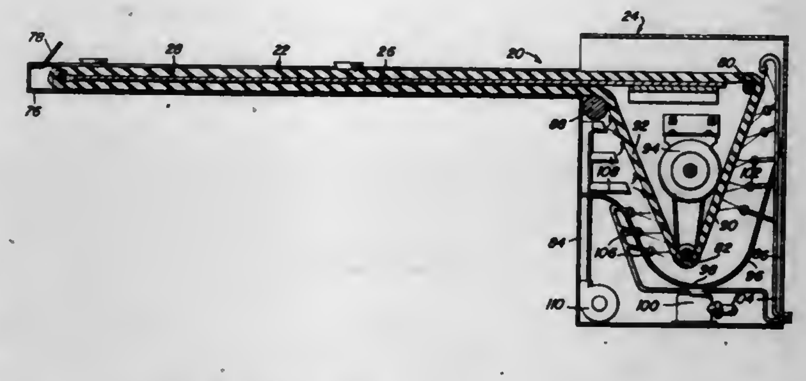
Cyril George Golding, Bilston, England, assignors to GKN Sankey Limited, Bilston, England
Filed Oct. 14, 1969, Ser. No. 866,299
Claims priority, application Great Britain, Oct. 14, 1968, 48,634/68
Int. Cl. B08b *3/02*
U.S. Cl. 134—62 10 Claims



A combined washing and racking machine for beer kegs comprises a conveyor for conveying a succession of kegs past a washing station and then past a racking station at spaced positions along the conveyor. An upper unit extends over the washing station forming a tunnel through which the kegs pass. Pneumatically operated turnover arms are mounted on the tunnel walls and arranged to grip a keg at the washing station and invert it before passing on to the racking station.

3,605,769
SELF-CLEANING DINING TABLE

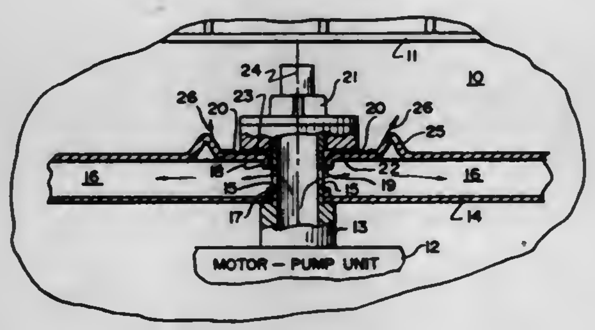
Dennis P. Bagwell, Minot AFB, N. Dak.
(206 N. Brockway 11, Palatine, Ill. 60067)
Filed Apr. 1, 1969, Ser. No. 812,180
Int. Cl. B08b *3/02, 1/02*
U.S. Cl. 134—115 20 Claims



An endless flexible belt mounted on a table defining panel for travel thereacross through an end located cleaning cabinet. A length of the belt equal to the length of the support panel is provided with at least one and preferably multiple place settings, including integral food receptacles and removably mounted utensils. This portion of the belt travels through the cleaning cabinet in an inverted position and along a triangular path during which it is subjected to cleaning and drying operations, after which it is stored beneath the support panel until ready for use.

3,605,770
DISHWASHER APPARATUS

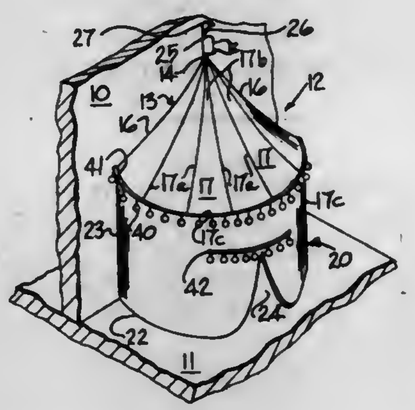
William F. Robandt II, St. Joseph, and Raymond W. Spiegel, Stevensville, Mich., assignors to Whirlpool Corporation
Filed Apr. 15, 1970, Ser. No. 28,648
Int. Cl. B08b *3/02*
U.S. Cl. 134—179 9 Claims



A dishwasher that includes a liquid conduit and a rotatable spray arm and an article holding rack spaced from the spray arm in which a portion of the liquid that is under pressure within the spray arm is permitted to escape to the outside of the arm, and in which intercepting and projecting members are provided for directing this escaping liquid first along the outer surface of the spray arm and then toward the adjacent rack and articles such as dishes therein.

3,605,771
TENT STRUCTURE

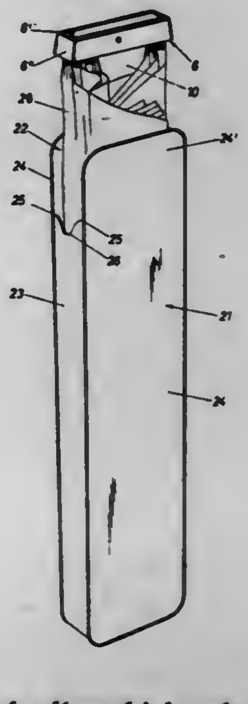
Gay C. Fox, 307 Tomahawk Ave., and Mary E. Droppers, Box 1196, both of Black Mountain, N.C. 28711
Filed Apr. 1, 1969, Ser. No. 812,201
Int. Cl. A45f *1/00*
U.S. Cl. 135—1 2 Claims



A tent structure adapted to be suspended adjacent and supported by a substantially vertical surface such as a wall, door or the like, including a top portion formed from a flexible sheet material and having an apex, base, and side edges extending from said apex to said base adjacent the vertical surface, a wall portion formed from a flexible sheet material and connected to the base of said top portion and having side edges adjacent the vertical surface, means connected to the apex suspending the tent structure adjacent the vertical surface, and support means mounted along the connection between said top and wall portions and having terminal ends bearing against the vertical surface and a body portion extending outwardly therefrom supporting the top and wall portions in an extended position, whereby the top and the wall portions with the vertical surface form an enclosure.

3,605,772
UMBRELLA SHEATH FOR FOLDABLE-FLAT UMBRELLAS

Fritz Bremshey, Solingen-Ohligs, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Mar. 21, 1969, Ser. No. 810,443
Claims priority, application Germany, Mar. 30, 1968, P 17 57 104.9; Aug. 3, 1968, P 17 82 245.6
Int. Cl. A45b *25/18*
U.S. Cl. 135—33 7 Claims

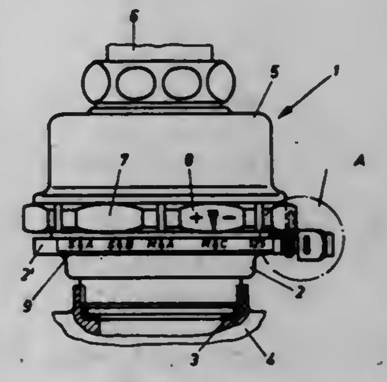


A collapsible umbrella which when collapsed is flattened in cross section and has a generally rectangular or oval outline. The handle is of corresponding rectangular cross section and has dome rib receiving recesses in opposed lateral portions of the handle.

The sheath for stowing the collapsed flat umbrella is of rectangular cross section and has stiffened lengthwise side walls, and shortened widthwise side walls.

3,605,773
GAS FLOW REGULATOR

Helmut Schmidt auf Altenstadt, Remscheid-Reinshagen, and Ernst Sohnchen, Huckeswagen, Germany, assignors to Joh. Vaillant KG., Remscheid, Germany
Filed June 22, 1970, Ser. No. 48,265
Claims priority, application Germany, June 24, 1969, P 19 31 898.0
Int. Cl. F17d *1/02, 3/00*
U.S. Cl. 137—1 7 Claims



A gas flow regulator has a ring rotatable with respect to the body for adjusting the performance of the regulator as required by the conditions. A pointer is mounted on the ring in juxtaposition to scale indicia on the body to indicate the setting of the adjustment ring. These are applied after the regulator is installed so that they will be on the front of the installed regulator. A sealed locking clamp prevents rotation of the ring.

3,605,774
MARITIME APPARATUS UTILIZABLE AS A HYDROCARBON RESERVOIR

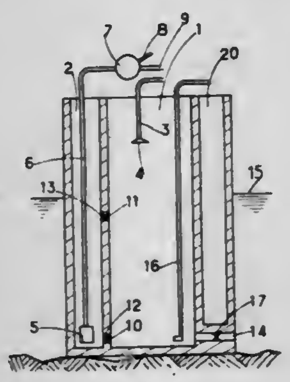
Pierre Launay, Versailles, and Tran Dinh Phat, Paris, France, assignors to Compagnie Industrielle de Travaux and Compagnie Francaise des Petroles, both of Paris, and Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed July 20, 1970, Ser. No. 56,289

Claims priority, application France, July 30, 1969, 6,926,062

Int. Cl. E02b *17/00, 1/00*

U.S. Cl. 137—1 **12 Claims**



A marine installation for storing hydrocarbon liquids has a reservoir containing the hydrocarbon liquid and water beneath the hydrocarbon liquid. As the hydrocarbon liquid enters the reservoir water is removed. When the hydrocarbon liquid is removed water is added to maintain sufficient ballast in the installation to keep the installation immersed and in place.

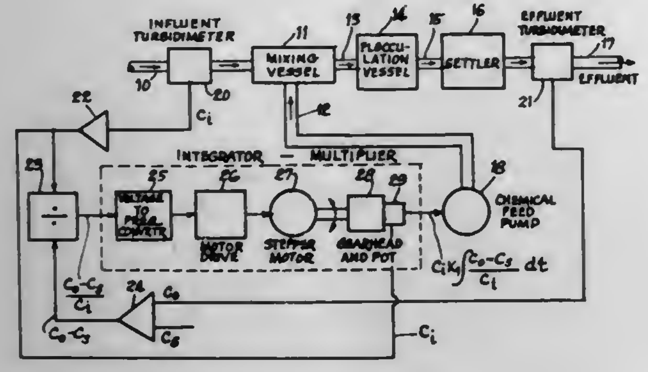
3,605,775
METHOD TO CONTROL DOSAGE OF ADDITIVE INTO TREATMENT PROCESS AND AUTOMATIC DEVICE THEREFOR

Carl J. Zaander, Clarendon Hills, Veljko Milenkovic, Glencoe, and Bernard A. Johnson, Deerfield, Ill., assignors to General American Transportation Corporation

Filed Nov. 18, 1969, Ser. No. 877,732

Int. Cl. E03b *1/00;* **G05d** *11/00*

U.S. Cl. 137—3 **23 Claims**



A method for controlling, by a novel feedforward-feedback adaptive system, a continuous process of treating a fluid, containing an ingredient, that includes incorporating a dosage of additive in the flowing fluid so as to change the ingredient. During the operation of the process, without the use of the control method, there can be unpredictable variations affecting the efficiency of the treatment so as to require correction of the dosage of additive to an unpredictable extent. A device for this system provides for automatic control of dosage of the additive. In the process there is a nonlinear relationship between the amount of additive and the degree of treatment. This relationship can be expressed as a monotonic curve within the range of concentration of the ingredient in the fluid and the range of dosage required for the desired extent of treatment.

The control method comprises: a feedforward control process including (1) monitoring the flowing fluid to sense a property of the fluid relevant to the treatment of the fluid by the additive, and (2) generating a first signal proportional to the magnitude of the sensed property of the fluid to be treated; a feedback control process including (1) monitoring a product of the treatment process to sense a property of that product relevant to the desired result of the treatment process, (2) generating a second signal proportional to the desired magnitude of the sensed property of the product, (3) generating a third signal proportional to the magnitude of the actual sensed property of the product, and (4) comparing the second and third signals to provide an error signal indicating the difference between the actual and desired sensed property of the product; an adaptive control process including (1) superimposing the first signal on the error signal by dividing the latter by the former to provide a fourth signal, (2) integrating the fourth signal over a long period of time to provide a fifth signal, and (3) multiplying the first signal by the fifth signal to obtain a sixth signal that includes the variable gain for the first signal by the extent of the fifth signal; and using the sixth signal to adjust the dosage of additive into the fluid.

The device for automatically controlling the dosage of additive performs the three basic control functions described above for the process. Thus the part of the device that provides a signal representing a comparison of actual and desired property of a product of the treatment is the feedback system that is used to adjust dosage with the adjustment time being made through an integrator to reduce the steady state error to zero. The signal proportional to the magnitude of the property of the fluid to be treated is the feedforward signal that provides essentially instantaneous corrective response while the other system is very slow. The control of the feedforward system to change with variation in one or more process conditions, e.g., efficiency, is determined by the feedback system that adjusts the gain of the feedforward system.

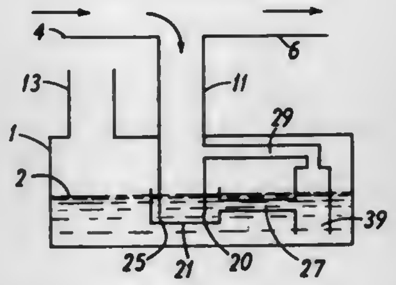
3,605,776
GAS VENT RELIEF DEVICE

James J. Fullam, Furlong, Pa., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 29, 1970, Ser. No. 33,022

Int. Cl. F16k *9/00*

U.S. Cl. 137—14 **16 Claims**



A gas pressure relief device is provided which is based on a liquid seal and comprises a housing having inlet and outlet means, a liquid level within said housing which seals the open end of the inlet means under normal operating pressures, said seal capable of being blown or ruptured under abnormal pressure conditions to permit passage of gas through the inlet means into the housing and escape through the outlet means; the structure of said inlet means at its open end in the housing being designed so that the liquid seal will not reestablish itself when blown until the pressure in the inlet means has been returned to a predetermined normal operating level and will not permit reverse gas flow even when the system which the device serves is subjected to moderate negative pressure. This invention finds particular application as a safety device for control of the pressure of hydrogen gas evolved in the manufacture of chlorine in electrolytic cells.

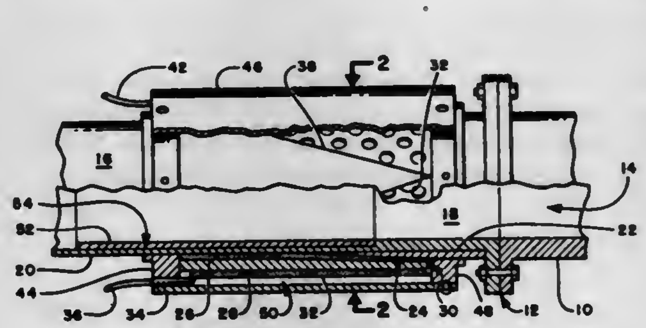
3,605,777
CLOSURE MECHANISM

George G. Curry and John C. Dresser, Albuquerque, N. Mex., and James A. Moeller, Phoenix, Ariz., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed May 11, 1970, Ser. No. 36,035

Int. Cl. F16k *7/04*

U.S. Cl. 137—67 **10 Claims**



Apparatus for rapidly closing a conduit by pinching off with an explosive utilizing a tapered explosive collar about a tapering wall with a tamper for directing explosive energy against the tapering wall, and simultaneously igniting the explosive collar about its circumference.

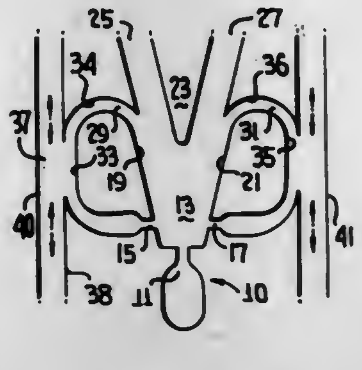
3,605,778
VARIABLE DELAY LINE OSCILLATOR

Eric E. Metzger, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Mar. 4, 1969, Ser. No. 804,086

Int. Cl. F15c *1/04*

U.S. Cl. 137—81.5 **15 Claims**



The frequency of a negative feedback type fluidic oscillator is rendered variable by introducing control fluid flow to either aid or oppose the feedback flow. The control fluid flows adjacent, about or within the feedback fluid in an enlarged section of the feedback passage, and may have a variable flow rate which frequency-modulates the oscillator output signal. The oscillator may be employed as a flow sensor when the control fluid is supplied from the flow being monitored. Alternatively, if the enlarged section of the feedback passage is curved about a predetermined axis, rotation of the system about that axis introduces control flow variations which vary the oscillator frequency as a function of angular acceleration of the system about that axis.

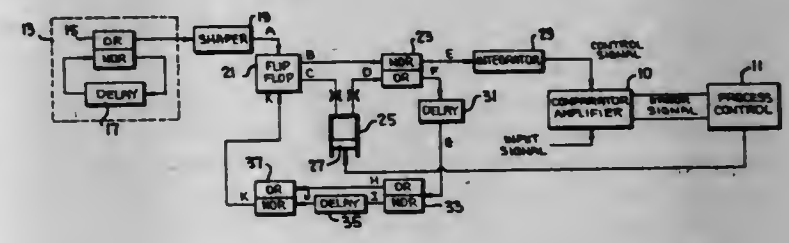
3,605,779
FLUIDIC CONTROL CIRCUIT

Peter Bauer, Germantown, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Mar. 14, 1969, Ser. No. 807,374

Int. Cl. F15c *1/12*

U.S. Cl. 137—81.5 **12 Claims**



Fluidic process control is achieved by controllably delaying a fluid signal in response to variations in a process parameter. In a preferred embodiment the controllable delay effects duty cycle variations in a constant frequency alternating fluid signal. Integration of the variable duty cycle signal provides an analog fluid signal as a function of the variable process parameter.

3,605,780
ELECTROMECHANICAL FLUIDIC TRANSDUCER

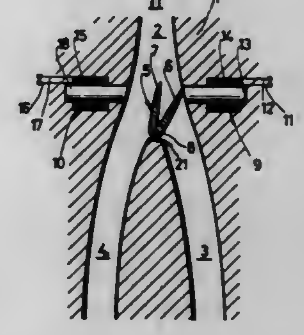
Walter Kranz, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrunn, near Munich, Germany

Filed Sept. 17, 1969, Ser. No. 858,656

Claims priority, application Germany, Sept. 21, 1968, P 17 74 859.3

Int. Cl. F15c *3/08*

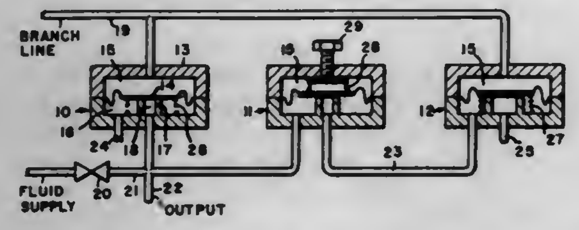
U.S. Cl. 137—81.5 **8 Claims**



An electromechanical fluidic transducer has a flow feed line communicating with two flow outputs. Two control signal responsive electromagnetic devices are operable to select the flow output, each controlling flow relative to a respective output. A single flow switching element is movable, under the influence of fluid flow, into flow blocking relation in a selected one of the flow outputs, and the switching element is lockable in its blocking position by the associated electromagnetic device. The flow switching element is a forked element, and either may be pivoted at the fork between the two outputs or may be flexible, in the form of a leaf spring. Adjustment canals or ducts communicate with the flow feed or supply line from opposite sides to compensate for asymmetry of the flow control element.

3,605,781
PNEUMATIC RELAY

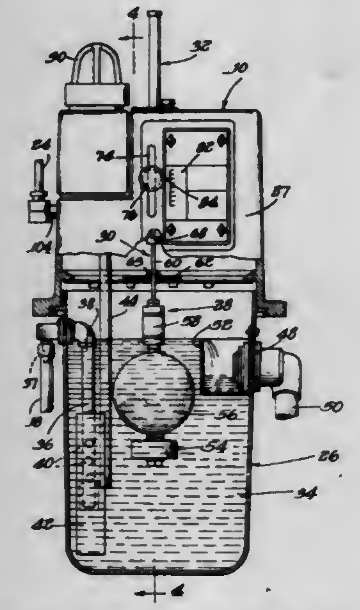
Frederick D. Joesting, Park Ridge, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed July 16, 1970, Ser. No. 55,320
Int. Cl. G05d *23/00, 11/00*
U.S. Cl. 137—82 **10 Claims**



A pneumatic relay utilizing diaphragm logic for providing an output pressure to a fresh air damper motor or the like. The damper is held closed until the input pressure to the relay reaches a first level whereupon the damper is opened to a preselected position admitting a preselected percentage of fresh air, which position is maintained until the input pressure reaches a preselected second level, whereafter the damper continues to open as the input pressure continues to increase until 100% fresh air is admitted.

3,605,782
LIQUID MIXING DEVICE

Raymond Hollis, Park Ridge, and Frank X. Barr, Buffalo Grove, Ill., assignors to Graymills Corporation, Chicago, Ill.
Filed July 14, 1969, Ser. No. 841,243
Int. Cl. G05d *11/00;* **B41l** *27/00*
U.S. Cl. 137—91 **6 Claims**

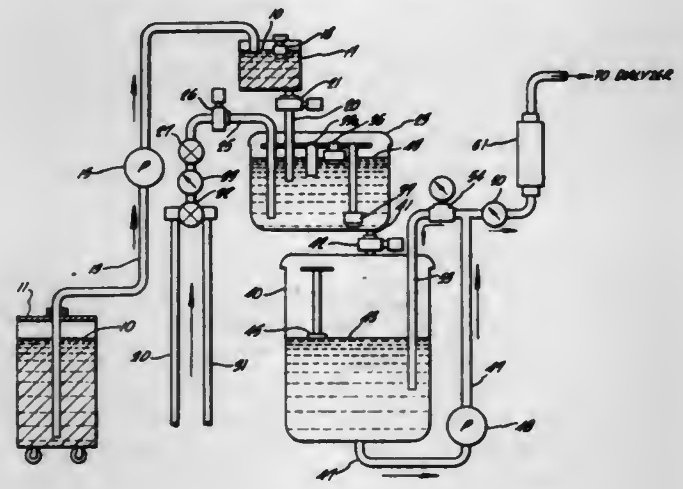


A liquid mixing device for mixing and maintaining two or more liquids to a selected specific gravity of a mixture of the liquids including a tank for holding the mixture of liquids. A hydrometer is positioned in the tank, and the hydrometer is connected to a control device. The control device is in turn connected to a valve which controls the flow of one of the liquids into the tank holding the mixture of liquids, thereby regulating the specific gravity of the mixture in the tank by the addition of one of the liquids.

3,605,783
FLUID MIXING SYSTEM

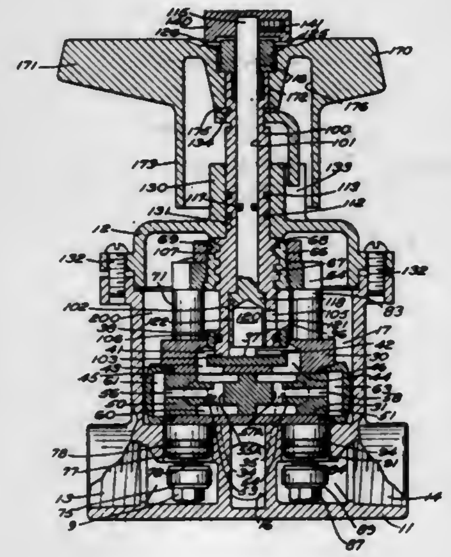
Edwin A. Pecker and Harve M. Hanish, Los Angeles, Calif., assignors to Bio/Systems, Inc., Santa Monica, Calif.
Filed Mar. 17, 1966, Ser. No. 536,194
Int. Cl. G05d *11/13*
U.S. Cl. 137—93 **9 Claims**

A fluid mixing system for mixing two fluids and delivering the composite fluid to a device. The system includes a mixing tank for receiving the components of the composite fluid and a supply tank for storing the mixed fluid. The supply tank has a capacity substantially larger than the capacity of the mixing tank and has an outlet providing a continuous flow of the composite fluid to the device. A transfer valve is located between the mixing tank and supply tank and is actuable to empty the entire contents of the mixing tank into the supply tank. A testing means associated with the mixing tank is coupled to the transfer valve for preventing actuation of the transfer valve when the composite fluid does not meet a predetermined composition standard.



3,605,784
MIXING VALVE

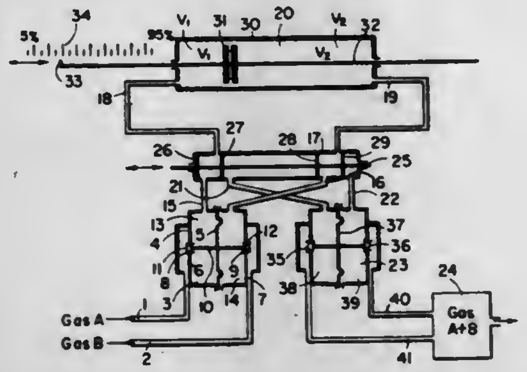
Lawrence Everton Bowman, Warwick, R.I., assignor to Leonard Valve Company, Cranston, R.I.
Filed Dec. 23, 1969, Ser. No. 887,550
Int. Cl. G05d *11/00*
U.S. Cl. 137—100 **3 Claims**



This invention relates to a bathroom shower hot and cold water mixing valve which incorporates three structural features. One feature is an independently operated volume or flow control valve for the mixed water. The second feature is a valve opening and valve closing independently operated temperature regulating sleeve. The third feature is an equalizing valve for maintaining the mixed water in the mixing chamber at the pre-selected temperature determined by the temperature regulating sleeve regardless of the variation in pressure of the respective, hot and/or cold water supply.

3,605,785
APPARATUS FOR MIXING GASES IN A PREDETERMINED RATIO PARTICULARLY FOR RESPIRATORY AND MEDICAL PURPOSES

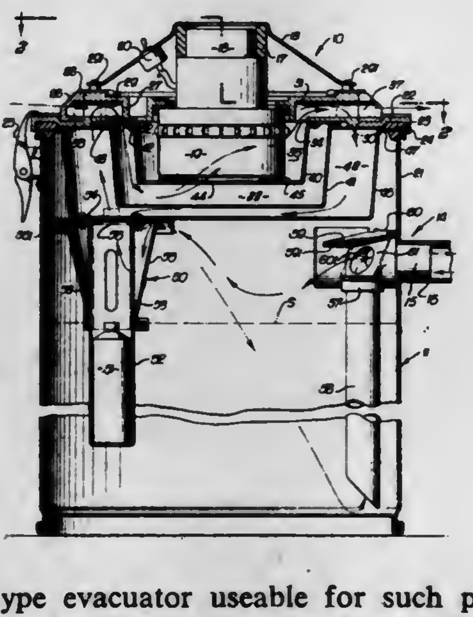
Gunter Dobritz, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany
Filed June 6, 1969, Ser. No. 831,095
Claims priority, application Germany, June 15, 1968, P 17 57 801.7
Int. Cl. G05d *11/02*
U.S. Cl. 137—101 **22 Claims**



Two gases to be mixed are introduced, at equal pressures, into respective chambers whose volumes have the desired mixture ratio. The gases continue to be introduced into the respective chambers until the pressure in the chambers attains a desired value, after which flow of gases into the chambers is interrupted and flow of gases from the chambers is initiated. As the gases flow from the chambers, they are mixed to form the gas mixture. A pressure reducer is connected to the two gas inflow lines to equalize the two gas pressures. A shut-off valve is operatively associated with each inflow line. between the pressure reducer and a respective chamber. A shut-off valve also controls the outflow of gas to a further pressure equalizing pressure reducer valve whose output is connected to a gas mixing tank or the like. In a modification, the pressure reducing inflow valve and the shut-off valves are combined into a single unit. Preferably, means are provided to assure maintenance of equal pressure in the two chambers.

3,605,786
EVACUATOR

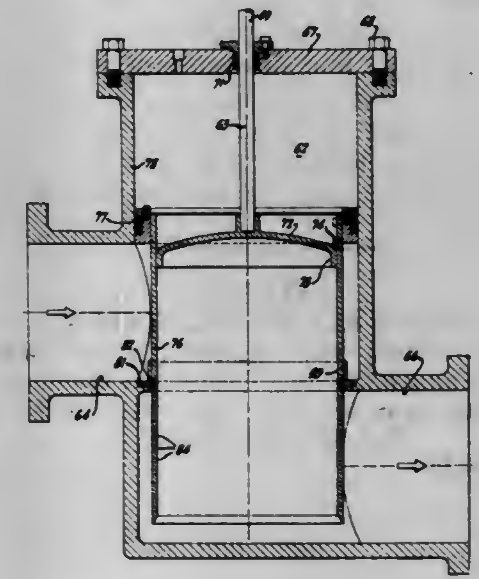
Edwin J. Machin, Jr., Roslindale, Mass., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Sept. 10, 1969, Ser. No. 856,551
Int. Cl. A47l *5/14, 7/00*
U.S. Cl. 137—205 **15 Claims**



A tank type evacuator useable for such purposes as suction removal of liquids from surfaces with liquid accumulation in a receptacle, obviates the usual liquid dumping manipulations and other requirements by alternately evacuating the receptacle atmosphere to induce wet inflow as from a conduit connectible to an opening leading from the receptacle, and pressurizing the receptacle to expel liquid through the same opening, evacuation and pressurizing of the receptacle requiring but a single blower unit operating in conjunction with air flow control valving associated with the evacuator cover and receptacle sections.

3,605,787
POLYJET VALVE

Ralph J. Krogfoss, San Mateo, and Robert W. Dixon, Concord, Calif., assignors to Chas. M. Bailey Co., Inc.
Filed Dec. 4, 1969, Ser. No. 882,098
Int. Cl. F16k *1/06*
U.S. Cl. 137—219 **7 Claims**



A polyjet valve for throttling hydraulic flow includes a housing having a liquid inlet and a liquid outlet. A tube of circular cylindrical form is disposed within the housing and at one end is interiorly connected to the outlet. The other end of the tube is closed. The tube is pierced by an exceptionally large number of holes. The relationship of these holes is determined by the formulas:

$$D_H = \frac{\text{from } 0.2 \text{ to } 0.4 ID_T}{12}$$

wherein D_H is the diameter in inches of a typical hole and ID_T is the diameter of the tube in inches and

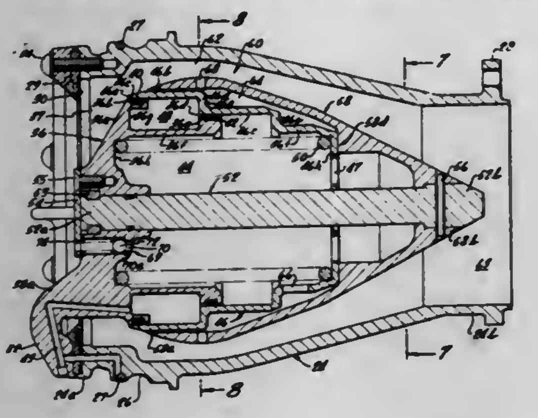
$$H_S = \text{from } 2.0 \text{ to } 3.5 D_H$$

wherein H_S is the center to center distance of adjacent holes. The tube wall thickness is between 1.0 and 2.0 times the hole minimum diameter. The holes in the aggregate have a flow area approximately equal to the flow area through the tube. A solid sleeve in the housing and surrounding the tube on the high pressure side is relatively movable along the tube by means operable from outside the housing.

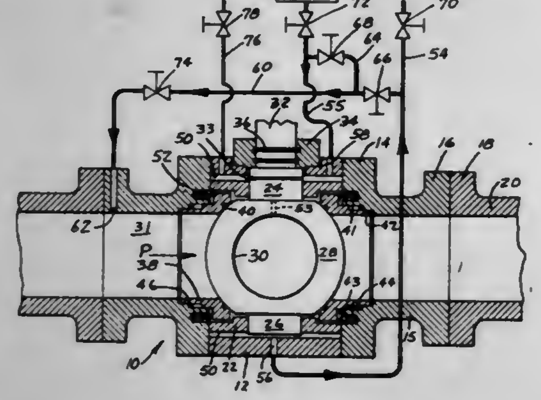
3,605,788
FUELING PRESSURE REGULATOR

Albert William Brown, Newport Beach, Calif., assignor to The J. C. Carter Company, Costa Mesa, Calif.
Filed Mar. 9, 1970, Ser. No. 17,434
Int. Cl. G05d *7/01*
U.S. Cl. 137—220 **17 Claims**

A piston-like valve member is slidably mounted on a support centrally positioned within a tubular housing at the end of a fuel hose to control fuel flow through an annular path around the valve member. A fixed shroud spaced from the housing slidably receives the valve member, and sensing holes within the shroud permit fluid pressure in the flow path to enter the shroud and react against a downstream facing working surface on the valve member. The sensing holes are placed along a restricted throat in the flow path so that at high flow rate settings the valve member is subjected to pressures which are substantially less than the actual pressure downstream of the throat, with the result that downstream pressure increases at high flow rates. Two dynamic seals in the structure are adjacent an ambient pressure cavity within the valve member so that any leakage is to that cavity and hence does not affect the accuracy of no flow or low flow rates.



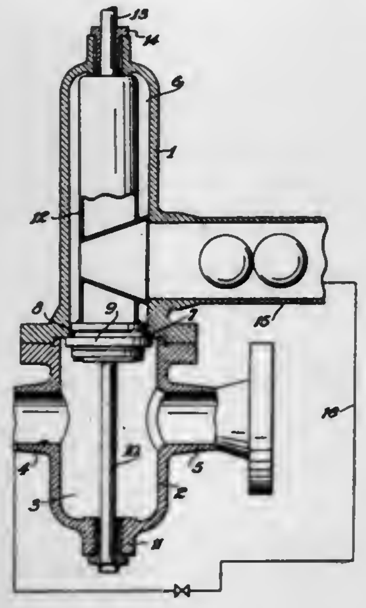
3,605,789
VALVE FLUSHING SYSTEM
Donald E. Graham, San Leandro, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.
Filed May 4, 1970, Ser. No. 34,417
Int. Cl. F16k *5/08*
U.S. Cl. 137—240 **10 Claims**



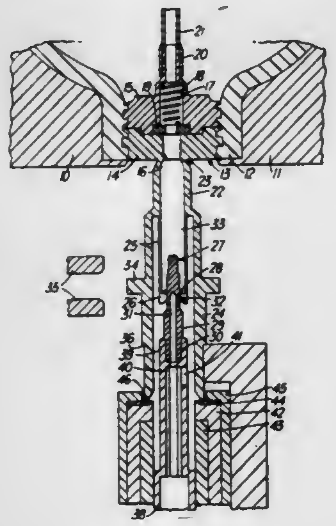
A valve flushing system including a pair of flush lines connected to the top and bottom, respectively of a ball valve body. A discharge line is connected between one of the lines and the main upstream line, and a reversing line is connected between the other line and the discharge line. A valve is situated in each of the reversing and discharge lines so that fluid under pressure higher than that in the main upstream line may be forced through one of the lines, through the ball valve and out the other line to the discharge line. If the flushing is done when the valve is closed, the seat rings seal against the ball irrespectively of the direction of pressure differential so that the flushing fluid is confined between them.

3,605,790
SPHERE LAUNCHERS
Keith Ellis Hunter, North Anston, near Sheffield, England, assignor to General Descaling Company Limited, Worksop, Nottinghamshire, England
Filed Nov. 10, 1969, Ser. No. 875,105
Claims priority, application Great Britain, Nov. 12, 1968, 53,590/68
Int. Cl. F17d *3/02*
U.S. Cl. 137—268 **4 Claims**

A pipeline sphere launcher or receiver is described in which a launching or receiving carriage is movable in an elongated chamber transverse to the pipe into which a sphere is to be launched between a first position in which it receives or discharges a sphere from or to a radially extending chamber, and a second position in which the sphere is launched into or received from the pipeline by means of the flow therethrough, the carriage being supported by stems passing through glands in the ends of the elongated chamber and supporting a valve member which closes off the carriage and the radially extending chamber from the pipeline when the carriage is in its first position.

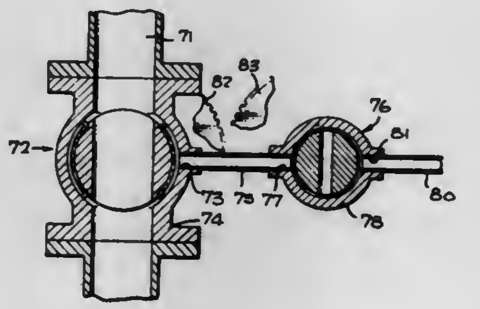


3,605,791
VALVE ASSEMBLY FOR AND METHOD OF FITTING PRESSURIZED SPRAYING CONTAINERS
Yves Le Troadec, Mont-Saint-Aignan, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Apr. 21, 1969, Ser. No. 817,818
Claims priority, application France, July 15, 1968, 159,238
Int. Cl. B65b *3/04*
U.S. Cl. 137—316 **6 Claims**



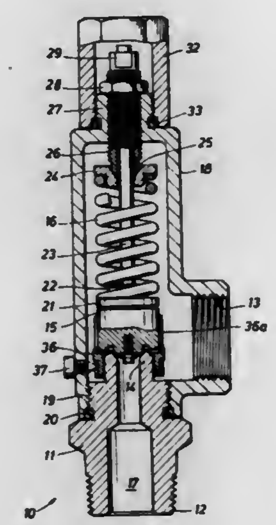
The specification describes a valve assembly for a pressurized spraying container. The body of the valve is provided with an external tubular extension or sleeve in which is temporarily located the valve member. The sleeve is used to guide fluid under pressure into the container and may also be used during the blow moulding of the container. When the container is filled, the valve member is forced through the sleeve into engagement with its valve seat, where it is retained by an already positioned spring, and the sleeve is detached.

3,605,792
VALVE WITH LEAK COLLECTOR
James V. Westbrook, La Canada, Calif., assignor to Allied Industrial Components, Lynwood, Calif.
Filed Oct. 31, 1969, Ser. No. 872,834
Int. Cl. F16k *3/26*
U.S. Cl. 137—312 **3 Claims**



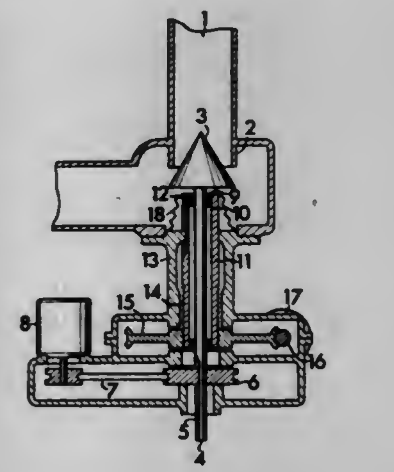
A plug valve in which the valve body has a special seal ring assembly of a plastic seal ring and a resilient backup ring disposed around the inner ends of the fluid passage in the body where such passages intersect the central valve element receiving bore, the valve element being journaled in the body beyond the bore and beyond seal rings between the valve member and body. In another form a special rectangular seal is provided on each side of the valve member to close off the fluid passages in the valve body when the valve is closed.

3,605,793
SAFETY RELIEF VALVE
John W. Kinsel, 4040 Southwest Freeway, Suite 235 Houston, Tex. 77027
Filed July 18, 1969, Ser. No. 842,947
Int. Cl. F16k *1/52, 15/02*
U.S. Cl. 137—329.06 **2 Claims**



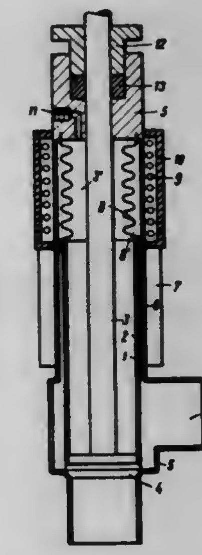
For use in a safety relief valve which incorporates a hollow body having therein a valve seat and a valve member which closes a passage through the valve seat, an improvement which includes a plastic seal carried on said valve member and adapted to be contacted against said valve seat, the valve seat being tapered at a predetermined angle with respect to the valve body and bearing against the plastic seal with a similar but differently inclined taper on the valve body immediately adjacent and behind the valve seal to provide a line of contact and closure when the plastic seal bears against the seat and a secondary but equally effective line of closure by the differently tapered valve member immediately to the rear of the seal so that wear of the seal does not effect the operation of the valve.

3,605,794
APPARATUS FOR FLOW CONTROL OF SLURRY
Hajime Seo, Katsumi Tagomori, and Toshio Okazaki, Yokohama-shi, Japan, assignors to Kurita Water Industries, Ltd.
Filed May 26, 1969, Ser. No. 827,785
Claims priority, application Japan, May 30, 1968, 43/36,969
Int. Cl. F16k *29/02*
U.S. Cl. 137—331 **2 Claims**



A valve assembly for controlling the flow of a slurry or the like material comprising a valve seat, a closure member, which, in accordance with the valve seat, defines a valve opening, and a means for rotating the closure member so as to avoid clogging between said closure member and the valve seat.

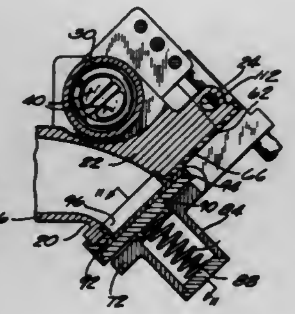
3,605,795
SPINDLE VALVE
Gundolf Rajakovics, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria
Filed Jan. 28, 1969, Ser. No. 794,537
Claims priority, application Austria, Jan. 29, 1968, A 827
Int. Cl. F16k *49/00*
U.S. Cl. 137—338 **5 Claims**



A spindle valve for preventing the escape of an operating medium and resistant to extreme temperature differentials in said medium, the valve including a housing and an axially movable spindle having a closure means at one end adjacent a valve seat in the housing. A siphon surrounds the spindle and is spaced from the closure means, and a tube connects the closure means to the siphon. A siphon chamber exists between the siphon and the housing, and a narrow annulus exists between the tube and the housing. Cooling fins are connected to the housing adjacent the narrow annulus, and a heating means surrounds the siphon chamber.

3,605,796
GATE VALVE WITH TORSION ADJUSTMENT

Edward F. Sette, Oakland, Calif., assignor to Sette Products Co., Oakland, Calif.
Filed Dec. 11, 1969, Ser. No. 884,195
Int. Cl. F16k *3/04*
U.S. Cl. 137—385 8 Claims

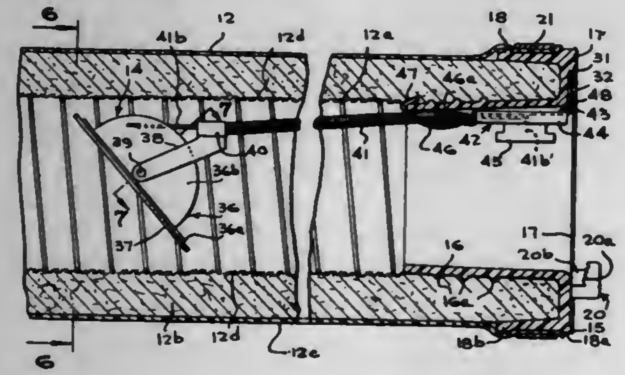


A slideable valve gate carries a spring pressed closure provided with a sheet resin facing which abuts a complementary ported facing on a way provided by the valve casing. An upstanding web on the valve casing has an integral transverse bearing by which a boxlike lever is pivoted to the casing, such lever having linkage connecting it with the valve gate. Springs centrally anchored to and projecting oppositely from the aforesaid web are adjustably connected at their ends to the boxlike lever by polygonal elements adjustable in the lever for varying spring tension. A fin projecting upwardly from the web is apertured to receive a lock, said fin projecting through a slot in the boxlike lever so that when the lock is in place the valve cannot be opened.

The lever has a U-shaped handle for the legs of which it provides separate openings beyond which the lever has dog portions engaged with notches in the legs of the handle for retaining the handle in assembly with the lever.

3,605,797
SHUT OFF DAMPER ASSEMBLY FOR HIGH VELOCITY DUCTED AIR TYPE CONDITIONING SYSTEM

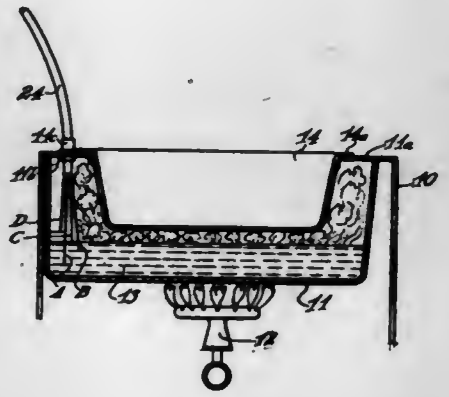
John J. Dieckmann, Harrisonburg, Donald V. Bowman, Dayton, and Anthony M. Castello, Harrisonburg, Va., assignors to Dunham-Bush, Inc., West Hartford, Conn.
Filed May 18, 1970, Ser. No. 38,072
Int. Cl. F16k *27/00, 1/22;* **F24f** *13/06*
U.S. Cl. 137—375 15 Claims



A shut off damper assembly which can be installed as a unit in an already installed sound attenuating flexible air tube for high velocity conditioned air. The air tube has a quick connector at its downstream end for connection to an orifice device and the damper assembly includes a pivoted damper to be inserted in the air tube to occupy a location spaced upstream from the connector and a clip member to be detachably mounted on the connector and support a Bowden cable sheath and a slide member for actuating the Bowden cable wire attached to the damper to control its angular position.

3,605,798
WATER LEVEL CONTROLS FOR STEAM TABLES AND THE LIKE

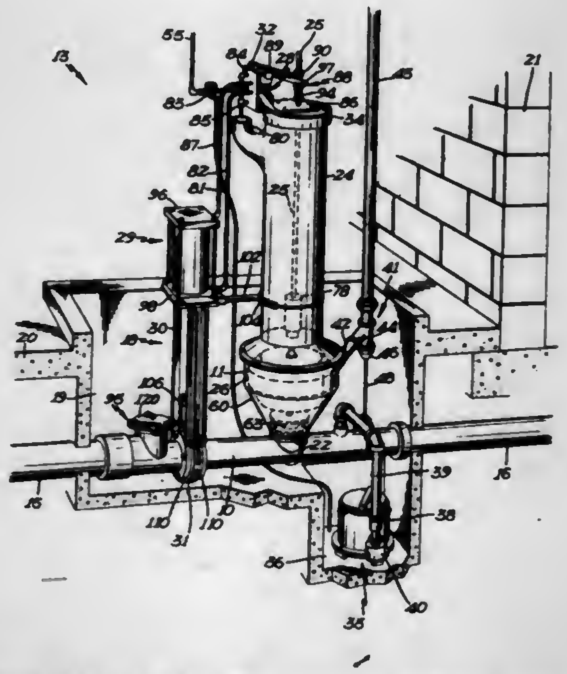
Carl P. Green, 25 N. Racine Ave. 60607, and Basil N. Burnetti, 2421 N. Washtenaw Ave. 60647, both of Chicago, Ill.
Filed Apr. 2, 1970, Ser. No. 25,217
Int. Cl. G05d *9/12*
U.S. Cl. 137—392 14 Claims



A unit accessory to steam tables and the like for automatically replenishing the supply of water in the trough of the steam table when the water level falls to a low limit, to shut off the water supply when the water level rises to a routine high level, and to shut off the power in case the water shut-off facility fails and the water rises to an extremely high level. The unit operates an emergency red signal lamp at the lowest and highest water levels and an amber signal lamp during normal operation. The unit employs a set of electrodes which depend to different levels in the water trough, and are responsive to water contact at their lower ends to form circuits employing the conductivity of the water and a solenoid-actuated valve to turn on the water.

3,605,799
SEWER FLOODING CONTROL SYSTEM

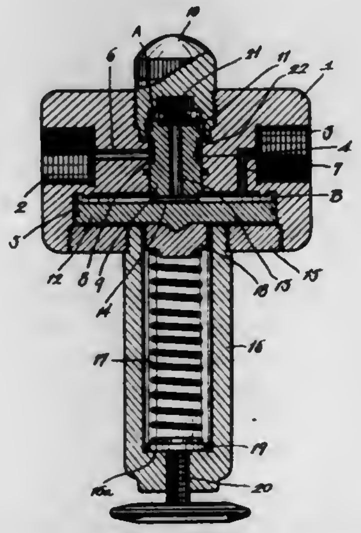
Lloyd G. Cherne, 5704 View Lane, Minneapolis, Minn. 55424
Filed Apr. 24, 1970, Ser. No. 31,586
Int. Cl. F16k *31/26*
U.S. Cl. 137—413 10 Claims



An improved sewer flooding control system utilized to prevent the flooding of a building basement because of a backup in the building sewer or the surging of sewage in the sewer. The improved sewer flooding control system is mounted below the floor level of a basement to be protected and is actuated by the presence of sewer flooding conditions in the sewer. The improved system also provides novel means for preventing flooding or damage as a result of surging sewage both in the basement as well as within the system, and also provides novel guide means for guiding a float and preventing damage from surging. When flooding conditions exist, a float member rises with the level of the sewage, and in turn, causes a valve to close in the sewer pipe, thereby preventing any flow of sewage through the pipe. When flooding conditions subside, the float is correspondingly lowered with the level of sewage and the valve is opened.

3,605,800
AUTOMATIC REGULATING VALVE

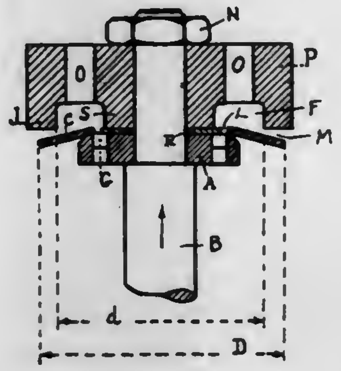
Kichiro Satoh, 29 Uguisudani-machi, Shibuya-ku, Tokyo, Japan
Filed Oct. 20, 1969, Ser. No. 867,443
Int. Cl. F16k *31/12*
U.S. Cl. 137—505.18 1 Claim



An automatic regulating valve to assure the constant flow and the constant pressure on the secondary side regardless of any changes of the pressure on the first side, in which a valve body is provided with a neck portion defining upper and lower surfaces receiving the same pressure and an adjusting means acts on the valve body and maintains the predetermined pressure.

3,605,801
SHOCK ABSORBER PISTON WITH FLOATING VALVE

Christian Bourcier de Carbon, 64 Boulevard Maurice-Barres, 92 Neuilly-sur-Seine, France
Filed Feb. 28, 1969, Ser. No. 803,363
Claims priority, application France, Mar. 1, 1968, 142,058
Int. Cl. F16d *57/00*
U.S. Cl. 137—513.7 4 Claims



The shock absorber valving includes an upper radially outwardly disposed annular seat and a lower radially inwardly disposed annular seat and a floating annular thin disc valve element having a radially outward portion adapted to seat against the first named seat and a radially inward portion adapted to seat against the second named seat; a fixed washer rigid with said lower second named seat, disposed approximately co-planar with the valve disc, but having an outside diameter slightly smaller than the inside diameter of the annular valve disc, whereby a narrow annular slit by-pass passageway is provided. Underlying said washer, the lower seat member is provided with a series of openings forming continuations of said narrow slit passageway. Alternatively, an annular groove or trough can be provided immediately beneath the slit and a series of separate passageways below the groove.

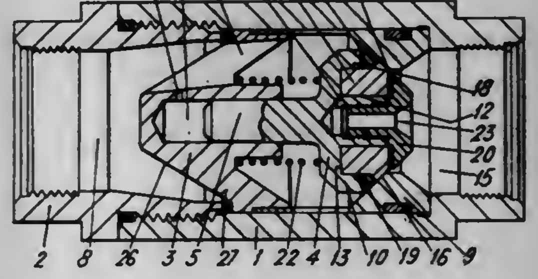
Importantly, the outer portion of said valve disc has virtually line contact with the upper outer annular seat inwardly of the periphery of the disc, the diameter D of the disc and the diameter *d* of the circular line of contact bearing the relationship

$$\frac{D-d}{d}$$

is equal to or greater than approximately 15%.

3,605,802
CHECK VALVE

Siegfried Hertell, Kelsterbach (Main), Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,219
Claims priority, application Germany, Nov. 2, 1968, P 18 06 748.6
Int. Cl. F16k *15/06, 25/02*
U.S. Cl. 137—514.5 10 Claims

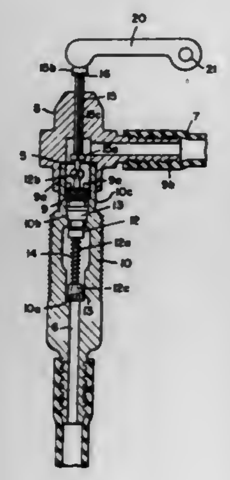


A check valve having a spring-loaded poppet held against an annular valve seat with means for damping the movement of the poppet in both opening and closing directions. The stem of the poppet moves in a blind bore, the bottom of which is connected to the downstream side of the valve by a restricted passageway to provide damping when the valve is opening. A damping element on the poppet head contacts the seat as the valve closes to force fluid out of an annular chamber behind the damper to provide damping in the closing direction.

3,605,803
VALVE

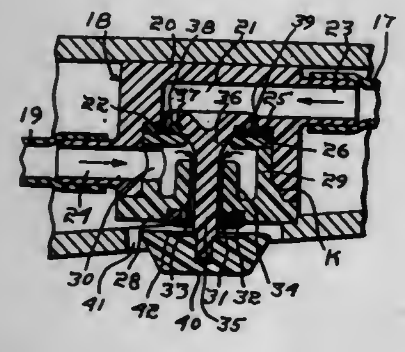
Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133
Filed Feb. 24, 1970, Ser. No. 13,549
Int. Cl. F16k *11/04*
U.S. Cl. 137—596.1 4 Claims

This invention pertains to a very simple through valve using the insides of an ordinary tire valve with a modified cap with outlet port and incorporating a plunger with a groove or flat to provide a controlled bleed when the plunger is not fully depressed and providing a non-metallic seat to close off said bleed when the plunger is fully depressed for controlled flow of a fluid such as suction from the intake of an engine to operate a suction operated motor including a diaphragm and enclosure with the diaphragm operating against a spring as in a suction operated spark advance or ventilating temperature control.



3,605,804
THREE- AND FOUR-WAY VALVES

David G. Way, Boxborough, Mass., assignor to Tapeler Corporation, Newton, Mass.
Filed Oct. 9, 1969, Ser. No. 864,985
Int. Cl. F16k *11/02*
U.S. Cl. 137—596.2 **13 Claims**

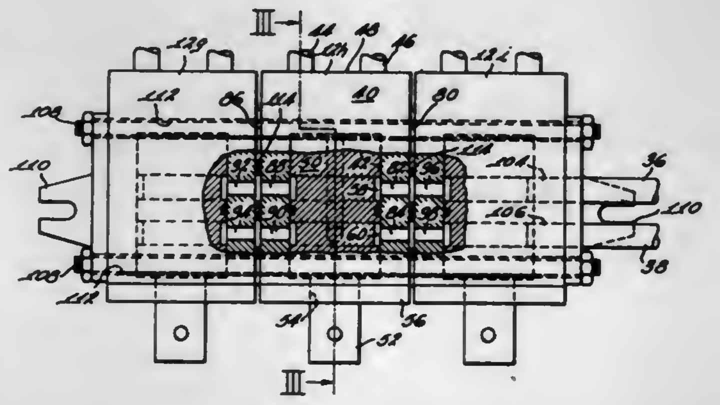


Valves are disclosed that have a member provided with a chamber open at one end in the case of a three-way valve and at both ends in the case of a four-way valve. The chambers have an internal shoulder accessible through each open end and ports on each side of their shoulders, the ports remote from the open ends being inlets. Seats each having a central port, are held against the shoulders by closures for the open ends, each closure also including a seat having a central relief port. The valves have stems extending freely through their central ports, each stem provided with seat engaging heads spaced for alternate engagement with an inlet and a relief seat. One particular combination of a valve and an air-operated device and various modes of valve operation are also disclosed.

3,605,805
STACKABLE ROTARY VALVES

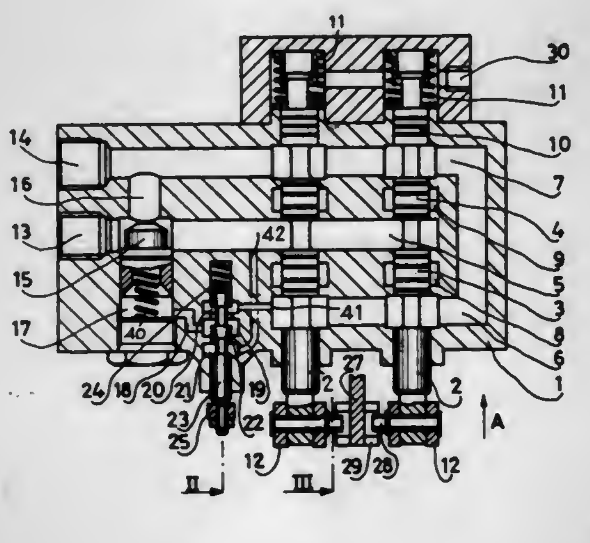
Matthew L. Worrix, Sheridan, Oreg., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 24, 1969, Ser. No. 869,037
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.12 **2 Claims**

A system for controlling a plurality of actuators operable from a source of pressurized fluid comprises a plurality of rotary valves, one valve for each actuator, designed to be stacked together in a compact unit or arrangement. Each valve comprises a body having a cavity in which a rotary cylindrical valve member is located. The valve member has two annular grooves therein, one of which is a fluid supply chamber and the other of which is a fluid return chamber. Each chamber is alternatively connectable through passages in the valve member to either of two actuator ports in the valve body. The actuator ports are connected to an actuator. The supply chamber and return chamber are also in communication with supply ports and return ports, respectively, provided in the valve body. When a plurality of valves are stacked and secured together, the supply ports and return ports of one valve body communicate with those of any adjacent valve body. Thus, it is only necessary to connect the supply port and return port of one valve body to the fluid source and fluid reservoir, respectively, to effect fluid supply and return for all valves in the stack, regardless of their number.



3,605,806
SLIDE VALVE WITH A CORRELATED RELIEF VALVE

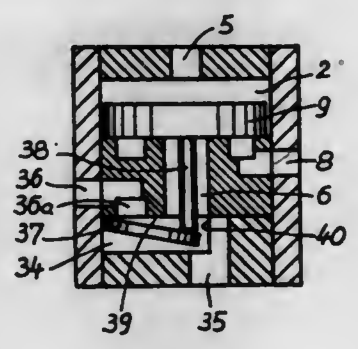
Francesco Coatti, Montorio, Italy, assignor to M.I.T.A. Macchine Infilzatrici Tabacco Automatiche S.a.r.l., Verona, Italy
Filed Feb. 17, 1970, Ser. No. 12,110
Claims priority, application France, Feb. 26, 1969, 61,218/69
Int. Cl. F16k *11/18*
U.S. Cl. 137—596.13 **4 Claims**



A device for distributing fluids at high pressure, to a number of consumer devices each having an inlet and an exhaust, has a distributor body with a feed passage for connection to the source of fluid, and an exhaust passage. Means are provided for connection of the feed and exhaust passages to the consumer devices, and a corresponding number of valves in the distributor body serve to connect the feed and exhaust passages selectively to the respective consumer devices. A communication is provided directly between the feed passage and the exhaust passage, and an auxiliary valve therein is associated with the plurality of valves so that said auxiliary valve is closed when any one of the plurality of valves is actuated.

3,605,807
SWITCHING ELEMENTS FOR A HYDRAULIC OR PNEUMATIC CONTROL SYSTEM

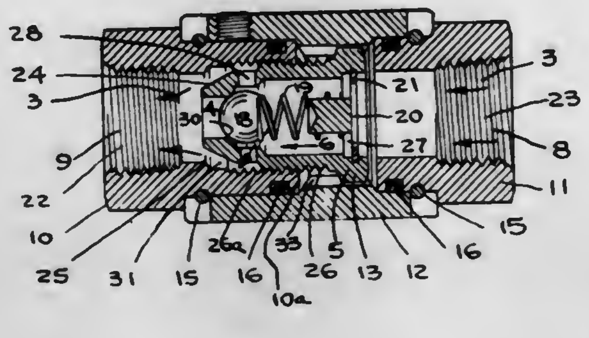
Hanns-Dieter Paschke, Neckarsulm, Olgaweg 6, Germany
Filed Sept. 9, 1968, Ser. No. 758,512
Claims priority, application Germany, Sept. 13, 1967, P 16 50 501.4; Jan. 26, 1968, P 16 75 370.1; Feb. 16, 1968, P 16 75 511.6
Int. Cl. F16k *31/143*
U.S. Cl. 137—596.18 **3 Claims**



A fluid switching valve having input, output, and control lines, and a valve chamber formed with valve seats for the control line and the ouput line, and containing a disc valve which is movable in the chamber between the valve seats, under the influence of the pressure in the control line, there being a fluid clearance around the disc valve which is of smaller effective area than the cross-sectional area of the input line. The valve may be arranged optionally either to close or open the output line on an increase in pressure in the control line, and may also be arranged to connect the output line selectively to a relief port. The valve may be included in digital switching circuits provided on digital logic function, for example AND, OR, and NOR.

3,605,808
IN-LINE EXTERNALLY ADJUSTABLE FLOW CONTROL AND NEEDLE VALVE ASSEMBLY

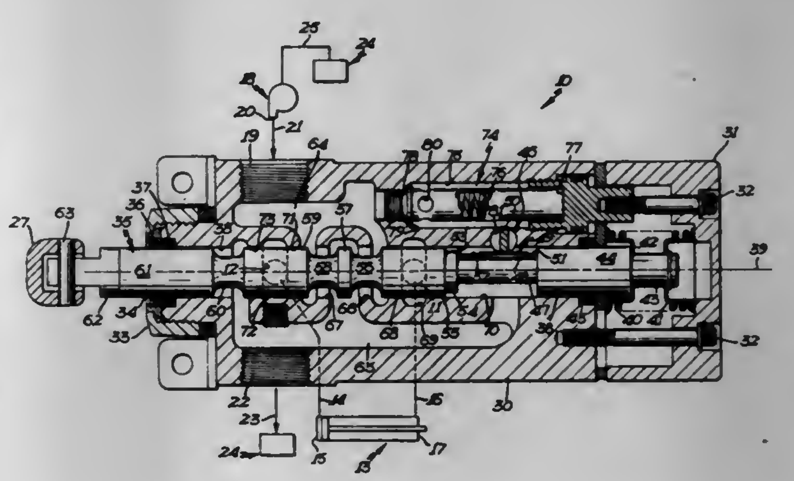
Robert M. Fisher, 20966 Los Flores Mesa Drive, Malibu, Calif. 90265
Filed June 23, 1969, Ser. No. 835,588
Int. Cl. F16k *15/18*
U.S. Cl. 137—599.2 **2 Claims**



A compact in-line flow-control valve and needle valve assembly is disclosed wherein an externally adjustable needle valve element is adjustable to permit a predetermined restricted flow in both directions or may include a spring-loaded ball assembly by which flow is restricted in one direction with free-flow thru ball assembly when flow is reversed.

3,605,809
HYDRAULIC VALVE

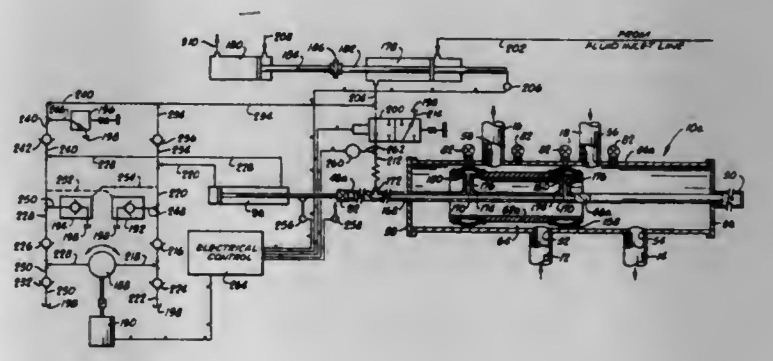
Clayton W. Thorson, Edina, Minn., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Oct. 29, 1969, Ser. No. 872,114
Int. Cl. F16k *11/02, 31/143*
U.S. Cl. 137—624.27 **7 Claims**



A four-way, three position, hydraulic valve of the automatic return to neutral type wherein the automatic return mechanism is protected from flow of working fluid and is sensitive and responsive to system fluid flow from approximately ½ g.p.m. to over 20 g.p.m.

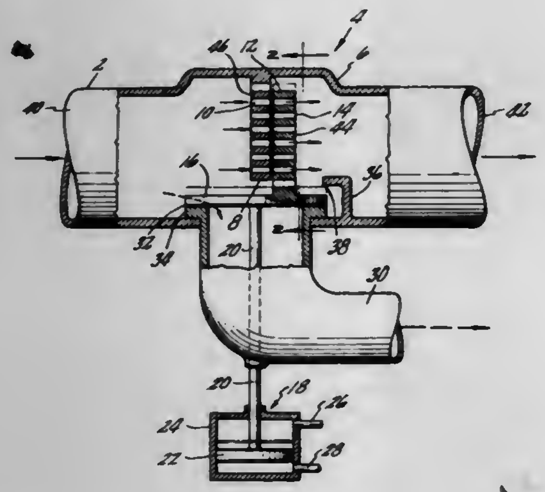
3,605,810
FLOW DIVERTER VALVE

Bernard M. Moroney, Tulsa, Okla., assignor to Metric, Inc., Tulsa, Okla.
Filed Nov. 18, 1968, Ser. No. 776,508
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.43 **11 Claims**



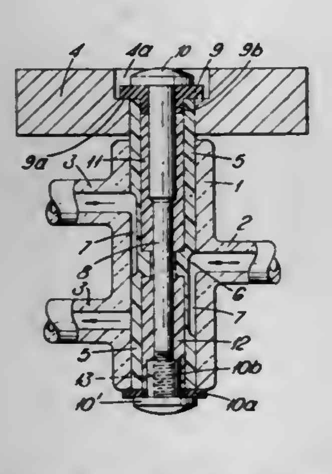
A flow diverter valve which includes an elongated, hollow external barrel concentrically surrounding a shorter hollow internal barrel and defining an annulus therewith. Annular seals are secured to opposite end portions of the internal barrel and engage the internal wall of the external barrel to prevent fluid flow past the seals between the barrels. A device is provided for reciprocating in the external barrel, the internal barrel and the seals secured thereto. A plurality of ports are provided through the external barrel in axially spaced relation therealong so that in one position of said internal barrel, some of the ports are placed in fluid communication through said annulus concurrently with the placement of the remaining of the ports in fluid communication through the interior of said hollow internal barrel, and in a second position of the internal barrel, pairing of the ports which are in fluid communication is altered.

3,605,811
CONTROLLED IMPEDANCE DIVERTER VALVE
John S. Lovell, Bloomfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 14, 1968, Ser. No. 775,674
Int. Cl. F16k *11/14*
U.S. Cl. 137—625.49 **5 Claims**



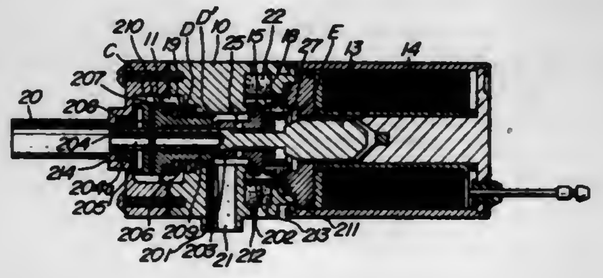
A controlled impedance diverter valve is provided by the combination of a poppet valve and a gate valve which requires small displacement to go from open to closed position.

3,605,812
MULTIPLE WAY STOPCOCKS
Wilhelm Anton Richter, deceased, late of Staffordshire, England, by Hilda Rosina Richter, executrix, Staffordshire, England, assignor to Quickfit & Quartz Limited, Walton, Stone, England
Filed Sept. 29, 1969, Ser. No. 870,593
Claims priority, application Great Britain, Oct. 16, 1968, 49,040/68
Int. Cl. F16h *11/02*
U.S. Cl. 137—627.5 **11 Claims**



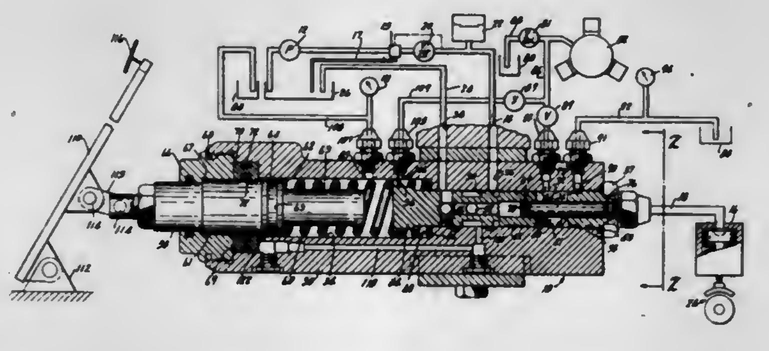
A cock comprising a body with inlet and outlet ports, a bore through the body having an obturating assembly slidable therein, either rotatably or longitudinally, the obturating assembly having a liner, a clamping device within and spaced from the liner, an elastomer e.g. polytetrafluoroethylene filling the space, glands and a device operable to vary the length of the clamping device with the glands engaging the ends of the elastomer filling to vary the radial pressure of the liner against the walls of the body bore, and grooving in the liner to provide for fluid flow between the inlet and the outlet ports.

3,605,813
CONTROL VALVE MEANS OF THE NEGATIVE PRESSURE DIFFERENTIAL TYPE
Yoshiaki Nakano, Gifu-shi, Atutoshi Okamoto, Toyohashi-shi, Noriyoshi Ando and Koichi Taniguchi, Kariya-shi, and Koichi Toyama, Toyohashi-shi, Japan, assignors to Nippon Denso Company Limited, Kariya-shi, Japan
Continuation-in-part of application Ser. No. 814,937, Apr. 10, 1969. This application June 9, 1969, Ser. No. 831,651
Claims priority, application Japan, Apr. 10, 1968, 43/29,219; Aug. 29, 1968, 43/74,608
Int. Cl. F16k *11/24*
U.S. Cl. 137—627.5 **7 Claims**



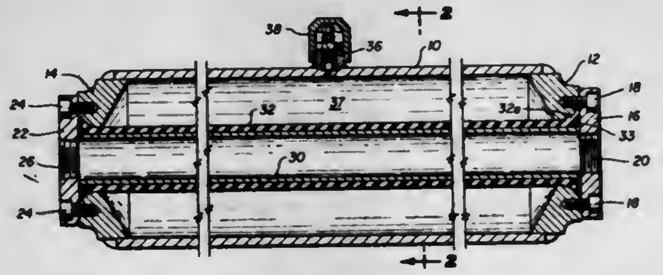
Control valve means of the negative pressure differential type which is provided with a pressure comparing diaphragm mounted on a rod for operating valves, the valves being operated such that one of them is closed simultaneously when the other valve is opened, and the rod being operated by a solenoid. The negative pressure differential between a chamber on one side of the diaphragm and a chamber on the other side thereof can be controlled by maintaining balance between said negative pressure differential and a force exerted by said solenoid on a plunger. This control valve means has particular utility in an anti-skid mechanism for motor vehicles. In this application, the control valve means permits to control and maintain the braking hydraulic pressure at a predetermined level when the braking force is released by the anti-skid mechanism.

3,605,814
PRESSURE REGULATING VALVE
Richard O. Gordon, Belgium, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.
Filed Nov. 6, 1969, Ser. No. 874,443
Int. Cl. F16k *11/07, 29/00;* **B60t** *13/16*
U.S. Cl. 137—636 **15 Claims**



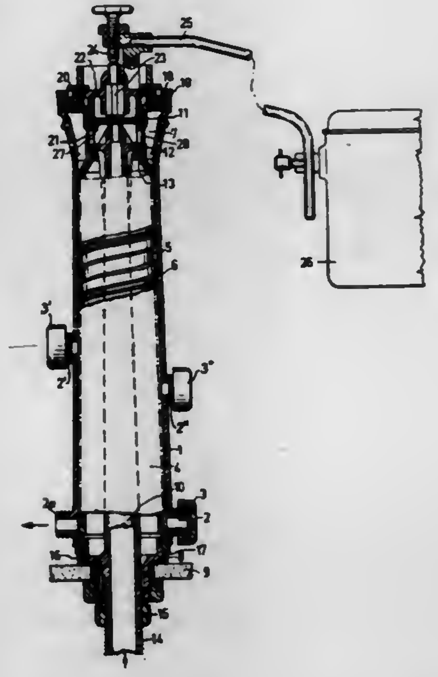
Disclosed herein is a pressure regulating valve including a spool valve mounted for modulating movement in a valve passage to control the admission of high pressure hydraulic fluid into the valve passage and having a fluid flow passage, a piston positioned in the valve passage and operatively associated with said fluid flow passage to define a hysteresis chamber in the valve passage and a reaction chamber in the fluid flow passage in the spool valve, a fluid piston pump connected to the valve to provide a pulsating force at each end of the spool valve and a control valve connected to control the pressure of the pulsating fluid at each end of the spool valve. A hydraulic power assist is provided for actuating the spool valve when operating under heavy loads.

3,605,815
PRESSURE ACCUMULATOR
Kenneth J. Von Forell, P.O. Box 2176, Industrial Park, Fort Collins, Colo. 80521
Filed Nov. 12, 1969, Ser. No. 875,731
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **1 Claim**



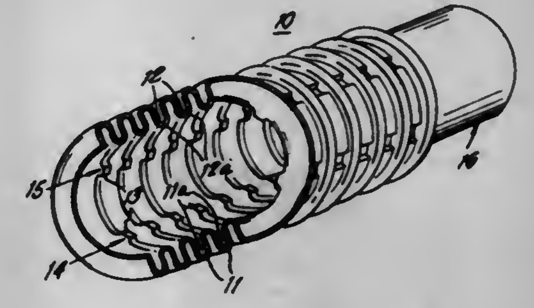
A gas pressure charged, tubular diaphragm, pressure accumulator having a flow tube formed of sintered metal providing communication passages for the tubular diaphragm and a liquid under pressure in the flow tube, so that the gas absorbs sudden surges of flow and pressure in the liquid flow line. The sintered metal flow tube in the accumulator provides full open communication between the liquid and the diaphragm but prevents extruding of the diaphragm material through the openings at high gas pressures and low liquid pressures.

3,605,816
SOUND DAMPER FOR PRESSURE WATER CONDUITS
Sten Lennart Nilsson, Nacka, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Sept. 18, 1969, Ser. No. 858,930
Claims priority, application Sweden, Dec. 6, 1968, 16,755/68
Int. Cl. F16k *47/02;* **F16l** *55/02*
U.S. Cl. 138—43 **5 Claims**



A sound damper for pressure water conduits having a tubular casing connected to an inlet tube with a valve wherein an insert is fitted into the inside of the casing and has at least two independent helical grooves in its outer surface, which grooves together with the inner wall of the casing define helical channels which at one end open into a space within the casing communicating with the outlet of the valve. The opposite ends of said channels lead each into a closable outlet on the casing.

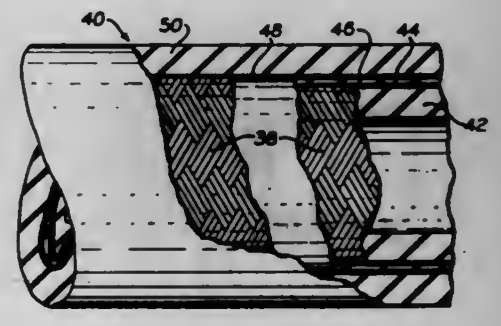
3,605,817
FLEXIBLE CORRUGATED TUBING HAVING IMPROVED PERFORMANCE CHARACTERISTICS
Joseph F. Bauman, Trenton, and Edward Kurtz, Jr., Hamilton Square, N.J., and Adrian V. Cini, Levittown, Pa., assignors to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.
Filed Sept. 22, 1969, Ser. No. 859,639
Int. Cl. A47l *9/24;* **F16l** *11/12*
U.S. Cl. 138—121 **7 Claims**



Flexible corrugated tubing, preferably formed of a thermoplastic material having a configuration for eliminating annoying whistling which occurs in conventional tubing used for moving air at relatively high velocities. The pitch and/or roughness of the tubing interior surface is controlled during formation of the tubing.

The tubing may be formed in a continuous process, for example, in the manner described in U.S. Pat. 3,280,430, issued Oct. 25, 1966, which is further provided with means combined within the molds to control the configuration of the tubing.

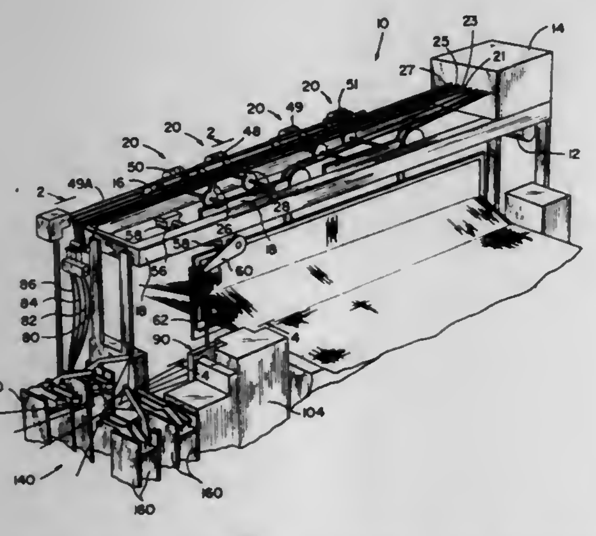
3,605,818
HIGH PRESSURE HOSE
Adolph J. Balchan, Paterson, N.J., assignor to Uniroyal, Inc., New York, N.Y.
Filed Jan. 2, 1968, Ser. No. 695,163
Int. Cl. F16l *11/08*
U.S. Cl. 138—126 **7 Claims**



Method of making a package of reinforcing ribbon. Involves impregnating substantially untwisted multi-filament yarns with wet polymeric binder, bringing the impregnating yarns together in a side-by-side relationship with adjacent edges touching, winding the yarns about a core while still wet with the binder, and drying. Further relates to resulting ribbon package, wherein the yarns are bonded to one another at their adjacent edges to form the ribbon and wherein adjacent layers of the ribbon are weakly bonded to one another, so that an outer ribbon layer is readily strippable from a layer therebeneath. Also discloses a textile-reinforced high pressure hose utilizing the ribbon in the textile reinforcement. Hose comprises a rubbery interior tube, a ply of reinforcing textile wrapped therearound, and a second rubbery tube disposed about this ply, the reinforcing textile being made up of the polymeric binder-impregnated ribbon, the interior and second rubbery tubes being vulcanized to the binder and hence tenaciously secured to the binder-impregnated textile ply.

3,605,819
FOUR COLOR PICK SELECTOR MECHANISM

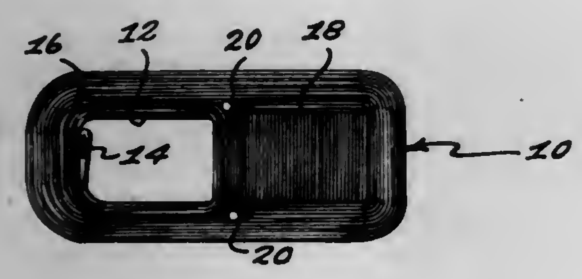
O'Neal Smith, 3469 Sylvan Lane,
Ellicott City, Md. 21043
Filed Jan. 26, 1970, Ser. No. 5,627
Int. Cl. D03d *47/24*
U.S. Cl. 139—126 **7 Claims**



A weaving machine of the Jacquard type is disclosed wherein multiple weft supply choices by the dobby head are executed through a cam arrangement.

3,605,820
LOOP PICKER FOR LOOMS AND METHOD OF FORMING SAME

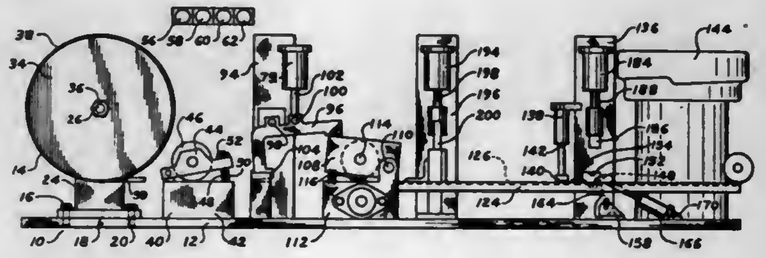
Kyle Campbell, Charlotte, N.C., assignor to The Terrell Machine Company, Charlotte, N.C.
Filed Nov. 26, 1969, Ser. No. 880,211
Int. Cl. D03d *49/36*
U.S. Cl. 139—159 **8 Claims**



A loop picker for looms of the type formed by molding assembled layers of rubberized fabric during a vulcanizing cure is improved by interposing a layer of thermoplastic material (e.g., nylon fabric) in the rubberized fabric layers surrounding the picker stick hole or "loop" provided in the picker body and subjecting this interposed layer to the vulcanizing cure and molding along with the rubberized fabric layers. The resulting picker can have the loop thereof sized to fit a picker stick on which it is to be installed with a grip effective enough to eliminate any need for glue or screw fastening such as is commonly employed for maintaining pickers of this sort in place during use.

3,605,821
BINDING STRIP MEASURING AND ASSEMBLY MECHANISM

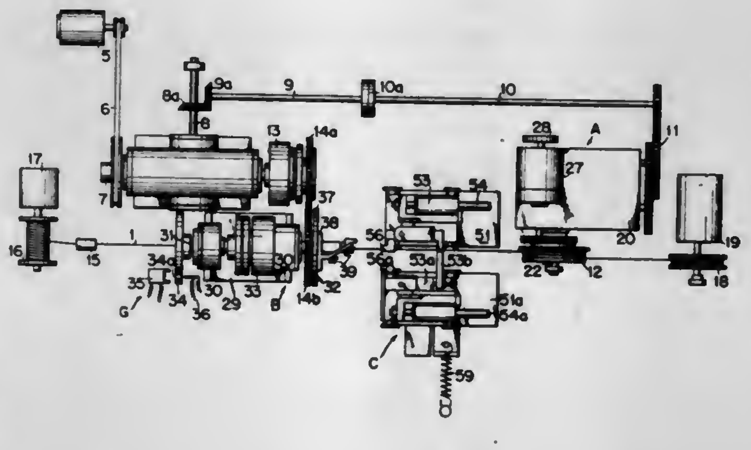
Brown Isaacs, 702 Ave. B, South Houston, Tex. 77011
Filed Aug. 15, 1969, Ser. No. 850,566
Int. Cl. B21f *9/02, 45/16*
U.S. Cl. 140—1 **11 Claims**



A mechanism for automatically assembling a binding clip to one extremity of a strip of metal material, measuring a desired length of the strip material and severing the desired length of strip material from a storage roll. The mechanism is provided with a strip guide bar having a strip guide groove formed therein. A brake mechanism, a strip drive mechanism, and a strip extremity immobilizing mechanisms, are disposed adjacent the strip guide groove to control movement of the strip material. A strip cutter, a strip binding apparatus, and a clip fastening device are provided adjacent the strip guide groove to perform cutting, bending, and fastening operations on the strip material. A clip orienting and feed device is provided to orient binding clips so that a clip may be connected to the free extremity of the strip material. Control of the entire mechanism is achieved by an adjustable sequence timing control device which is responsive to linear movement of the strip material being driven.

3,605,822
APPARATUS FOR WINDING COILS TO FORM A STRAIGHT LEG PORTION BETWEEN ADJACENT COIL SECTIONS

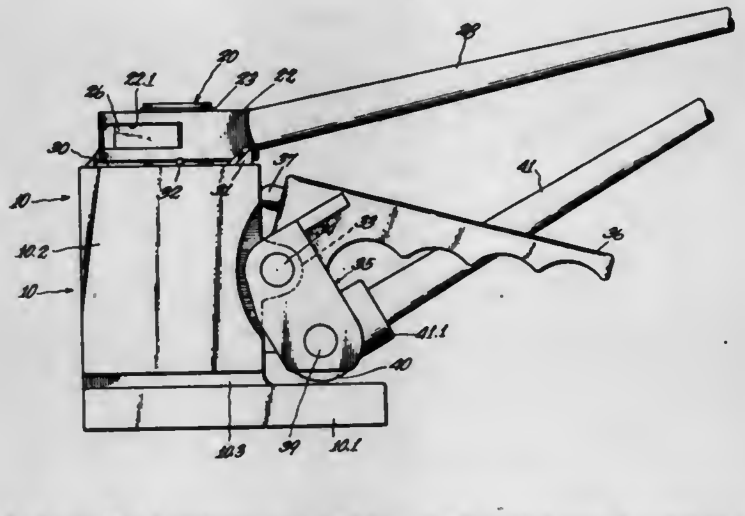
Takashi Noguchi, Sagamihara-shi, and Takashi Takahashi, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Dec. 4, 1968, Ser. No. 781,168
Int. Cl. B21f *3/04*
U.S. Cl. 140—71.5 **3 Claims**



A coiling head is rotated about a continuously advanced mandrel to helically wind a filament wire about the mandrel to form coil sections and while the rotation of the coiling head is being stopped the mandrel and filament wire are clamped by chucks and advanced straightly to form the straight leg portion between adjacent coil sections.

3,605,823
BANDING APPARATUS

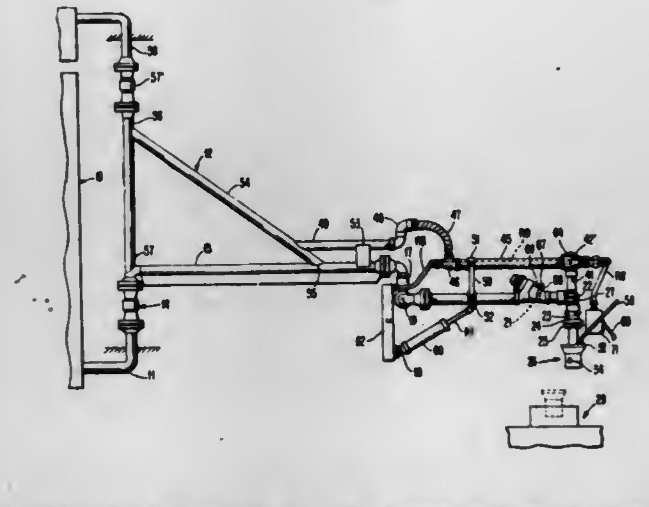
Peter Fromm, Zurich, Switzerland, assignor to A. Fromm G.m.b.H., Zurich, Switzerland
Filed Feb. 17, 1969, Ser. No. 799,782
Int. Cl. B21f *9/02;* **B25b**
U.S. Cl. 140—93.2 **6 Claims**



A tool for fastening together overlapped band portions and providing upper and lower die members for receiving such band portions therebetween. The upper die member is vertically movable toward the lower die member to form tongues in respective band portions which interlock with each other, such movement of the upper die member being effected by an actuating member rotatable about a vertical axis and having a helical cam surface for effecting such die member movement.

3,605,824
METHOD AND SYSTEM FOR LOADING LIQUID INTO A CONTAINER OR THE LIKE

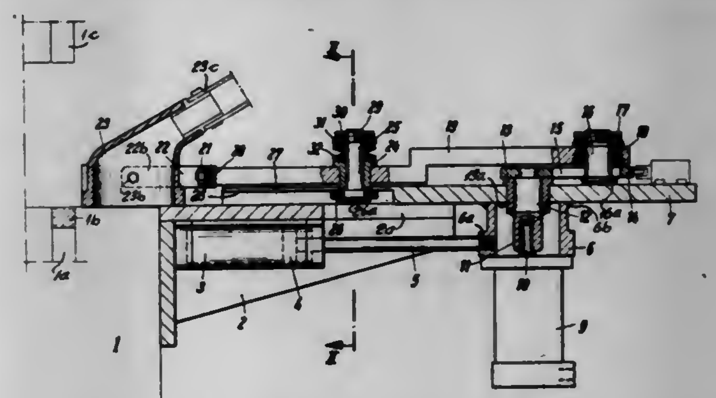
Michael J. Madden, West Covina, Calif., Robert L. Murray, Dayton, Ky., and Stephen C. Lemon and Paul R. Ostand, Cincinnati, Ohio, assignors to Dover Corporation, Cincinnati, Ohio
Filed Sept. 20, 1968, Ser. No. 761,236
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 **13 Claims**



This disclosure relates to an apparatus and method whereby liquid is supplied to a container from a supply line only when a vapor seal is formed between the supply line and the container. Flow of liquid is automatically stopped when the liquid in the tank reaches a predetermined level, when the pressure in the tank exceeds a predetermined value, or when the vapor seal is broken. Vapor is removed from the container during filling thereof. When filling ceases or the supply line is no longer vapor sealed to the container, the vapor removal line is automatically blocked to prevent escape of vapors into the atmosphere.

3,605,825
METHOD AND APPARATUS FOR FILLING THE DIE OF A POWDER PRESS, ESPECIALLY OF A METAL POWDER PRESS

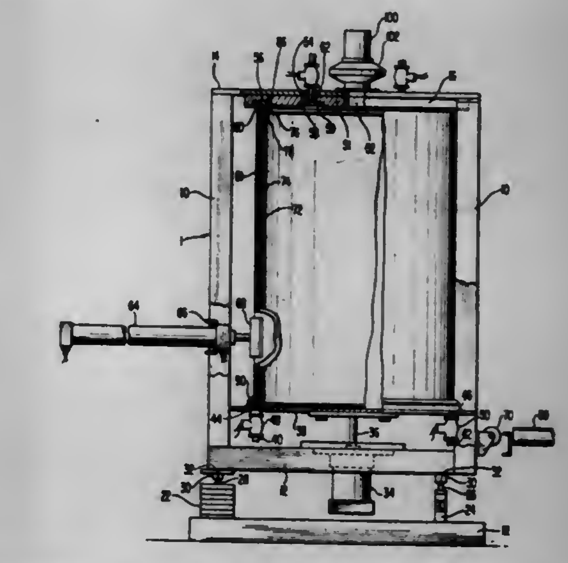
Rolf Hermes, Rheydt-Giesenkirchen, Germany, assignor to Mannesmann-Meer Aktiengesellschaft, Monchen-Gladbach, Germany
Filed Sept. 30, 1969, Ser. No. 862,294
Claims priority, application Germany, Oct. 2, 1968, P 18 01 397.3
Int. Cl. B22f *9/00*
U.S. Cl. 141—1 **15 Claims**



Filling the die of a powder press, especially of a metal powder press, wherein the powder is filled into the die or matrix through a filler member which performs a rotational movement, particularly a substantially circular rotational movement. The apparatus for performing such filling process comprises a filler member which is attached to one end of a lever, the other end of which is connected to a crank drive arrangement. The lever itself is supported, preferably at its center, in a longitudinal slot of a lever support member which is in turn slidably supported on a base member and driven by a piston and cylinder arrangement operatively positioned between the base member and the lever support member. The crank drive is driven by a motor connected through a shaft to the crank drive, the shaft extending preferably through said lever support member.

3,605,826
METHOD AND APPARATUS FOR FILLING CONTAINERS

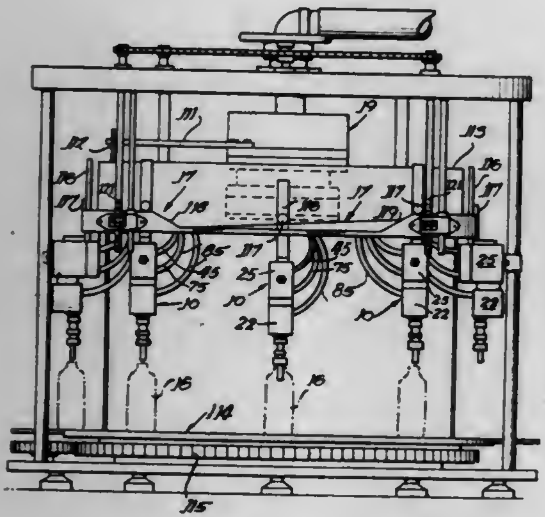
Clarence F. Carter, Danville, Ill., assignor to Carter Engineering Company
Filed May 1, 1970, Ser. No. 33,775
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—5 **19 Claims**



The disclosure relates to a method and apparatus for filling containers with particulate material by at least partially surrounding the container with a shroud which sealingly engages the container to provide a barrier between the shroud and the mouth of the container. The container is loaded into a container filling zone, filled, and unloaded from the container filling zone with the barrier between the shroud and the container, thereby preventing contamination of the shroud interior and the container exterior. A dust collecting system is operable to prevent contamination by particle dust and particulate material while loading and unloading containers into and out of the filling zone.

3,605,827
ROTARY FILLING MACHINE

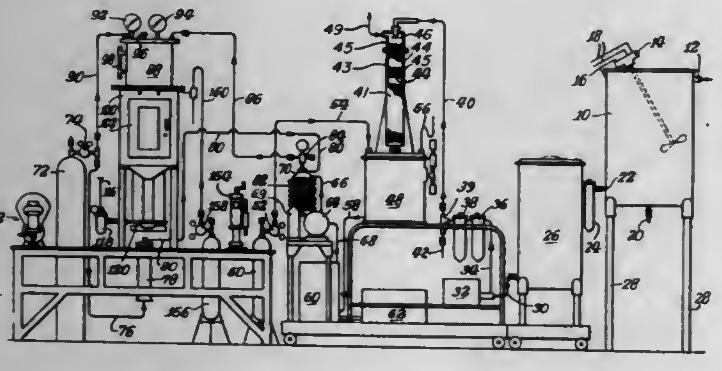
James A. Risser, Northbrook, Ill., assignor to U.S. Bottlers Machinery Company, Chicago, Ill.
Filed Aug. 4, 1969, Ser. No. 847,182
Int. Cl. B65b *3/26*
U.S. Cl. 141—39 **9 Claims**



A rotary filling machine having spaced cam-controlled filler heads or units with depending filling stems which are automatically lowered and raised for accurate level filling of containers or bottles of any suitable material, each filler head when lowered enters its filling stem in the opening or neck of a container, sealing and air sensing its container before filling, and rejecting a defective container whereby only those containers which are leakproof under air pressure are filled with the desired volume of the liquid product. The filling head or unit includes a flexible sensing diaphragm and a ported plunger providing an air valve, and a flexible diaphragm and plunger having a valve controlling product flow, each operated by an air flow system, and vacuum signals determining when to commence filling and when to stop.

3,605,828
PILOT BOTTLING AND CANNING UNIT

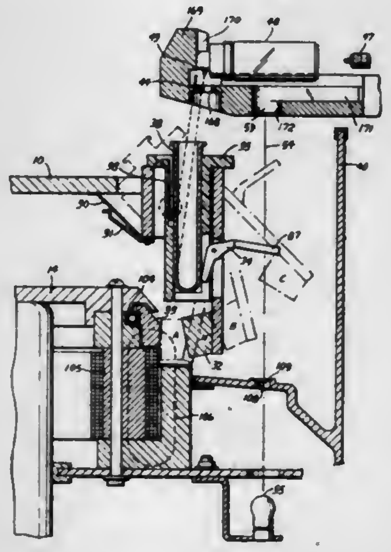
Emanuel T. Bohm, New York, N.Y., assignor to CPC International Inc.
Continuation of application Ser. No. 660,293, Aug. 14, 1967. This application Apr. 1, 1970, Ser. No. 22,130
Int. Cl. C02d *1/00*
U.S. Cl. 141—69 **8 Claims**



A pilot unit for bottling and canning small quantities of soft drink beverages, whereby ingredients can be mixed under controlled conditions to permit testing of the results of ingredient variations. The unit includes means for preparing and storing the water to be used, provides means for carbonating the water, and permits packaging of the beverage in a carbon dioxide atmosphere, whereby specified manufacturing conditions can be duplicated, or varied, as desired.

3,605,829
BLOOD HANDLING MACHINE

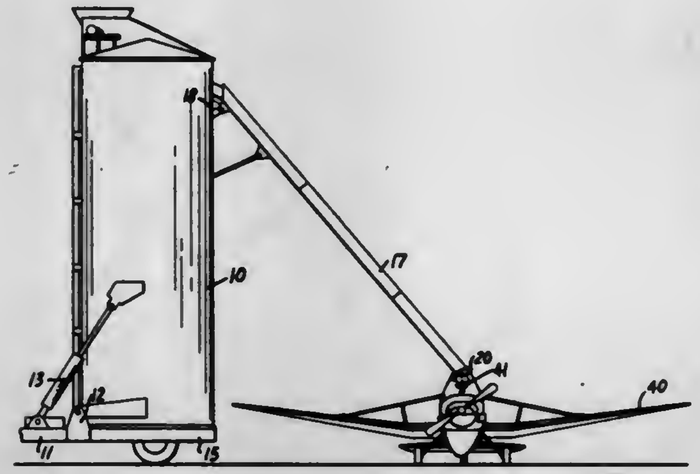
Joseph N. Genese, Paterson, Edward J. Rapoza and Charles F. Galanaugh, Butler, Harry M. Kennard, Chester, Roger A. Chevalaz, Rockaway, and John A. Smith, East Orange, N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Apr. 29, 1970, Ser. No. 32,915
Int. Cl. B65b *1/22*
U.S. Cl. 141—79 **9 Claims**



An apparatus for automatically performing a series of operations on a blood sample contained in a vial. For example, in performing the Coombs antiglobulin test, the apparatus is programmed to initially inject saline into the vial, to centrifuge the vial at approximately 1300 RCF, and then to decant the saline from the vial leaving a "button" of blood cells in the vial. The above sequence is repeated three times, and then a predetermined amount of Coombs serum is injected into the vial. The vial is then agitated to mix the serum with the blood cells, and then it is centrifuged at 500 RCF. At the termination of the centrifuging operation, the sample will be ready for final analysis by a technician. In carrying out this invention, a circular turntable is provided having a plurality of receptacles positioned about its outer periphery. Each of the receptacles is adapted to receive a single vial and includes a pivotally mounted flag which is lifted to a horizontal position whenever a vial is present. An electrical motor is provided to rotate the turntable, and a dispensing mechanism overlies the periphery of the turntable and includes a nozzle for injecting the saline as well as a nozzle for injecting the Coombs serum downwardly into the vial. A photoelectric mechanism is provided for detecting a horizontal flag which then actuates the appropriate injection mechanism. The Coombs injecting mechanism includes a removable cartridge containing the serum. The cartridge comprises a tubular barrel which is closed at its forward end by a nozzle and at its rear end by a cylindrical piston positioned within the bore of the barrel. The mechanism further includes a plunger for driving the piston into the bore of the barrel to dispense the liquid from the forward nozzle.

3,605,830
DISPENSING DEVICE FOR STORAGE BIN

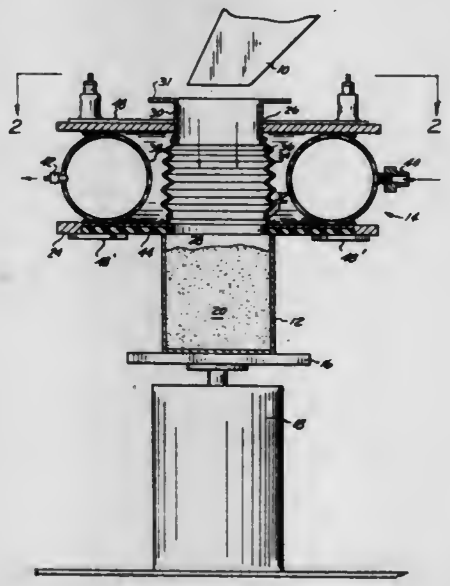
Roy Haskins, % The Haskins Co., Inc., P.O. Box 4215, Station B, Spokane, Wash. 99202
Filed Oct. 21, 1968, Ser. No. 769,030
Int. Cl. B67c *3/26;* **B65b** *1/04;* **B60p** *1/04*
U.S. Cl. 141—284 **5 Claims**



A dispensing device is described for a portable cylindrical storage bin to discharge a full load of agricultural chemicals into an airplane. The dispensing device includes a vertical conveyor, a chute and elongated spout pivotally mounted to the exterior of the bin. The spout is pivoted by a hydraulic cylinder to position a discharge opening over the body of the airplane.

3,605,831
INFLATABLE CLOSURE DEVICE

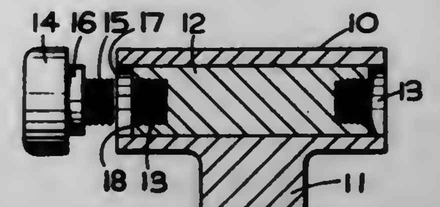
Cecil Patrick Michael Mitchell, Wyandotte, and Charles William Axce, Trenton, Mich., assignors to Wyandotte Chemicals Corporation, Wyandotte, Mich.
Filed Dec. 8, 1969, Ser. No. 882,988
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—388 **5 Claims**



Apparatus for delivering pulverulent material to a receiving drum includes a feed chute and a drum loading closure device. The device, itself, includes a pair of apertured support members having their respective apertures coaxially aligned. The support members are secured to a tunnelway which extends through the apertures and has one end thereof secured to the feed chute and its other end communicating with the drum. A toroidal element is concentrically disposed about the tunnelway in the space defined between the two support members. Sealing means is provided on the lower support member to provide a pressure-tight seal between the device and the drum. Included also are means for urging the device into engagement with the drum.

3,605,832
HAMMERS

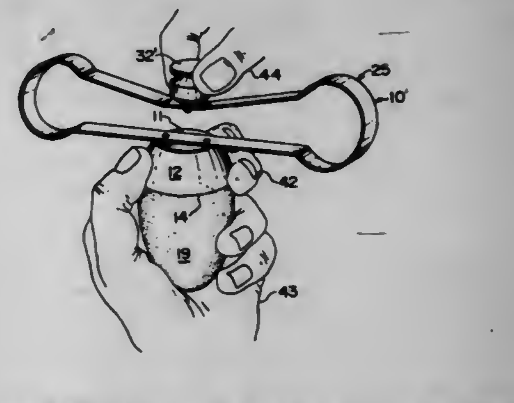
Walter R. Stephens, Solihull, England, assignor to Thor Hammer Company Limited
Filed Oct. 10, 1968, Ser. No. 766,411
Claims priority, application Great Britain, Feb. 21, 1967, 8,078/67; May 30, 1967, 24,823/67; Oct. 19, 1967, 47,625/67
Int. Cl. B25d *1/02*
U.S. Cl. 145—29A **4 Claims**



A hammer having one or two replaceable striking faces and comprising a head which is of tubular form and within which is fitted a removable insert, the or both replaceable striking faces being connected to the insert so that when in position the head, insert and the or both replaceable striking faces are all held rigidly together. Provision may be made for the accommodation of a quantity of metal shot.

3,605,833
EGGSHELL OPENER

Herman D. Strang, 308 Ridge St., Algonquin, Ill. 60102
Filed June 16, 1969, Ser. No. 833,618
Int. Cl. A47j *19/28*
U.S. Cl. 146—2E **4 Claims**

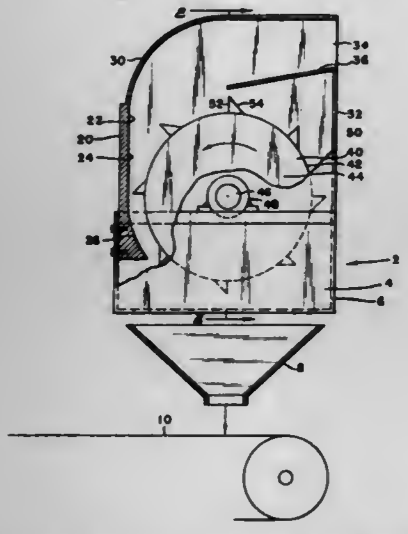


A sanitary eggshell opener includes a circular squared-edge skirt dependent from an anvil, a U shaped leaf spring, one arm of which is fixed to the cutter, the other arm being fixed to a hammer which is positioned to strike the anvil when the U shaped spring is flexed open and released. The egg-engaging edge of the circular cutter is squared. This is found to provide sharp, well defined line, while preventing the initiating of large chips in the remaining portion of the eggshell.

3,605,834
COCONUT BREAKING MACHINE

Luis E. Cancel, San Juan, Puerto Rico, assignor to the Commonwealth of Puerto Rico
Filed June 5, 1969, Ser. No. 830,621
Int. Cl. A23n *5/04*
U.S. Cl. 146—7 **1 Claim**

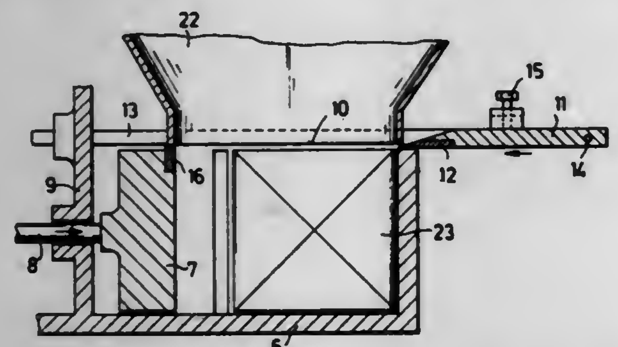
A machine for breaking, without crushing, the nut of a coconut, comprising a fixed smooth pressure plate and a rotating cylindrical drum the axis of which is parallel to the pressure plate. The drum has a smooth surface spaced from the pressure plate a distance less than the diameter of the coconut and is provided with axially extending slats which are spaced apart a distance greater



than the diameter of the coconut, and which co-operate with the pressure plate and the surface of the drum to provide pockets within each of which a coconut is positioned to be pressed between the pressure plate and drum.

3,605,835
CUTTING APPARATUS FOR FOODSTUFFS AND THE LIKE

Ernst Holz, Hauptstrasse 76, Heidenheim-Schnaitheim, Germany
Filed July 9, 1969, Ser. No. 840,356
Claims priority, application Germany, July 12, 1968, P 17 79 153.6
Int. Cl. B26d *3/26*
U.S. Cl. 146—78R **10 Claims**

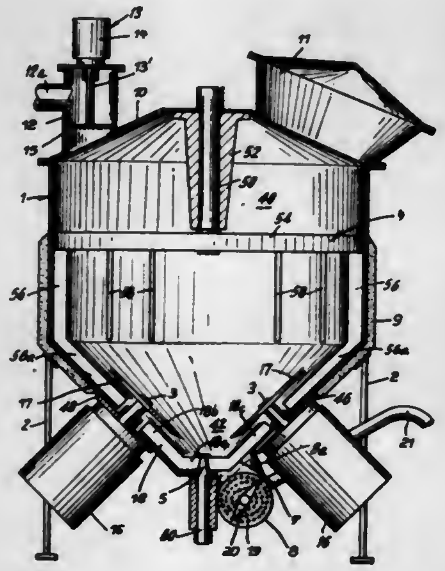


A receptacle has an inlet opening at one side and an outlet opening at another side inclined to the one side. Cutter means extends across the outlet opening so as to cut material issuing therethrough. Pusher means is mounted for advancing the receptacle in direction towards the outlet opening so as to push material therethrough. A hopper communicates with the inlet opening for introducing material into the receptacle. A severing blade is mounted for movement across the inlet opening at least substantially in the general plane of the latter to thereby sever and separate the material in the receptacle from the material in the hopper means.

3,605,836
GRINDER WITH TEMPERATURE REGULATION AND STIRRING MEANS

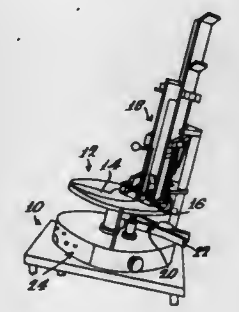
Karl Schnell, Muhlstrasse 28, Winterback, near Stuttgart, Germany
Filed Dec. 11, 1968, Ser. No. 783,052
Claims priority, application Germany, Mar. 8, 1968, P 16 32 883.9
Int. Cl. B02c *18/12*
U.S. Cl. 146—79 **15 Claims**

A grinder construction, particularly for grinding meat, bread and similar products includes a large size receptacle or vessel having means for selectively heating and cooling the contents to be treated therein. The lower end of the vessel is conically shaped and terminates in an opening or conduit connected to a fine grinding machine. At least one rotating coarse grinding wheel is located within the vessel adjacent one of the oblique conical walls in the vicinity of the discharge to the fine grinding machine. The vessel also contains an upper rotatable stirrer and a lower rotatable stirrer, the latter including blades which rotate past the opening to the fine grinder. A gas exhaust opening is defined at the upper end of the vessel and is advantageously connected to a vacuum pump so that processing can be effected under vacuum or air exclusion conditions so that the grinding material can be protected against acid and fermentation and can be stored for a longer period of time. A froth breaker is located in the gas discharge line adjacent the top of the vessel.



3,605,837
SLICER CONTROL SYSTEM

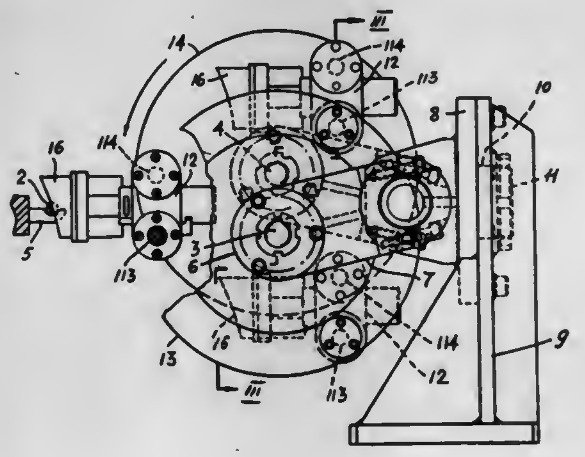
Robert D. Lambert, Fort Wayne, and Keith E. Flesch, Garrett, Ind., assignors to Peter Eckrich & Sons, Inc.
Filed Apr. 24, 1969, Ser. No. 819,017
Int. Cl. B26d *4/56*
U.S. Cl. 146—94 **16 Claims**



A food slicing apparatus for use in the process of fabricating multiple slice food packages for closely controlling the weight of each package to thereby minimize so-called "give-away." The apparatus includes a cutting area in which a blade is operative together with feeding means for feeding a food product having a generally uniform cross section into the cutting area. After each slice to go into a package is cut, the weight of the slices cut to that point is judged against a predetermined standard and an adjustment in the feed rate and the position of the blade within the cutting area is made after each slice is cut as required to alter slice thickness and thus weight to achieve a standard package weight.

3,605,838
CONTINUOUS CIGARETTE ROD CUTOFF

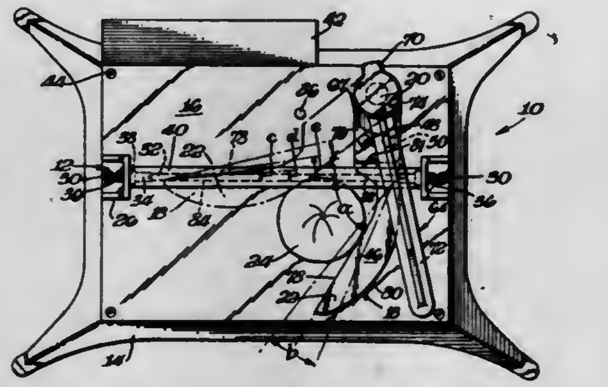
Goffredo Gianese, Bologna, Italy, assignor to American Machine & Foundry Company
Filed Sept. 29, 1969, Ser. No. 861,859
Claims priority, application Italy, Oct. 2, 1968, 7,373/68
Int. Cl. B26d *3/16*
U.S. Cl. 146—101 **10 Claims**



A blade for cutting a continuous cigarette rod into predetermined lengths is coupled to a link interposed between two crank members. Each crank member rotates about its own shaft, the two shafts being parallel and offset relative to each other, and parallel to the longitudinal axis of the continuous cigarette rod.

3,605,839
SLICING DEVICE

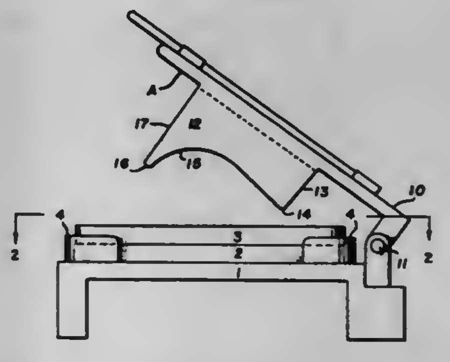
Samuel L. Gerson, Wilmington, Del., assignor to Restaurant Equipment Design Co., Wilmington, Del. Continuation-in-part of application Ser. No. 673,147, Oct. 5, 1967. This application Nov. 18, 1968, Ser. No. 778,004
Int. Cl. B26d *3/26*
U.S. Cl. 146—169 **19 Claims**



An array of spaced parallel bars is rotatably mounted to mesh between a rack of linear cutters. The bars rotate towards the cutters from an open angle to initially slide the object across the cutters to puncture it. The action changes in final closing stages to primarily pushing to help discharge the sliced object from between the cutters. This action is facilitated by making the portions of the bars extending through the cutter of scythe shape. The bars are conveniently rotated by connecting the boss of an operating handle to them adjacent their pivot upon the base. Operation downward vertically is highly efficient and together with serrated blades facilitates slicing harder vegetables like onions.

3,605,840
APPARATUS FOR COMMINUTING COMESTIBLES

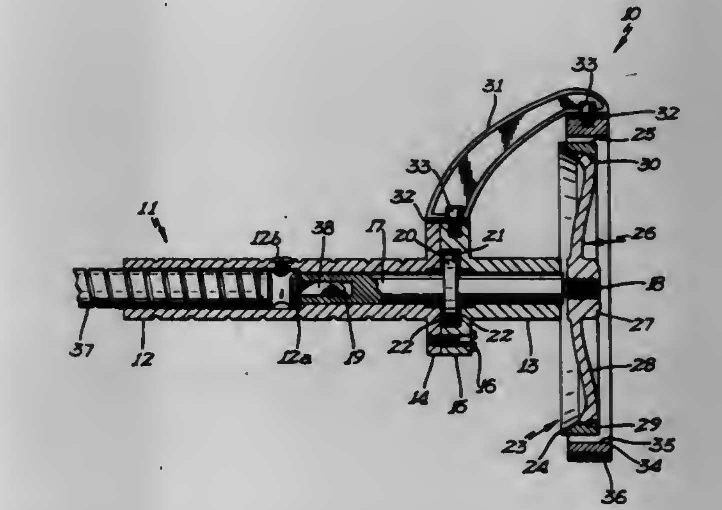
Charles H. Morrett, 16 Willowbrook Road, Bromall, Pa. 19008
Filed July 17, 1969, Ser. No. 842,510
Int. Cl. B26d *3/26*
U.S. Cl. 146—169 **3 Claims**



This invention relates to apparatus for comminuting fruit, vegetables and the like comprising superposed harps or sets of parallel cutting blades in which the blades in each set are laterally offset with respect to those in the other set, together with impeller blades of novel design whereby the article to be cut is first presented in a slightly rotative motion to the superior blade set and by them progressively severed into relatively thick slices, and then by the same motion of the impeller blades presented to the cutting blades of the inferior set whereby the thick slices are bifurcated and thus reduced to relatively thin ones; thereafter the slices may be piled together and rotated through 90° for reducing them to slivers which in a further pass may be "diced" if desired.

3,605,841
CUTTING DEVICE

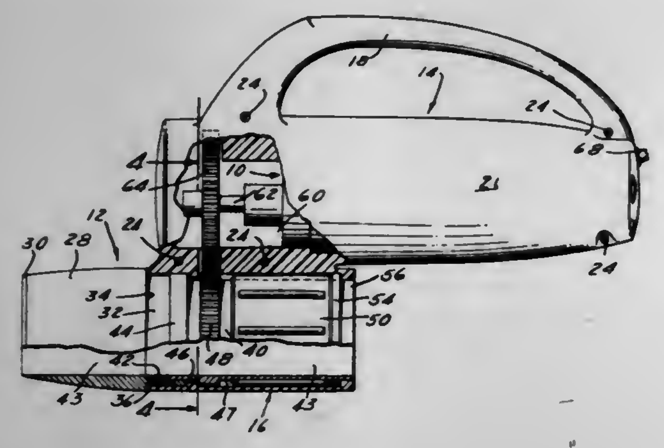
Oscar H. Lindstrom and Nathan A. Fischer, Austin, Minn., assignors to Geo. A. Hormel & Co., Austin, Minn.
Filed Mar. 24, 1970, Ser. No. 22,163
Int. Cl. A22c *17/12*
U.S. Cl. 146—203 **5 Claims**



A cutting device for removing fat from a chunk of meat includes a handle having a revolvable shaft therein, which is connected at its forward end to an annular blade. An annular guard member is positioned around and spaced from the annular blade, and the guard member has a serrated exterior surface which is positioned against the surface of the meat which is to have the fat removed therefrom. In one form of the invention, a flexible drive shaft is connected to a shaft in the handle, and in another form, an air motor is positioned interiorly of and constitutes a part of the handle for revolving the annular blade.

3,605,842
CUTTING TOOLS

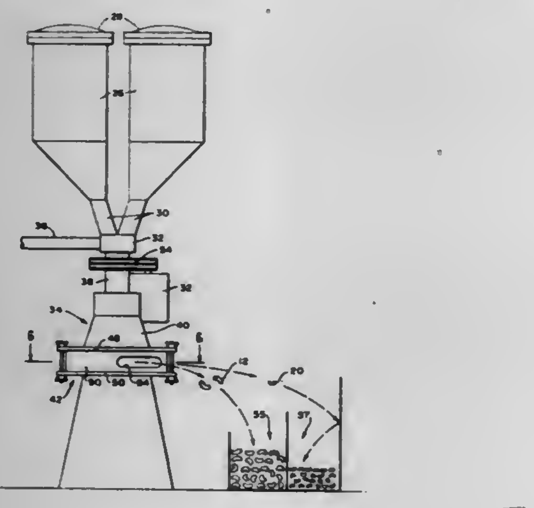
Donald R. Kuri, 19395 E. Dairen St., Rowland Heights, Calif. 91745
Filed Aug. 26, 1968, Ser. No. 755,046
Int. Cl. A47j *25/00;* **B26b** *3/00*
U.S. Cl. 146—203 **1 Claim**



Power operated cutting apparatus having a hollow, rotatable cylindrical blade with a sharp annular cutting edge at the leading end. An electric motor is connected to the blade for rotating same.

3,605,843
CASHEW NUT SHELLER

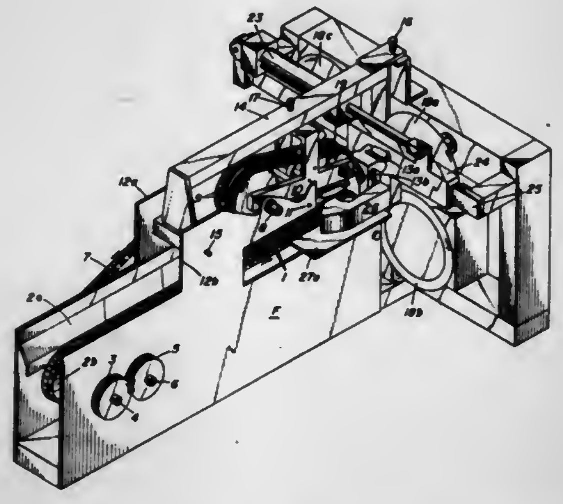
Robert C. Dean, Jr., Norwich, and Richard W. Couch, Jr., South Royalton, Vt., assignors to Creare, Inc., Hanover, N.H.
Filed Jan. 2, 1970, Ser. No. 138
Int. Cl. A23h *5/00*
U.S. Cl. 146—223 **18 Claims**



A method and apparatus for removing explosively the kernel of a cashew or similar nut from its shell while isolating the kernel from contamination. The explosive opening of the nut-shell results from a technique in which the nut initially is subjected to a compressed gas for a time interval during which the internal pressure of the nut is raised. The nut then is exploded rapidly, to a lower pressure which fractures the shell and separates the shell from the kernel. The nuts are isolated and exploded individually and in rapid, continuous succession. As each nut is exploded both its kernel and shell are ejected from the machine along different trajectories and are collected and sorted separately and automatically thus avoiding any contact between the separated shells and kernels.

3,605,844
CORN DEBUTTING MACHINE AND METHOD

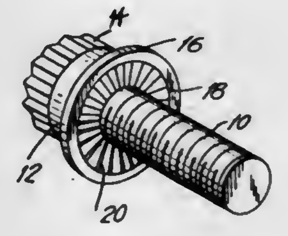
Charles G. Peter Oldershaw, Avon, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
Filed Aug. 14, 1969, Ser. No. 850,108
Int. Cl. A23n *15/04*
U.S. Cl. 146—242 **7 Claims**



A machine for debutting corn including means for gauging the ears whereby minimum damage to the kernels and controlled depth of cut are obtained.

3,605,845
SELF-LOCKING FASTENER

Gerhard H. Junker, Bad Breisig, Germany, assignor to Standard Pressed Steel Co., Jenkintown, Pa.
Continuation-in-part of application Ser. No. 733,663, May 31, 1968. This application Oct. 3, 1969, Ser. No. 868,965
Int. Cl. F16b *39/282*
U.S. Cl. 151—37 **24 Claims**

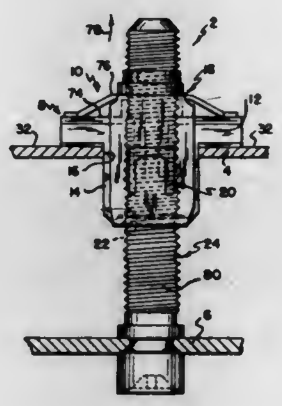


A self-locking fastener having a serrated bearing surface arranged to penetrate a workpiece, whereby resistance to loosening is created. The serrations in the bearing surface are located within a smooth surface, annular ring which, upon engagement with the workpiece, opposes further penetration of the serrations and controls the extent of penetration of the serrations.

3,605,846
FASTENING ASSEMBLY

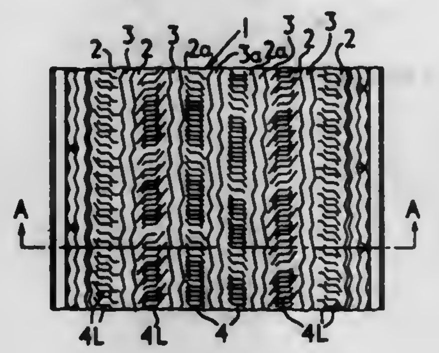
Clarence R. Van Niel, North Olmsted, and William L. Seitz, Parma, Ohio, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Sept. 24, 1969, Ser. No. 860,764
Int. Cl. F16b *13/04, 39/284*
U.S. Cl. 151—41.75 **4 Claims**

A fastening assembly for mounting with an apertured support panel including plug-like retainer member and attachable clip-like locking member adapted for resilient mounting on said retainer member. The retainer member and locking member are adapted for insertion through the aperture in the support member, as a unit, and coact with one another to secure the assembly to the support member. The locking member is provided with locking elements which are disposed for engagement with one side of the support panel, and a deformable base which is disposed for resilient engagement with the retainer member for interlocking engagement with the opposite side of the support member to enable relative movement of the locking member with respect to the retainer member and resilient mounting of the assembly with the support member.



3,605,847
PNEUMATIC TIRES

Vernon E. Gough, Croyde, near Braunton, North Devon, England, assignor to Dunlop Holdings Limited, St. James, London, England
Filed July 7, 1969, Ser. No. 839,548
Claims priority, application Great Britain, July 9, 1968, 32,704/68
Int. Cl. B60c *11/12*
U.S. Cl. 152—209 **5 Claims**

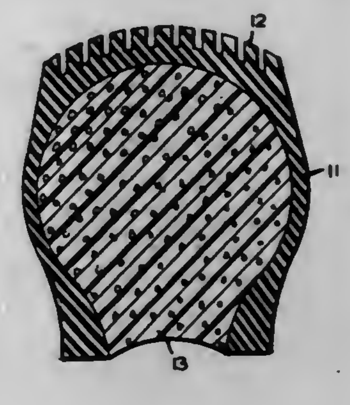


A pneumatic tire having a tread comprising ribs, defining at least one intermediate groove. At least one of the ribs is provided with slots and the radial extent of said slots is substantially greater than the radial extent of the intermediate groove.

3,605,848
MICROCELLULAR URETHANE ELASTOMERS OF RELATIVELY LOW DENSITY

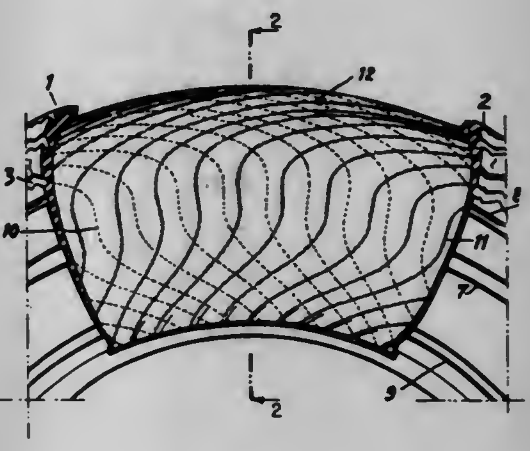
Frank G. Lombardi, Manchester, Conn., and Fritz Hostettler, Verona, N.J., assignors to Inter-Polymer Corporation, Passaic, N.J.
Filed Dec. 23, 1968, Ser. No. 785,929
Int. Cl. B60c *7/12;* **C08g** *22/48;* **C08f** *47/10*
U.S. Cl. 152—310 **6 Claims**

A bullet proof vehicle tire having a peripheral coating of solid polyurethane elastomers and a core of predominantly open-celled microcellular polyurethane elastomers having a density of from about 6 to about 25 pounds per cubic foot produced by the reaction of (a) a polyol containing at least about 35% of secondary hydroxyl end-groups, (b) an organic polyisocyanate, (c) a surfactant, (d) a foaming agent, and (e) a catalyst.



3,605,849
TIRE COVER

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, France
Filed Nov. 13, 1968, Ser. No. 795,759
Claims priority, application France, Nov. 13, 1967, 127,994; Sept. 19, 1968, 166,850
Int. Cl. B60c *9/10*
U.S. Cl. 152—356 **8 Claims**

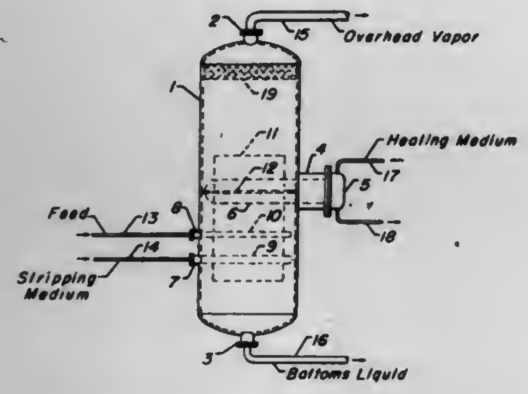


A tire cover is formed with continuous cords extending from bead to bead and crossed at the crown and in a portion of the sidewalls. The cords extend in a generally radial direction in a portion of the sidewalls near the shoulder. The result is a tire that has a rigid tread and rigid sidewalls that are in effect flexibly hinged to the tread.

3,605,850
VOLATILE SEPARATION APPARATUS FOR THERMALLY UNSTABLE ORGANIC COMPOUNDS

William B. Borst, Jr., Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 31, 1969, Ser. No. 795,578
Int. Cl. B01d *1/14, 3/00, 1/04;* **C10g** *21/12*
U.S. Cl. 159—16S **4 Claims**

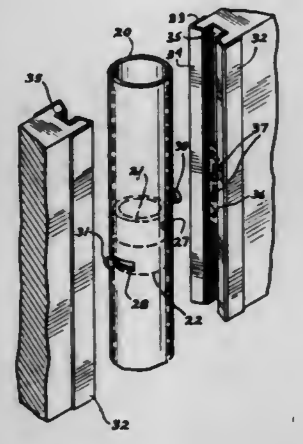
Apparatus and process for separation of an organic chemical liquid feed containing at least one thermally unstable constituent and relatively nonvolatile contaminants, to produce a vapor product having substantial freedom from relatively nonvolatile contaminants, at operating conditions below the level of thermal instability of the liquid feed. The apparatus comprises a chamber containing a fluid contacting zone, a vaporization zone above the contacting zone, at least one conduit zone adjacent to the contacting and vaporization zones, and upper and lower fluid separation zones communicated by the conduit zone.



Preferred application of the inventive process and apparatus is in the purification of solvent compositions of the type utilized in extracting aromatic hydrocarbons from hydrocarbon mixtures.

3,605,851
DIVIDER SCREEN ASSEMBLY

Robert E. Miles and Lloyd C. Mollenkopf, Bloomington, Minn., assignors to Rosemount Partitions Inc., Minneapolis, Minn.
Filed Sept. 22, 1969, Ser. No. 859,760
Int. Cl. A47g *5/00*
U.S. Cl. 160—135 **12 Claims**

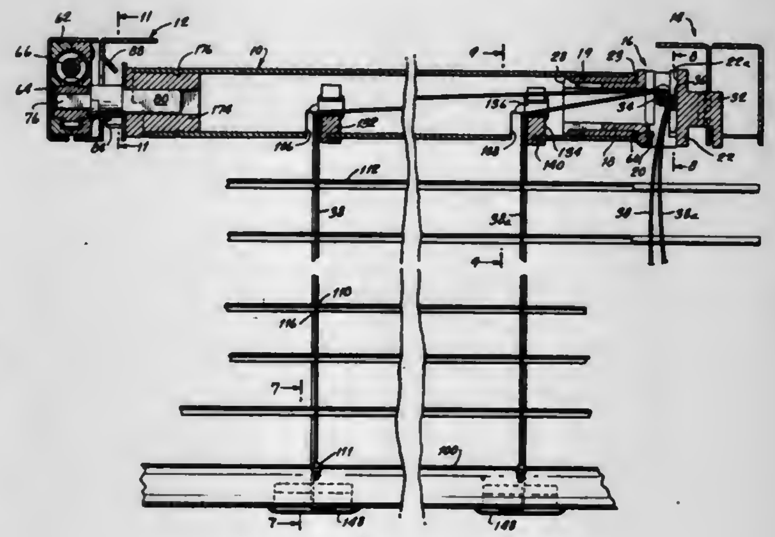


A divider screen panel assembly comprising support members or columns which permit hinging of the screen panels at an infinite number of angular positions to accommodate the interior designers wishes to avoid stereotyped rectangular layouts only for interior partitions in offices and the like. The panels are made so that they will mount easily onto the support columns, and can be adjusted to the desired angular position at will. Further, the columns are made so that four panels can be supported on one column at 90° to each other. The support members permit the use of curved panels, sound proofing panels, and also have provisions for insertions of glazing strips if less than a full height of panel is desired.

3,605,852
VENETIAN BLIND HAVING ROTATABLE HEAD ASSEMBLY

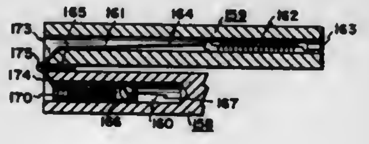
Francis Vecchiarelli, River Edge, N.J., assignor to Alcan Aluminum Corporation, Cleveland, Ohio
Filed Mar. 6, 1969, Ser. No. 804,781
Int. Cl. E06b *9/26*
U.S. Cl. 160—168 **1 Claim**

A venetian blind includes a tubular head assembly which is rotatably mounted at one of its ends in a cord lock assembly having therein a vertically movable locking pin which automatically grips and locks the cord when the latter is released after the blind has been lifted. Lift cords pass through the cord lock assembly and into the tubular head assembly and through spaced slots in the wall of the tubular head assembly. Tilt cords are attached to the head assembly. One end of the tubular head assembly is mounted in a first mounting bracket which supports the cord lock assembly and holds it against rotation. A second mounting bracket which supports the other end of the head assembly has mounted therein a tilt gear assembly; said other end of the tubular head assembly is separably connected to the tilt gear assembly in tubular head assembly rotating relation.



3,605,853
FOLDING-DOOR CONSTRUCTIONS AND INSTALLATIONS

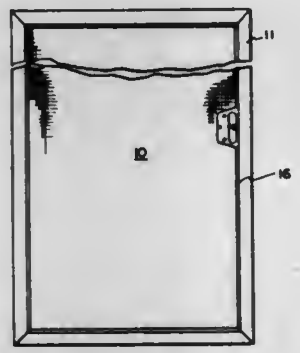
Norman W. Osborn, 2199 East 2875 South, Salt Lake City, Utah 84109
Filed Apr. 1, 1969, Ser. No. 811,860
Int. Cl. E06b *3/70*
U.S. Cl. 160—229R **1 Claim**



The present invention comprises specific improvements in constructions and installations of folding doors. The folding door itself is preferably spring-loaded by a spring-biased linkage at its hinged area and jamb connection to facilitate self-closing of the door. A support and travel guide assembly is included and is designed to accommodate a number of sizes of door openings to be covered by the folding-door construction. A bearing member is uniquely disposed upon a travel rod of the guide assembly in a manner so that no possibility of binding exists as the bearing member travels along its rod in accordance with door movement. Linkage between the door and the bearing member is made adjustable and extensible to accommodate various types and sizes of installations. The door itself is installed such that it does not interfere with the central door opening itself and, in a preferred form of the invention, is collapsible in a side-cavity on the adjacent wall section.

3,605,854
DOOR PULL

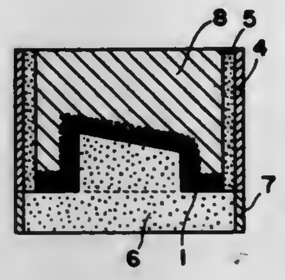
Henry L. Majeske, Goshen, Ind., assignor to Homeshield Industries Inc., Elmhurst, Ill.
Filed May 27, 1969, Ser. No. 828,314
Int. Cl. E06b *3/12, 3/14*
U.S. Cl. 160—371 **3 Claims**



A screen panel unit having a handle assembly including front and rear sections between which the screen is sandwiched along edge portions of an opening provided in the screen, within an area adjoining the frame bordering said panel unit and said handle assembly occupying a position totally within the confines of planes defined by the front and rear faces of said frame.

3,605,855
PROCESS FOR THE MAKING OF METAL MOULDS FOR A CASTING

Kunii Nakata, Nagano-shi, Nagano-ken, Japan, assignor to Gonichiro Nishizawa (Governor of Nagano Prefecture), Nagano-ken, Japan
Filed Feb. 19, 1969, Ser. No. 800,681
Claims priority, application Japan, Feb. 26, 1968, 43/12,093; July 24, 1968, 43/52,287
Int. Cl. B22c *9/00*
U.S. Cl. 164—23 **2 Claims**



A process for making porous metal moulds characterized by moulding and solidifying material prepared by mixing and kneading metal powder and sodium silicate with metal particles as a main component on a pattern set in a moulding flask so that a shell may be formed mostly of the metal particles, removing said pattern from the moulding flask and then casting molten metal on the side of the above mentioned shell, if necessary which is arranged with exothermic agent, reverse to the pattern surface so that said shell and molten metal is made integral to make a metal mould.

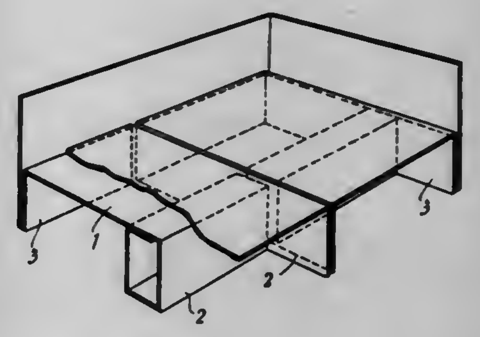
3,605,856
METHOD FOR INOCULATING INVESTMENT CASTING MOLD

Lynn D. Boreland, Minerva, and George V. Ward, East Liverpool, Ohio, assignors to TRW Inc., Cleveland, Ohio
No Drawing. Filed May 22, 1969, Ser. No. 827,050
Int. Cl. B22c *9/04*
U.S. Cl. 164—24 **10 Claims**

Method of forming an investment mold wherein a destructible pattern is coated with refractory particles, and a backup material is applied against the resulting coating, the backup material containing refractory particles having particles of a nucleation catalyst adhering thereto. The remainder of the mold assembly is then built up in conventional fashion and, upon completion, the pattern is removed from the mold and the mold is ready for the reception of molten metal.

3,605,857
APPLICATION OF TREATMENT AGENTS TO INGOT MOULDS

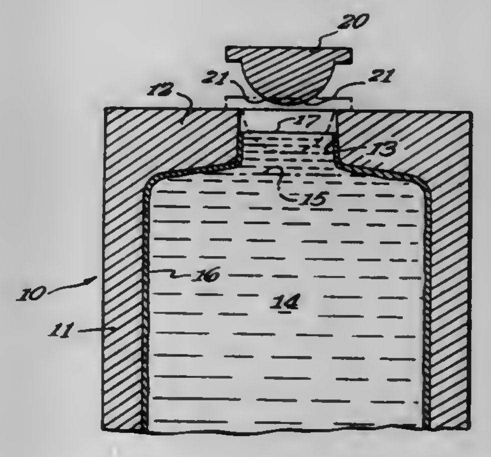
Francois Adrien Duhem, Pres-de-Sedan, France, assignor to Foseco International Limited, Birmingham, England
Filed Sept. 4, 1968, Ser. No. 757,294
Int. Cl. B22d *27/18, 27/20*
U.S. Cl. 164—59 **2 Claims**



Molten metal may be treated during casting, e.g. to form ingots, by placing on the base of the ingot mould prior to casting a treatment agent in a combustible container, there being an air space between the treatment agent in the container and the base of the mould.

3,605,858
METHOD FOR PRODUCING A RIMMING INGOT CONTAINING A FUME-PRODUCING INGREDIENT

Robert N. Edmondson, Chesterton, and Kurt R. Mattson, Crown Point, Ind., assignors to Inland Steel Company, Chicago, Ill.
Filed Mar. 12, 1970, Ser. No. 18,953
Int. Cl. B22d *27/20*
U.S. Cl. 164—57 **8 Claims**

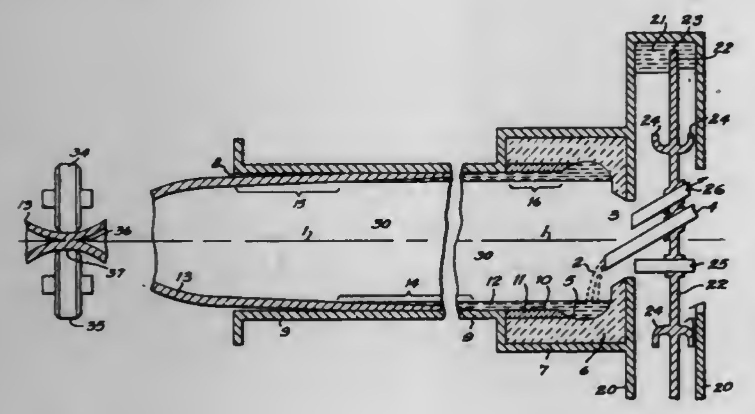


Fill substantially entire bottle-top ingot mold, except neck, with molten rimming steel. Allow ingot to rim without rising in mold. Add ingredient capable of fuming (e.g., tellurium) after ingot has rimmed to the extent desired. Pour molten rimming steel into neck of mold immediately after adding fume-producing ingredient. Mechanically cap ingot, with bottom of capping element dipping into molten steel, immediately after pouring step, to seal ingot and prevent escape of fumes. Fume-producing ingredient is mixed with ingot's molten interior while fuming is minimized. Ingot has rim free of fume-producing ingredient.

3,605,859

CONTINUOUS CENTRIFUGAL TUBE CASTING WITH DRY MOLD AND GAS PRESSURE DIFFERENTIAL

George R. Leghorn, 1423 Washington Ave., Apt. 1, Santa Monica, Calif. 90403
Continuation-in-part of application Ser. No. 538,506, Feb. 11, 1966, now Patent No. 3,445,922, dated May 27, 1969. This application Oct. 21, 1968, Ser. No. 769,017
Int. Cl. B22d *11/00, 13/02, 27/16*
U.S. Cl. 164—62 **13 Claims**

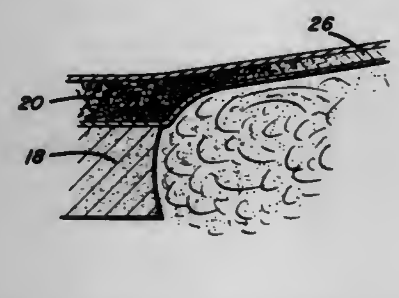


The invention relates to a rapid and improved means for the continuous centrifugal casting of metallic and non-metallic tube on the interior surface of a rotating solid-wall by utilizing novel techniques to greatly reduce the side-wall friction.

3,605,860

METHOD FOR PRODUCING SOLID BODIES FROM POWDERED MATERIAL

Eugene L. Nooker, San Luis Obispo, and George W. Galloway, Baldwin Park, Calif., assignors to G. W. Galloway Company, Baldwin Park, Calif.
Filed Dec. 4, 1968, Ser. No. 781,100
Int. Cl. B22d *23/06;* **B22f** *3/08*
U.S. Cl. 164—80 **17 Claims**

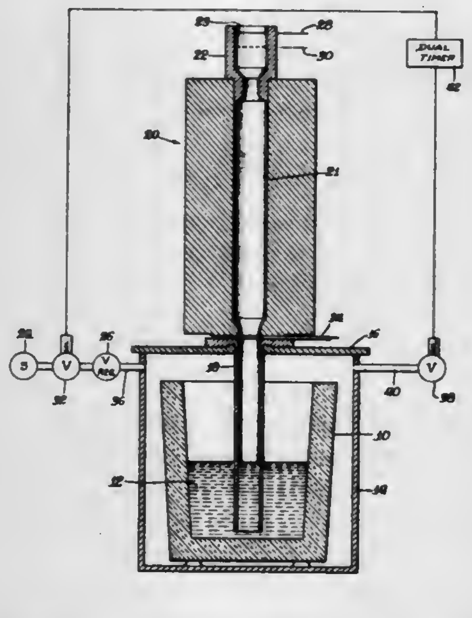


A method for producing solid bodies from powdered material by the use of explosive forces. The forces involved are of sufficient magnitude and other parameters are so chosen that complete fusion of the particles of the powdered material takes place to produce bodies of pure metal or composed of alloy or mixture compositions of types now known as well as those beyond the ranges presently available, physical properties superior to those previously known and which may be composed of metallic or of metallic and non-metallic mixtures. This is in contrast to prior art methods which use relatively low magnitudes of explosive forces to achieve only mechanical compactions.

3,605,861

MODIFYING CAST STRUCTURE

Gordon R. Lohman, Glen Ellyn, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Mar. 28, 1969, Ser. No. 811,550
Int. Cl. B22d *17/06, 27/14*
U.S. Cl. 164—119 **4 Claims**

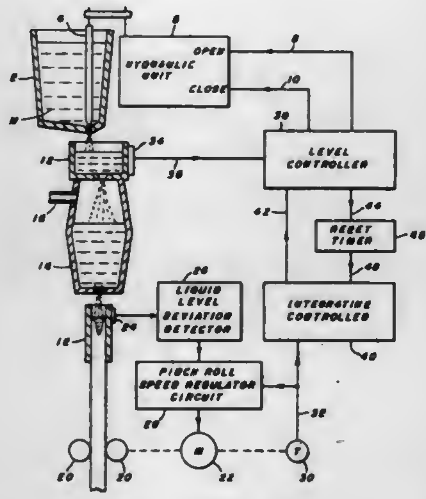


In a bottom pressure casting operation wherein molten metal is forced upward from a ladle through a pouring tube and into a mold by the application of superatmospheric pneumatic pressure to the metal, the mold is completed filled by the application of sufficient pressure to the metal, and the pressure is oscillated, in order to reduce the formation of dendrites and reduce chemical segregation in the solidifying casting.

3,605,862

SYSTEM FOR FEEDBACK CONTROL OF MOLD LEVEL IN A CONTINUOUS CASTING PROCESS UTILIZING A POUR BOX

Ronald G. Schultz, Bay Village, Ohio, assignor to United States Steel Corporation
Filed May 8, 1969, Ser. No. 823,097
Int. Cl. B22d *11/10, 17/32*
U.S. Cl. 164—155 **10 Claims**

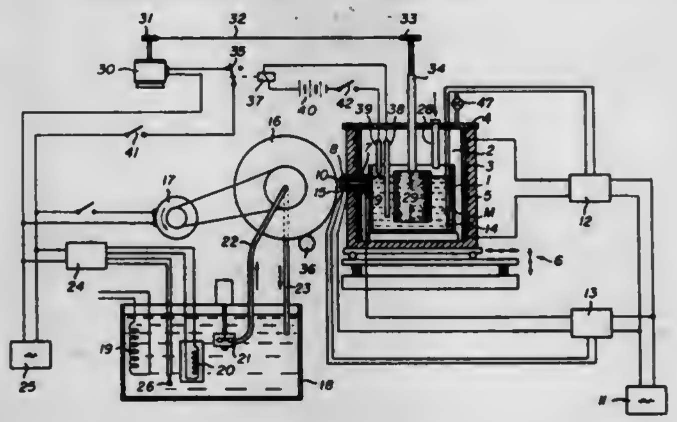


A system for controlling the mold liquid level in a continuous casting process with a pour box and a degassing vessel between a hot metal ladle and the mold. The controller cycles the pour box level within a predetermined band by opening the ladle stopper when the liquid level reaches the lower limit and closing the ladle stopper when the liquid level reaches the upper limit. The level of the band is reset each cycle according to the amount of metal cast during the previous cycle.

3,605,863

APPARATUS FOR MANUFACTURING WIRE AND THE LIKE

Derek King, Lachappele-sur-Carouge, Switzerland, assignor to The Battelle Development Corporation, Columbus, Ohio
Original application July 6, 1967, Ser. No. 651,551, now Patent No. 3,522,836, dated Aug. 4, 1970. Divided and this application Sept. 29, 1969, Ser. No. 870,880
Claims priority, application Switzerland, July 6, 1966, 9,991/66
Int. Cl. B22d *11/10*
U.S. Cl. 164—156 **4 Claims**

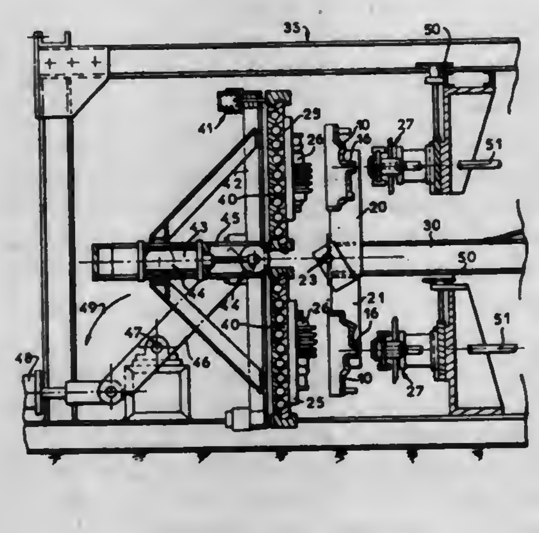


Manufacturing wire and the like by maintaining static equilibrium in molten material at the outlet of a nozzle to form a convex meniscus from which the material is continuously drawn off and solidified by means of a moving surface at constant temperature.

3,605,864

TURNTABLE SHELL MOULDING MACHINE WITH PIVOTALLY INTERCONNECTED MOULD PARTS

Jean-Pierre Bernard, 5 Avenue Valioud, Sainte-Foy les Lyon, Rhone, France
Filed Oct. 9, 1969, Ser. No. 865,092
Claims priority, application France, Oct. 10, 1968, 50,481
Int. Cl. B22c *13/08, 15/24*
U.S. Cl. 164—166 **5 Claims**

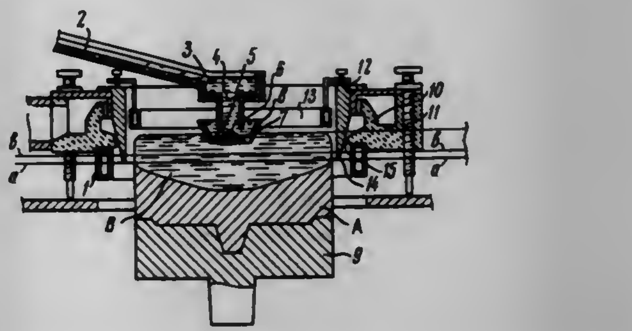


The preparation of a mould assembly for moulding or casting purposes in which the mould assembly consists of two pivotally interconnected parts movable into closed abutting relationship for moulding or casting purposes from a position in which the mould parts are in longitudinal alignment in the same plane, in which position a pattern plate having an impression in relief is inserted into the cavities of the mould parts which are approximately the same configuration as the relief impression, a space of a few millimetres being left between the pattern and the mould parts and sand being blown in to said space through the mould parts to form a skin or shell for moulding purposes. The pattern plate is preferably heated.

3,605,865

CONTINUOUS CASTING APPARATUS WITH ELECTROMAGNETIC SCREEN

Zinovy Naumovich Getselev, Prospekt Metallurgov 32, kv. 11, Kuibyshev, U.S.S.R.
Filed Dec. 23, 1969, Ser. No. 887,646
Int. Cl. B22d *11/10, 27/02*
U.S. Cl. 164—250 **2 Claims**

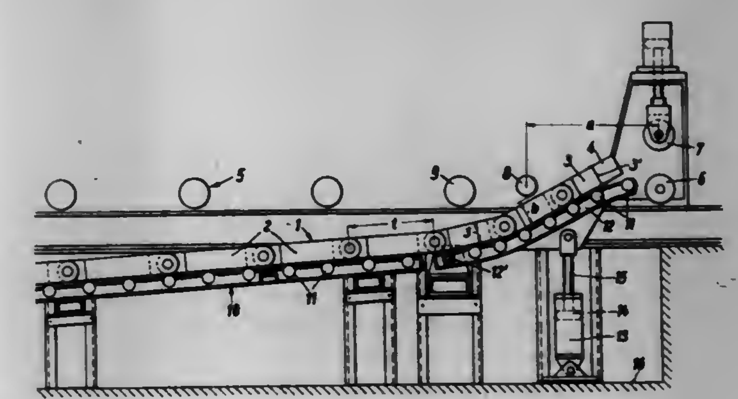


An apparatus for continuous and semicontinuous casting of metals permitting ingots to be produced without any surface defects due to the fact that a magnetic field is provided in the apparatus distributed in the axial direction so as to ensure the quality of the hydrostatic and electromagnetic pressures. This is achieved by means of an electromagnetic screen mounted within the ring-shaped inductor. The electromagnetic screen consists of a closed ring of a non-magnetic metal whose thickness increases upwardly while the lower edge is disposed at approximately half of the height of the inductor.

3,605,866

STARTER DEVICE FOR A CONTINUOUS CASTING PLANT

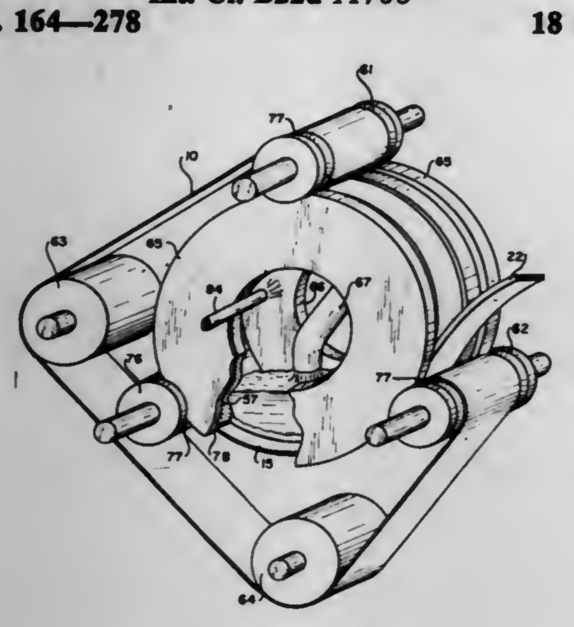
Otmar Kleinhagauer, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria
Filed Feb. 10, 1969, Ser. No. 797,872
Claims priority, application Austria, Feb. 12, 1968, A 1,271/68
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **4 Claims**



An articulated starter bar train is adapted to be joined to the leading end of a continuously cast ingot. A first roller bed comprises rotatable rollers adapted to support the starter bar train and the continuous casting. A second roller bed is disposed below the first roller bed. Deflecting means are provided to deflect the starter bar train from the first roller bed onto the second roller bed.

3,605,867
APPARATUS FOR CASTING METAL STRIP

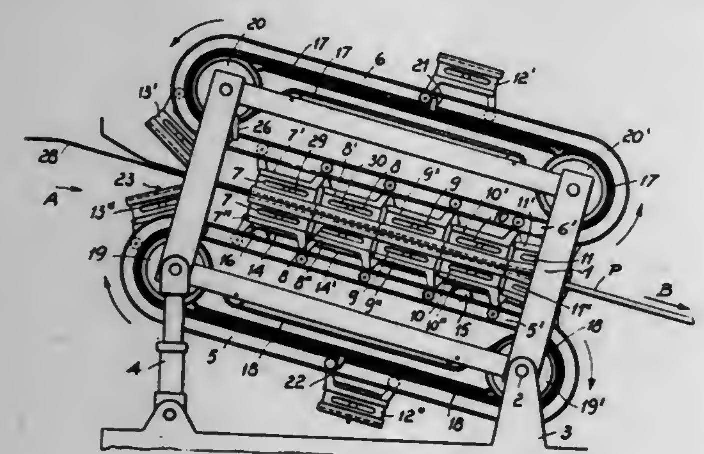
Charles Christian Gerding, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed June 30, 1970, Ser. No. 51,276
Int. Cl. B22d *11/06*
U.S. Cl. 164—278 **18 Claims**



Apparatus for continuously casting metal strip on a continuously cooled moving belt includes means around which the belt is trained to form a small dependent loop within a larger loop, and end pieces that cooperate with the small loop to make a reservoir into which molten metal is teemed and in which it solidifies against the inside surface of the belt.

3,605,868
MACHINE FOR THE CONTINUOUS CASTING OF MOLTEN MATERIALS IN IRON MOLDS OR CHILLS

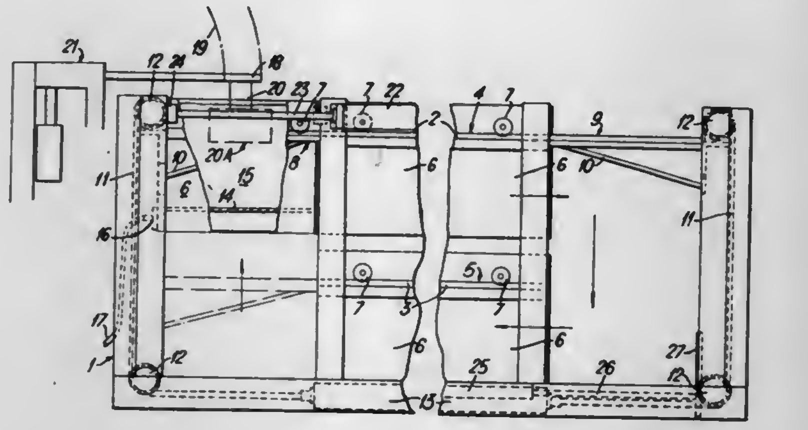
Massimo Gladorou, Via priv. C. Battisti 1, Milan, Italy
Filed Feb. 16, 1970, Ser. No. 11,551
Claims priority, application Italy, Feb. 24, 1969, 13,247/69
Int. Cl. B22d *11/06*
U.S. Cl. 164—279 **9 Claims**



A machine for the continuous casting of molten material into an elongated cooling composite mold cavity for obtaining a continuous bar formation from said material, the machine comprising a plurality of movable composable chills having at least two removably mating chill parts defining a longitudinal section of said elongated mold cavity when in mating position, and guide means for said mating chill parts.

3,605,869
SUPPORT MEANS FOR CERAMIC SHELL MOULDS

Roland P. Chapman, Redditch, and Barry F. Irving, Highley, England, assignors to British Leyland (Austin-Morris) Limited (formerly The British Motor Corporation Limited), Longbridge, Birmingham, England
Filed Oct. 22, 1969, Ser. No. 868,528
Claims priority, application Great Britain, Nov. 9, 1968, 53,201/68
Int. Cl. B22d *5/04*
U.S. Cl. 164—324 **4 Claims**



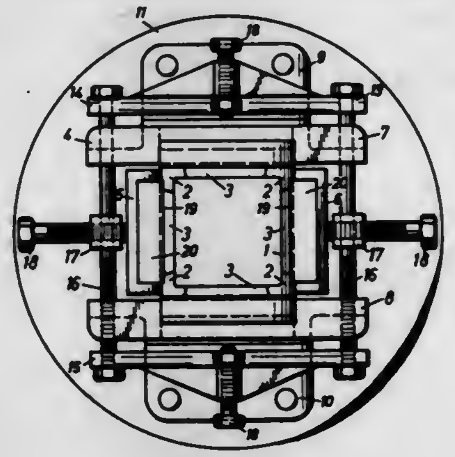
A ceramic shell mold is partially immersed in a fluidized bed of granular refractory material. The bed is then defluidized so that the shell mold is firmly embedded in readiness to receive a charge of molten metal.

3,605,870
COOLING DEVICE FOR CONTINUOUS CASTING MOLDS

Heribert Krall, Wurzburg, and Hans Adalbert Koch, Hochberg, Germany, assignors to Technica-Guss G.m.b.H., Wurzburg, Germany
Filed Oct. 18, 1968, Ser. No. 768,858
Claims priority, application Germany, Apr. 26, 1968, T 24,030, Patent 1,993,120
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 **2 Claims**

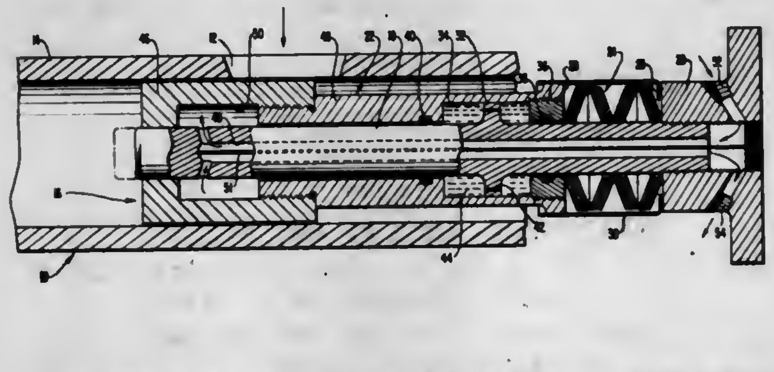
The disclosure relates to a device for cooling molds for the continuous casting of bars, strips and sections with edges. The mold is elongated and made up of elongated mold parts abutting each other, such as for a rectangular mold corner members and mid-sections therebetween. Two opposite sides of the mold have cooling plates abutting the outside of the mold parts. These plates have spaced ribs extending outward therefrom and a closure plate rests upon the ribs so that coolant channelways are formed. Strap members having adjusting screws right against the outside of these closure plates and tension rods secure the opposite strap members against the outside of the closure plates and force the opposite cooling plates into close abutting contact with the outside of the adjacent mold members. The other opposite two outsides of the mold members each have an elongated U-shaped plate member with its legs resting against the outside of the adjacent opposite mold members. A sleeve is received on each tension rod adjacent the outside of the U-shaped cooling plates and a screw is threadedly received in a threaded aperture in each sleeve and presses against the outside of the bight portion of the U-shaped coolant plate to urge the legs thereof into engagement with the adjacent mold members.

The elongated space formed between the U-shaped member and the outside of the adjacent mold member serves as a passageway for coolant. The first two mentioned cooling plates have in line transverse flanges that serve as mounting means for mounting the assembly onto an intermediate plate attached to the furnace at its discharge opening. The intermediate plate has an aperture therein in alignment with the adjacent open end of the mold assembly.



3,605,871
DIE CASTING MACHINE INCLUDING SEQUENTIALLY ACTING COMPOUND PISTON ASSEMBLY MACHINE

Richard K. Whitehead, Sr., 1631 Northgate Wood Road NE. 30329; Richard K. Whitehead, Jr., 2044 Breckenridge Drive NE. 30324; and Harry C. Whitehead, 2585 Circle Wood Road NE. 30329, all of Atlanta, Ga.
Filed May 1, 1969, Ser. No. 820,869
Int. Cl. B22d *17/10, 27/12*
U.S. Cl. 164—319 **6 Claims**

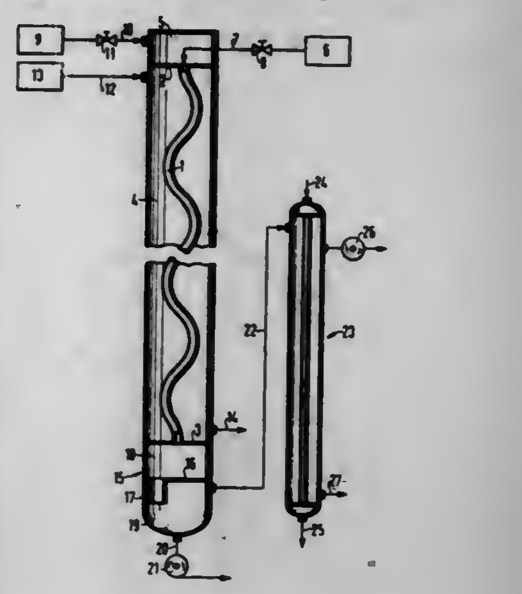


The piston assembly of a die casting or plastic injection machine includes inner and outer concentric pistons. The inner piston is directly driven while the outer piston is driven through the medium of a stack of conical washers so that when the metal or plastic being cast attains a predetermined pressure, the washers collapse and arrest motion of the outer piston while the inner piston continues to move, greatly increasing the internal pressure at final chilling.

3,605,872
METHOD OF CAUSING A LIQUID TO FLOW IN A STREAM OF ANNULAR CROSS SECTION

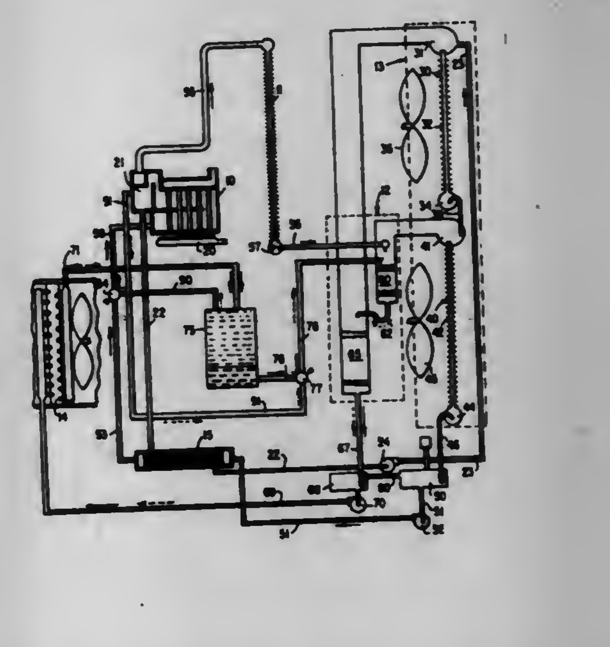
Jacques Brault, Neuilly-sur-Seine, France, assignor to Wiegand Apparatebau G.m.b.H., Karlsruhe, Germany
Filed Aug. 11, 1969, Ser. No. 849,620
Claims priority, application France, Aug. 15, 1968, 12,295
Int. Cl. F28d; B01d *1/22*
U.S. Cl. 165—1 **16 Claims**

When a liquid and a gas are passed continuously through a helical heat exchanger conduit spiraling about a vertically extending axis, the liquid is forced against the wall of the conduit and the gas occupies the center of the tube if the flow rates of the liquid and gas are controlled to permit the liquid to be discharged from the conduit over the entire circumference of the exit orifice of the conduit. High heat transfer coefficients are obtained thereby between the liquid and the conduit wall.



3,605,873
HEATING AND COOLING SYSTEM

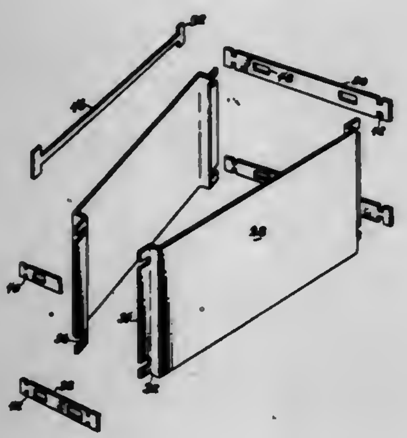
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,655
Int. Cl. F25b *15/06*
U.S. Cl. 165—2 **11 Claims**



An absorption refrigeration system is provided with an excess quantity of octyl alcohol heat exchange additive. A separation tank is provided which stores the alcohol when the system is operating in the cooling mode. In the heating mode, the alcohol is discharged from the separation tank, heated in the generator, and passed through an air-conditioning coil to provide heating to a desired location. Means are provided for mixing absorbent solution and refrigerant to form a dilute mixture which will not freeze when stored in the system during heating mode operation.

3,605,874
ELEMENT BASKET

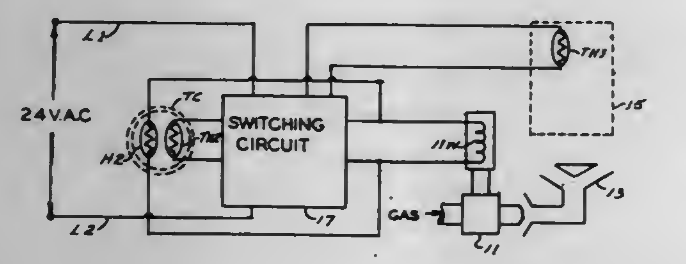
Richard L. Brunell, Scio, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Oct. 15, 1969, Ser. No. 867,984
Int. Cl. F28d *19/04*
U.S. Cl. 165—9 **2 Claims**



A basket for a mass of heat absorbent element contained in a rotor of a rotary regenerative heat exchanger. The basket is comprised of uniformly sized components that may be readily formed and stockpiled, and easily assembled into an effective container for the element.

3,605,875
ELECTROTHERMAL TIME PROPORTIONING TEMPERATURE CONTROL

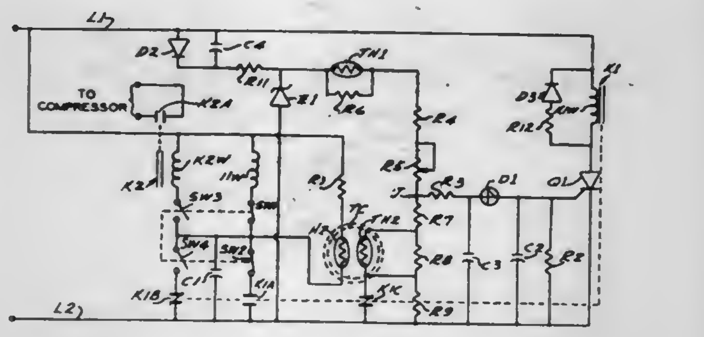
Lyle E. McBride, Jr., Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 4, 1969, Ser. No. 855,143
Int. Cl. F25b *29/00*
U.S. Cl. 165—12 **8 Claims**



Apparatus controls a furnace or other heat transfer means to maintain the temperature in a given zone substantially at a preselected level where the zone is subject to exchange of heat with respect to an environment at a variable rate tending to cause substantial change in temperature therein from this preselected level. First and second thermistors are provided, the first sensing the temperature in the zone and the temperature of the second being substantially independent of the temperature in the zone. A heater is provided which is energized concomitantly with energization of the furnace to cause heating of the second thermistor. A switching circuit interconnected with the thermistors is operative as means for repetitively energizing and deenergizing the furnace for respective first and second time intervals varying as a function of the temperature in the zone, the average ratio of the first interval to the total cycle time (the sum of the first and second intervals) being proportional to the heat exchange rate.

3,605,876
ELECTROTHERMAL TIME PROPORTIONING TEMPERATURE CONTROL

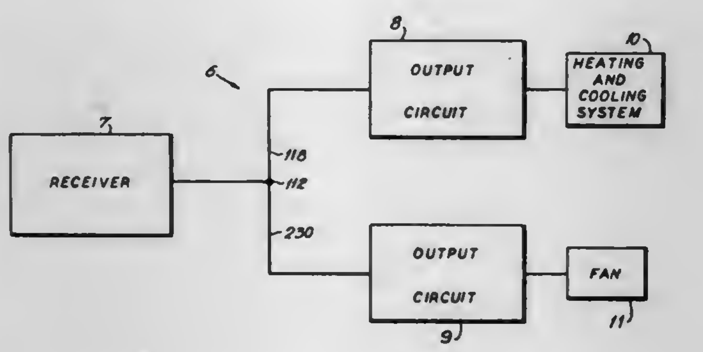
David J. Squiers, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 4, 1969, Ser. No. 855,179
Int. Cl. F25b *29/00*
U.S. Cl. 165—12 **7 Claims**



Apparatus controls a furnace or other heat transfer means to maintain the temperature in a given zone substantially at a preselected level where the zone is subject to exchange of heat with respect to an environment at a variable rate tending to cause substantial change in temperature therein from this preselected level. An SCR is connected for energizing the furnace when the SCR is triggered. First and second thermistors are provided, the first sensing the temperature in the zone and the temperature of the second being substantially independent of the temperature in the zone. A heater is provided which is energized concomitantly with energization of the furnace to cause heating of the second thermistor. A triggering circuit for the SCR is interconnected with the thermistors and triggers the SCR to repetitively energize and deenergize the furnace for respective first and second time intervals varying as a function of the temperature in the zone, the average ratio of the first interval to the total cycle time (the sum of the first and second intervals) being proportional to the heat exchange rate.

3,605,877
RECEIVER CIRCUIT ASSEMBLY

Roger Isaacs, 953 E. 9th St., and Albert Stern, 929 E. 18th St., both of Brooklyn, N.Y. 11230
Filed June 26, 1969, Ser. No. 836,860
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 **82 Claims**

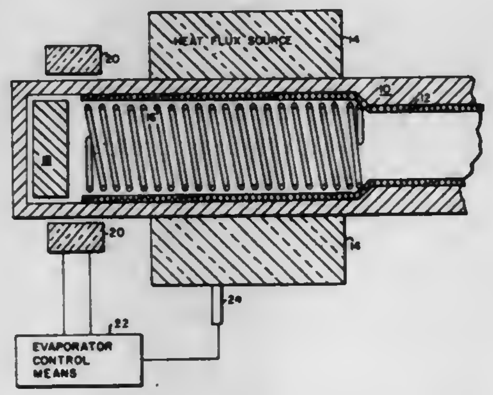


The present invention pertains to an RF receiver circuit assembly and more particularly to a receiver operatively associated with remote controlled heating and cooling systems having fans and adapted to demodulate a complex RF signal having an RF component, a midrange audio frequency component and a low frequency component and including associated output circuits operatively connected to the receiver which are responsive to the low frequency component to selectively activate said heating and cooling systems and the fans in a predetermined manner.

The present invention is directed to a receiver and associated output circuits for activating heating and cooling systems and fans connected therewith in response to the reception of a selected transmission to said receiver.

3,605,878
HEAT PIPE WITH VARIABLE EVAPORATOR

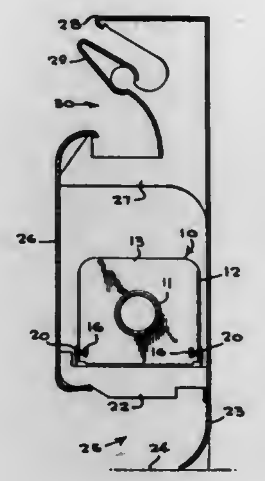
John B. Coleman, Buffalo, N.Y., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Oct. 8, 1969, Ser. No. 864,619
Int. Cl. F28d *15/00*
U.S. Cl. 165—32 **10 Claims**



A heat pipe is provided with means in the evaporator section for reducing the effective capillary pore diameter of that portion of the wick. The effective size of the pores in the evaporator wick are varied in response to an external signal and the pressure differential which drives the circulating fluid is thereby controlled.

3,605,879
PLASTIC CORNER RAIL AND FIN-AND-TUBE HEATING ELEMENT ASSEMBLY

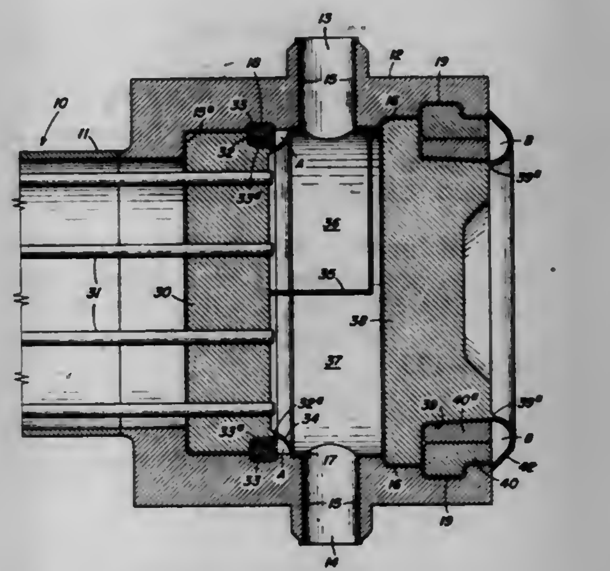
Claude William Schaefer, Jr., 119 St. Dunstans Road, Baltimore, Md. 21212
Filed May 8, 1970, Ser. No. 35,837
Int. Cl. F24h *9/08*
U.S. Cl. 165—55 **4 Claims**



A fin-and-tube heat exchanger for baseboard radiators and the like wherein the fins have laterally opening undercut notches or recesses at their lower corners. Plastic corner rails having a thin slat-like, vertically oriented body portion are assembled to the fins alongside their lower corners by pairs of integral flexible fish hook formations which fit into and are retained in the notches.

3,605,880
PRESSURE VESSELS

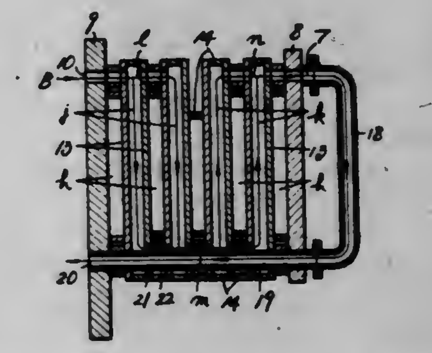
Colin Smith, Upper Warlingham, England, assignor to The Lummus Company, Bloomfield, N.J.
Filed Feb. 24, 1970, Ser. No. 13,377
Claims priority, application Great Britain, Feb. 25, 1969, 10,096/69
Int. Cl. F23d *7/06;* **F28f** *9/02*
U.S. Cl. 165—158 **6 Claims**



A closure assembly for pressure vessels, such as boilers, heat exchangers and autoclaves wherein at least two mediums are passed in heat exchange relationship thereto and wherein each medium is under a separate pressure whereby the differential may be of relatively high magnitude. A tube sheet is positioned within the end closure member of the vessel on a shoulder portion thereof. A retaining ring assembly is inserted into the closure member and cooperates with a shouldered portion on the tube sheet to restrain the latter within the closure member. A collection ring is thereafter affixed about the retaining ring assembly to form a collection zone. Laterally spaced apart from said tube sheet, to form an inlet zone with an inlet conduit provided in said closure member, is a cover which is similarly positioned within said closure member as the tube sheet. A second retaining ring assembly and collection ring are fitted and affixed, respectively to form a second collection zone.

3,605,881
PLATE HEAT EXCHANGER

Masafumi Doi, Daito-shi, Japan, assignor to Hisaka Works, Limited, Higashi Osaka-shi, Japan
Filed Aug. 27, 1969, Ser. No. 853,366
Claims priority, application Japan, Sept. 5, 1968, 43/64,122
Int. Cl. F28b *3/00*
U.S. Cl. 165—167 **5 Claims**



In a multiple-pass heat exchanger, a fluid passageway of double-pipe construction is provided, having a through passage extending through a main support frame, a plurality of plates and a rear support frame which are laminated and clamped together and other passages, preferably concentric or complementary to the through passage, for establishing the series connections of the multiple-pass relation, it being so arranged that a fluid passing through a fluid channel on the multiple-pass side is led to the rear end of said fluid passageway and is withdrawn from the front surface of said main support frame through said fluid passageway. Or, the fluid is supplied from said fluid passageway and withdrawn from the front surface of the main support frame through the channel on the multiple-pass side.

3,605,882
HEAT EXCHANGERS

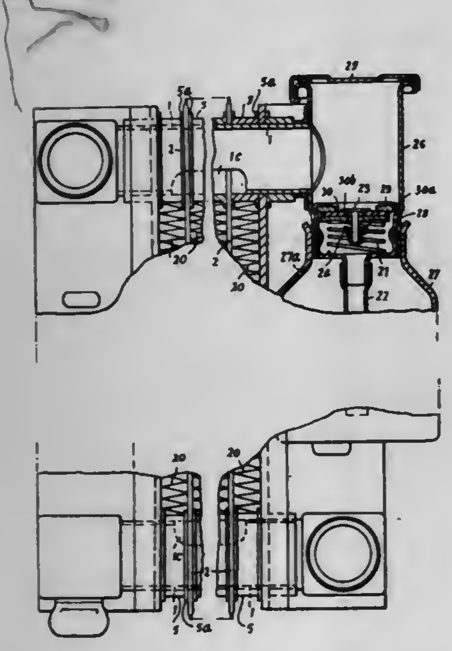
Peter Roy Smith, Colin Raymond Bemrose, and Henry John Levington, Leamington Spa, England, assignors to Associated Engineering Limited, Leamington Spa, England

Filed June 9, 1969, Ser. No. 831,404

Claims priority, application Great Britain, July 2, 1968, 31,589/68; Nov. 6, 1968, 52,686/68

Int. Cl. F28f *9/00*

U.S. Cl. 165—173 **4 Claims**



This invention relates to heat exchangers comprising at least one manifold tube interconnecting a plurality of passage members through which a liquid can flow, wherein the manifold tube passes through apertures in the walls of the passage members and is constructed to allow for liquid flow between the manifold tube and the passage members. The passage members and manifold tube are secured together by means of surrounding members affixed to both the manifold tube and passage members. The invention also discloses features of an expansion container connected to the manifold.

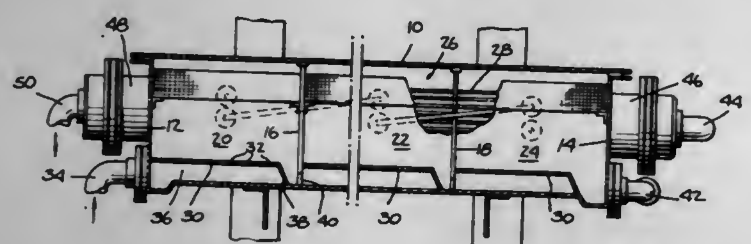
3,605,883
HEAT EXCHANGER

Robert Louis Nalbone, Westwood, N.J., assignor to Saline Water Conversion Corporation, Oradell, N.J.

Filed Apr. 25, 1969, Ser. No. 819,169

Int. Cl. F28f *9/14*

U.S. Cl. 165—178 **1 Claim**



A heat exchanger having a tube configuration with a uniform inside diameter and periodically placed thickened sections which serve to eliminate the requirement of sealing devices between tubes and the divider plates of a multistage evaporator, thereby serving as a seal between adjacent stages.

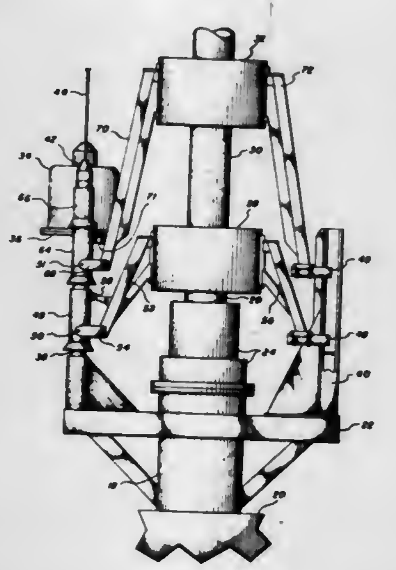
3,605,884
SINGLE GUIDELINE SYSTEM

Walter Brown, Long Beach, Calif., assignor to North American Rockwell Corporation

Filed June 25, 1969, Ser. No. 836,372

Int. Cl. E21b *33/035*

U.S. Cl. 166—.5 **12 Claims**



The disclosed system for emplacing equipment under water employs the combination of an orienting bushing mounted on a guide sleeve that is adapted to travel down a flexible guideline and which cooperates with a guide key mounted on a guide pin that is fixedly positioned to one side of a connector on a subaqueous bottom mounted structure. The relatively coarse adjustment provided by the orienting bushing enables the use of a fine adjustment that is achieved by a radial cylindrical extension fitting into an upwardly tapered slot that is fixedly positioned on the bottom structure at a known orientation relative to the bottom connector and to the bottom guide pin. As structure to be connected at the bottom is lowered into position the orienting bushing operates first to produce a coarse orientation which then allows mating of the radial extension and tapered slot to provide a fine adjustment of the equipment that is to be emplaced.

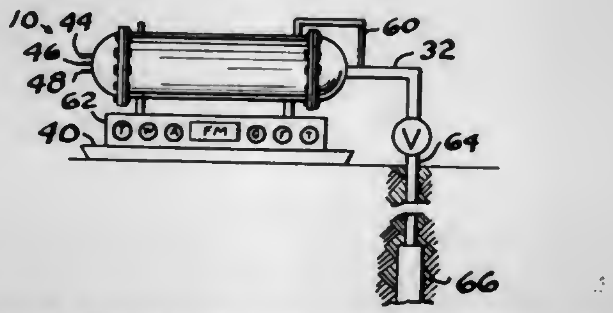
3,605,885
EARTH FORMATION HEATING APPARATUS

Johnnie L. Leeper, 1013 SW. 57th, Oklahoma City, Okla. 73109

Filed July 14, 1969, Ser. No. 841,390

Int. Cl. E21l *43/24*

U.S. Cl. 166—57 **2 Claims**



A double walled insulated combustion chamber having fuel inlet ports and a heated gas exhaust port has its exhaust port connected to tubing extending into a well bore. Water received by a jacket surrounding the combustion chamber is converted to steam and injected into the flow of heated gases down stream from the exhaust port. Pressure generated by combustion forces the heated gases and steam into the well bore for heating pipe and earth formations.

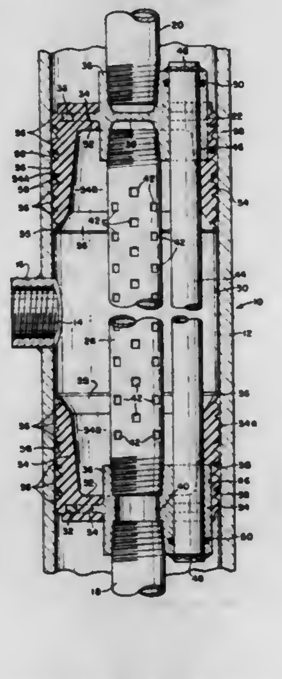
3,605,886
DISTRIBUTION UNIT FOR PITLESS WELLS

Edward A. Cox, Lake Zurich, and Conrad R. Medina, Des Plaines, Ill., assignors to Clayton Mark and Company, Evanston, Ill.

Filed Aug. 29, 1969, Ser. No. 854,243

Int. Cl. F21b *23/00, 33/03*

U.S. Cl. 166—89 **10 Claims**



A distribution unit for use within a well casing of a pitless well installation serves to establish a pressure isolated chamber intercommunicating the drop pipe of the well with a lateral discharge outlet. The unit includes a pair of end supports held in spaced relation by a perforated conduit, each support carrying a packer engageable in sealing relation with the well casing. One end support is engageable with a hanger pipe for suspending the unit at the level of the discharge outlet, and the other end support is engageable with the drop pipe for introducing fluid through the conduit perforations into the chamber defined between the packers. Each packer includes a flexible resilient sleeve expandable into sealing engagement against the casing wall when the chamber is subjected to pressure, together with an outer rib structure providing a seal when the chamber is subjected to vacuum.

3,605,887
APPARATUS FOR SELECTIVELY PRODUCING AND TESTING FLUIDS FROM A MULTIPLE ZONE WELL

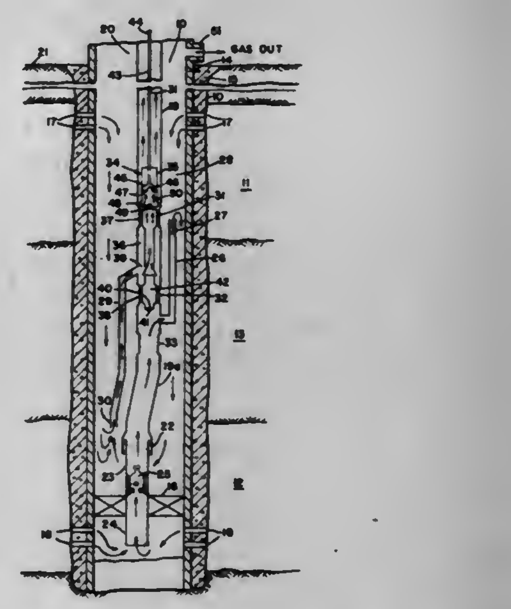
Darryl A. Lambie, Midland, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,340

Int. Cl. E21b *43/00*

U.S. Cl. 166—105 **7 Claims**

Apparatus for selectively producing and testing fluids from a multiple zone well including a packer sealing off one of the zones from another and a tubing string in fluid communication with the lower zone. A lower zone cross-over is disposed above the packer in fluid communication with the tubing string for diverting fluids from the lower zone and into the annulus between the tubing string and the well. An upper zone fluid inlet is in fluid communication with the tubing string above the lower zone cross-over. A pump extension is selectively movable in the tubing string between a position sealing off the tubing string at one point above the lower zone cross-over and below the upper zone fluid inlet and at another point below both the lower zone crossover and the upper zone fluid inlet. The pump extension includes a first normally open fluid inlet for removing fluids from both of the zones and a second normally closed fluid inlet for removing fluids from the lower zone.



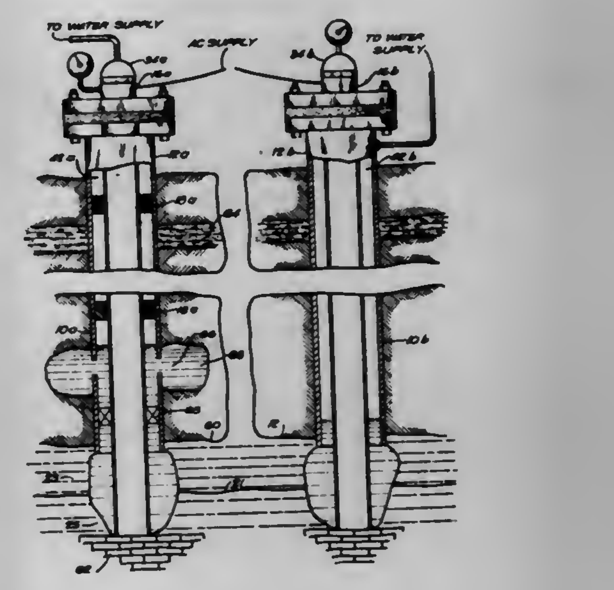
3,605,888
METHOD AND APPARATUS FOR SECONDARY RECOVERY OF OIL

Fred L. Crowson, Portland, and William G. Gill, Corpus Christi, Tex., assignors to The Electrothermic Co., Corpus Christi, Tex.

Division of application Ser. No. 767,917, Sept. 30, 1968, now Patent No. 3,507,330, which is a continuation-in-part of application Ser. No. 677,836, Oct. 16, 1967, which is a continuation-in-part of application Ser. No. 449,077, Apr. 19, 1965. This application Oct. 21, 1969, Ser. No. 870,006

Int. Cl. E21b *43/20, 43/24*

U.S. Cl. 166—248 **21 Claims**

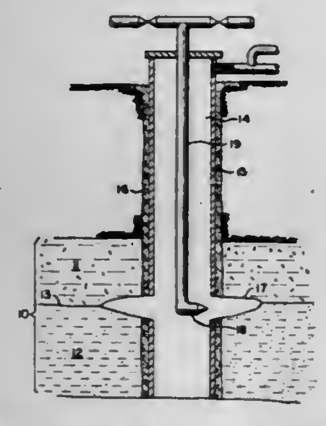


There is disclosed in the specification and drawings a method for secondary recovery of oil in which electrical current is caused to flow through water in the bottom of a bore hole to produce heating of the water. Sufficient pressure is maintained on the water as the water is heated to prevent boiling of the water at temperatures substantially in excess of the boiling point of water at the surface of the bore hole. In accordance with one embodiment of the invention, water is injected into the strata to produce a water flood. The water which is injected is heated by the flow of electrical current such that a hot water flood is provided. In accordance with the second embodiment of the invention, the pressure on the water is periodically relieved when the water is heated to a temperature at least as great as the boiling point of the water at the surface to permit conversion of the heated water into steam. In accordance with the third embodiment of the invention, the water is contained within a reservoir until the temperature of the water is sufficiently high to produce steam at the pressure present in the oil bearing strata the water and steam is then released from the reservoir into the strata. The water which is released is converted into steam. There is also disclosed apparatus for practicing the method of the invention.

3,605,889

ETCHED OIL SHALE FRACTURING

Philip J. Closmann, Charles T. Deeds, and Monroe H. Waxman, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Filed May 13, 1970, Ser. No. 36,856
Int. Cl. E21b *43/27*
U.S. Cl. 166—254 **7 Claims**

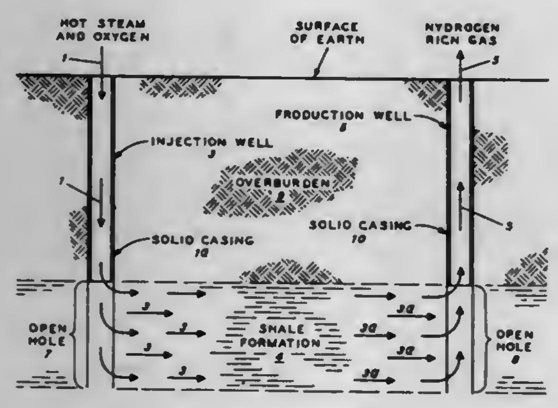


A method for forming substantially horizontal fractures in a subsurface oil shale formation by chemically generating a substantially horizontal plane of weakness and then hydraulically extending a fracture into this plane of weakness.

3,605,890

HYDROGEN PRODUCTION FROM A KEROGEN-DEPLETED SHALE FORMATION

Melvin M. Holm, Alameda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed June 4, 1969, Ser. No. 830,467
Int. Cl. E21b *43/24;* **C10b** *57/20*
U.S. Cl. 166—261 **6 Claims**



A process for producing a hydrogen-rich gas which comprises injecting steam into a kerogen-depleted shale formation through an injection well; contacting the steam with carbonaceous matter in the shale formation at a temperature between about 600° F. and 1,100° F. to obtain a hydrogen-rich gas, at a temperature between about 600° F. and 1,100° F. and with a relatively small amount of CO in the hydrogen-rich gas, the CO_2 to CO ratio being at least 2.5; and withdrawing the hydrogen-rich gas from the shale formation through a production well; said kerogen-depleted shale formation having a volume of at least ½ million cubic feet of kerogen-depleted shale.

3,605,891

OIL RECOVERY PROCESS BY MISCIBLE DISPLACEMENT

Robert C. Ayers, Jr., Houston, Tex., assignor to Esso Production Research Company
Filed Mar. 3, 1969, Ser. No. 803,702
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **5 Claims**

In a process for the recovery of oil from a subterranean formation using as a first bank a polar organic solvent and as a second bank an aqueous surfactant solution, an organic additive is added to the surfactant solution. The organic additive decreases the density of the surfactant solution and reduces the tendency of the second bank to underride the first bank. The organic additive also decreases the amount of surfactant which must be employed in the second bank to cause the second bank to miscibly displace the first bank and to be miscibly displaced by the following flood water. The organic additive must be highly soluble in both the polar organic solvent and water. The density of the organic additive should be approximately that of water or less.

3,605,892

IMPARTING IN SITU STABILITY TO DISPLACING FLUIDS

William B. Gogarty and Richard W. McAtee, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,348
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **24 Claims**

An improved process of recovering hydrocarbon from a hydrocarbon-bearing subterranean fomation having at least one injection means in fluid communication with at least one production means and wherein a flooding agent (e.g. a miscible-type) is injected into the formation followed by the injection of a displacing fluid containing a mobility reducing agent and the displacing fluid followed by a drive fluid to displace the flooding agent and displacing fluid toward the production means to recover crude oil therethrough, the improvement comprising incorporating into a mini-slug of the displacing fluid relatively high concentrations of the mobility reducing agent. For example, 1–20 percent formation pore volume of a micellar dispersion is followed by 0.1–20% formation pore volume of a displacing fluid containing 50–100,000 p.p.m. of the mobility reducing agent and this, in turn, followed by drive water.

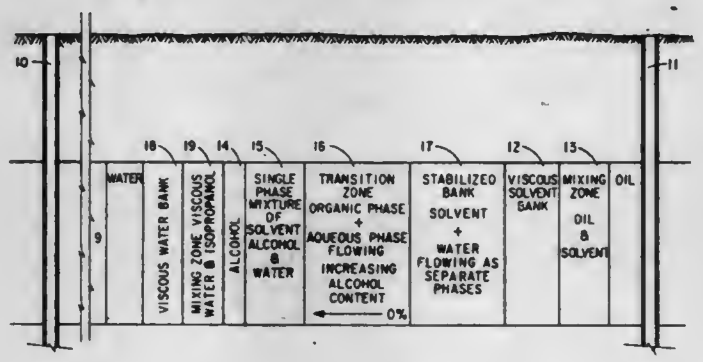
3,605,893

SECONDARY RECOVERY PROCESS

Dwight L. Dauben, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Filed Nov. 28, 1969, Ser. No. 880,578
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **5 Claims**

Oil is recovered from an underground oil-bearing formation by injecting into the formation in sequence three batches or slugs of liquid. These are first a liquid

hydrocarbon; second, a mutual solvent for the liquid hydrocarbon and water; and, third, water with increased viscosity. The final slug is followed by ordinary drive water. The viscosities of the viscous water slug and hydrocarbon liquid are increased to values at least as great as the viscosity of the mutual solvent. Preferably, the hydrocarbon liquid is propane or butane with viscosity increased by the addition of a solution of polyisobutylene in a hydrocarbon having a higher molecular weight than butane.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WATER
VISCOUS WATER BANK
MIXING ZONE VISCOUS WATER & ISOPROPANOL
ALCOHOL
SINGLE PHASE MIXTURE OF SOLVENT ALCOHOL & WATER
TRANSITION ZONE ORGANIC PHASE + AQUEOUS PHASE FLOWING INCREASING ALCOHOL CONTENT
0%
STABILIZED BANK SOLVENT + WATER FLOWING AS SEPARATE PHASES
VISCOUS SOLVENT BANK
MIXING ZONE OIL & SOLVENT
OIL

3,605,894

IMPARTING IN SITU STABILITY TO DISPLACING FLUIDS

Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
No Drawing. Continuation-in-part of application Ser. No. 693,103, Dec. 26, 1967, now Patent No. 3,520,366. This application Oct. 29, 1969, Ser. No. 872,397
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **13 Claims**

A secondary-type recovery process wherein crude oil is recovered from a subterranean formation by displacing therethrough a displacing fluid comprised of electrolyte and/or semi-polar compound is improved by injecting into the formation before the displacing fluid an aqueous pre-slug containing a preferably water soluble semi-polar compound or electrolyte and the preferably water soluble semi-polar compound. Examples of displacing fluids include water- and oil-external emulsions, and water- and oil-external micellar dispersions and miscible-type fluids. A mobility buffer slug can follow the displacing fluid and the displacing fluid and mobility buffer can be displaced through the formation by a drive fluid which can be substantially hydrocarbon or aqueous.

3,605,895

IMPARTING IN SITU STABILITY TO DISPLACING FLUIDS

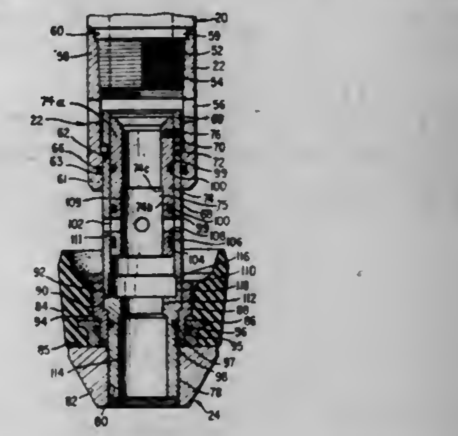
Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
No Drawing. Continuation-in-part of application Ser. No. 693,103, Dec. 26, 1967, now Patent No. 3,520,366. This application Oct. 29, 1969, Ser. No. 872,405
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **13 Claims**

A secondary-type recovery process wherein crude oil is recovered from a subterranean formation by displacing therethrough a displacing fluid comprised of electrolyte and semi-polar organic compound or semi-polar organic compound is improved by injecting into the formation before the displacing fluid a pre-slug containing electrolyte and semi-polar compound. Examples of displacing fluids include water- and oil-external emulsions, and water- and oil-external micellar dispersions and miscible-type fluids; examples of preslugs include preferably aqueous fluids but also include those which are substantially hydrocarbon. A mobility buffer slug can follow the displacing fluid. The displacing fluid and the mobility buffer can be displaced through the formation by a drive fluid which can be substantially hydrocarbon or aqueous.

3,605,896

LINER TOP SQUEEZE PLUG BELOW RETRIEVABLE TOOL

Lee E. Perkins, Houma, La., assignor to Halliburton Company, Duncan, Okla.
Filed June 4, 1969, Ser. No. 830,462
Int. Cl. E21b *33/16*
U.S. Cl. 166—290 **10 Claims**



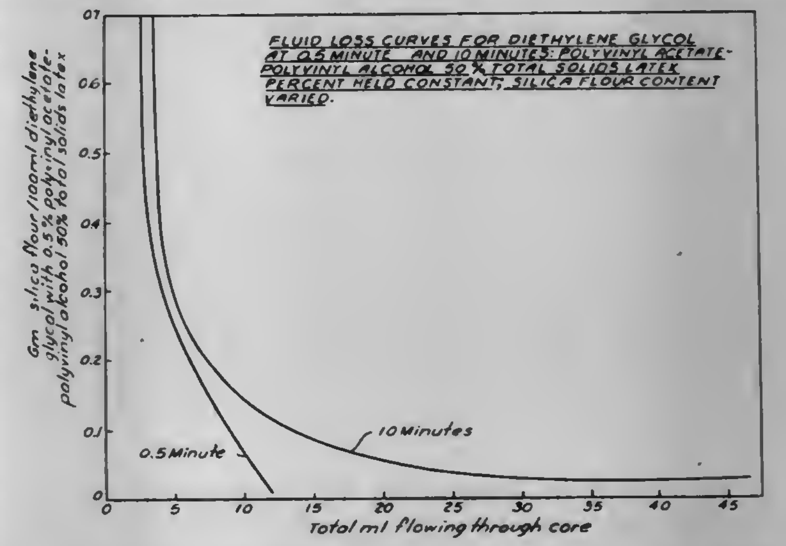
An annular liner plug is releasably mounted on the lower end of a well bore cementing string by means of a ball-type retaining and releasing device. A releasing plug is pumped down the cementing string, following the cement used to cement a liner within the well bore, and forceably engages within slidable socket member within the annular liner plug. Hydrostatic pressure on the releasing plug results in the shearing of an attachment means connecting the slidable socket with the interior of the annular liner plug. The socket member slides downward, under the force of the releasing plug and permits the ball device to operate so as to release the annular liner plug from the cementing string.

The liner plug is pumped downward and, ultimately, seats over the liner at the bottom of a well bore. The liner plug operates to seal off an annular gap between the liner top and a surrounding casing. The releasing plug, engaged within the socket member of the annular liner plug, now operates to seal off the cement below this assembly from the fluid disposed above this assembly. Latching means may be provided for retaining the releasing plug within the annular liner plug against abrupt back pressures or well "kicking."

3,605,897

WELL TREATMENT METHOD USING FLUID-LOSS CONTROL AGENT FOR GLYCOLS

Oliver William Crinkelmeyer, Biloxi, Miss., and Edwin N. Alderman, Jr., Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.
Filed Dec. 3, 1968, Ser. No. 780,778
Int. Cl. E21b *33/13*
U.S. Cl. 166—291 **5 Claims**



(1) A composition of matter having low fluid-loss through pores, cracks and small openings in solid surfaces

in contact therewith comprising a polyalcohol (e.g., glycols or polyglycols), silica fluor, and polyvinyl acetate-polyvinyl alcohol polymer and (2) use therefor in well treatments and cooling systems wherein a glycol or polyglycol is employed.

3,605,898
METHOD OF DRILLING AND CEMENTING A WELL USING AN AQUEOUS HYDRAULIC CEMENT SLURRY

Hugh T. Harrison, Tulsa, and Korwin J. Goodwin, Enid, Okla., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed July 29, 1968, Ser. No. 748,173
Int. Cl. E21b *21/04, 33/14*
U.S. Cl. 166—293 **4 Claims**

An improved aqueous hydraulic cement slurry which may be retained in a pumpable fluid state for an indefinite time (and accordingly used as a well-drilling circulating fluid) by admixture therewith of a heptolactone, particularly D-gluco-D-guloheptolactone, and just prior to ultimate emplacement of the slurry containing the additive, admixing therewith a polyvalent metal salt accelerator to the setting rate, e.g. $CaCl_2$.

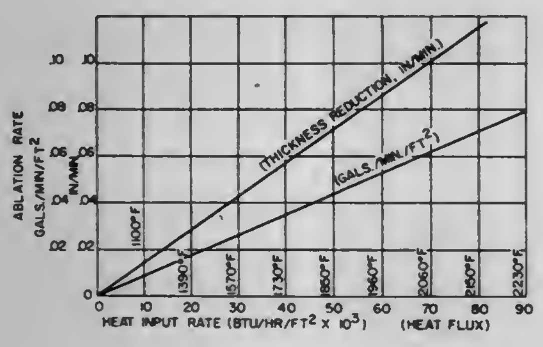
3,605,899
METHOD OF INCREASING PERMEABILITY OF CEMENT PACKS

Jack F. Tate and Thomas E. Sample, Jr., Houston, Tex., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,973
Int. Cl. E21b *43/27*
U.S. Cl. 166—300 **14 Claims**

Permeability of a cement pack containing acid-soluble materials in a wellbore traversing a producing formation is improved by the controlled generation in situ of a halogenated acid whereby acid-soluble materials accumulated at the pack face and within the cement pack are dissolved and the flow of fluids therethrough is facilitated, without substantially weakening the mechanical strength of the cement pack.

3,605,900
METHOD OF CONTROLLING FIRE

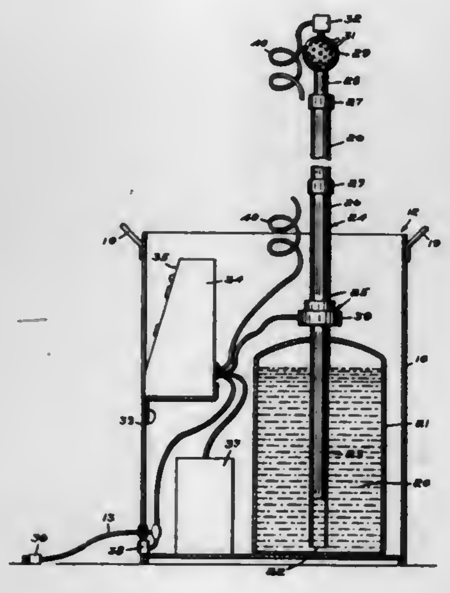
William L. Livingston, Sharon, and Russell W. Pierce, Hanover, Mass., assignors to Factory Mutual Research Corporation, Boston-Providence Turnpike, Mass.
Filed Oct. 10, 1968, Ser. No. 766,475
Int. Cl. A62c *1/00*
U.S. Cl. 169—1A **12 Claims**



A method of controlling fire within an enclosure involving the application to the object subjected to fire of a coating of an ablative fluid to form a layer of sufficient thickness so that the layer possesses ablative properties, said coating being applied from an automatically operable fixed source in a substantially continuous stream in sufficient quantity to maintain said layer at said sufficient thickness.

3,605,901
FIRE PROTECTION APPARATUS

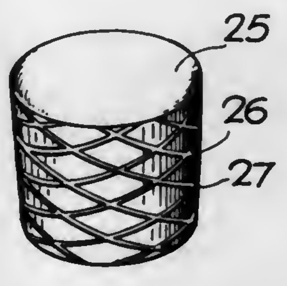
George J. Grabowski, Needham, William B. Osborne, Marlboro, and Rexford Wilson, Framingham Centre, Mass., assignors to Fenwal, Inc., Ashland, Mass.
Filed Oct. 28, 1968, Ser. No. 770,926
Int. Cl. A62c *35/00*
U.S. Cl. 169—2R **11 Claims**



A completely automatic fire protection system is disclosed comprising battery powered, portable suppressor units each including a supply of fire extinguishing fluid and a fire detector. Connection of the individual unit's control circuits provides a control circuit network that automatically initiates extinguishing fluid discharge from all units in response to fire detection by any single unit.

3,605,902
REINFORCED FUSIBLE ELEMENT

Wayne E. Ault, Aurora, Ohio, assignor to A-T-O Inc., Cleveland, Ohio
Filed Mar. 11, 1969, Ser. No. 806,123
Int. Cl. A62c *37/30*
U.S. Cl. 169—42 **1 Claim**



A reinforced fusible element useful in fire extinguishing sprinklers, fusible links on fire doors and the like is disclosed wherein the fusible material usually solder of a lead alloy or the like is provided with reinforcing means for stabilizing its size and shape by acting to prevent cold flow of the alloy as a result of compressive or tension forces thereagainst. Specifically a fusible element may be provided with reinforcing fibers of suitable materials including natural fibers, synthetic fibers and metal fibers or fine strands may be mixed into the alloy so as to be disposed continuously therethrough and still another version encloses a section of fusible material in a woven jacket

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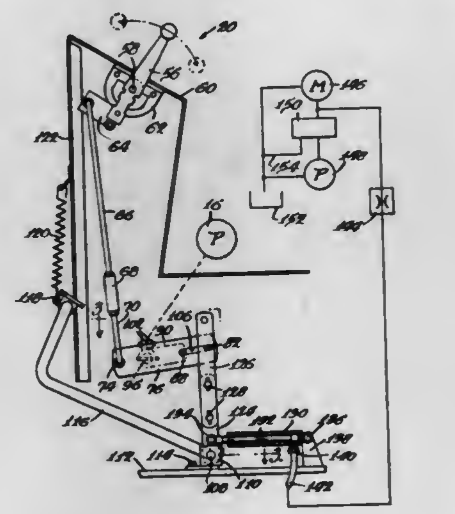
engaging the surface area of the fusible material that would ordinarily expand when the same is subjected to compressive forces, etc.

3,605,903
SPEED CONTROL SYSTEM FOR A VEHICLE

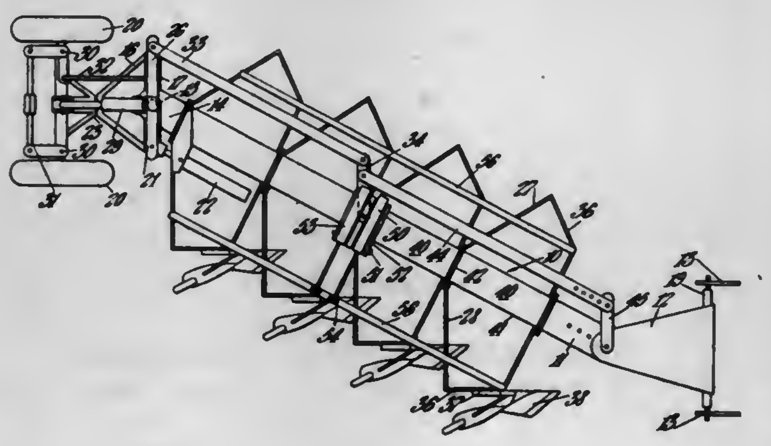
Herbert C. Glesmann, Omaha, Nebr., assignor to Omsteel Industries, Inc.
Filed July 25, 1969, Ser. No. 844,892
Int. Cl. A01b *67/00*
U.S. Cl. 172—3 **14 Claims**



A speed control system for a vehicle including manually operable control means for a variable speed drive and settable to a plurality of positions corresponding to a plurality of different ground traversing speeds, and override means operative to temporarily override the manual control to alter the speed of the vehicle without changing the setting of the manually operable control. In one form of the invention, the override means comprises a manually actuable operator while in another, sensing means are provided to sense when a work performing means requires more time to perform a given job to thereby decrease the rate of speed of the vehicle.

3,605,904
AGRICULTURAL PLOUGHS

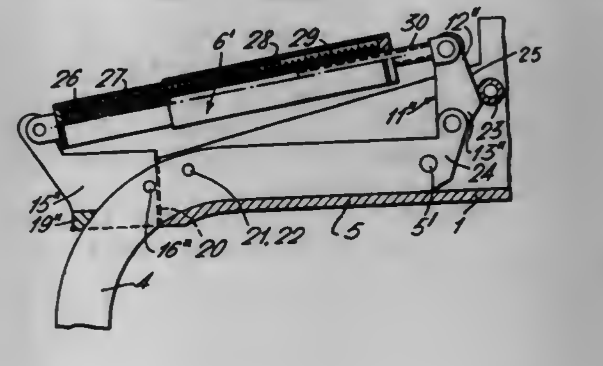
Roger Hugh Rutterford, 7 St. James St., King's Lynn, Norfolk, England
Filed Apr. 30, 1969, Ser. No. 820,502
Claims priority, application Great Britain, May 3, 1968, 21,061/68
Int. Cl. A01b *3/16, 3/44*
U.S. Cl. 172—212 **3 Claims**



A reversible plough has two sets of plough bodies mounted on a beam structure, the rear end of which is mounted on steerable depth control wheels mounted on a bogey, the steering of the plough being achieved by the superimposed effects of angling the bogey with respect to the plough beam and angling the wheels with respect to the bogey frame.

3,605,905
AGRICULTURAL IMPLEMENTS

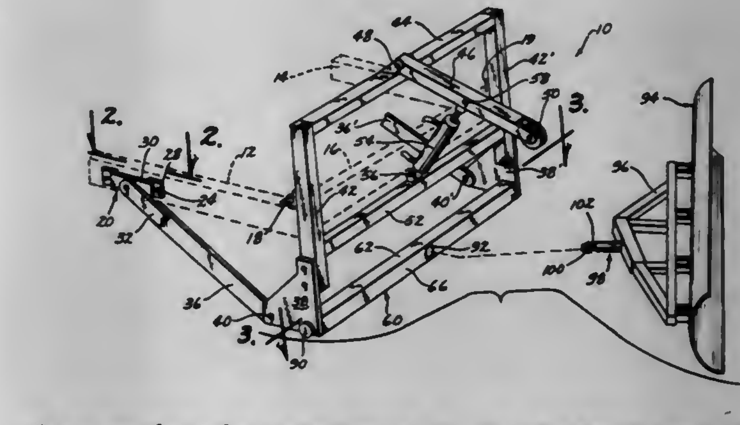
Isak T. Bo, Randaberg pa Jaeren, Norway, assignor to Kyllingstad Plogfabrik A/S, Kleppe, Norway
Filed Jan. 8, 1969, Ser. No. 789,911
Claims priority, application Norway, Jan. 9, 1968, 80/68; Apr. 5, 1968, 1,335/68, 1,336/68
Int. Cl. A01b *61/00, 35/24*
U.S. Cl. 172—265 **2 Claims**



A hinged pressure releasable connecting means is provided to join the frame of an agricultural implement to the beam which supports the implement. The connecting means comprises a pressure device connected at one end to a two-armed lever. The pressure device may be connected to the implement beam, and the lever arranged to cooperate with the implement frame, or the positioning can be reversed. By a suitable choice of the relative lengths of the arms of the two-armed lever and of other link means there may be obtained an accurate setting of the pressure required to release the connecting means.

3,605,906
SNOWPLOW WITH MEANS TO FACILITATE MOUNTING

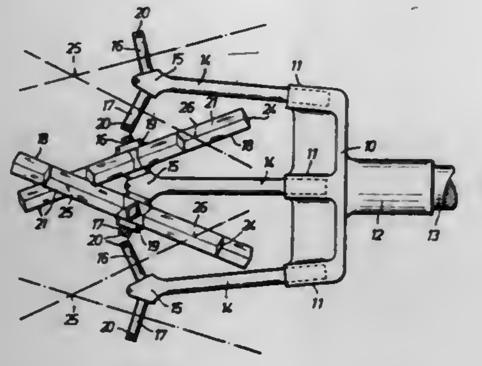
Frank Coates, Corydon, Iowa, assignor to Coates Manufacturing Co., Corydon, Iowa
Filed Mar. 28, 1969, Ser. No. 811,305
Int. Cl. E01h *5/06;* **E02f** *3/76*
U.S. Cl. 172—272 **6 Claims**



A snowplow for attachment to the forward end of a vehicle such as a truck or the like. The snowplow includes a pair of spaced apart push arms which are secured at their rearward ends to the vehicle frame and which extend forwardly therefrom. A cross beam means is secured to and extends between the forward ends of the push arms and has a hollow tube provided thereon adapted to rotatably receive a pivot shaft. The pivot shaft extends rearwardly from the blade portion of the snowplow and is removably received by the tube to effect a pivotal or rotational connection between the cross frame means and the blade structure. A locking means is provided for detachably maintaining the pivot shaft in the tube. A lift arm assembly is connected to the cross beam means and the blade structure for raising and lowering the blade structure with respect to the cross beam means. The pivot shaft tube is mounted on a cross beam member which is rotatable about a horizontal axis and means is provided for yieldably preventing the rotational movement of the cross beam member during the periods when the blade structure is removed from the cross beam means to facilitate the subsequent attachment of the blade structure to the cross beam means.

3,605,907
HAND TOOL FOR COMMINUTING SOIL

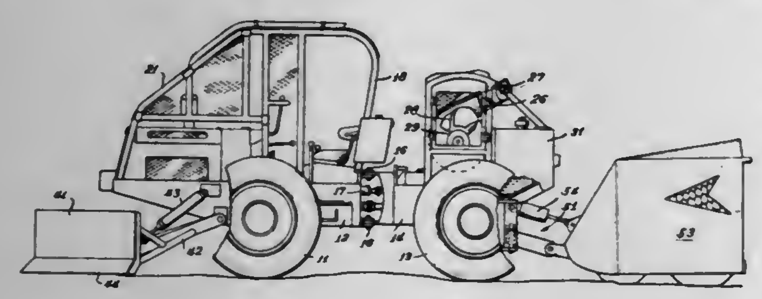
Walter Schuring, 41 Breite Str., 4800 Bielefeld, Germany; Hans vom Braucke, 27 Karl Str., 4973 Vlotho, Germany; and Manfred vom Braucke, 259 Theesener Str., 4801 Vilsendorf, Germany
Filed July 3, 1969, Ser. No. 838,956
Int. Cl. A01b *1/04, 1/14*
U.S. Cl. 172—378 4 Claims



A hand tool for comminuting soil, especially for loosening, cutting and crumbling soil for agricultural or horticultural purposes comprising comminuting tools rotatably mounted at an angle relative to one another on bearing heads and arranged side by side with comminuting tools meshing with one another and forming intersecting regions located alternately on both sides of the bearing heads.

3,605,908
FORESTRY WORK VEHICLE

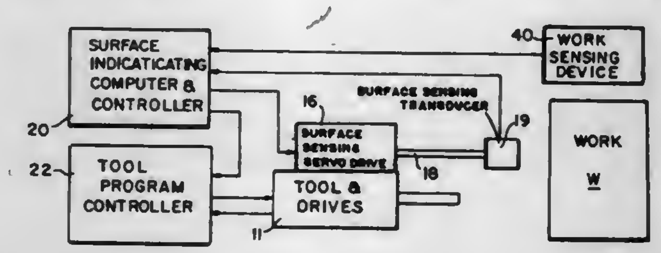
Raymond E. McDonald, L'Anse, Mich., Jerry T. Davis, Monticello, Ark., and Jack J. Benns, Chicago, Ill., assignors to Pettibone Corporation, Chicago, Ill.
Filed Mar. 28, 1968, Ser. No. 716,945
Int. Cl. A01b *49/04*
U.S. Cl. 172—438 5 Claims



The basic work vehicle comprises a chemical sprayer carried by a rough terrain four-wheel drive chassis, articulated for steering. The sprayer is carried by the rear-half of the articulated chassis, is directed upwardly and rearwardly, and has three jet openings, each with its own mist-producing spray head, to spray a wide swath with satisfactory uniformity. The blower is driven by a hydraulic motor which makes it easily supplied with power from the forward half of the vehicle on which the engine and pumps are mounted. The hydraulic motor is of the positive displacement type and has a by-pass provided with a pressure relief valve which prevents damage when the hydraulic fluid is shut off by a manual control valve. The vehicle carries a hydraulically raiseable V shaped plow at its front end for shearing or bending aside light undergrowth and camming frame bars overhead for facilitating passage under low limbs of trees. A trailer hitch is provided and a large chemical tank is shaped to give access to the hitch under it. Attachments for the hitch include a fire lane plow and at least one planter for planting tree seeds or seedlings. Because of the articulation, the vehicle with trailer can "snake" a winding course among trees, with the front wheels, rear wheels and trailer all following the path cleared by the V shaped plow at the front.

3,605,909
TOOLING MACHINE HAVING SURFACE SENSING PROGRAM STARTING

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of application Ser. No. 294,076, July 10, 1963, now Patent No. 3,481,042, which is a continuation-in-part of application Ser. No. 250,942, Jan. 11, 1963, now Patent No. 3,188,947, which in turn is a continuation-in-part of application Ser. No. 518,616, Jan. 4, 1966, now Patent No. 3,476,481. This application Nov. 13, 1968, Ser. No. 775,433
Int. Cl. B23b *39/08;* **G06f** *15/46*
U.S. Cl. 173—3 17 Claims


SURFACE INDICATICATING COMPUTER & CONTROLLER
20
TOOL PROGRAM CONTROLLER
22
16
SURFACE SENSING TRANSDUCER
SURFACE SENSING SERVO DRIVE
TOOL & DRIVES
11
18
19
40
WORK SENSING DEVICE
WORK
W

An apparatus and method are provided for operating on material by means of an automatically controlled tool and work requiring prepositioning of the tool and work surface. In one form surface-sensing means is mounted on or adjacent the tool for sensing the location of the work surface which, upon being detected thereby, either initiates an automatic cycle of operation or provides a feedback signal which is operative to correct the automatic control means or compensate for variations in the location of the surface of the work piece and the tool from one work piece to the next.

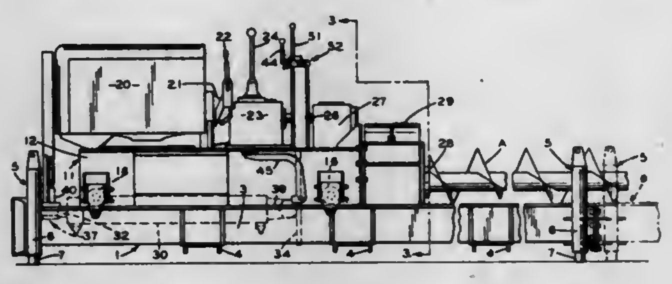
Locating the surface of the work is effected either by means of a movable probe mounted on the tool head or tool manipulator and operative to be driven into engagement with or sensing relationship with the work, or by means of locating the sensing transducer on or adjacent the tool itself which is moved to permit the transducer to sense the surface of the work prior to initiating an automatic operational cycle. In another form, the tool itself is energized to define the surface-sensing transducer and relative movement of the work and tool is effected to permit location of the work surface by the tool.

3,605,910
AUGER APPARATUS DRIVE SYSTEM

Ronald C. Deeter and William G. Young, Salem, Ohio, assignors to The Salem Tool Company, Salem, Ohio
Filed Sept. 26, 1969, Ser. No. 861,340
Int. Cl. E21c *5/10*
U.S. Cl. 173—4 17 Claims

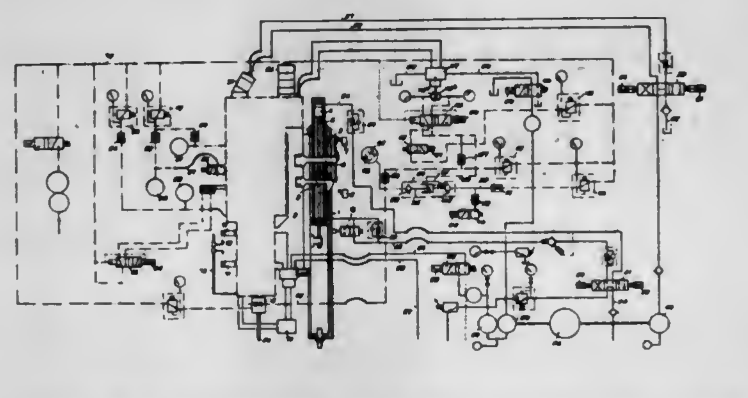
An auger machine, such as a trench drill, having an auger carriage that is moved by a cylinder that can force the auger forward into the materal being drilled by supplying the cylinder with hydraulic liquid under pressure

and at a rate corresponding to the rate of auger penetration, means being provided to insure that for the rate of penetration the pressure and power requirements will be within the capabilities of the apparatus, and that little if any liquid at high pressure is vented with loss of energy as waste heat. The hydraulic system includes a variable displacement pump for supplying liquid to the cylinder on a selected side of the piston at a controlled desired rate, means for controlling the pump to control the rate at which fluid is supplied by the pump, and means for limiting the maximum pressure of the hydraulic liquid to an upper limit correlated to the rate of penetration of the auger, to insure that maximum pressures are within the capabilities of the apparatus, and maximum pump power requirements are within the capabilities of the power supply means such as a power takeoff from an internal combustion engine driving the auger.



3,605,911
MACHINE TOOL CONTROL SYSTEMS

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Andre Citroen, Paris, France
Filed Mar. 18, 1969, Ser. No. 808,257
Claims priority, application France, Mar. 26, 1968, 3,482
Int. Cl. B23b *39/10*
U.S. Cl. 173—9 9 Claims

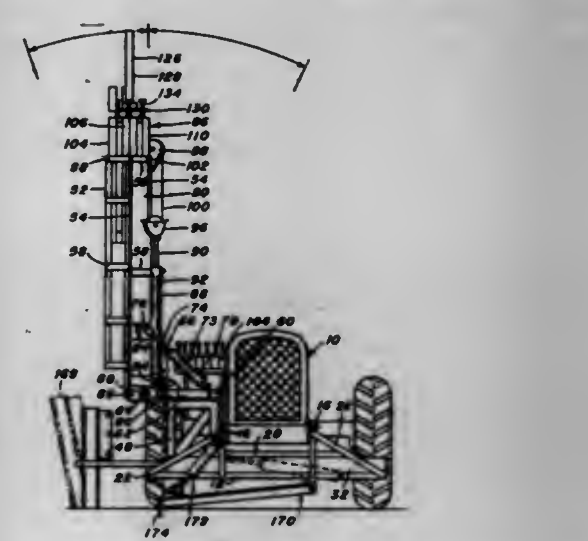


The axial movement of a rotating machine tool is controlled by an operating sequence valve that delivers an output signal for controlling axial movement of the tool in accordance with a variable input signal from a torque detector associated with the tool and an adjustable threshold value to which the valve is subjected.

3,605,912
POST SETTING APPARATUS

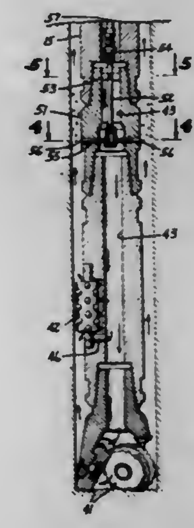
Arthur L. Fisher, 112 Mar Vel Drive, Butler, Pa. 16001
Continuation-in-part of application Ser. No. 749,853, Aug. 2, 1968. This application May 5, 1970, Ser. No. 34,752
Int. Cl. E02d *7/10;* **E21c** *11/02*
U.S. Cl. 173—23 8 Claims

An attachment for a self-propelled tractor for use in setting posts is disclosed. The attachment comprises a frame structure detachably securable to the chassis of the tractor and the frame has a pair of slide rails extending crossways of the chassis when the frame structure is secured thereto. A slide is reciprocally supported on the rails for movement laterally of the chassis. A mast is supported for universal movement on the slide and a post driving unit is mounted in the mast for delivering a percussion blow to a fence post or the like. Also, the mast and post driving unit assembly is selectively movable forwardly or rearwardly of the tractor for alignment of the post driving unit with a post.



3,605,913
DUST SUPPRESSOR FOR ROTARY DRILLS

Gerald E. Lehtinen, Salt Lake City, Utah, assignor to Reserve Mining Company, Silver Bay, Minn.
Filed Apr. 14, 1970, Ser. No. 28,395
Int. Cl. E21b *21/04;* **E21c** *7/06*
U.S. Cl. 173—74 6 Claims

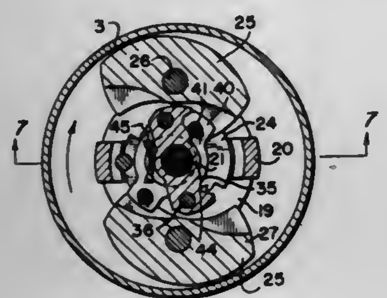


A rotary drilling rig for use in drilling blast holes for the removal of ore. The rig includes a vertically disposed rotatable shaft, the lower end of which carries a plurality of rotary cutter bits that engage and grind the ore surface. The shaft carries a compressed air passage which opens at the lower end to blow rock bits and dust upwardly from the blast hole, and a separate water passage which distributes water radially outward from the shaft at a point above the cutters to suppress the dust before reaching the ground surface.

3,605,914
ROTARY IMPACT WRENCH MECHANISM

Leo Kramer, Skillman, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Aug. 23, 1968, Ser. No. 754,824
Int. Cl. B25d *15/00*
U.S. Cl. 173—93 31 Claims

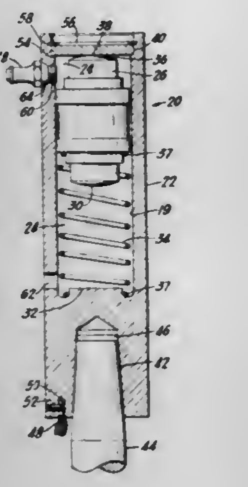
A rotary impact wrench clutch mechanism including a rotary anvil adapted to deliver a rotary blow to a fastener, a rotary hammer carrier mounted around the anvil and connected to a motor, and a pair of diametrically opposed hammer dogs pivoted on the carrier to tilt inwardly to strike a blow to the anvil. The clutch mechanism includes a cam operative to tilt the hammer dogs inwardly to strike a blow and then to allow the dogs to pass the anvil without striking a blow during the following rotation of the carrier. The hammer dogs are proportioned and pivoted so that they automatically remain in the non-impact position until they



are cammed inwardly and they are returned to the non-impact position during their rebound by inertial forces following impact with the anvil. The tool clutch is operative in either direction of rotation and includes stop means for automatically preventing the dogs from tilting in the wrong direction in either direction of rotation. During the instant of impact inertial forces hold the hammer dogs against sliding out of engagement with the anvil.

3,605,915
PNEUMATIC RAPPER FOR ELECTROSTATIC PRECIPITATORS

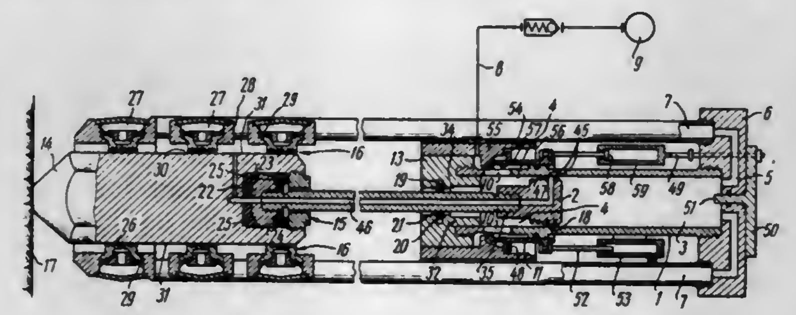
Thomas J. Gately, Ellicott City, Bartholomew F. Quintilian, Baltimore, and Charles H. Rodgers, Sykesville, Md. (all % Koppers Company, Inc., 440 College Park Drive, Monroeville, Pa. 15146)
Filed Apr. 11, 1969, Ser. No. 815,418
Int. Cl. B03c *3/76;* **B25d** *9/00*
U.S. Cl. 173—116 **13 Claims**



A pneumatic single-impulse rapper for electrostatic precipitators comprising a piston made from dry-lubricating material within a unitary, flangeless, cylindrical housing having no bolted connections, with the piston being returned to its pre-pulse position by a spring having reduced diameter end coils, said piston including a spherical or alternate striking surface for localized impact against the end of the housing, said housing including a non-removable cap and an air inlet adapted to secure a strengthened air fitting to the housing. A braided wire provides electrical grounding of the rapper.

3,605,916
HYDRAULIC HAMMER

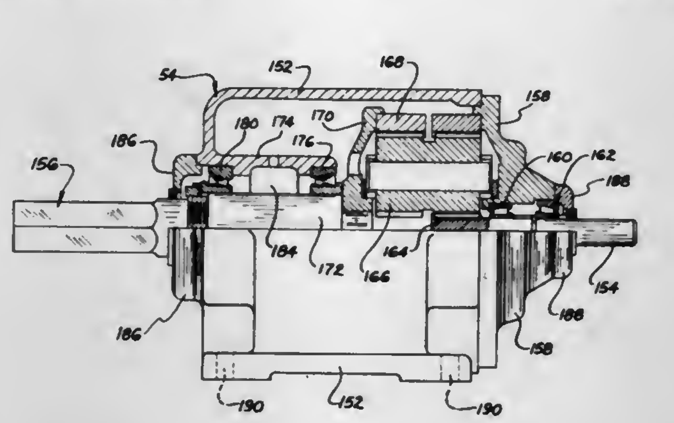
Bogdan Vyacheslavovich Voitsekhovsky and Faina Fedorovna Voitsekhovskaya, Ulitsa Akademicheskaya 2; Timofei Fedorovich Gorbachev, Ulitsa Zolotodolinskaya 71; Grigory Yankelevich Shoikhet, Ulitsa Pravdy 1, kv. 37; and Vladimir Alexandrovich Girinsky, Ulitsa Zolotodolinskaya 19, kv. 2, all of Novosibirsk, U.S.S.R.; Vladimir Fedorovich Krylov, Ulitsa Ordzhonikidze 7, kv. 17, Kemerovo, U.S.S.R.; and Alexandr Ivanovich Buteev, Ulitsa Akademicheskaya 10, kv. 8; and Dmitry Timofeevich Gorbachev, Sovetskaya 13, kv. 31, both of Novosibirsk, U.S.S.R.
Filed Nov. 18, 1969, Ser. No. 877,667
Int. Cl. B25d *9/00*
U.S. Cl. 173—139 **9 Claims**



A hydraulic hammer for rock breaking has a cylinder accommodating a piston which is connected to the working member and performs the working stroke under the action of compressed gas, and the reverse stroke under the action of pressurized fluid, means being provided in the hammer permitting the piston to deflect together with the working member, from the cylinder axis under the effect of lateral forces arising as a result of the impact, produced by the working member against an uneven rock surface. Damping arrangements are provided to damp the residual energy of the working member during the impact.

3,605,917
EARTH BORING MACHINE WITH DRIVE SHAFT SUPPORT BEARINGS

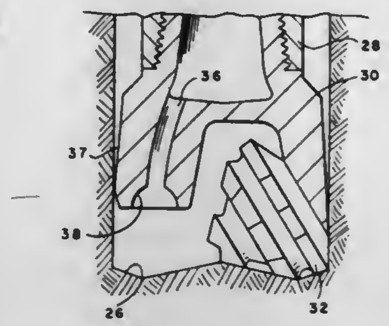
Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio
Filed Oct. 20, 1969, Ser. No. 867,817
Int. Cl. E21c *1/10*
U.S. Cl. 173—154 **6 Claims**



A machine for the horizontal boring of shafts for the insertion of pipelines where excavation from the surface is undesirable, such as under freeways or the like, which comprises a boring mechanism for forming the holes as well as the push function for advancing the pipeline casings. This arrangement includes a novel power train arrangement for most effectively delivering the energy from the power means to the boring and pushing apparatus, said power train being characterized by a novel drive shaft and bearing arrangement that efficiently resists bending stresses in the transmission of torsional loads from said power means to said boring and pushing apparatus.

3,605,918
DRILL BIT AND METHOD FOR EXPLOSIVE DRILLING

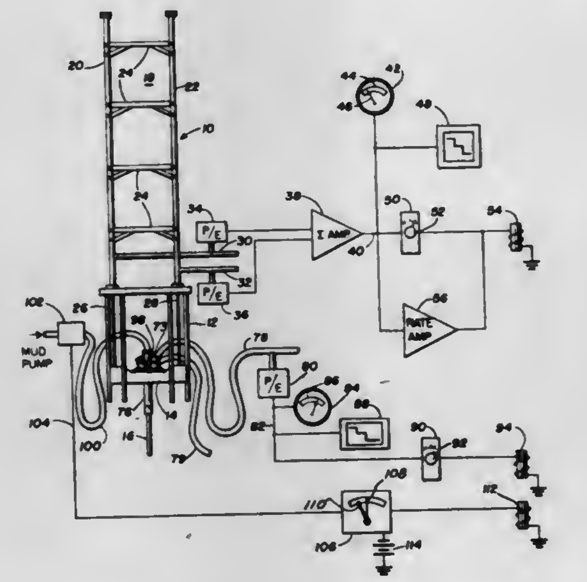
John D. Bennett, Denton, Tex., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Dec. 15, 1969, Ser. No. 884,955
Int. Cl. E21b *7/00, 7/18, 9/35*
U.S. Cl. 175—2 **9 Claims**



The particular embodiment described herein as illustrative of one form of the invention utilizes a drill bit having a fluid exit for passing drilling fluids from the interior of the drill pipe to the exterior of the drill bit. The surface surrounding the exit is formed in the shape of a parabola. Explosive capsules are placed in the drilling fluid stream and then moved with the drilling fluid through the drill stem and out the opening in the bit for impact with the formation, whereupon the explosive capsule is detonated. Primary energy in the form of a shaped jet charge is directed into the formation to penetrate the bottom of the borehole and cause fracturing of formation materials. In addition, upwardly directed energy from the shaped explosive charge is reflected from the parabolic-like surface of the drill bit to provide a secondary energy source directed against the formation at the bottom of the borehole.

3,605,919
DRILLING RIG CONTROL

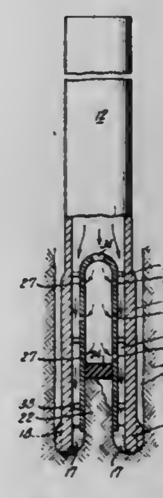
Raymond J. Bromell, Dallas, Tex., and George Homanick, Livonia, Mich., assignors to Automatic Drilling Machines, Inc., Dallas, Tex.
Filed May 16, 1969, Ser. No. 825,322
Int. Cl. E21b *3/02, 7/00, 19/08*
U.S. Cl. 175—27 **10 Claims**



The operation of a drilling rig is monitored and controlled to prevent damage or unnecessary delay due to the occurrence of off-normal operation. For example, drill string twistoff may be indicated by a sudden decrease in the total weight of the drill string, a sudden decrease in drilling torque, or a sudden decrease in mud pump pressure. Each of these three variables in monitored, and a departure of any one of the three from an established level may be used to sound an alarm. A sudden decrease in the drill string weight actuates a control relay which may shut down the drilling rig operation completely, or any part thereof. A sudden decrease in drilling torque and/or a sudden decrease in mud pump pressure similarly operates a control relay to shut down the drilling rig operation completely, or any part thereof.

3,605,920
CORE DRILLING APPARATUS WITH MEANS TO INDICATE AMOUNT OF CORE IN BARREL

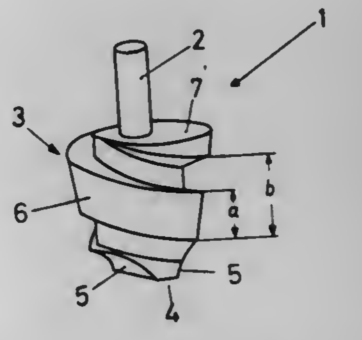
Charles D. Woodward, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,046
Int. Cl. E21b *25/00, 45/00*
U.S. Cl. 175—46 **1 Claim**



The core barrel of a core drill has longitudinally spaced ports in its sidewalls and a plug slidable in the barrel. As the core enters the barrel it raises the plug, blocking the ports in turn and thus producing pressure changes or anomalies in the drilling fluid indicative of the amount of core in the barrel.

3,605,921
DRILL FOR PRODUCING HOLES FOR PLANTS IN FLOWER POTS OR OTHER CONTAINERS

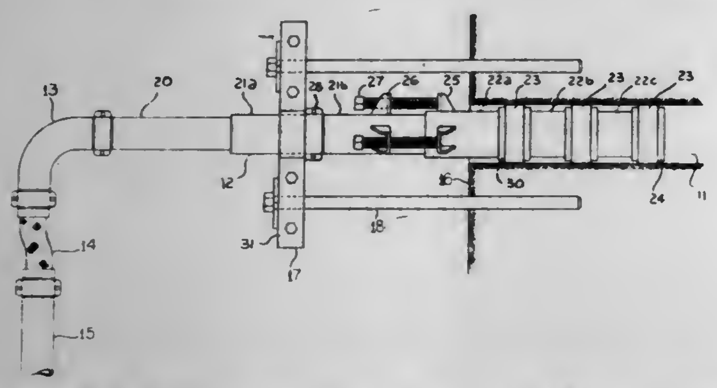
Georg Mayer, Bolheim, Germany, assignor to Firma Mayer KG, Heidenheim-Mergelstetten, Germany
Filed Sept. 11, 1969, Ser. No. 857,169
Claims priority, application Germany, Sept. 11, 1968, P 17 82 509.1
Int. Cl. E21c *13/04;* **A01c** *11/00*
U.S. Cl. 175—108 **6 Claims**



A drill for producing holes for plants in flower pots or other containers having a shank and a drill body wherein the drill body has at least one rising, worm-shaped spiral flute and the body portion between the spiral flute extends from the tapered lower end of the drill body up to its upper end.

3,605,922
DRILL HOLE CONNECTOR DEVICE

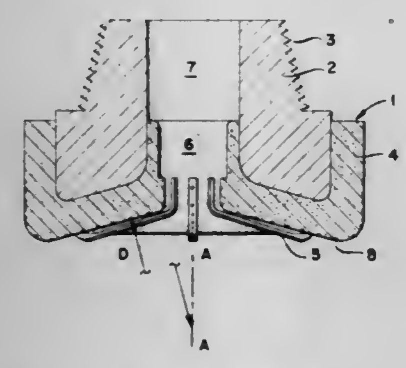
Willard I. Bergeron, 478 Surprenant, Drummondville, Quebec, Canada, and John David Gallagher, Chapais, Abitibi East, Quebec, Canada
Filed July 29, 1969, Ser. No. 845,718
Claims priority, application Canada, June 21, 1969, 54,995
Int. Cl. E21b *23/06, 33/02*
U.S. Cl. 175—210 **7 Claims**



A drill hole connector device for use in mines which comprises a housing having a cylindrical portion adapted to fit into a drill hole, a resilient ring surrounding the housing and being capable of being compressed by means of an external sleeve disposed about the housing. The axial compression and radial expansion of the resilient ring holds the device in the drill hole.

3,605,923
DIAMOND BITS HAVING DIAMONDS POSITIONED IN CONCENTRIC CIRCLES ON THE DRILLING FACE

Robijn Feenstra, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Original application Mar. 6, 1967, Ser. No. 620,839. Divided and this application Jan. 24, 1969, Ser. No. 813,352
Int. Cl. E21b *9/36*
U.S. Cl. 175—329 **7 Claims**

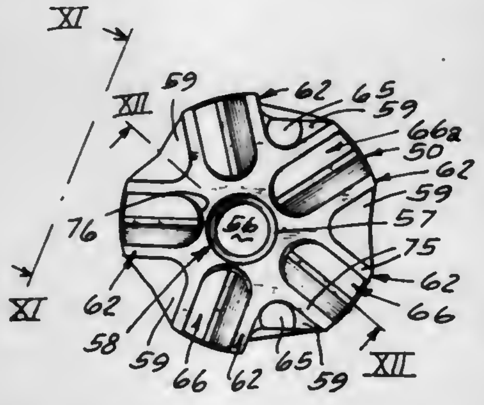


A drilling bit having diamonds embedded in the drilling face, with the diamonds arranged in a pattern of concentric circles having axes coinciding with the axis of the bit. All of the diamonds in a given circle will subscribe a common path in the face of the material being drilled. A method of manufacture of such a bit is disclosed, along with a special mold for practicing the method.

3,605,924
DRILL BIT

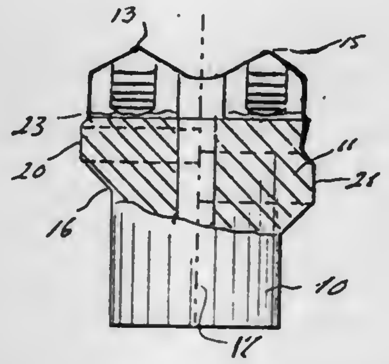
Edward A. Donegan, St. Catharines, Ontario, Canada, assignor to Thompson Products, Ltd., St. Catharines, Ontario, Canada
Filed Aug. 26, 1969, Ser. No. 853,051
Int. Cl. E21c *13/01, 13/06*
U.S. Cl. 175—400 **12 Claims**

A single pass percussion drill bit having from five to nine wings around a central hole, each carrying a shallow, wide, hard insert tooth in a flat narrow end face thereof and having free flow chip discharge passages between the teeth. The bit body has a flat front face with a separate slot for each insert, and each insert has its inner end butted against a shoulder at the inner end of the slot. The inserts are wide and shallow to provide maximum cutting faces with minimum material, may be of the same or different lengths, and will be spaced in accordance with the placement of a central flushing hole and chip clearance grooves in the bit body.



3,605,925
NON RIFLING DRILL BIT

Irvine Berscheid, Flin Flon, Manitoba, Canada, assignor to I. J. Berscheid and Associates Limited, Queenston Bay, Winnipeg, Manitoba, Canada
Continuation-in-part of abandoned application Ser. No. 706,921, Feb. 20, 1968. This application Sept. 2, 1969, Ser. No. 854,667
Int. Cl. E21c *9/00, 13/00*
U.S. Cl. 175—408 **2 Claims**



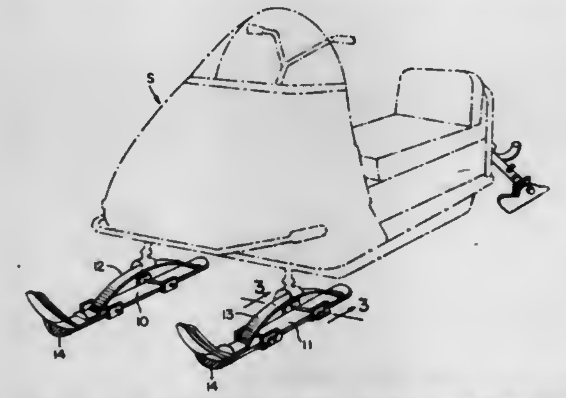
The bit is for hard rock rotative percussive drilling and instead of the body of the bit decreasing in diameter from the tips of the inserts, additional body metal is provided in one form or another around the head spaced below the inserts, to steady the bit in the hole and having an outer diameter equal to or just less than the true diameter of the hole. This keeps the bit true during the percussive rotation action and eliminates or substantially reduces rifling.

3,605,926
SNOWMOBILE WITH ANTISKID AND STABILIZING ATTACHMENTS

Felix Leonawicz, Espanong Road, Nolan's Point, P.O. Box 162, Lake Hopatcong, N.J. 07849
Filed Aug. 8, 1969, Ser. No. 848,566
Int. Cl. B62m *27/02*
U.S. Cl. 180—5R **10 Claims**

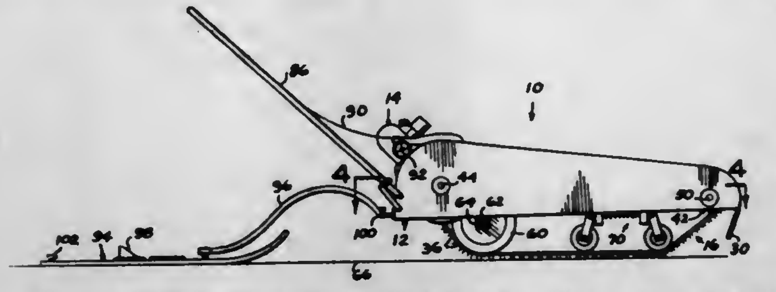
This specification discloses a snowmobile with attachments which adapt it for use on ice and hard-packed snow. One of these attachments comprises runners of V-shaped cross-section that are applied to the front steering runners of the vehicle. The other is a stabilizer mounted on the rear of the snowmobile. The stabilizer

consists essentially of a pair of arms, each pivotally connected to the rear end of the vehicle and extending downwardly and outwardly with their lower ends assuming a position outboard of the snowmobile. Pivotally mounted on the free end of each arm is a shoe having a chisel edge. Each arm comprises telescoping sections which render it adjustable in length and a tension spring has its ends connected to the arms to generate inward pressure thereon.



3,605,927
POWERED ENDLESS TRACK VEHICLE

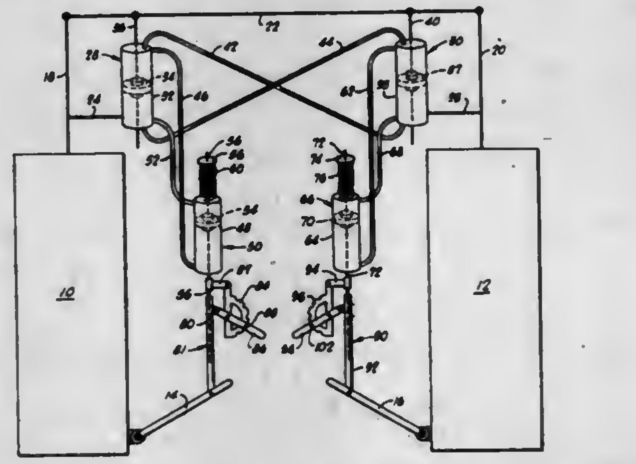
David L. Wells, 1813 Cottonwoods Road, Carrollton, Tex. 75006
Filed Sept. 17, 1969, Ser. No. 858,775
Int. Cl. B62m *27/02*
U.S. Cl. 180—5R **2 Claims**



A frame transversely journals sprockets and wheels around which an endless track is entrained and engaged by the sprockets for movement of the track. One of the sprockets is driven by a motor mounted on the frame. Means, connected with the frame in trailer-like fashion, transports the user. Handle control means, connected with the frame, projects rearwardly thereof toward the operator.

3,605,928
SYSTEM FOR MAINTAINING LATERALLY SPACED VEHICLES LONGITUDINALLY ABREAST

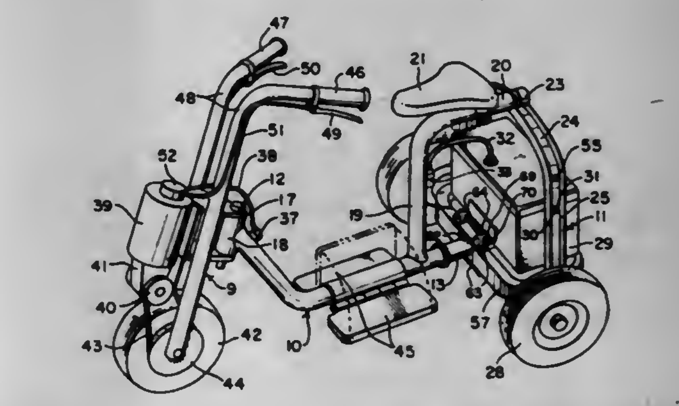
Raymond W. Loesch, 1601 E. Oklahoma St., Enid, Okla. 73701
Filed Sept. 29, 1969, Ser. No. 861,868
Int. Cl. B60d *7/00*
U.S. Cl. 180—14 **20 Claims**



A system for simultaneously operating a plurality of vehicles from one of the vehicles to automatically maintain them in horizontal alignment abreast of each other, which system includes a linkage interconnecting the steering mechanisms of the vehicles to produce identical turning movement in the vehicles, and a closed hydraulic-mechanical system which is connected to speed control devices on the several vehicles so that any vehicle which advances beyond other vehicles in the array will actuate a hydraulic signal which is used to change the relative speeds of the vehicles to restore horizontal alignment of the several vehicles.

3,605,929
ONE RIDER GOLF CART

Burton A. Rolland, 332 Dawson Ave., Rockford, Ill. 61107
Filed July 7, 1969, Ser. No. 839,298
Int. Cl. B62d *61/08*
U.S. Cl. 180—26 **15 Claims**

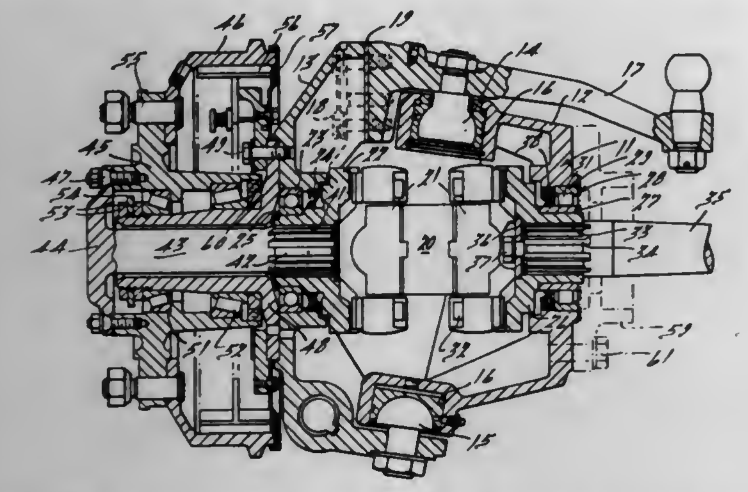


The three-wheel cart comprises three sub-assemblies designed to be easily assembled and disassembled, namely, a front steering fork assembly detachably connected by a withdrawable king-pin with the front end of the front frame assembly, on which the driver's seat is carried, and a rear frame assembly pivotally and detachably connected to the rear end of the front frame assembly by means of an axle working in a fore and aft rear lower bearing, spacer sleeve and pilot bearing, two withdrawable pins detachably connecting the bearing with the lower portion of the rear frame assembly. Each sub-assembly is light enough and compact enough to be handled readily and stored in the trunk of an average sized automobile for transportation. The drive means is carried on the front fork and transmits drive to the front steerable wheel, and brake means is also provided working on the same wheel. A rigid upright frame of inverted U-shape on the rear frame assembly has an arcuate track on its upper end struck on an arc with the rear axle as a center and has a roller on the back of the seat support running thereon between widely spaced stops, allowing a wide range of tilting of the front fork and front frame relative to the rear frame for operation like a bicycle or motorcycle. The upright frame also has a battery carrier case pivotally suspended therein permitting upright positioning of the battery with the case during transportation independently of the rest of the rear frame assembly, the two withdrawable connector pins having head ends that hook onto the carrier case when the cart is assembled to hold the carrier case in rigid relationship to the upright frame.

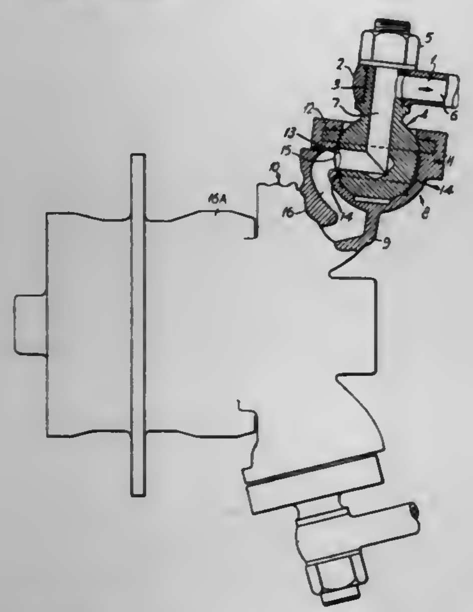
3,605,930
STEERABLE DRIVING AXLE

Laine J. Ainsworth, Oakland, Calif., assignor to Kelsey-Hayes Company
Filed Nov. 26, 1968, Ser. No. 778,991
Int. Cl. B60k *17/30*
U.S. Cl. 180—43R **6 Claims**

The steerable driving axle is driven through a double cardan universal joint suspended inside a steerable drive with the outer end fixed and the inner end movable within a roller bearing carried by the inner suspension member. This arrangement positions the universal joint and permits the removal of the outer driven axle and its replacement in the located end of the joint.



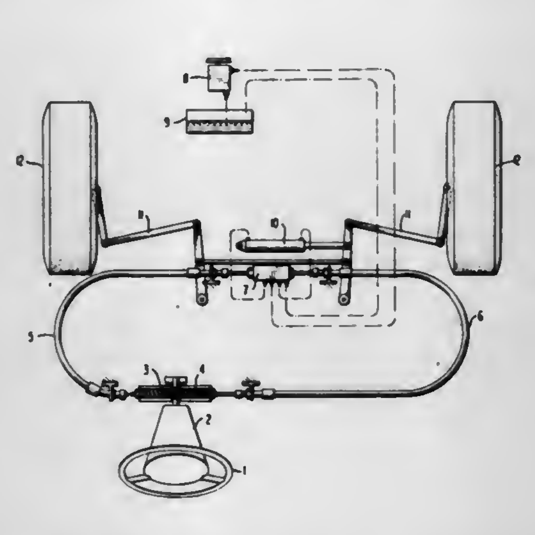
3,605,931
HYDROSTATIC DRIVE SYSTEM FOR A VEHICLE
Donald Firth and Roger Harvey Yorke Hancock, East Kilbride, Glasgow, and Derek Mitchell, Larkhall, Scotland, assignors to National Research Development Corporation, London, England
Filed Dec. 6, 1968, Ser. No. 781,925
Claims priority, application Great Britain, Dec. 11, 1967, 56,254/67
Int. Cl. B60k *17/30*
U.S. Cl. 180—43R **5 Claims**



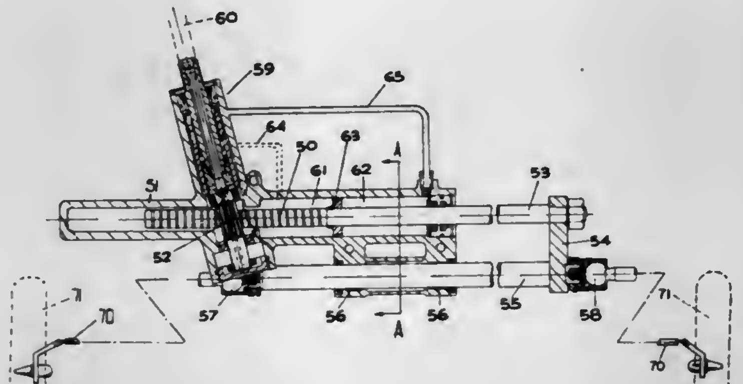
A hydrostatic drive system for a vehicle in which a hydraulic motor is mounted in the steerable vehicle wheel or immediately adjacent the vehicle wheel and movable with it. The system includes a conduit for conveying fluid from an engine driven pump to the motor via a fluid coupling. The fluid coupling is preferably in the form of a ball joint having a swivel axis substantially aligned with the steering or king pin axis of the wheel.

3,605,932
STEERING SYSTEM FOR MOTOR VEHICLES
Karl Wilfert, Gerlingen-Waldstadt, and Rudolf Andres, Sindelfingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Apr. 2, 1969, Ser. No. 812,728
Claims priority, application Germany, Apr. 3, 1968, P 17 55 136.9; June 8, 1968, P 17 55 685.3
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2R **19 Claims**

A steering system for motor vehicles which operates with an auxiliary force assist and in which flexible mechanical connecting elements are used for the transmission of the steering wheel movements; one such flexible connecting element is provided for each actuation direction of the steering system and is so designed that the force necessary for the steering can also be transmitted thereby in case of failure of the auxiliary force.



3,605,933
STEERING MECHANISM FOR MOTOR VEHICLES
Barry John Millard, Earley, near Reading, England, assignor to Adwest Engineering Limited
Filed June 30, 1969, Ser. No. 837,856
Claims priority, application Great Britain, July 1, 1968, 31,345/68
Int. Cl. B62d *3/12, 5/06*
U.S. Cl. 180—79.2R **4 Claims**



A steering mechanism for a motor vehicle comprising a toothed rack slidable in a housing and having one end thereof projecting from the housing, a pinion in meshing engagement with the rack and rotatable to move the rack, and a rod mounted parallel with the rack and secured to the said one end of the rack so as to move therewith, at least one end of the rod being adapted for connection to the steerable road wheels of a motor vehicle.

3,605,934
STEERING MECHANISM FOR MOTOR VEHICLES
Barry John Millard, Earley, near Reading, England, assignor to Adwest Engineering Limited
Filed June 30, 1969, Ser. No. 837,858
Claims priority, application Great Britain, July 1, 1968, 31,345/68
Int. Cl. B62d *3/12, 5/06*
U.S. Cl. 180—79.2R **5 Claims**

Steering mechanism for a motor vehicle, the mechanism comprising a rod member adapted to be fixedly secured to a motor vehicle, a casing slidable on the rod

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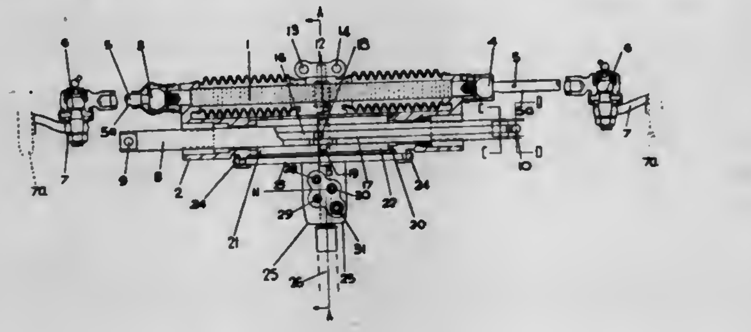
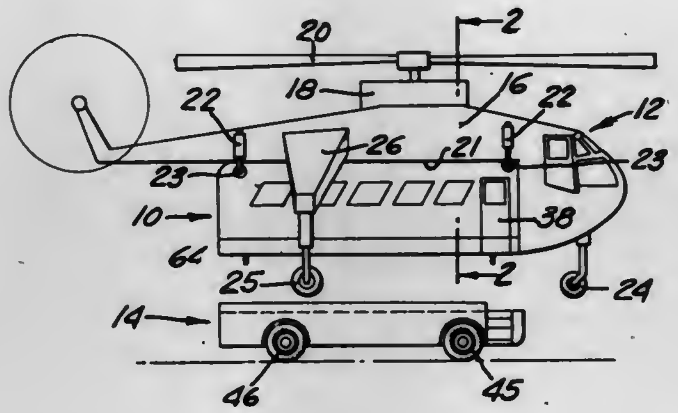
member, a toothed rack carried by the casing and connectable with the steerable road wheels of a motor vehicle, and a pinion in meshing engagement with the toothed rack and connectable with the steering control of a motor vehicle, the pinion being rotatable to effect longitudinal movement of said rack and said casing relative to the rod member.



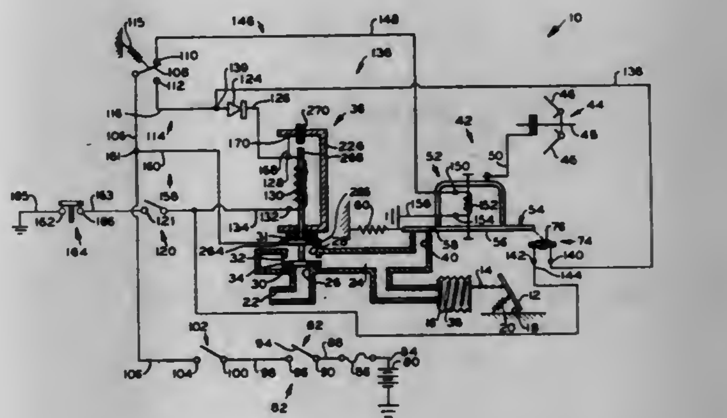
3,605,935
AIR SURFACE RAPID TRANSIT VEHICLE
Richard H. Gilbert, P.O. Box 4206,
Riverside, Calif. 92504
Continuation-in-part of abandoned application Ser. No. 756,716, Aug. 8, 1968, which is a continuation-in-part of abandoned application Ser. No. 609,467, Jan. 16, 1967. This application Jan. 6, 1970, Ser. No. 913
Int. Cl. B60k *35/00;* **B64c** *37/02;* **B64d** *9/00*
U.S. Cl. 180—89 **14 Claims**



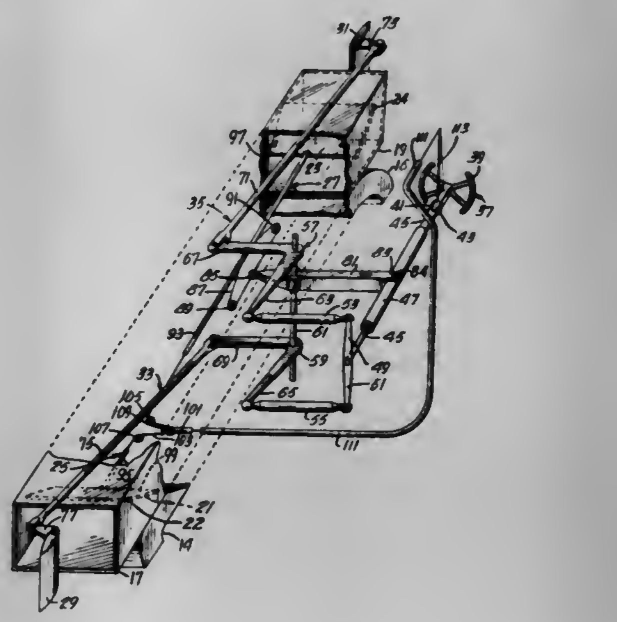
A passenger- or cargo-carrying pod is detachably connected to a helicopter for high-speed transport thereby between metropolitan and suburban depots, and is then transferred to and locked onto a self-propelled power unit of one type or another, for transport on the ground. In one case, the power unit comprises an automotive-type chassis having wheels that run on the street or highway. The chassis has a self-contained power plant and transmission for driving the wheels, as well as steering mechanism, brakes, lights, etc., which are operated by controls within the pod. In another case, the power unit comprises a chassis having wheels that run on one or more tracks, such as a monorail. When mounted on either of the power units, the pod can be transported over a fixed route within the city to pick up and discharge passengers or cargo.

3,605,936
SPEED CONTROL WITH ADVANCE FEATURE
James A. Charles, Greens Fork, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed May 16, 1969, Ser. No. 825,285
Int. Cl. B60k *31/00*
U.S. Cl. 180—108 **20 Claims**

A speed control system is provided which utilizes manifold vacuum pressure, as modified by atmospheric pressure, to control an engine throttle and thereby maintain an automotive vehicle at a desired speed. The speed control system includes an electro-magnetic means and a control circuit interrupting means for providing the speed control system with advanced speed actuation. Once a new speed has been obtained the speed control system may again be placed in speed controlling mode.



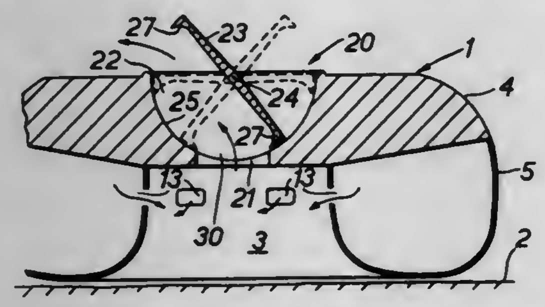
3,605,937
MOVEMENT CONTROL SYSTEM FOR FLUID PRESSURE VEHICLES
Charles Peter Kirwan, Brossard, Quebec, Canada, assignor to Canive Industries Ltd., Brossard, Quebec, Canada
Filed Feb. 19, 1969, Ser. No. 800,454
Int. Cl. B60v *1/14*
U.S. Cl. 180—120 **6 Claims**



A control system for air-cushion vehicles requiring only a single control member to control, using a portion of the air pressure supplied to support the vehicle, the movement of the vehicle in one or more directions.

3,605,938
FLUID-FLOW CONTROL APPARATUS
Paul Dominic Davis, 4 Firtree Grove, Butts Ash Lane, Hythe, Southampton, England, and John Norman Lane, "Sukiyaki," 16 Linden Gardens, Hedge End, Southampton, England
Filed Apr. 1, 1969, Ser. No. 812,094
Claims priority, application Great Britain, Apr. 5, 1968, 16,407/68
Int. Cl. B60v *1/14*
U.S. Cl. 180—120 **5 Claims**

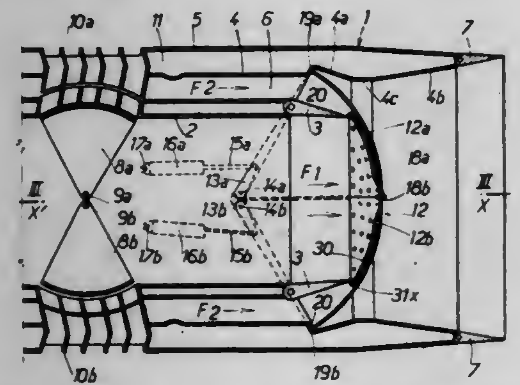
A flow control valve, suitable for venting cushion air from an air-cushion vehicle so as to apply lateral or longitudinal thrust forces thereto, comprises a butterfly-valve member mounted for rotation within a concavity. The hollow of the concavity is connected to the cushion space of the vehicle. The butterfly-valve member has



three operative positions. When it is disposed horioztally it closes off the concavity. When rotated in one direction or another it allows cushion air to escape from the concavity and also serves to direct it in a predetermined direction.

3,605,939
DEVICE FOR REDUCING THE NOISE PRODUCED BY FLUID FLOW ESCAPING FROM A NOZZLE

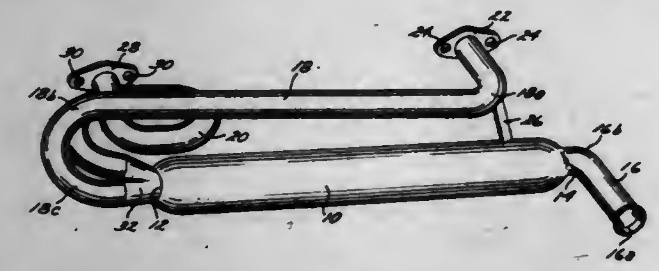
Louis Duthion, Paris, France, assignor to
Bertin & Cie, Boite Postale, France
Filed Dec. 30, 1969, Ser. No. 889,165
Claims priority, application France, Dec. 30, 1968,
182,228
Int. Cl. B64d *33/06*
U.S. Cl. 181—33HC **18 Claims**



A noise reducing device for an ejector type nozzle having a primary fluid flow surrounded by a secondary fluid flow, which device comprises a hollow obstacle which can be arranged to intercept the primary flow and includes a number of passages for splitting the intercepted portion of the primary flow into a number of elementary flows, together with means for placing the interior of the obstacle into communication with the secondary flow thereby to form a number of elementary secondary flows which envelop at least some of said elementary primary flows.

3,605,940
EXHAUST HEADER SYSTEM

Wayne A. Christensen, 1959 Harbor Blvd.,
Costa Mesa, Calif. 92627
Filed May 12, 1969, Ser. No. 823,927
Int. Cl. F01n *1/04;* **F02b** *27/00*
U.S. Cl. 181—42 **5 Claims**

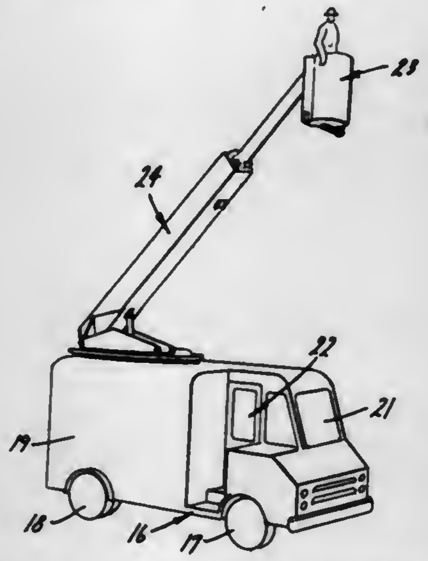


The exhaust header system is for use with an internal combustion engine, as for instance with the Porsche 911, wherein the cylinders are divided into two exhaust banks. The system comprises a muffler which is connected to exhaust conduits from the respective cylinder banks, which conduits are adapted to provide substantially the same resistance to the flow of exhaust gases therethrough. Notwithstanding the fact that one such conduit is longer than the other, the resistance is maintained substantially equal by virtue of the addition of certain turns or bends in the shorter one.

The muffler is unique in having coaxially arranged inner and outer tubular members and noise absorbing means interposed therebetween. The inner tubular member is perforated but the several tubular members are maintained straight so that the flow of exhaust gases is unimpeded and the noise is absorbed by the noise absorbing means between the tubular members.

3,605,941
AERIAL LIFT WITH ROTATABLE AND ENCLOSABLE BASKET

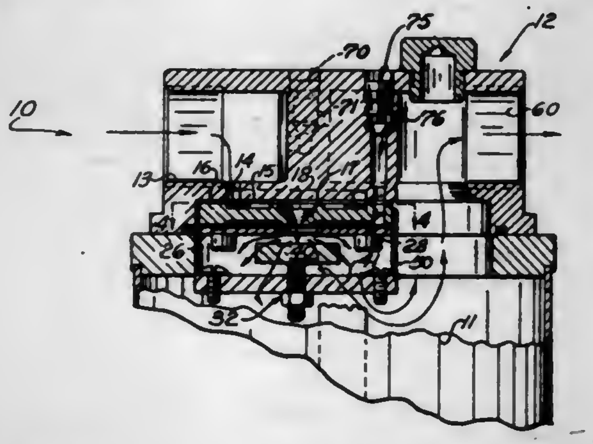
Chester P. Edwards, Redwood City, Calif., assignor to
General Cable Corporation, San Carlos, Calif.
Filed Jan. 9, 1969, Ser. No. 790,006
Int. Cl. B66f *11/04*
U.S. Cl. 182—2 **21 Claims**



Aerial lift with rotatable and enclosable workman's basket which serves as an aerial workshop having means permitting rotation of the basket in a substantially horizontal plane through substantially more than 90° and having means for enclosing the basket to protect the workman against inclement weather and providing light and heat and ventilation.

3,605,942
MIST GENERATOR

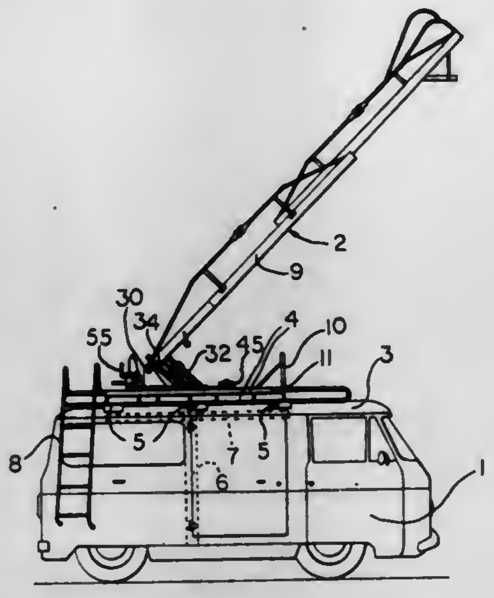
William W. Lyth, Cleveland, Ohio, assignor to Eaton
Yale & Towne Inc., Cleveland, Ohio
Filed May 19, 1969, Ser. No. 825,726
Int. Cl. F16n *7/32*
U.S. Cl. 184—6.26 **22 Claims**



A mist generator comprises means defining a vortex chamber having an inlet and an outlet. The vortex chamber creates a rotating flow of fluid which moves in a direction generally axially of the direction of rotation thereof. The rotating flow of fluid moves past an oil gap and draws oil from the oil gap thereinto. As the fluid flows beyond the oil gap, it encounters a mist density adjustment means which is located in the path of the rotating fluid. The mist density adjustment means comprises a particle size regulator disc or member which is adjustable toward and away from the vortex outlet to control the suction which is created by the rotating fluid flow in the oil gap.

3,605,943
AERIAL LADDER

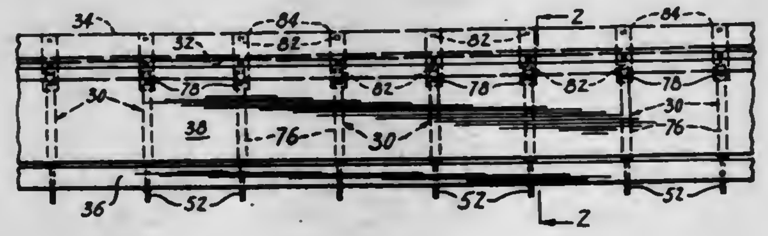
Marcel Beaudet, 11 Boulanger Blvd., and Cyrille Blais,
Blais Road, both of Warwick, Quebec, Canada
Filed Oct. 20, 1969, Ser. No. 867,820
Int. Cl. E06c *5/08*
U.S. Cl. 182—67 **9 Claims**



An aerial ladder which is power operated for swinging and tilting movement with respect of a base mounting, said base mounting so designed as to have a minimum height and thus a very low center of gravity, such that the base mounting and ladder are especially adapted to be mounted on the roof of a small truck, whereby a person standing at the end of the extended ladder, with the ladder oriented transversely of the truck will not be able to overturn the truck even if the latter has no ground engaging stabilizers.

3,605,944
ADJUSTABLE SCAFFOLD AND BRACKET

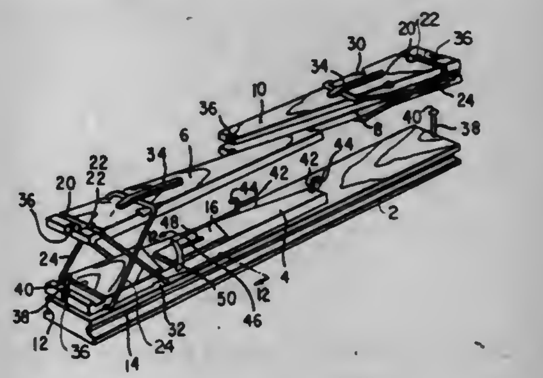
Wendell Cleghorn, 1231 Old Atlanta Road, Griffin, Ga.
30223, and Richard Rogers, 150 Lake Drive, Fayetteville, Ga. 30214
Filed Dec. 12, 1969, Ser. No. 884,600
Int. Cl. E04g *3/08*
U.S. Cl. 182—82 **9 Claims**



A scaffold having an adjustable tubular frame supporting a scaffold board and having adjustment fasteners connected to the tubing for adjusting and mounting a form support.

3,605,945
SCAFFOLD HORSE

Eugene W. Knuth, Land O'Lakes, Wis. 54540
Filed July 28, 1970, Ser. No. 58,760
Int. Cl. E04g *1/32;* **F16m** *11/00*
U.S. Cl. 182—151 **8 Claims**



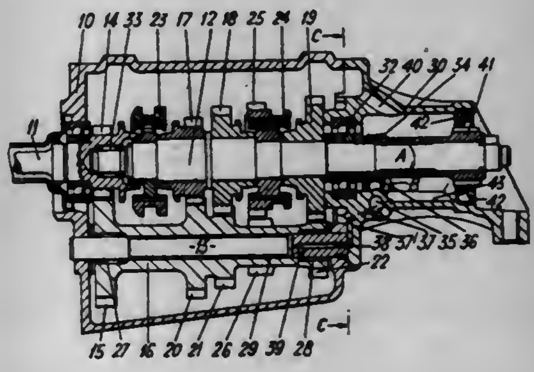
A wooden scaffold horse made in several readily assembled and disassembled parts each being constructed to cooperate when in both knocked down and step-up position of parts whereby to form a more secure and symmetrical package for both handling and shipment and a more rigid load supporting horse with the minimum of time and labor.

ERRATUM

For Class 184—6.26 see:
Patent No. 3,605,942

3,605,946
POWER TRANSMISSION LUBRICATION ARRANGEMENT

Adolf Oehl, Budenheim, Germany, assignor to
General Motors Corporation, Detroit, Mich.
Filed Mar. 11, 1970, Ser. No. 18,411
Claims priority, application Germany, Mar. 20, 1969,
G 69 11 180
Int. Cl. F01m *9/06;* **F16n** *7/40*
U.S. Cl. 184—11 **7 Claims**

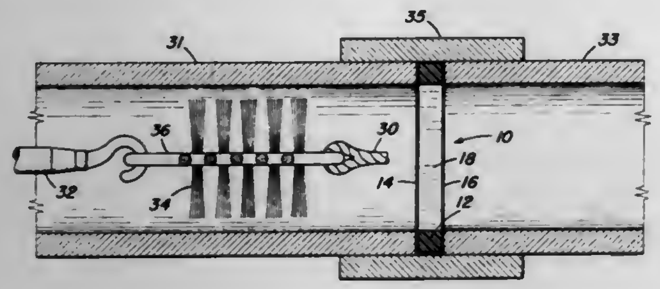


In a vehicle power transmission lubricant is pumped by a pair of meshing helical gears to lubricate highly loaded bearings of the transmission when the transmission is operative to provide forward drive for the vehicle.

3,605,947
DEVICE USED IN INSTALLING CABLES IN CONDUITS

Phillip Salerno, 7208 Ave. W., Brooklyn, N.Y. 11234,
and Michael Sammaritano, 910 Manor Lane, Bayshore, N.Y. 11706
Continuation-in-part of application Ser. No. 23,346, Mar. 27, 1970. This application July 22, 1970, Ser. No. 57,268
Int. Cl. F16n *1/00*
U.S. Cl. 184—15R **11 Claims**

A conduit in which an electrical cable or the like is to be installed has rupturable containers of lubricant installed therein. The containers are broken during installation of the electrical cable thereby releasing the lubricant in the conduit and reducing the friction of the electrical



cable and otherwise facilitating pulling of the cable through the conduit.

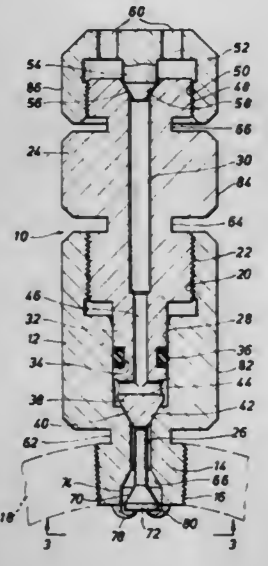
3,605,948
LUBRICANT FITTING FOR VALVES

Robert O. Wynn, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 20, 1970, Ser. No. 7,282

Int. Cl. F01m *1/18;* **F16n** *21/06*

U.S. Cl. 184—6.4 **8 Claims**



Injection of lubricant material into valves or other pressure vessels subject to extremely high pressure, is accomplished by a lubricant fitting including a plurality of sequentially operable valves of various constructions in order to achieve proper connection of the lubricant fitting to a lubricant supply system without risking erosion of the valve seats within the lubricant fitting by the high pressure fluid within the valve or pressure vessel. The lubricant fitting also includes a frangible portion that will enable the fitting to become severed at a preselected portion thereof, in the event the lubricant fitting is subjected to extremely high impact forces. The fitting also includes a safety valve structure that is disposed at the inner most portion of the lubricant fitting inwardly of the frangible portion thereof, in order that a fluidtight seal may be developed to prevent valve leakage in the event the lubricant fitting should inadvertently become severed. In order to assist in preventing erosion of the valve seats within the lubricant fitting, the velocity of fluid flow through the lubricant fitting is maintained at a low level by an internal restricted portion of the lubricant passage formed therein.

3,605,949
ATOMIZER, PARTICULARLY FOR LUBRICANTS

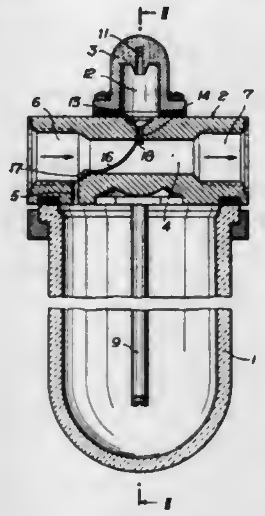
Erwin Vock, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Mar. 14, 1967, Ser. No. 623,003

Claims priority, application Austria, Mar. 18, 1966, 2,587

Int. Cl. F16n *7/34*

U.S. Cl. 184—55A **1 Claim**



An atomizer, particularly for lubricants, to produce a fine oil spray in compressed-air lines for the lubrication of compressed air installations. The atomizer includes an atomizer head having a passage for the flow of a gaseous medium therethrough and a container for the material to be atomized.

3,605,950
INDUSTRIAL LIFT TRUCKS

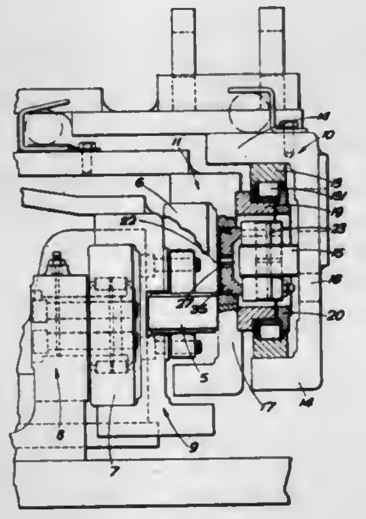
Ronald Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, Hampshire, England

Filed Aug. 28, 1969, Ser. No. 853,739

Claims priority, application Great Britain, Aug. 30, 1968, 41,602/68

Int. Cl. B66b *9/20*

U.S. Cl. 187—9 **9 Claims**



An industrial lift truck comprises a mast having an upright member; a movable member slidable up and down in relation to the upright member, the upright member having a channel section with a web part and flanges facing the movable member; a roller assembly mounted on the movable member between the flanges of the channel section and comprising an outer roller engaging the flanges of the channel section, a housing around which

the outer roller is rotatably mounted, removable bolts securing the housing to the movable member, an inner roller mounted within the housing and partially projecting therefrom to engage the web part of the channel section, and a mounting for the inner roller which is adjustable within the housing towards and away from said web part. The mounting for the inner roller slides along the bolts which thereby prevent rotation of the mounting, and the roller assembly as a whole is slidable along the channel section upon removal of the bolts.

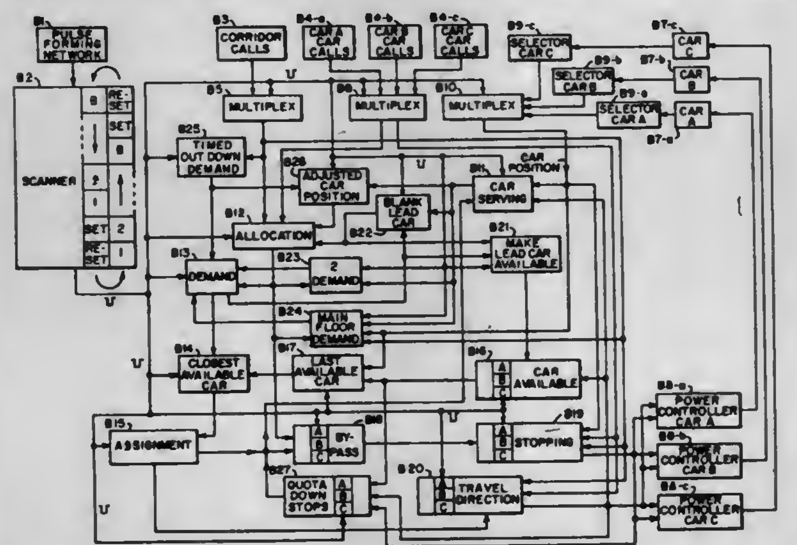
3,605,951
PULSE-SUPERVISED MULTI-VEHICLE TRANSPORTATION SYSTEM

Andrew F. Kirsch, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1968, Ser. No. 784,308

Int. Cl. B66b *1/22*

U.S. Cl. 187—29 **57 Claims**



An improved multi-car elevator supervisory system wherein movement of the cars is controlled by pulse driven logic circuits. In addition to the predetermined number of car and first direction corridor calls allocated to cars traveling in the first direction to serve first direction calls, a predetermined number of first direction corridor calls are allocated to cars while traveling in the second direction on assignment to serve first direction calls. Exess corridor calls not allocated to cars serving in the direction of the calls or traveling in the opposite direction to serve in the direction of the calls create a demand for an extra car. Cars traveling in the second direction to serve first direction corridor calls are not assigned to any specific first direction corridor call. They all travel for the farthest first direction demand until one car has passed all the first direction demands except the farthest one at which time it is committed to the farthest demand while the other cars are permitted to see the next farthest demand. If the distance between corridor calls is excessive, a demand for an extra car is created even though less than the predetermined number of calls have been allocated to the assigned cars. Corridor calls registered for more than a predetermined time are given preferred treatment. Since cars on assignment to serve preferred calls bypass nonpreferred calls, the system considers these cars to be approaching the preferred calls regardless of their actual position so that the normal call allocating circuits may be utilized to allocate the bypassed calls to other cars. When no car is located at the lower terminal floor an artificial demand for a car to be sent to the lower terminal is created unless a car is approaching the main floor with less than a predetermined number of calls allocated to it. In the absence of such a car, a car is assigned to serve the artificial demand at the lower terminal; however, it will reverse and serve the lowest actual up corridor call between it and the lower terminal floor should a call be registered. A down traveling car will bypass all remaining down corridor calls after making a predetermined number of stops with passengers on board. Such a car will not be considered in the allocation of calls to cars serving down corridor calls.

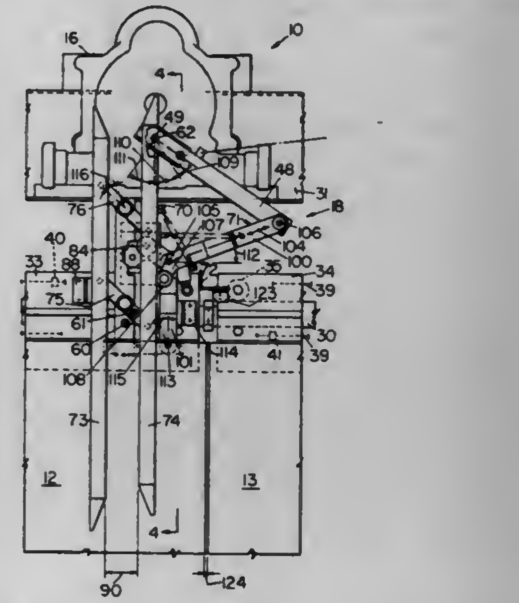
3,605,952
DOOR COUPLING APPARATUS FOR ELEVATOR SYSTEMS

John Lusti, River Vale, N.J., assignor to Otis Elevator Company, New York, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,186

Int. Cl. B66b *13/12*

U.S. Cl. 187—51 **16 Claims**



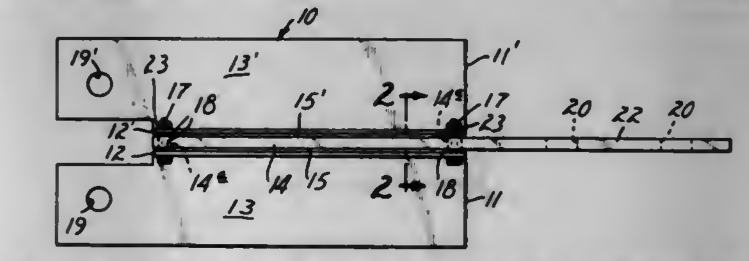
A door coupling apparatus for an elevator system for coupling and driving an elevator car door and a hoistway door of an elevator system for simultaneous movement of the doors between open and closed positions. The door coupling apparatus includes a vane assembly, which is mounted on the car door copuling the hoistway door thereto, and includes an elongate link assembly which has one end thereof connected to the vane assembly for urging the vane assembly to couple the doors and for latching the vane assembly after the doors are coupled together. The door coupling apparatus also includes a door operating mechanism which is connected to the other end of the link assembly for driving the coupled doors between the open and closed positions. The door coupling apparatus also includes a releasing member arranged to engage the link assembly after the coupled doors reach the closed position for unlatching the vane assembly and for uncoupling the doors in the closed position.

3,605,953
BIDIRECTIONAL DAMPING UNIT

Donald B. Caldwell, East Oakdale Township, Washington County, Carl A. Dahlquist, Roseville, and Robert L. Elton, White Bear Lake, Minn., and Leslie E. Robertson, Fairfield County, Conn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn. Continuation-in-part of application Ser. No. 746,053, July 19, 1968. This application May 26, 1969, Ser. No. 830,577

Int. Cl. F16f *7/08*

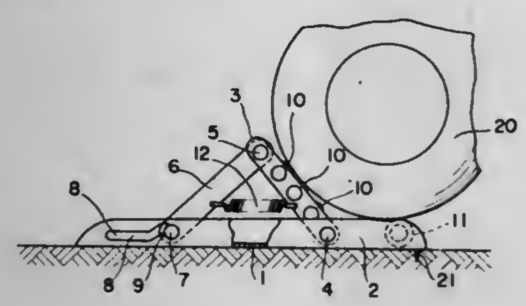
U.S. Cl. 188—1 **11 Claims**



A damping unit for use in a building structure subject to subsonic oscillations such as the wind may induce in a tall building or stack or bridge. The damping unit includes at least a pair of rigid members having broad surfaces separated by a viscoelastic layer. The improvement resides in the viscoelastic material which may be a copolymer of acrylic monomers such as a copolymer of isooctyl acrylate and acrylic acid. The viscoelastic layer may be adherently bonded to the broad rigid surfaces by a room-temperature-curing epoxy resin composition.

3,605,954
EMERGENCY STOPPING DEVICE FOR AUTOMOBILES

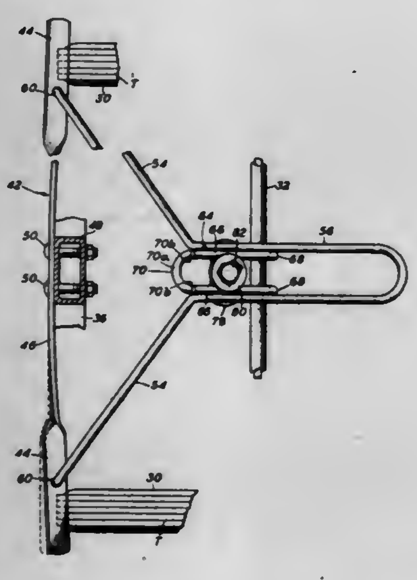
Manzo Wakabayashi, 7–13 2-chome, Nishirokugo, Ota-ku, Tokyo, Japan, and Teikichi Kobayashi, Shibata, Japan; said Kobayashi assignor to said Wakabayashi
Filed Feb. 24, 1969, Ser. No. 801,270
Claims priority, application Japan, Sept. 30, 1968, 43/70,184; Oct. 19, 1968, 43/75,847
Int. Cl. B60t *1/00*
U.S. Cl. 188—4 **5 Claims**



The present invention relates to a device for stopping an automobile in case of an emergency, said device being characterized by the fact that it comprises a channel-shaped base plate supporting one end of a frame. Rollers are pivotally attached to the frame, said rollers, together with another roller at one end of the channel-shaped base plate, serving as idler rollers for the automobile wheels. Anti-skid projections are provided on the bottom of the channel-shaped base plate, and a strut which holds the frame upright to prevent the forward movement of the wheel is held in place by suitable spring means.

3,605,955
BRAKING ASSEMBLY FOR STROLLERS AND THE LIKE

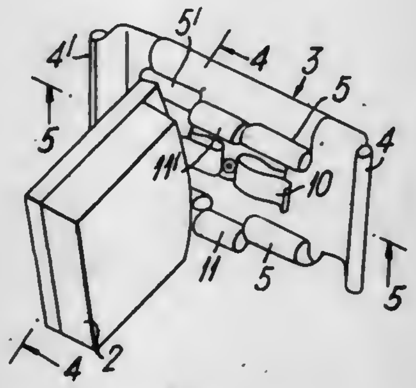
William G. Ballenger, Highland Park, Ill., assignor to Central Specialties Co., Chicago, Ill.
Filed Jan. 5, 1970, Ser. No. 693
Int. Cl. B62b *9/08*
U.S. Cl. 188—20 **8 Claims**



A braking assembly in which a wheel contacting member is engaged and disengaged by movement of a locking member in contact with a transverse stationary member. The member is flexible and has a yoke member attached at the ends thereof, the center portion of the yoke forming a loop extension to which manual braking force is applied. The locking member is adjustably attached to the loop extension.

3,605,956
COMBINED COVER AND BRAKE PAD RETAINER FOR DISK BRAKES

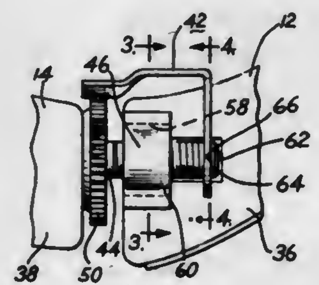
Heinz Gunter Hahm and Helmut Marschall, Frankfurt am Main, and Mustafa Demirsoy, Darmstadt, Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,681
Claims priority, application Germany, Aug. 29, 1968, P 17 75 586.1
Int. Cl. F16d *55/22*
U.S. Cl. 188—72.3 **2 Claims**



A combined cover and brake pad retainer for disk brakes having an access opening adjacent to the disk for the replacement of the brake pads including a snap-on sheet metal cover plate with sides which are bent radially inward to form guide rails for the brake pads. A cross spring for urging the brake pads away from the disk is attached to the underside of the cover plate.

3,605,957
ADJUSTER MECHANISM

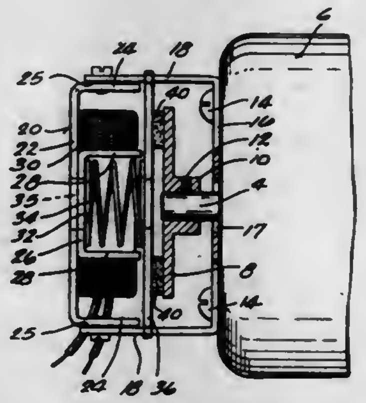
Joseph L. Mossey, South Bend, Ind., assignor to The Bendix Corporation
Filed Mar. 24, 1969, Ser. No. 809,859
Int. Cl. F16d *65/46*
U.S. Cl. 188—79.5 **3 Claims**



A brake equipped with an adjuster mechanism interposed between adjacent ends of a pair of brake shoes to compensate for shoe wear, comprising an extendible strut interconnecting the unanchored ends of said brake shoes and a locking means for controlling the extension of said strut.

3,605,958
SPRING-APPLIED, ELECTRICALLY-RELEASED BRAKE

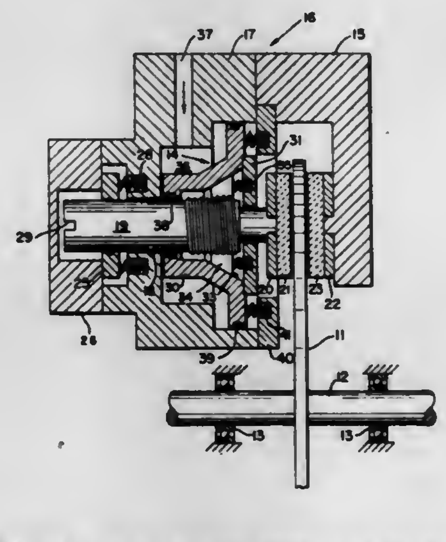
Richard H. McCarthy, Milwaukee, Wis., assignor to Stearns Electric Corporation, Milwaukee, Wis.
Filed Jan. 21, 1970, Ser. No. 4,640
Int. Cl. F16d *65/24*
U.S. Cl. 188—171 **10 Claims**



A brake disk connected to rotate with a shaft is confined between a mounting plate and an armature plate. In one embodiment, the disk is fixed to the shaft. In another and preferred embodiment, the disk floats and may be clamped between said plates. The mounting plate has arms on which the armature plate is guided; a core frame connected with such arms comprises long and short straps fastened together and providing inner and outer poles between which a spool carries the magnetic winding. A compression spring engaging the shorter strap between the inner poles serves to bias the armature plate toward engagement with the brake disk. When the winding is energized the several poles attract the armature plate to release the disk.

3,605,959
ADJUSTING MEANS FOR DISC BRAKES

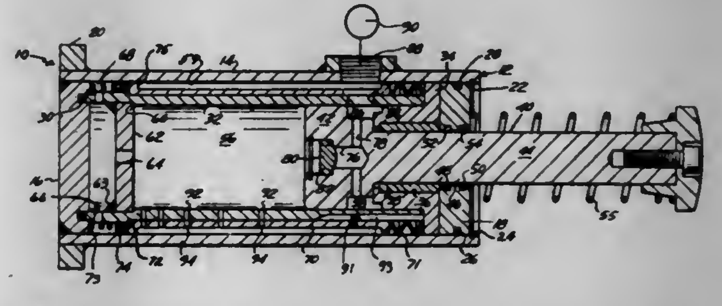
Earl A. Beck, Stillwater, Okla., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Sept. 15, 1969, Ser. No. 858,024
Int. Cl. F16d *65/54, 55/18*
U.S. Cl. 188—196P **3 Claims**



A disc brake having a caliper assembly straddling a portion of the periphery of a rotatable disc and including piston means slidably supported by the caliper to bring a brake shoe into frictional engagement with the disc. The piston means incorporating an automatic adjusting device for taking up slack and wear in the brake linings. The adjusting device is an extensible assembly that is interposed between the piston and the brake shoe to maintain a substantially constant piston stroke and cylinder chamber.

3,605,960
AUTOMATICALLY ADJUSTABLE SHOCK ABSORBERS

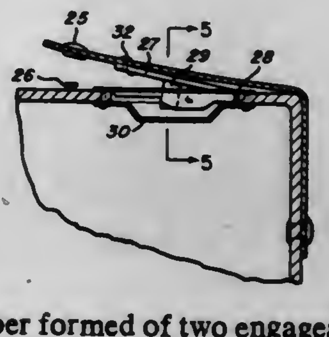
Jerome R. Singer, 9916 Nottingham, Detroit, Mich. 48224
Filed May 27, 1969, Ser. No. 828,168
Int. Cl. F16f *9/50*
U.S. Cl. 188—287 **20 Claims**



A fluid pressure shock absorber of the type having a cylinder with a piston slidably mounted therein separating the cylinder into variable volume chambers, the piston movement decreasing the size of one of the chambers in response to the shock load exerted thereon creating a pressure in such chamber which is a function of the shock load. A plurality of spaced apart ports in the cylinder connect the chambers through which fluid is forced from one chamber to the other wherein the rate of said fluid flow controls deceleration of the piston as a shock load is dissipated; and including means for automatically varynig the rate of fluid flow through the ports as a function of a pressure force in said one chamber.

3,605,961
LUGGAGE MEMBER

Dennis S. Marrion, Chester, Va., assignor to Seward Luggage Manufacturing Company, Inc., Petersburg, Va.
Filed Aug. 12, 1969, Ser. No. 849,419
Int. Cl. A45c *13/10*
U.S. Cl. 190—41R **6 Claims**

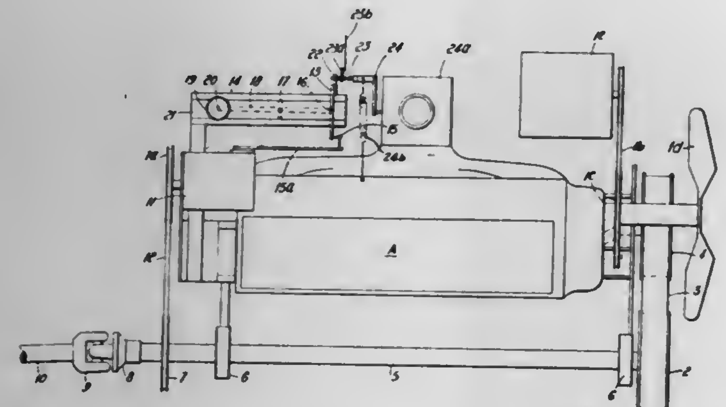


Luggage member formed of two engageable sections with latches mounted on the top wall of one section and engaging the other section. The strap is mounted on the latch in such a manner that lifting a free end of the strap releases the latch. The free end is mounted either on the same wall or on an angularly adjacent side wall, and the opposite end of the latch is fixed to the top or side wall.

3,605,962
ELECTRIC CLUTCH AND ENGINE GOVERNOR CONTROLS FOR POWER TAKE-OFF

Edwin James Maynard, Thornhill, Southampton, England, assignor to A. C. Morrison (Engineers) Limited, Southampton, England
Filed Dec. 29, 1969, Ser. No. 888,353
Claims priority, application Great Britain, Oct. 22, 1969, 51,831/69
Int. Cl. F16d *47/00*
U.S. Cl. 192—.092 **5 Claims**

An auxiliary power take-off apparatus for use with an internal combustion engine comprising an electromagnetic clutch through which a drive is transmitted from the engine to a take-off shaft, a governor driven by the take-off shaft, a control device movable into and out of an operative position and responsive to the governor, a setting device movable to set the control in and out of an operable position, the control device having a cam element engageable with the fuel intake control of the engine in the operative position, and an electric circuit energised by a battery or generator current and including a master switch, and an electric element of the clutch and of the setting device. A locking device responsive to gear ratio change in the vehicle drive transmission and actuating a switch in said circuit to break the circuit when the transmission is not in neutral condition.



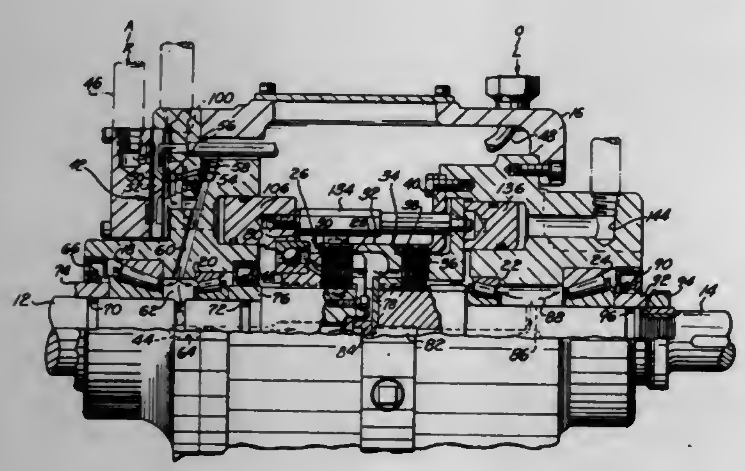
3,605,963
MIST LUBRICATING AND COOLING APPARATUS FOR A TORQUE-TRANSMITTING MECHANISM

Ellwood L. Roob and Alfred Penko, Parma, and William W. Lyth, Cleveland, Ohio, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Feb. 3, 1970, Ser. No. 8,178

Int. Cl. F16d *67/04, 13/74*

U.S. Cl. 192—18A **9 Claims**



A torque-transmitting mechanism for transmitting torque between a pair of relatively rotatable members includes friction discs drivingly connected to one of the relatively rotatable members and other friction discs drivingly connected to the other relatively rotatable member. Means is provided to cool and lubricate the friction discs when torque is transmitted thereby. The torque-transmitting mechanism also includes means for moving the friction discs into frictional engagement to effect the transmission of torque between the relatively rotatable members. The means for cooling and lubricating the friction discs includes a mist generator for generating a mist and means defining a passageway for conducting the mist from the mist generator to the friction discs to effect lubrication and cooling thereof.

3,605,964
AUTOMATICALLY REVERSING FREE-WHEEL CLUTCH

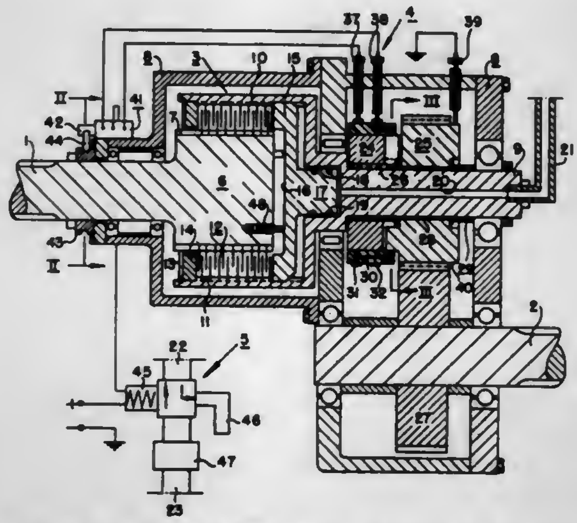
Sven O. I. Jonsson, Storebro, and Bertil R. Jonsson, Vimmerby, Sweden, assignors to Valiakra Mekaniska Verkstad, Vimmerby, Sweden

Filed Nov. 24, 1969, Ser. No. 879,437

Claims priority, application Sweden, Nov. 26, 1968, 16,085/68

Int. Cl. F16d *25/063*

U.S. Cl. 192—40 **10 Claims**



A normally disengaged fluid pressure engaged clutch is between a power take-off shaft connected to a tractor engine and a driven shaft connected to trailer wheels. When the tractor wheels slip, the speed of the power shaft becomes greater than the speed of the driven shaft, thus closing switch means on a lost motion coupling in the driven shaft. The switch means opens a solenoid valve to supply fluid pressure to the clutch for engaging it whereby the engine drives the trailer wheels for additional traction. A reversing switch senses the direction of rotation of the power shaft and automatically renders the device operative in either direction of rotation. A manual override switch permits the clutch to be selectively engaged at any time.

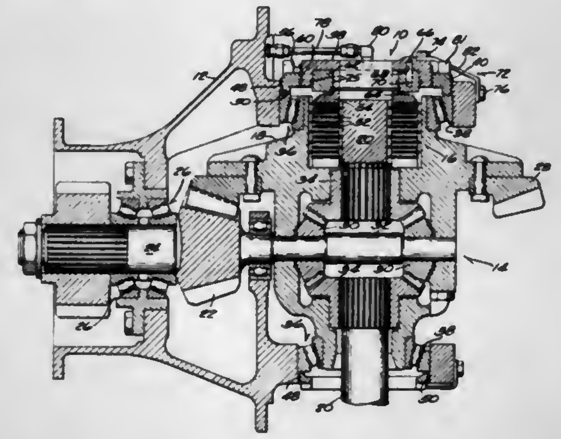
3,605,965
MOUNTING FOR ANNULAR PISTON IN DIFFERENTIAL LOCKUP ASSEMBLY

David A. Thomas, Clintonville, and Dennis T. Crowe, Oshkosh, Wis., assignors to FWD Corporation, Clintonville, Wis.

Filed Dec. 29, 1969, Ser. No. 888,777

Int. Cl. F16d *25/06*

U.S. Cl. 192—85C2 **1 Claim**



An annular piston and cylinder assembly positioned to apply pressure to the discs of a lockout clutch for a differential gear set with the annular cylinder for the assembly having a screw thread on its outer periphery for mounting in the differential gear housing in a threaded bore concentric with the axis of the clutch and located in a plane normal to the axis of the clutch.

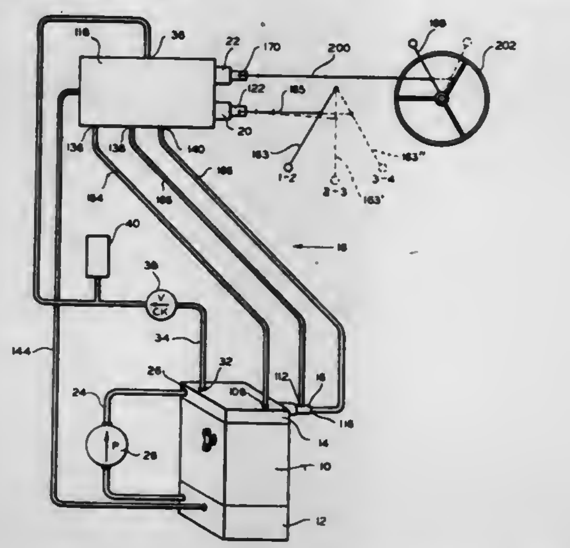
3,605,966
TRANSMISSION CONTROL SYSTEM

William C. Erdman, Tampa, Fla., assignor to Clark Equipment Company

Continuation-in-part of application Ser. No. 783,373, Dec. 12, 1968. This application May 25, 1970, Ser. No. 40,181

Int. Cl. F16d *25/00;* **F16h** *3/08;* **F17k** *1/00*

U.S. Cl. 192—87.18 **4 Claims**



A multiple speed ratio gear transmission with a control system for selecting different pairs of clutches for engagement and alternating engagement of the pair of clutches selected for engagement.

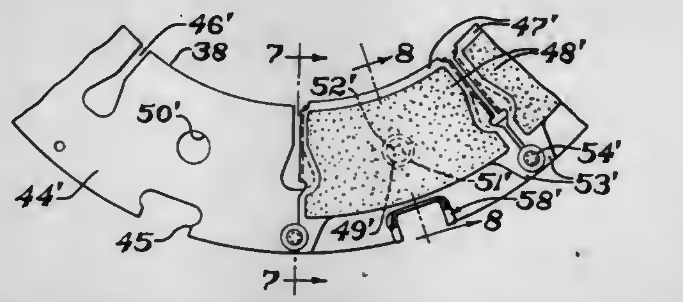
3,605,967
PROTECTIVE BEARING MEMBER FOR BRAKE OR CLUTCH

John H. Warren and Marvin E. Hotchkiss, Troy, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 7, 1969, Ser. No. 813,977

Int. Cl. F16d *13/64*

U.S. Cl. 192—107R **2 Claims**



A protective bearing member for a brake which is suitable for very high energy service such as on aircraft and has rotors and stators of a lightweight frangible heat absorbing material. The protective bearing members are of a wear-resistant durable material and are mounted in slots in the peripheral edges of the stators and rotors for sliding engagement with keys or splines of the supporting members and for torque transmitting engagement with the stators and rotors.

3,605,968
SEGMENTED FRICTION MEMBER FOR BRAKE OR CLUTCH

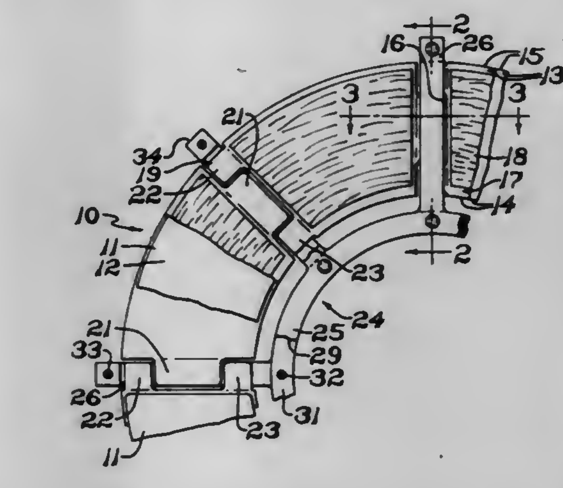
William Edwin Ely, Troy, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Sept. 18, 1969, Ser. No. 859,059

Int. Cl. F16d *13/64, 65/12*

U.S. Cl. 192—107R **7 Claims**

An annular segmented friction disc member for use as a rotor or stator in a disc-type brake or clutch assembly in which a plurality of circumferentially spaced-apart heat-absorbing segments are held between pairs of segmental facing members. Each facing member has circumferential extensions at the ends which overlap the extensions of adjacent facing members and are retained by radial members connected to an annular ring providing a unitary disc structure.



3,605,969
TWO HAND SAFETY DEVICE

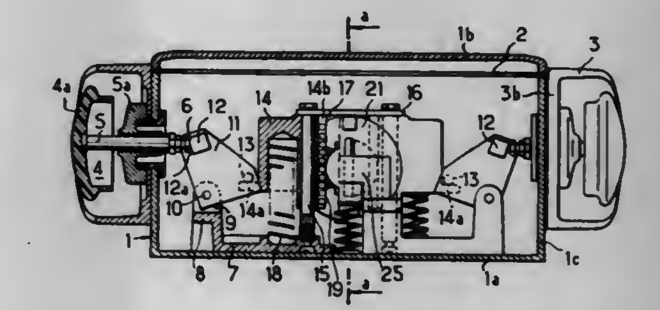
Marcel Cornu, Rueil, and Serge Terpin, Nanterre, France, assignors to La Telemecanique Electrique (Societe Anonyme), Nanterre, France

Filed Sept. 15, 1969, Ser. No. 857,898

Claims priority, application France, Sept. 27, 1968, 167,814

Int. Cl. F16p *3/18*

U.S. Cl. 192—131R **3 Claims**



In a safety control for an intermittently operated press and the like, two elongated slide blocks reciprocally mounted on two respective guide blocks, two elongated racks integrally mounted on the respective slide blocks, a toothed wheel mounted for reciprocating translation along the racks and an actuating member integrally mounted on said wheel and cooperating with the clutch of the press only when the slide blocks are simultaneously operated.

3,605,970
COIN RECEIVING AND REIMBURSING APPARATUS

Edouard de Crepy, Paris, France, assignor to Societe Anonyme Francaise des Appareils Automatiques Taximetre-Taxiphone, Paris, France

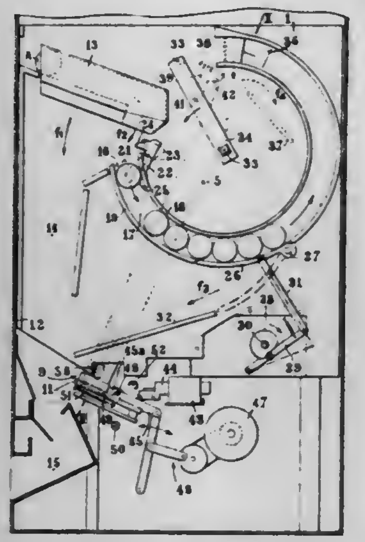
Filed Feb. 17, 1970, Ser. No. 12,014

Claims priority, application France, Feb. 18, 1969, 6904035

Int. Cl. G07f *1/00*

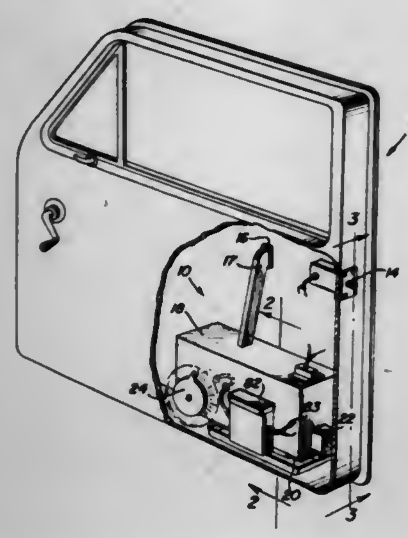
U.S. Cl. 194—1 **10 Claims**

An apparatus for receiving and paying back coins, characterized in that it comprises at least one vertical plate having formed on its front face a storage channel of arcuate configuration, so that the coins inserted by the user into the apparatus can fall into the lower portion of this channel and accumulate therein, a movable mem-



ber associated with said channel and adapted to push the coins accumulated in said storage channel towards a hole formed in said plate at the upper end of said channel, said hole being lined with a diverting member adapted to direct the coins towards a position overlying the upper orifice of an inclined tube disposed in close proximity of the rear face of said plate and wherein the coins to be delivered for reimbursement purpose are accumulated.

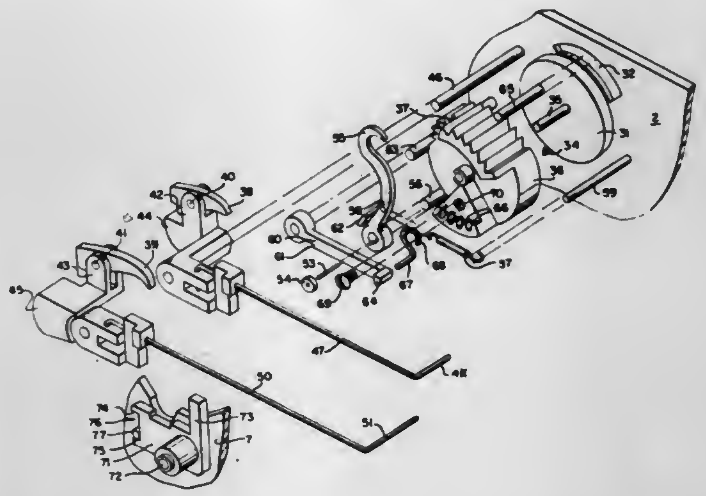
3,605,971
TAXICAB FARE BANK
Corry L. Forehand, 2106 Maryland Ave. NE., Apt. 12, Washington, D.C. 20002
Filed Mar. 14, 1969, Ser. No. 807,379
Int. Cl. G07f *5/10*
U.S. Cl. 194—9 **4 Claims**



A fare receptacle is housed within a vehicle door. A slot disposed on the exterior door panel permits the insertion of fare money therein. Upon deposit of the proper fare, the vehicle door is opened thereby permitting passenger entrance. Further, a security timer is connected to a money return door in the receptacle thereby permitting retrieval of deposited fare money only at a particular time of day.

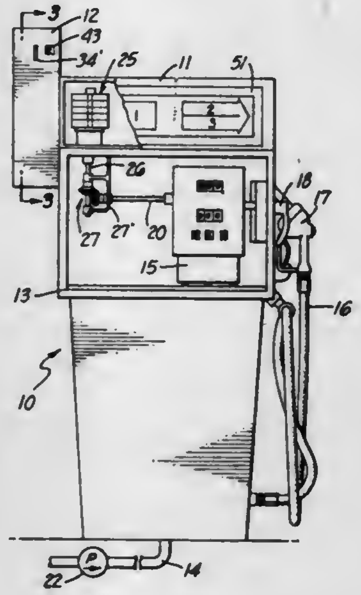
3,605,972
STEPPER AND CHANGE DISPENSER FOR A COIN CHANGER
Wilson M. Stewart, Ottawa, Ontario, Canada, assignor to Vendall Machines Limited, Ottawa, Ontario, Canada
Filed July 8, 1969, Ser. No. 839,857
Claims priority, application Canada, May 9, 1969, 51,101
Int. Cl. G07f *11/00*
U.S. Cl. 194—10 **7 Claims**

A stepper for a coin changer comprises a ratchet wheel having a switch actuating pin mounted thereon. The ratchet wheel is biased to an initial position and is moved therefrom by coin-operated dogs. It is held against premature return movement by a spring-urged pawl. A roller mounted on the ratchet wheel pushes the pawl away as the ratchet wheel is moved the last step required to initiate a vend cycle. A latch bar holds the pawl away to allow the wheel to return to its initial position. As the wheel does so, a trip member thereon strikes a release member which lifts the latch bar to allow the pawl to re-engage the wheel.



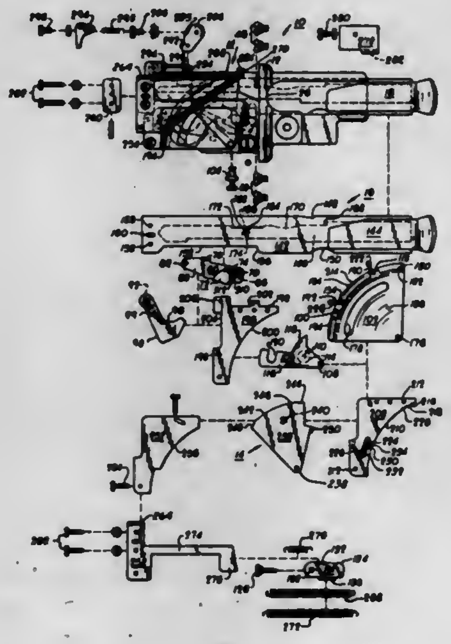
Change is dispensed, when required, by an apertured slide reciprocable to receive change from tubes and deliver it to a change chute. A spring rod is incorporated in the drive to the slide so that the motor for driving the slide may operate even when the slide is stuck and the slide may be reciprocated by hand without actuating the motor.

3,605,973
COIN-ACTUATED FLUID-DISPENSING SYSTEM WITH SEPARATE REGISTERS FOR COINS RECEIVED AND FLUID DISPENSED
William F. Burke, Westminster, Harry R. Rothschild, Santa Fe Springs, and Robert B. Young, Littlerock, Calif., assignors to Pan-Nova, Inc., Santa Fe Springs, Calif.
Filed Oct. 21, 1969, Ser. No. 868,088
Int. Cl. G07f *13/00*
U.S. Cl. 194—13 **12 Claims**



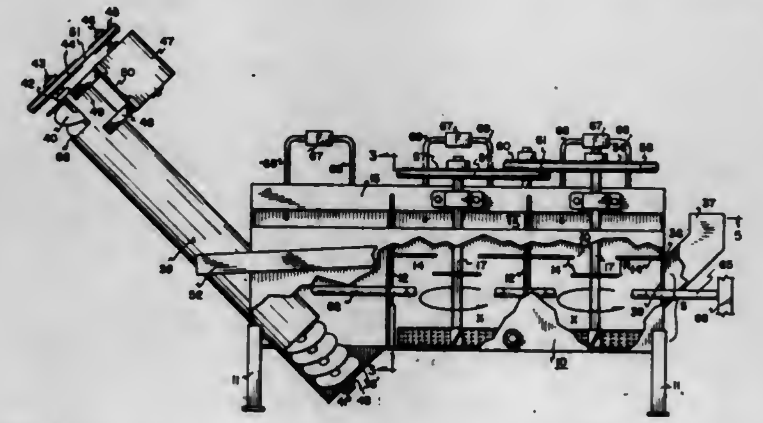
A coin-operated system for use with conventional gasoline pumping units for coin-operated dispensing. A system which accepts a variable amount of initial payment, dispenses the full amount of gasoline paid for or any portion thereof, and pays out the exact change to the customer. A system which operates in larger monetary units at a relatively high rate while dispensing gasoline and which operates in smaller monetary units at a relatively low rate while paying out exact change to the penny.

3,605,974
MULTIPLE COIN ACTUATING DEVICE
Jiri J. Hovorka, Oklahoma City, Okla., assignor to Pyramid Manufacturing Company, Oklahoma City, Okla.
Filed Nov. 12, 1969, Ser. No. 875,659
Int. Cl. G07f *5/00*
U.S. Cl. 194—55 **15 Claims**



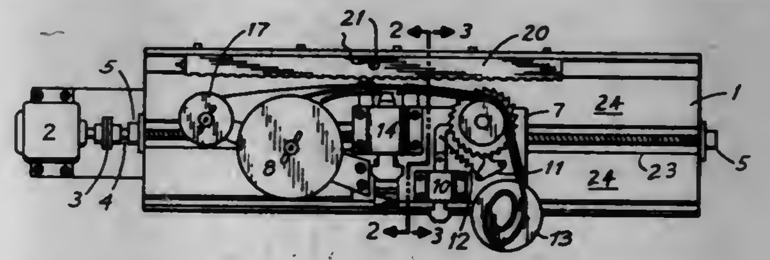
Apparatus for receiving and registering acceptance of a prescribed number and combination of coins which apparatus is readily adjustable to accept various denomination combinations of both U.S. and foreign coin monies after satisfaction of a triple verification. The apparatus consists of a coin slide member operating through a housing member which includes a metering assembly consisting of an arcuate rotor, arcuate stator and arcuate control rotor operating in coaction to sense an arcuate segmental measure of one or more coins equaling a predetermined monetary value. The apparatus relies upon a measure of coin diameter relationships to effect coin deposits upon validity sensing, and coin rejection upon failure of validity sensing.

3,605,975
APPARATUS FOR PROCESSING BITUMINOUS SANDS
Ray S. Brimhall, 4604 Idlewild Road, Salt Lake City, Utah 84117
Filed Mar. 3, 1969, Ser. No. 803,749
Int. Cl. B01d *12/00*
U.S. Cl. 196—14.52 **10 Claims**



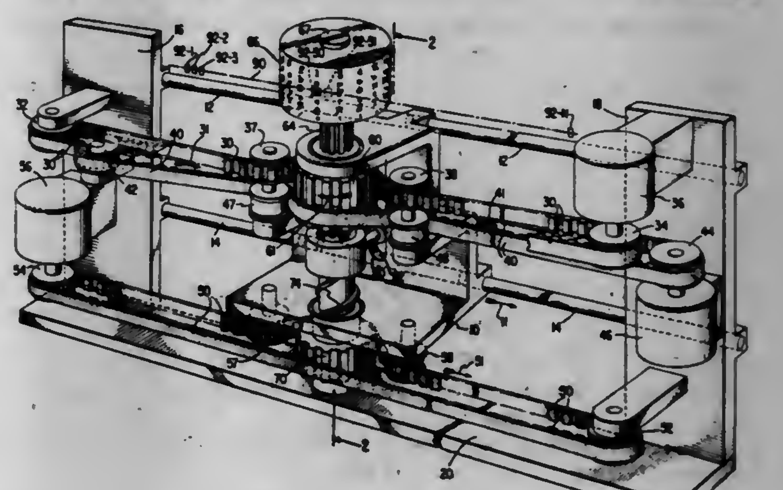
The present invention provides new and improved apparatus for processing bituminous sands to recover petroleum. The apparatus is preferably a multi-cell structure principal cells of which include bottom stirrer zones and upper quiet zones separated from the stirrer zones by baffles. Continuous through-plant feed is provided for the plant structure by partially processed sands being urged into subsequent cells for continued processing. An oil slick forms the upper surfaces of the fluid levels in each cell and the so-formed oil slick gradually spills over into a collection trough. Novel impeller or stirrer means are provided to provide the requisite, slight agitation at the bottom of each cell for oil separation and yet retain the stirred mixture at the bottom of the cell to the bottom zone of each cell affected. Adjustable gate means are provided to accommodate regulation of feed-through through the plant structure.

3,605,976
PROGRAMMED CHARACTER PRINTING MEANS FOR STAMPING TUBING MATERIAL
Lewis H. Angle, Check, Va., assignor to Methods and Improvements Corporation, Check, Va.
Filed Mar. 17, 1970, Ser. No. 20,222
Int. Cl. B41j *3/00;* **B44d** *5/00*
U.S. Cl. 197—6 **21 Claims**



A heated stationary character bar cooperates with a program moved carriage having a solenoid actuated hammer, a printing tape supply reel and tubing supply reel carried by a cantilevered arm, a printing tape take-up reel driven by a solenoid actuated mechanism in response to movement of the hammer, and a cylindrical tubing receiving container. The carriage has a depending ball bearing nut guidingly received within an upwardly opening channel on the stationary base. A reversible electric motor selectively drives a lead screw within the channel that is threaded through the nut to selectively align the hammer with a desired character on the bar for thermal embedding a portion of the printing tape corresponding to the character into the tubing, which is preferably plastic.

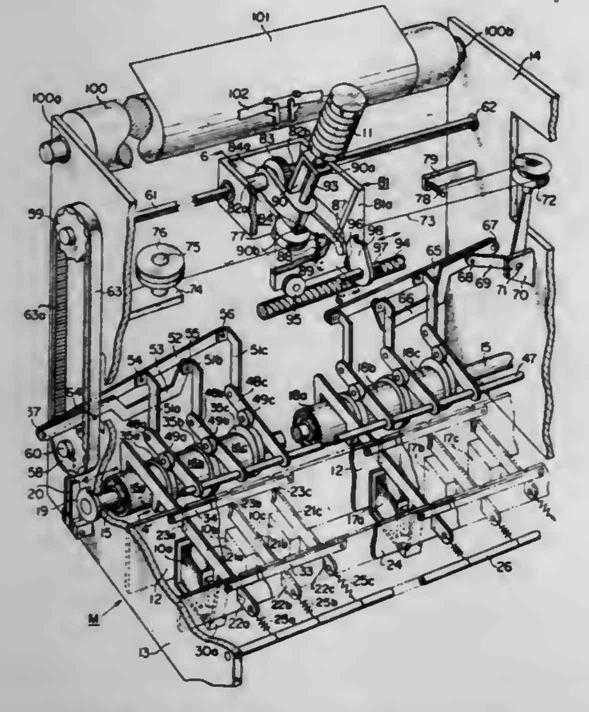
3,605,977
THREE-AXIS DRIVE SYSTEM
Donald Walter Janz, Framingham, and Richard Earle Seeger, Marlboro, Mass., assignor to RCA Corporation
Filed Apr. 22, 1969, Ser. No. 818,335
Int. Cl. B41j *23/04, 1/32*
U.S. Cl. 197—18 **8 Claims**



Three belt drive assemblies cooperate to selectively position a cylindrical character font carrier in a serial printer angularly about its axis of rotation, linearly along said axis, and linearly in a direction perpendicular to said axis. These movements may occur concurrently to move any desired character on the font carrier into printing position.

3,605,978
TYPE-SELECTING MECHANISM PROVIDING VISIBILITY OF PRINTED CHARACTERS DURING FUNCTION OPERATIONS

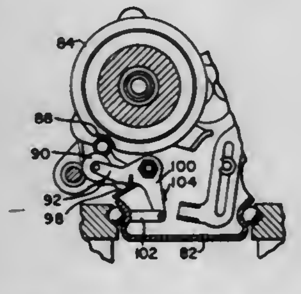
Reijiro Kawano, Tokyo, Japan, assignor to Kurosawa Tele-Communications Limited, Tokyo, Japan
Continuation-in-part of application Ser. No. 761,518, Sept. 23, 1968. This application Feb. 25, 1970, Ser. No. 14,134
Int. Cl. B41j *1/40*
U.S. Cl. 197—55 **3 Claims**



A typewriting mechanism comprising a selectively positioned type head in its longitudinal and/or in its rotary or lateral direction by means of selective lever assemblies electromagnetically operated by being supplied with coded binary signals, means being provided for receding the type head from its selected working position to its most convenient position for the necessary observation of already typewritten sentences on the typewriting paper under use, when at least a group of binary selection signals has been received.

3,605,979
LINE INDICATOR FOR TYPEWRITER PLATENS

Hugh St. Lawrence Dannatt, Rochester, N.Y., assignor to The Singer Company
Original application Apr. 27, 1967, Ser. No. 634,223, now Patent No. 3,474,889, dated Oct. 28, 1969. Divided and this application Oct. 30, 1968, Ser. No. 798,236
Int. Cl. B41j *29/42*
U.S. Cl. 197—55 **3 Claims**

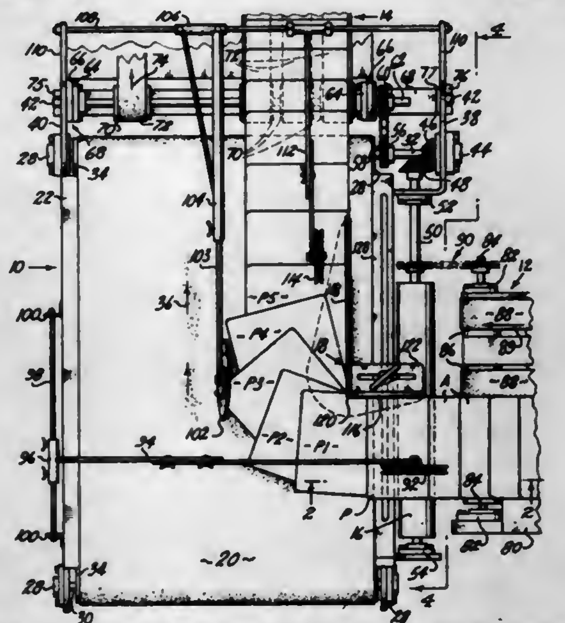


A typewriter platen has a card line indicator connected thereto which includes a detent ring having a single detent notch in its periphery which is sensed during platen rotation by a detent roller mounted on the carriage. The detent ring, for the purpose of relative rotational adjustment of the detent ring and card clamp, is made rotatable independently of the platen by mounting it on the line spacing ratchet for rotation with the latter. Release of a line spacing ratchet clutch permits the rotation of the platen without affecting the line spacing ratchet and the detent ring, allowing the notch in the latter to be first rotated into detented position as the platen is rotated and the subsequent rotation of the platen and card clamping bar alone to a desired line position. Whenever, thereafter, the detent roller enters the detent notch, it will be an indication to the operator that a predetermined line of a card held by the card clamp is in proper typing position. The additional torque provided by registration of the detent and detent notch, while producing a clear signal that a desired line position has been reached, is not sufficient to interfere with subsequent conventional line feed functions.

The detent roller is mounted on a pivoted, spring-biased, bellcrank carried by the carriage. A latch finger at one end of the bellcrank can be swung into contact with the carriage frame to disable the detent roller.

3,605,980
TURNING CONVEYOR

Leo O. Donahue and Roy E. Behrens, Highland, Calif., assignors to Graphic Engineers, Inc., San Bernardino, Calif.
Filed Aug. 12, 1969, Ser. No. 859,608
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 **10 Claims**

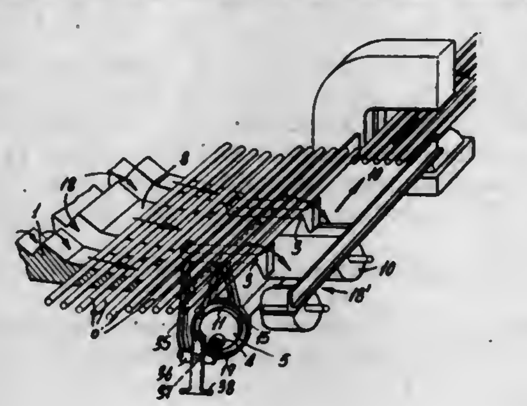


Apparatus comprising a belt conveyor and fulcrum device for receiving a line of overlapping "shingled" papers from a delivery conveyor and transporting them around a right-angle corner, during which the papers fan out and then return to shingle condition. The papers are propelled onto the belt conveyor in sequence to dispose at least the leading half of each paper ahead of the corner, whereupon the pull of the belt conveyor initiates turning of the paper thereabout. Means are provided for pressing the papers against the belt conveyor for better traction to bring the papers up to the belt speed for accelerating turning thereof and aligning the papers with the direction of movement of the belt conveyor.

3,605,981
DEVICE FOR TRANSFERRING BARS FROM THE COOLING BED OF A HOT ROLLING MILL FOR CONVEYANCE ON A TRANSPORT ROLLER PATH

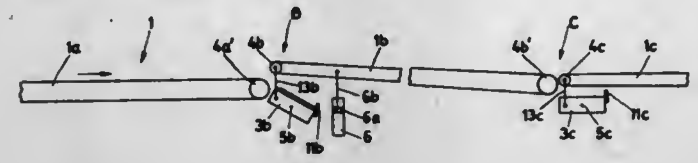
Luigi Danieli, Buttrio, Udine, Italy
Filed Mar. 20, 1969, Ser. No. 808,839
Claims priority, application Italy, Apr. 2, 1968, 14,716/68
Int. Cl. B65g *47/00*
U.S. Cl. 198—27 **6 Claims**

A device for transferring bars from the cooling bed of a hot rolling mill to a transport roller path includes an articulated quadrilateral or four-bar linkage arrangement. The four-bar linkage arrangement is actuated by an eccentric to reciprocate a bar carrier through forward and return strokes. A plurality of bars are transferred from the cooling bed to the transport path on each forward stroke of the carrier.



3,605,982
APPARATUS FOR DISTRIBUTING OBJECTS

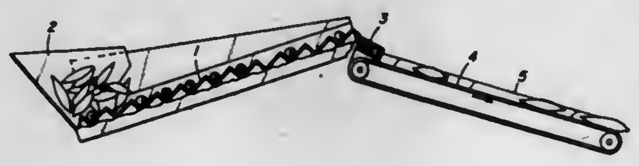
Michael Adler, Forchheim, Germany, assignor to Maschinenfabrik Loesch GmbH, Forchheim, Germany
Filed Apr. 2, 1970, Ser. No. 24,990
Claims priority, application Germany, Apr. 2, 1969, P 19 17 062.8
Int. Cl. B65g *47/26*
U.S. Cl. 198—30 **11 Claims**



The invention provides an apparatus for distributing objects, comprising a main conveyor which views objects such as chocolate bars, to be distributed. The main conveyor comprises a plurality of main conveyor sections. The main conveyor sections are in generally horizontal alignments with one another. A plurality of feed conveyors are supported horizontally transversely of the main conveyor adjacent front ends of the associated ones of said main conveyor sections. Means are provided for tilting said feed conveyors about an axis transverse to the main conveyor so that the front edge of said feed conveyors are brought substantially to the level of the preceding main conveyor sections and means are provided for simultaneously pivoting said respective main conveyor sections to bring said front ends of said main conveyor sections out of alignment in the said preceding sections.

3,605,983
CORN ORIENTING APPARATUS AND METHOD

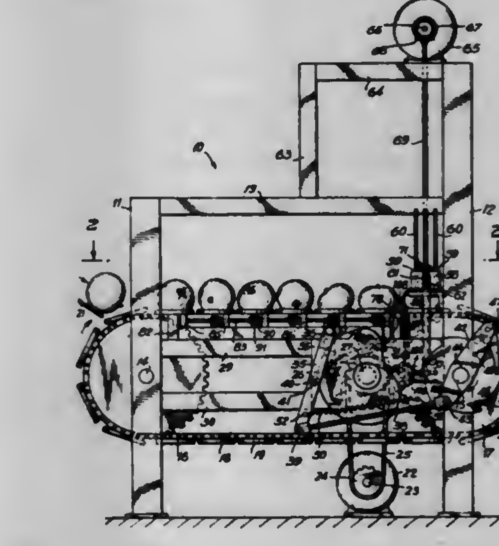
Charles George Peter Oldershaw, Avon, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
Filed Aug. 14, 1969, Ser. No. 850,188
Int. Cl. B65g *47/24*
U.S. Cl. 198—30 **10 Claims**



An apparatus for orienting tapered agricultural products such as corn so that the products are discharged from the apparatus with their larger diameter end forward.

3,605,984
APPARATUS FOR ORIENTING CORE-BEARING FRUIT

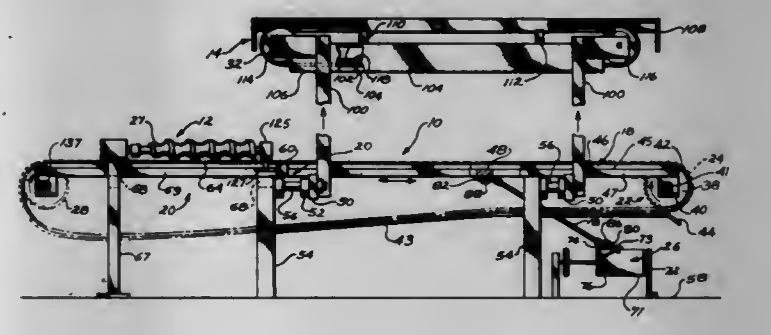
Arthur B. Erekson, Scarsdale, N.Y., and Malcolm S. Lane, Baltimore, Md., assignors to Borden, Inc., New York, N.Y.
Filed July 7, 1969, Ser. No. 840,605
Int. Cl. B65g *47/24*
U.S. Cl. 198—33AA **3 Claims**



This invention relates to the method of and apparatus for orienting core-bearing fruit and comprises a cell having an opening, said cell adapted to receive core-bearing fruit, rotation wheels mounted for movement through said opening to subject said fruit to multi-axial rotation out of contact with said cell whereby said core is aligned in a vertical axis.

3,605,985
APPARATUS AND PROCESS FOR TRANSPORTING ARTICLES FOR LABELING AND THE LIKE

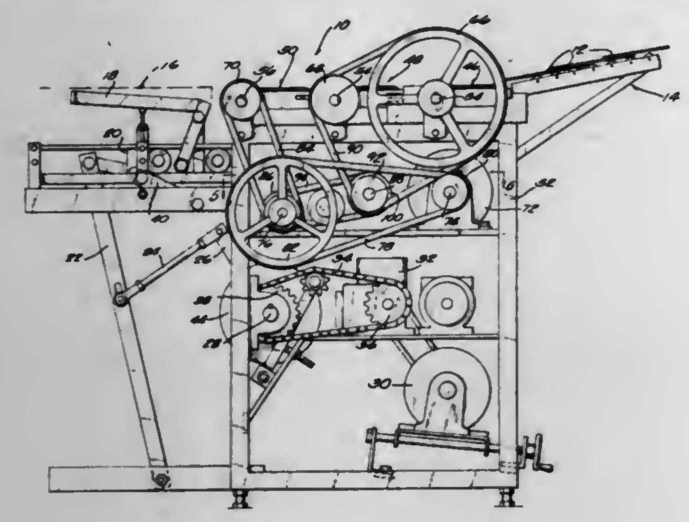
Thomas E. Ellison, Pasadena, Calif., assignor to Biner-Ellison, Los Angeles, Calif.
Filed Aug. 1, 1969, Ser. No. 846,773
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **17 Claims**



An endless conveyor transports articles to be labeled from an input station to an output station and, while transporting the articles, stops the articles at a labeling station. The conveyor is in continuous motion. At selected times, the conveyor is moved at a rate equal to but opposite in direction from its conveying speed. When the conveyor is so moved, the relative motion between articles being conveyed and the labeling station is zero. An input feed screw stops when the relative motion of the articles at the labeling station stops to maintain proper article spacing and avoid an article jam.

3,605,986
PACKAGE INDEXER

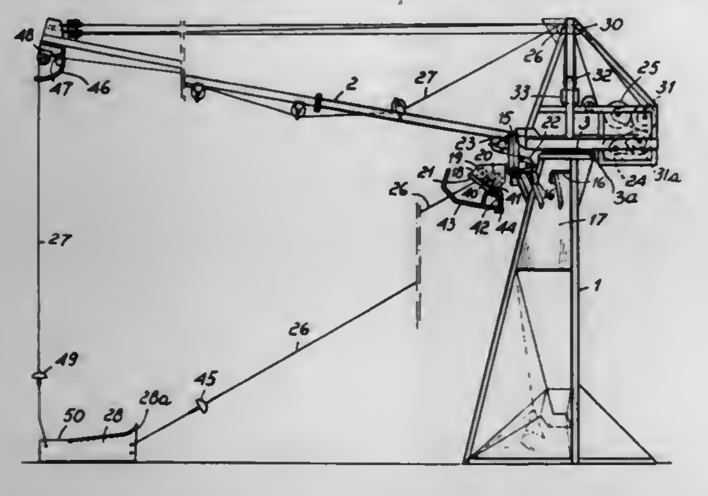
James P. Navin, Racine, Wis., assignor to Sturtevant Industries, Inc., Sturtevant, Wis.
Filed Nov. 13, 1969, Ser. No. 876,396
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **8 Claims**



A prewrapped package indexer including a first belt type conveyor driven at a slow speed to seperate packages stacked in a shingled relation on an infeed conveyor, a second belt type conveyor to hold the package separated from the stack by the first conveyor at an intermediate position for timed delivery to a weighing and labeling device, a third belt type conveyor operating continuously at a high speed to transport the package from the second conveyor to the weighing and labeling device, and an electrical circuit to control the operation of the first and second conveyors in timed sequence with the operation of the labeling device.

3,605,987
AUTOMATIC APPARATUS FOR CONVEYING LOOSE MATERIALS TO A UTILIZATION STATION

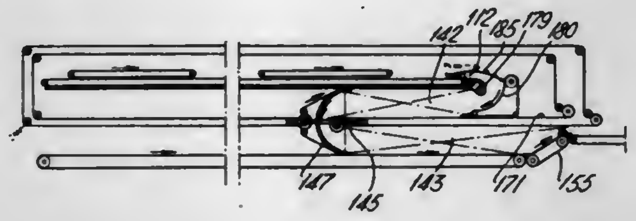
Franco Sigismondo, Via Montevideo 9, Milan, Italy
Filed Sept. 18, 1969, Ser. No. 859,105
Claims priority, application Italy, Sept. 23, 1968, 21,578/68
Int. Cl. B65g *65/28*
U.S. Cl. 198—36 **7 Claims**



This disclosure relates to an automatic device for conveying loose material from a plurality of zones around the apparatus and separated by portion walls to a collection zone, said apparatus including a clamshell bucket carried by an arm mounted for rotation on the fixed framework of the apparatus, and cable means for actuating said clamshell bucket, means being provided to cause the clamshell bucket to move substantially parallel to said partition walls when material adjacent these walls is collected.

3,605,988
APPARATUS FOR FEEDING CIGARETTES

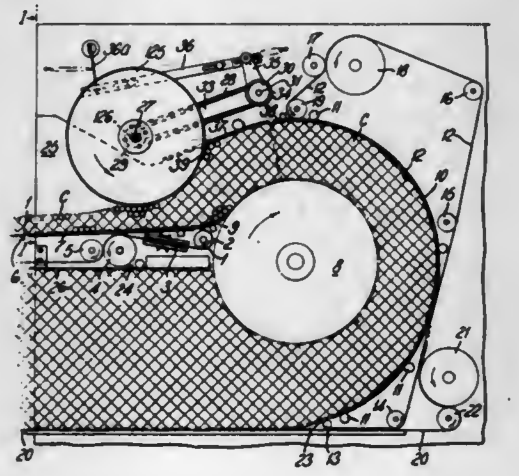
Alan Keith McCombie, London, England, assignor to The Molins Organisation Limited, London, England
Continuation of application Ser. No. 685,995, Nov. 7, 1967, which is a continuation of application Ser. No. 491,672, Sept. 30, 1965, which in turn is a continuation-in-part of application Ser. No. 319,846, Oct. 29, 1963. Application Ser. No. 547,702, Apr. 11, 1966, being a continuation of said application Ser. No. 319,846. This application Aug. 28, 1969, Ser. No. 854,028
Claims priority, application Great Britain, Nov. 1, 1962, 41,395/62
The portion of the term of the patent subsequent to Jan. 10, 1984, has been disclaimed
Int. Cl. B65g *15/22, 43/08*
U.S. Cl. 198—37 **5 Claims**



Conveying apparatus for cigarettes, especially tipped cigarettes, having an expansible reservoir through which the cigarettes are conveyed in a continuous stack by means of conveyor belts and rollers between which the stack is confined and having a horizontal conveyor feeding the cigarettes into the reservoir and a pair of rollers resting on the cigarettes on the horizontal conveyor and arranged to push them into the reservoir and pack against a ceiling of the reservoir to reduce the risk of jamming. Additionally the rollers sense variations in the flow rate which are used to control the capacity of the reservoir.

3,605,989
APPARATUS FOR FEEDING CIGARETTES

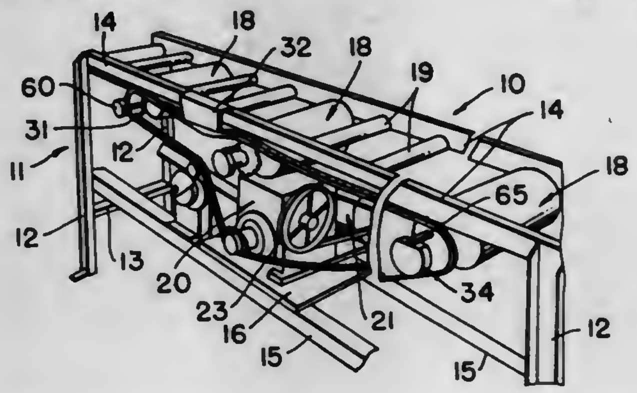
Alan Keith McCombie, 2 Evelyn St., Deptford, London, SE. 8, England
Division of application Ser. No. 854,028, Aug. 28, 1969, which is a continuation of application Ser. No. 685,995, Nov. 7, 1967, which is a continuation of application Ser. No. 491,672, Sept. 30, 1965, which in turn is a continuation-in-part of application Ser. No. 319,846, Oct. 29, 1963. Application Ser. No. 547,702, Apr. 11, 1966, being a continuation of said application Ser. No. 319,846. This application Nov. 20, 1970, Ser. No. 91,313
Int. Cl. B65g *15/14*
U.S. Cl. 198—76 **20 Claims**



Conveying apparatus for cigarettes, especially tipped cigarettes, having an expansible reservoir through which the cigarettes are conveyed in a continuous stack by means of conveyor belts and rollers between which the stack is confined and having a horizontal conveyor feeding the cigarettes into the reservoir and a pair of rollers resting on the cigarettes on the horizontal conveyor and arranged to push them into the reservoir and pack against a ceiling of the reservoir to reduce the risk of jamming. Additionally, the rollers sense variations in the flow rate which are used to control the capacity of the reservoir.

3,605,990
SHAFT DRIVER DEVICE AND CONVEYOR SYSTEM EMBODYING THE SAME

William E. Cowen, Jr., Westland, Mich., assignor to United Industrial Engineering Corporation, Madison Heights, Mich.
Filed Jan. 17, 1968, Ser. No. 698,533
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **10 Claims**



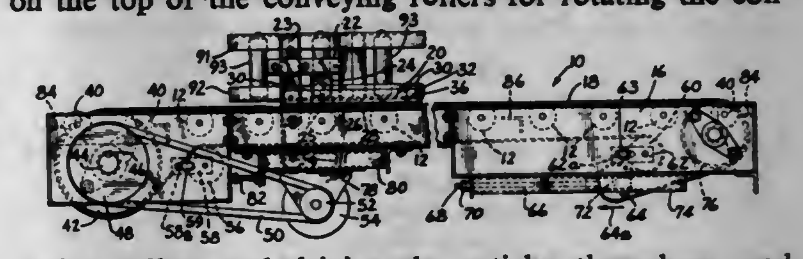
A shaft driver device is disclosed for use, illustratively, in a roller-type load conveyor or like system in which load units are halted for the performance of an operation thereon, with a consequent increased drag on a normally powered roller of the conveyor which is driven by the device. The system and drive device incorporate means which acts quite independently of any control factor, other than the drag effect, to interrupt the drive of the conveyor roller, or equivalent element in a different installation, immediately upon the arising of drag in excess of a critical value, restoring the drive when that value diminishes or the drag ceases. The drive control means referred to is built in its entirety into the structure of a driven roller or other shaft-driven component comparable thereto.

More specifically, the system comprises a first hub member normally rotating with the driver shaft and powered from an appropriate source, a second hub member coaxial with the first member, and means in the form of a torsion spring clutch device normally coupling said members for rotation as a unit under a drag load less than the cirtical value. The first member is shown as having a resilient driving connection to the second member which, on excess load, yields and causes the torsion spring coupling means to be de-clutched, the shaft drive then coming to a halt. This drive connection is adjustable as to its resilient bias to determine the critical value.

3,605,991
CONVEYING APPARATUS

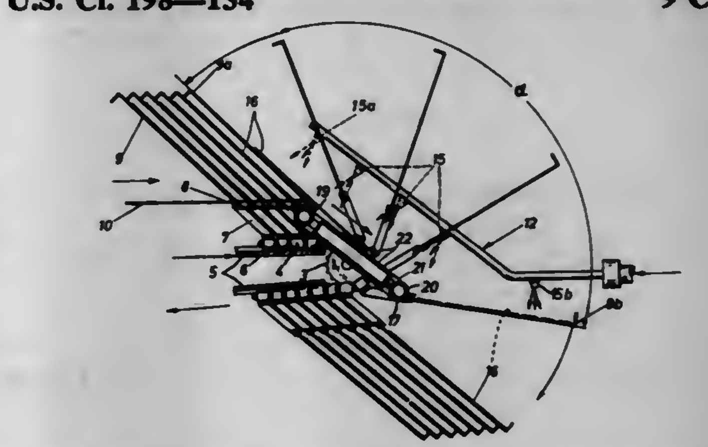
Harold S. Burt, Wilmette, and Raymond E. Derflinger, Chicago, Ill., assignors to Conveyor Systems, Inc., Morton Grove, Ill.
Filed Aug. 11, 1969, Ser. No. 848,869
Int. Cl. B65g *13/07*
U.S. Cl. 198—127R **1 Claim**

A roller conveying apparatus having a plurality of conveying rollers for conveying articles supported thereon in a given direction, the conveying rollers being mounted for rotation about axes perpendicular to the direction in which the articles are conveyed, each of the conveying rollers having an article carrying portion and a belt receiving portion on the top thereof. There is provided an endless power transmission belt having an active run and a return run, the active run engages the belt receiving portion on the top of the conveying rollers for rotating the conveying rollers and driving the articles therealong, and belt pressure applying means above the active run of the power transmission belt and comprising a number of belt engaging means resting under force of gravity on the belt at points preferably between the conveying rollers and mounted for free floating movement above the belt, the drive power of the roller conveying apparatus being readily adjusted by merely changing the weight of said belt pressure applying means.



3,605,992
APPARATUS FOR DRYING PRINTED SHEETS

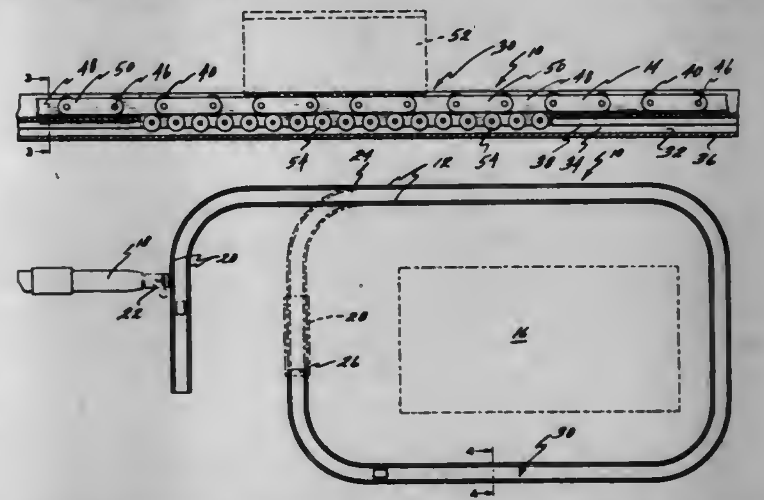
Erich Weber, Eichgrabenweg 2, Feldafing, Germany
Filed May 14, 1969, Ser. No. 824,521
Claims priority, application Germany, May 15, 1968, P 17 61 401.6
Int. Cl. B65g *17/12, 17/46;* **B65h** *29/00*
U.S. Cl. 198—134 **9 Claims**



A printed sheet drying apparatus of the type comprising inclined carriers mounted on an endless moving chain with upper and lower runs is provided with a conveyor for controlled lowering of the sheets from the upper run to the lower run. Suction and/or blowing devices are provided for holding the sheets on the conveyor.

3,605,993
ROLLER CHAIN CONVEYOR ACCUMULATOR

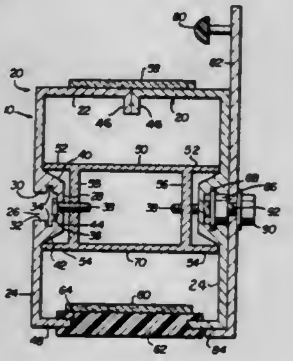
Carl C. De Rozario, Denver, Colo., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Mar. 9, 1970, Ser. No. 17,798
Int. Cl. B65g *17/24*
U.S. Cl. 198—183 **8 Claims**



This invention relates to an accumulator section for a roller chain conveyor run wherein the connecting links pivotally interconnecting adjacent rollers of the chain for rotational movement are supported on both sides by a series of stationary idler rollers that permit the chain rollers to turn freely in either direction therebetween.

3,605,994
UNIT FRAME ASSEMBLY FOR ENDLESS BELT OR SIMILAR CONVEYOR

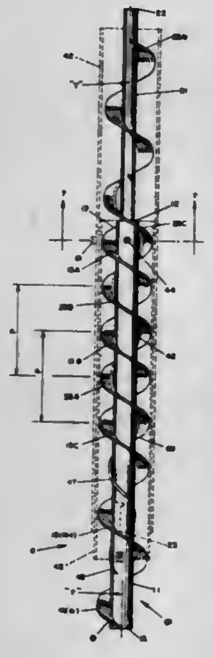
Carl L. Parlette, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Mar. 26, 1970, Ser. No. 22,861
Int. Cl. B65g *15/60;* **E04c** *3/30;* **F16b** *1/00*
U.S. Cl. 198—204 **5 Claims**



A unit frame assembly is constructed from elongate extruded shapes especially designed to enable simple and rapid fabrication in the field of frames for conveyors of the endless belt, endless chain or plate type.

3,605,995
LONGITUDINALLY EXTENDABLE SCREW FEED DEVICE

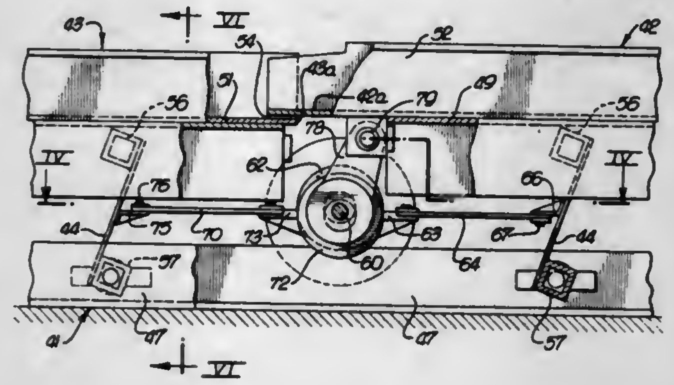
Norris N. Maack, R.R. 3, Box 66, West Point, Nebr. 68788
Filed Apr. 8, 1970, Ser. No. 26,651
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **11 Claims**



An auger-like screw feed device wherein the longitudinally extending length can be selectably varied within a continuous range. The screw-feed device comprises a pair of telescoping auger sections each disposed along a longitudinally extending axis including a first-auger section having an axial bore extending forwardly from the rearward end thereof, and further including a second-auger section having an axial shaft that enters the rearward end of the first-auger section axial bore; the forward-length portion of the second-auger section's helical flighting is radially spatially separated from the second-auger axial shaft whereby rotation of the second-auger axial shaft about the longitudinal axis allows telescoping relative movement between the pair of auger sections, to attain the selected length for the screw feed device.

3,605,996
MATERIAL HANDLING APPARATUS AND MEANS TO IMPART VIBRATORY FORCES THERETO

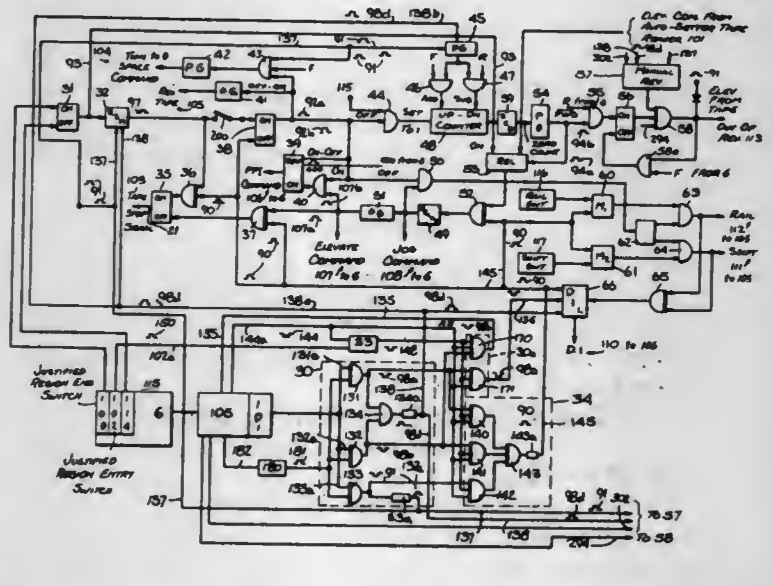
Lee B. Holman, Whittier, Calif., assignor to State Steel Products, Inc., City of Industry, Calif.
Filed June 25, 1969, Ser. No. 836,527
Int. Cl. B65g *27/00*
U.S. Cl. 198—220CB **6 Claims**



A material handling apparatus for conveying material along a longitudinal path including conveyor means supported by a plurality of spaced inclined members and means to actuate or impart vertical and longitudinal force components to material being conveyed along said path. Actuating means includes a resilient member, such as a flexible driven leaf having an eccentric connection to a driven rotatable shaft and having a transverse connection to the adjacent inclined support member. The driven rotatable shaft may be mounted on a base frame means or may be floatably mounted from the conveyor means, the apparatus including a stabilizing means carried by the conveyor means for the floatably mounted rotatable shaft.

3,605,997
AUTOMATIC JUSTIFICATION OF LINE-CASTING MACHINE

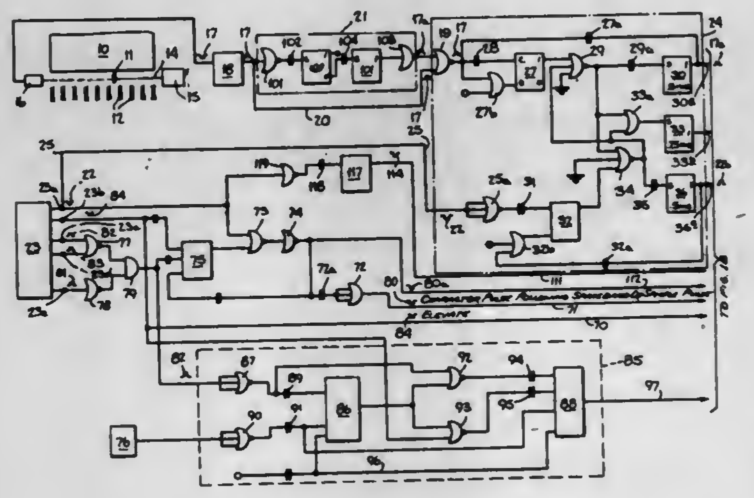
David J. Sinnott, Ringwood, N.J., assignor to Star-New Era, Inc., South Hackensack, N.J.
Continuation of abandoned application Ser. No. 678,324, Oct. 26, 1967. This application Mar. 2, 1970, Ser. No. 14,793
Int. Cl. B41b *9/06;* **B41j** *5/36*
U.S. Cl. 199—18 **9 Claims**



A line-casting machine is operated by an automatic setting mechanism. The automatic setting mechanism is actuated by a tape reader sensing codes on a tape. An automatic justifying mechanism is also connected to the reader and the automatic setting mechanism for determining if an assemblage of matrices by the line-casting machine is justifiable. The apparatus takes into consideration the completion of a syllable in the justified region that could be hyphened. Each word is syllabized with a hyphen between the syllables, which is an artificial one. The artificial hyphen is sensed by the tape reader and is applied to the electronic circuit to determine if the assembled matrices will justify. The artificial hyphen is impressed on the automatic setting mechanism only in the justified region.

3,605,998
ELECTRICAL APPARATUS FOR COMPARING DROPPED MATRICES WITH REQUESTED MATRICES OF A LINE-CASTING MACHINE

David J. Sinnott, Ringwood, N.J., assignor to Star-New Era, Inc., South Hackensack, N.J.
Continuation of application Ser. No. 694,732, Dec. 29, 1967. This application Mar. 11, 1970, Ser. No. 18,004
Int. Cl. B41b *9/06*
U.S. Cl. 199—18 **8 Claims**

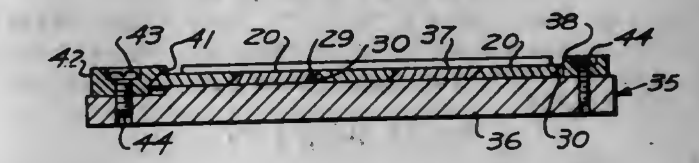


Logic circuits are connected to an automatic apparatus for operating a line-casting machine from a coded tape and connected to a photocell for sensing the dropping of the matrices in response to the automatic equipment. Signals from a photocell assembly count the dropped matrices and signals from the electronic equipment are impressed on a selection circuit so that one signal is held while the other signal is impressed on an up/down counter. The count detector is provided to read the counter to determine if all the matrices requested are dropped. If a proper comparison is not made, the machine is stopped. The comparison may be made at the end of each word and at the end of each line. An electronic unit is connected to the means sensing the dropping of the matrices to create a simulated signal when two overlapping matrices provide for a single interruption of the light beam projected to the photocell.

3,605,999
INSULATIVE COATED METAL SUBSTRATES AND APPARATUS FOR HOLDING SUBSTRATES

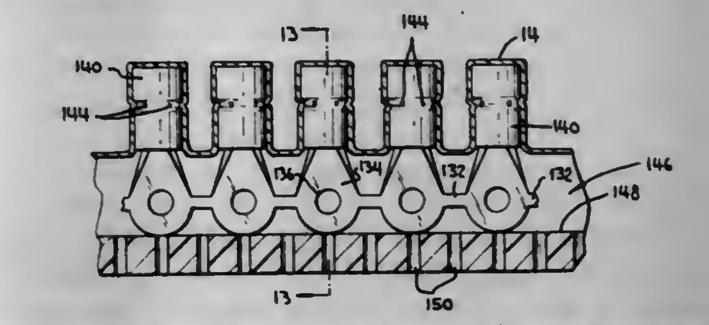
Seneca G. Coon, Jr., Glendora, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed July 23, 1969, Ser. No. 844,104
Int. Cl. B65d *73/02, 85/54, 85/62*
U.S. Cl. 206—1R **8 Claims**

A substrate according to this disclosure comprises a metallic sheet having an insulative layer on one surface thereof for supporting a microcircuit. The substrates preferably have beveled edges so that similar substrates may be positioned in apparatus whereby the beveled side edges of the substrates react against beveled edges of a slot in the apparatus and beveled edges of contiguous substrates react against each other to hold all of the substrates in place.



3,606,000
THERMOFORMED PLASTIC COVERED CONNECTORS

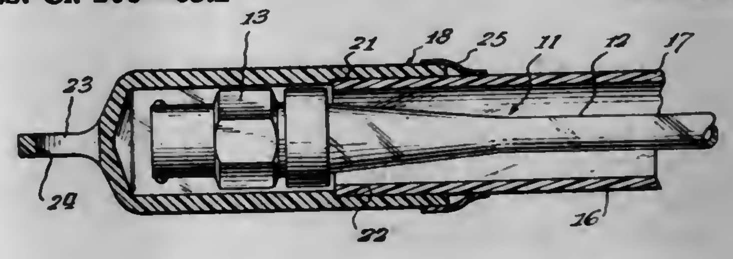
Joseph Agusta Wise, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 3, 1968, Ser. No. 742,427
Int. Cl. B65d *69/00, 73/02*
U.S. Cl. 206—56 **1 Claim**



Connectors including a plastic covered metal element are manufactured by thermoforming flat stock plastic sheet material onto a mandrel of an appropriate configuration and then cutting away portions of the formed sheet to provide an article of a desired configuration. The mandrel is made to carry the metal element which is locked into the plastic covering by reason of a vacuum drawn through holes in the mandrel during forming. In one embodiment a preformed metal element is itself used as the mandrel with the plastic sheet material thermoformed around a portion thereof and then trimmed to provide a final article configuration. Assemblies of plastic covered elements are provided by leaving a portion of the thermoformed strip as a web between individual elements or alternatively, thermoforming insulating sheet material onto strips of metal elements joined by a web of sheet metal stock from which the elements were initially formed.

3,606,001
CARDIAC CATHETER PACKAGE

Daniel A. Talonn, St. Louis, and John K. Cook, Overland, Mo., assignors to Sherwood Medical Industries Inc.
Filed June 26, 1968, Ser. No. 740,261
Int. Cl. A44b *7/00*
U.S. Cl. 206—63.2 **5 Claims**

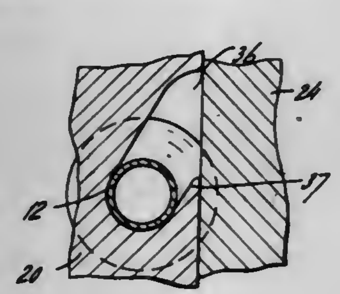


A cardiac catheter package including a cardiac catheter having a relatively stiff body provided with a turned portion, and a relatively stiff container loosely receiving the catheter. The container has a turned configuration substantially conforming to the catheter configuration whereby the turned body of the catheter is freely received in the container in its use configuration thereby preventing undesirable bending and kinking of the catheter and facilitating use thereof in cardiac catheter insertions.

3,606,002

STABILIZER FOR A PLURALITY OF ABUTTING RECTILINEAR SURFACES

James A. Miller, Rte. 1, Box 225, Tiffin, Ohio 44883
Continuation-in-part of application Ser. No. 816,205, Apr. 15, 1969. This application Feb. 12, 1970, Ser. No. 10,857
Int. Cl. B65g *1/14*
U.S. Cl. 206—65R **10 Claims**

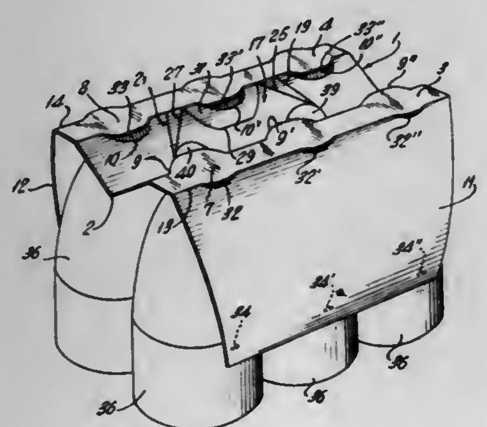


A stabilizer for a plurality of abutting rectilinear surfaces, so as to hold the surfaces in longitudinal and lateral alignment in a desired support plane, particularly a method for so stabilizing a plurality of squared spool ends. The stabilizer includes the notching one of two opposed abutting surfaces so as to define a cylindrical shoulder downwardly inclined away from one surface and its abutting with the other surface, then securing the abutting surfaces against lateral movement by imposing a cylindrical force within the aperture and securing the abutting surfaces against longitudinal movement by applying opposed lateral forces radially outwardly of said aperture on both sides of said abutting surfaces.

3,606,003

MULTIPLE-ARTICLE CARRIER

Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Filed Mar. 17, 1969, Ser. No. 807,508
Int. Cl. B65d *71/00*
U.S. Cl. 206—65E **8 Claims**



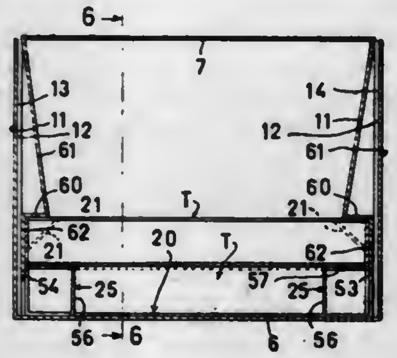
A multiple-article carrier comprising a depressed top panel, a crown cover panel and a side panel. The carrier is useful for packaging articles, preferably of the bottle type. Both lateral and longitudinal support is afforded by bonding the carrier to the carried articles and by bonding the carried articles to each other.

3,606,004

PLANT PACKAGE AND SHIPPING CONTAINER FOR POTTED PLANTS

Franz Fruehwirth, 137 Seeman Drive, Encinitas, Calif. 92024
Filed July 10, 1969, Ser. No. 840,798
Int. Cl. B65d *5/48, 85/52*
U.S. Cl. 206—65R **8 Claims**

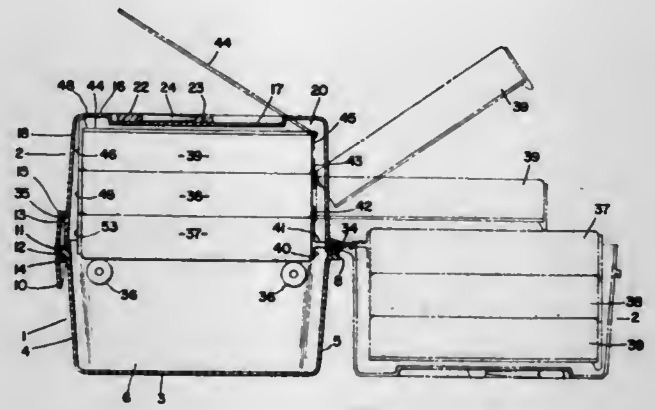
A plant package including an outer container of fibreboard and a pair of superposed horizontal rows of trays supported on a fibreboard pad on the bottom of the container, each tray holding a row of potted plants therein with said trays held on said pad in spaced relation for passage of the plant stems into the upper portion of the container, and closure flaps on said container closing positions and vice versa, said flaps formed to provide horizontally-extending ledges positioned over the upper sides of the ends of the upper row of trays to lock said trays and potted plants down against movement during handling of the container when the closure flaps are secured in closed positions.



3,606,005

FISHING TACKLE BOX

Bernard Meksula, 13215 Maple Ave., Garfield Heights, Ohio 44105
Filed Dec. 29, 1969, Ser. No. 888,587
Int. Cl. A45c *11/26;* B65d *85/54*
U.S. Cl. 206—16R **7 Claims**



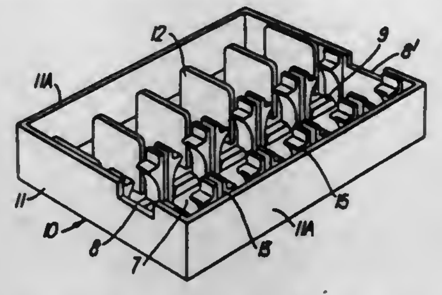
A fishing tackle box is provided comprising a box or shell and a tier of bait trays so arranged and latched to each other as to permit ready access to any tray without disturbing the other trays. The tier of trays is so disposed within the box as to permit easy access to each tray, while providing a substantial volume of space within the box for items not usually carried in the trays. A unique latching mechanism is provided which latches the trays to each other and occupies little or no space within the box.

3,606,006

PACKAGE FOR AMPOULES

Georges Raybois, Paris, France, assignor to Societe Parisienne d'Expansion Chimique S.P.E.C.I.A., Paris, France
Filed Aug. 15, 1969, Ser. No. 850,441
Claims priority, application France, Apr. 23, 1969, 6912816
Int. Cl. B65d *1/36*
U.S. Cl. 206—72 **2 Claims**

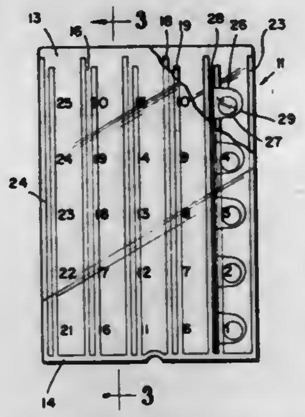
A package for pharmaceutical ampoules in the form of a rectangular box having upstanding side walls, the ampoules being retained by resilient lugs located in pairs. The lugs grip the cylindrical portions of the ampoules only near the bottom thereof and near the neck, a space being left between the lugs. At the same location as and co-extensive with the space, slots are formed to extend downwardly from the top edge, so that a marking member may be moved laterally of the box, through the slots, and in contact with the ampoules, to mark them. The ampoules may be supported on bars to rotate as the marking member passes in contact therewith.



3,606,007

COMBINATION CONTAINER AND DISPENSER FOR STRIP PACKAGES

Lewis C. Huston, Jr., Granville, Ohio, assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed June 18, 1969, Ser. No. 834,320
Int. Cl. B65d *1/36, 85/00, 85/56*
U.S. Cl. 206—73 **3 Claims**

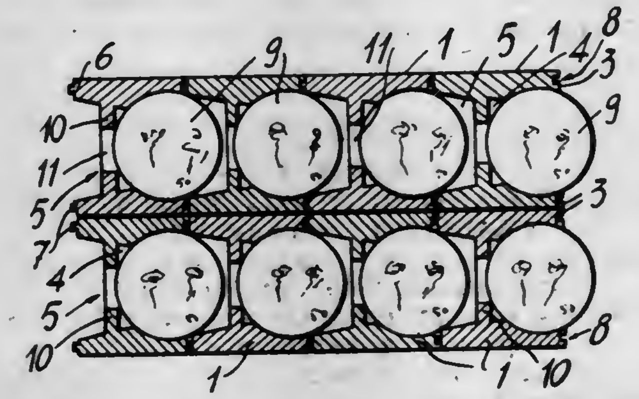


A combination container and dispenser for strip packages containing medication in individual and separable units. The combination container and dispenser has a pair of substantially vertical side walls integrally connected to a base wall with a plurality of channels disposed on the inner surfaces of the side walls for containing the strip packages.

3,606,008

COIN CONTAINER

Sergio Lusetti, Via Matilde di Canossa 17, Modena, Italy
Filed Dec. 3, 1968, Ser. No. 780,740
Claims priority, application Italy, Dec. 11, 1967, 31,110/67
Int. Cl. A45c *11/28;* B65d *21/00*
U.S. Cl. 206—.84 **2 Claims**

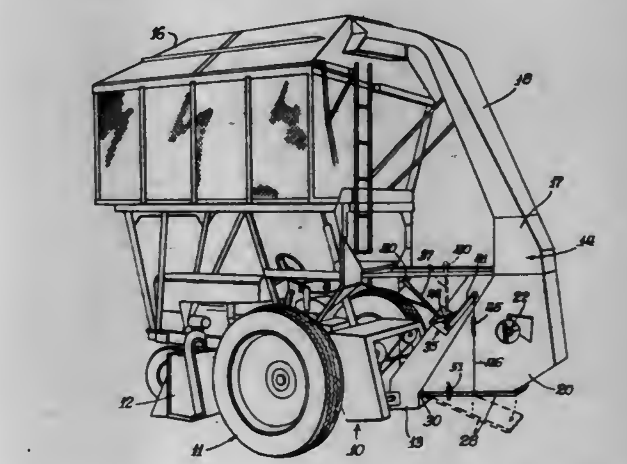


Coin container comprising an elongate body member of a substantially H-shaped cross-section wherein a first coin accommodating groove is provided, as defined by a cylindrical surface enveloping the coins at the periphery thereof for more than half the circumference thereof. The coin containers are fittable on one another to form a panel defined by plane surfaces wherein the coins accommodated within the coin accommodating groove extend into a second container slot overlapped thereto, this second groove being also provided in each container.

3,606,009

COTTON BOLL BOX CAPACITY INDICATOR

Wilbur H. Clendenin, Ava, Ill., and Wyatt T. Gable, Jr., Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.
Filed July 28, 1969, Ser. No. 845,368
Int. Cl. B07c *5/20*
U.S. Cl. 209—71 **5 Claims**

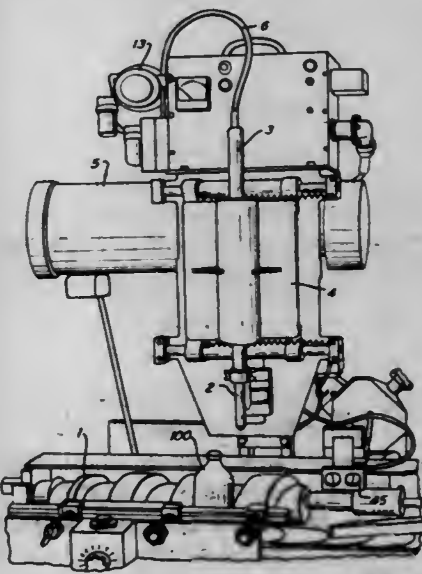


An apparatus for signaling the operator of a cotton harvester that a predetermined quantum of green cotton bolls have been collected in a boll collecting chamber of the cotton harvester, the chamber having a hinged discharge door on which collected green bolls lie, the door being biased in a closed position by a resilient member arranged to provide a closing force to the door so that the door will assume a slight predetermined displacement toward the open position when the boll chamber is filled to capacity, an electric switch disposed to sense this displacement and thereupon to actuate closing an electric circuit which energizes a signaling device placed within sensorial range of the operator.

3,606,010

GAS CLASSIFIER FOR CONTAINERS

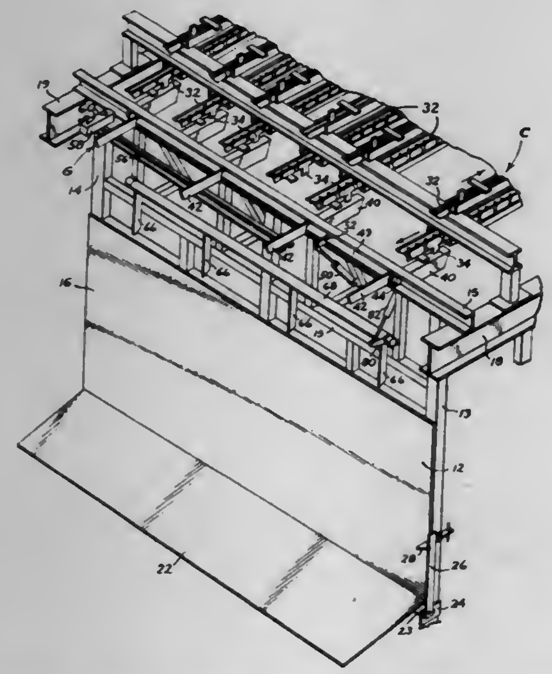
Whitney S. Powers, Pine City, N.Y., assignor to Powers Manufacturing, Inc., Elmira, N.Y.
Filed Feb. 16, 1970, Ser. No. 11,496
Int. Cl. B07c *5/34*
U.S. Cl. 209—72 **8 Claims**



Defective bottles produced by a defective mold in a multi-element molding machine are first identified by an inspector by injecting a charge of fluid such as carbon dioxide gas. During later testing in transit, the presence of the fluid in a bottle is sampled to trigger a device for ejecting the bottle from the test line.

3,606,011
LUMBER SORTING METHOD AND APPARATUS

Otto G. Jeddeloh, Medford, Oreg., assignor to Oregon Cutstock and Moulding Corp., White City, Oreg.
Filed June 27, 1969, Ser. No. 837,257
Int. Cl. B07c *5/04*
U.S. Cl. 209—73 **8 Claims**

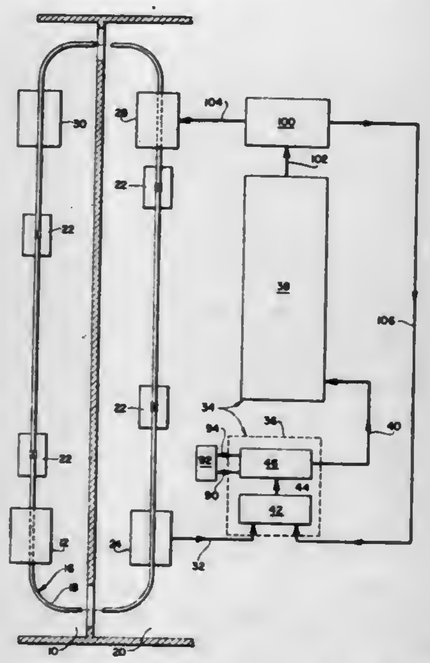


A method and apparatus for sorting lumber. The method includes conveying a board laterally to a sorting station and then rapidly dropping the support from under the board whereby it falls essentially in the position it had while conveyed and without turning over on its edge. The apparatus includes a conveyer for moving boards laterally, one at a time, with conveying force imparted by contacting edges of the boards. The boards are conveyed over a horizontally disposed drop gate in a sorting station, which is hingedly mounted at its upstream margin to accommodate swinging of its downstream margin downwardly to drop a board into a bin. A motor is connected to the gate for powering its swinging movement. The apparatus also includes means at the bottom of the bin for unloading boards from the bin, and an accumulator between the gate and bottom of the bin for accumulating boards during unloading of the bottom of the bin. The apparatus features a modular type of construction permitting the number of sorts produced in a sorting line to be varied.

3,606,012
SORTING SYSTEM

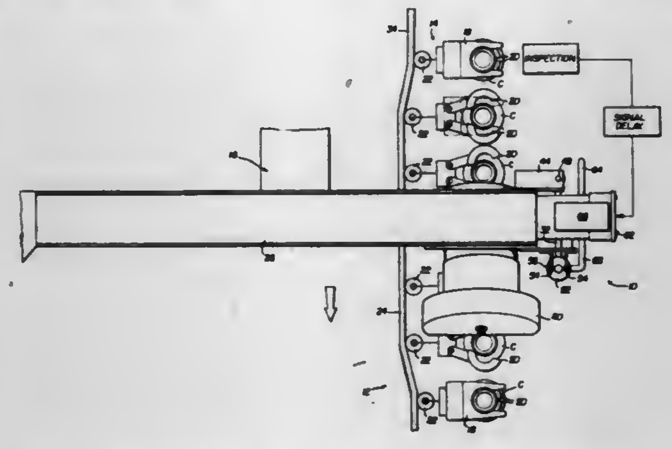
Charles W. Brouwer, East Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Sept. 15, 1969, Ser. No. 857,848
Int. Cl. B07c *3/14*
U.S. Cl. 209—73 **10 Claims**

A closed automatic system for handling bobbins and for preventing the system from becoming loaded with bobbins which cannot be effectively handled within the system. Filled bobbins are conveyed, as needed, from a supply area to a winding area where the bobbins are prepared for unwinding on a self-tending winder. Bobbins ejected from the winder are automatically sorted and the substantially emptied bobbins are returned to the supply area. Partially filled bobbins ejected from the winder are returned to be again prepared, along with other filled bobbins, for return to the winder. However, some of the filled bobbins may, for various reasons, be in such condition that they cannot be prepared for unwinding or have not been properly prepared for use by the winder. In order to keep the system from becoming loaded with such defective bobbins, the bobbins are inspected and bobbins not passing inspection are rejected from the system, and are deposited outside of the system for subsequent manual inspection.



3,606,013
CONTAINER REJECT MECHANISM

Luther H. Wideman, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Feb. 16, 1970, Ser. No. 11,394
Int. Cl. B07c *3/02*
U.S. Cl. 209—74 **4 Claims**

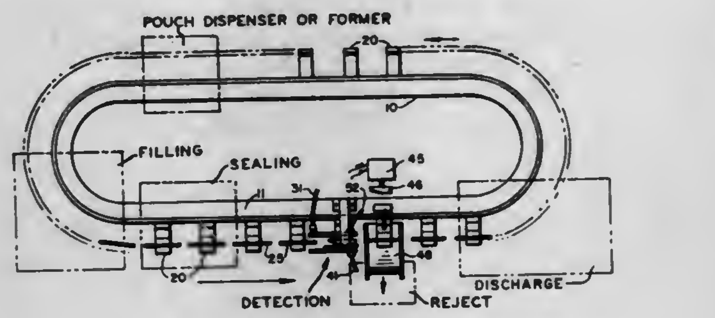


A reject mechanism for ejecting malformed containers from support forks upon which the containers are carried along a container production line. A rotating wire brush is mounted for movement from a normally maintained inactive position clear of the path of movement of containers along the line into an active position at which the brush sweeps a malformed container from its support fork.

3,606,014
APPARATUS AND METHOD FOR DETECTING UNFILLED CONTAINERS

Stephen Linn, Tenafly, N.J., assignor to General Foods Corporation, White Plains, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,102
Int. Cl. B07c *5/00*
U.S. Cl. 209—79 **14 Claims**

A packaging machine, adapted to grip flexible containers along one edge thereof for conveying the containers seriatim through various stations, applies a uniform impulse to each container in a direction perpendicular to the direction of conveyor travel. The impulse deflects each container within a predetermined time period an extent inversely proportional to the mass represented by the container and its contents. The containers which deflect a greater extent than the extent of deflection of a filled container are identified and subsequently rejected.

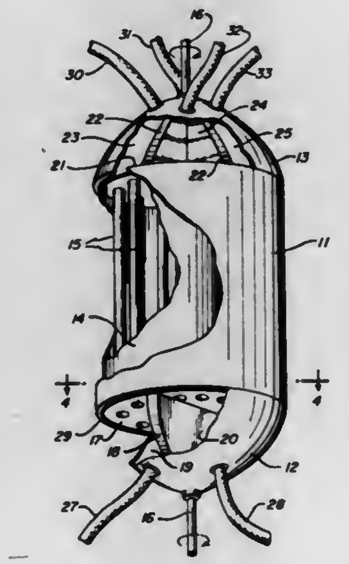


ERRATA

For Classes 209—318 and 210—59 see:
Patent Nos. 3,606,026 and 3,606,015

3,606,015
HEAT-REGENERATIVE SEPARATOR AND METHOD

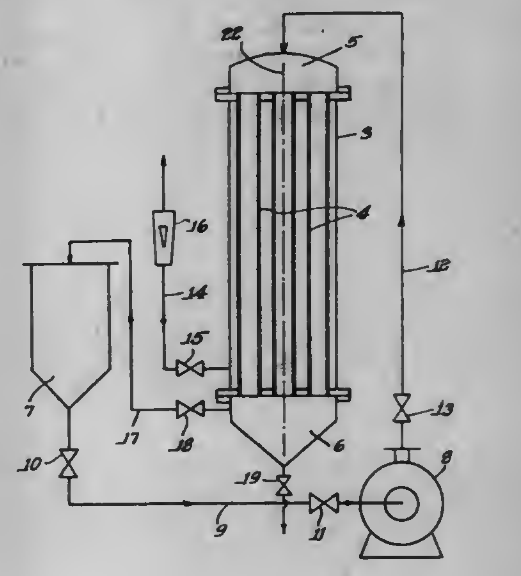
Richard Francis Bukacek and Sanford A. Weil, Chicago, Ill., assignors to The Institute of Gas Technology, Chicago, Ill.
Filed Nov. 28, 1969, Ser. No. 880,731
Int. Cl. C02b *1/18;* **F28d** *17/00*
U.S. Cl. 210—59 **6 Claims**



A heat-regenerative separator and method which uses a heat-regenerative element having a heat-regenerative material at phase-change temperature to impart to or receive from an imput fluid latent heat of separation thereby causing separation from said input fluid a product of a phase different than the input fluid which product will subsequently be withdrawn from the separation area in a withdrawal fluid when said heat-regenerative material receives from or imparts to said withdrawal fluid latent heat of decomposition of said product into said withdrawal fluid, said method comprising alternating passage of input fluid and withdrawal fluid in heat-exchange relation with said heat-regenerative element.

3,606,016
FILTERING METHOD AND APPARATUS THEREFOR

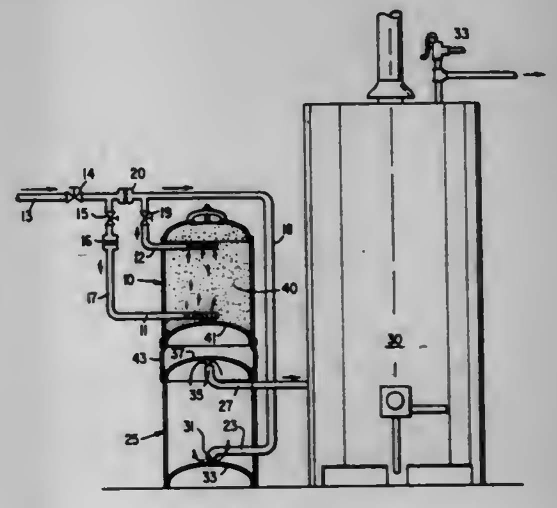
Jiro Sasaki, 4067–2 Nimyo-cho, Nara, Japan
Filed Dec. 18, 1969, Ser. No. 886,318
Claims priority, application Japan, May 21, 1969, 44/39,810
Int. Cl. B01d *37/04*
U.S. Cl. 210—65 **4 Claims**



A filtering method in which the filtration of impurity particles from a liquid is performed by causing the liquid and impurity particles contained therein to flow along a path having a preselected angle with respect to the longitudinal axis of a filter medium whereby impurity particles having grain sizes larger than the effective diameter of the pores of the filter medium are not able to pass through the pores, the intended degree of purification of the liquid thereby being achieved.

3,606,017
APPARATUS FOR CONDITIONING WATER SUPPLIED TO A WATER HEATER TANK

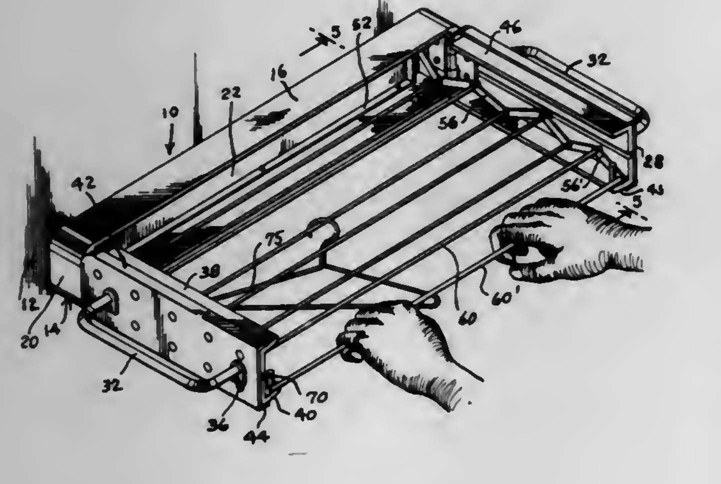
Samuel J. Moore, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,770
Int. Cl. C23f *14/00*
U.S. Cl. 210—181 **5 Claims**



The water supply main is connected to the inlet of a first closed tank containing water-conditioning material. The outlet of the first tank is connected to the inlet of a second closed tank, the outlet of which is connected to the inlet of the heater tank. The second tank is dimensioned to contain a volume of water exceeding the expansion in volume of the initially cold water in the heater tank when it is raised to a predetermined temperature. The inlet and outlet of the second tank are located or arranged as not to disrupt the stratification of the water in the second tank upon the backflow from the heater tank whereby high temperature backflow from the heater tank does not enter the first tank containing the conditioning material.

3,606,018
FOLDING INDOOR CLOTHES DRYER

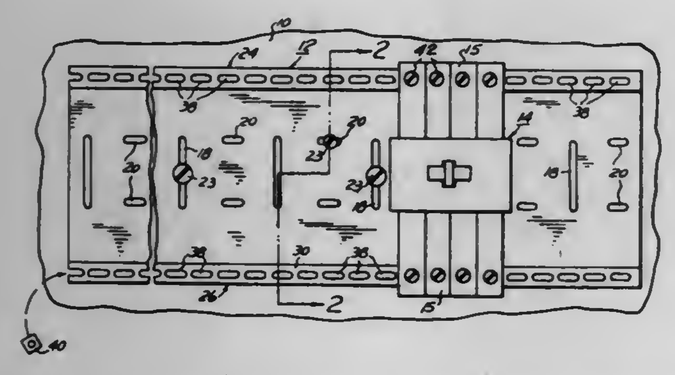
Irving Ruina, North Miami, Fla., assignor to Russell Aluminum Corporation, Miami, Fla.
Filed Aug. 18, 1969, Ser. No. 850,729
Int. Cl. A47g *25/06;* **A47k** *10/04*
U.S. Cl. 211—1.3 3 Claims



A collapsible indoor clothes dryer includes an elongated box-like enclosure with open front. Channel members each equal in length to one-half the enclosure are hinged to ends of the enclosure. A collapsible frame formed by mutually pivotable side bars and horizontal rods is secured at one end inside the enclosure. Lugs on ends of the side bars hold them in V-shaped angular disposition when the frame is extended, so that adjacent rods are disposed in different planes.

3,606,019
MOUNTING PAN FOR ELECTRICAL PANEL BOARD

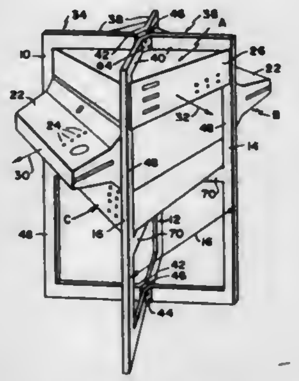
Robert J. Dubiel, 22140 Guidot, Taylor, Mich. 48180
Filed Feb. 6, 1969, Ser. No. 797,041
Int. Cl. A47f *7/00*
U.S. Cl. 211—26 16 Claims



A mounting pan for electrical components, such as relays or the like, for mounting on a panel board or cabinet wall panel, having appropriate apertures for mounting on the panel board or wall panel and a pair of parallel side channels provided with apertures for mounting of the components on the pan, and retaining means dependent from the channels for holding captive mounting nuts and the like. A modification of the pan is constructed to be adjustable in width for adaptability to be adjustable to various sizes of components.

3,606,020
RACK FOR ELECTRONIC MODULES

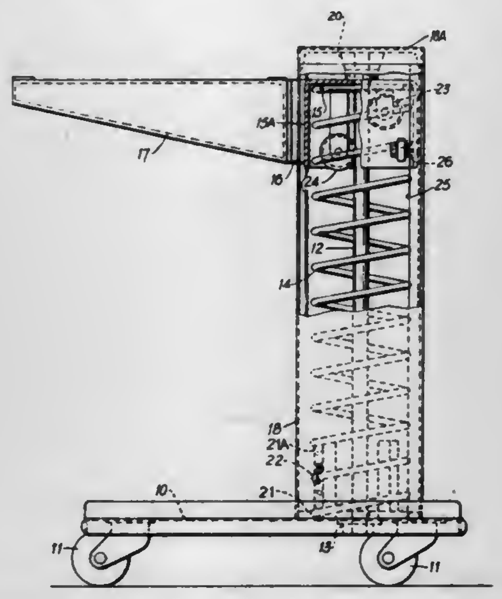
Walter Kern, Cohasset, Mass., assignor to Teradyne, Inc., Boston, Mass.
Filed Sept. 18, 1969, Ser. No. 859,096
Int. Cl. A47f *7/00;* **H02b** *1/04*
U.S. Cl. 211—26 14 Claims



A rack for supporting a plurality of electronic component modules in an array provides maximum accessibility to the side panels of each module. The rack includes a skeletal frame having vertical, parallel bars arranged to embrace, and be secured to, the corners of each module which is supported by the rack. The lateral span between adjacent bars is unobstructed so that each side panel of each module is exposed fully. The vertical bars are rigid and are secured to each other by means of upper and lower bracing elements which connect together the upper ends of the bars and the lower ends of the bars and do not interfere with the supported modules. When the modules are mounted in the rack, panels span adjacent vertical bars so that the side panels cooperate with the cross braces to define a rigid triangular structure.

3,606,021
MATERIALS HANDLING APPARATUS

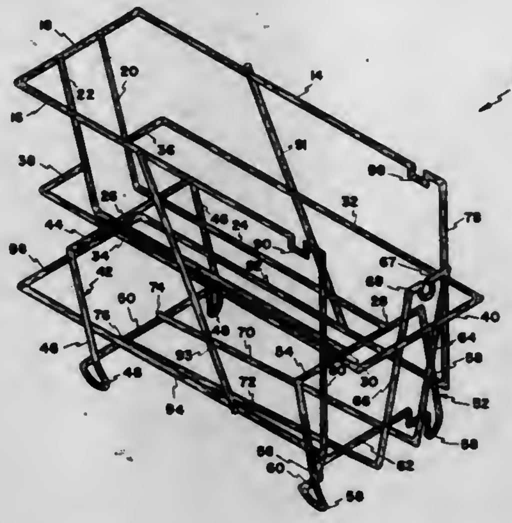
Hans Roels, Dordrecht, Netherlands, assignor to American Machine & Foundry Company
Filed June 10, 1969, Ser. No. 831,909
Int. Cl. A47f *1/00;* **B66f** *9/00*
U.S. Cl. 211—49R 2 Claims



This invention is for materials handling apparatus wherein an article supporting tray is adapted to move upwardly and downwardly with respect to the base in response to weight of the article on the tray on a calibrated compression spring. The tray is prevented from tilting or rotating in one or more directions by the provision of a guiding member, guiding channel and guiding means.

3,606,022
STORAGE AND DISPENSING RACK

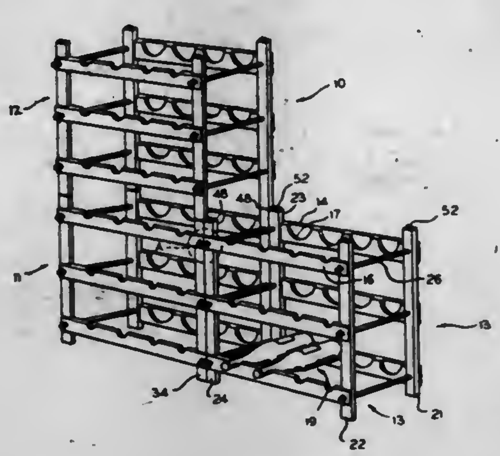
William N. Beesley, 2755 Apple Blossom, Salt Lake City, Utah 84117
Filed May 14, 1970, Ser. No. 37,080
Int. Cl. A47f *7/00*
U.S. Cl. 211—49 9 Claims



A two-tier storage and dispensing rack of wire construction including upper and lower ramps connected by a chute. Downwardly depending feet are inwardly contoured to function as coupling members so that two-tier racks may be releasably stacked one on top of another to form a continuous multi-tier dispensing unit for receiving and dispensing cylindrical containers, such as standard-size food cans.

3,606,023
WINE RACK

Frank A. Edmunds, 7920 S. Greenwood Ave., Chicago, Ill. 60619
Filed Dec. 29, 1969, Ser. No. 888,610
Int. Cl. A47b *73/00*
U.S. Cl. 211—74 10 Claims

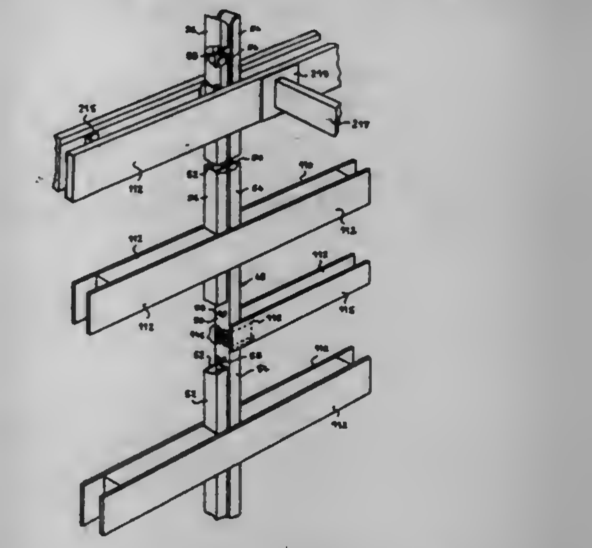


A sectional knock down rack that can be assembled without any tools. The individual sections are amenable to vertical stacking and to horizontal joining.

3,606,024
MULTIPURPOSE STRUCTURE IN STANDARDIZED ELEMENTS

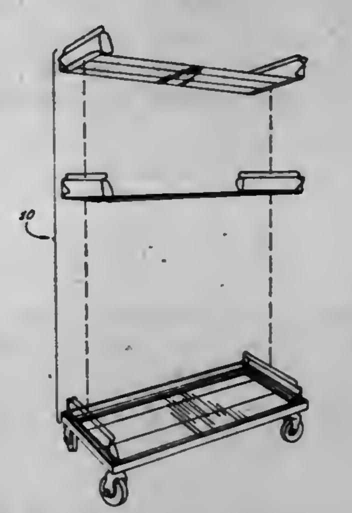
André Mieville, Lausanne, Switzerland, assignor to SA pour l'Etude de la Promotion des Entreprises, Fribourg, Switzerland
Filed June 2, 1969, Ser. No. 829,343
Claims priority, application Switzerland, May 31, 1968, 8,146/68
Int. Cl. A47f *5/10*
U.S. Cl. 211—176 23 Claims

A structure in standardized elements, for example forming a piece of furniture, comprises a framework of parallel longitudinal sectioned elements assembled by means of transverse elements. Each longitudinal element comprises at least two hollow open sections which interfit by elastic gripping in a manner to define a generally prismatic longitudinally enclosed enclosure and the transverse elements are fitted to the longitudinal elements by the gripping of the two interfitting sections. The sections of the longitudinal element can be of U-shaped cross section and have an exterior surface of plastics material to increase the gripping effect thereof.



3,606,025
MODULAR RACK

James D. Wilson, Long Beach, Calif., assignor to Banner Metals, Inc., Compton, Calif.
Filed Aug. 27, 1969, Ser. No. 853,379
Int. Cl. A47f *3/14;* **B65d** *21/02*
U.S. Cl. 211—126 2 Claims

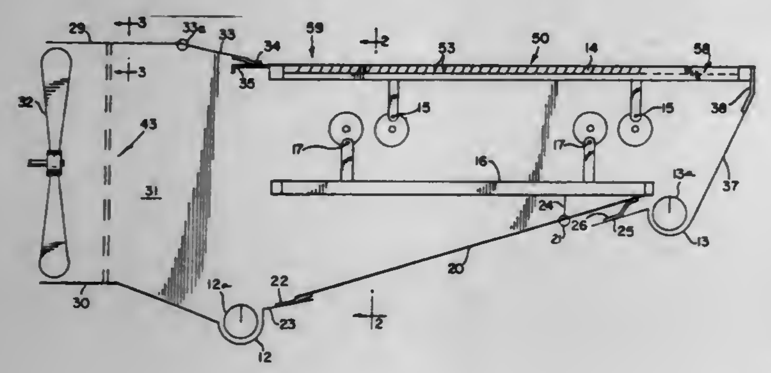


A demountable rack formed of separate wire-formed shelf modules capable of being stacked over one another in a spaced and parallel relationship is provided. The demountable rack of the invention has particular utility for the cooling, storage and movement of pies, pastry shells, and the like, and it has general utility in the bakery and other industries. The rack of the invention is intended primarily to replace the prior art type of racks which include solid corner posts and shelves supported thereby.

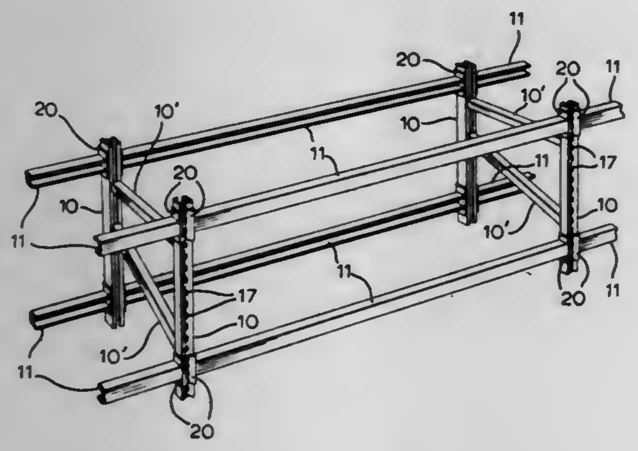
3,606,026
SIEVE MECHANISM FOR SEPARATING GRAIN

Bernard C. Mathews, Box 70, Crystal Lake, Ill. 60014
Filed Apr. 22, 1969, Ser. No. 818,295
Int. Cl. B07b *1/28*
U.S. Cl. 209—318 7 Claims

The separating mechanism comprises an upper sieve and a lower sieve located one above the other and supported by cranks journaled in the side walls of the casing of a combine. The cranks for the upper and lower sieves are offset from each other 180°. The cranks are driven at about 200 r.p.m. Both of the sieves have transverse ribs about ½ inch high and 2 inches apart. Threshing mix deposited on the upper sieve will be agitated by the circular vibratory motion which shakes the grains or kernels out of the mix and through the sieves. An axial delivery fan located in front of the two sieves causes an air blast to blow upwardly through the upper sieve. Flexible seals are provided at the front and rear ends of the upper sieve to confine the air blast. A shutter in the form of sliding plates regulates the air blast. The casing has a movable bottom which is hingedly mounted at its rear end at the lower sieve and slidingly engages a portion of the casing at its front end. Preferably, the openings in the upper sieve are in the form of transverse slots having shelves underneath and slots to block endwise movement of straw.

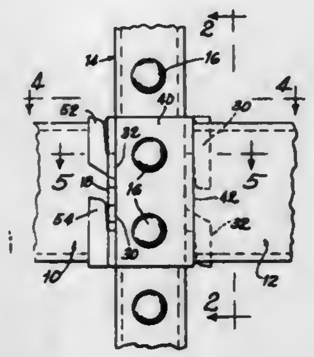


3,606,027
ADJUSTABLE STORAGE RACK
Denis Clements, Port Credit, Ontario, Canada, assignor to Westeel-Rosco Limited, Toronto, Ontario, Canada
Filed Oct. 28, 1968, Ser. No. 771,198
Claims priority, application Great Britain, May 14, 1968, 22,945/68
Int. Cl. A47f *5/10*
U.S. Cl. 211—176 **7 Claims**



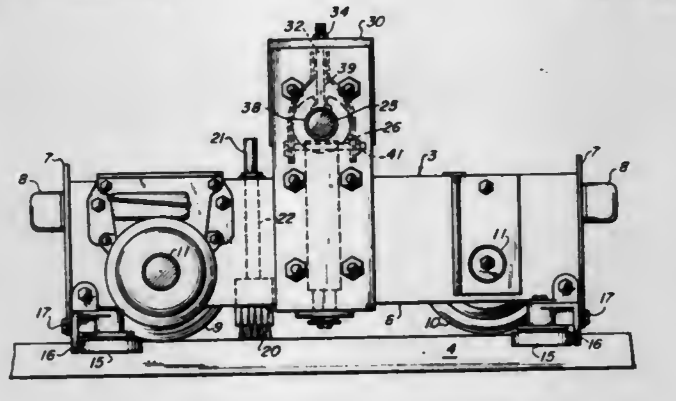
An adjustable storage rack wherein horizontal support rails adjustably interconnect hollow, vertical columns, each column being substantially M-shaped in cross-section. Brackets secured to the ends of the support rails each present teeth which engage a vertical row of apertures centrally formed in the front wall of the column with the bracket embracing a side wall of the column and the portion of the front wall between this side wall and the row of apertures, this portion of the front wall being at an acute angle to the adjacent side wall.

3,606,028
INTERCONNECTING MEMBERS FOR EXTERIOR CONNECTION TO RACK COLUMN
Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.
Filed June 4, 1970, Ser. No. 43,344
Int. Cl. A47f *5/10*
U.S. Cl. 211—177 **6 Claims**



A rack with knockdown character is provided by horizontal frame members with interengaging ends that define a sleeve-like connector for cooperation with vertical uprights, wherein the vertical upright is imperforate with one side shaped to provide a vertical series of uniformly-spaced protuberances that are adapted to enter apertures defined on the sleeve-like connector to provide a supporting interconnection.

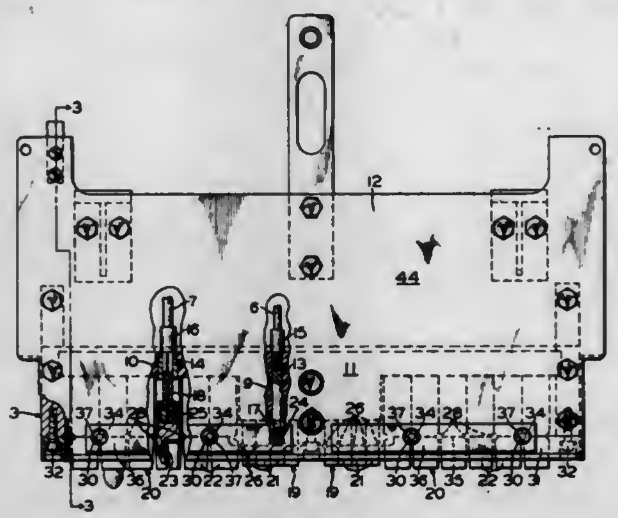
3,606,029
HOISTING APPARATUS
Auguste Verlinde, 19 Rue Danton, 59 Loos-lez-Lille, France
Continuation-in-part of abandoned application Ser. No. 624,812, Mar. 21, 1967. This application June 16, 1969, Ser. No. 833,428
Claims priority, application France, May 12, 1966, 61,321
Int. Cl. B66c *17/00*
U.S. Cl. 212—18 **9 Claims**

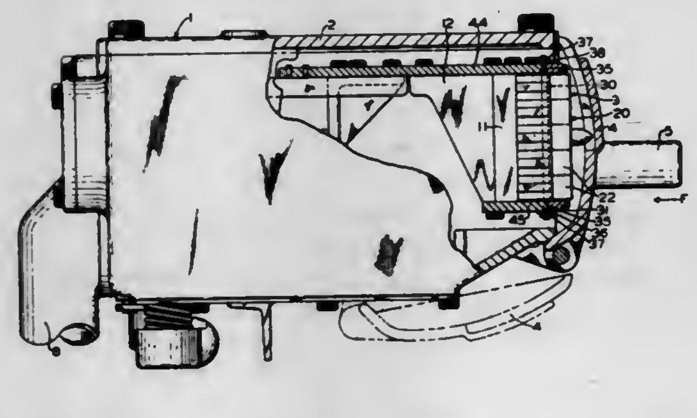


The beam of a travelling crane is supported at opposite ends by carriages running on parallel rails. The support at at least one end comprises a bearing member which is supported on the carriage to rotate about a horizontal axis and has a horizontal bearing cavity rotatively and slidably receiving a horizontal shaft projecting horizontally from the respective end of the beam.

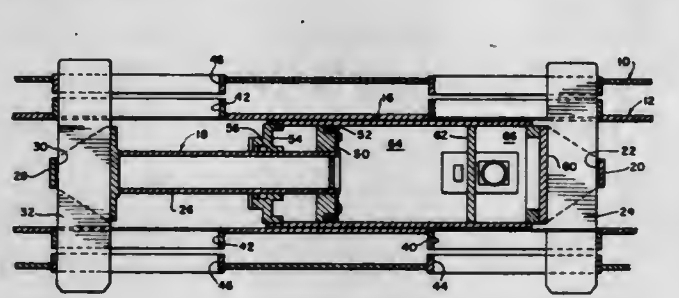
3,606,030
AUTOMATIC ELECTRIC LINE COUPLER WITH REMOVABLE CONTACT UNIT
Richard K. Frill, Pittsburgh, and Ronald F. Monzi, Lower Burrell, Pa., assignors to Westinghoue Air Brake Company, Wilmerding, Pa.
Filed Mar. 13, 1970, Ser. No. 19,384
Int. Cl. B61g *5/10;* **B60d** *7/00*
U.S. Cl. 213—1.3 **10 Claims**

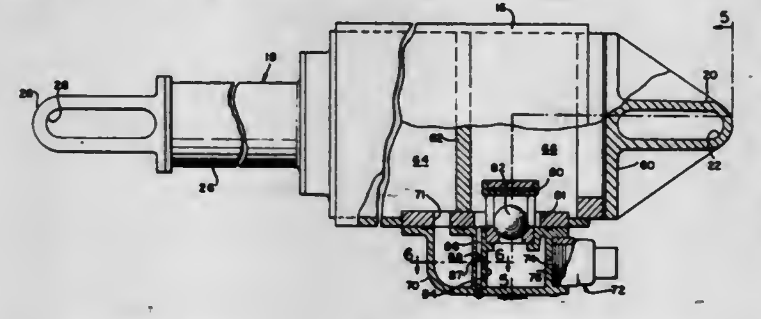
An automatic multiple electric conductor connecting portion for an automatic railway car coupler having counterpart multiple-contact units in each mating head of the coupler and in which said multiple-contact units are accessibly arranged so as to be removable and replaceable without removal of the electric conductor connecting portion from the coupler mating head.





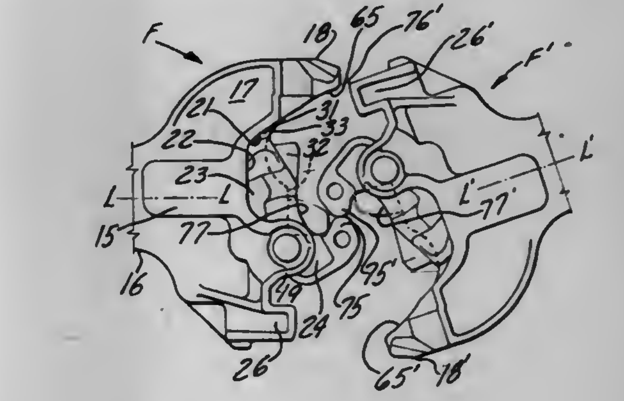
3,606,031
SHOCK ABSORBING MECHANISM FOR RAILWAY CARS
Einar O. Lunde, 1045 Sansome St., San Francisco, Calif. 94111
Filed Sept. 16, 1969, Ser. No. 858,418
Int. Cl. B61g *9/12, 9/16*
U.S. Cl. 213—8 **7 Claims**

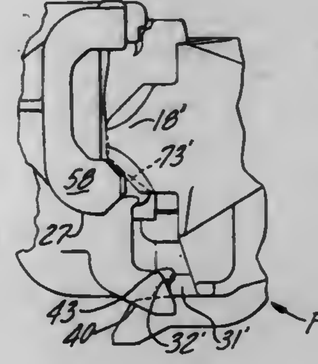




A railway car includes a frame structure slidably supporting a center sill carrying coupler means. Shock absorbing mechanism includes a cylinder and a piston slidable therein. A pair of keys are connected with the cylinder and piston, the keys each having a lost motion connection with the center sill and the frame structure. The cylinder is divided into a large chamber and a small chamber interconnected by a passage having a check valve therein. A second passage provides communication between the large and small chambers and has an adjustable metering means therein. The chambers are filled with air by means of a differential air inlet valve which is continuously connected with a source of air pressure.

3,606,032
RAILWAY CAR COUPLER
Kenneth L. De Penti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Mar. 23, 1970, Ser. No. 21,831
Int. Cl. B61g *3/04*
U.S. Cl. 213—152 **7 Claims**

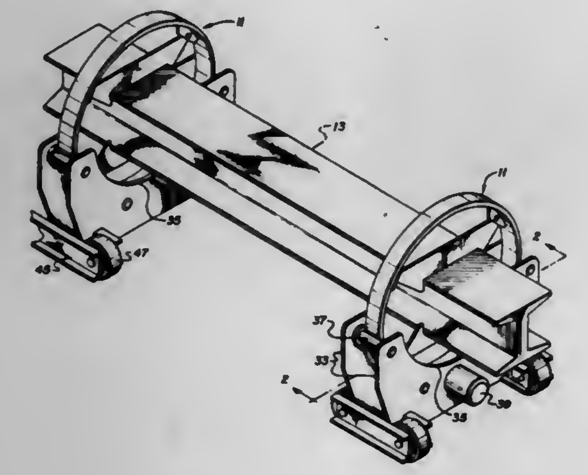




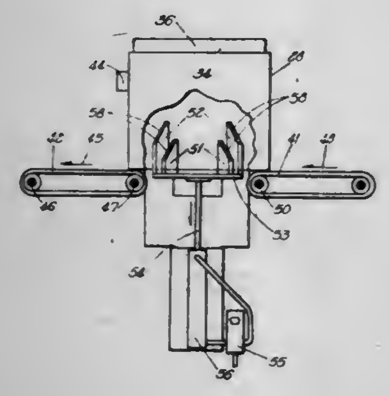
An interlocking knuckle type car coupler having an auxiliary interlocking lug mounted on a shelf carried on the lower portion of the coupler head. The auxiliary lug has a ramp portion adapted to slidably engage the bottom forward edge of a shelf carried by an opposed mating coupler to permit alignment of the couplers for coupling when two opposed couplers are angularly and/or vertically misaligned a predetermined amount and when the knuckles of the opposed couplers are each in an open position during the coupling operation. The interlocking coupler has an aligning wing pocket at the knuckle side of the coupler carrying vertically spaced upper and lower interlocking lugs adapted to cooperate with an aligning nose on the guard arm of a similar coupler. The lower interlocking lug and guard arm aligning nose are modified to improve the horizontal and vertical gathering characteristics between their cooperating surfaces during the coupling operation of two opposed couplers when the couplers are vertically and angularly misaligned.

3,606,033
STRUCTURE HANDLING DEVICE
Pat Barilla, 6101 Ivory Circle, Huntington Beach, Calif. 92647
Filed Mar. 24, 1969, Ser. No. 809,803
Int. Cl. B65g *7/00*
U.S. Cl. 214—1Q **2 Claims**

A device for handling structures particularly including steel wide flange beams and the like comprising a ring of diameter substantially larger than the piece to be held with a pair of holding plates detachably connected to the ring and extending inwardly and having a configuration conforming to the piece to be held. Half of the ring rests on a support structure having a plurality of idler rollers in contact with the ring and a frictional drive roller for rotating the ring within the support structure. The support structure is further mounted on wheels which contact the ground so that it can readily be maneuvered when the structure being handled is supported.

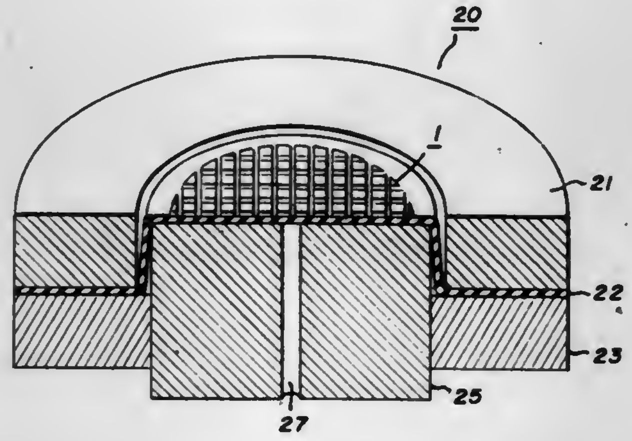


3,606,034
ARTICLE HANDLING APPARATUS
Paul G. Lewis, Tonawanda, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed June 4, 1969, Ser. No. 830,277
Int. Cl. A45c *11/00*
U.S. Cl. 214—1R **5 Claims**



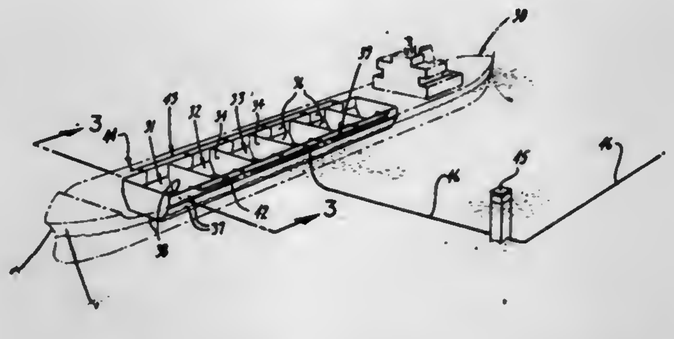
A unique article carrying container and associated apparatus utilized therewith in a manual or automatic retrieval and storage system. The container is adapted to accommodate a plurality of substantially flat articles; such as documents, file folders, or the like. Appropriate means deliver a container to an operator console, whereupon the documents are automatically lifted from the container for convenient access. The upper edges of the articles are exposed in an echelon array to facilitate identification by means of associated indicia or coding means applied thereto. The lifting arrangement at the console comprises one or more fingers adapted for registration with a like number of cooperating slots in the container to effect engagement with the bottom edges of the articles accommodated by the retrieved container. Article guide means on the interior surface of the container prevent articles from becoming lodged between the fingers and the container walls under conditions where the fingers are protruding through the slots.

3,606,035
SUBDIVIDED SEMICONDUCTOR WAFER SEPARATOR
Francis Charles Gantley, Fulton, N.Y., assignor to General Electric Company
Filed Aug. 15, 1969, Ser. No. 850,551
Int. Cl. B26f *3/00*
U.S. Cl. 214—1R **2 Claims**



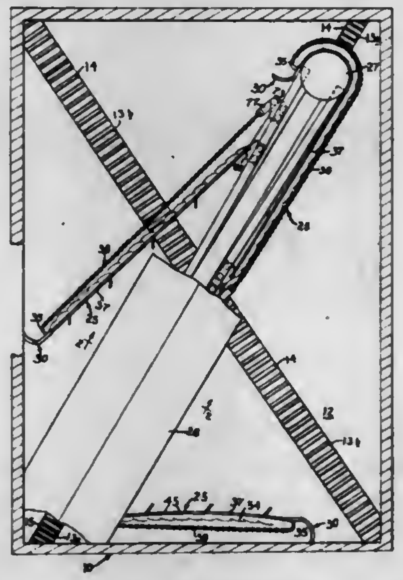
This invention related to a method and an apparatus for supplying a predetermined spacing to individual semiconductor pellets, subdivided from a parent semiconductor wafer without changing the relative orientation and position the pellets occupied in the parent wafer prior to the subdivision. The separator comprises a sheet of stretchable material having a major face adapted to support an array of pellets, means for holding the sheet in a taut condition, and means engageable with the sheet for simultaneously stretching the same in two mutually perpendicular coordinates in the plane of the major face. Thus, when the stretching of the sheet is increased, the spacing between the pellets supported on the sheet also increases and thereby facilitates treatment of each individual pellet with minimized disturbance of its neighbor.

3,606,036
METHOD AND APPARATUS FOR SHIPPING MINERAL SOLIDS AND OTHER PARTICULATE MATTER
Robert R. Beebe, Tiburon, and Emmett J. Murphy, Woodside, Calif., assignors to Marcona Corporation, San Francisco, Calif.
Filed July 31, 1968, Ser. No. 778,364
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. B63b *27/24*
U.S. Cl. 214—14 **10 Claims**



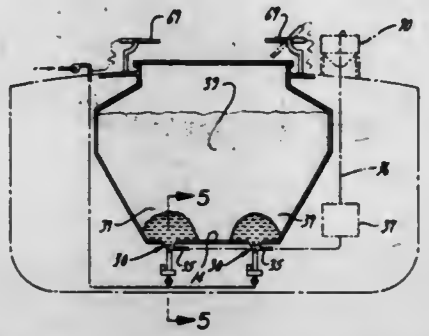
A method and apparatus for loading, transporting and discharging discrete minerals in ships in which a slurry of the mineral is pumped into and allowed to settle in the hold of the ship and excess water decanted off to leave a settled material in the form of a nonshifting cargo. At the destination the settled material is pulped to form a pumpable slurry by application of water and vigorous agitation. The slurry so formed is then pumped out of the ship through suitable piping.

3,606,037
CENTRAL DRAG LINE SYSTEM FOR NON-CYLINDRICAL PARTICLE STORAGE FACILITIES
John L. Peterson and George H. Pettis, Spokane, Wash., assignors to Atlas Spokane, Inc.
Filed July 22, 1969, Ser. No. 843,702
Int. Cl. B65g *65/42*
U.S. Cl. 214—10 **8 Claims**



A plurality of drag lines are attached to a continuous chain mounted above a flat floor over a floor aperture in the center of a non-cylindrical particle storage facility for digging granular material from a base of a pile and conveying the material to the floor aperture.

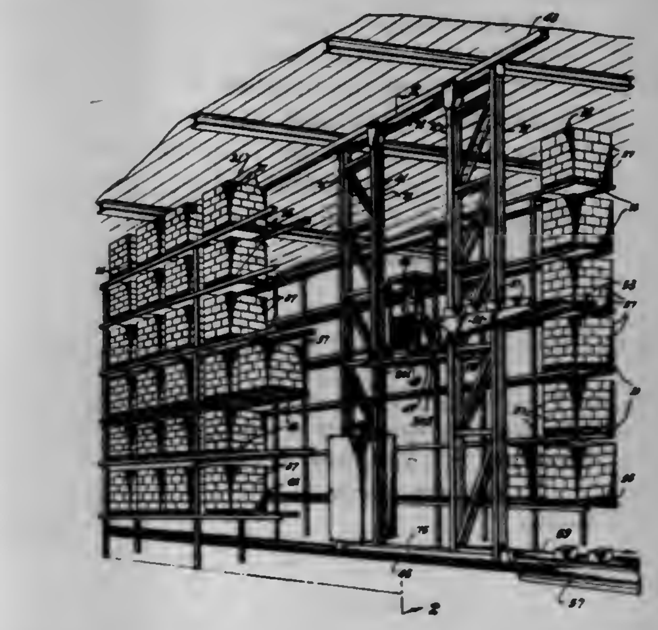
3,606,038
ORE CARRIER WITH SLURRY REPULPING AND UNLOADING SYSTEM
Tom B. Thomas, Walnut Creek, Robert R. Beebe, Tiburon, and Norman J. Thompson, Moraga, Calif., assignors to Marcona Corporation, San Francisco, Calif.
Continuation of abandoned application Ser. No. 796,730, Feb. 5, 1969. This application Aug. 17, 1970, Ser. No. 64,579
Int. Cl. B63b *27/00*
U.S. Cl. 214—15B **3 Claims**



Ship's apparatus for slurry repulping using a sump formed in the inner bottom with a mechanical rotating impeller located in the sump and carrying hydraulic jets for continuously sweeping the vicinity of the sump to break up and cut away compacted particulate ore in the vicinity of the sump. Particular constructions of suitable ships for use with the invention are also disclosed.

3,606,039
STACKER CRANE SYSTEM
David C. Weston, Los Angeles, and Adrian A. Arnott, West Covina, Calif., assignors to Interstate Restaurant Supply Co., Los Angeles, Calif.
Filed May 12, 1969, Ser. No. 823,762
Int. Cl. B65g *65/02*
U.S. Cl. 214—16.4A **12 Claims**

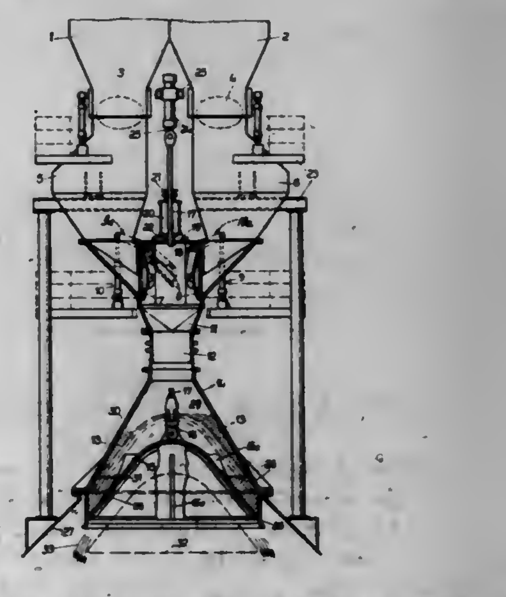
A stacker crane and conveyor system for retrieving articles from a vertical stack and depositing them at a collection point. The system includes a horizontal storage conveyor extending longitudinally of the stack and leading to a collecting point. A gantry frame is carried on a track extending longitudinally of the storage conveyor and mounts an elevator having an operator's platform thereon. Thus, the gantry frame may be moved to a position along the track and the elevator raised to a selected level so the operator can select articles from the stack and lower the elevator to deposit the articles so selected on the storage conveyor for eventual conveyance to said collecting point.



Ramp-type picker conveyors may be mounted on the elevator for receipt of the articles picked and for actuation when the elevator is lowered to transfer the selected articles to the storage conveyors.

A lifting fork may be mounted on the elevator for transverse movement thereon whereby the gantry frame may be moved to a point at one end of the stack and the fork activated to lift a pallet loaded with articles onto the elevator, the gantry frame then moved to a selected position along the stack and the elevator raised and, finally, the fork again activated to transfer the loaded pallet to a selected position in the stack.

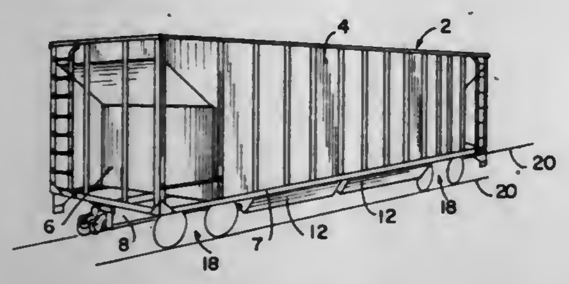
3,606,040
METHOD OF AND APPARATUS FOR CHARGING FURNACES
Manfred Euteneuer, Essen-Bredeney, Germany, assignor to Demag A.G., Duisburg, Germany
Filed May 9, 1969, Ser. No. 823,427
Int. Cl. F27b *11/12*
U.S. Cl. 214—37 **10 Claims**



An apparatus for charging shaft furnaces particularly blast furnaces which are operated at high pressure includes a plurality of lock chambers which are arranged with their inlet ends connected through lock chamber openings to one or more storage bins and with their discharge ends located for selective discharge into a central distributing chamber. The distributing chamber has a flared lower end which opens into the furnace and which accommodates a distributor bell. The flared end of the distributor is dimensioned so that the distributor bell may be shifted upwardly and downwardly therein for varying the cross sectional area of the material delivered to the top of the bell of distribution downwardly into the furnace. In accordance with the inventive method, the material is delivered on the lock chambers into the central distributing chamber and permitted to pile up in front of the furnace chamber over the bell first on a ring surface with the bell positioned uppermost within the flared end of the distributing chamber and then on an annular surface which is increased in width and reduced in height as the bell is lowered in the distributing chamber.

3,606,041
OFF-VEHICLE-MOUNTED DOOR ACTUATING MECHANISM

James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed July 2, 1969, Ser. No. 838,572
Int. Cl. B65g *67/24*
U.S. Cl. 214—63 **17 Claims**

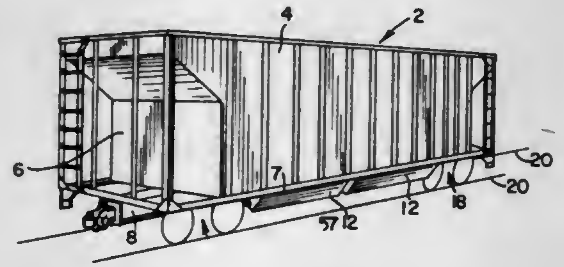


Trackway-mounted railroad hopper car door actuating mechanism including a pair of longitudinally spaced cam track structures, said first cam track structure in the door opening direction of the door operating mechanism presenting transversely extending drive lever engaging door opening cam surfaces, said second cam track structure in the door opening direction of the door operating mechanism presenting a final opening transverse cam surface for final opening of the hopper doors and a pivotal cam track gate for passage of the drive lever therethrough in the opening moving direction of the railroad car, said second cam track structure in the door closing direction of the hopper car door operating mechanism presenting an initial cam surface for closing the vehicle doors and engageable with the drive lever in the closing moving direction of the car, said first cam track structure having an intermediate door closing cam surface and pivotal cam means in the door closing direction of the door operating mechanism presenting surface means for final closing of the door operating mechanism and a pivotal cam track gate for passage of the drive lever therethrough in the car door closing direction.

3,606,042
VEHICLE HOPPER DOOR OPERATING MECHANISM

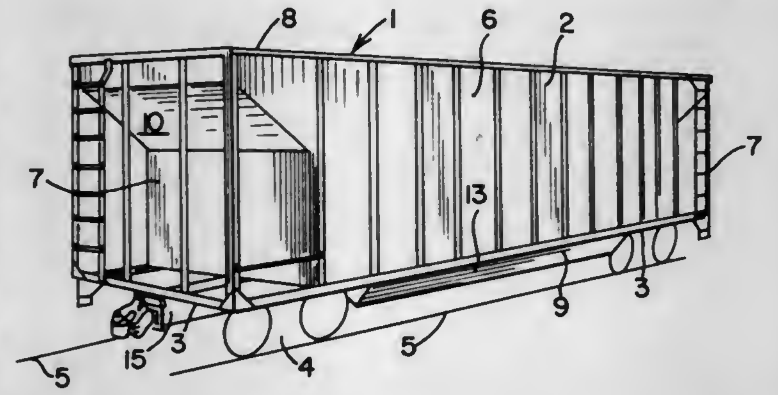
James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed July 2, 1969, Ser. No. 838,714
Int. Cl. B61d *7/30;* **B65g** *67/24*
U.S. Cl. 214—63 **8 Claims**

In a railroad hopper car, a hopper door operating mechanism including a car-mounted door opening and closing crank mechanism and a track-engaging drive lever constrained for rotation with said crank mechanism and having hopper door opened and closed positions, the crank mechanism in the closed position having its linkage disposed in over-center relation to prevent accidental opening of the car doors and an auxiliary lock bar preventing movement of the drive lever to the open position should it pass over-center toward the open position, said auxiliary lock bar including a vertically pivotal bar engageable with a portion of the crank mechanism to prevent movement of the drive lever, the end edge of the drive lever and the side edge of the auxiliary lock bar each being chamfered to permit movement of the drive lever from the open to closed position by raising of the lock bar to permit passage of the drive lever past the lock.



3,606,043
LOCK MEANS FOR DOOR OPERATING MECHANISM

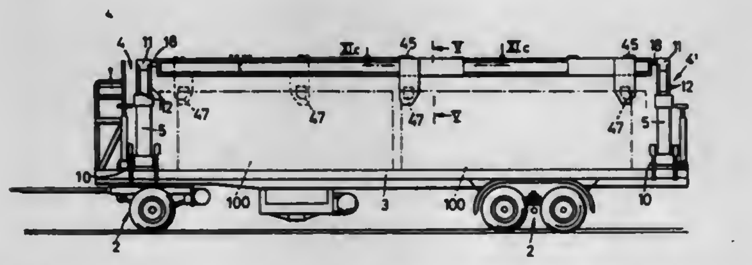
Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed July 2, 1969, Ser. No. 838,715
Int. Cl. B61d *7/30;* **B65g** *67/24*
U.S. Cl. 214—63 **17 Claims**



For a railroad car-mounted crank mechanism for operating the discharge doors of a hopper railroad car between open and closed positions, an auxiliary lock device for limiting movement of the crank mechanism from the closed door position, the lock device being pivotally mounted at one end thereof to one end of a car-mounted fixed support, a multiplier unit pivotally mounted intermediate its ends to the other end of the support and one end of the unit being a free end carrying roller means below the point of pivotal mounting of the unit, the upper part of one end of the unit being a free end and slidingly supporting the lock device, the other end being a free end having abutment with a car-mounted stop to limit pivoting of the multiplier unit, the underside side portion of the multiplier unit carrying roller means between and below the multiplier unit pivot and the one end of the multiplier unit, said roller means being adapted for engagement with the rail means for raising the lock device out of the path of movement of the crank mechanism attendant to rotating the crank mechanism to the open door position.

3,606,044
LOADING AND UNLOADING APPARATUS FOR BULKY LOADS

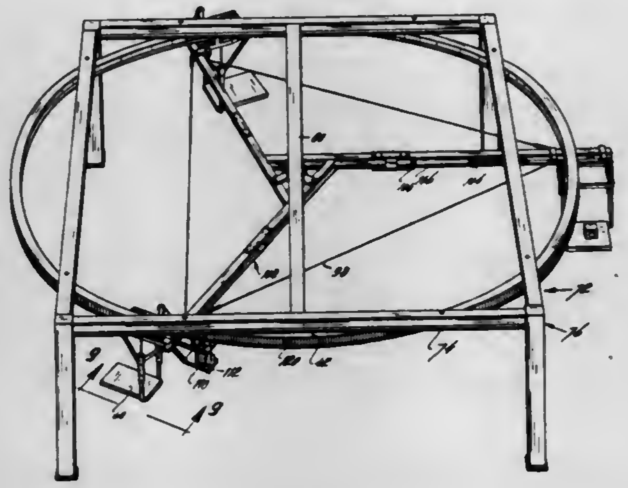
Alois Goldhofer, 397 Donaustrasse, D-8941 Amendingen, Memmingen, Germany
Filed Apr. 14, 1969, Ser. No. 815,843
Claims priority, application Germany, Apr. 13, 1968, P 17 55 215.7; Apr. 27, 1968, P 17 55 332.1
Int. Cl. B60p *1/48;* **B66c** *23/62*
U.S. Cl. 214—77R **11 Claims**



A loading and unloading mechanism for bulky loads wherein the loading and unloading can be carried out at either side of the transporter, there being extendable support tubes for a frame assembly having a plurality of load holding implements.

3,606,045
INSTRUMENT TRANSPORT AND POSITIONING SYSTEM

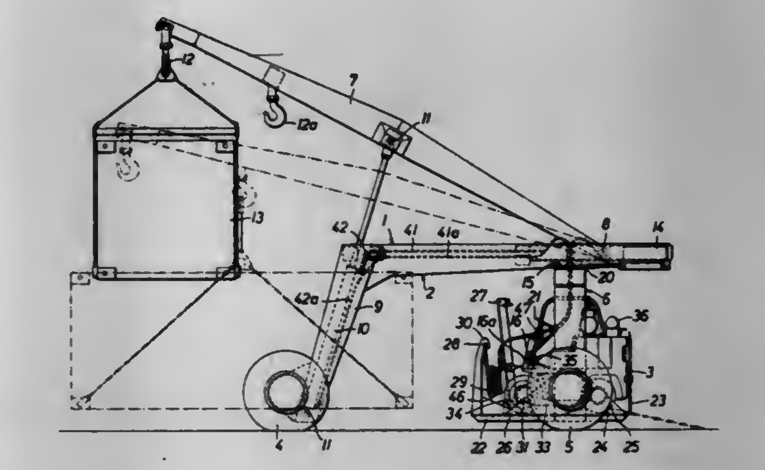
John C. Abromavage, Tempe, and James F. George, Phoenix, Ariz., assignors to Advanced Management Engineering & Research Co., Phoenix, Ariz.
Filed Nov. 19, 1969, Ser. No. 878,079
Int. Cl. B65g *21/22*
U.S. Cl. 214—89 **10 Claims**



An instrument transport and positioning system for use in multiphasic medical examinations screening laboratories of a type where a test sequence phase is conducted in a plurality of juxtaposed wedge shaped test chambers surrounding a central core area wherein each test chamber is adapted to encompass therein for a given test all instruments required to perform predetermined tests in a prephased sequence with inexpensive instruments located in each test chamber, expensive equipment being centrally located in the central core and inter-connected with each test chamber via a cable, with still further expensive equipment mounted on a circular track above the wedge shaped test chamber adapted for selective vertical placement in or removal from each chamber. The equipment mounted on the track is adapted for movement along the track and lowering or raising through a ceiling door in the chambers with the ceiling door and raising and lowering mechanism for the equipment being phased in the test time sequence and automatically operable by means of coacting devices selectively operated upon given increments of movement of the equipment around said track.

3,606,046
CONTAINER HANDLING VEHICLE

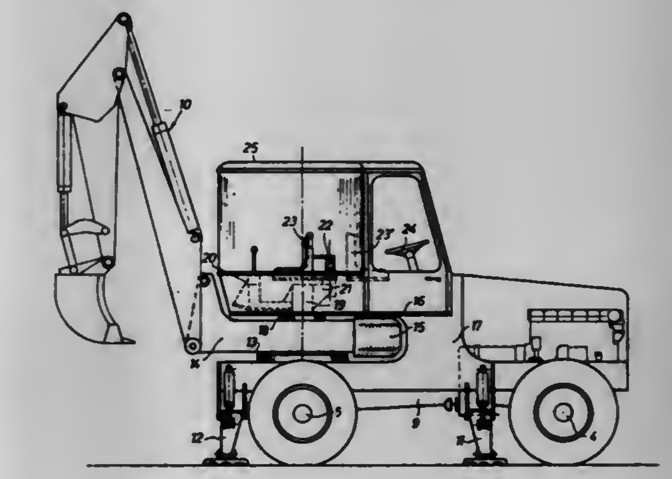
Karl-Heinz Griesenbrock, Duisburg, Germany, assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio
Filed Mar. 2, 1970, Ser. No. 15,665
Int. Cl. B66c *23/00*
U.S. Cl. 214—130R **5 Claims**



A materials handling device includes a wheeled frame, a lifting boom, and frame supported platform upon which a self-propelled vehicle can be driven for supplying power for propulsion, lifting and braking of the mobile frame.

3,606,047
VEHICLE WITH SWINGING TOOL OPERATOR

Hans Schaeff, Langenburg, Germany, assignor to Karl Schaeff KG, Maschinenfabrik, Langenburg, Wurttemberg, Germany
Filed June 20, 1969, Ser. No. 834,960
Claims priority, application Germany, June 20, 1968, P 17 59 910.9
Int. Cl. E02f *3/28*
U.S. Cl. 214—138 **9 Claims**

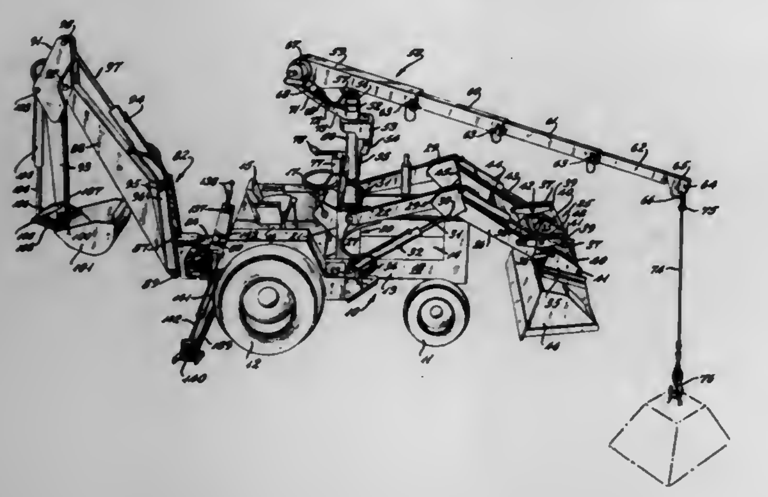


A vehicle having an excavator on the rear end wherein the operator's compartment has a seat which is rotatable so that the operator can move his location from vehicle driving position to an excavator operating position.

3,606,048
VEHICLE HAVING FRONT, CENTRAL AND REAR IMPLEMENTS

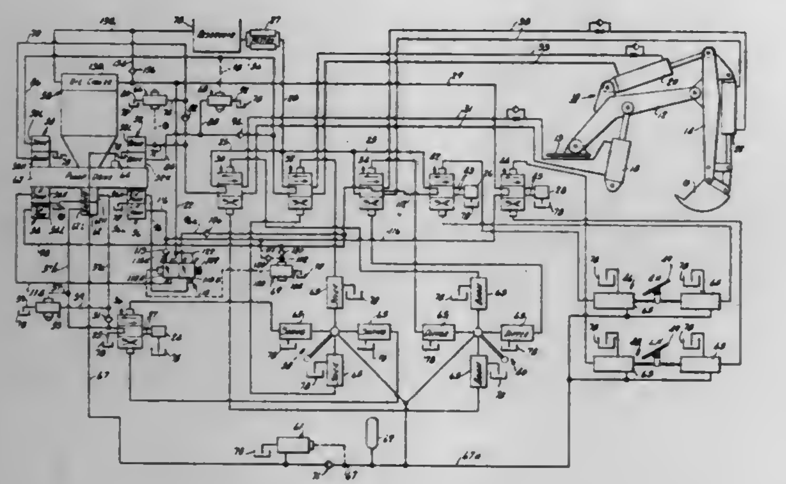
William R. Long, Tarboro, N.C., assignor to Long Manufacturing Company, Tarboro, N.C.
Filed Sept. 5, 1969, Ser. No. 855,646
Int. Cl. B66f *9/00*
U.S. Cl. 214—138 **6 Claims**

A land vehicle having implements mounted at the front, central and rear portions and in which certain of said implements are replaceable by other implements and such implements are arranged so that each implement can be operated independently or two or more of the implements can be operated simultaneously.



3,606,049
HORSEPOWER LIMITING HYDRAULIC CONTROL CIRCUIT

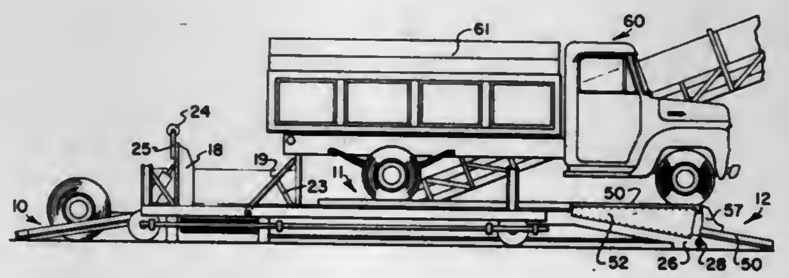
Richard O. Gordon, Belgium, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.
Filed Nov. 12, 1969, Ser. No. 875,797
Int. Cl. E02f *3/30*
U.S. Cl. 214—138 **8 Claims**



A horsepower limiting hydraulic power transmission system for hydraulically operated lifting and digging equipment including a number of hydraulic cylinders and motors for controlling the various functions of the equipment. The system includes a number of double, fixed volume pump assemblies operatively connected to the main engine, each pump assembly including a high volume-low pressure pump and a low volume-high pressure pump, one high volume pump from each assembly being cross connected to one of the low volume pumps of another pump assembly to provide hydraulic fluid for one of the cylinders or motors; a pilot operated valve connected across each pair of cross connected pumps, each of the valves is responsive to the pressure of the low volume-high pressure pump to bypass the fluid from the high volume-low pressure pump to the reservoir. A double acting hydraulically actuated valve is included and is responsive to the pressure of either of two low volume pumps to simultaneously by-pass both corresponding high volume pumps and thereby simultaneously shift two operating functions from high horsepower to low horsepower operation.

3,606,050
ELEVATING DUMP RAMP

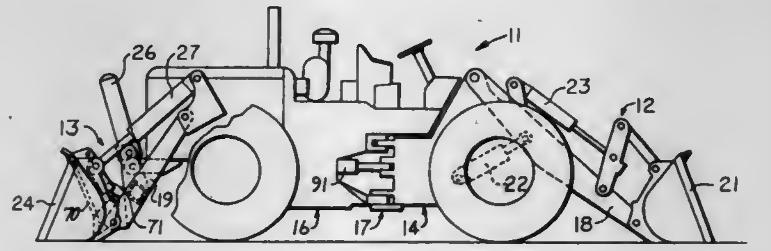
Joseph M. Silver, 185 23rd St., Ogden, Utah 84401
Filed June 23, 1969, Ser. No. 835,453
Int. Cl. B65g *67/24*
U.S. Cl. 214—46 **10 Claims**



An elevating ramp for use with beet pilers. The ramp is arranged to have a level dump section, an upwardly inclined approach-section and a downwardly inclined exit section. The exit section includes a portion arranged to be raised such that it forms a level or upwardly extending continuation of the level section and the level section includes pivotable hopper plates through which trucks positioned on the level section and the raised down section can dump their loads.

3,606,051
HYDRAULIC IMPLEMENT CONTROL CIRCUIT

Wayne A. Peterson, R.R. 3, Kurt and Kent Roads 60435, and Edward A. Wirtz, R.R. 3, McClintock Road 60436, both of Joliet, Ill.
Filed Jan. 26, 1970, Ser. No. 5,577
Int. Cl. B66f *9/00*
U.S. Cl. 214—140 **12 Claims**



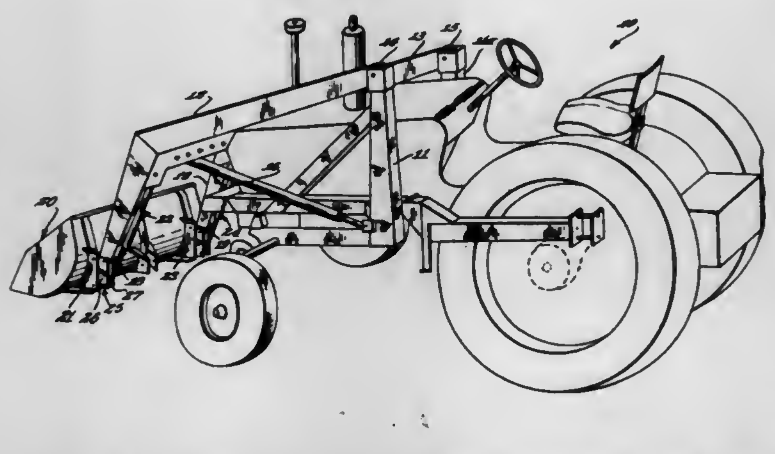
A hydraulic circuit for a machine having implements arranged on two portions of the machine, a fluid tank and implement control valve assembly associated with each implement, a pump for drawing fluid from one of the tanks and delivering it to the control valve assemblies with conduits for returning exhaust fluid to either of the tanks, a fluid equalizing line and an air equalizing line interconnecting the two tanks to assure an adequate supply of hydraulic fluid in each tank.

3,606,052
LOADER ATTACHMENT QUICK COUPLER DEVICE

James L. Schurz, Sioux Falls, S. Dak., assignor to Du-Al Manufacturing Company, Sioux Falls, S. Dak.
Filed July 3, 1969, Ser. No. 838,841
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 **1 Claim**

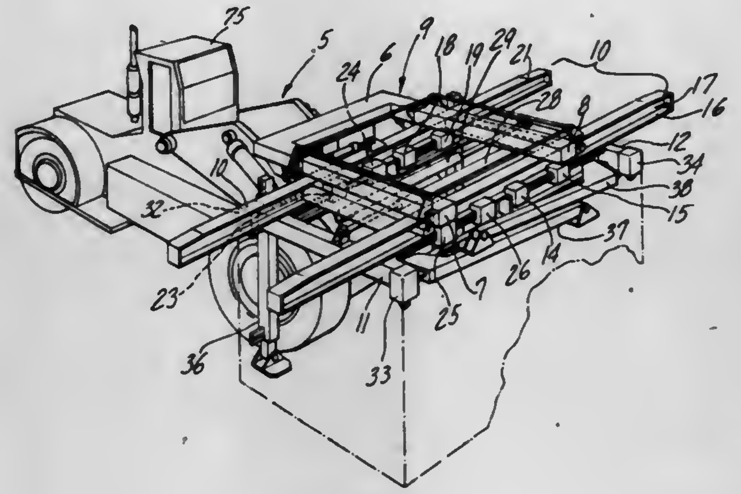
A quick-connect-disconnect coupler for attaching loading implements to the forward end of a lifting and dumping type boom assembly. Coupling is accomplished by manipulation of the hydraulic rams of the loader and includes automatic latching of the implement and boom

assembly. The latch mechanism may be locked by insertion of a locking pin. Upon release of the latching mechanism, the implement may be uncoupled by reverse operation of the hydraulic rams.



3,606,053
GRAPPLER-SPREADER FOR CANTILEVER-BOOM TRUCKS

Donald R. Whiteman, Roxboro, N.C., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Dec. 15, 1969, Ser. No. 884,986
Int. Cl. B66c *1/30*
U.S. Cl. 214—147G **7 Claims**

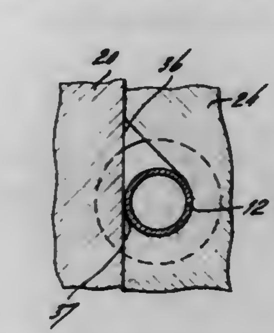


An expandable spreader and grappling device, termed herein a grappler-spreader, for top-lifting cargo containers and bottom-lifting containers, piggyback trailers, etc. particularly adapted for use on large front or side lift trucks or other vehicles which provide a cantilever-type lifting boom. For bottom-lifting, the device necessarily has grappling arms which are retractable in order that the top-lifting mechanism may be used more effectively. In the present instance, the arms, which are on the side of the spreader toward the supporting vehicle, are shortenable to a length within the height of a container.

3,606,054
METHOD FOR STABILIZING A PLURALITY OF ABUTTING RECTILINEAR SURFACES

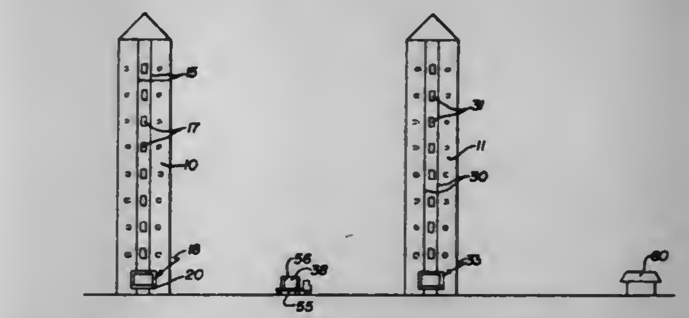
James A. Miller, Rte. 1, Box 225, Tiffin, Ohio
Filed Apr. 15, 1969, Ser. No. 816,205
Int. Cl. B65g *1/14*
U.S. Cl. 214—152 **2 Claims**

Method for stabilizing a plurality of abutting rectilinear surfaces, so as to hold the surfaces in longitudinal and lateral alignment in a desired support plane, particularly a method for so stabilizing a plurality of squared spool ends. The method includes notching opposed portions of the abutting surfaces so as to define a cylindrical aperture, then securing the surface against lateral movement by imposing a cylindrical force within the aperture and securing the surfaces against longitudinal movement by applying opposed lateral forces radially outwardly of said aperture on both sides of said abutting surfaces.



3,606,055
GOODS MOVING METHOD

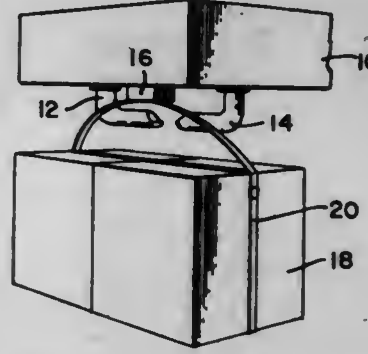
Berge M. Heede, Jr., Greenwich, Conn., and James K. McGuigan, North Vancouver, British Columbia, Canada, assignors to Sky-Van Limited, Vancouver, British Columbia, Canada
Filed May 23, 1969, Ser. No. 827,384
Int. Cl. B65g *63/06*
U.S. Cl. 214—152 **13 Claims**



There are disclosed a method of and apparatus for moving goods between multi-storied buildings. A container in which the goods are loaded is latched to a lift unit mounted on a first building to be transported by said unit to a vehicle, is transported by said vehicle to a second building, and is latched to a lift unit mounted on the second building to be transported thereby to a desired floor of said building.

3,606,056
STRAPLIFT LOADING SYSTEM

Howard Morgan, Vancouver, British Columbia, Canada, assignor to Skagit Corporation, Sedro Woolley, Wash.
Original application Jan. 25, 1968, Ser. No. 706,739, now Patent No. 3,493,259, dated Feb. 3, 1970. Divided and this application Aug. 20, 1969, Ser. No. 851,571
Int. Cl. B66c *1/18*
U.S. Cl. 214—152 **5 Claims**

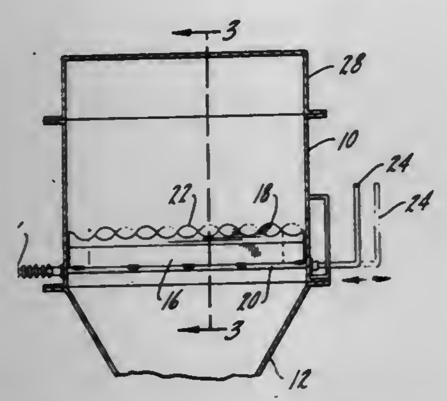


A strapped load can be lifted by positioning a straplift device over the load and horizontally slewing load-lifting arms of the straplift device through the top load-lifting strap arc of the strapped load from the high point of the arc and suspendingly lifting the load by the strap.

3,606,057

BAG OPENER

Robert June II, Birmingham, Mich., assignor to
Triskelion Corporation, Franklin Park, Ill.
Filed Apr. 2, 1970, Ser. No. 25,196
Int. Cl. B65b *69/00*
U.S. Cl. 214—305 8 Claims

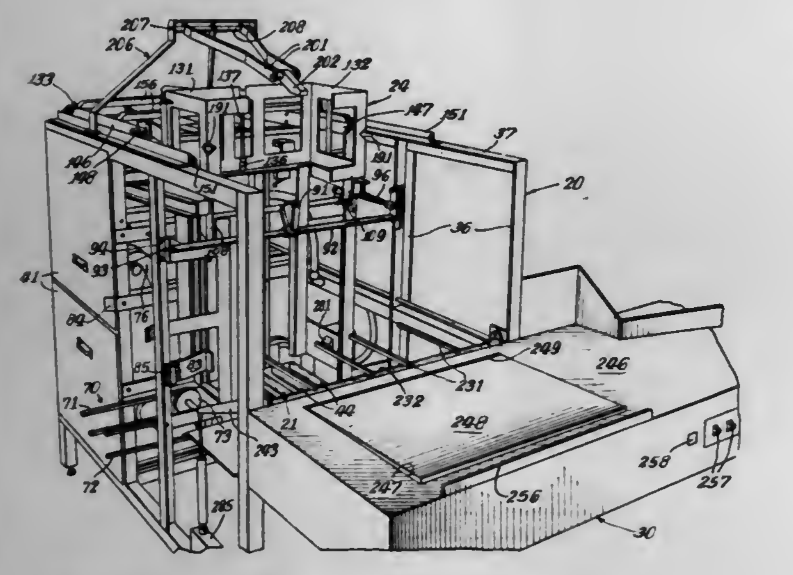


A bag receiving hopper having two hinged blades therein. The blades having undulating cutting edges and being arranged for side-by-side contact during cutting. One of said blades being longitudinally displaceable with respect to the other and said blades being pivoted away from each other during the bag emptying operation. A cover is provided for said hopper to retain dust within said hopper and said hopper communicates with a product receiving hopper located therebelow. Said product receiving hopper has conveyor means communicating therewith.

3,606,058

CASE CUTTING MACHINE

Allan C. Davis, Baltimore, Md., assignor to
The Meyercord Co., Wheaton, Ill.
Filed Dec. 18, 1968, Ser. No. 784,776
Int. Cl. B65b *69/00*
U.S. Cl. 214—305 22 Claims

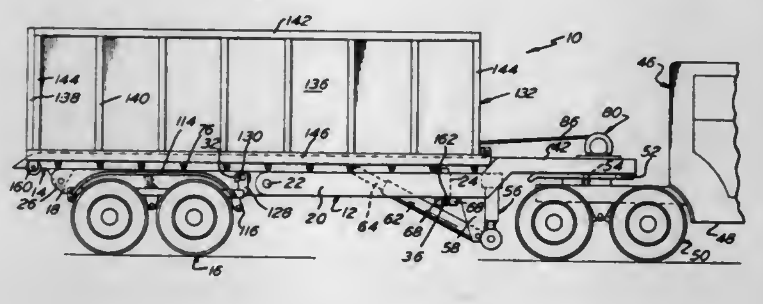


This disclosure deals with a machine for automatically cutting a case into two parts and breaking the two parts apart to make the contents of the case accessible. The machine moves a case in a first direction between a pair of spaced cutting blades which slit two sides of the case. The case is then moved in a second direction between a second pair of cutting blades which slit another two sides of the case, the second direction being at an angle to the first direction. The four blades are located in a single plane, thus dividing the case into two parts. The portion of the machine which moves the case in the second direction is also operable to break the two parts of the case apart after the case has been moved past the second pair of blades.

3,606,059

ROLL-OFF TRAILER

Herbert Haberle, Jr., 113 E. 4th St.,
Bridgeport, Pa. 19405
Filed Dec. 15, 1969, Ser. No. 885,167
Int. Cl. B60p *1/28*
U.S. Cl. 214—505 20 Claims

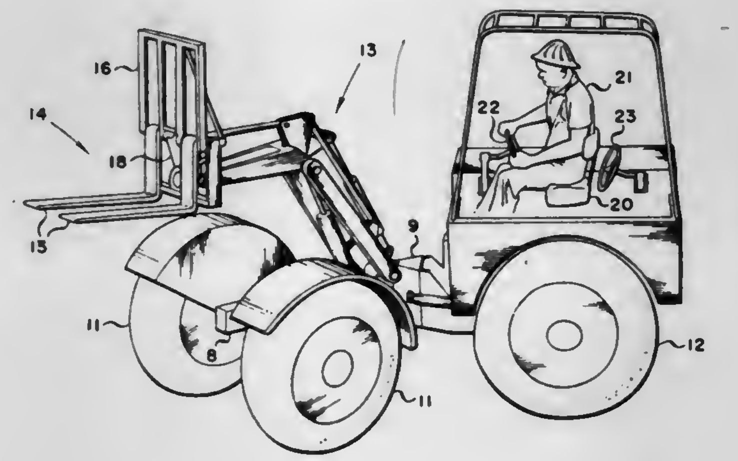


A roll-off trailer comprising a support frame and a main frame pivotally mounted thereon at the rear thereof. The rear wheels of the trailer are slidable relative to the support frame whereby they may be moved from the rear of the support frame to an intermediate point on the support frame. The support frame comprises two pivotally linked sections which are linked at the intermediate point to which the rear wheels may be moved. By pivoting the support frame at the intermediate point, a smaller roll-off angle is attained than that which would be obtained when using the prior art unsplit support frames on roll-off trailers. Having the smaller roll-off angle facilitates the loading and unloading of container bodies and cargo on the main frame.

3,606,060

MATERIAL HANDLING VEHICLE

David R. Fleming, Mountain View, and Edward H. Jacobsen, Menlo Park, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Nov. 28, 1969, Ser. No. 880,638
Int. Cl. B66f *9/00*
U.S. Cl. 214—771 3 Claims

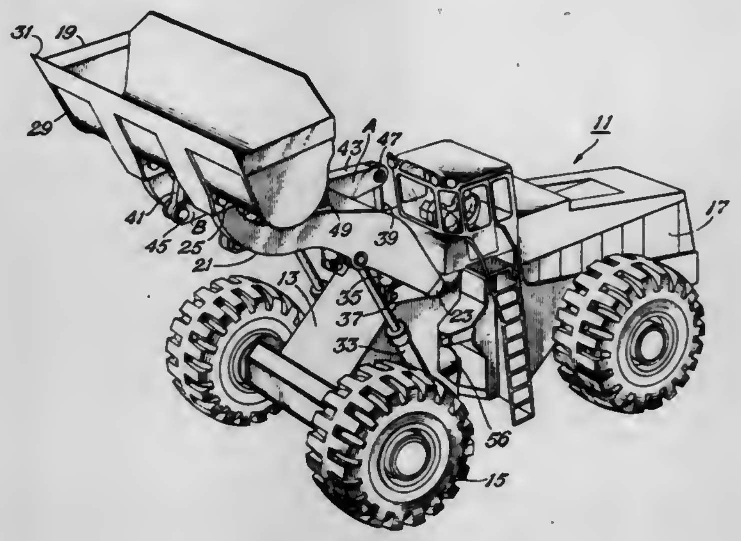


A material handling vehicle adapted for rough terrain operations having pantographic linkage means for lifting a load from the terrain and for positioning the load over the vehicle chassis for transport.

3,606,061

FRONT END LOADER TYPE VEHICLE

Lloyd A. Molby, Longview, Tex., assignor to
R. G. LeTourneau Inc., Longview, Tex.
Filed June 23, 1969, Ser. No. 835,464
Int. Cl. E02f *3/80*
U.S. Cl. 214—776 4 Claims

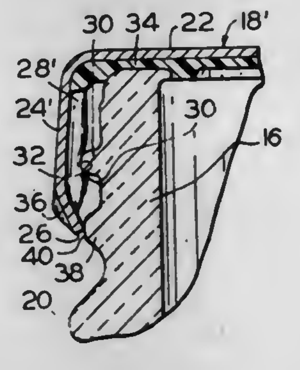


This specification discloses an improvement in a front end loader type vehicle characterized by a linkage arrangement between a tilting means and a bucket that inherently effects a normal ground level loading position of the bucket with the desired tilt attitude when the bucket is merely lowered from its full dump tilt at its top position. No skillful or time-consuming cooperative manipulation between the tilting means and an elevating means is required. To accomplish the above result without significant engineering sacrifices, there is employed, inter alia, a bell crank that has a ratio of lengths of a second lever arm, connected with the bucket, to a first lever arm, connected with the tilting means, of 1.4–2.0. The other components are selected to effect nearly optimum angles of tip back, carry and dump; and to enable elevating the loaded, tilted back bucket to the top without spilling the load by merely elevating the bucket, without adjusting the tilting means.

3,606,062

BOTTLE STRUCTURE FOR CRIMP ON-TWIST OFF CAPS

Jacob O. Frisch and Wayne H. Sanders, Olympia, Wash., assignors to Olympia Brewing Company, Olympia, Wash.
Filed Mar. 9, 1970, Ser. No. 17,364
Int. Cl. B65d *41/04*
U.S. Cl. 215—43 5 Claims

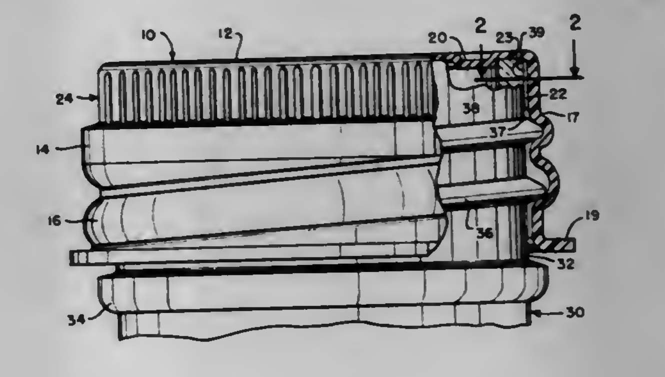


A bottle has its neck portion provided with a multiple thread structure which will receive and hold a pressure applied crown or crimp on type metal cap and which will enable the cap to be more easily twisted off than prior constructions. The lower part of the thread structure terminates in an outwardly projecting circumferential ring having an outer cylindrical surface substantially parallel to the axis of the neck of the bottle. The outer diameter of this ring is substantially equal to the outer diameter of the threads and is positioned on the neck so that the lower edge of the cap contacts the mid portion of this surface. Also the ridges of the mold parting lines on the bottle neck are positioned so that each crosses one thread only near the lower end of the thread.

3,606,063

THREADED PLASTIC CLOSURE

Edmund Childs, Longmeadow, Mass., and Raymond Ostrowski, Florence, S.C., assignors to The KLM Company, Stratford, Conn.
Filed May 22, 1969, Ser. No. 826,973
Int. Cl. B65d *41/04*
U.S. Cl. 215—43 6 Claims

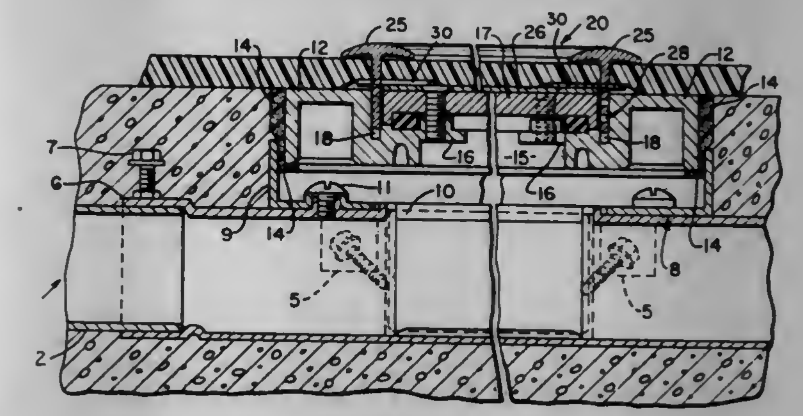


A thermoformed screw type closure of semi-rigid material having a plurality of projections located between the uppermost point of the thread and the top of the closure which is recessed to lie inwardly of the root of the thread to engage the neck of a container onto which the closure is to be applied. The projections deform upon screwing down of the closure onto the container producing a good seal and fit and preventing the closure from backing off. A die is also disclosed for making closures of the foregoing type which utilizes the recessed portions of the closure as an aid in removing the closure from the die.

3,606,064

FLOOR COVERING TRIM FOR UNDERFLOOR JUNCTION BOXES

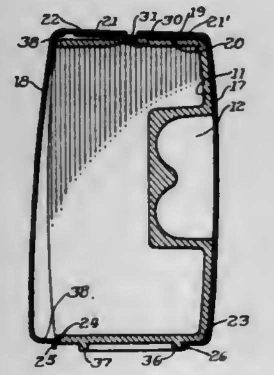
De Forest D. Butler, Oxford, Ohio, assignor to Square D Company, Park Ridge, Ill.
Filed Feb. 2, 1970, Ser. No. 7,762
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.8 11 Claims



A plurality of elongated frame members are detachably connected at their adjacent ends to provide a closed trim frame. Each member is of a T-shape cross section, having a decorative horizontal top wall and a depending side wall. A metal sheet or pan is enclosed by the side wall and faces the top of the frame. It is detachably connectable to the side wall in parallel relation to the plane of the top wall at different selected distances from the top wall by means of tongues on the sheet received in selected openings in the side wall, so as to adapt the frame to different carpet thicknesses. In installed position of the trim frame, the sheet is juxtaposed in load transmitting relation on a junction box cover.

3,606,065
CAMERA ENCLOSURE

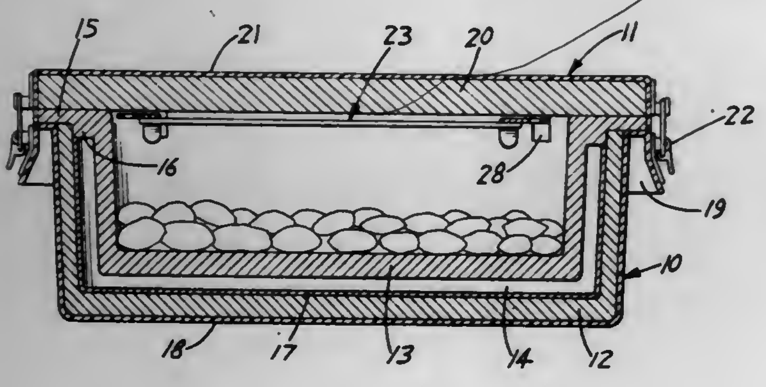
Richard K. Carlson, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 2, 1969, Ser. No. 854,487
Int. Cl. B65d *7/12;* **G03b** *17/02*
U.S. Cl. 220—4R **6 Claims**



This invention consists of an enclosure which is of shell-like or tubular formation, being of polygonal cross-section and open at its ends in order to fit compatibly about a body member or mechanism having shouldered portions around the body. The enclosure is provided with a hinge on one part of its surfaces, and resilient lips on another part thereof to releasably engage the body member.

3,606,066
INSULATED GRILL AND FIRE BUCKET

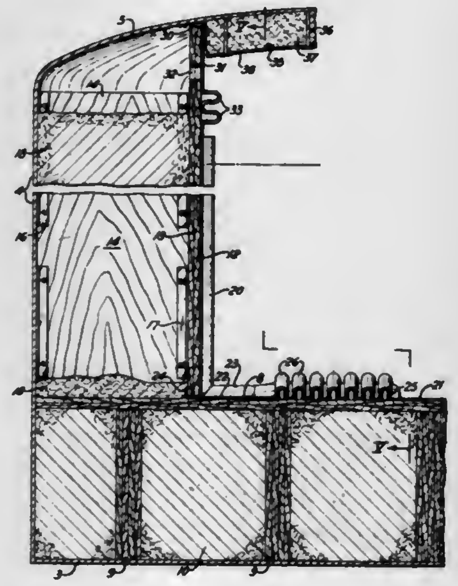
Maurice N. Anderson, 3301 Wendhurst Ave. NE., Minnneapolis, Minn. 55418
Filed Aug. 28, 1969, Ser. No. 853,774
Int. Cl. B65d *25/18*
U.S. Cl. 220—9R **4 Claims**



A molded heat insulative open-topped container for ignited fuel, having a closely fitting cover for extinguishing the fuel when placed over the open top. Depending upon its size, the container may be used as a firebox for a cooking grill, or as a receptacle for receiving the fuel from a grill firebox for quickly extinguishing and conserving the fuel for reuse. Preferably the container is molded from a micaceous material admixed with a hardenable binder. Desirably the container is double-walled to reduce its weight and provide an insulating air cell. A liner of heat reflective material may be used within the cell to direct heat from the fuel inwardly to the cooking zone.

3,606,067
STORAGE RECEPTACLE FOR LIQUEFIED GAS

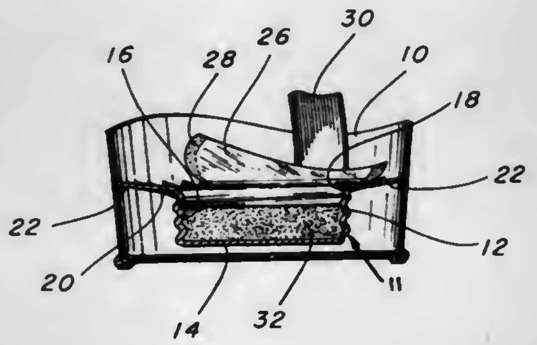
Edward L. Jones, 1281 Beagle Drive, Bethel Park, Pa. 15102
Filed Feb. 6, 1969, Ser. No. 797,200
Int. Cl. B65d *7/22*
U.S. Cl. 220—10 **6 Claims**



A tank has a relatively flexible side wall enclosed by a jacket that has a rigid side wall spaced from the tank wall. Rigid panels encircling the tank wall in engagement with it are spaced from the jacket side wall by means of vertical struts. The panels and struts are made of material of very low heat conductivity and transfer the outward pressure of the filled tank to the jacket side wall. The space between the panels and the jacket is filled with thermal insulation. The tank is provided with expansion joints to allow its side wall to remain against the panels under all conditions.

3,606,068
CONTAINER WITH INSERT

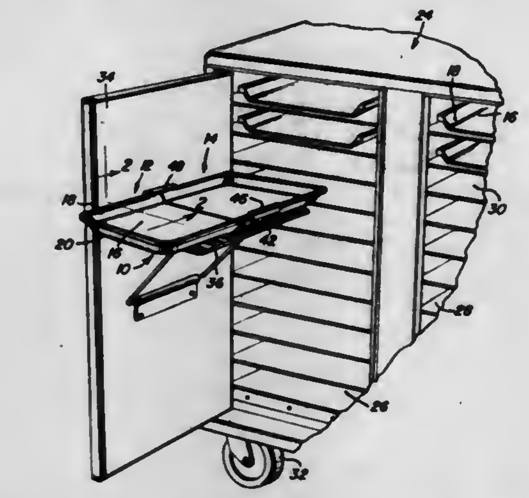
Charles E. Palmer, Turnpike Road, Somers, Conn. 06071
Filed May 7, 1969, Ser. No. 822,626
Int. Cl. B65d *85/00, 25/00*
U.S. Cl. 220—20 **7 Claims**



An insert for assembly in a container comprises a body which has an interior recess and a gripping portion projecting outwardly about the periphery thereof. The gripping portion is designed to engage the sidewall of a container so as to secure the insert therein.

3,606,069
DETACHABLE TRAY UNIT

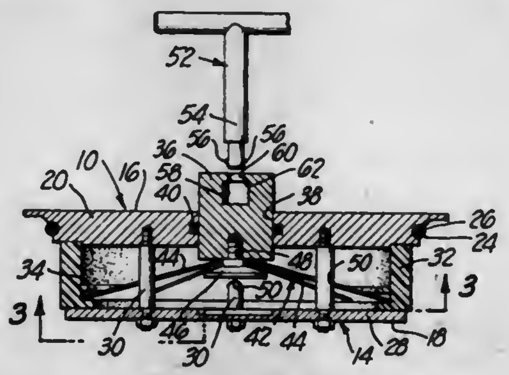
Hertzel Harrison, North Miami, Fla. (℅ Mercury Manufacturing Co., 226 W. 23rd St., Hialeah, Fla. 33010)
Filed Feb. 19, 1969, Ser. No. 800,548
Int. Cl. B65d *7/08, 7/32*
U.S. Cl. 220—23.4 **4 Claims**



A tray unit incorporating two half tray units and structural devices for detachably interconnecting the units to form a complete carrying tray.

3,606,070
LOCKABLE TANK CLOSURE WITH EXPANDABLE PLUG

Willard W. Shepherd, Whittier, Calif., assignor to Shepherd Machinery Co., City of Industry, Calif.
Filed Oct. 6, 1969, Ser. No. 863,942
Int. Cl. B65d *39/12*
U.S. Cl. 220—24.5 **8 Claims**

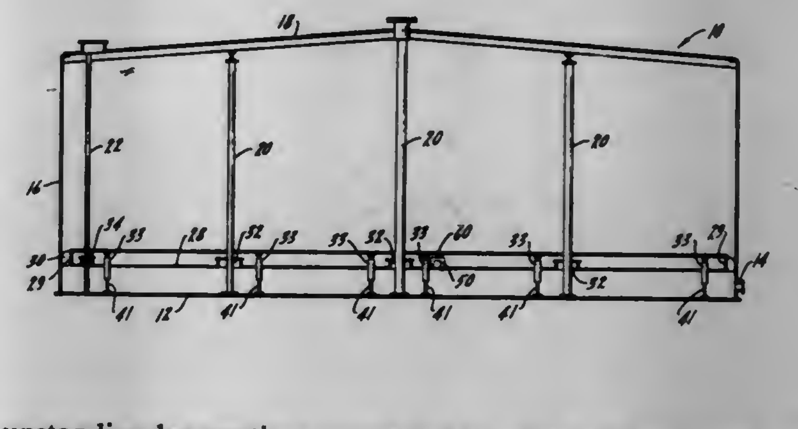


A lockable closure for a fuel tank filler opening comprising a frame carrying a radially expandable, annular plug engageable with the periphery of the filler opening to lock the closure therein. The annular plug is expanded radially by a plug expanding means which is responsive to axially inward movement of a central actuator carried by the closure frame adjacent the outer end thereof. The central actuator projects axially outwardly beyond the outer end of the closure frame prior to actuation of the plug expanding means to provide a visual indication that the closure has not been locked. The outer end of the closure frame carries an annular seal engageable with the periphery of the filler opening. The annular plug may be formed of an elastomeric material to provide a second annular seal when the closure is locked.

3,606,071
FLOATING ROOF DRAIN

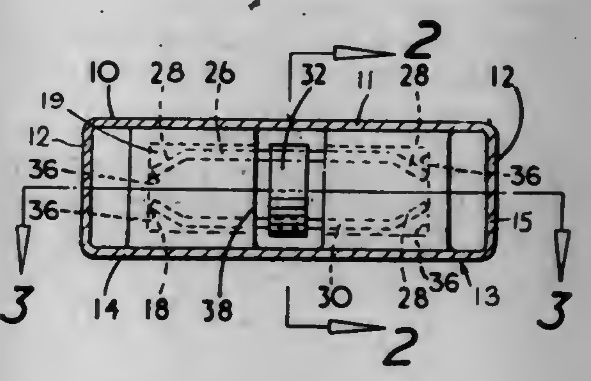
Robert B. Wagoner, Griffith, Ind., and John S. Kinghorn, Houston, Tex., assignors to Aerojet-General Corporation
Filed Feb. 27, 1970, Ser. No. 15,112
Int. Cl. B65d *87/18*
U.S. Cl. 220—26D **5 Claims**

A method and apparatus for removing liquid from a sunken floating roof of a liquid storage tank. The method comprises the steps of: withdrawing liquid from below the sunken floating roof; and siphoning liquid from above the floating roof to below the floating roof when the liquid lever of the tank is below the accumulated liquid above the floating roof. The apparatus includes a generally inverted U-shaped siphon drain having first and second upstanding leg portions connected together at their respective upper ends by a connecting portion; the bottom end of the second portion extends below the roof and the bottom end of the first portion is positioned above the roof. A check valve is attached to the connecting portion to allow trapped air to escape from the pipe only in a vertically upward direction.



3,606,072
BOXES, CASES AND THE LIKE

Thomas William Pinchin, Evesham, Worcester, England, assignor to Willmotts Limited, Evesham, Worcester, England
Filed July 25, 1969, Ser. No. 844,941
Claims priority, application Great Britain, Aug. 8, 1968, 37,855/68
Int. Cl. B65d *43/16*
U.S. Cl. 220—31S **3 Claims**

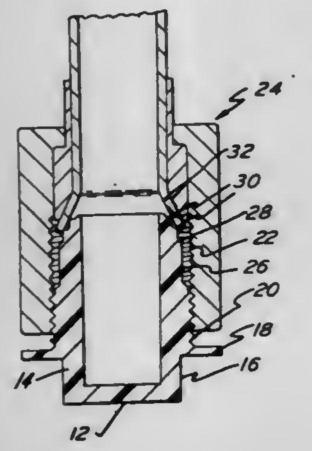


A box includes a body portion and a lid formed integrally with the body portion as a one-piece moulding of a synthetic plastics material. The lid is connected to the body portion by a web extending between side walls of the body portion and lid which are co-planar when the lid is closed. The side walls provide means for attachment of a spring clip which biases the lid into either a fully open position or a fully closed position.

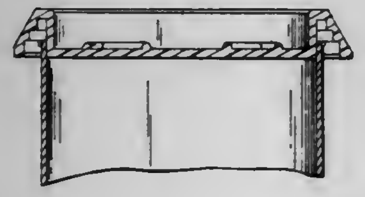
3,606,073
CAP FOR FLARE FITTING

Joseph Anthony Burke, Elizabeth, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Dec. 16, 1969, Ser. No. 885,417
Int. Cl. B65d *41/04*
U.S. Cl. 220—39 **3 Claims**

A plastic cap, for pressure-sealing a tubular threaded flare fitting and protecting its threads, is provided with cooperating threads and a raised thin annular surface on a beveled surface of the cap so that the annular surface engages with a beveled surface of the fitting in sealing relationship.

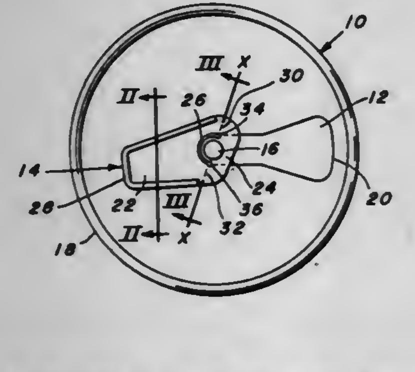


3,606,074
MULTIPLE PURPOSE GRIPPING LID
Robert M. Hayes, 24 Webster Ave.,
Somerville, Mass. 02143
Filed July 24, 1969, Ser. No. 844,437
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 5 Claims



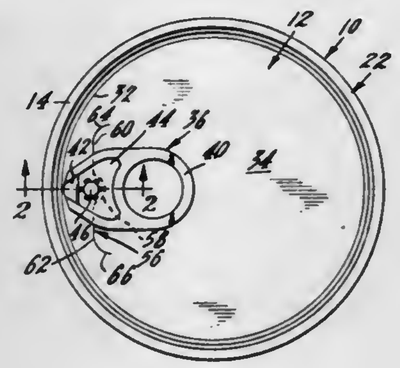
A multiple purpose lid suitable for open cans and other containers of various sizes has a closed top and a side wall shaped to resiliently grip the edges of different sized cans. There is shown an upwardly extending series of decreasing diameter ring surfaces formed in the inner surface of the side wall, adjacent ring surfaces joined by ledge surfaces which the can top can abut when the lid is in place. There is also shown a second inner side wall joined to the first, providing a smaller size gripping surface. There is also shown a combination in which the lid also defines a coaster acceptable for use in the home.

3,606,075
CONTAINER OPENING DEVICE
Lloyd Graham Dunn, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Jan. 5, 1970, Ser. No. 730
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 8 Claims



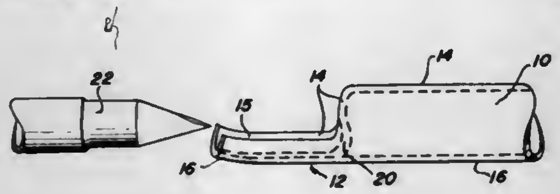
A tab for attachment to a tear-out section in a container wall, which tab has a cut line therein around the side of attachment aperture in the tab adjacent the handle portion of the tab and terminating on a line through the center of the attachment aperture in the tab to form a hinge line through the aperture whereby the handle portion of the tab can be rotated upwardly about the hinge line to form a rigid lever which can be manipulated to initiate rupture of the score line adjacent the attachment of the tab to the panel, and then be pulled to complete severance of the tear-out panel.

3,606,076
CONTAINER OPENING MEANS
Edward Herman Hanke, Barrington, Ill., and Leonard Thomas La Croce, Paramus, N.J., assignors to American Can Company, New York, N.Y.
Filed May 7, 1969, Ser. No. 822,509
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 6 Claims



In order to prevent rotation of a pull tab about a rivet which secures it to the scored end closure of a container, a plurality of recesses are indented into the upper surface of marginal edge portion of the tab which defines the opening in the tab in which the rivet is received. Upon formation of the rivet head to secure the pull tab to the end closure, the metal of the rivet head is caused to flow into the recesses in the tab to lock the latter against rotation on the rivet.

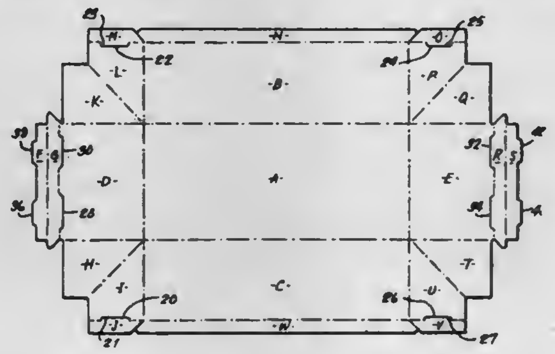
3,606,077
SHAPED SEAL CLOSURE
Clifford C. Faust, Riverside, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 23, 1969, Ser. No. 843,921
Int. Cl. B65d *7/42*
U.S. Cl. 220—66 8 Claims



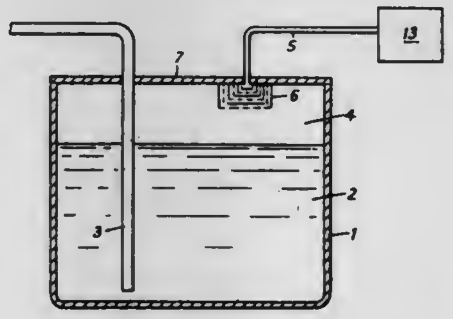
A shaped seal closure for a thermoplastic tubing comprises a diaphragm membrane extending across the tubing and integral with said tubing, and a trough integral with the tubing and coextensive with said tubing. The trough serves as a support and guide for a coupler, a needle or the like which will perforate the diaphragm.

3,606,078
CONTAINER AND BLANK THEREFOR
Floyd L. Phillips, Jr., Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Aug. 1, 1968, Ser. No. 749,374
Int. Cl. B65d *7/42, 5/24*
U.S. Cl. 220—62 8 Claims

A container and a blank for a container. The container is flanged at the tops of the sides and ends thereof. The flange at each end of the container is formed from extensions of the end panel of the container which have sandwiched therebetween locking flange panels that form extensions of the panels joining the end to the sides of the container.

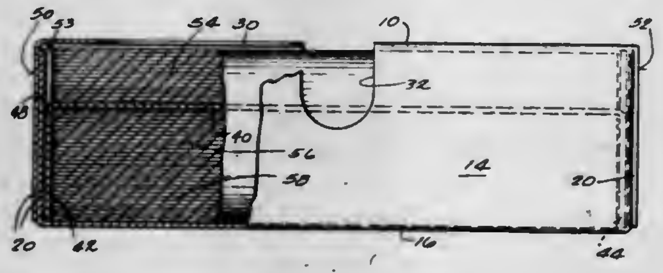


3,606,079
EXPANSION CHAMBERS FOR GAS DISCHARGE OUTLETS
Colin Ashton Eaton, West Drayton, Middlesex, England, assignor to Walter Kidde and Company, Incorporated, Belleville, N.J.
Filed Feb. 14, 1969, Ser. No. 799,378
Int. Cl. B65j *1/02*
U.S. Cl. 220—86 6 Claims



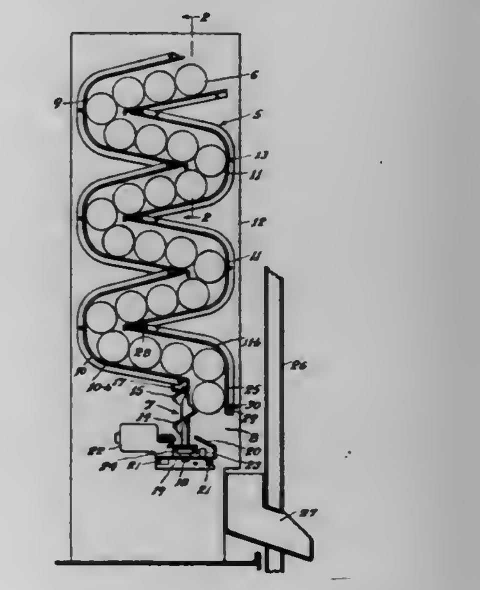
A container for combustible liquids or gases having a gas inlet whereby gas from a gas discharge outlet may be admitted under pressure for expelling the contents of the container, there being provided an expansion chamber at the inlet for ensuring that there is not a large build-up of static electricity in the incoming gas. The expansion chamber comprises flow reducing means for reducing the velocity of the gas as it enters the container and an earthed conductor with which the incoming gas makes intimate contact. The earthed conductor is preferably a wire mesh.

3,606,080
PLASTIC BAG PACKAGE
John E. Lynch, Oshkosh, and Anton Zeller, Neenah, Wis., assignors to Presto Products Inc., Appleton, Wis.
Filed Jan. 29, 1970, Ser. No. 6,835
Int. Cl. B65b *1/04*
U.S. Cl. 221—63 4 Claims



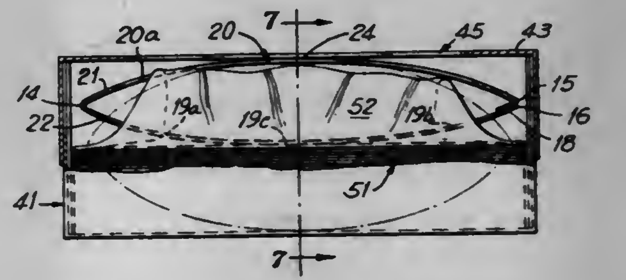
A box having a removable wall portion providing an access slot contains paper or plastic articles wound upon a bridge member formed from a cardboard strip which has its ends wider than its intermediate portion and folded to be abutments and disposed vertically in substantial contact with the ends of the box. Sandwich bags exemplifying the articles packaged have both ends in the lower part of the box, only their intermediate portions lying above the bridge member, the latter being about one-half so far from the top of the box as from its bottom.

3,606,081
SERPENTINE MAGAZINE VENDING MACHINE WITH SPIRAL DISCHARGE
Thomas H. Croteau, Hartford, and Robert L. Renfro, Windsor Locks, Conn., assignors to Walter E. Heller & Company, Chicago, Ill.
Filed Aug. 8, 1969, Ser. No. 848,530
Int. Cl. G07f *11/00*
U.S. Cl. 221—75 3 Claims



A vending machine having a serpentine magazine in the form of a chute for storing articles to be vended and a vertical spiral having a helical flange for dispensing said articles one at a time from the front of the machine; the articles being delivered by the chute over the top and down the front of the spiral onto said flange thereof.

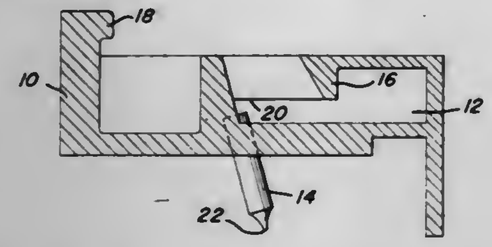
3,606,082
DISPENSING CONTROL MEMBER FOR INTERFOLDED TISSUES
Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, New York, N.Y.
Filed June 4, 1969,, Ser. No. 830,331
Int. Cl. A47k *10/24*
U.S. Cl. 221—52 12 Claims



A carton for dispensing interfolded flexible sheet materials which includes a flexible, dispensing control member, having a closed, generally elliptical profile. The control member is constructed from a single, folded sheet, preferably paperboard, the ends of which are seamed together. The control member, as formed, has two vertically aligned openings therein and is fastened to and dependent from the top wall of the dispensing carton so that the openings in the control member are in vertical alignment with an opening in the top wall of the dispensing carton, thereby allowing the top sheet in the carton to be grasped by reaching through the opening in the top wall and the openings in the control member.

3,606,083
MEASURING AND TRANSFERRING APPARATUS

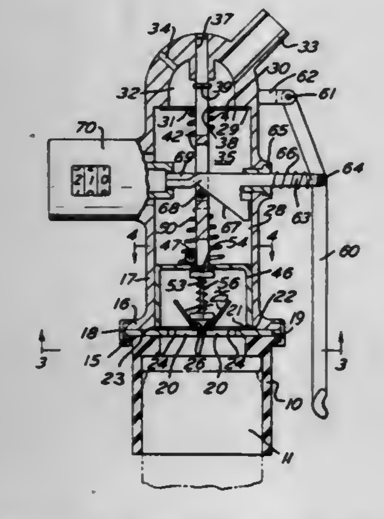
Richard L. Simon, Rye, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Aug. 18, 1969, Ser. No. 851,017
Int. Cl. B67b *7/00*
U.S. Cl. 222—1 **10 Claims**



An apparatus for the precise measurement and transfer of liquids in a centrifugal field is comprised of an annular disk having a plurality of reservoir chambers, capillary measuring tubes extending into the chambers and communicating to a discharge port on the disk, means for rotating the apparatus and means for collecting dispensed liquid.

3,606,084
DRINK DISPENSERS AND COUNTER

John J. Morrone, 114 Payson Ave., Audubon, N.J. 08106
Filed Dec. 15, 1969, Ser. No. 884,917
Int. Cl. B67d *5/22*
U.S. Cl. 222—38 **6 Claims**

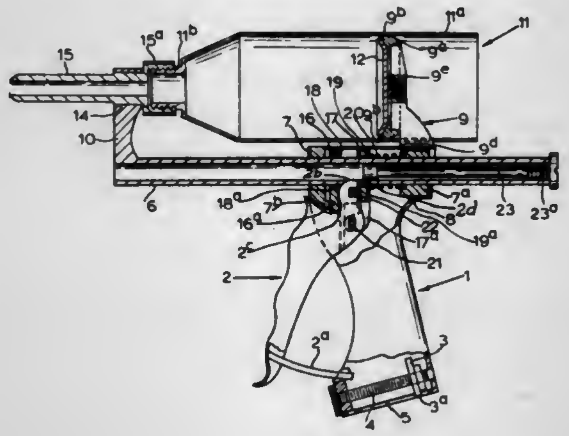


A drink dispenser and counter is provided having a housing with a spout and within the housing a measuring chamber with controlled wide opening inlet and outlet valves, an exteriorly accessible actuating handle for closing the inlet valves and opening the outlet valve. Also actuating a counter to record the number of drinks measured in the chamber and delivered through the spout.

3,606,085
DISPENSING GUN FOR PASTES AND LIKE SUBSTANCES

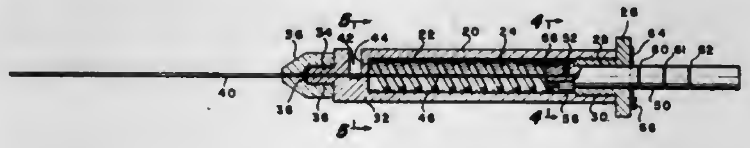
Ian Butler Spilman, 46 Paynters Ave., New Plymouth, New Zealand
Filed Aug. 25, 1969, Ser. No. 852,607
Claims priority, application New Zealand, Aug. 26, 1968, 153,576
Int. Cl. B67d *5/22*
U.S. Cl. 222—43 **21 Claims**

A dispensing gun for delivering substances such as pastes, for example for delivering medicinal pastes in the form of a drench to farm stock, the gun including a pistol butt handle with a support at its upper end and a carriage is slidably engaged in guides in the support. The forward end of the carriage is provided with an upstanding container holder for engagement with an outlet or dispensing nozzle for the container and the support has a thrust member upstanding therefrom and aligned with the forward container holder, such thrust member being arranged to co-operate with the piston member for expressing the contents of the substance container. The dispensing gun has a trigger associated with the handle and with carriage moving means so that manipulation of the trigger will move the carriage rearwardly relative to the handle and support so that in use the substance container is also moved rearwardly over a stationary piston and thrust member. Preferably the container is of the disposable kind and is constructed from an easily severable material such as a plastics material or a thin soft metal alloy material and the thrust member has a connecting part to the support with a sharpened forward edge capable of slitting the container lengthwise in permitting rearward movement of the container over the piston and thrust member, the piston being located forwardly of the sharpened connecting portion between the thrust member and support. The piston member for the container can be formed initially integrally with the walls of the container and be subsequently separable therefrom. The gun is also provided with an adjustable stop means to limit the trouble of the trigger relative to the handle in controlling the amount of paste to be dispensed from the container.



3,606,086
MICRODISPENSING DEVICE

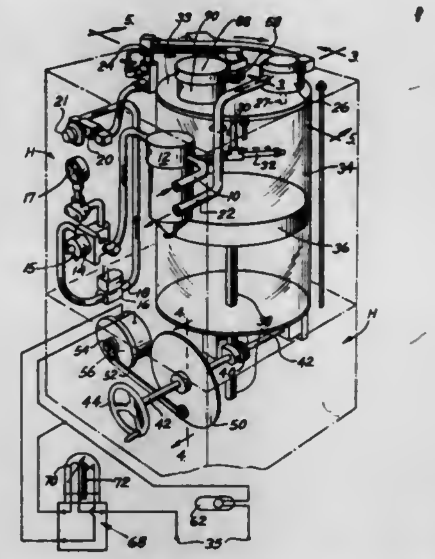
Michael E. Drummond, Springfield, and John E. Robinson, West Chester, Pa., assignors to Drummond Instrument Company, Broomall, Pa.
Filed Nov. 10, 1969, Ser. No. 875,082
Int. Cl. B67d *5/22*
U.S. Cl. 222—49 **12 Claims**



This invention is a microdispensing device into which a precision amount of liquid may be drawn and dispensed. The device includes a barrel having a bore and a disposable capillary tube removably held in communication with one terminal of the bore. A plunger moves through the barrel and the capillary tube, the plunger extending through an end cap in the opposite terminal of the barrel. Uniformly spaced annular recesses in the outer periphery of a plunger holder selectively engage a wire spring detent for determining by "feel" the amount of liquid dispensed. Travel limiting inserts removably positioned in the barrel regulate the length of the plunger stroke and consequently the amount of liquid drawn into and dispensed from the device.

3,606,087
POWDER SPRAY EQUIPMENT FOR OFFSET PREVENTION

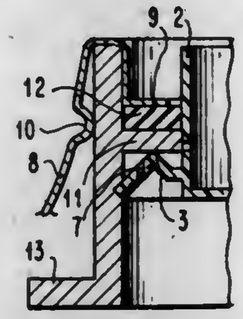
Laurice W. Ortman, Deerfield, Ill., assignor to Ortman-McCain Company, Chicago, Ill.
Filed Aug. 11, 1967, Ser. No. 660,052
Int. Cl. B67d *5/08*
U.S. Cl. 222—64 **3 Claims**



Equipment for spraying powder on freshly printed sheets of paper to prevent offset. A compressed air line discharges from a nozzle directed toward the sheet of paper and has a side inlet that picks up the powder from a container. To effect such pick-up, compressed air pressurizes the powder container. The powder is agitated in the container so as to form a cloud. To insure uniform consistency of the cloud a constant level of powder is maintained in the container.

3,606,088
MEMBRANE VALVE FOR SPRAY CONTAINERS

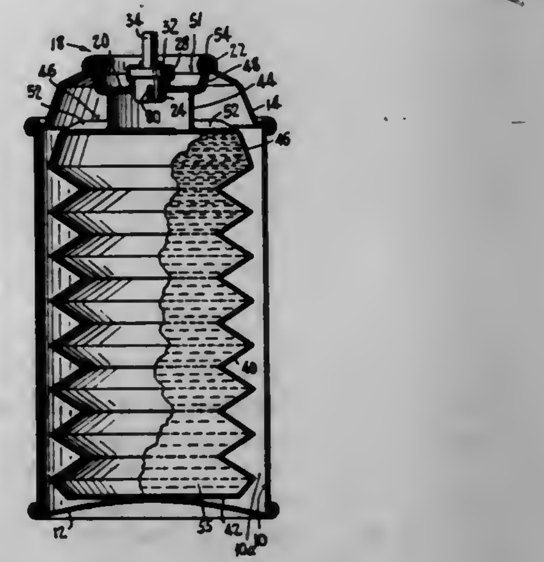
Walter Baltzer, Bad Ems, Germany, assignor to Beleggingsmaatschappij "Industriebank" N.V., The Hague, Netherlands
Filed Dec. 2, 1968, Ser. No. 780,321
Int. Cl. B65d *33/00*
U.S. Cl. 222—94 **32 Claims**



Membrane valve for spray containers includes a substantially plate-shaped member having a marginal edge adapted to be retained under stress substantially at the wall of a spray container, the plate-shaped member having a flexible annular zone between the marginal edge and a center portion thereof, the flexible annular zone being formed with an opening therethrough, an annular sealing lip formed on one side of the plate-shaped member around the center portion thereof and being prestressed into engagement with a valve seat and defining a closed chamber therewith and means for disengaging the annular sealing lip from the valve so as to provide communication between the chamber and the other side of the plate-shaped member through the opening in the flexible annular zone thereof.

3,606,089
PRODUCT-ISOLATING SACK FOR PRESSURIZED DISPENSERS

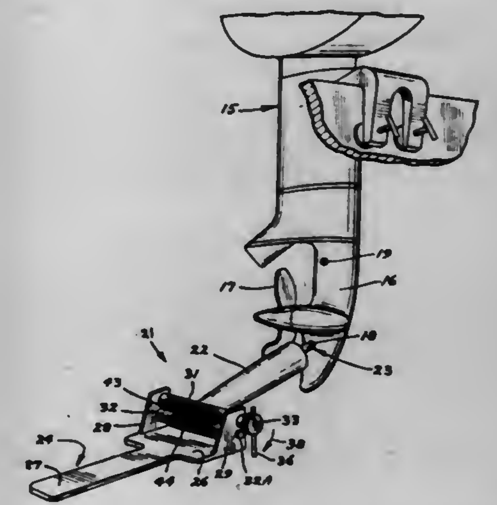
Charles D. Chambers, Huntington, Conn., assignor to Valve Corporation of America, Bridgeport, Conn.
Filed May 19, 1969, Ser. No. 825,787
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 **3 Claims**



A vertically collapsible product-isolating sack having a reduced neck portion at its top, through which the produce passes, and having below said neck portion an externally grooved annular shoulder adapted to fit within the top shoulder of the dispenser casing and to provide pasages within the casing shoulder for the charging of the casing with propellant liquid. During said charging the sack neck is supported above the casing neck and in spaced relation thereto, and the propellant liquid passes through the existing space between the necks and through the grooves of the sack shoulder, being brought into the casing.

3,606,090
DEVICE FOR DISPENSING MATERIAL FROM A TUBE

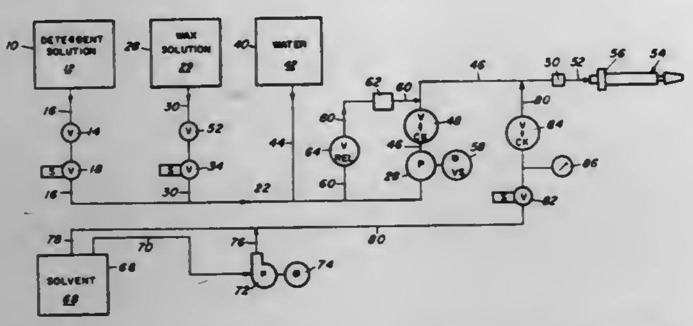
Orva W. Byers, 3035 Dutch Lane, Mound, Minn. 55364
Filed July 2, 1969, Ser. No. 838,537
Int. Cl. B65d *35/28*
U.S. Cl. 222—102 **16 Claims**



A device for progressively squeezing a flexible tube to inject fluid lubricant into the lower gear case of an outboard motor. The device has a frame carrying a pair of side-by-side rollers operable to squeeze a flexible walled tube. The tube has an outlet carrying an adapter threadably secured to the lower gear case of the outboard motor. Located within the adapter is a one-way cone-shaped valve operable to prevent reverse flow of lubricant from the gear case into the tube. The adapter containing the one-way valve can be an integral part of the outlet nipple of the tube.

3,606,091
MULTI-PRESSURE LIQUID DISPENSER SYSTEM

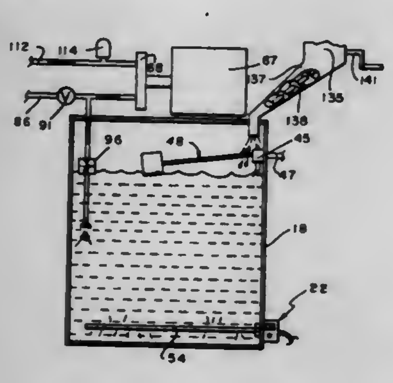
Leo A. Grisham, 1205 McKinley Ave.,
Ashland, Ky. 41101
Filed Mar. 31, 1970, Ser. No. 24,135
Int. Cl. B67d *5/60*
U.S. Cl. 222—132 9 Claims



This disclosure relates to a multi-pressure liquid dispensing apparatus for use in a self-service car wash system. A plurality of storage tanks containing a detergent solution, a wax solution, a solvent and water are interconnected by a series of conduits so that washing, rinsing, waxing and degreasing operations may be performed on an automobile. The apparatus utilizes a single hand-held spraying nozzle for dispensing the different solutions, and a rotary switch is provided for activating solenoid valves and two pumps so that the different liquids can be combined and dispensed through the nozzle. The washing and rinsing operation uses the high speed output of a variable speed motor to operate one of the pumps to produce high pressures for the operation. The waxing operation uses the low speed output of the variable motor. The degreasing operation uses the other pump at an extremely low pressure. During the washing operation, water and the detergent solution are used; the rinsing operation dispenses only high pressure water, the waxing operation dispenses a wax solution and water, and the degreasing operation dispenses only the solvent. Since these are dispensed through a single nozzle, the vehicle can remain in one location for all four operations.

3,606,092
MULTIPLE FLUID WASHING APPARATUS

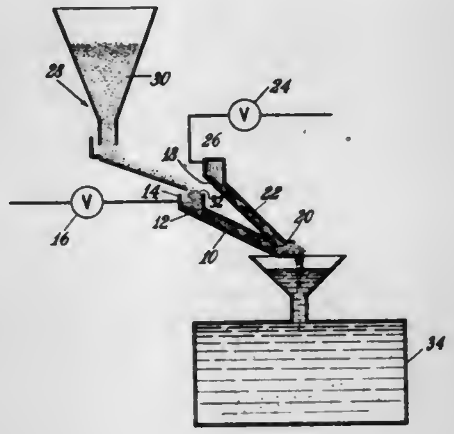
Klaus E. Kollmai, 211 S. Main Ave.,
Haysville, Kans. 67060
Filed Dec. 4, 1968, Ser. No. 781,003
Int. Cl. B67d *5/60*
U.S. Cl. 222—144.5 4 Claims



This invention is a compact fluid dispensing apparatus including a support means having heated, cleansing fluid therein; a pressure spray apparatus mounted upon the support means operable to impart pressure to a fluid received; a second fluid source connectable to the support means to add the second fluid to the cleansing fluid solution and, additionally, to supply the fluid directly to the spray apparatus for dispensing therefrom during the rinsing cycle; a heater element secured to the support means to heat the cleansing fluid; and a chemical supply means to add the required chemical to the cleansing fluid with the second fluid to maintain a consistent cleansing fluid mixture.

3,606,093
DISPERSING DEVICE AND PROCESS FOR USE

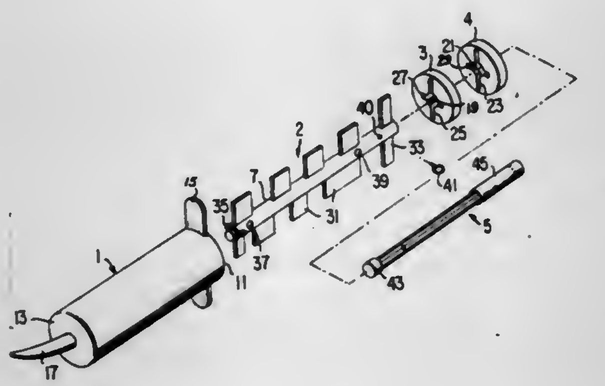
Frederick J. Morse, Monroe, N.Y., and Lincoln A. Carter, Ringwood, N.J., assignors to Union Carbide Corporation, New York, N.Y.
Filed Dec. 9, 1968, Ser. No. 782,126
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 2 Claims



A dispersing device which is useful in the preparation, under the non-shearing conditions, of solutions of materials which ordinarily are difficult to dissolve, is comprised of at least one surface over which passes a thin film of liquid, a dispenser for dispensing a narrow sheet of finely divided material onto the film and at least one mechanism for controlling the liquid flow and dispensing rates so as to provide a predetermined concentration of material in the solution.

3,606,094
MIXING AND DISPENSING SYRINGE

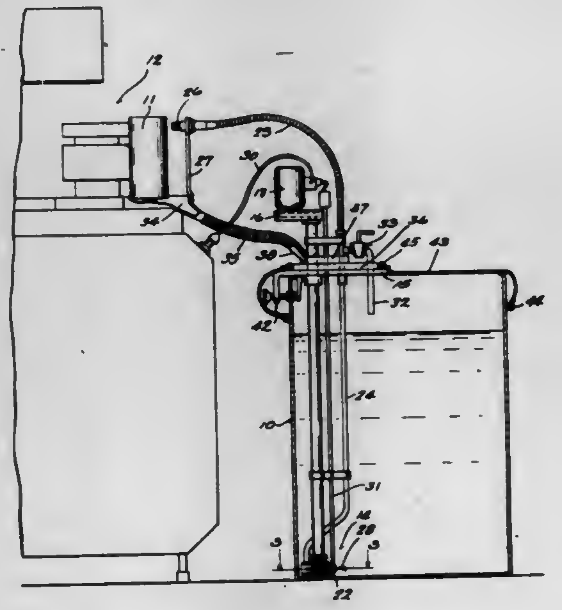
Peter B. Mills, 3502 Spring Circle, Decatur, Ga. 30032, and Arthur B. Silver, 3510 Rosewell Road NE., Apt. M-3, Atlanta, Ga. 30305
Filed June 5, 1969, Ser. No. 830,672
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 7 Claims



A mixing and dispensing device having a housing suitable for containing a fluid, a fluid outlet and containing a mixing device movable between first, second and third positions, such that when the mixing device is in its first position, the device is contained within the housing so as to be capable of subjecting a fluid contained within the housing to a mixing action, when the mixing device is in its second position, the device is partially removed from the housing and engagedly attached to a stopper, and when the mixing device is in its third position, the mixing device is again contained within the housing in engaging relationship with the stopper so as to form a piston which is used to urge a fluid contained within the housing through a fluid outlet.

3,606,095
FEEDER FOR HIGH VISCOSITY LIQUIDS

Hermann Kronseder, Berliner Str. 10,
Neutraubling, Germany
Filed Aug. 26, 1968, Ser. No. 755,221
Claims priority, application Germany, Sept. 7, 1967,
P 15 86 372.6
Int. Cl. B67d *5/62*
U.S. Cl. 222—146HE 5 Claims

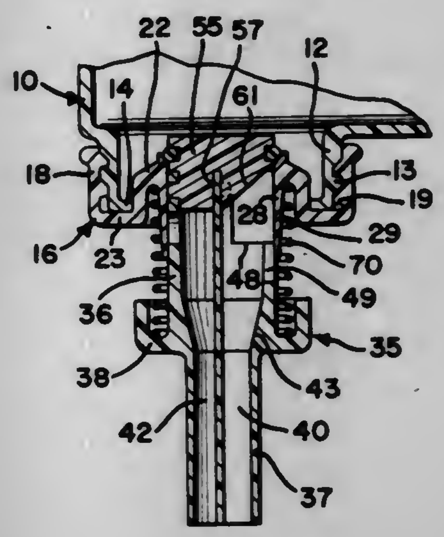


This disclosure relates to a portable feeder for high viscosity liquids, such as glue, in which a motor and pump are assembled unitarily with a hanger bracket by which the feeder may be hung on the side of a liquid container with the pump immersed in the liquid. The pump desirably has gears which protrude from the pump housing at the intake side to insure adequate loading of the liquid into the gear teeth. There is a heater adjacent the pump to soften highly viscous liquid such as glue.

3,606,096
LIQUID DISPENSING DEVICE

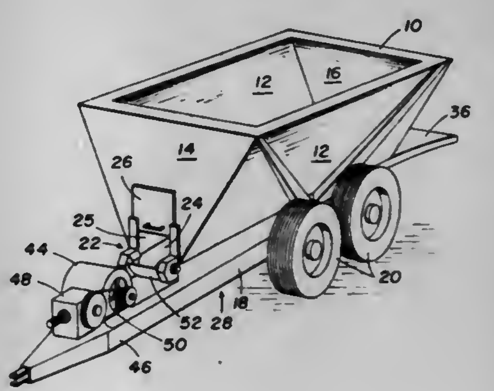
Charles G. Campbell, Miamisburg, Ohio, assignor to The Huffman Manufacturing Company, Miamisburg, Ohio
Filed Sept. 30, 1969, Ser. No. 862,351
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 10 Claims

A container is provided with a dispensing device including a cap-like housing which supports a spring-biased tubular valve member defining separate liquid and air passages having enlarged inner ends closed by a plug member. When the valve member is moved to its open position, the liquid passage opens through a large inlet to the container chamber prior to the air passage, and the end of a sleeve on the housing forms a seal with the valve member. When the valve member is moved to its closed position, the liquid passage opens directly to atmosphere so that no liquid is entrapped within the passage. The cap-like housing has an inner surface which cooperates with the neck of the container to form a radially expanding liquid tight seal therebetween.



3,606,097
APPARATUS FOR DISTRIBUTING GRANULAR MATERIAL AND THE LIKE

George B. Wall, Delhi, Iowa, assignor to Air-Spread, Inc., Delhi, Iowa
Filed July 15, 1969, Ser. No. 841,921
Int. Cl. A01c *15/04*
U.S. Cl. 222—176 11 Claims

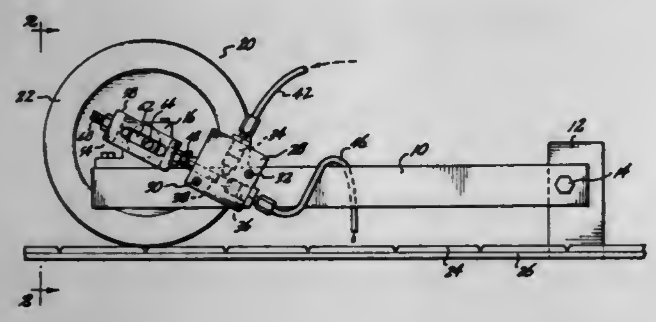


An apparatus for distributing granular material such as fertilizer or salt-sand mixtures for ice control, by using air as the conveying medium and propelling force to distribute the material over a selected area. The apparatus is used on mobile equipment either in crop farming or in ice control for highways and streets.

3,606,098
CONDITIONING LIQUID DISPENSER FOR A CONVEYOR

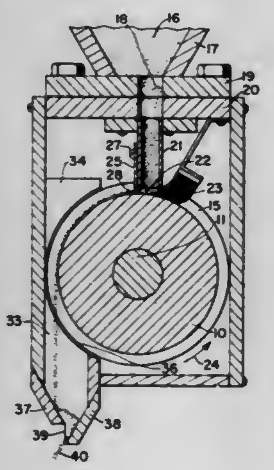
Charles A. Genther, 8180 Merrimount Drive,
Mercer Island, Wash. 98040
Filed July 11, 1969, Ser. No. 840,969
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 10 Claims

A reciprocating piston type metering device is secured to a support arm. A large diameter drive wheel is connected to one end of the axle; a small diameter cam wheel is connected to the opposite end of the axle; a bearing rotatably supports the axle on the support arm. The support arm is pivotally connected to a frame portion of a conveyor at a location placing the drive wheel in contact with a traveling runner of the conveyor. An eccentrically mounted pin extends axially from the cam wheel into an elongated guide slot formed in the side wall of a yoke connected to the piston. The cam wheel is between two end walls of the yoke which are spaced radially outwardly from the periphery of the cam wheel. An adjustable stop (e.g. a bolt) is threadably received in the end wall of the yoke distal the piston. A first conduit delivers conditioning liquid to the inlet of the metering device, and a second conduit leads from the outlet of the metering device to a discharge position above the conveyor runner.



3,606,099
APPARATUS FOR THE UNIFORM DELIVERY OF GRANULAR MATERIAL
John F. Benson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 26, 1970, Ser. No. 5,613
Int. Cl. G01f *13/00*

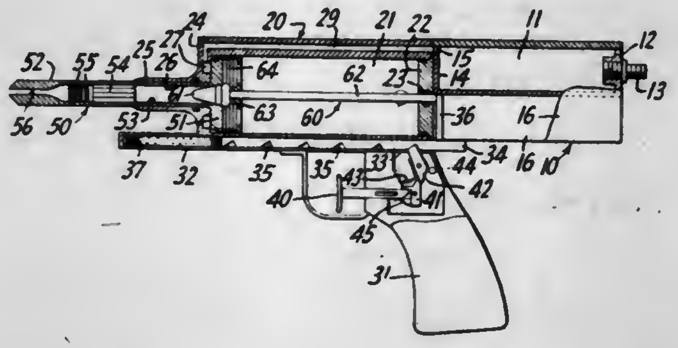
U.S. Cl. 222—312 **8 Claims**



An apparatus for continuously delivering a uniform supply of granular material, e.g. granular table salt, for application upon the surface of edible products, e.g. potato chips, moving beneath the applicator apparatus. The applicator is characterized by a continuously rotating drum having an annular groove which receives granular material from a feed tube projecting into the groove. An adjustable flow control gate projects radially into the groove. A flow control slot is formed between the gate and the groove which may be varied in width to control the flow of granules as the drum rotates. Granules flowing through the slot are conveyed in the groove to a chute where they fall by gravity until striking a series of baffles whereupon they are deposited upon the surface of the product being coated.

3,606,100
DEVICE FOR DISPENSING A CONCENTRATED FLUID STREAM
William E. Stapf, Alexandria, Va., assignor to AMF Incorporated
Filed Feb. 13, 1970, Ser. No. 11,210
Int. Cl. G01f *11/00*

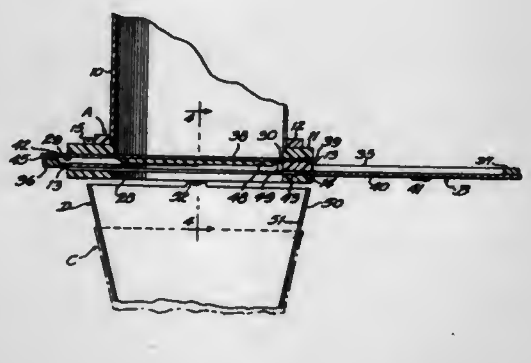
U.S. Cl. 222—320 **8 Claims**



A device for dispensing a concentrated fluid stream with substantial force utilizing a pressure fluid medium which does not effect the stored fluid to be dispensed until the device is triggered.

3,606,101
APPARATUS FOR DISPENSING CLINGING SUBSTANCES SUCH AS SHAVED ICE AND THE LIKE INTO RECEPTACLES
Clarence R. Wilhelmi, 2203 Midvale Ave., Los Angeles, Calif. 90064
Filed Jan. 2, 1969, Ser. No. 788,519
Int. Cl. G01f *11/28*

U.S. Cl. 222—447 **10 Claims**



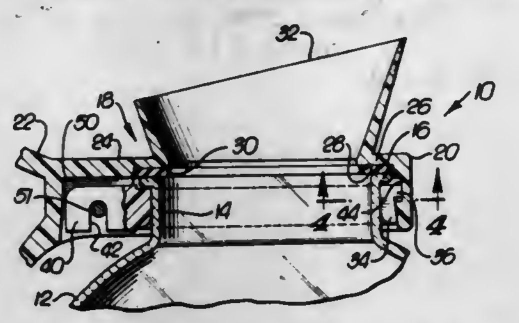
A dispenser for substances such as flaked ice which tends to cling to the dispenser surfaces, wherein a cutter blade and support plate, moving in unison in vertically spaced planes, are operable to remove a measured quantity of the substance from the bottom of a column thereof in a hopper, and to dispense it through a delivery funnel with a positive stripping action.

3,606,102
BEVERAGE DECANTER HANDLE AND SPOUT ASSEMBLY STRUCTURE
Thomas M. Lowry, Hacienda Heights, and Charles W. Punton, Pacific Palisades, Calif., assignors to Margaret A. Curtis, North Hollywood, Calif.
Filed June 20, 1969, Ser. No. 835,002
Int. Cl. A47j *19/14*

U.S. Cl. 222—475 **9 Claims**

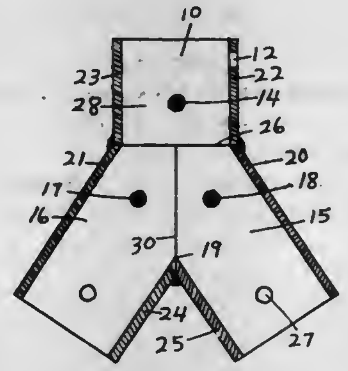
Apparatus for attaching a handle and pouring spout assembly to the neck of a glass flask having an outwardly beaded upper edge. A split locking ring engages around the neck of the flask under the bead, and a collar forming a part of the handle and spout assembly is engaged at

the front thereof by tongue and groove means with the locking ring, and is pivoted downwardly and rearwardly into overlapping relationship over the flask bead, and the ring and handle and spout assembly are interlocked proximate the rear of the collar to secure the assembly to the neck of the flask.



3,606,103
DIVIDER SPOUT
Billy R. Taylor, 210 Willow Wood, Levelland, Tex. 79336
Filed Oct. 29, 1968, Ser. No. 771,389
Int. Cl. B67d *3/00*

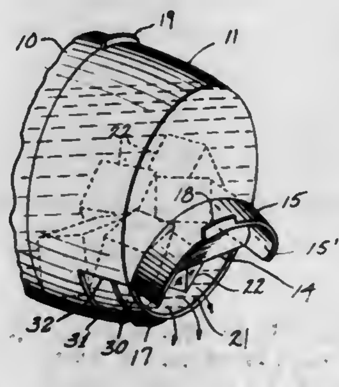
U.S. Cl. 222—478 **2 Claims**



A divider spout having scatter bars positioned to divide and disperse a gravity flow of material to the lower chambers and median dividing point of the inside lower chamber walls to result in division of this material.

3,606,104
CARAFES
Carl H. Rickmeier, Jr., Sheboygan, Wis., assignor to The Vollrath Co., Sheboygan, Wis.
Filed Nov. 10, 1969, Ser. No. 875,341
Int. Cl. B65d *5/72*

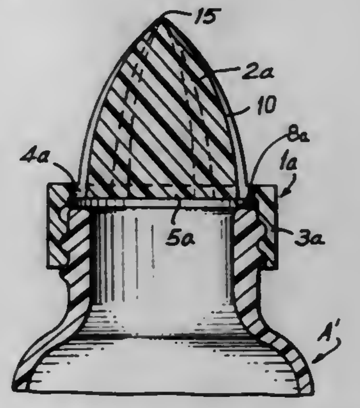
U.S. Cl. 222—498 **5 Claims**



A plastic drinking water carafe provided with a removable cover having an integral hinged lid portion which is normally yieldably snap-locked in a closed condition but which cover lid can be readily manually released for swinging movement upwardly to an open position to expose a restricted opening through which water can be poured from the carafe, said discharge opening being small enough to prevent ice cubes in the carafe from falling therefrom, which can cause annoying splashing or spillage.

3,606,105
ROTARY AND LONGITUDINALLY MOVABLE CAP WITH AXIAL DISCHARGE
Anthony Santore, 249 Calhoun Ave., New York, N.Y.
Filed Sept. 15, 1969, Ser. No. 857,994
Int. Cl. B67d *3/00*

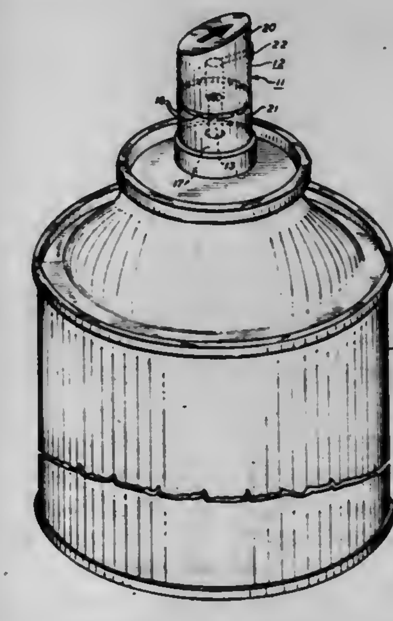
U.S. Cl. 222—520 **6 Claims**



A "squeeze-container" dispenser in which a cap, which is axially movable on the neck of the container between a sealing position and a dispensing position, has a first annular portion which, when said cap is in said sealing position thereof, is in engagement with the upper lip of the container for forming therewith a fluidtight circumferential seal, and said cap having a second annular portion which forms a substantially air-tight circumferential seal with the periphery of the neck of the container in both said positions. The cap is provided with at least one fluid passage located intermediate the aforesaid annular portions for permitting fluid to be dispensed therethrough when the cap is in said dispensing position thereof, and in response to squeezing the container.

3,606,106
TAMPERPROOF ACTUATOR
Edward R. Yuhas, Yonkers, N.Y., assignor to Fluid Chemical Company, Inc., Newark, N.J.
Filed June 19, 1969, Ser. No. 840,120
Int. Cl. B65d *47/10*

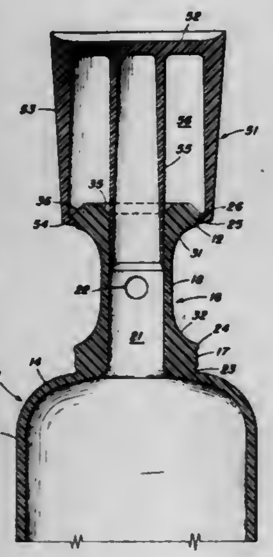
U.S. Cl. 222—541 **7 Claims**



A tamperproof actuator, for the dispensing of contents of a container, preventing dispensing and loss of contents of the container prior to initial use by the ultimate purchaser thereof.

3,606,107
PUSH-PULL CONTAINER AND CAP ASSEMBLY

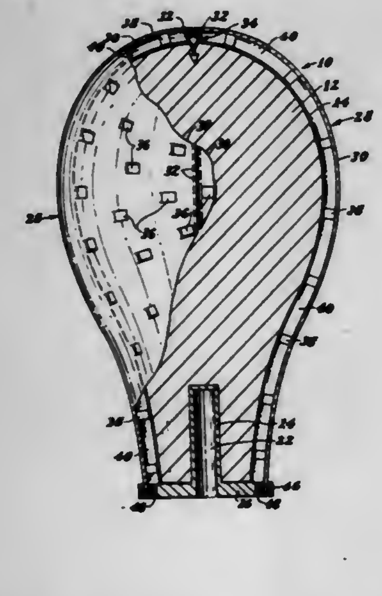
Gerald J. Ardito, Bayside, Jerome S. Newman, Floral Park, and Samuel E. Sarris, Jamaica, N.Y., assignors to Inventions Unlimited Incorporated, Glen Oak, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,583
Int. Cl. B65d *47/12*
U.S. Cl. 222—546 **20 Claims**



A material dispensing container provided with an elongated neck having a dispensing orifice in the side thereof. The neck of the container is also provided with engaging recesses. The cap of the container has a plunger which extends into the neck of the container and an outer portion which fits over the container neck. The lower extremity of the outer portion of the cap is provided with an inwardly extending peripheral engaging lip which cooperates with the engaging recesses of the neck of the container in open and closed positions. The plunger may also be provided with a resilient skirt which is compressed within the neck and outwardly biased to provide for sealing engagement, notwithstanding tolerance discrepancies.

3,606,108
WIG SUPPORT

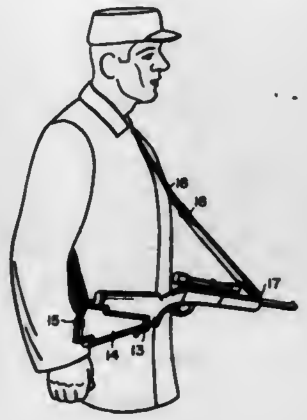
Ronald K. Baugh, Indianapolis, Ind., and Susan L. Mattox, West Carrollton, Ohio, now by change of name to Susan L. Baugh, by marriage (both of 1105G Westfield Court, Indianapolis, Ind. 46220)
Filed June 22, 1970, Ser. No. 48,120
Int. Cl. A41g *5/00;* **A41h** *5/00;* **D06c** *15/00*
U.S. Cl. 223—66 **6 Claims**



A wig support device which provides for the circulation of air interiorly of the wig supported on the device.

3,606,109
GUN SLING

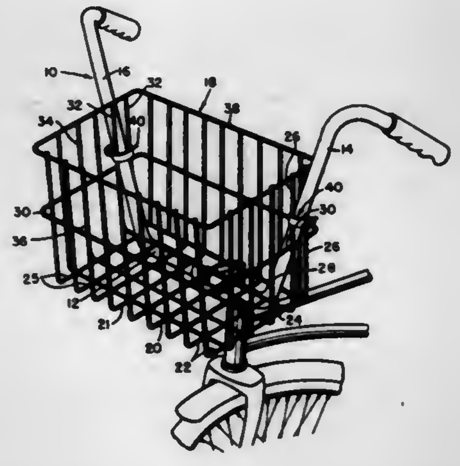
Edward C. Brokus, 4050 Herman Ave. SW., Wyoming, Mich. 49509
Filed Dec. 5, 1969, Ser. No. 882,641
Int. Cl. F41c *33/00*
U.S. Cl. 224—1A **4 Claims**



A gun sling including a socket-shaped stock receiver pivoted at its forward end to the underside of the stock of a gun, the rear of the receiver being connected to a strap extending to a conventional strap terminal on the front portion of the gun.

3,606,110
BICYCLE BASKET AND SUPPORT MEANS THEREFOR

Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.
Filed June 20, 1969, Ser. No. 835,194
Int. Cl. B62j *7/06*
U.S. Cl. 224—36 **10 Claims**

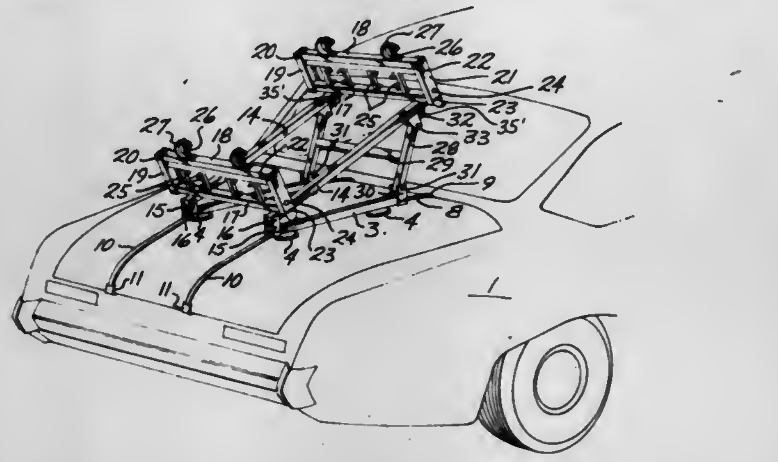


A bicycle basket having opposed side walls, each of which include channels defined by a pair of laterally spaced wires to receive the upwardly and outwardly extending portions of a handlebar, is securely though releasably anchored to the handlebar by clamps which engage each channel-defining pair of spaced wires at their intersection with the aforesaid portions of the handlebar.

3,606,111
TILTABLE FRAME SKI RACK FOR AUTOMOBILE TRUNK LIDS

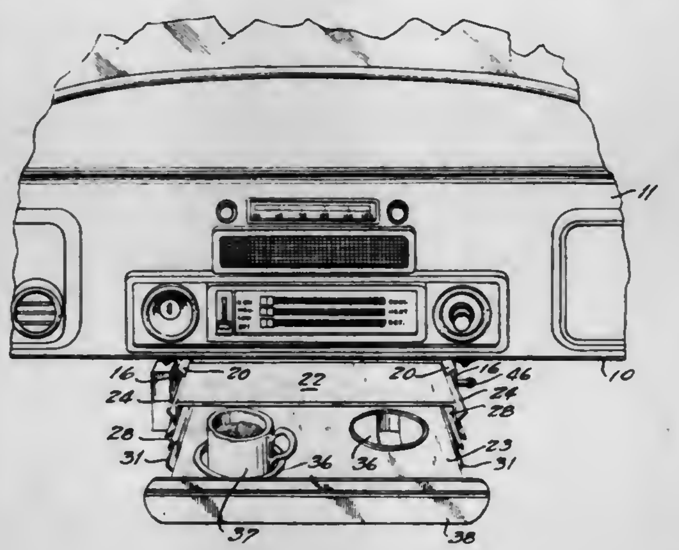
Donald J. Gjesdahl, 320 W. Republican, Seattle, Wash. 98109
Filed Apr. 21, 1969, Ser. No. 817,799
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1F **1 Claim**

A ski rack frame is mounted on base bars by direct pivots and pivoted struts which are spaced apart. At least one end of each strut is displaceable relative to the direct pivot so as to alter the angle between the strut and the ski rack frame for, in turn, changing the angle of tilt between such frame and the base bars. Posts of molded plastic can be secured in desired selected positions on the rack frame and an apertured stretchable strap can be applied easily to a post and secured in position on it by projections to bind an object to such post.



3,606,112
RETRACTABLE BEVERAGE HOLDER FOR MOTOR VEHICLES

Leonard A. Cheshier, 830 Fairwood, Dallas, Tex. 75232
Filed Jan. 28, 1970, Ser. No. 6,414
Int. Cl. B60r *7/00*
U.S. Cl. 224—42.44 **5 Claims**

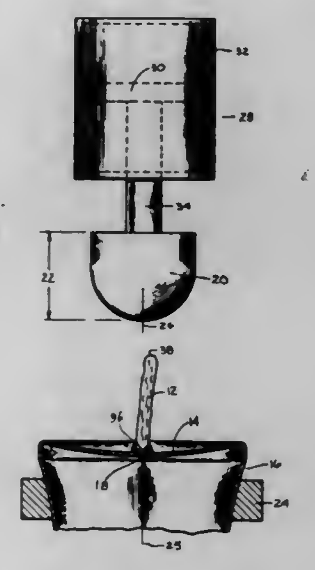


A beverage holder for motor vehicles adapted for attachment to the instrument panel thereof and retractable beneath the panel, its telescoping frame members providing for maximum extension while affording compact retractability. The device includes a conveniently accessible coin dispensing feature and means for attaching thereto such accessories as tissue dispensers and litter bags.

3,606,113
REMOVING WASTE FROM A MOLDED ARTICLE

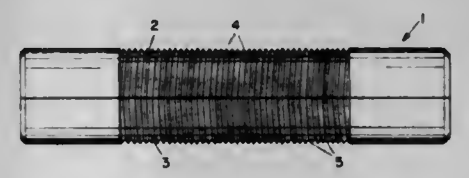
Howard Lichtman, Windsor, Conn., and Lawrence A. Martino, Trenton, N.J., assignors to Monsanto Company, St. Louis, Mo.
Filed Jan. 26, 1970, Ser. No. 5,681
Int. Cl. B26f *3/00*
U.S. Cl. 225—1 **7 Claims**

A projecting, fin-like waste tail, preferably made of a relatively stiff thermoplastic, is detached from the base of a molded article along a thin interconnecting web by a method which involves striking the tail with a curved surface moving toward the base to deflect the tail along the advancing surface and cause a limited surface portion of the tail to contact the base. Continued movement of the advancing surface breaks the tail away from the base along the web about the limited surface portion which acts as a fulcrum during separation. The apparatus includes a reciprocally mounted specially rounded striking surface.



3,606,114
FIBRILLATION OF STRIATED FILMS

Charles W. Kim, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Dec. 23, 1969, Ser. No. 887,569
Int. Cl. B26f *1/20, 3/02*
U.S. Cl. 225—3 **2 Claims**

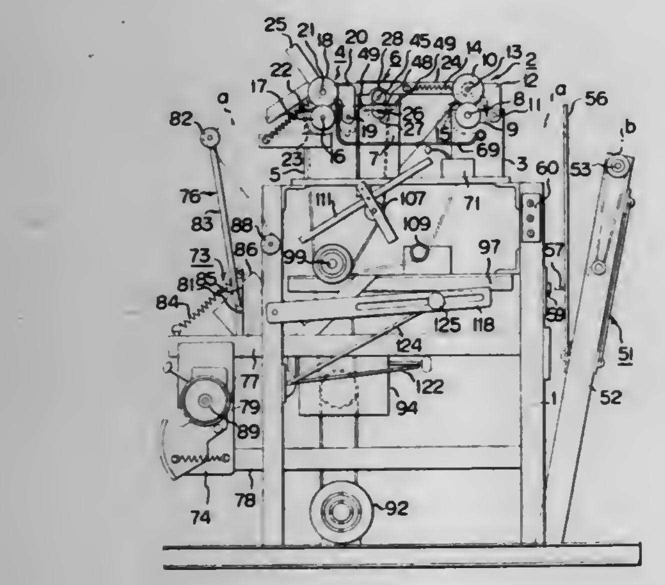


A method is taught of fibrillating a striated film by contacting a film with a helically grooved fibrillation device having on its surface at least one section comprising left-handed helical threads and the same number of sections having right-hand helical threads. The threads are disposed in such a way that at the point where right and left-hand threads meet, the threads of one section abut the grooves between the threads on the other section. The total number of threads per inch on the surface of the device is approximately equal to the number of striations per inch on the film to be fibrillated.

3,606,115
APPARATUS FOR PRODUCING THERMOPLASTIC RESIN SPLIT YARNS

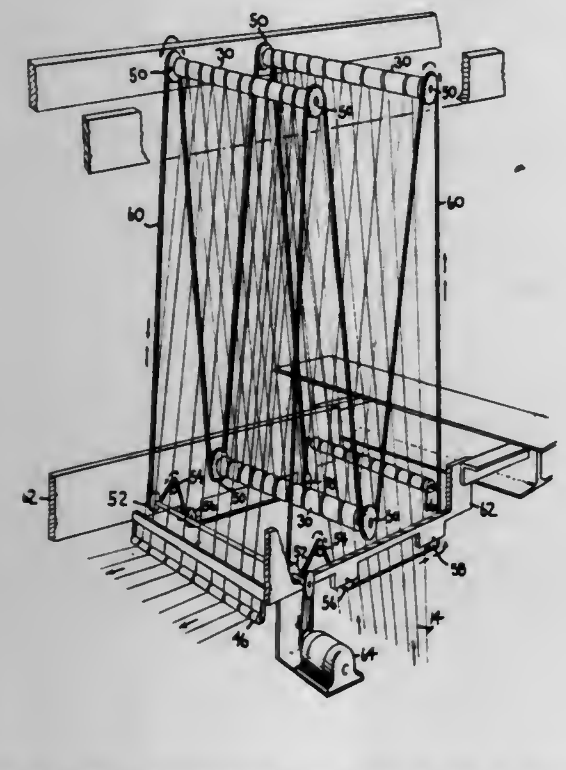
Mitsuo Matsui, Ashikaga-shi, Japan, assignor of a fractional part interest to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan
Filed Dec. 20, 1968, Ser. No. 785,685
Claims priority, application Japan, Dec. 28, 1967, 43/83,834
Int. Cl. B26f *3/02*
U.S. Cl. 225—97 **16 Claims**

The invention relates to an apparatus for producing a split yarn at a high speed and with a high efficiency, which split yarn has an excellent feeling, that is, its feel is soft, has warmth and is pliable to touch as well as in appearance. The split yarn is formed by passing a synthetic thermoplastic resin film or strip between a splitter, consisting of an assembly of alternately arranged coaxially disposed thin pieces spaced apart by distance pieces, and a holding member rotating independently and positively in synchronism with said splitter, whereby the strip is split.



3,606,116
PROCESS AND APPARATUS FOR FESTOONING FIBROUS STRAND

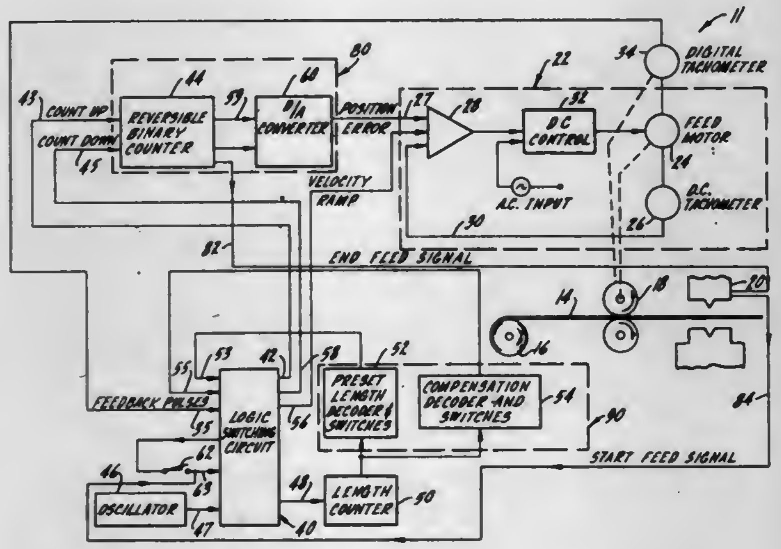
John Kallenborn, Murrysville, and George B. Zurheide, Upper St. Clair, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 3, 1970, Ser. No. 16,004
Int. Cl. B65l *17/00*
U.S. Cl. 226—1 **6 Claims**



A method and apparatus for festooning a plurality of parallel fibrous strands over support means provided at opposite ends of an elongated heating chamber and, when required by breakage of one or more of the strands, for replacing broken strand by lifting the remaining strands from at least one of said support means and introducing additional fibrous strand in parallel, coplanar, running alignment therewith.

3,606,117
MATERIAL POSITIONING CONTROL

John C. Fagan, Oaklawn, and Robert L. Billingsley, Hazel Crest, Ill., assignors to Amtron, Inc., Midlothian, Ill.
Filed Feb. 27, 1970, Ser. No. 14,951
Int. Cl. B65h, *23/18*
U.S. Cl. 226—2 **16 Claims**

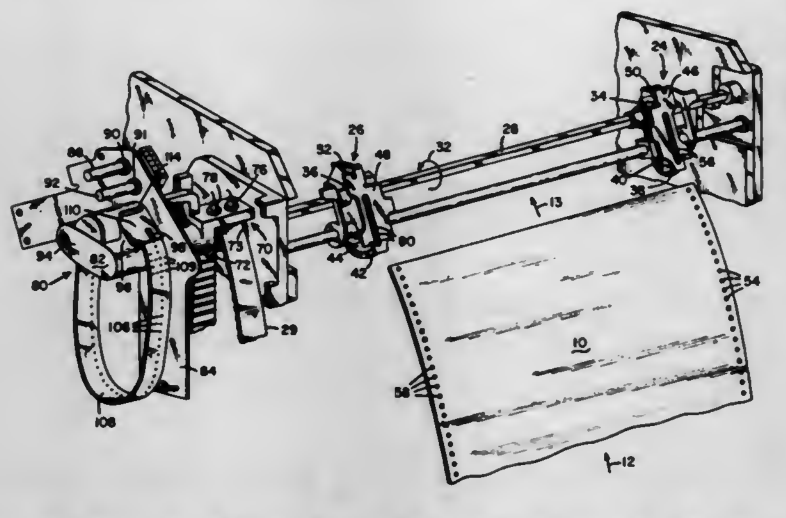


There is disclosed a method and a control system for carrying out the method for feeding a preselected length of material to a utilization device in a minimum feed time comprising the steps of: accelerating the feed rate of said material from an initial first feed velocity, for example, zero velocity, to a second feed velocity, for example, a preselected maximum feed velocity; providing a first signal to a first storage means wherein the first signal is indicative of the actual length of the material being fed; providing a second signal during the acceleration to the first storage means and to a second storage means wherein the second signal is indicative of the total length of material that would have been fed during the acceleration period if said feed rate had accelerated from the first feed velocity to the second feed velocity instantaneously; disconnecting the second signal from the first and second storage means and applying the first signal to the second storage means when the difference in magnitude of the first and second signals stored in the first storage means is equal to the amount of material which will be fed during deceleration from the second feed velocity to the first feed velocity, wherein the second storage means adds the first signal to the previously provided second signal until the total magnitude of the signals stored in the second storage means is indicative of the preselected length to be fed; and decelerating the feed rate from the second feed velocity to the first feed velocity whereby the length of material being fed during the deceleration is determined by the difference in magnitude between the second signal and the first signal stored in the first storage means thereby feeding a preselected length of material to a utilization device in a minimum feed time.

3,606,118
WEB DRIVING SYSTEM WITH CONTROL CIRCUIT FOR HIGH SPEED SLEWING

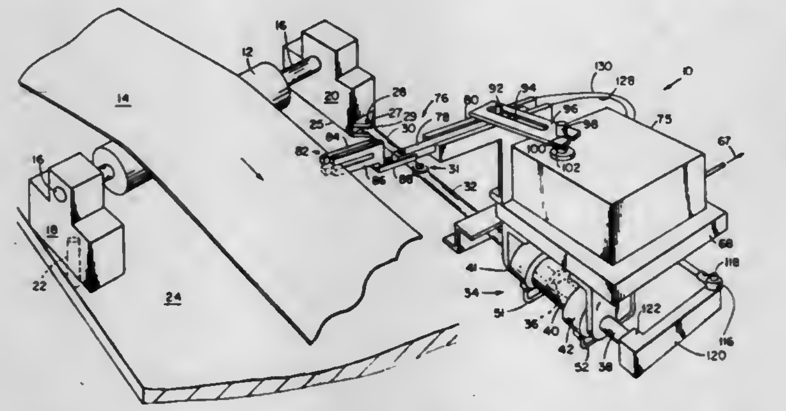
Sebastian W. Piccione, Norristown, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Feb. 12, 1970, Ser. No. 14,814
Int. Cl. G11b *19/26*
U.S. Cl. 226—9 **14 Claims**

A control circuit for a high speed web driving system includes a plural stage shift register for receiving groups of coded vertical format signals, and a first decoder for decoding each group of coded signals stored in the register and for determining presence of a stop code in the register, to cause generation of a control signal for advancement of web speed from low speed slew to high speed slew when no stop code is in the register. A second decoder decodes the coded group at a predetermined stage of the register to determine presence of a stop code a predetermined number of lines from the stop position on the web, and effects deceleration of the web from high speed slew to low speed slew upon decoding of a stop code thereat.



3,606,119
WEB REGISTRY CONTROL APPARATUS

John G. Callan, Sharon, Mass., assignor to Knox, Inc., South Walpole, Mass.
Continuation-in-part of application Ser. No. 694,713, Dec. 29, 1967, now Patent No. 3,504,835. This application Feb. 27, 1970, Ser. No. 15,063
Int. Cl. B65h *25/26*
U.S. Cl. 226—20 **6 Claims**

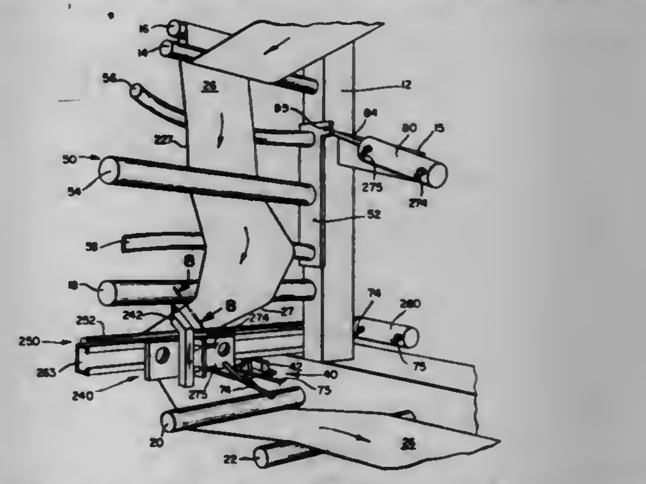


Apparatus is provided for detecting movements of a moving web out of registry with equipment operating thereon and for actuating adjustment mechanism to restore registry. The detector is designed to produce opposite actuation of the adjustment mechanism according to movements of the web from registry with a nul zone of the detector to registry with operating zones thereof at either side of the nul zone. The detector is mounted on a movable arm which is moved by feedback mechanism in proportion to adjustment actuation in the direction to restore registry of the nul zone with the web when a movement of the web away from such registry terminates. The feedback enables adjustment proportional to web movement with simple on-off type controls.

3,606,120
CONTINUOUS BAND WIDTH CONTROLLER AND BAND DIRECTOR

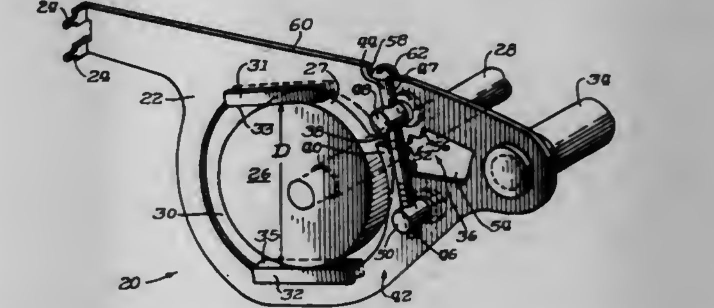
William Kirk Wyatt, Lansdale, and John R. Brownell, Telford, Pa., assignors to Turbo Machine Company, Lansdale, Pa.
Filed June 23, 1969, Ser. No. 835,614
Int. Cl. B65h *25/08*
U.S. Cl. 226—22 **10 Claims**

A control means for the adjustment of the band width of a moving band of continuous material and for directing the traverse of the band as it passes over a plurality of tensioning bars; the band being subject to deviations in its width and its lateral position due to its inherent properties in such an environment. The means comprises at least one bar presenting a curved surface to one face of the band, said surface, upon engaging said face, causing said band to spread or become narrower in accordance with the disposition of said curved surface, and a bar contacting the face of the band of material and capable of being tilted with respect to the dominant moving plane of said face by means disposed at the end of said bar, and most preferably by means connected to said bar within the range of its contact with said face to pivot said bar about a point removed from the axis thereof. Both bars are actuated by amplifier-controller servo systems which are constantly error sensitive.



3,606,121
MOTION PICTURE PROJECTOR SHUTTLE

Arthur E. Nupnau, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Dec. 31, 1969, Ser. No. 889,535
Int. Cl. G03b *1/22*
U.S. Cl. 226—62 **7 Claims**

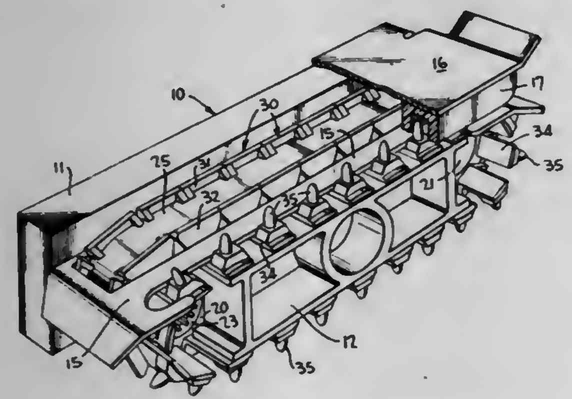


An improved intermittent film moving mechanism for use in motion picture apparatus is provided. The mechanism includes a pulldown cam disposed within an intermediately located central opening of a shuttle having two cam engaging surfaces and film engaging members. A slot, having opposed sides, is formed within the shuttle and extends into the central opening of the shuttle, and a screw is positioned across the slot and secured to the shuttle adjacent the opposing sides of the slot for opening and closing the slot and thus changing the configuration of the shuttle and the position of the cam engaging surfaces relative to the cam.

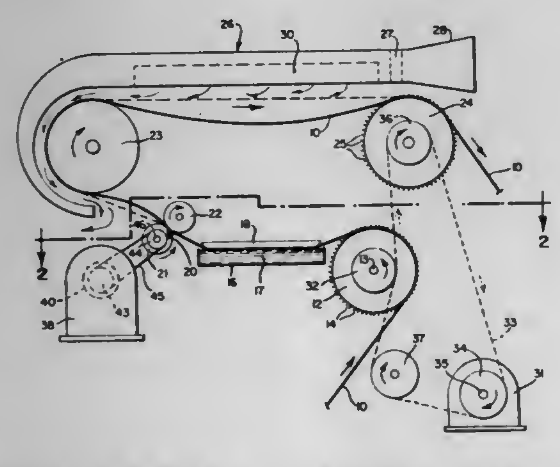
3,606,122
PIN-FEED TRACTOR FOR PAPER WEBS

Ronald W. Brewster, Villa Park, Ill., and Raymond E. Connor, Durham, N.H., assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.
Filed Apr. 17, 1969, Ser. No. 817,022
Int. Cl. B65h *17/38*
U.S. Cl. 226—74 **6 Claims**

The tractor type of pin-feed device for feeding marginally perforated paper webs such as continuous business forms to, from, or through imprinting or handling machines, presents perculiarly configured endless belts, pin-carrying elements or clips, and drive sprockets therefor. The pin elements are detachable from the endless belt and are preferably made of plastic although for some purposes metal may be used. A series of transverse ribs are provided along the belt, alternate ones of which are spaced for interlocking engagement with transverse notches or recesses formed on the respective pin elements. Substantially coincidentally with these notches, the pin elements are themselves provided with downwardly projecting transversely disposed rib portions or protuberances.



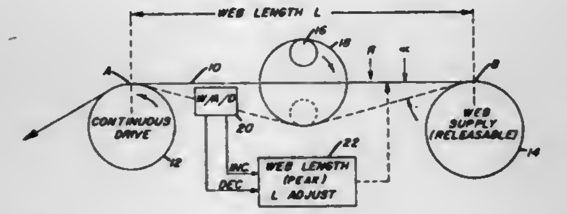
3,606,123
WEB HANDLING APPARATUS
Nils L. Hakanson, West Springfield, Mass., assignor to The Plastic Coating Corporation, Hampden County, Mass.
Filed Dec. 23, 1968, Ser. No. 785,993
Int. Cl. G11b *15/43*
U.S. Cl. 226—76 9 Claims



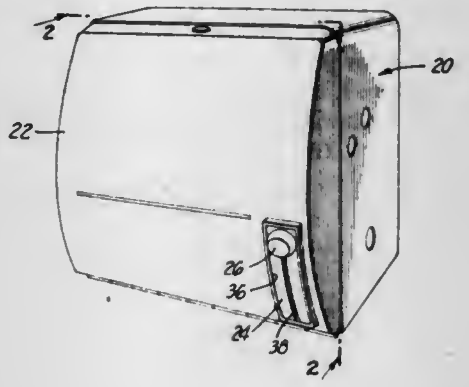
Apparatus including a combination of elements enabling a continuous web to be sprocket fed into a pressure nip without creating wrinkles or causing tracking problems of the web, including two parallel spaced-apart moveable series of sprocket pins engaging the web and advancing it at a predetermined speed, two pressure rolls spaced-apart from the series of sprocket pins and forming a pressure nip through which the web passes following its disengagement from the sprocket pins, and drive means for driving at least one of the rolls so as to maintain tension in the portion of the web running from the sprocket pins to the pressure nip.

3,606,124
INTERMITTENT MOVEMENT
Howard F. Ott, Victor, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,878
Int. Cl. B65h *17/02*
U.S. Cl. 226—113 6 Claims

Control is obtained for the prior art practice of intermittently moving a continuously driven web by cyclically stroking such web so as to pull it by discrete amounts from a releasable supply thereof. Regulation of intermittent web advance is disclosed as being controlled in accordance with the length of web subject to such cyclical stroking.



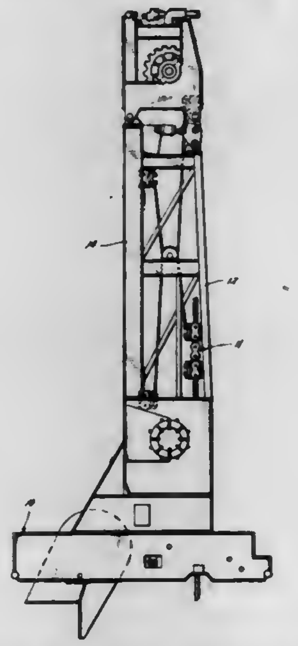
3,606,125
LEVER ACTUATED ROLL TOWEL DISPENSER
Council A. Tucker, Glendale, and Jack L. Perrin, Los Angeles, Calif., assignors to Towlsaver, Inc., Los Angeles, Calif.
Filed Aug. 26, 1969, Ser. No. 853,226
Int. Cl. B65h *17/26*
U.S. Cl. 226—130 44 Claims



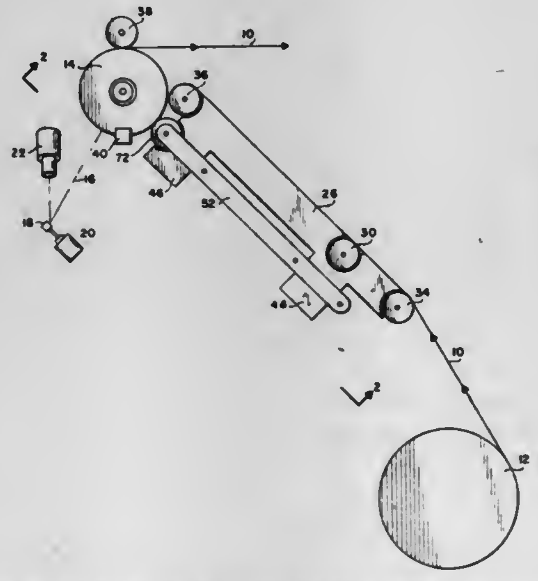
A reciprocal operating lever drives a rotatable member, preferably the dispensing roll of a roll towel dispenser, in a single direction of rotation during both forward and return strokes of said lever drawing a toweling continuous web from a supply roll and dispensing lengths thereof from between said dispensing roll and a pressure roll during said lever strokes. The operating lever drives the dispensing roll through ratchet controlled rack-gear assemblies alternately actionable during the lever strokes for the dispensing roll single direction rotation. A pivotal hook anti-milking means locks the dispensing roll in the event a force is applied to the toweling web being dispensed attempting to overrun the dispensing roll rotation and also when the dispensing roll is stationary. Anti-overspin means locks the dispensing roll at the end of the lever strokes preventing momentum of the dispensing roll from causing roll overspin beyond the lever movements. Also, lever stroke adjustment may be provided for selectively adjusting the lever stroke as permitted by continued drive between the lever and dispensing roll despite lever reversal in either direction of movement.

3,606,126
COMPENSATING HOSE REEL
Dale H. Pryor, Houston, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Mar. 9, 1970, Ser. No. 17,750
Int. Cl. B65h *17/34*
U.S. Cl. 226—173 8 Claims

An endless chain device such as a retractor in which conduits connected to the endless chain are wound on a pair of drums, and resilient means interconnect the drums to permit different speeds of rotation of the drums as the connections between the conduit and endless chain move toward and away from the drum at different speeds.



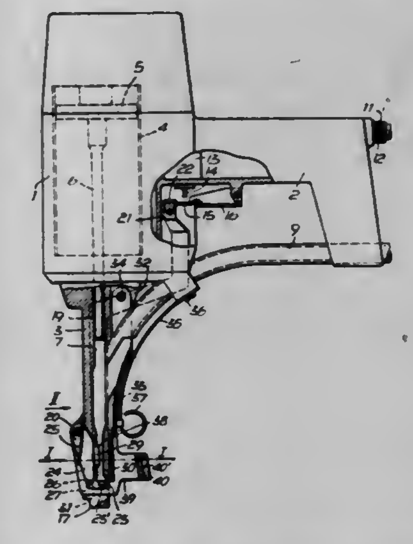
3,606,127
TRANSPORT SYSTEM
Lee Roy Brown, Houston, Tex., assignor to Image Information Inc., South Norwalk, Conn.
Filed Jan. 15, 1969, Ser. No. 791,217
Int. Cl. B65h *17/20*
U.S. Cl. 226—190 4 Claims



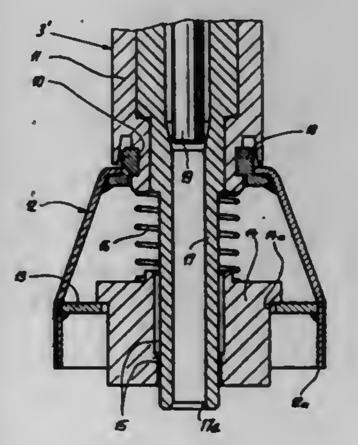
This disclosure is of a high speed data plotter system. The data plotter system uses modulated laser light to scan photographic film. The system includes means for driving the photographic film, and a pair of guide rollers with helices which frictionally engage the moving photographic film. The helices are made of a material having a high coefficient of friction relative to the coefficient of friction of the photographic film. The guide rollers help to maintain the fast moving film taut and true in position during the scanning.

3,606,128
PERCUSSION MACHINE FOR FASTENERS
Adolf Cast, Oberlenningen, Heinz Schwarz, Zizishausen, and Kurt Reich, Nurtingen, Germany, assignors to Karl M. Reich, Maschinenfabrik, Nurtingen, Germany
Filed Mar. 5, 1968, Ser. No. 710,524
Claims priority, application Germany, Mar. 7, 1967, P 16 03 943.3
Int. Cl. B27f *7/06*
U.S. Cl. 227—1 25 Claims

A percussion machine for driving fastening elements such as nails, staples, or the like into workpieces which is provided with different safety means, and especially with means for preventing the percussion piston with a striker rod thereon from carrying out a driving stroke when no fastening element is located within the guide channel of the striker rod.



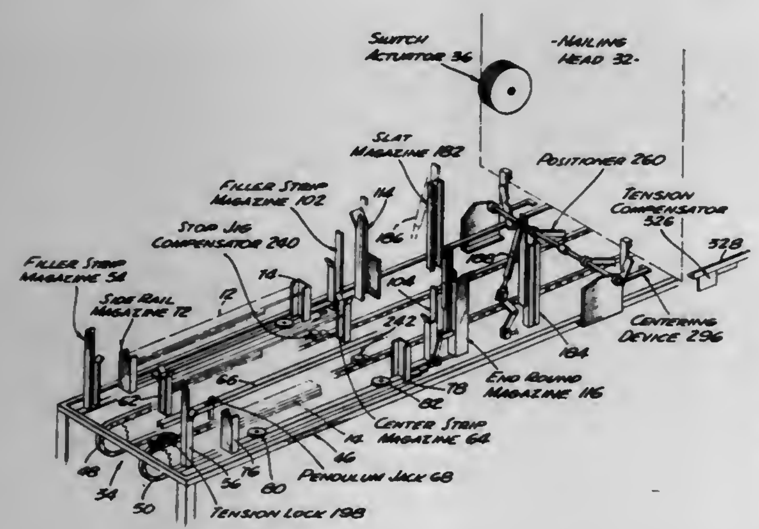
3,606,129
APPARATUS FOR DRIVING ANCHORING DEVICES INTO HARD RECEIVING MATERIALS
Adolf Ritter, Mauren, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Jan. 21, 1969, Ser. No. 792,517
Claims priority, application Germany, Apr. 3, 1968, P 17 03 117.3
Int. Cl. B25c *1/18*
U.S. Cl. 227—11 8 Claims



An apparatus for driving anchoring devices into hard receiving material, such as concrete, comprises positioning a mass such that it surrounds the drive-in point and supports the receiving material during the driving process. The mass is advantageously urged against the receiving material so that it will be uniformly positioned thereon to prevent the cracking or nicking of the receiving material. The apparatus for effecting this includes a setting gun having a reciprocating barrel member for driving the anchoring element into the concrete. Associated with or directly connected to the barrel is the mass. The mass surrounds the concrete at the location of the placement of the anchoring element and is advantageously provided with a central opening to permit the drive piston to move therethrough and to drive the anchoring element into the concrete at such location. Another embodiment includes a widened flange portion surrounding the barrel and which has an internal ledge portion which supports the mass but prevents it from becoming disassociated with the barrel. The mass is mounted so that it is urged in a contacting direction toward the receiving material by a coil spring contained within the flange extension.

3,606,130
CONVEYOR CONTROLS FOR NAILING MACHINE

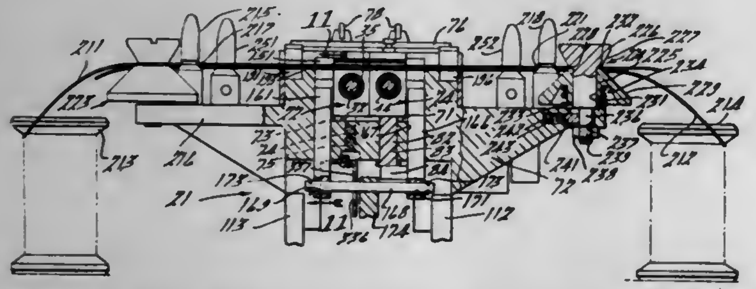
Roland D. De Lamar, Newport Beach, and Robert H. Herod, Escondido, Calif., assignors to De Lamar Bed Spring Corporation, Los Angeles, Calif.
Filed Mar. 20, 1969, Ser. No. 808,910
Int. Cl. B27f *7/02*
U.S. Cl. 227—45 **26 Claims**



The bed frame nailing machine comprises a conveyor in association with a nailing machine. Wooden bed frame members are for the most part automatically discharged onto and positioned upon the conveyor. They are locked together in unitary structure as the nailing machine accomplishes securement. Some of the bed frame parts are discharged onto the conveyor and locked on the conveyor in accordance with signals from conveyor position. Others are discharged in accordance with nailing machine programming. Magazines are provided for the various parts and discharge from the magazines onto the conveyor is accomplished by several novel structures.

3,606,131
FINE WIRE BUTT WELDER

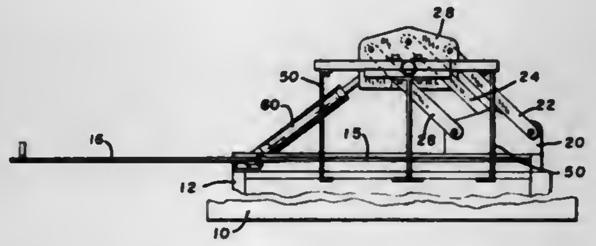
Walter J. Rozmus, Hubbardsville, and Matt T. Rozmus, Barneveld, N.Y., assignors to Kelsey-Hayes Company
Filed Oct. 11, 1968, Ser. No. 766,813
Int. Cl. B23k *3/02, 21/00*
U.S. Cl. 228—3 **38 Claims**



A fine wire welding machine for cold butt welding small diameter wires through a multiple upset technique. The machine includes a loading mechanism for accurately positioning the fine wire strands for subsequent engagement with the welding dies and the welding dies are movable in a plane parallel to their abutting faces for shearing the wires and aligning the end of the wire from one spool with the end of the wire from another spool for the subsequent welding technique. An improved operating mechanism is incorporated for operating the die actuating V-blocks and for operating the dies and gripping means in a predetermined sequence. The operating mechanism includes means for adjusting the opening of the dies and for permitting retraction of the dies for the loading procedure.

3,606,132
SOLDERING APPARATUS FOR PRINTED CIRCUIT BOARDS

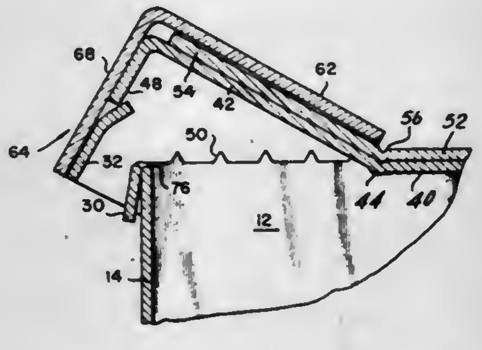
Ralph A. Rinaldi, Hawthorne, N.J., and William Tippy, Philadelphia, Pa., assignors to Henry Mann, Inc., Feasterville, Pa.
Filed Feb. 25, 1970, Ser. No. 13,888
Int. Cl. B23k *1/08*
U.S. Cl. 228—36 **15 Claims**



Apparatus for the dip soldering of printed circuit boards includes a platform or frame carried on a plurality of pivotally mounted links or arms having their lower ends carried by the base so as to be disposed in a parallelogram array. With the platform moved to an up condition, a printed circuit board is removably gripped in spring fingers adjustably carried by the platform. In this up condition the gripped printed circuit board is above and parallel to the surface of a body of molten solder in a heated container. To solder the circuit of the board, the platform and gripper board is swung on the links toward the molten solder until the under surface of the board just enters the molten solder to a shallow determined depth. The loading platform is carried on rods disposed to permit the transverse movement of the loading platform from a position above the molten solder trough or container to a position to the side of and above the solder trough. This manipulation is preferably accomplished by pulling the platform outwardly from above the solder trough. The swinging of the platform on the arms is preferably by a pneumatic cylinder which as it moves the platform towards the solder engages an adjustable stop disposed to limit the penetration of the printed circuit board into the molten solder to a determined depth. A dross skimmer as part of the cover is also provided on this apparatus so that the dross which accumulates on top of the solder may be readily skimmed therefrom to provide clean molten solder adapted for making the connections on the printed circuit board.

3,606,133
RECLOSABLE CARTON CONSTRUCTION

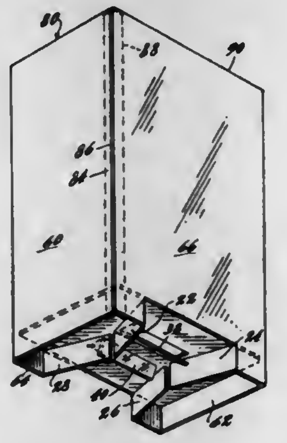
George LeRoy Meyers, Neenah, Wis., assignor to American Can Company, New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,692
Int. Cl. B65d *5/54*
U.S. Cl. 229—7R **10 Claims**



A reclosable carton construction wherein an auxiliary blank is secured to and reinforces an upper corner construction of the carton formed from a main blank. An end panel of the main blank is provided with a rupturable flap which has a removable portion secured to the auxiliary blank with the latter pivoting about a pair of superposed hinge lines in the top panels of the main blank. In one form of the invention the reclosable corner construction tears along parallel hinge lines between the top panels and front and rear panels of the main blank whereas in a modification the tear lines are located inwardly along the top panels so as to provide a pair of dust flaps after the carton is open.

3,606,134
FOLDED WASTE PAPER CONTAINER

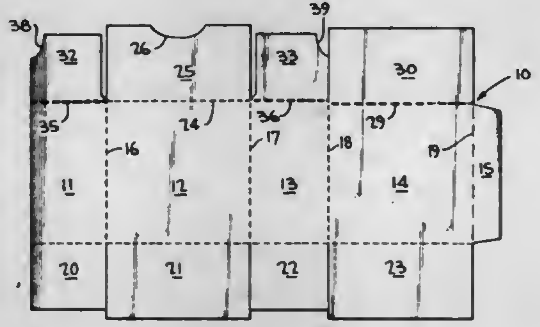
William H. Engle, 10 Hillvale Road, Syosset, N.Y. 11791
Filed Jan. 15, 1969, Ser. No. 791,282
Int. Cl. B65d *5/32*
U.S. Cl. 229—23 **1 Claim**



A folded waste paper container which is stamped in two sections from a single blank of corrugated material and so die cut and so scored as to be readily foldable into a rectangular cross-sectional configuration and interlocked to thereby provide a receptacle for waste paper and the like.

3,606,135
CARTONS CONTAINING COUPONS

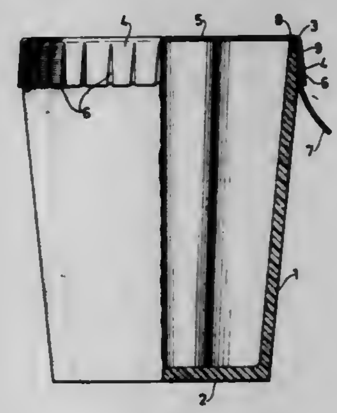
Charles W. Rosenburg, Jr., North Tonawanda, N.Y., assignor to F. N. Burt Company, Inc., Buffalo, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,853
Int. Cl. B65d *5/02*
U.S. Cl. 229—37 **4 Claims**



The carton, so far as its general basic structure is concerned comprises the usual four wall panels secured in parallelepiped form by means of a glue-panel extending from an end panel and adapted to be secured to the remote edge of the opposite end panel. At each end of the carton each of the four main wall panels is provided with a closure flap, the flaps extending from the broader front and rear face walls preferably being of substantially the depth of the carton itself, while the flaps extending from the narrow side walls are adapted to extend only approximately half way across the width of the carton. However, the flaps extending from the upper ends of the side walls are attached to the side walls by perforated tear lines so as to be ruptured and removed when the main outer closure flap to which they are glued is raised. Furthermore, the other side wall flap is similarly detachably connected to the remaining face wall along a tear line and this last named flap constitutes the premium or promotional coupon.

3,606,136
CONTAINERS MADE FROM A FOAM PLASTIC MATERIAL

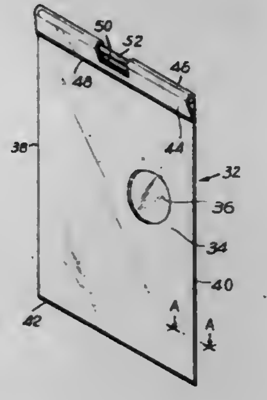
Christian Hegardt, Skivarp, Sweden, assignor to AB Tetra Pak, Lund, Sweden
Filed June 13, 1969, Ser. No. 833,062
Claims priority, application Sweden, June 27, 1968, 8,710/68
Int. Cl. B65d *41/44*
U.S. Cl. 229—43 **8 Claims**



A container comprises a container body made of foam plastic material and a cover for the same made from metal foil and which is turned down over the top edge of the container body and pleated. A leak-proof joint is established between the cover and container body by causing the foam plastic to swell to such an extent that the pleats along the folded-down edge portion of the cover are filled with foam plastic.

3,606,137
DOWEL HANDLE BAG

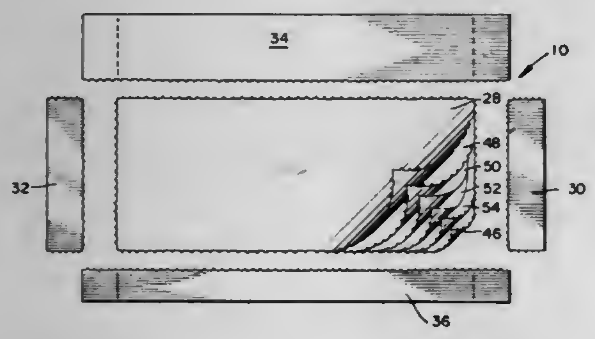
Emanuel Kugler, Lawrence, N.Y. (Kennedy House, 110—11 Queens Blvd., Forest Hills, N.Y. 11375)
Filed July 8, 1969, Ser. No. 839,865
Int. Cl. B65d *33/06*
U.S. Cl. 229—54 **1 Claim**



A construction for a plastic bag with a dowel handle made from tubular stock with welded seams on the top and bottom of the bag for holding heavy bulk materials or items. The material at the top of the bag is folded over and fastened to one face of the bag to provide a channel for a dowel; the force imparted to the bag by the dowel is transmitted substantially along the width of the bag and other than on a welded seam. A cut-out is provided in the bag and through the fold, approximately midway between the sides thereof, so that the hand of the holder may be accommodated around the dowel. Alternative constructions using side gusseted or side welded tubular stock or sheet stock for the bag are described. Means may be provided to prevent the dowel from being removed from the channel. Furthermore, in some of the embodiments it is useful to provide snaps rather than welding for the folded top of the bag.

3,606,138
ONE-PIECE ENVELOPE WITH INTEGRAL, DETACHABLE COUPONS CONTAINED THEREIN

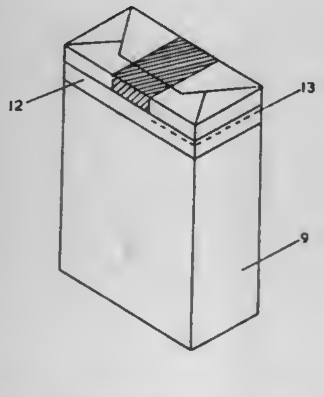
Robert D. Allison, West Hartford, Conn., assignor to United States Envelope Company, Springfield, Mass.
Filed Aug. 21, 1969, Ser. No. 851,857
Int. Cl. B65d *27/34*
U.S. Cl. 229—70 **22 Claims**



An envelope enclosing a number of coupons is made from a single blank of paper or the like, which blank also includes the coupons. A potential separation line extends along each of the four edges of the finished envelope and, by tearing or cutting along these four lines, the coupons contained within the envelope are separated from one another and from the envelope. The front and rear panels of the envelope may also include coupon portions which are separated from the remainder of the envelope and from the other coupons by tearing or cutting along the potential separation lines.

3,606,139
LAMINATED WEBS

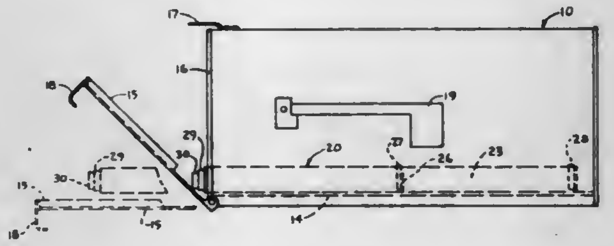
John Rowland Arscott, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Sept. 8, 1969, Ser. No. 856,069
Claims priority, application Great Britain, Sept. 17, 1968, 44,092/68
Int. Cl. B65d *65/42, 85/10*
U.S. Cl. 229—87C **12 Claims**



A laminated web containing a layer of wrapping film and comprising a series of blanks, each of which may be folded to form a packet—especially a cigarette packet.

3,606,140
MAIL BOX TRAY

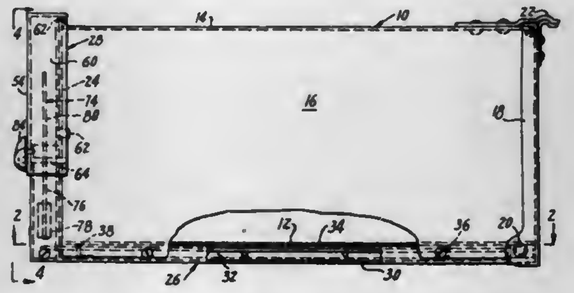
John K. Shannahan, 114 Mike Loop, Jacksonville, N.C. 28540
Filed Sept. 17, 1969, Ser. No. 858,584
Int. Cl. A47g *29/12*
U.S. Cl. 232—17 **3 Claims**



In abstract, a preferred embodiment of this invention is an open, partitioned mail receiving tray for insertion in rural type mail boxes. The front of the tray is fitted with a magnet so that the tray will be pulled partially out of the box whenever the door is opened.

3,606,141
VISUAL SIGNAL FOR RURAL MAILBOXES

Floyd R. Taylor, 3346½ Walnut Ave., Carmichael, Calif. 95608
Filed Apr. 24, 1969, Ser. No. 818,942
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **7 Claims**



A conventional rural mailbox is provided therebeneath with a casing through which projects a rod engageable at its forward end with the mailbox door and at its rear end with a visual signal, biased to operative position and held in inoperative position by the adjacent end of the rod. The signal is arranged in a casing, at least the upper portion of the rear wall of which is glass or other transparent material. The rod is biased to move forwardly when the mailbox door is opened, thus releasing the signal for movement to operative position to advise the occupant of the house that mail has been placed in the box.

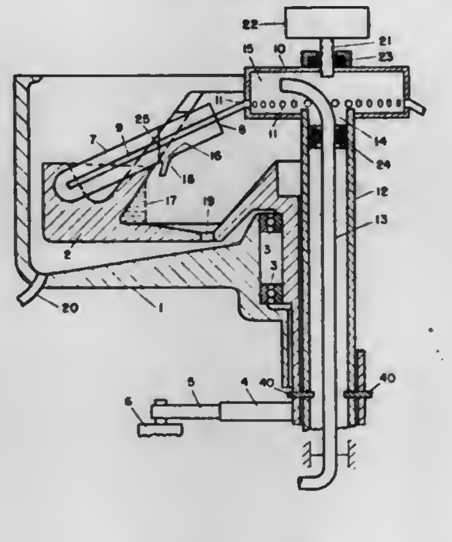
ERRATA

For Classes 232—43.2 and 232—62 see:
Patent Nos. 3,606,144 and 3,606,145

3,606,142
CENTRIFUGAL APPARATUS

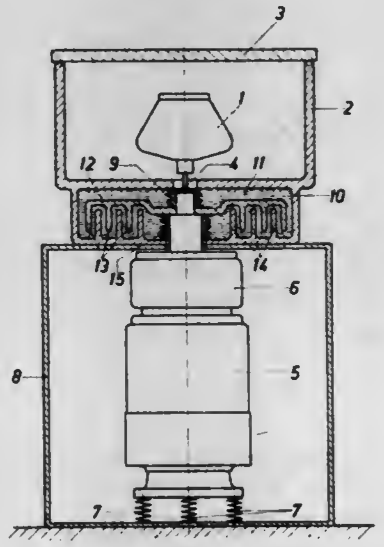
Johan Eric Hayden Westberg, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden
Filed July 9, 1969, Ser. No. 840,220
Claims priority, application Sweden, July 10, 1968, 9,474/68
Int. Cl. B01d *21/26;* **B04b** *1/20, 15/02*
U.S. Cl. 233—1A **10 Claims**

A centrifugal apparatus including a rotating support member for supporting sample containing vessels and a distributing chamber rotatable with the support member and adapted to receive liquid for distributing the same through cannulas to the vessels. The pressure in the distributing chamber is varied periodically to vary the level of the liquid in the vessels, and hence to agitate the said liquid in the vessels.



3,606,143
DAMPING DEVICE FOR A CENTRIFUGE ROTOR

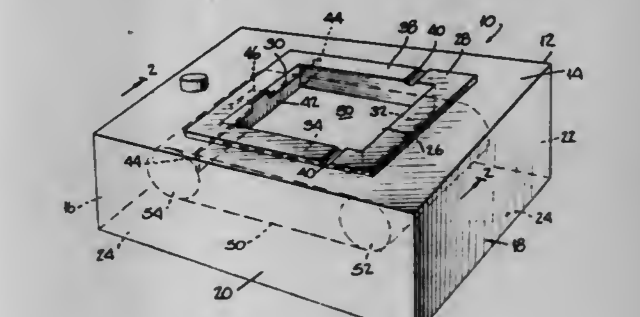
Hans Stallmann, Osterode, Germany, assignor to Heraeus-Christ G.m.b.H., Osterode, Germany
Filed Feb. 25, 1969, Ser. No. 801,939
Claims priority, application Germany, Mar. 1, 1968, P 16 57 276.2
Int. Cl. B04b *9/00*
U.S. Cl. 233—23 **10 Claims**



A device for damping lateral vibrations of the rotor of a high-speed centrifuge which is mounted on the upper end of a vertical drive shaft and rotatable within a chamber on the upper side of a container which, in turn, is secured to the top of a stationary frame in which the drive unit for the rotor is resiliently mounted. The container is filled with a damping fluid and contains a damping plate which is centrally secured to a hublike bushing which projects from the drive unit into the container and from which, in turn, the drive shaft projects. This damping plate is provided at least on one side with projections which, when the damping plate is moved especially by lateral vibrations, tend to displace the damping fluid within the container. These projections are preferably cylindrical, extending from the damping plate coaxially to the drive shaft toward one horizontal wall of the container. To increase the damping effect, this wall preferably also carries similar projections which extend into the gaps between the adjacent projections on the damping plate and are laterally spaced therefrom.

3,606,144
ASHTRAY

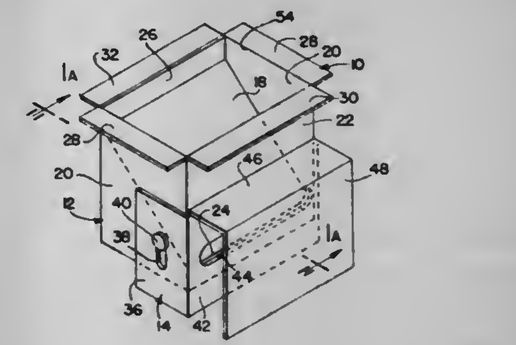
Arthur Ginsberg, Westbrook, N.Y., assignor to Royal London, Ltd., New York, N.Y.
Filed Sept. 24, 1968, Ser. No. 762,079
Int. Cl. A24f *19/08*
U.S. Cl. 232—43.2 **7 Claims**



The ashtray of this invention receives refuse such as tobacco ashes and cigarette stubs in an open receptacle and removes such refuse to a collection bin in the ashtray. The refuse is deposited on a conveyor in the ashtray for delivery to and temporary storage in a collection bin. Disposal to the collection bin is controlled by an actuating device made available to the ashtray user. The collection bin is removable from the ashtray housing to provide for discarding the refuse. During the disposal operation a cleaver engages and cleans the ash receiving conveyor.

3,606,145
COIN BOX DEVICE

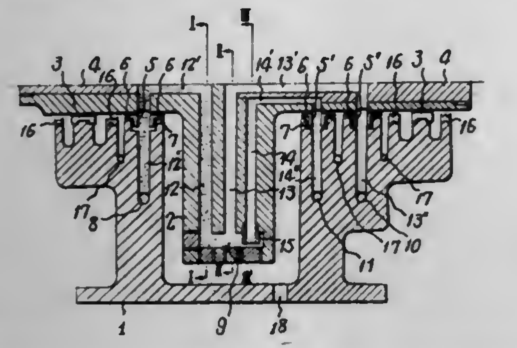
William J. Davidson, 23300 Beierman Ave., Warren, Mich. 48091, and John E. Montgomery, 7017 Norborne Ave., Dearborn Heights, Mich. 48127
Filed Mar. 26, 1970, Ser. No. 22,906
Int. Cl. B65g *11/04*
U.S. Cl. 232—62 **16 Claims**



The invention pertains to a coin box device adapted to receive and pass coins therethrough into a collecting box and to prevent discharge or release of coins therefrom except by the opening of a simple door or other discharge avenue for release of collected coins. The coin box device of this invention is primarily designed to prevent theft of coins from the box. A gate is provided at the coin receiving device which allows coins to pass into the box chamber but prevents those coins from passing out of such chamber through the receiving device. This gate is disposed adjacent a wall or panel that limits rotation of coins through the gate opening, thus preventing discharge of the coins through the gate and receiving device coin slot openings even though in register with each other.

3,606,146
CENTRIFUGAL SEPARATOR

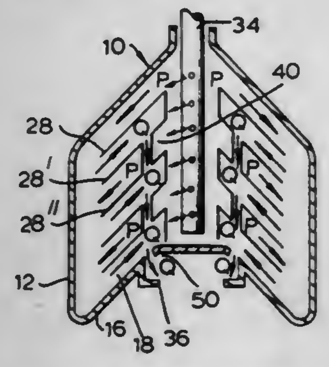
Osamu Fujii, Michio Ishigaya, and Hiroyuki Nakamoto, Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 12, 1969, Ser. No. 798,680
Claims priority, application Japan, Feb. 15, 1968, 43/9,153; June 18, 1968, 43/42,049
Int. Cl. B04b *9/06*
U.S. Cl. 233—24 **2 Claims**



A continuous centrifugal separator comprising a casing, and an integrated rotor rotatably supported therein, said rotor being provided with separating chambers in the form of hollows formed in the portions of the rotor remote from the center thereof, an opening for introducing a mixture to be treated into said separating chambers, an opening for discharging the separated light fraction, another opening for discharging the separated heavy fraction that is provided at a point radially farther from the above openings, and further provided with passages for respectively communicating said openings to the outside.

3,606,147
SEPARATOR

Frank Broadbent, Thongsbridge, England, assignor to Thomas Broadbent & Sons Limited, Huddersfield, England
Filed Dec. 29, 1969, Ser. No. 888,742
Claims priority, application Great Britain, Dec. 16, 1969, 61,120/69
Int. Cl. B04b *1/00, 11/00*
U.S. Cl. 233—29 **4 Claims**

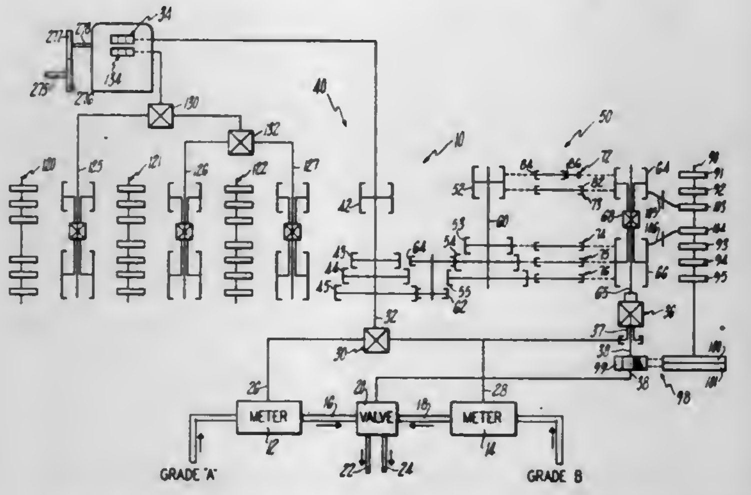


A centrifugal machine comprising a bowl or tank having a plurality of guides therein defining a number of feed paths therebetween, alternate feed paths being closed at their upper end to provide a plurality of open and closed feed paths arranged alternately, a perforated slurry infeed pipe for introducing slurry to be separated into said bowl or tank and a spilling lip and opening for allowing removal of separated liquor component from each closed feed path.

3,606,148
QUICK CHANGE VARIATOR

Christian W. Kruckeberg and Joseph D. Clymer, Fort Wayne, Ind., and Arthur J. Wells, Bloomfield, Conn., assignors to Veeder Industries Inc., Hartford, Conn.
Filed July 10, 1968, Ser. No. 743,686
Int. Cl. F16h *3/22;* **G06c** *15/00*
U.S. Cl. 235—61M **19 Claims**

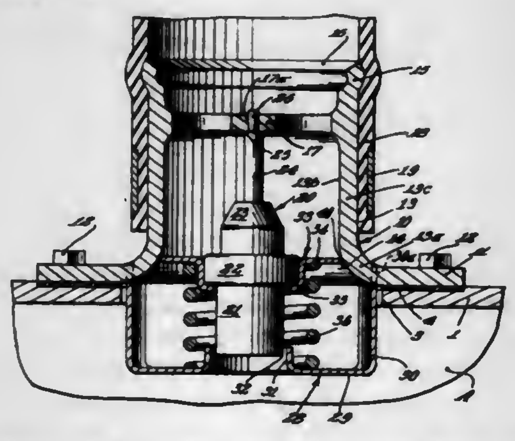
Fuel dispensing apparatus having a register for registering the cost and volume of fuel dispensed and price and blend variators with range arm stacks and corresponding cam shafts for setting the blend variator for selecting the product (i.e., the blend of two separate grades of fuel and the individual grades) to be delivered and for setting the price variator for selecting the corresponding unit volume price. The range arms of the blend and price variators provide for selecting relative drive ratios of +3, —3, +4, +5, and +6 and the corresponding cam shafts provide for selectively actuating the range arms to provide relative drive ratios of 1 through 9. The cam shaft of the blend variator is manually set, and the cam shafts of the price variator are set by an electric reset motor during a combined price setting and register resetting cycle.



In the embodiment of FIG. 8 the price variator comprises a pair of conventional manually adjustable range arms and a quick change section for varying the price setting in one cent increments through a range of 18 cents. The quick change section includes a stack of range arms providing relative drive ratios of +3, —3, +4, +5, and +6; and for selectively adding or subtracting the output of the range arms, and a cam shaft for selectively actuating the range arms to provide relative drive ratios of —9 through +9 to provide a price range of 18 cents in increments of one cent. The cam shaft is adapted to be angularly set by price cams mounted on the cam shaft and which are presettable to select each of the available price settings. The cam shaft is set during the register reset cycle by rotating the cam shaft in one angular direction to a withdrawn angular position against the bias of a spring which returns the cam shaft in the opposite angular direction until such rotation is restrained by the engagement of the selected price cam with a one-way stop.

3,606,149
VALVE AND THERMOSTAT CONSTRUCTION

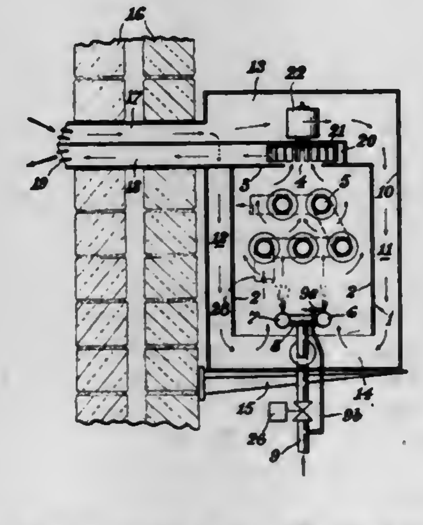
Frank E. Obermaier, Park Ridge, and Nello L. Benedetti, Mount Prospect, Ill., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 22, 1969, Ser. No. 818,280
Int. Cl. F01d *7/16*
U.S. Cl. 236—34 **5 Claims**



Attachment of a valve and an associated thermostat directly on an outlet fitting of an engine to control coolant flow between the engine and a heat exchange means reduces manufacture and assembly cost by reducing the number of parts and facilitating installation. The valve seats directly against an internal surface of the fitting by means of a power unit having one end connected to an internal portion of the fitting. Likewise a thermostat guide bracket is also attached to the fitting.

3,606,150
FLUID HEAT APPARATUS

Jozef Rosiek, Surbiton, Surrey, England, assignor to Potterton International Limited, London, England
Filed Aug. 6, 1969, Ser. No. 847,939
Claims priority, application Great Britain, Aug. 15, 1968, 39,031/68; May 2, 1969, 22,456/69
Int. Cl. F23n *1/02*
U.S. Cl. 236—20 **7 Claims**

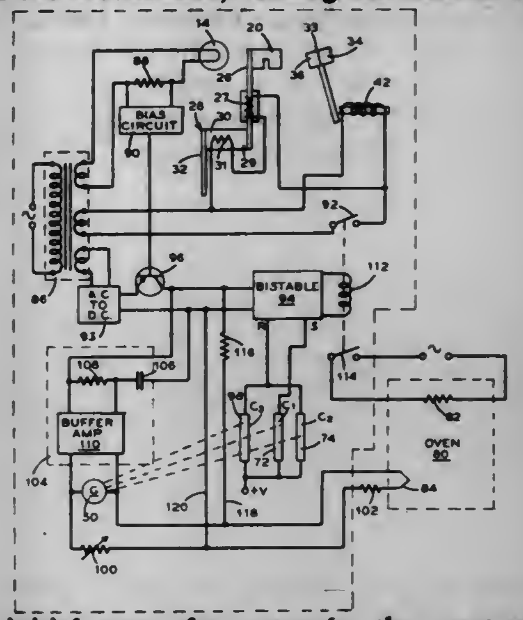


The invention provides a gas-fired water heater comprising a burner unit including a main burner and a pilot burner, a combustion chamber and a heat-exchanger assembly sealed by a casing, two conduits for admitting combustion air to, and exhausting combustion products from, the combustion chamber, a horizontially disposed balanced flue constituted by the extremities of said conduits, and an extraction fan incorporated in the exhaust conduit to draw combustion products from the combustion chamber and to expel said combustion products to atmosphere through the exhaust conduit. Preferably the extraction fan includes electrical switching means adapted to control the combustion products extraction rate of the fan in such a manner that the throughput of the fan required for operation of the main burner is reduced when gas is supplied to the pilot burner only.

3,606,151
REGULATOR-METER UTILIZING A BEAM OF LIGHT FOR INDICATION AND REGULATION

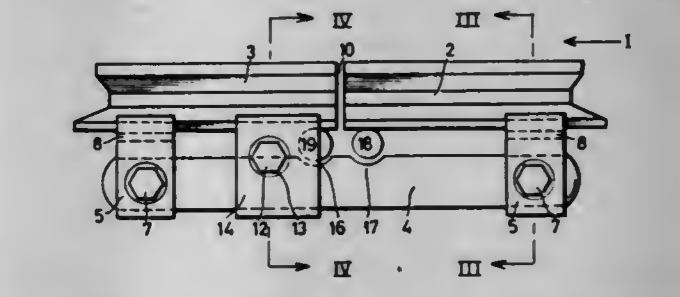
Michel Dumast, Pantin, Guy Rouzaud, Fontenay-Aux-Roses, and Luc Thevenin, Cormeilles-en-Parisis, France, assignors to Societe d'Instrumentation Schlumberger, Paris, France
Filed July 14, 1969, Ser. No. 841,695
Claims priority, application France, July 24, 1968, 160,343
Int. Cl. G05d *23/22*
U.S. Cl. 236—69 **8 Claims**

Regulator-meter apparatus includes signal-responsive meter mechanism for projecting a light spot onto a transparent screen such that the spot traverses the screen during signal-caused movement of the mechanism. The position of the spot on the screen is detected by two photosensitive elements which define one set point for the regulator portion of the apparatus, the elements being spaced apart a distance slightly greater than the corresponding cross-sectional dimensions of the spot and having the outputs thereof connected to different ones of the set and reset inputs of a bistable multivibrator. The bistable assumes either its set or reset state depending upon the position of the spot relative to the elements. Circuitry is provided for effecting initial full-scale energization and de-energization of the mechanism, causing the bistable to assume a known initial state, for example, the reset state. The cross-sectional shape of the spot is defined by a suitably apertured mask, mounted so as to be responsive to the displacements of both a proportional-effect and an integral-effect bimetallic element.



3,606,152
RAIL JOINT

Wilhelm Orth, 1 Affentorplatz, 6 Frankfurt am Main, Germany
Filed Feb. 17, 1969, Ser. No. 799,681
Claims priority, application Germany, Feb. 20, 1968, P 17 08 648.5
Int. Cl. E01b *11/56*
U.S. Cl. 238—215 **3 Claims**

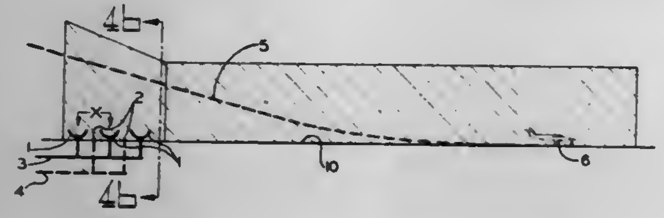


A rail joint connecting a pair of consecutive sections of rail track; the facing ends of the sections are spaced apart including a base plate disposed beneath both of the sections, a bar joint securing a portion of each of the sections remote from the facing ends to the base plate, a clamp disposed adjacent the facing ends of the section for floatingly supporting the ends of the sections and grooves and rollers disposed in the base plate directly adjacent to facing ends of the sections. When a downward force is exerted at the facing end of one of the tracks a force is transmitted to the facing end of the other track through the base plate to maintain the track sections in planar alignment.

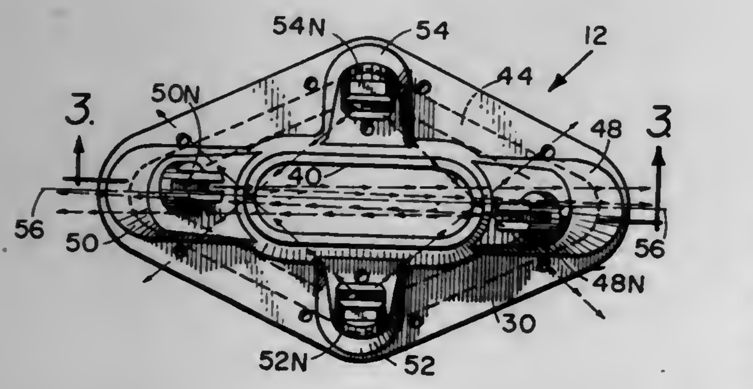
3,606,153
METHOD FOR INCREASING VISIBILITY THROUGH FOGS

Raymond Marcel Gut Boucher, Metuchen, N.J., assignor to Wave Energy Systems, Inc., New York, N.Y.
Filed July 28, 1969, Ser. No. 845,330
Int. Cl. E01h *13/00*
U.S. Cl. 239—2 **12 Claims**

This disclosure relates to a method for increasing visibility through warm natural or artificial fogs. It is based upon the absorption and degradation of microwave energy into heat to accelerate the evaporation of the smaller fog droplets which are the greatest hindrance to the transmission of light through fog. The method can be used within the 100 to 230,000 megahertz range, however, the most practical frequencies are those between 500 and 23,000 megahertz. Visibility can be doubled or tripled in a matter of seconds when microwave energy is emitted on both sides of a landing strip by means of a series of individual generators spaced 7 feet apart and operated at the kilowatts power level. The method comprises continuously sweeping microwave beams vertically from both sides of the runway at a maximum sweep speed of about 1° per second. In difficult cases, with denser fogs, the evaporation of droplets is increased by combining the microwave emission with ultrasonic waves from a number of airborne ultrasonic generators operating at intensities above 150 db and within the 16 to 100 kHz. range. The method can economically handle any kind of natural warm fogs and may thus allow continuous year round operation at certain airports.

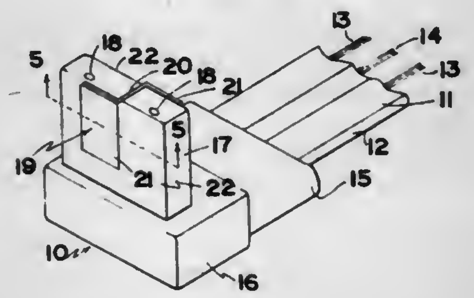


3,606,154
SPRAY COATING APPARATUS
Raymond C. Tufts, Walnut Creek, Calif., assignor to Mono-Therm Insulation Systems, Inc., San Francisco, Calif.
Filed Dec. 23, 1968, Ser. No. 785,924
Int. Cl. A01n *17/02;* **A62c** *1/12*
U.S. Cl. 239—8 **2 Claims**



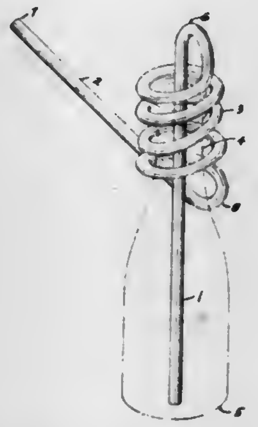
A gun having a center orifice for delivering a course of dry particulate material and plural nozzle tips adjacent the orifice. The nozzle tips are adapted to form flat fan-shaped streams of adhesive. Each of a pair of such tips is located in diametric opposition to the other and such nozzle tips are so oriented that the flat fan-shaped streams slice through the course of dry material to spread out the dry material and to coat the dry material with adhesive so that the adhesive will adhere to a surface. A pair of auxiliary nozzle tips are provided in quadrature with the tips previously mentioned and contribute to the shaping of the course of dry material and the application of adhesive to the dry material and to the surface being coated.

3,606,155
THREE WIRE ELECTRICAL PLUG
Lynne E. Windsor, Winnipeg, Manitoba, Canada, assignor to James B. Carter Limited, Winnipeg, Manitoba, Canada
Filed May 16, 1969, Ser. No. 825,208
Int. Cl. H01r *3/06*
U.S. Cl. 339—14R **5 Claims**



An electrical plug with a ground wire connected to an angulated grounding strip moulded into the plug body between the two contacts and extending on both sides of the body so that it grounds to a shroud shielding the pins of a heater to which the plug is connected.

3,606,156
DRINKING STRAW
John Homorodean, Jr., Seven Hills, Ohio, and Edwin E. Gentilly, 4488 W. 160th St., Cleveland, Ohio 44135; said Homorodean assignor to Edwin E. Gentilly
Filed Feb. 24, 1970, Ser. No. 13,561
Int. Cl. A47g *19/22*
U.S. Cl. 239—33 **4 Claims**

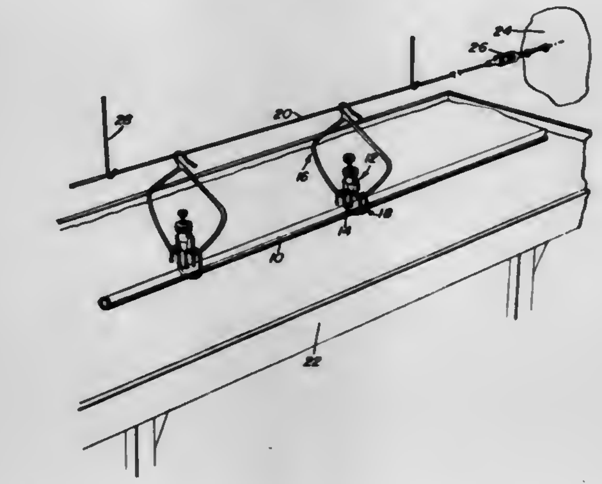


A tube for drinking liquids from a container has end portions which connect with upper and lower ends of a spirally shaped mid portion. Said end portions, or when said end portions are not coplanar as preferred, intersections of planes of the end portions define an angle which is greater than 90 degrees but less than 180 degrees. The turns of the mid portion surround and extend downwardly from the top of the end portion adapted to be placed into the container. Said turns are also adapted to envelop the upstanding walls of the container to hold the straw in a stable position so that siphoning action does not occur.

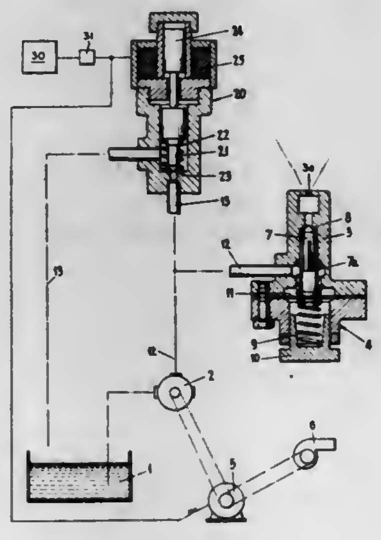
3,606,157
SUSPENSION SPRAY SYSTEM
Richard D. Chapin, 368 N. Colorado Ave., Watertown, N.Y. 13601
Filed Aug. 4, 1969, Ser. No. 847,210
Int. Cl. B05b *15/02*
U.S. Cl. 239—118 **12 Claims**

A watering system for long runs consisting of an elongated water supplying main suspended horizontally in an elevated position from a tensioned suspension cable by

means of a series of hangers engaged with the suspension cable and movement accommodating supports engaged between the main and the hangers. The main is provided with a series of upstanding spray nozzles connected thereto by flow restricting small diameter connecting or supply tubes, each nozzle being directly engaged with and supported by a hanger independently of the main whereby a proper vertical orientation of the nozzles will be maintained regardless of slight movements in the main itself.

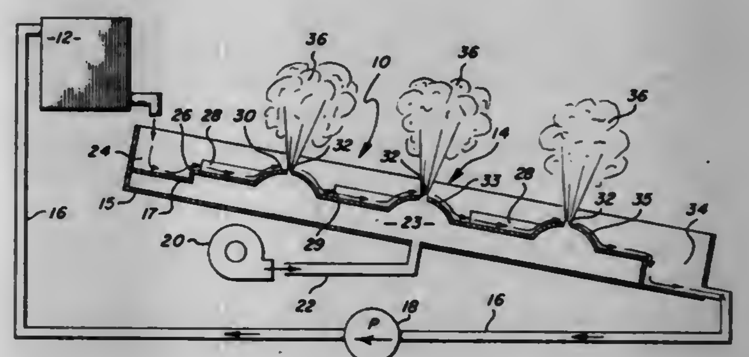


3,606,158
PRESSURE JET BURNER CONTROL SYSTEMS
Edward Pritchard, 339 Balaclava Road, Caulfield, Victoria, Australia
Filed Nov. 13, 1969, Ser. No. 876,432
Claims priority, application Australia, Nov. 15, 1968, 46,350/68
Int. Cl. B04b *9/00;* **F02g** *3/00;* **F04b** *9/00*
U.S. Cl. 239—124 **5 Claims**



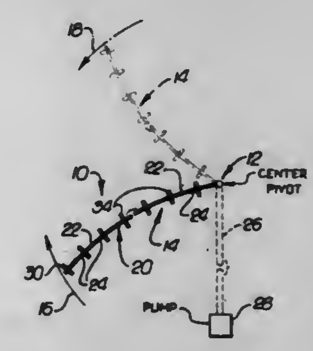
The invention relates to pressure jet burner control systems including a motor driven fuel pump which stops and starts according to the fuel requirements of the burner and in which cut-off and start-up of the fuel spray in the burner is abrupt and the pressure of fuel is maintained above a predetermined minimum pressure of the volume. Fuel supply to the burner is controlled by a quick cut-off valve arranged to start and cut off fuel at predetermined fuel pressure and also includes a by-pass line connected in the fuel line between the cut-off valve and the pump, said bypass line being controlled by a solenoid valve which simultaneously relieves fuel trapped in said fuel line under pressure when the fuel pump is deenergised.

3,606,159
MULTI-SPRAY DEVICE
George P. Sutton, Encino, Calif., assignor to North American Rockwell Corporation
Filed July 7, 1969, Ser. No. 839,270
Int. Cl. B05b *7/08*
U.S. Cl. 239—127 **10 Claims**



A method of dispersing a liquid in a multiplicity of fine mist spaced patterns is disclosed. The device consists of an inclined trough having a series of substantially inclined bulbous protrusions over which liquid is directed. An orifice is located at the apex of each protrusion through which fluid under pressure passes. A blast of gaseous fluid, for example air, is directed through the apertures thereby atomizing the film of liquid passing over the holes. By inclining the trough, liquid not dispersed by the uppermost bulbous protrusion is collected and directed by means of contoured channels to the next dome under gravity for subsequent atomization thereby. The unused liquid is then collected and circulated back to the liquid supply tank and thence into a weir at the top of the trough, thus completing the cycle. The device therefore provides a multiple spray atomizing unit from one source of liquid supply.

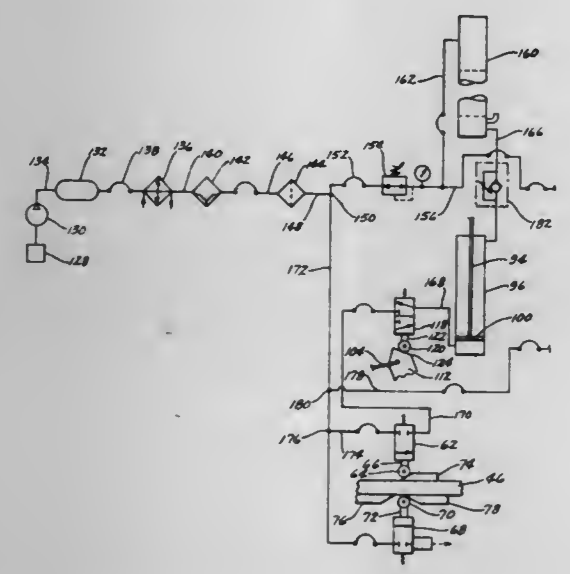
3,606,160
REVERSIBLE, SELF-PROPELLED SPRINKLER SYSTEM
Harry C. Bonds, Whittier, and August C. Ringe, Pomona, Calif., assignors to Layne & Bowler Pump Company, La Puente, Calif.
Filed Mar. 31, 1970, Ser. No. 24,113
Int. Cl. A01g *25/02;* **B05b** *15/06*
U.S. Cl. 239—212 **13 Claims**



A sprinkler-type irrigation system including an elongated, self-propelled, reversible, sprinkling apparatus or structure bidirectionally moveable along an arcuate sprinkling path. The sprinkling structure comprises an elongated, sprinkler-equipped pipeline composed of a plurality of substantially aligned, interconnected pipes relatively pivotable in a generally horizontal drive plane. The sprinkling apparatus is propelled along its path by a reversible propelling means comprising a leading carriage supporting the outer end of the pipeline and driven by a reversible leading motor, and comprising a plurality of following carriages respectively supporting the pipeline at the junctions of the pipes and respectively driven by reversible following motors. A reversing means reverses the carriage drive motors upon arrival of the sprinkling structure at the end of its arcuate sprinkling path. A control means responsive to relative pivoting of the pipes in the drive plane selectively energizes the following motors as required to cause the following carriages to follow the leading carriage in either direction of movement of the sprinkling structure. The control means comprises control devices which are located at the respective junctions of the pipes and each of which includes two oppositely oriented cams and cam actuating means for pivoting the cams in opposite directions in response to relative pivoting of adjacent ones of the pipes in opposite directions in the drive plane. The carriages are maintained on a bowed line from the inner end of the pipeline to the outer end therof, in both directions of swinging movement of the sprinkling structure along the sprinkling path, with the intermediate carriages progressively farther ahead circumferentially than carriages adjacent the ends of the pipeline, whereby the pipeline operates in a bow with its convex side leading.

3,606,161
SELF-PROPELLED SPRINKLING APPARATUS AND SAFETY MEANS THEREFOR

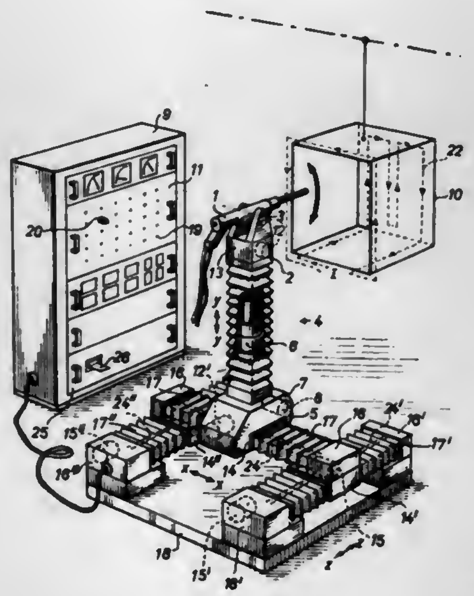
Dwaine Paul, Amarillo, Tex., assignor to Kroy Metal Products Co., York, Nebr.
Filed Apr. 10, 1969, Ser. No. 815,106
Int. Cl. B05b ***3/16***
U.S. Cl. 239—177 **2 Claims**



A self-propelled sprinkling apparatus for sprinkling or irrigating a relatively large area surrounding a central pivot point. A water supply pipe extends outwardly from the central pivot point and is supported by a plurality of spaced apart, wheeled towers. An air operated drive means is provided on each of the towers to propel the towers and pipe around the central pivot point. A control means is provided on each of the towers and is interconnected with each of the other towers to selectively operate the drive means associated therewith to maintain the pipe and towers in an aligned condition as the water supply pipe is pivoted around the central pivot point. A safety valve is provided in the air circuit on each of the towers to de-activate the drive means on all of the towers upon one of the towers becoming out of alignment with the other towers to prevent structural damage to the apparatus.

3,606,162
PROGRAMMED MEANS FOR IMPARTING COMPOUND MOTION TO A SPRAY GUN

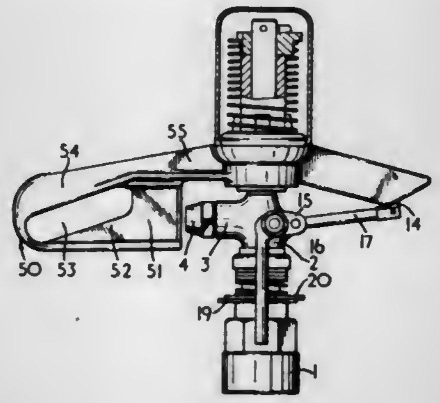
Ernst Lehmann, St. Gall, Switzerland, assignor to Gema AG Apparatebau, St. Gall, Switzerland
Filed Aug. 28, 1969, Ser. No. 853,911
Claims priority, application Germany, Oct. 25, 1968, P 18 05 145.1
Int. Cl. B05b ***3/18***
U.S. Cl. 239—227 **3 Claims**



Spraying apparatus for automatically coating workpieces with coating material applied by means of a spray gun the apparatus including a carrier head on which a spray gun is mounted for pivoting movement in a vertical plane. The carrier head is mounted on a lifting stand for vertical up and down movement and the lifting stand is placed on carriage means for movement in a horizontal plane in two directions at right angles to each other. The movements of the spray gun, lifting stand and carriage means are effected by motors controlled by program control devices adapted to be set to produce a sequence of operating steps of the spray gun, lifting stand and carriage means.

3,606,163
SWING ARM FOR ROTARY WATER SPRINKLER

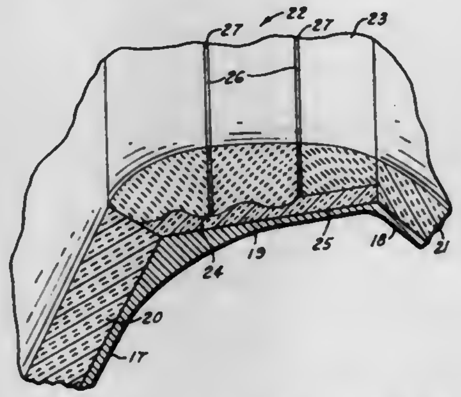
Brian Alfred Lewis, Ringwood, England, assignor to Wright Rain Limited of Crowe, Ringwood, Hampshire, England
Continuation-in-part of abandoned application Ser. No. 739,437, June 24, 1968. This application Jan. 12, 1970, Ser. No. 2,173
Int. Cl. B05b ***3/02***
U.S. Cl. 239—230 **4 Claims**



A swing arm for a rotary water sprinkler. The swing arm has a spoon-like portion into which a jet of water from a nozzle of the sprinkler impinges. The sprinkler may be of the kind having a sectoring mechanism operative to cause the swing arm to effect oscillation of the sprinkler through a limited sector. To reduce the impact of the swing arm on a stop at the end of the sectoring operation, the spoon-like portion has a deflector surface extending along the length of the spoon from the end nearer to the nozzle and an aperture extending longitudinally of the bowl of the spoon-like portion along a major part of the deflector surface downstream of an initial part which extends across the width of the spoon, whereby only part of the jet from the nozzle will flow through the aperture into the bowl of the swing arm, the remainder being guided by the deflector surface past the spoon-like portion without entering the bowl thereof. The swing arm of this invention also gives an improved water distribution and so can be used with a water sprinkler not having sectoring mechanism.

3,606,164
NOZZLE THROAT INSERT ASSEMBLY

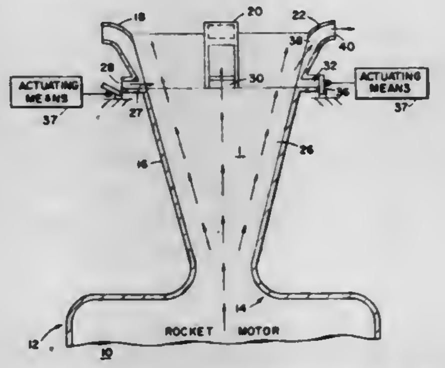
Cecil G. Stokes, Jr., Denny M. West, Kenneth E. Junior, James C. Machen, and Walter E. Sharp, Huntsville, Ala., assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed Oct. 23, 1969, Ser. No. 868,735
Int. Cl. B64d ***33/04***
U.S. Cl. 239—265.15 **3 Claims**



A throat insert assembly for the nozzle of a solid propellant rocket motor having incorporated therein a sinewave configuration for preventing displacement of the throat insert from the nozzle during the tailoff of the solid propellant rocket motor.

3,606,165
JET REACTION CONTROL SYSTEM FOR ROCKETS

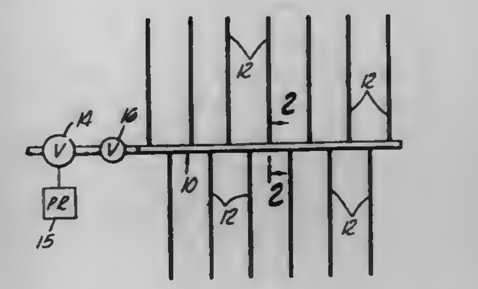
J. C. Dunaway, Falkville, Ala., assignor to the United States of America as represented by the Secretary of the Army
Filed Nov. 6, 1969, Ser. No. 874,607
Int. Cl. B63h ***25/46;*** **B64c** ***15/10***
U.S. Cl. 239—265.17 **7 Claims**



A jet reaction attitude control system for rockets wherein high velocity gases are bled from points in the divergent cone of a supersonic rocket nozzle and selectively directed through ducts to exit the nozzle normal to the centerline thereof to provide a control force on the rocket.

3,606,166
AUTOMATIC FIRE EXTINGUISHING SYSTEM

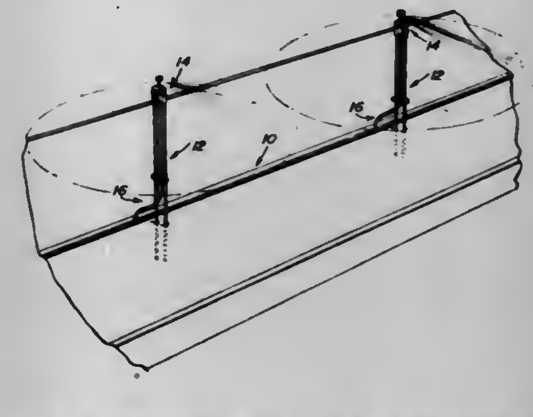
Alfred L. Whear, P.O. Box 366, Minden, Nev. 89423
Original application July 21, 1967, Ser. No. 655,152, now Patent No. 3,512,363, dated May 19, 1970. Divided and this application Mar. 30, 1970, Ser. No. 23,847
Int. Cl. A62c ***35/32***
U.S. Cl. 239—272 **2 Claims**



Water flow under pressure through a distribution tube in a given axial direction is discharged as a mist into the atmosphere through relatively small bores in the wall of the tube with the bores directed contrary to the axial direction at an angle of 6° to 14° from the axis of the tube. A thermostat to detect a fire controls the supply of pressurized water to the distribution tube.

3,606,167
SPRAY SYSTEM

Richard D. Chapin, P.O. Box 298, Watertown, N.Y. 13601
Filed June 11, 1969, Ser. No. 832,145
Int. Cl. B05b ***15/02***
U.S. Cl. 239—276 **5 Claims**

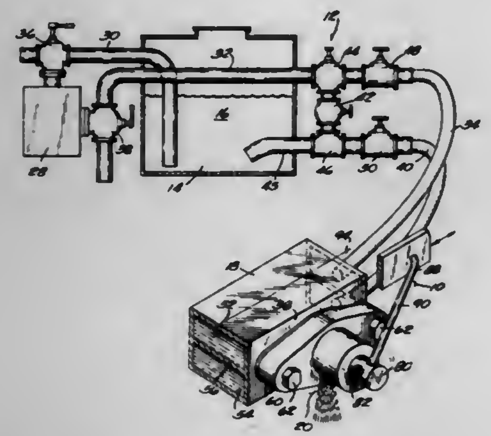


A watering system for long runs consisting of a series of elevated nozzles, each mounted on a twin rod upright and communicated with an enlarged main through a reduced diameter supply tube. The individual supply tubes meter the pressure to the individual nozzles, thereby enabling the maintenance of a substantially constant high pressure along the full length of the main. Each of the nozzles includes a manual cut-off directly therein.

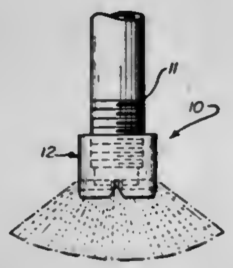
3,606,168
RECIRCULATING SPRAY NOZZLE

Harry J. Seaman, Jr., Milwaukee, Wis., assignor to Seaman Corporation, Milwaukee, Wis.
Filed Dec. 27, 1968, Ser. No. 787,329
Int. Cl. B05b ***1/00***
U.S. Cl. 239—597 **6 Claims**

A spraying apparatus for heated bituminous material including a spray bar divided by a horizontally disposed partition into inlet and outlet flow passages and a number of spray valves mounted on the spray bar, each spray valve having an inlet port connected to the inlet flow passage in the spray bar, an outlet port connected to the outlet flow passage in the spray bar and a spray port open to the atmosphere and a valve plug having a flow passage terminating in a spray nozzle port, the valve plug being mounted for rotary motion in said valve to selectively connect the flow passage to the inlet port and to either the outlet port or the spray port.



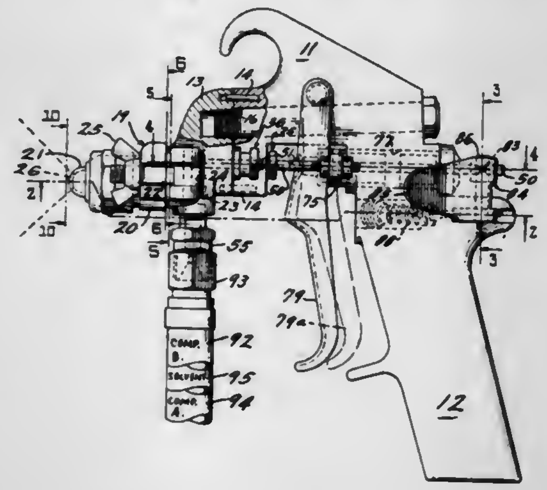
3,606,169
WIDE ANGLE SPRAY NOZZLE
Frank W. West, Newington, Conn., assignor to Casco Products Corporation, Bridgeport, Conn.
Filed Aug. 21, 1969, Ser. No. 851,803
Int. Cl. B05b *1/10*
U.S. Cl. 239—597 **3 Claims**



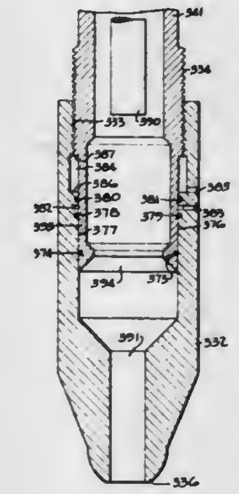
A spray nozzle includes a generally cup-shaped body having a cylindrical side wall bounding a lengthwise passage of uniform diameter along its length and terminating in an integral end wall. The end wall has a central circular opening and a pair of slots radially extending therefrom to provide a cruciform-shaped discharge orifice leading outwardly from the passage. The slots extend into the cylindrical side wall to provide side discharge exit paths from the passage. A protective blow-off cap is seated on the nozzle end.

3,606,170
PLURAL COMPONENT SPRAY GUN
Thomas Oren Hoffman and Erhard Kock, Toledo, John H. Mang, Oregon, and Earl F. Staifer, Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio
Filed Feb. 9, 1970, Ser. No. 9,506
Int. Cl. B05b *7/12*
U.S. Cl. 239—414 **14 Claims**

The present invention relates to a plural component spray gun which is utilized, for example, in the spraying of plastic foams. Pressurized fluid components flow through the spray gun where they are mixed together and discharged through a spray nozzle. The spray gun includes a spray head mounted on a spray gun body. The spray head defines a plurality of valve chambers which are located on longitudinally extending and parallel major axes. A valve assembly is positioned in each of the valve chambers and each of the valve assemblies includes a fluid discharge opening. A nozzle assembly, which includes a mixing plate is removably mounted on the front end of the spray head. The mixing plate is closely adjacent the discharge ends of the valve assemblies. The mixing plate defines a passageway network which is in communication with each of the fluid discharge openings. The plural components are fed through the passageway network upon the operation of a triggering apparatus. A second triggering apparatus is connected to another one of the valve assemblies and is utilized to direct solvent into the passageway network during the cleaning of the spray gun.

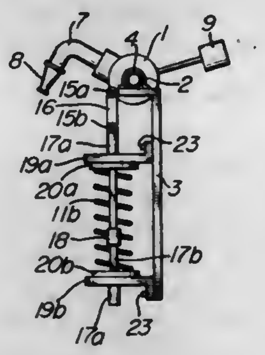


3,606,171
INJECTION NOZZLE OF ADJUSTABLE LENGTH
Walter D. Voelker, 220 Miller Road, Philadelphia, Pa. 11801
Filed Mar. 6, 1970, Ser. No. 17,247
Int. Cl. B05b *15/08*
U.S. Cl. 239—587 **2 Claims**



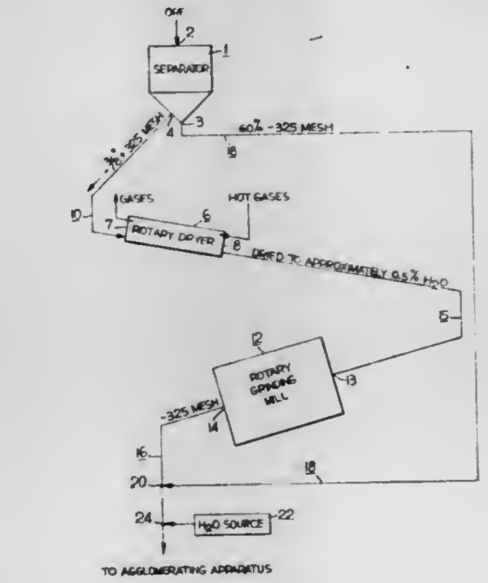
Giant articles are sometimes so shaped that the orifices to be secured to the nozzles of a multi-nozzle injection molding machine should desirably be positioned at different distances from the frame of the molding machine instead of the conventional uniform distance. Threadable adjustable members permit adjustment of length of injection nozzle throughout a range such as one centimeter with a zone of close tolerance sliding contact being locked into non-leaking and non-rotational relationship by the action of relatively high plastic pressure. Such pressure influenced zone, a plurality of O-rings, and weep holes prevent any plastic from seeping to the adjustable threads. Further adjustability is attainable by optionally using extension members which can be inserted and secured by couplers for lengthening a nozzle.

3,606,172
DEVICE FOR HOT-LINE WASHING OF INSULATORS
Kazuyuki Sato and Kenji Kawai, Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Aug. 28, 1969, Ser. No. 853,846
Claims priority, application Japan, Sept. 14, 1968, 43/66,307
Int. Cl. B05b *15/08*
U.S. Cl. 239—587 **11 Claims**



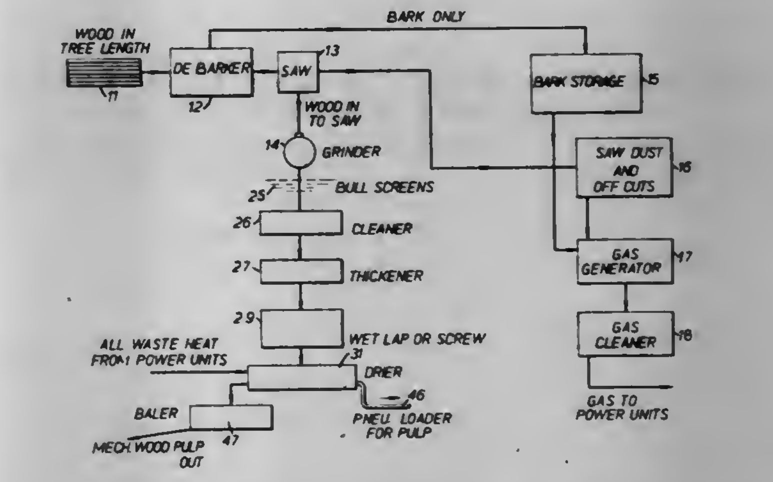
A device for hot-line washing of insulators in which a rotary drum which is rotated by the reaction force of the jet ejected through a nozzle is associated with a spring which may counterbalance the reaction force, thereby controlling the direction of the nozzle by the variation of the pressure of the jet. The device is simple in construction and inexpensive to manufacture and can wash the insulators located high above the ground or at such a place which is not accessible without danger, thus eliminating the faults due to the contamination of the surfaces of the insulators such as flashovers, corona discharges, obstacles to radio waves, etc.

3,606,173
DRY GRINDING SYSTEM FOR PREPARING IRON ORE FOR AN AGGLOMERATING PROCESS
Chester A. Rowland, Jr., Shorewood, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 6, 1969, Ser. No. 874,459
Int. Cl. B02c *21/00*
U.S. Cl. 241—17 **10 Claims**



A dry grinding system is disclosed for preparing iron ore for a process in which the ore is formed into water-bound agglomerates and then dried and heat hardened to provide agglomerates with sufficient degradation resistance to withstand handling and shipment. The system includes a separator for receiving about minus ⅜ inch iron ore particles which may be at ambient temperature and dividing it into a fraction containing fines and dust of about minus 325 mesh and a fraction of plus 325 mesh and minus ⅜ inch material. The system also includes a rotary dryer and conveying means that deliver the plus 325 mesh-minus ⅜ inch fraction of material from the separator to the dryer where such material is dried to a moisture content of about 0.5%. A dry operating grinding mill is provided and a second conveying means delivers the ore from the dryer to the mill where such material is reduced to about minus 325 mesh and discharged into a third conveying means for delivery to agglomerating apparatus. A fourth conveying means is connected to separator to receive the dust and fines fraction and bypass the dryer and mill, and discharge such material into the third conveying means to mix with and cool the discharge from the mill to reduce a tendency of the mill discharge to steam and evaporate water therefrom when water is added thereto for making the water-bound agglomerates. The second conveying means may include in series flow relation a second separator followed by a concentrator with the concentrator separating iron values from tailings which are discharged from the second conveying means. The second separator removes dust and fines generated in the dryer and has an outlet for such material connected to a fifth conveying means, discharging such fines and dust from the second separator directly into the fourth and mill bypassing conveying means for later remixing in the third conveying means with concentrate discharged from the mill.

3,606,174
TIMBER PULPING METHOD
William A. C. Theed, Wargrave, England, assignor to International Pulp Holdings Limited
Filed Nov. 30, 1967, Ser. No. 686,881
Claims priority, application Great Britain, Dec. 9, 1966, 55,249/66
Int. Cl. B02c *21/02*
U.S. Cl. 241—18 **6 Claims**



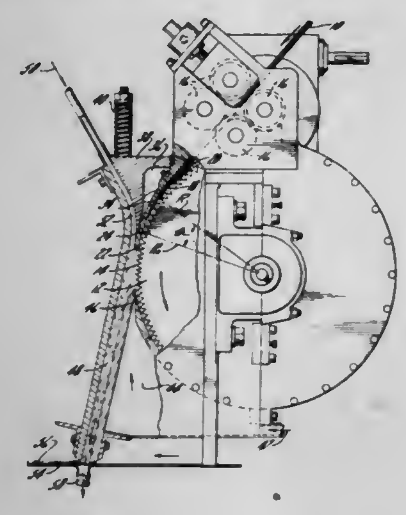
A method for pulping timber in the woodlands to save the cost of transporting felled timber to a pulping mill. Portable equipment can be transported to the site on a member of trailers or low loaders and these can produce dried pulp for delivery direct to the users. The great heat used in pulping the timber and in cooling the engine driving the pulper can be used for drying the pulp.

3,606,175
PICKER FOR DIVELLICATING PULP
David W. Appel and Charles L. Sanford, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 4, 1969, Ser. No. 882,258
Int. Cl. B02c *4/08*
U.S. Cl. 241—18 **11 Claims**

An apparatus for divellicating sheets into their component fibers, and a method therefore, includes a cylindrical drum having picking teeth on the surface thereof and a pulp sheet feed guide which is adapted to contact the top surface of the outermost pulp sheet so that at each point of contact between a pulp sheet and the picker teeth the angle between the plane tangent to the teeth at the point of contact and the plane of the pulp sheet at the contact point is not in excess of about 10°. This can be achieved by the use of a forming guide, the inner surface of which spirally approaches the picking teeth to a point of approximately zero clearance, the radial distance, R, from any point on the inner surface of the guide to the center axis of the drum being determined according to the following formula:

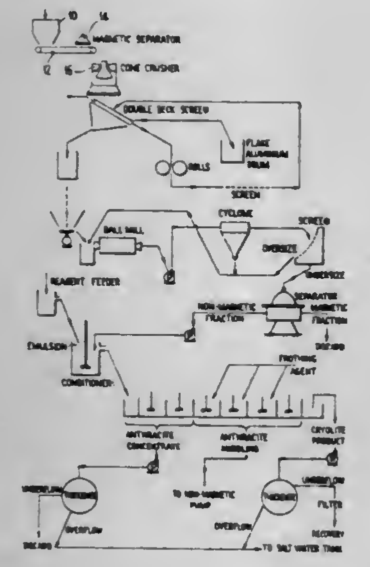
$$R=R_0(1+K\theta)$$

wherein R_0 is the radial distance from the inner guide surface to the center axis of the drum at the point of approximately zero clearance, θ is the angle in radians between the lines corresponding to R_0 and the line corresponding to R, and K is a constant which is greater than zero and less than 0.176.



3,606,176
SEPARATION OF REDUCTION BATH MATERIALS FROM CARBONACEOUS RESIDUES

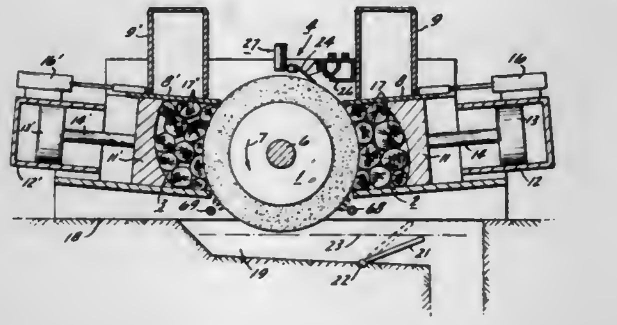
Peter Anthony Vodic, Brighton, South Australia, Australia, assignor to Comalco Aluminium (Bell Bay) Limited, Bell Bay, Tasmania, Australia
Filed June 27, 1969, Ser. No. 837,017
Claims priority, application Australia, July 1, 1968, 39,959/68
Int. Cl. B02c *1/00, 11/08, 21/00*
U.S. Cl. 241—20 **5 Claims**



The invention relates to the recovery of reuseable constituents from the spent cathodes from electrolytic furnaces used in the reduction of aluminum, which furnaces require to be shut down from time to time for maintenance or other purposes, at which stage they contain a spent cathode consisting of carbonaceous residues from the anode, metallic aluminum and cryolite. The constituents are recovered by crushing the spent cathode to reduce particle size and to form aluminum particles into flake aluminum; screening to remove flake aluminum and to separate the larger and smaller particles of the remaining constituents; putting the particulate material through a ball mill in the form a slurry with salt water to prevent undue leaching; and separating the constituents of the ground particulate material by flotation.

3,606,177
WOOD PULP GRINDER

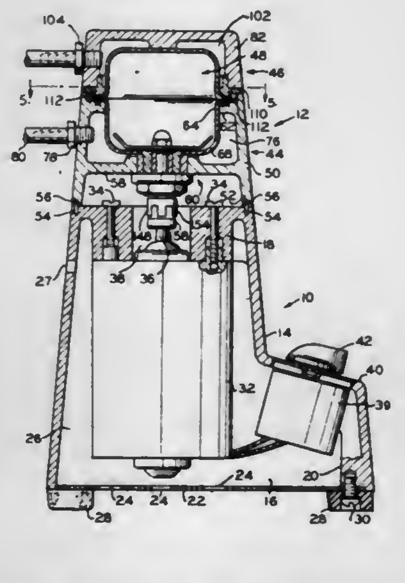
Donald K. Alexander, Fort William, Ontario, and John J. Denovan, Brantford, Ontario, Canada, assignors to Koehring-Waterous, Ltd., Brantford, Ontario, Canada
Filed Mar. 20, 1969, Ser. No. 808,891
Claims priority, application Canada, Apr. 11, 1968, 17,371
Int. Cl. B02c *4/00, 19/12, 23/02*
U.S. Cl. 241—42 **9 Claims**



A top stock removal device for a pulpwood grinding machine is mounted over the grind stone in the space between an uprunning pocket and a downrunning pocket and comprises a doctor blade which is included toward the uprunning pocket, showering nozzles for the blade, and a flume for diverting stock from the doctor blade over the axially opposite ends of the grind stone.

3,606,178
GRINDING MILL

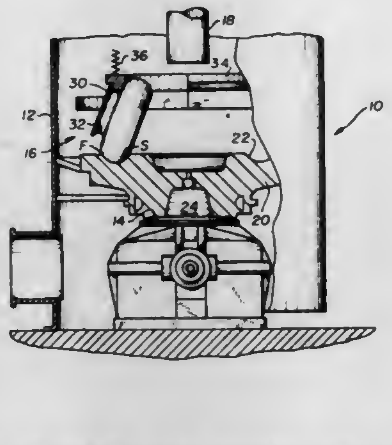
Edward M. Klopp, Medina, Ohio, assignor to The Chemical Rubber Company, Cleveland, Ohio
Filed Feb. 26, 1970, Ser. No. 14,559
Int. Cl. B02c *18/12, 23/00*
U.S. Cl. 241—65 **6 Claims**



A grinding mill apparatus particularly suited for grinding small laboratory samples and the like. The disclosed embodiment includes a base support and motor housing with a grinding chamber forming assembly removably mounted thereon. The grinding chamber assembly is comprised of two separable sections each defining approximately half of the chamber. Each section has an internal space for permitting a heat exchange fluid to be circulated therethrough. Additionally, a grinding blade assembly is removably mounted in one of the sections.

3,606,179
PULVERIZER

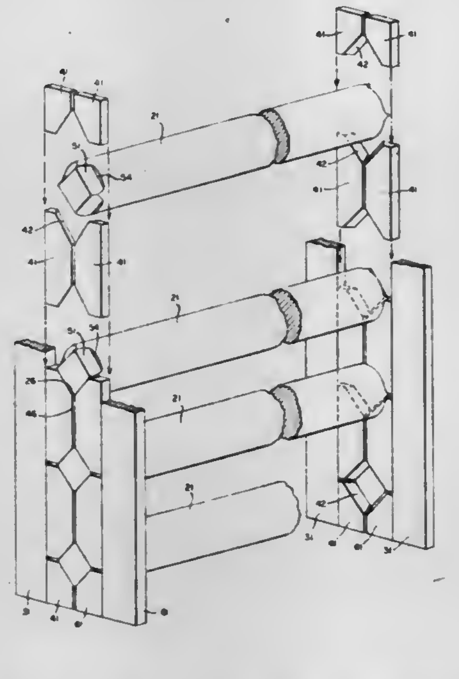
Chester J. Romanowski, Carteret, N.J., Guy A. Leclair, Mountaintop, Pa., and Harry H. Pratt, West Orange, N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Oct. 21, 1969, Ser. No. 868,006
Int. Cl. B02c *15/00;* **F16h** *13/00*
U.S. Cl. 241—103 **8 Claims**



Apparatus is provided for pulverizing raw coal feed stock into comminuted particles which can be conveyed to the combustion chamber of a furnace. An abrasive overlay is deposited on the thrust ring of the pulverizer to prevent skidding of the rollers.

3,606,180
BREAKER BAR MOUNTING FOR ROTARY IMPACTOR

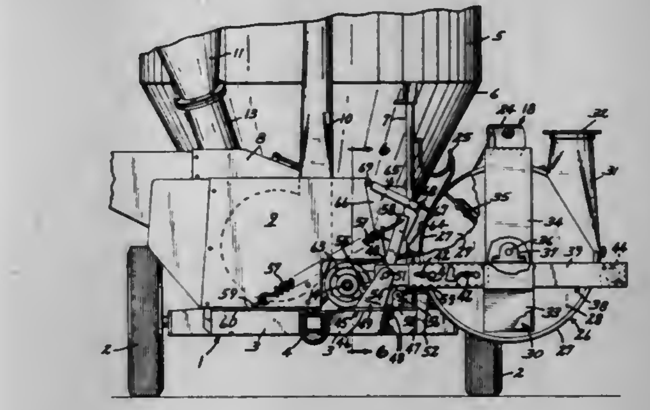
William F. Hahn, Devon, Pa., assignor to Pennsylvania Crusher Corporation, Broomall, Pa.
Filed Nov. 26, 1969, Ser. No. 879,983
Int. Cl. B02c *13/26*
U.S. Cl. 241—285R **14 Claims**



Breaker bars in a rotary impactor are tapered or otherwise shaped at their ends and supported thereat by a wedge-bar assembly located within the frame or housing of the impactor. The ends of the breaker bars do not project through the walls of the housing and there are no exterior supporting brackets and clamps for the wedge bars. The wedge-bar assembly is readily adjustable, and may be readily disassembled to allow removal of one or more of the breaker bars for maintenance and/or replacement.

3,606,181
BLOWER ATTACHMENT FOR PORTABLE FEED MILL

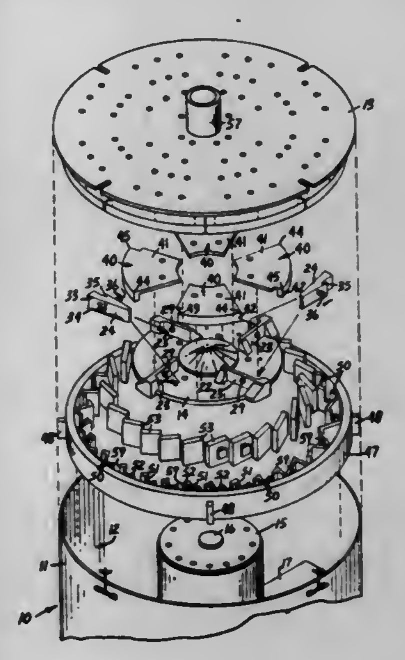
Carroll E. Moore, Minneapolis, Minn., assignor to Farmhand, Inc., Hopkins, Minn.
Filed Mar. 24, 1969, Ser. No. 809,693
Int. Cl. B02c *11/00;* **B65g** *53/40*
U.S. Cl. 241—60 **4 Claims**



A blower carrying frame pivotally connected to a bracket for mounting on a portable feed mill of the type including a feed mixing tank, mixing mechanism connected to a drive shaft, and a discharge conveyor driven from the drive shaft. The blower has an inlet for reception of material from the conveyor, and an outlet, and is movable between inoperative storage and operative positions relative to the mixer and bracket. The blower is operatively coupled to said mixer drive shaft.

3,606,182
CRUSHING CHAMBER FOR A CENTRIFUGAL IMPACT ROCK CRUSHING MACHINE

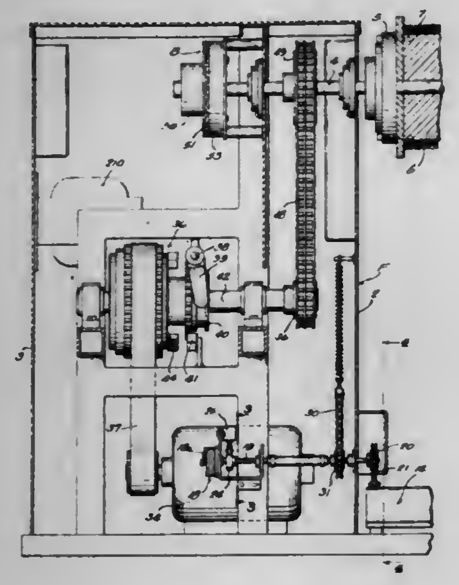
Donald R. Warren, Spokane, Wash., assignor to Cimco, Inc., Spokane, Wash.
Filed Feb. 27, 1969, Ser. No. 803,001
Int. Cl. B02c *13/18, 13/28, 19/00*
U.S. Cl. 241—275 **7 Claims**



A crushing chamber for a centrifugal impact rock crushing machine is described, having a rotatable turntable for accelerating the rock to high velocities and then discharging the rock against independent wear resistant impact blocks circumscribing the turntable.

3,606,183
COIL WINDING APPARATUS

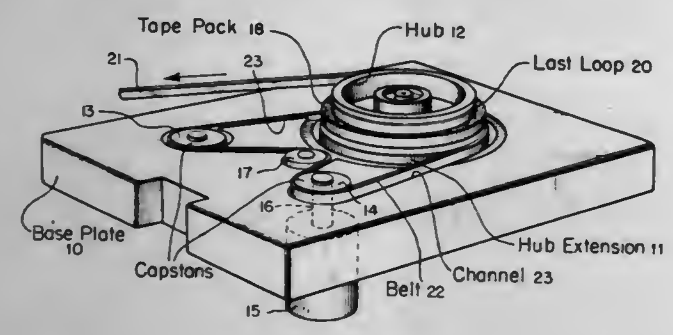
Anton F. Turk, New Berlin, Wis., assignor to
Steel Fabricating Inc., Elm Grove, Wis.
Filed Mar. 17, 1969, Ser. No. 807,597
Int. Cl. H01f *41/06;* **B65h** *81/06*
U.S. Cl. 242—7.07 9 Claims



Flexible material is wound onto a form driven by electric motor operated transmission. To maintain constant tension on the material being wound, a brake prevents or regulates rotation of the winding form. A torque sensing circuit is connected to the brake to positively hold the form and prevent its rotation in an unwinding direction until the driving torque of the transmission reaches a predetermined value.

3,606,184
CONTINUOUS LOOP TAPE RECORDER WITH DRIVEN TAPE PACK

Stanley R. Fencel, Westminster, Calif., assignor to
Borg-Warner Corporation, Chicago, Ill.
Filed Apr. 24, 1968, Ser. No. 723,736
Int. Cl. B65h *17/46, 17/48*
U.S. Cl. 242—55.19R 5 Claims

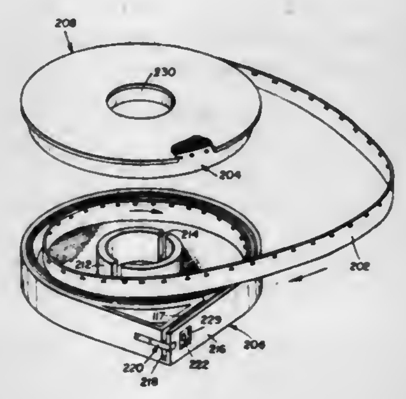


A tape recorder of the endless loop type in which the tape, pack, or "cartridge," is supported around a hub, which is positively driven by the same belt which couples the capstans to the drive motor.

3,606,185
NON-REWIND CARTRIDGE FOR ROLL OF STRIP MATERIAL

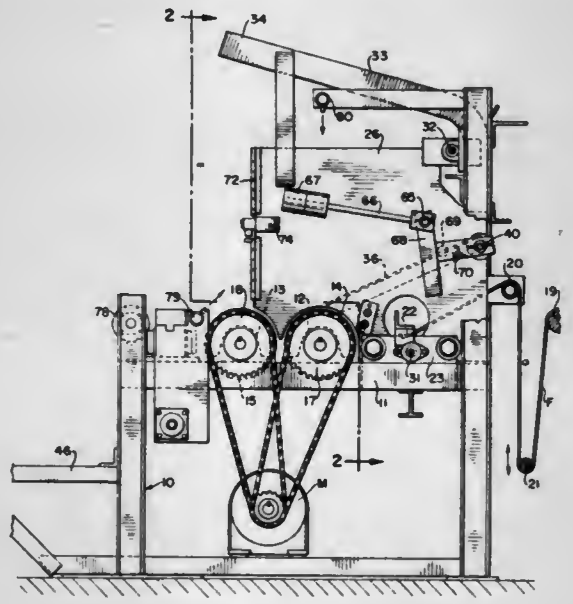
William A. Martin, Fairport, N.Y., assignor to
Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 659,938, Aug. 11, 1967. This application Feb. 13, 1970, Ser. No. 11,268
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.21 15 Claims

A non-rewind cartridge for use on an apparatus, such as film or tape projector, wherein a rotatable holder winds up entering strip material from the periphery of the holder inwardly so that the lead portion of the strip material is outermost; and the roll of strip material is also disposed in supply form in the same cartridge.



3,606,186
AUTOMATIC ROLL-UP BATCHER

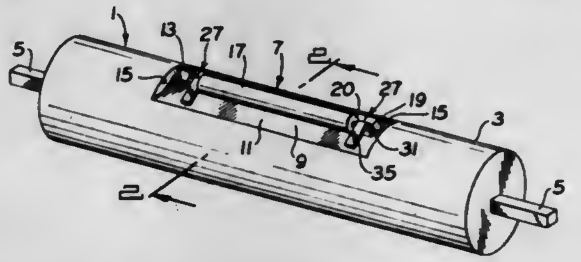
Eugene Cohn, Great Neck, and Andrew P. Cecere, Valley Stream, N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.
Filed Oct. 18, 1968, Ser. No. 768,872
Int. Cl. B65h *19/20*
U.S. Cl. 242—56R 20 Claims



The invention is directed to a roll-up batcher for web materials, particularly knitted fabrics, which is characterized particularly by its simplified construction and low overall cost, while having a plurality of desirable operational features and being substantially automatic in operation. The roll-up batcher receives knitted fabric or other web material continuously, rolls it about a core tube to provide a roll or "batch" of predetermined size. The batch roll is cut from the web and removed, and the winding of a new batch roll is automatically commenced. The equipment of the invention utilizes lightweight core tubes, to facilitate handling of the roll of batches; it is readily adjustable in width, to accommodate various widths of fabric or other web material; it easily handles the winding of very small diameter "sample size" rolls; and it is arranged so that core tube loading and batch unloading may be readily accomplished from the front or discharge side of the equipment.

3,606,187
CLUTCH FOR TIGHTENING WINDING TUBE ON WINDUP SHAFT

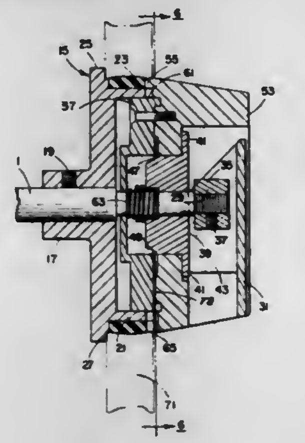
Kenneth H. Hahn, 4336 Berwick,
Toledo, Ohio 43612
Filed Apr. 17, 1970, Ser. No. 29,592
Int. Cl. B65h *75/30;* **F16d** *41/07*
U.S. Cl. 242—68.2 3 Claims



Sheet goods are conventionally solid in roll form wherein the roll is wound upon a hollow tube that is of a length and diameter such that it may be fitted into various processing machinery. Conventional windup machines for these roll goods utilize clutches as pivotal teeth clutch assemblies and sliding cable clutch assemblies to tighten the winding tube on the windup shaft during the winding operation; these devices frequently jam, very often damage the inner surface of the winding tube, and frequently require attention. This invention is a roller type clutch for mounting on a windup shaft for tightening a winding tube thereto that provides jam-free operation, that does not damage the winding tube, and that requires very little, if any, maintenance.

3,606,188
DEVICE FOR SECURING A MAGNETIC TAPE REEL

Jack M. Wagner, Arcadia, Calif., assignor to
Data Devices, Inc.
Filed May 12, 1969, Ser. No. 823,687
Int. Cl. B65h *17/02, 75/02*
U.S. Cl. 242—68.3 2 Claims

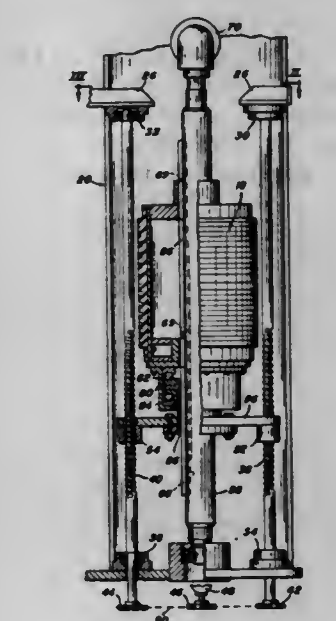


A device for securing and driving reels of magnetic tape to devices on which they are used, comprising a rim having an elastomeric compressible layer about its outer periphery and a movable hub element which compresses and expands the elastomeric material to secure a tape reel thereon, further including a plurality of projectable finger elements which extend radially outward, covering a reel prior to the compression and expansion of the elastomeric element.

3,606,189
METHOD AND APPARATUS FOR COILING STRIP

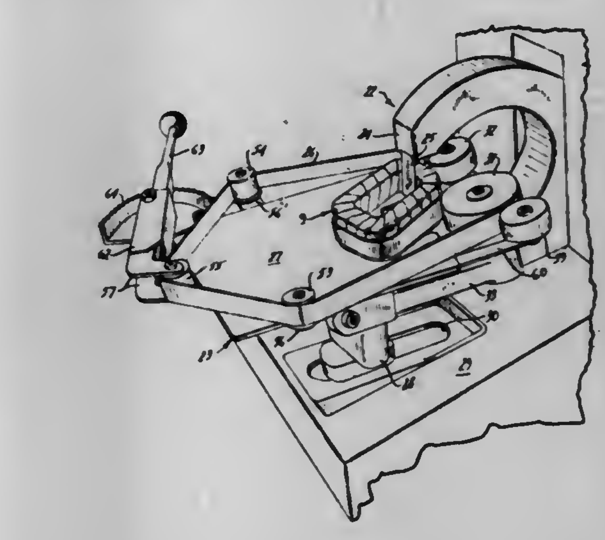
Leroy J. Johnson, Valparaiso, Ind., assignor to
United States Steel Corporation
Filed Apr. 2, 1970, Ser. No. 24,984
Int. Cl. B21c *47/02;* **B65h** *23/02*
U.S. Cl. 242—78.1 7 Claims

In uncoiling an open coil of steel strip arranged with its axis vertical and recoiling the strip into a tight coil also arranged with its axis vertical, the strip passes around a vertical tension drum with a vertical snubber roll bearing against the strip on the tension drum in order to position the strip in a desired vertical position. The snubber roll has a spline connection with a rotatable shaft fixed in a vertical position. Movement of the strip causes rotation of the snubber roll and its shaft. The snubber roll is connected to two diametrically opposed nuts which engage vertical threaded guide rods which are rotated in unison by a reversible motor. If the strip wanders from its desired position the operator runs the motor in the desired position to raise or lower the snubber roll while the coiling continues to return the strip to the desired position.



3,606,190
APPARATUS FOR TAPING CLOSED COILS

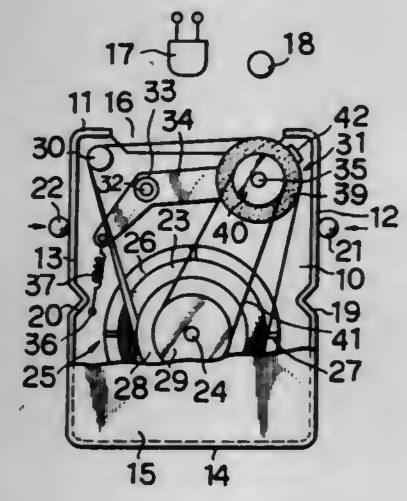
James R. Burton, Franklin, Wis., assignor to
McGraw-Edison Company, Milwaukee, Wis.
Filed Sept. 12, 1968, Ser. No. 759,443
Int. Cl. B65h *81/02;* **H01f** *41/12*
U.S. Cl. 242—6 3 Claims



Apparatus for wrapping an insulating tape on a rectangularly shaped, prewound primary coil of a lighting transformer. An endless belt passes about a plurality of guide rollers one of which is movable laterally for release of the belt tension. The guide means includes a pair of drive wheels frictionally engaging the inner periphery of belt and providing movement thereof. The drive wheels are mounted in spaced relation slightly greater than the maximum width of tape and the belt is pulled inwardly between the two drive wheels to define an inner drive loop. The coil is disposed within the loop and by increasing the belt tension is moved outwardly into friction driving engagement with the belt at the point of contact to the drive wheels. A wrapping head is driven in timed relation with the driven coil to apply overlapping turns of tape on the coil.

3,606,191
ENDLESS MAGNETIC TAPE CARTRIDGE

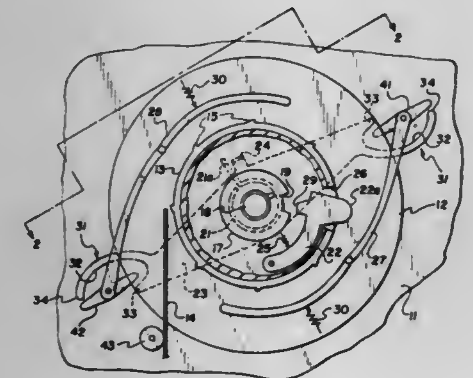
**Itsuki Ban, 829 Higashi-Oizumimachi,
Nerima-ku, Tokyo-to, Japan
Filed May 12, 1969, Ser. No. 823,786
Claims priority, application Japan, May 15, 1968,
43/39,286
Int. Cl. B65h** *17/48*
U.S. Cl. 242—55.19A 3 Claims



An endless magnetic tape cartridge which is capable of recording and reproducing by an endless magnetic tape cartridge playing apparatus including a magnetic head and a rotary driving capstan, comprising a cartridge housing, a reel rotatably provided within the cartridge housing, an endless magnetic tape spirally wound to the reel, a pinch roller rotatably provided within the housing, a reel pulley provided on the reel, a pinch roller pulley provided on the pinch roller, and a belt interposed between the reel pulley and the pinch roller pulley. The tape is drivingly transported between the capstan and the pinch roller and the reel is rotated through the pinch roller pulley, belt and the reel pulley as the pinch roller is rotated.

3,606,192
AUTOMATIC TAKEUP MECHANISM FOR STRIP MATERIAL

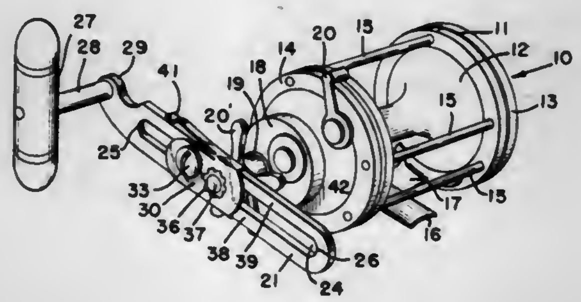
**William H. Goddard, Brockport, N.Y., assignor to
Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 17, 1970, Ser. No. 29,575
Int. Cl. B65h** *27/00*
U.S. Cl. 242—76 7 Claims



A takeup mechanism for directing strip material, such as motion picture film, onto a rotatable core in a device for handling such material, includes a plurality of curved guiding fingers for directing the free leading end of the strip material toward the core member for engagement by such core member. Means are provided which are effective automatically in response to strip build-up on the core for moving the ends of the fingers away from the core and out of contact with the strip material.

3,606,193
CRANK FOR FISHING REEL

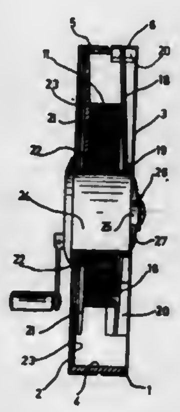
**Arthur L. Allred, 929 Norwood Ave.,
High Point, N.C. 27262
Filed July 19, 1968, Ser. No. 746,037
Int. Cl. G05g** *1/00;* **A01k** *89/00*
U.S. Cl. 242—84.1J 2 Claims



An adjustably extensible handle for attachment to the driving boss of a conventional fishing reel. The handle includes a crank arm having a knob at one end and an elongated slot positioned over the boss and retained thereon by a clamping plate. The clamping plate has a serrated opening fitting over a correspondingly shaped spool drive spindle of the reel and is retained thereon by an offset screw seated in a tapped opening in the driving boss. The elongated slotted portion of the handle is slidable on the boss to attain the crank arm length desired after which a resilient finger of the clamp inhibits free displacement of the crank on the boss.

3,606,194
CASING FOR TAPE MEASURE

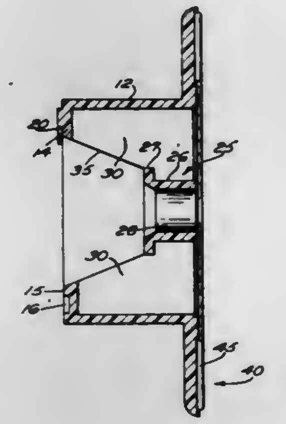
**Andre Quenot, Besancon, France, assignor to
Quenot & Cie S.a.r.l., Besancon, France
Filed Mar. 5, 1969, Ser. No. 804,716
Claims priority, application France, Apr. 22, 1969,
148,905
Int. Cl. B65h** *75/16*
U.S. Cl. 242—84.8 9 Claims



A tape measure casing having a mandrel positioned therein for supporting a coiled measuring tape. The mandrel has radial fingers for cooperation with a spring having corresponding radial fingers for guiding the winding of the tape and for acting as a brake on the coiled tape. The mandrel is provided with slots in its peripheral face for receiving the outer extremities of the spring fingers to prevent rotation of the spring, but to allow axial movement of the spring fingers as they bear on the tape. Other braking means can be held in place by the mandrel or secured thereon, and the mandrel can also carry an outlet allowing the tape to be tangentially withdrawn from the casing.

3,606,195
MOLDED PLASTIC SPOOL

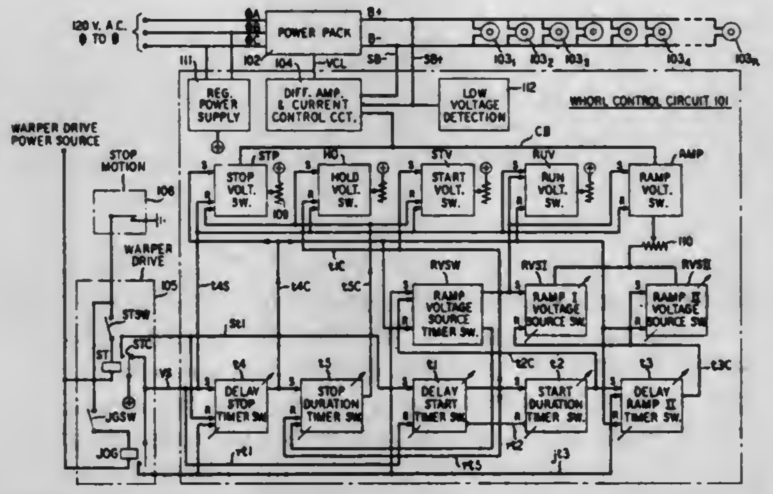
**Hovey T. Freeman, Jr., Guaynabo, Puerto Rico, and
William B. Schlegel, Cranbury, N.J., assignors to Durafoam, Inc.
Filed Feb. 7, 1969, Ser. No. 797,424
Int. Cl. B65h** *75/14*
U.S. Cl. 242—118.7 3 Claims



A spool formed of substantially identical halves, each having a cylindrical drum with an abutting surface at one end and a flange at the other end, the abutting surfaces being keyed together and the flanges being so formed that the spool will not shift when co-axially positioned one on the other in stacked relation. A hub is provided for receiving an arbor which is mounted by webs extending between the hub, the barrel and its flanges, the webs also providing a driving slot.

3,606,196
WHORL CONTROL SYSTEM

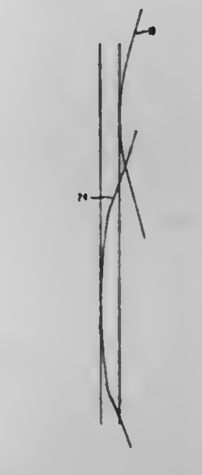
**George Waller Heard, Cheshire, Conn., assignor to Allied
Control Company, Incorporated, Plantsville, Conn.
Filed June 1, 1970, Ser. No. 41,987
Int. Cl. B65h** *57/00, 59/16*
U.S. Cl. 242—155M 12 Claims



Circuits are disclosed to control the power supply furnishing D.C. voltage to a plurality of electromagnetic whorl tension devices which control the tension of a plurality of yarns during the production of a beam by a warper. Five voltage level controls, five adjustable timing controls and two ramp voltage controls are disclosed to enable the application of the tension to the plurality of yarns to be within close tolerances of a selected running tension level during the starting, running and stopping of the beaming operation.

3,606,197
PLURAL CYCLE CAM YARN WINDING PROCESS AND PACKAGES PRODUCED THEREBY

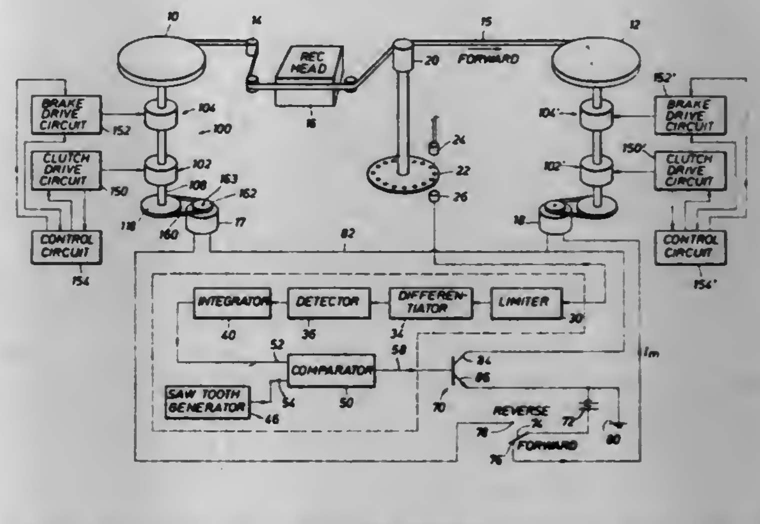
**Richard L. Akers, Wilmington, Del., assignor to E. I. du
Pont de Nemours and Company, Wilmington, Del.
Filed June 3, 1969, Ser. No. 830,054
Int. Cl. B65h** *54/28, 54/38*
U.S. Cl. 242—176 7 Claims



A process for winding yarn into a cylindrical-bodied package wherein the yarn is traverse wound in layers of helical coils on a bobbin wherein the coils are laid down in their reversals in different shaped curves in a repeating progression throughout the winding of the package. The corresponding stroke lengths of the coils with different shaped reversals may also be of different lengths.

3,606,198
TAPE TRANSPORT

**Cecil R. Gilbreath and Henry T. Ray, Houston, Tex.,
assignors to Geo Space Corporation
Filed June 19, 1969, Ser. No. 834,736
Int. Cl. B65h** *59/38;* **G11b** *15/52, 15/54*
U.S. Cl. 242—186 8 Claims

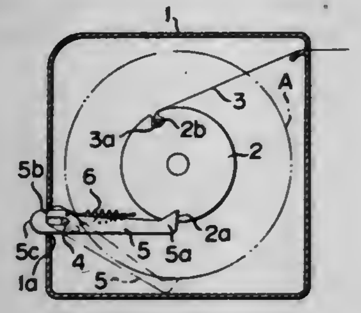


This invention is concerned with magnetic tape transports which include a supply reel and a takeup reel for moving magnetic recording tape about a magnetic read-write head. Each reel preferably has a drive motor. A transducer senses linear tape speed errors by producing a signal having a parameter which is proportional to the instantaneous speed of the tape. This signal is converted for comparison with a standard signal and the output of the comparator network is used to control the speed of the driving motor.

3,606,199

DEVICE FOR TERMINATING UNWINDING OF BELT-SHAPED BODY FROM A SPOOL

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 15, 1969, Ser. No. 816,199
Claims priority, application Japan, Apr. 17, 1968, 43/26,263
Int. Cl. B65h *25/04, 63/08;* **G11b** *23/10*
U.S. Cl. 242—187 5 Claims

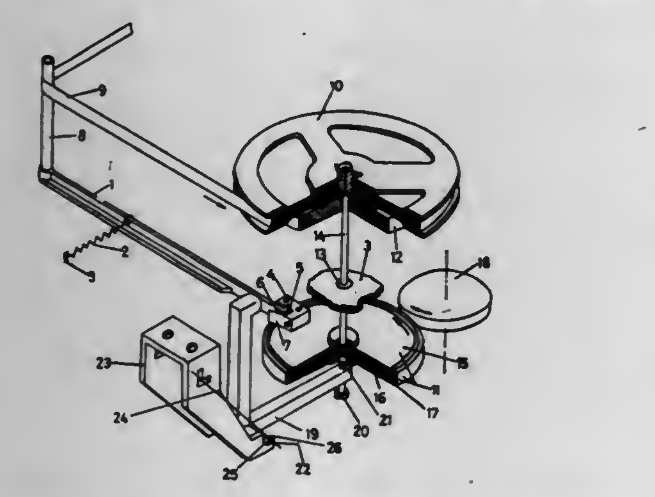


Device for terminating unwinding of film or tape on a spool. A spring biased lever follows an unwinding and decreasing film supply to engage a notch on the spool for the termination. Signal means are provided in association with the lever to indicate the termination.

3,606,200

TAPE TENSION CONTROL SYSTEM WITH A SENSING LEVER, PARTICULARLY FOR MAGNETIC SOUND RECORDERS

Hubert O. Richt, 4 Buchenweg, 8135 Soecking, Germany, and Albert Liebl, 12 Am Muhleich, 813 Starnberg, Germany
Filed Aug. 23, 1968, Ser. No. 757,806
Claims priority, application Germany, Aug. 24, 1967, P 15 49 043.4
Int. Cl. B65h *59/38, 63/02;* **G03b** *1/04*
U.S. Cl. 242—189 6 Claims



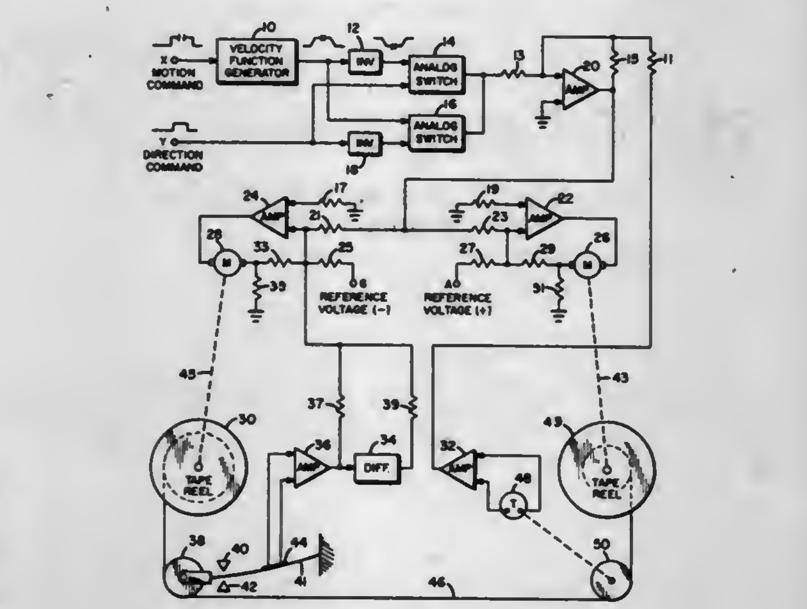
An apparatus for regulating the tension of a tape moving between two reels on a tape recorder. A sensing lever is biased by a spring to hold a preselected tension on the tape. If the tension on the tape is above or below the desired value, the sensing lever moves the first arm of a bell crank lever, the second arm of which is connected to a variable friction clutch in order to vary the speed of the reel to adjust the tape tension.

3,606,201

CONSTANT SPEED, CONSTANT TENSION TAPE TRANSPORT

Neil J. Petusky, Lafayette Hills, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed July 15, 1969, Ser. No. 841,834
Int. Cl. B65h *59/38, 63/02;* **G03b** *1/04*
U.S. Cl. 242—190 13 Claims

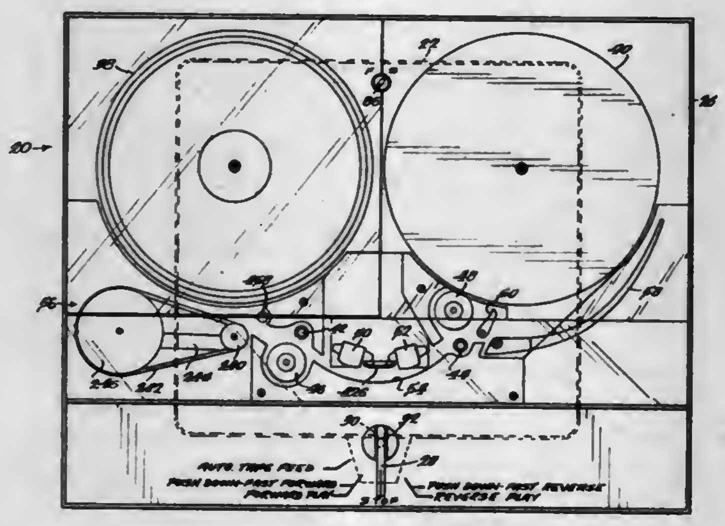
The instant invention relates to a constant speed tape transport system which utilizes a minimum of two motors in the tape drive mechanism and two closed loop servo systems comprising a velocity loop and a tension loop. Both loops are active in both the static and dynamic states of the system. A signal is generated in the tension loop in either state for maintaining approximately equal tension in the tape despite unequal tape radii on the associated tape reels.



3,606,202

TAPE RECORDER

Noman L. Williams, Villa Park, and Allen L. Ryan, Chicago, Ill., assignors to Warwick Electronics Inc.
Filed Sept. 11, 1967, Ser. No. 666,739
Int. Cl. G11b *15/32, 15/66*
U.S. Cl. 242—192 7 Claims

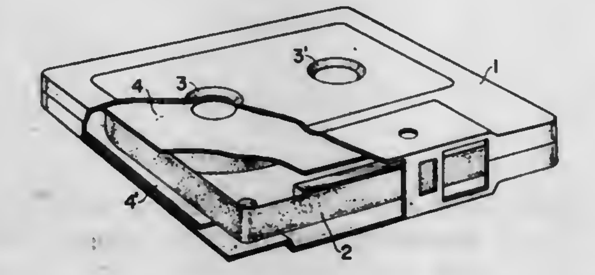


A two directional tape recorder apparatus having means for automatically threading tape from a supply reel to a take-up reel; means for effecting record, erase, and playback functions in either direction of movement of the tape; means for automatically reversing the direction of movement of the tape; and means for shifting transducing heads into operative association with different tracks on the tape during tape reversal. A scissors brake mechanism is provided for stopping supply and takeup turntables and to release the turntables for rotation during wind, rewind, fast wind and fast rewind operations; and a single control is provided to actuate separate slide members for selecting wind and rewind, and fast wind and fast rewind functions, with means being provided for shifting tape away from the transducing heads during fast wind and fast rewind functions.

3,606,203

CASETTE ENCAPSULATING MAGNETIC RECORDING TAPE

Goro Akashi, Masaaki Fujiyama, and Takashi Hirakawa, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 13, 1969, Ser. No. 865,711
Claims priority, application Japan, Oct. 12, 1968, 43/74,388
Int. Cl. G03b *1/04;* **B11b** *15/32, 23/04*
U.S. Cl. 242—199 5 Claims

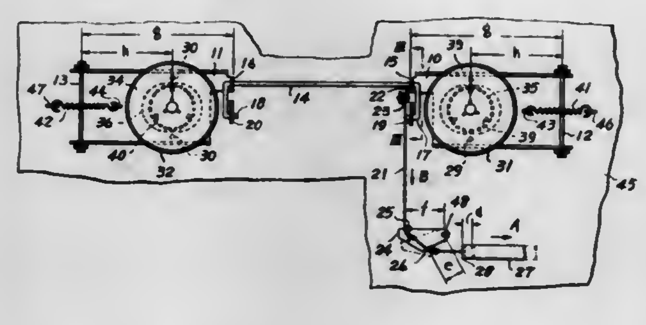


A cassette enclosing a magnetic tape wherein the cassette contains a plastic regulating plate. The plastic regulating plate contains finely divided particles dispersed therein.

3,606,204

OPERATION CHANGING DEVICE FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Mitsuo Iwata, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan
Filed May 23, 1969, Ser. No. 827,184
Claims priority, application Japan, May 25, 1968, 43/35,081; Feb. 14, 1969, 44/10,508
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—201 8 Claims



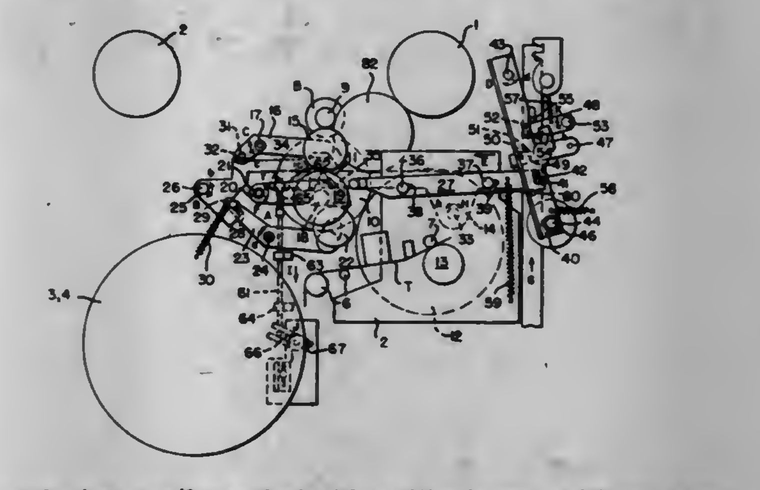
An operation changing device for magnetic recording and reproducing apparatus including vertically rotatable arms having oppositely aligned free end portions, a connecting rod connected between the free ends of the arms, take-up disks vertically movable in response to the rotation of the arms, a string, one end of which is secured to a rotatable arm for rotating the arm by its movement, and a means for changing the direction of displacement of the string from vertical to horizontal. The take-up disks are thus adapted to move simultaneously and vertically by horizontal movement of the string.

3,606,205

VIDEO-TAPE RECORDER WITH A STILL REPRODUCTION DEVICE

Soji Nakamoto, Osaka Prefecture, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi-shi, Japan
Filed Sept. 12, 1969, Ser. No. 857,358
Claims priority, application Japan, Sept. 14, 1968, 43/66,280, 43/79,614
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—206 13 Claims

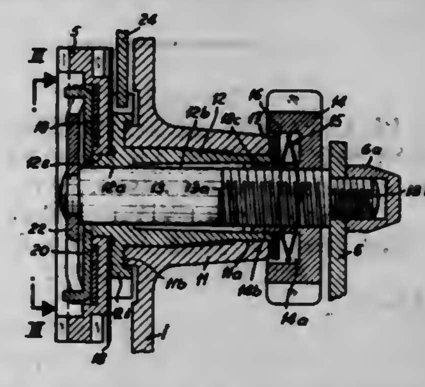
A video-tape recorder with still motion reproduction device which is able to adjust finely the scanning position of the tape on the rotary head and/or to change the picture frame of the tape one by one by rotating the capstan together with the tape keeping suitable tension for reproducing easily a desirable still picture without beat-noise.



3,606,206

SPIN CASTING REEL

Maurice Jacquemin, Clauses, France, assignor to Carpano & Pons, Clauses, France
Filed Dec. 30, 1968, Ser. No. 787,755
Claims priority, application France, Feb. 7, 1968, 139,013
Int. Cl. A01k *89/02*
U.S. Cl. 242—220 6 Claims



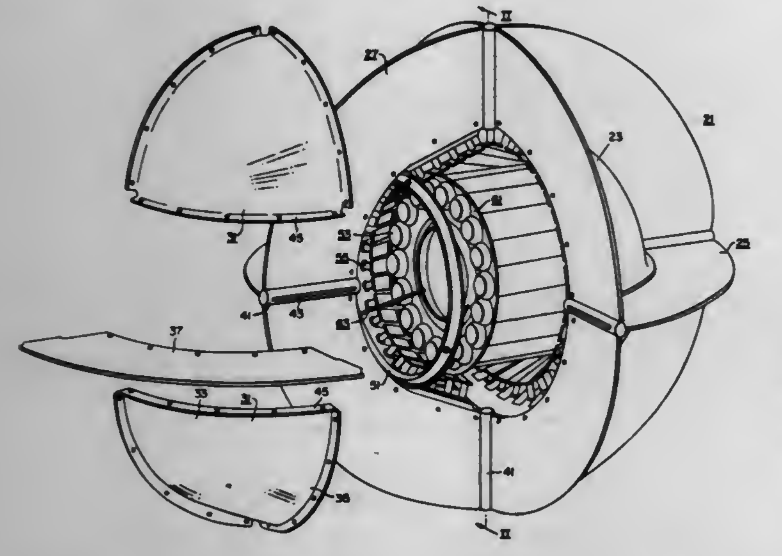
A pin casting reel having a clutch device in which the torque limiting mechanism has a nut which screws on a crank shaft, with a ratchet wheel slidingly mounted on the shaft to lock the same in one direction. The ratchet wheel is urged by a spring against a friction washer in contact with one side of a drive gear of the mechanism while a second friction washer is applied against the other side of the wheel by a supporting disc fixed on the shaft and forming one of the members of the limiting mechanism which also has a movable member fixed on the crank shaft and facing the support disc from the side opposite the wheel. The support disc and movable member bear on one another through at least one ramp which makes possible a relative axial movement of said members dependent upon the angular position of one with respect to the other. These members also having at least two checks and two catches adapted to cooperate to produce the disconnection of the limiting member when the crank is driven in the direction opposite the winding direction.

3,606,207

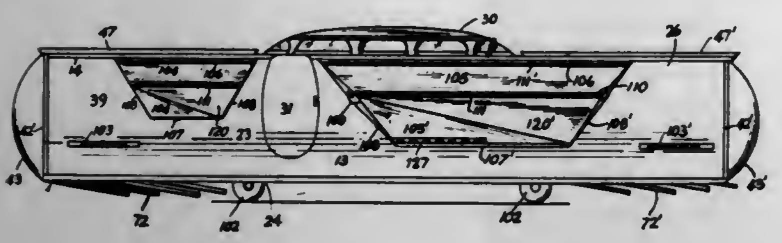
REENTRY VEHICLE FOR THERMOELECTRIC GENERATOR

Robert I. Weiner, Pikesville, Md., and Alvin H. Kasberg, Murrysville, and Carl Alvin Bodenschatz, Indiana, Pa., assignors to Nuclear Materials and Equipment Corporation, Apollo, Pa.
Filed Mar. 8, 1968, Ser. No. 711,619
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 10 Claims

A vehicle 21 of the unoriented type, particularly a radioactive isotope thermoelectric generator for use in space which is capable of intact reentry and survival in the earth's atmosphere. The vehicle is also capable of offering sufficient protection to radioactive capsules **53** or the like which it carries that these capsules are not buried, broken or melted down. The vehicle **21** has an outer casing or enclosure **23** from which fins **25**, **27** (FIG. 1) extend, the fins predominately mutually support each other and do not rely on support by the casing **23**. Specifically the casing is in the form of a sphere and the fins are in the form of a grid of orthogonal rings extending at right angles to the sphere.



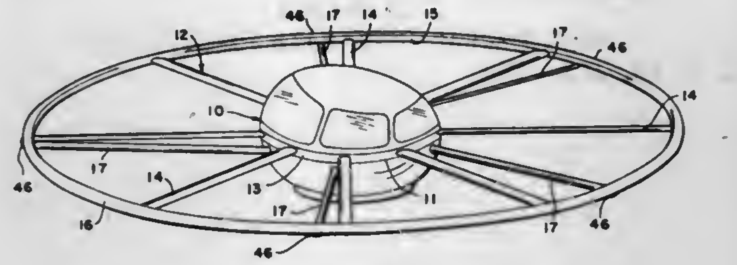
3,606,208
FLYING PLATFORM-AUTOMOBILE BOAT AND AIR SUSPENSION CAR COMBINATION
Steven Postelson-Apostolescu, 419 W. 35th St.,
New York, N.Y. 10001
Filed Dec. 11, 1968, Ser. No. 789,640
Int. Cl. B64c *27/20*
U.S. Cl. 244—7 12 Claims



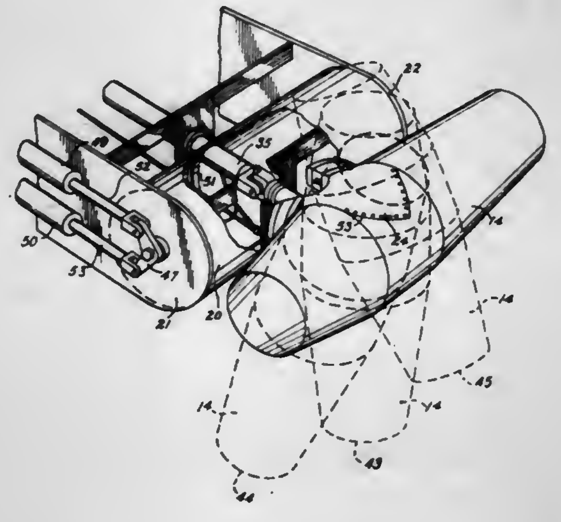
An aircraft having an elongated fuselage, angular sectionalized wings mounted on the side wall of the fuselage, and the front wings being smaller than the rear wing. A wing member is hinged on each of the larger and smaller wings and including means to tilt the wing member upward or downward for additional lift. The wings having a passage extending therethrough in which a jet engine is mounted and means to exhaust gas from the jet engine rearward, downward and into the horizontally directional vents. The fuselage being provided with rotor blade and motive means for ground effect and normal flight including means for controlling the direction of flight.

3,606,209
TURBINE DRIVE FOR ROTARY WING AIRCRAFT
William N. Rosta and Russelle L. Maxwell, Fort Worth, Tex., assignors to The VLM Corporation, Fort Worth, Tex.
Filed Jan. 26, 1970, Ser. No. 5,464
Int. Cl. B64c *27/20*
U.S. Cl. 244—12 19 Claims

A rotary wing, vertical lift aircraft includes a central fuselage and a rotor consisting of an inner annular hub rotatably supported on and encircling the fuselage, radially extending rotor blades and an outer ring connecting the outer ends of the blades. The rotor ring is guided in an annular guide track supported on the body by means of radial struts. The rotor ring defines a reaction turbine supplied with pressurized air from air supply stations located in the guide track and supplied from a compressor within the fuselage through the supporting struts.

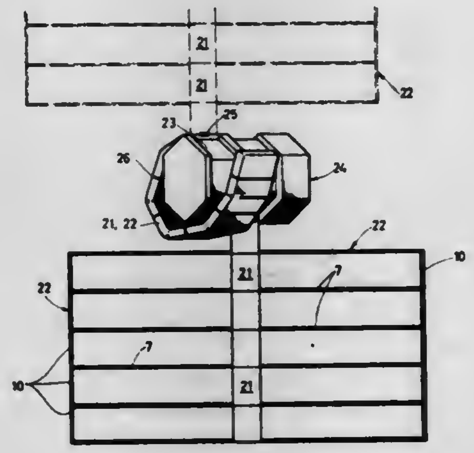


3,606,210
ENGINE MOUNTING FOR VTOL AIRCRAFT AND THE LIKE
Ralph E. Busby, 1620 9th St.,
Greeley, Colo. 80631
Filed Nov. 6, 1969, Ser. No. 874,519
Int. Cl. B64d *27/06*
U.S. Cl. 244—12A 6 Claims



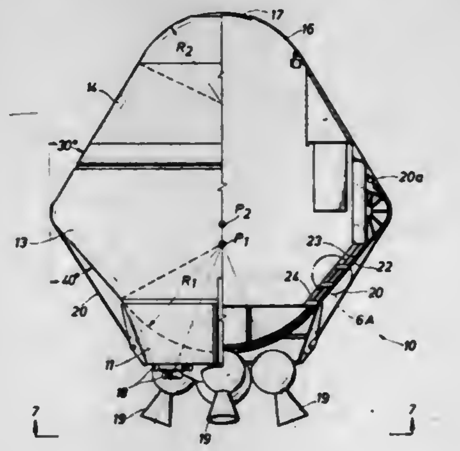
An engine mounting for aircraft capable of horizontal and vertical flight comprises a cylindrical base pivotally mounted on a horizontal longitudinal axis and having a portion constituting a continuation of the surface of the airfoil. An engine, preferably of the jet propulsion type, is mounted on a laterally extending housing projecting from the cylindrical base and provided with a ring bearing affording 180° of rotation of the engine in a plane parallel to the axis of the base whereby the engine may be positioned to direct its thrust forwardly, upwardly or in reverse and may be inclined from the vertical to either side when in its upward thrust position to produce a lateral thrust component. The engine pod structure is rotated by turning it on a shaft which intersects the axis of the base and passes through the base. A universal joint in the shaft affords bending of the shaft at the pivotal axis of the base. The lateral housing and bearing ring preferably have diameters of the order of that of the engine pod.

3,606,211
OUTRIGGER CONSTRUCTION
Wolfgang Roersch and Günther La Roche, Munich, Germany, assignors to Messerschmitt Bolkow Gesellschaft mit beschrankter Haftung, Munich, Germany
Filed June 30, 1969, Ser. No. 837,713
Claims priority, application Germany, Oct. 8, 1968, P 18 01 777.1
Int. Cl. B64g *1/00*
U.S. Cl. 244—1SS 26 Claims



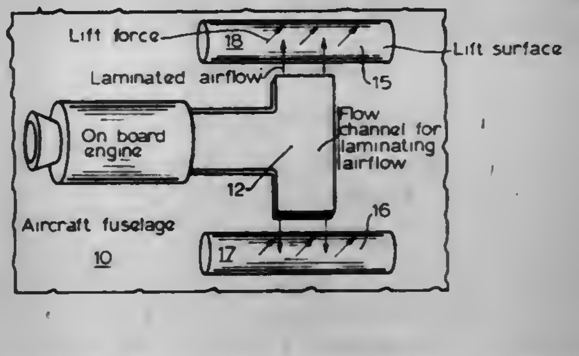
An outrigger secured to a space vehicle is displaceable between an inoperative position mounted in a compact arrangement against the vehicle and an operative position in which it is extended outwardly from the vehicle. The outrigger is formed of a main outrigger section which extends outwardly from the vehicle in the operative position and auxiliary outrigger sections which extend laterally from the main outrigger section in the operative position. In the inoperative position the auxiliary outrigger sections are disposed in a folded arrangement on the main outrigger section.

3,606,212
EMERGENCY EARTH ORBITAL ESCAPE DEVICE
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention by Raymond H. Bradley, Houston, Tex., and Warren K. Carter, Santa Cruiz, Louis A. De Lateur, San Jose, and Dean Chowing, Sunnyvale, Calif.
Filed Feb. 2, 1970, Ser. No. 7,669
Int. Cl. B64g *1/00*
U.S. Cl. 244—15.5 11 Claims



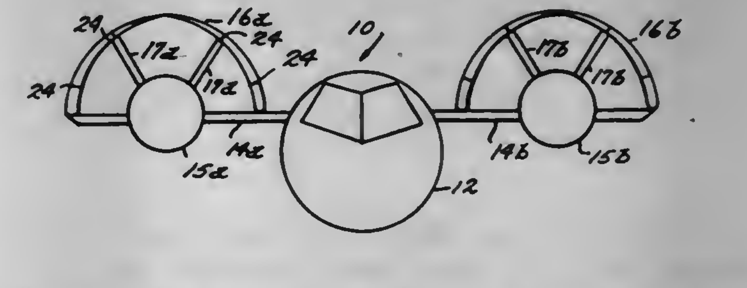
A space vehicle constructed from dissimilar right angle conical sections mated along their bases and having their apexes truncated and spherically rounded to provide the unique property of single point aerodynamic and hydrodynamic stability. A 40° half-angle cone section forms the forward end of the vehicle and is covered with a heat shield of ablative material to dissipate heat generated upon reentry into the Earth's atmosphere. A 30° half-angle cone forms the aft section and includes an entry hatch and window. A separable module secured to the leading end carries control thrusters and retrorocket motors for orienting the vehicle and decelerating it out of orbit toward the Earth. Passive power and life support systems are employed to increase storage life and reaction time of the vehicle. The relative position of the vehicle's center of gravity, center of aerodynamic pressure and hydrodynamic metacenter resulting from the configuration of the two conical sections render the craft stable in the correct position of heat shield leading during free fall through the atmosphere and with the aft end above the water when floating. This single point aerodynamic and hydrodynamic stability is accomplished without resorting to the use of outriggers, balloons, or other flotation devices required in existing reentry vehicles.

3,606,213
LAMINAR FLOW STRUCTURE
Eugene J. Lubimov, 668 Sirine Ave.,
Virginia Beach, Va. 23462
Filed May 5, 1969, Ser. No. 821,855
Int. Cl. B64c *3/00*
U.S. Cl. 244—35 3 Claims



An air foil lift effect is created by directing air from an onboard pressurizing source such as a turbine, through a channel which tends to laminate the flow and to direct the laminated flow against a curved surface where the lift effect is produced.

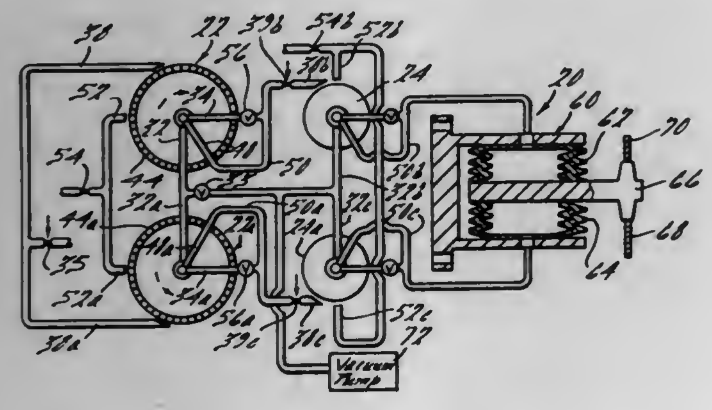
3,606,214
AIRFOIL
Galen E. Calvert, 7540 Beluga,
Anchorage, Alaska 99504
Filed Oct. 8, 1969, Ser. No. 864,859
Int. Cl. B64c *3/44, 3/54*
U.S. Cl. 244—4.3 16 Claims



An airfoil construction is described in which the flight characteristic of the airfoil is changed by rotating same to present a different leading edge to the relative wind. One disclosed embodiment is constructed as to permit the rotation to occur by means of a change in attitude of the aircraft. The other disclosed embodiments provide for mechanical rotation of the airfoil. An aircraft construction including a mode of attachment of the airfoils thereto is described.

3,606,215
FLUID CONTROL SYSTEM

Kenneth W. Verge, Farmington, and Lael B. Taplin, Livonia, Mich., and George I. Boyadjieff, Woodland Hills, Calif., assignors to The Bendix Corporation
Original application May 4, 1966, Ser. No. 547,595, now Patent No. 3,525,488, dated Aug. 25, 1970. Divided and this application Apr. 24, 1969, Ser. No. 819,061
Int. Cl. B64c *13/36*
U.S. Cl. 244—78 **1 Claim**



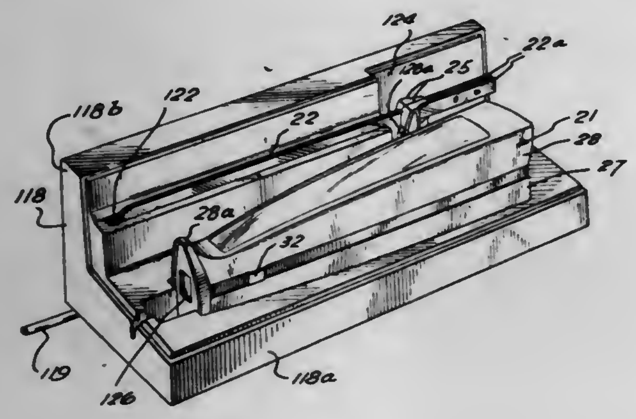
A control system for a craft having a vortex rate sensor on an inclined axis for sensing rate of roll and yaw of the craft and a compass or the like for determining direction of the craft, in combination with a fluid operable actuator for controlling craft roll, yaw and direction.

ERRATUM

For Class 244—122 see:
Patent No. 3,606,221

3,606,216
BATTERY POWERED ELECTRIC KNIFE

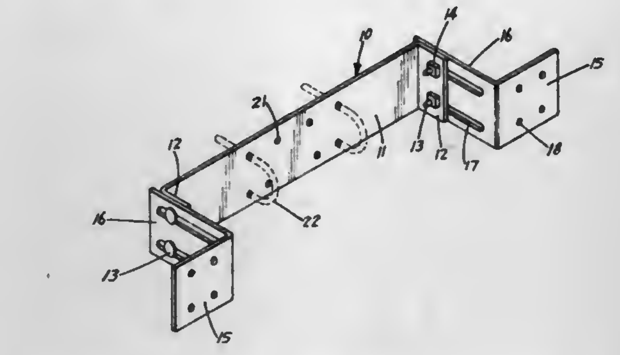
Worthy L. Chambers, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Original application Aug. 24, 1966, Ser. No. 574,648, now Patent No. 3,432,702, dated Mar. 11, 1969. Divided and this application Nov. 12, 1968, Ser. No. 775,064
Int. Cl. A47g *21/14*
U.S. Cl. 248—37.3 **4 Claims**



A battery operated electric knife having an elongated housing defining the knife handle and enclosing an electric motor and battery unit. A pair of charging contacts are mounted entirely within the elongated housing with access openings thereto and a charging and storage stand are provided shaped to receive the knife handle in only one predetermined position whereby said housing for the electric knife may be resiliently clamped in assembled relationship with the charging unit. An improved permanent magnet rotor is employed having an outer field member comprising a resilient cylindrical shell with a slit therein.

3,606,217
BATHTUB FAUCET BRACKET

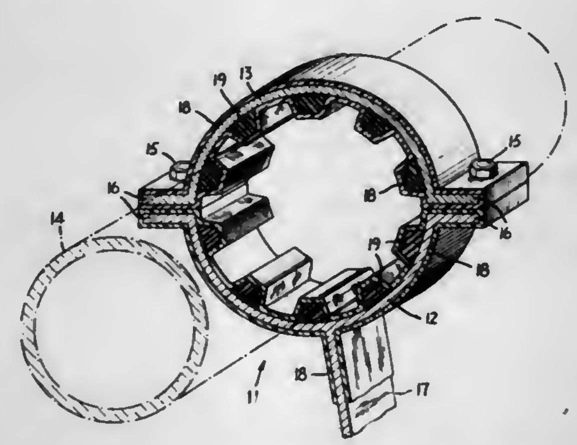
Robert J. Leiferman, 308 Davis St., Mankato, Minn. 56001
Filed Sept. 8, 1969, Ser. No. 855,858
Int. Cl. F16l *3/22*
U.S. Cl. 248—68 **7 Claims**



A bracket for quick and easy mounting of bathtub faucet and valve fixtures during construction. The bracket has a horizontal bar with a pair of arcuate clamping bolts for securing and positioning the fixture and a pair of laterally displaced ears at opposite ends of the bar to attach it to the studs of the wall framing at the construction site. The bathtub fixture may be side mounted or top mounted relative to the bar. The bar may be adjustably connected to the ears for attaching the bracket to the studs to permit variations in spacing of the fixture relative to the bathroom wall.

3,606,218
SOUND AND VIBRATION ISOLATION SUPPORT

Helmer L. F. Enlund, Waterford, and Enos V. Stanhope, Groton, Conn., assignors to General Dynamics Corporation, New York, N.Y.
Filed Mar. 21, 1969, Ser. No. 809,287
Int. Cl. F16l *3/10*
U.S. Cl. 248—74 **1 Claim**

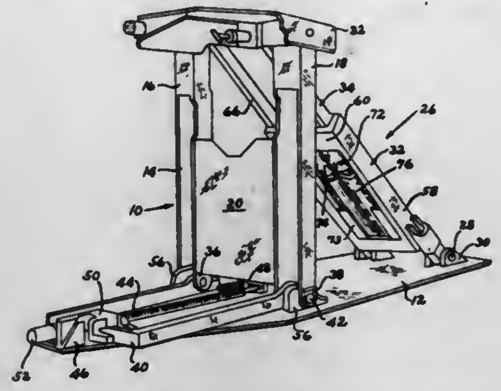


In the particular embodiment of the invention described herein, a pipe hanger comprises a metal strap, with a plurality of strips of resilient meaterial attached to the inner surface of the strap, the strap and the resilient strips being encapsulated by a coating of elastomeric material.

3,606,219
RAILWAY CAR TRAILER HITCH HAVING A SAFETY LOCK

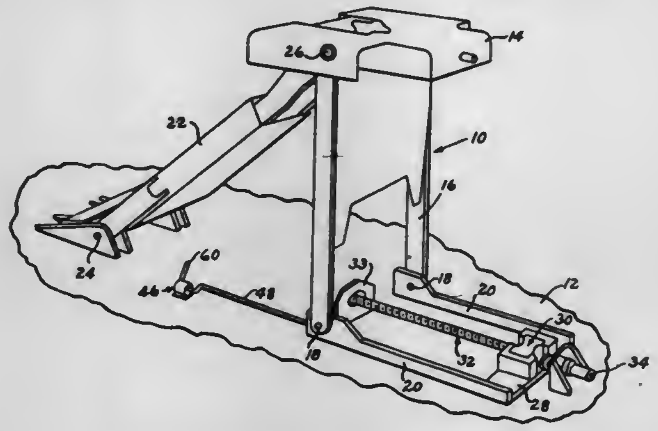
James C. Hammonds and Roy R. Dare, St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Apr. 21, 1970, Ser. No. 30,477
Int. Cl. B60p *7/06;* **B61d** *3/16*
U.S. Cl. 248—119S **7 Claims**

A railway car trailer hitch with oleo-pneumatic cushions in a telescoping diagonal strut includes safety means for preventing the hitch from failing to support the trailer, or to hold it securely, upon a loss of cushioning pressure. The safety means includes a locking bar adapted to be released by Belleville washers to lock the diagonal strut in a normally extended position when the cushion pressure falls below a safe value. The Belleville washers are encased in a housing which prevents the normally occurring variations of cushions force from being applied to the washers, thus reducing fatigue of the washers.



3,606,220
MEANS TO LUBRICATE SCREW OPERATED TRAILER HITCHES

James C. Hammonds and Robert W. Randolph, St. Charles, and Richard P. Yeates, Bridgeton, Mo. assignors to ACF Industries, Incorporated, New York, N.Y.
Filed May 25, 1970, Ser. No. 40,997
Int. Cl. B60p *7/06;* **B61d** *3/16*
U.S. Cl. 248—119S **6 Claims**

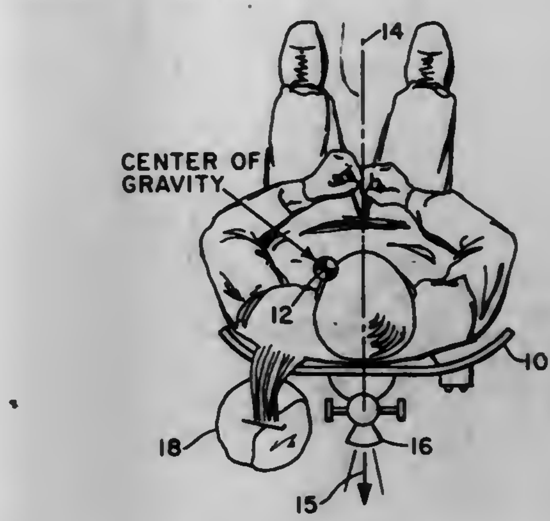


A nut mounted on an externally threaded screw for raising and collapsing a trailer hitch on a railway car upon rotation of the screw is supplied with lubricant for lubricating the screw upon each cycle of raising and collapsing the hitch. A supply of lubricant is in fluid communication with a lubricant well within the nut and actuating means is operatively connected to the lubricant supply to force upon actuation a predetermined amount of lubricant from the lubricant supply to the nut. The actuating means is responsive to the movement of the trailer hitch between collapsed and raised positions and is actuated upon each cycle of raising and collapsing the hitch thereby to provide lubricant to the nut and screw upon each cycle of hitch operation.

3,606,221
AIRCRAFT ROCKET EJECTION SEAT SYSTEM

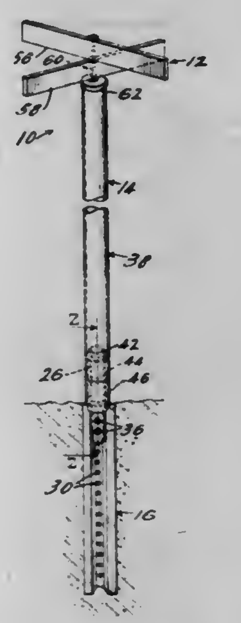
John B. Morris, Reynoldsburg, Ohio, and Frank H. Wallace, Fort Walton Beach, Fla., assignors to the United States of America as represented by the Secretary of the Navy
Filed Apr. 1, 1970, Ser. No. 24,697
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 **3 Claims**

An aircraft rocket ejection seat system characterized by the lateral separation of the seats, upon ejection, with respect to the line of flight, at least one seat structure assembly having its center of gravity located to the right or left of the plane which is coincident with the line of thrust of the catapult-rocket.



3,606,222
SUPPORT CONSTRUCTION FOR SIGNS

Edward J. Howard, 4244 River Road, Toledo, Ohio 43614
Filed Apr. 28, 1969, Ser. No. 819,636
Int. Cl. F16m *13/00;* **E04h** *12/22*
U.S. Cl. 248—156 **4 Claims**

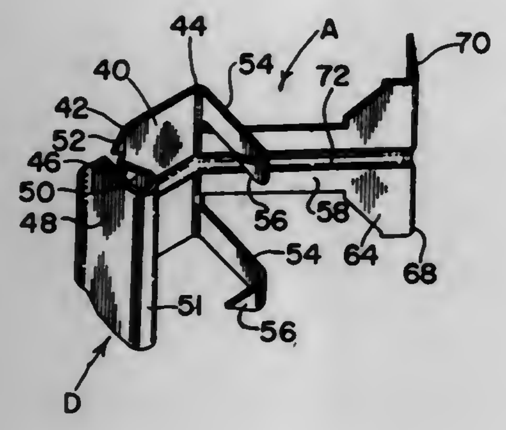


A street sign support is of the break-away type and includes a first post driven completely into the ground, a second post bolted to said first post and extending above the ground, and a third, sign-supporting post extending down over the second post to a point near the ground and carrying a street sign assembly at the top. The third post has notches in the lower end thereof fitting over flanges of the first post to prevent relative rotation between the third and first posts. The third post and the second are connected by means of washers which bite into the outer surface of the second post and the inner surface of the third when an attempt is made to separate these two posts.

3,606,223
OUTLET BOX MOUNTING CLIP

Leslie N. Havener, Euclid, Ohio, assignor to Spring Steel Fasteners, Inc., Cleveland, Ohio
Filed Mar. 21, 1969, Ser. No. 809,061
Int. Cl. H02g *3/12*
U.S. Cl. 248—205 **7 Claims**

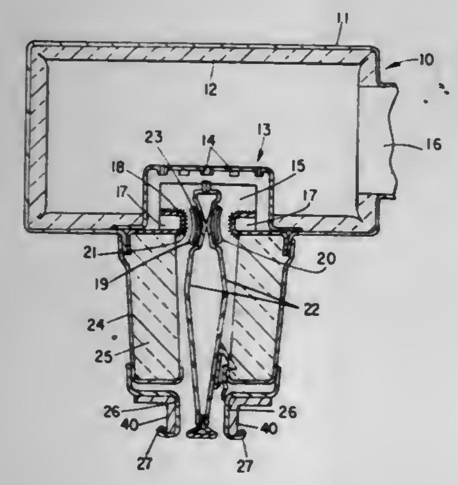
An interim mounting clip for use in dry wall partition construction, adapted to temporarily hold an electrical outlet box onto a U-shaped metal channel stud prior to fastening dry wall panels to the stud flanges. The clip comprises a portion adapted to fit over and grip an edge of the outlet box, at least one arm which engages a flange edge of the channel, and a leg in diverging relationship with the arm. The leg is bent in a reverse direction intermediate its ends to define upper and lower portions and a knee at the bend of the leg, the leg lower portion being wedged in the corner between the flange and base of the stud. The clip thereby supports the outlet box in position until the dry wall is installed and forms the final support.



3,606,224

MOUNTING BRACKET ASSEMBLY FOR AIR CONDITIONING TERMINALS

August William Gutheim, Chittenango, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jan. 2, 1970, Ser. No. 347
Int. Cl. F16b *1/00*
U.S. Cl 248—214 **8 Claims**

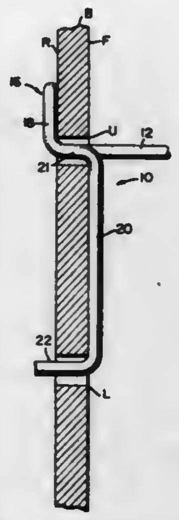


A bracket assembly for mounting a ceiling air conditioning terminal to the frame members of the ceiling of the area being served by the terminal. The bracket assembly includes at least one member for engaging the ceiling terminal and a second member connected to the first member and adapted to be cooperatively connected to a portion of the frame member. A portion of the bracket assembly is operable to transfer the load provided by the ceiling terminal to the upper portion of the ceiling frame member, the load being equally distributed about the midpoint of the frame member so that no turning moments will be created thereon.

3,606,225

APERTURED BOARD CLIP

Laurence J. Rasmussen, 608 Sunrise Ave., Stevens Point, Wis. 54481
Filed Mar. 11, 1969, Ser. No. 806,259
Int. Cl. A47b *97/00*
U.S. Cl. 248—220 **2 Claims**

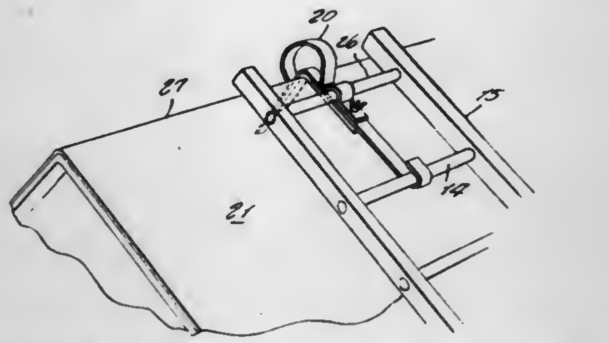


An apertured board clip having a plurality of laterally spaced elements for engagement with the board to stabilize the article supporting arm which extends outwardly of the board.

3,606,226

RIDGE LADDER BRACKET

Wesley V. Bell, Sr., 3804 S. Randolph St., Indianapolis, Ind. 46227
Filed Apr. 23, 1969, Ser. No. 818,693
Int. Cl. E04g *3/12;* **F06c** *1/36*
U.S. Cl. 248—237 **2 Claims**

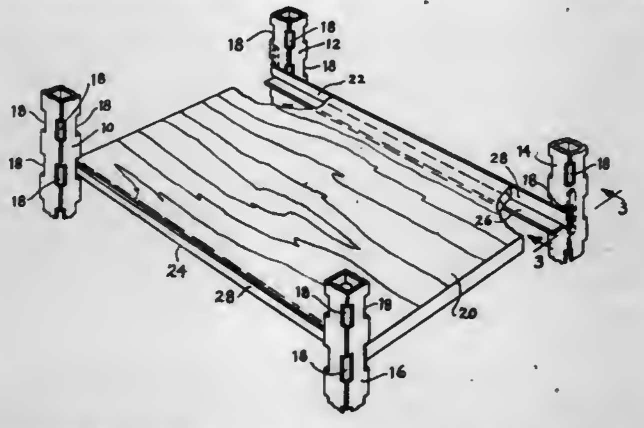


A bracket attachable to a ladder so that the ladder may be supported from a ridge of a roof, the ridge bracket including a holding bar, a reinforcement bar, a U bracket, a hoop slide and a wing nut bolt.

3,606,227

SHELF-SUPPORT FOR BINS

Herbert H. Klein, Arlington Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.
Filed June 4, 1970, Ser. No. 43,343
Int. Cl. E06b *7/28*
U.S. Cl. 248—243 **3 Claims**

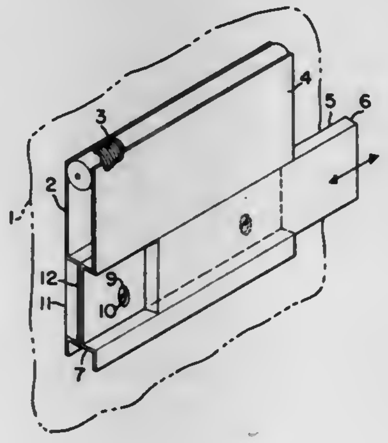


A removable shelf-support bracket which integrally defines spaced mounting fingers and an elongated angle bracket for vertical support and lateral confinement of the shelf is provided for selective connection between a pair of upright sheet metal posts, each of which posts is provided with a plurality of vertically aligned slots adapted for selectively receiving the mounting fingers of the bracket.

3,606,228

CLAMP HANGER

George A. Lasko, 1508 Westcliff Drive, Newport Beach, Calif. 92660
Filed June 1, 1970, Ser. No. 41,878
Int. Cl. A47j *51/08*
U.S. Cl. 248—316B **1 Claim**

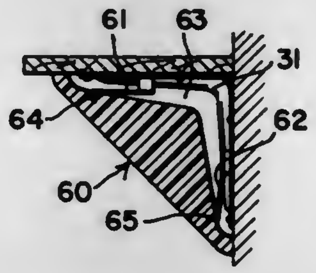


A clamp type hanger for trousers and other objects wherein initial contact by the object to be hung automatically causes the retention of the object and wherein manual removal of the object automatically sets the device for the next retention of an object.

3,606,229

WALL BRACKET COVER

James D. Wall, 18 Boxwood Drive, Kings Park, N.Y. 11754
Filed July 7, 1969, Ser. No. 839,609
Int. Cl. A47f *5/08*
U.S. Cl. 248—345 **1 Claim**

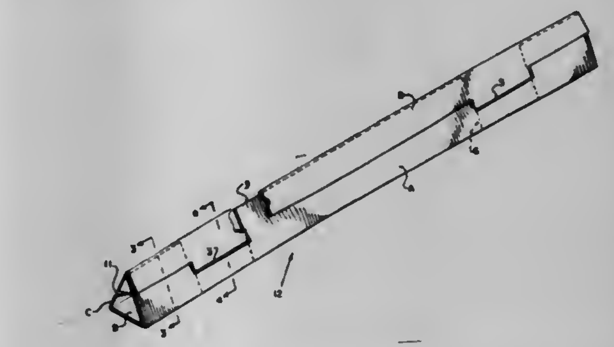


A wall bracket cover has been provided which can be easily assembled over an existing wall bracket supporting a shelf and fastened by various devices having snap engagement with the bracket or by grooves engaging flanges of the bracket covers with the under surfaces of the shelf and wall surface or by adhesive means made available by removal of adhesive cover strip from horizontal and vertical run surfaces of the bracket cover. This bracket cover itself is preferably formed of molded plastics or metal and may be formed of wood chips, papier mache or any other suitable material with the attached device embedded in the material and projected into the bracket receiving opening of the horizontal and vertical faces of the bracket.

3,606,230

CARTOP LOAD SUPPORTING DEVICE

George M. Hargreaves, 124 Larch St., Saginaw, Mich. 48602
Filed June 13, 1969, Ser. No. 833,124
Int. Cl. B60r *9/04*
U.S. Cl. 248—346 **9 Claims**

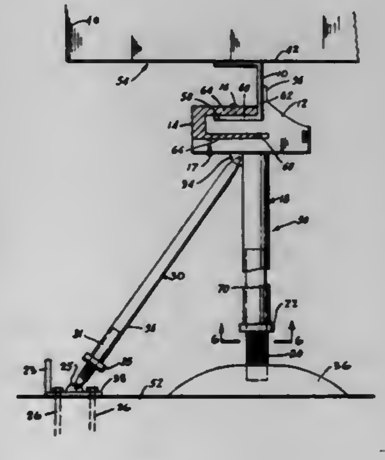


A cartop load carrying device comprises an elongated, hollow tubular member of triangular cross-section formed from a blank of corrugated paper or the like and having its cartop engaging side bowed longitudinally to conform substantially to the curvature of the cartop.

3,606,231

ANCHOR SUPPORT

John Kilborn, 4222 Brott Road, Goodells, Mich. 48027
Filed Oct. 2, 1969, Ser. No. 863,287
Int. Cl. F16f *11/02, 11/04*
U.S. Cl. 248—354S **1 Claim**



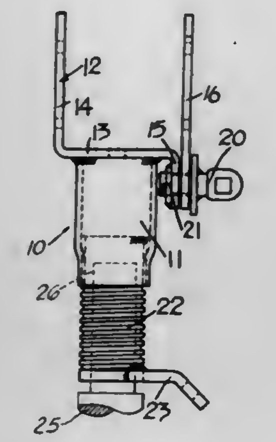
A combined support and guy stabilizer for trailers and the like which provides enhanced stability and security in high winds or other disturbances.

3,606,232

ADJUSTABLE HEAD FOR A FORMWORK PROP

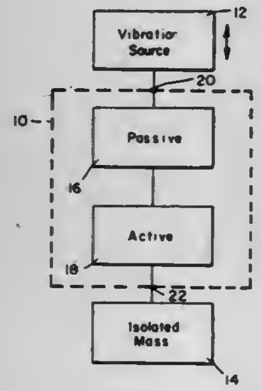
George B. A. Young, Wheaton Aston, England, assignor to Rapid Metal Developments Limited, Birmingham, England
Filed Oct. 31, 1968, Ser. No. 772,162
Claims priority, application Great Britain, Nov. 7, 1967, 50,566/67
Int. Cl. E04g *25/00*
U.S. Cl. 248—357 **1 Claim**

An adjustable head for a formwork prop for use in the casting of concrete slabs comprises a body in screw-threaded engagement with a member for rotatable engagement with the upper end of the prop. The body includes a channel one side of which can be pivoted to a position clear of the web of the channel to permit removal of a beam supported thereby.



3,606,233
VIBRATION ISOLATION SYSTEM

Terry D. Scharton, Santa Monica, and David A. Bies, Woodland Hills, Calif., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.
Filed Apr. 22, 1968, Ser. No. 723,186
Int. Cl. F16f *15/04*
U.S. Cl. 248—358 **14 Claims**

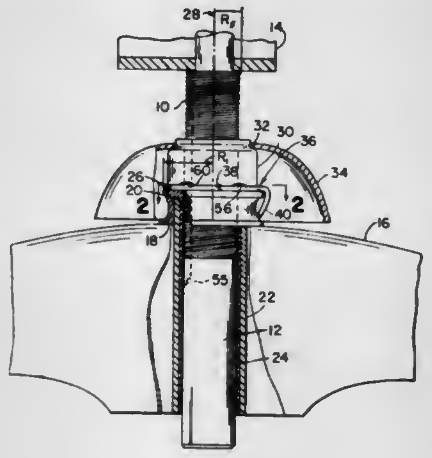


A vibration isolation system for mechanically coupling a mass to a source of vibratory energy, while reducing transmissibility of the vibrating energy to the mass. The system is a hybrid device, combining both passive and active isolation apparatus for producing isolation over a prescribed frequency range of the generated vibrations, while permitting the mass to be rigidly coupled to the source for frequencies below the isolation range. The hybrid system has particular application in a helicopter to couple the fuselage to the rotor, producing isolation with respect to vibrations above the helicopter control frequency range.

3,606,234
RELEASABLE SWIVEL CHAIR SUPPORT CONSTRUCTION

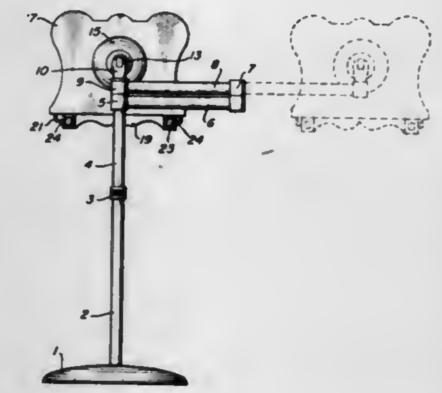
Robert W. Prescott, Lunenburg, Mass., assignor to Collier-Keyworth Company, Gardner, Mass.
Filed Feb. 24, 1970, Ser. No. 13,534
Int. Cl. F16m *13/00*
U.S. Cl. 248—406 **7 Claims**

A swivel chair support construction employs a spindle with one end adapted to be attached to a chair seat and a portion of the spindle being threaded for a sufficient distance to provide vertical adjustability over the position of the chair to the desired extent, a tubular member receiving the spindle in loose sliding engagement and adapted to be secured to a chair base and including a load bearing element, a load supporting nut threadedly engaged on the spindle, and means for releasably connecting together the spindle and tubular member to prevent axial separation thereof when the chair is lifted. The means includes a hook having an arcuate portion extending around at least a major portion of the periphery of the spindle adjacent the tubular member and an arm fixed to and extending from the hook toward the tubular member and terminating in a free end which is arranged to be free from engagement with the tubular member when the hook is cocked in one direction on the spindle to displace the free end of the arm away from the spindle and to engage a portion of the tubular member to prevent separation of the hook from the tubular member when the hook is cocked in the opposite direction on the spindle.



3,606,235
BOOK HOLDERS

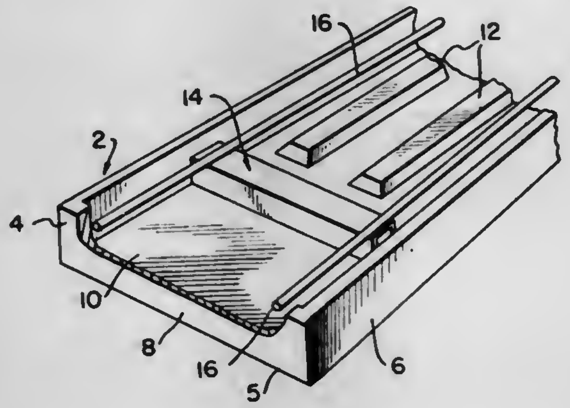
Joseph C. Young, Santa Rosa, Calif.
(6022 W. 8th St., Apt. 3, Los Angeles, Calif. 90036)
Filed Oct. 2, 1968, Ser. No. 764,985
Int. Cl. A47b *23/04, 23/06*
U.S. Cl. 248—453 **3 Claims**



A book holder comprising in combination a floor base, a vertically adjustable standard secured to said floor base, an extendable, horizontal arm pivotally connected to the upper, adjustable end of said standard to swing laterally, a book support means pivotally attached to the outer end of said horizontal arm to swing laterally, a page holding means pivotally attached to said book support means which is optionally useable, and a universally adjustable lighting means, preferably of the high intensity type, attached to said book support means. The book holder being capable of obscurely supporting an electric cord within it.

3,606,236
STAIR TREAD MOLD

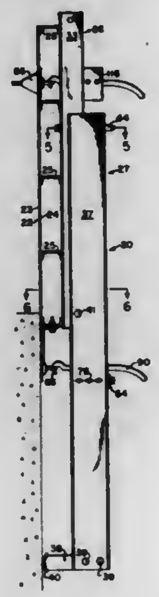
Glen A. Seegers, Lombard, Ill., assignor to American Stair Corporation, Inc., McCook, Ill.
Original application Jan. 31, 1968, Ser. No. 701,991, now Patent No. 3,498,012, dated Mar. 3, 1970. Divided and this application Sept. 17, 1969, Ser. No. 885,240
Int. Cl. B28b *7/22*
U.S. Cl. 249—14 **3 Claims**



The application is directed to structures and methods for producing pre-formed stair treads which are readily assemblable into complete stair units. The stairs are produced utilizing a mold designed to minimize the weight of individual stair treads, to reinforce such treads, and to provide them with an essentially integral locking device for connecting each of the treads to a riser assembly. Each prefabricated stair tread is reinforced and of a minimum weight and is ready for installation in a variety of stair unit environments. The stair tread locking devices employed are connected to a tread in a manner permitting their movement on the underside of the tread to obtain proper alignment of locking device with a particular riser element and permitting the removal of a locking device from the stair tread when necessary. A number of stair treads can be connected in ascending or descending relationship to a combination of stringers and interconnected risers.

3,606,237
ANCHORING DEVICE FOR VERTICALLY RAISING FORMS

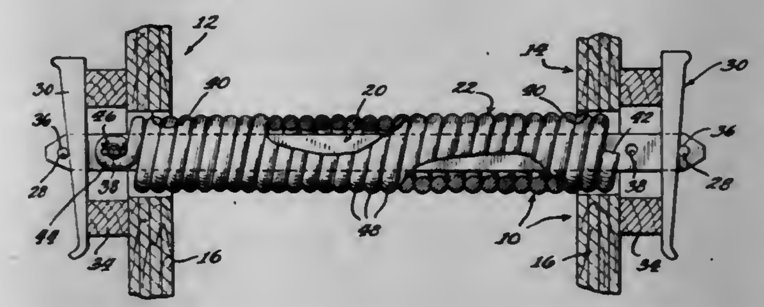
Billy R. Stephens, San Antonio, Tex., assignor to Advance Construction Equipment, Inc., New Braunfels, Tex.
Filed Oct. 13, 1967, Ser. No. 675,218
Int. Cl. E04g *11/22*
U.S. Cl. 249—20 **14 Claims**



A center passing toggle assembly connected to a form structure, said toggle assembly coacting with at least one anchoring device embedded in concrete to restrain concrete pressure and permit intermittent raising of the said form structure.

3,606,238
TIE ROD ASSEMBLY WITH REUSEABLE TIE ROD PROPER

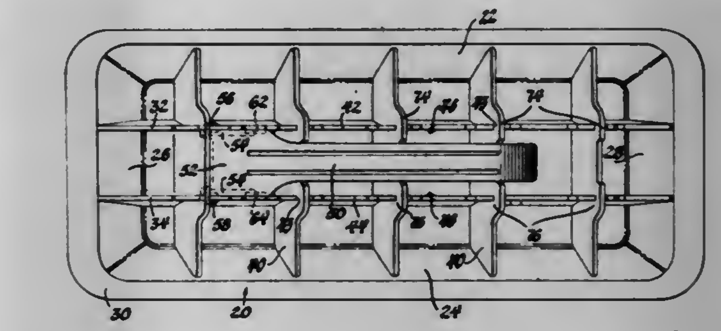
James C. Shoemaker, Hampshire, Ill., assignor to Symons Corporation, Des Plaines, Ill.
Filed May 2, 1969, Ser. No. 821,379
Int. Cl. E04g *17/06*
U.S. Cl. 249—40 **2 Claims**



A tie rod assembly for maintaining the opposite sides of a concrete wall form in spaced relationship and including a tie rod proper and a closely wound helical coil formed of soft wire, the coil encircling the medial region of the tie rod proper and spanning the distance between the form sides. After the poured concrete has become set and the form sides removed, the tie rod may be slid endwise from the surrounding concrete embedded coil for reuse in a succeeding concrete wall form installation, while the coil may be extracted from the open-ended transverse bore which it creates by progressively pulling the soft wire endwise from the bore, thus unwinding the coil. By using cylindrical wire stock for the coil, a contour-type screw thread pattern is imparted to the wall of the bore in the concrete wall.

3,606,239
FREEZING GRID WITH CAM LIFT

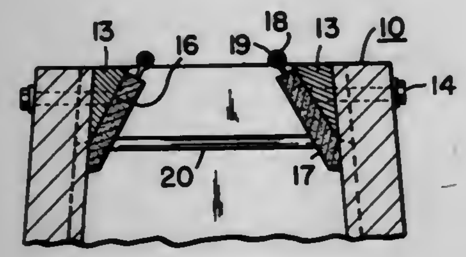
Joe P. Pietrzak, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 19, 1970, Ser. No. 20,937
Int. Cl. B28b *7/10;* **B29c** *1/00*
U.S. Cl. 249—72 **8 Claims**



In the preferred form, an ice tray grid has fore and aft movable transverse walls on opposite sides of a pair of lower longitudinal walls which are actuated for ice ejection by being connected with a pair of longitudinally movable upper operating members slidable on the lower longitudinal walls. In each opposite end of the top of each of the lower longitudinal walls is a curved ramp recess, and a cooperating curved cam projection is provided in the bottom of each end of each of the operating members. These projections and recesses are nested in the normal freezing position and cam to lift the operating members and the transverse walls in conjunction with the relative movement from the initial freezing position to the ejecting position.

3,606,240
INGOT MOLD WITH EXOTHERMIC SIDE BOARDS

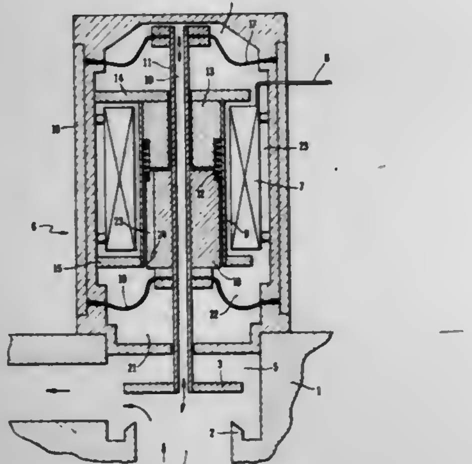
Roy E. Ferree, Valencia, Pa., assignor to The Susquehanna Corporation
Filed Feb. 10, 1961, Ser. No. 88,442
Int. Cl. B22d *7/10*
U.S. Cl. 249—106 **2 Claims**



2. In combination with an open-ended mold, a pair of exothermic plates, each separately suspended from the top surface of the mold by rods extending longitudinally above said plates and resting on top of said mold, said plates extending into the mold cavity in spaced relationship to each other; a separate device located between and engaging each said plate and the side wall of the mold; and means located between and engaging said plates and holding each plate in an inclined position with its lower edge engaging said side wall and its upper edge spaced therefrom.

3,606,241
HYDRAULICALLY DAMPED MAGNETIC VALVE

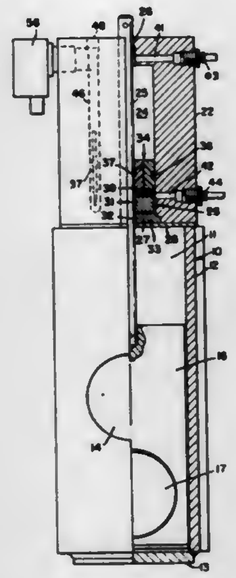
Siegfred Bornholdt, Lohr, Germany, assignor to Danfoss A/S, Nordborg, Denmark
Filed June 3, 1969, Ser. No. 832,038
Claims priority, application Germany, May 4, 1968, P 17 50 470.0
Int. Cl. F16k *31/06*
U.S. Cl. 251—52 **6 Claims**



The invention relates to a hydraulically damped magnetic valve having an oil chamber in which the armature and coil are enclosed. The oil chamber is formed by diaphragms attached to the valve spindle, at opposite ends of the armature, and to the interior wall of the housing. Two gas chambers are formed interiorly of the housing on opposite sides of the oil chamber. A passage is formed in the valve spindle which extends from the valve chamber to one of the gas chambers to effect balancing which is concomitant with low closing spring forces.

3,606,242
GATE VALVE WITH HYDRAULIC OPERATOR

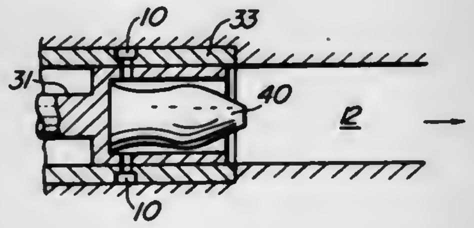
Francis M. Lathrop II, Houston, Tex., assignor to M & J Valve Company, Houston, Tex.
Filed Apr. 8, 1970, Ser. No. 26,614
Int. Cl. F16k *37/00*
U.S. Cl. 251—62 **3 Claims**



A gate valve consisting of a body having aligned flow passages and a valve gate within the body which is movable between open and closed positions. A block of nonmagnetic material (e.g., aluminum) is mounted on one end of the body and is provided with a central bore forming a cylinder. One or more additional smaller bores are formed in the block and serve to accommodate magnetically operated electrical switches. A rod connects with the gate and extends axially through the cylindrical bore. A piston is mounted on the rod and is sealed with respect to the surface of the bore. Both end portions of the bore are closed and are adapted to be connected with the hydraulic system for moving the piston in opposite directions whereby the gate is moved between full open and closed positions. A permanent magnet is mounted upon the piston and acts through the adjacent walls of the cylindrical bore to operate the switches.

3,606,243
DEVICE FOR PREVENTING NOISE IN AN OIL-HYDRAULIC ELEVATOR

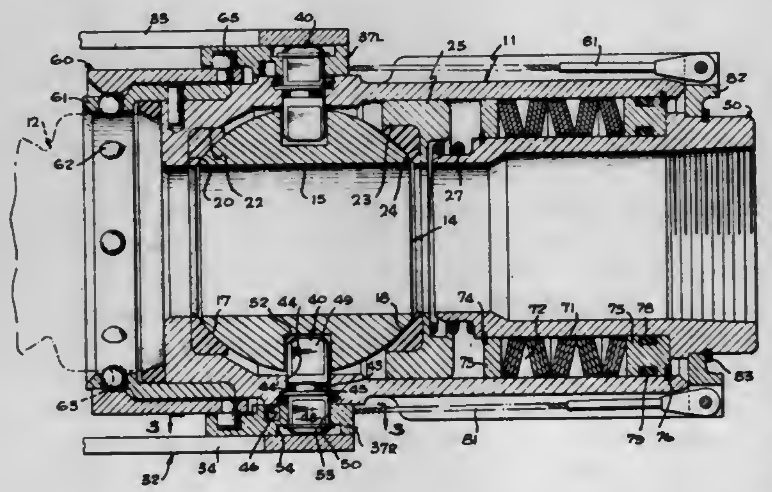
Ken Ichiryu, Hitachi-shi, Humio Hujisawa, Mito-shi, and Mitsuaki Takenoshita and Hiroshi Yumino, Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 12, 1969, Ser. No. 857,419
Claims priority, application Japan, Sept. 13, 1968, 43/65,559
Int. Cl. F16k *47/02*
U.S. Cl. 251—118 **7 Claims**



A device for preventing noise in an oil-hydraulic elevator having an oil-hydraulic circuit including a rotary oil flow control valve comprising a rotary spool in the shape of a cylinder rotatably received in a sleeve, said spool and sleeve each having a pair of oppositely arranged openings adapted to define a pair of oppositely arranged valve ports when said spool is positioned at a proper angular position with respect to said sleeve, said valve ports allowing two oil jets opposing to each other, the method being characterized by preventing cavitation at an outlet region of said valve ports due to collision of said two jets by keeping the oil pressure at said region in a range of 0.5–5 kg./cm.^{2}. Such an oil pressure in said region is kept by providing a bullet-shaped guide member or a baffle plate at said region or throttling and exhaust passage in the down stream of said valve ports.

3,606,244
BREAKAWAY COUPLING VALVE

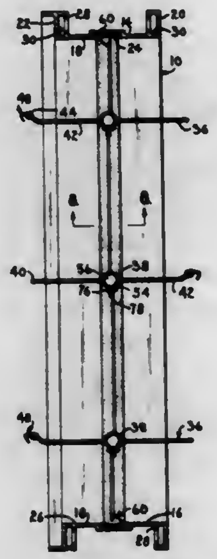
Henry Nusbaum, Los Angeles, Calif., assignor to The Rucker Company, Roylyn Division, Glendale, Calif.
Filed Oct. 24, 1969, Ser. No. 869,204
Int. Cl. F16l *37/28*
U.S. Cl. 251—149.9 **9 Claims**



The application discloses a valve body embodying coupling means at one end for detachably connecting it to a nipple or the like, a valve member, a manually operable common actuator means for the valve and the coupling means for operating these in sequence, together with a spring-loaded breakaway mechanism for operating the actuator means when the device is subjected to a predetermined axial load.

3,606,245
CONTROL DAMPER

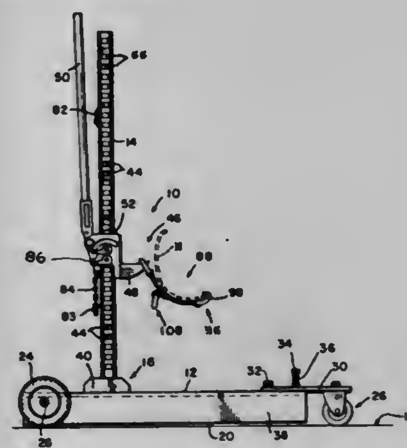
William A. Reichow and Thomas D. Hill, Kansas City, and James R. Root, Independence, Mo., assignors to Ruskin Manufacturing Company, Grandview, Mo.
Filed June 30, 1969, Ser. No. 837,465
Int. Cl. F16k *1/226*
U.S. Cl. 251—306 **5 Claims**



A damper having a rectangular frame provided with a longitudinal groove in each frame side member. A pivoted blade has tubular, cylindrical hubs extending into the grooves and a seal in each groove is configured to sealingly engage the arcuate outer surface of a corresponding hub throughout the movement of the blades to insure adequate sealing between the frame and blade when the latter is in its blocking position.

3,606,246
JACK ASSEMBLY

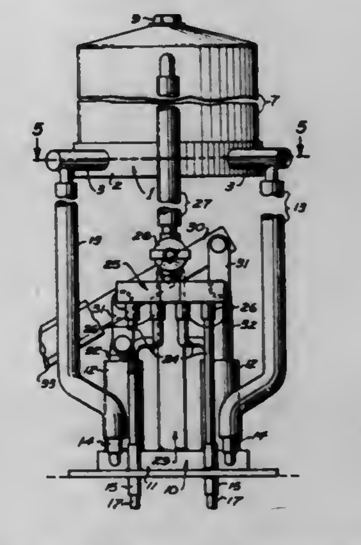
Chester P. Harrah, Bloomfield, Ind., assignor to The Bloomfield Manufacturing Co., Inc., Bloomfield, Ind.
Filed July 2, 1969, Ser. No. 838,624
Int. Cl. B60p *1/00;* **B66f** *1/04*
U.S. Cl. 254—2B **16 Claims**



A jack assembly comprising a platform, a jack standard rigidly connected to the platform and extending vertically upwardly therefrom, a lever-actuable lift frame arranged for vertical reciprocation on the standard, and wheel means for movably supporting the platform. The wheel means are preferably arranged yieldingly to support the bottom of the platform slightly above and out of contact with the surface on which the assembly is supported. A flexible lifting strap providing a pair of spaced apart hook-type fingers for engaging work is provided for connection with the lifting frame. A rigid sleeve is disposed telescopically over the upper end of the standard to rest directly on an upwardly and horizontally extending surface provided by the lift frame, which surface extends about the standard.

3,606,247
LEVELER FOR TRAILERS

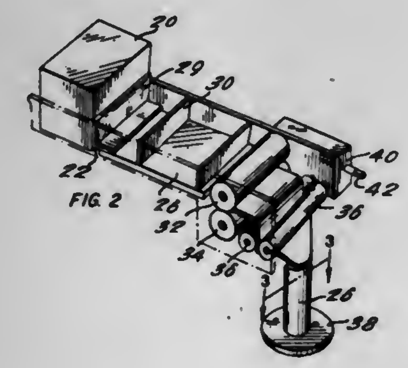
Lawrence I. Liston, 4107 W. 176th St., Torrance, Calif. 90504
Filed Aug. 25, 1969, Ser. No. 852,768
Int. Cl. B60s *9/02*
U.S. Cl. 254—86H **4 Claims**



A leveler for trailers wherein four simultaneously operated pumps of equal capacity supply hydraulic fluid to four hydraulic leveling jacks mounted at the corners of the trailer. Hydraulic fluid is supplied to the pumps from a common reservoir through a level sensor mounted on the trailer in such a manner that when the sensor is level, the trailer is likewise level, the sensor having a central downwardly directed inlet and four upwardly open outlets spaced radially from the inlet in correspondence with the jacks, the inlet and the four outlets defining a common plane so that hydraulic fluid is supplied to the lower inlet or inlets and corresponding jacks when the level sensor is tilted, thereby causing the level sensor to seek a level condition.

3,606,248
LIFTING MEANS FOR AUTOMOBILES

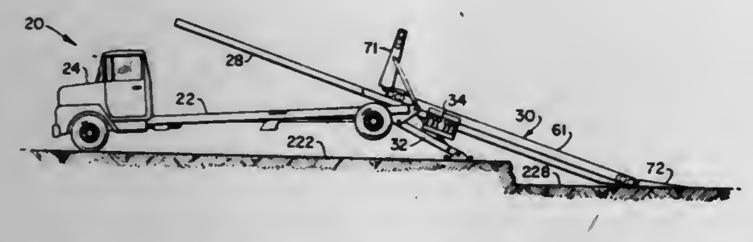
George Goldfarb, 5700 Smart Ave.,
Cote St.-Luc, Quebec, Canada
Filed July 7, 1969, Ser. No. 839,334
Int. Cl. B60s *9/02*
U.S. Cl. 254—86R **11 Claims**



A lifting device such as an automobile jack for displacing an apparatus relative to a given point, the device having a pretempered spring capable of coiling axially on itself when in an unrestrained condition. There are provided means such as guide rollers for flattening a portion of the spring for storage purposes, with drive means such as drive rollers for retracting and advancing the spring from the housing. The end of the spring is preferably provided with a bearing surface such as a metal plate for providing an abutment surface.

3,606,249
VEHICLES

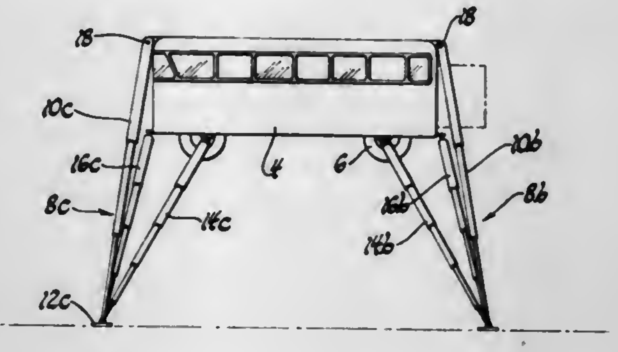
Charles W. Pewthers, 1015 Walton Drive,
College Station, Tex. 77840
Original application Nov. 29, 1967, Ser. No. 686,575, now Patent No. 3,485,400, dated Dec. 23, 1969. Divided and this application July 17, 1969, Ser. No. 862,560
Int. Cl. B60s *9/02*
U.S. Cl. 254—86H **8 Claims**



A vehicle with multisection bed which is extendible and tiltable relative to the vehicle frame and a foot assembly pivotable downwardly relative to the vehicle frame to elevate one end of the vehicle. Fluid-operated motors effect the tilting of the bed and the movement of the foot assembly; and a fluid-operated motor-flexible link arrangement is provided to extend and retract the bed.

3,606,250
GROUND TRANSPORT VEHICLE FOR AIRCRAFT PASSENGERS

Clarence A. Sherman, Birmingham, Mich., assignor to Benton Corporation, Troy, Mich.
Filed Dec. 12, 1969, Ser. No. 884,662
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 **10 Claims**

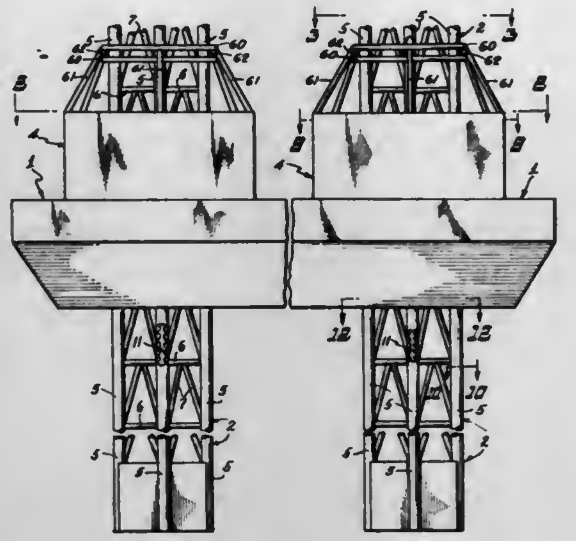


A bus or similar vehicle for carrying passengers between an airport terminal and large aircraft parked at a distance from the terminal with means for raising and lowering the bus to permit the passengers to load and unload directly between the aircraft and the vehicle. A plurality of extendable and retractable jack assemblies are carried by the body for elevating the body to a selected height above the surface when the vehicle is parked adjacent to an aircraft. The jack assemblies each include an extendable and retractable main lifting jack having a free end movable relative to the body of the vehicle upon extension and retraction of the main lifting jack with a surface engaging member secured to the free end of the main lifting jack, and extendable and retractable stabilizing jacks. The stabilizing jacks extend at an angle from the surface engaging member with respect to the main lifting jack when the jack assemblies are extended to provide diagonal bracing of the main lifting jack. All of the jack assemblies are actuated simultaneously between their extended and retracted positions by a power system including proportioning means operable to proportion the flow of hydraulic fluid to and from the individual jack assemblies to control the rate of extension and retraction of the individual jacks and maintain the body in a level attitude.

3,606,251
LEG SUPPORTED OFFSHORE STRUCTURE WITH JACKING APPARATUS

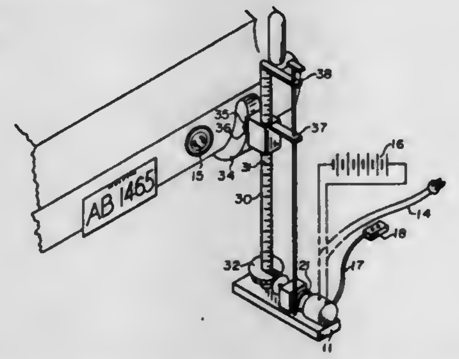
Herbert L. Willke, Houston, Tex., and James G. Abraham, Palos Verdes Peninsula, Calif., assignors to Armco Steel Corporation, Middletown, Ohio
Filed Nov. 14, 1969, Ser. No. 876,781
Int. Cl. B66f *7/12*
U.S. Cl. 254—89 **16 Claims**

In offshore platforms and the like of the type comprising a structure, such as a hull, and a plurality of upright legs for supporting the structure on the floor of a body of water, the invention provides an improved rack-and-pinion type jacking apparatus for connecting the structure to the legs in vertically adjustable fashion. For each leg, at least one dual rack bar is employed, the rack bar having two opposed sets of rack teeth each extending along a different one of the two edges of the bar. A jacking unit is mounted on the structure adjacent each rack bar and includes at least one pair of drive pinions with the pinions of the pair each meshed with a different one of the two sets of rack teeth, so that the two pinions are opposed across the rack bar. When the legs each comprise a number of tubular column members, one of the dual rack bars is provided for each of a plurality of the column members of each leg. Alternatively, when the legs are made up of a single tubular member, one or more of the dual rack bars are secured to the single tubular member of each leg.



3,606,252
PORTABLE ELECTRIC AUTOMOBILE JACK

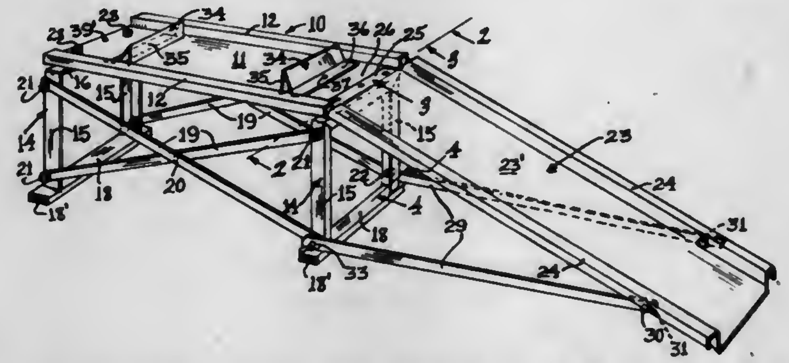
Joe Dorough, Jr., 2515 Community Drive, Apt. 2003,
Dallas, Tex. 75220
Filed July 15, 1969, Ser. No. 841,742
Int. Cl. B66f *3/18*
U.S. Cl. 254—103 **2 Claims**



A portable electric automobile jack that raises and lowers the bumper of a vehicle in a smooth continuous motion using electric power produced by the automobile but the structure of which is otherwise independent from the body of the automobile; thereby enabling the jack to be disassembled, transported to other vehicles when needed and stored in the trunk of the automobile.

3,606,253
PORTABLE VEHICLE RACK

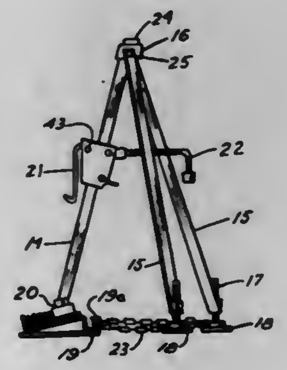
Dupree Wooten and Robert Wooten, both of
9401 W. William St., Rosemont, Ill. 60018
Filed Jan. 26, 1970, Ser. No. 5,730
Int. Cl. E02c *3/00*
U.S. Cl. 254—88 **5 Claims**



A portable vehicle rack having a platform provided at opposite ends with safety blocks and having an inclined ramp attached to either end of the platform and removable therefrom to permit free access to the underside of the vehicle being serviced or repaired, the rack being capable of being disassembled when not in use to facilitate storage thereof.

3,606,254
VEHICLE BUMPER JACK

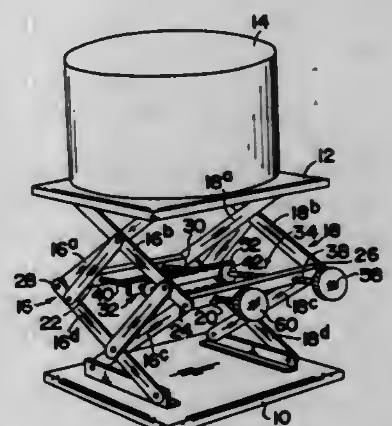
Oscar William Olson, 3613 37th Ave., NE., Apt. 306,
Minneapolis, Minn. 55421
Filed June 20, 1969, Ser. No. 834,962
Int. Cl. B66f *1/04*
U.S. Cl. 254—111 **8 Claims**



A stable tripod vehicle bumper jack characterized by vertically adjustable rear support legs and a fixed foot movably supporting the jack column to permit variations of the angle of the jack column to compensate for differences due to lifting of the vehicle bumper. The adjustable supporting legs permit the jack to remain stable with the lifting member lying substantially in a vertical plane. The movable support for the lifting member avoids the necessity that the support legs move to compensate for the conventional change in the angle of the lifting member as the vehicle is raised.

3,606,255
SCISSORS JACK

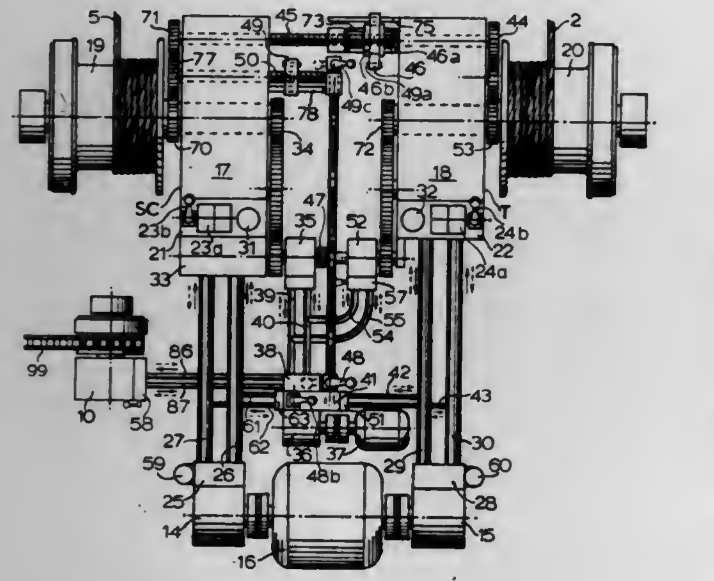
Gordon C. Stevens, Garfield Heights, Ohio, assignor to The Chemical Rubber Company, Cleveland, Ohio
Filed Aug. 1, 1968, Ser. No. 749,446
Int. Cl. B66f *3/22*
U.S. Cl. 254—122 **3 Claims**



A scissors jack having a load supporting member operative to be raised and lowered by movement of a pair of adjusting arms toward and away from each other, a pair of threaded rods interconnecting the arms, at spaced points, sprockets mounted on each rod and a chain drivingly interconnecting the sprockets.

3,606,256
WINCH CONTROL SYSTEMS

Karsten Alfred Ovretveit, 87 Lower Road,
Fetcham, Surrey, England
Continuation-in-part of application Ser. No. 608,636, Jan. 11, 1967. This application June 21, 1968, Ser. No. 738,927
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 **6 Claims**

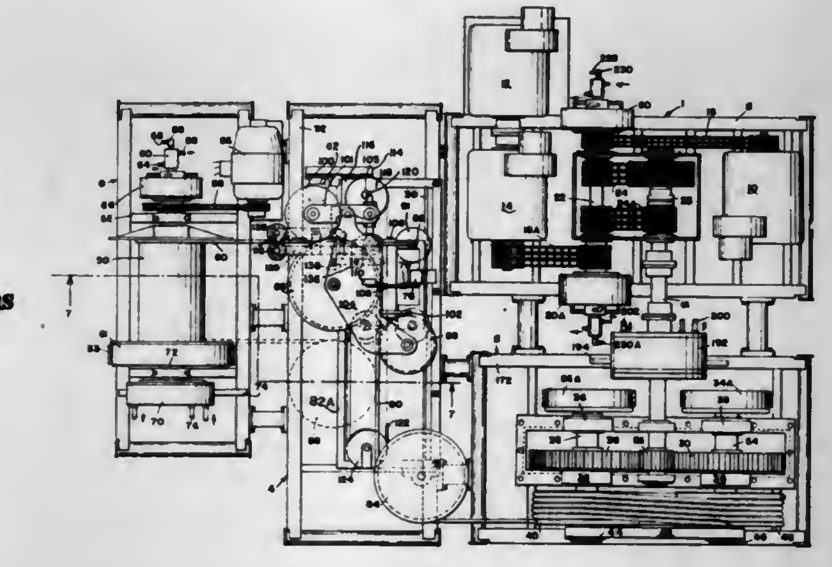


In a cable conveyor system for transfer of cargo between moving objects such as two ships where a loop of wire is slung over a pulley on one ship and the two ends of said wire are slung over independent pulleys on the other ship, where the two wire ends are independently operated by two hydraulic winches having a combined winch control system whereby one winch is used as a tensioning winch and the other is used as a speed and direction control winch, and incorporating feedback systems whereby the acceleration, speed, deceleration and stop position of said container can be predetermined relative to one ship or the other irrespective of the rolling of said two ships.

3,606,257
TRACTION DRUM WINCH WHICH EXERTS A PREDETERMINED CONSTANT TENSION ON A CABLE

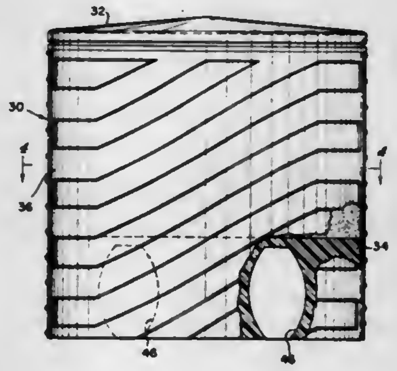
John Hart Wilson, % Wilson Manufacturing Co.,
P.O. Box 1031, Wichita Falls, Tex. 76307
Filed Dec. 31, 1968, Ser. No. 788,256
Int. Cl. B66d *1/48*
U.S. Cl. 254—175.7 **4 Claims**

A traction drum winching mechanism utilizing a storage drum on which a substantially constant tension is maintained to reel cable thereonto at a tension less than that which will crush a cable. This enables a cable of large diameter to be wound onto a storage drum without crushing. Water cooled clutches and brakes are provided to enable the clutches and brakes to be slipped continuously over an indefinite period of time without heating, and a sensing mechanism is provided for sensing the weight of the drilling pipe to enable drilling to be continued from a barge, drill ship or vessel, which vessel is being subjected to rise and fall due to waves, while maintaining constant tension on the pipe without the movement of the drill ship or vessel interfering with the drilling of the bore hole. Provision is made to spool the convolutions of cable in side by side relation with a slight crowd angle, by means of a hydraulically actuated cable spooling device.



3,606,258
ENERGY ABSORBING DECELERATION BARRIERS

John C. Fitch, Lime Rock, Lakeville, Conn., assignor to Fibco, Inc., Hartford, Conn.
Continuation-in-part of abandoned application Ser. No. 665,359, Sept. 5, 1967. This application Jan. 2, 1969, Ser. No. 788,890
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **9 Claims**



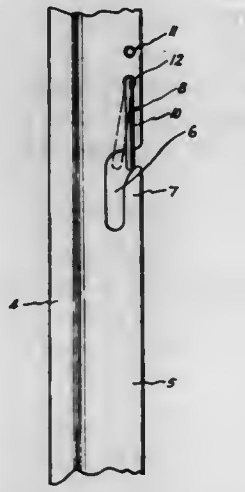
Highway safety devices comprising an array of energy absorbing barrier units each preferably comprising a dispersible mass, effective, when struck by a vehicle, to bring the vehicle to rest at a rate of deceleration tolerable to the vehicle occupants without imposing an overturning or lifting moment on the vehicle.

3,606,259
FENCE POSTS

James Michael Farrell, Walcha, New South Wales, Australia, assignor to Bessie May Larter, Northbridge, New South Wales, Annie Maude Taylor, Leichhardt, New South Wales, and Mabel Margaret Wise, Paddington, New South Wales, Australia, fractional part interest to each
Filed June 6, 1969, Ser. No. 831,155
Int. Cl. E04h *17/24*
U.S. Cl. 256—48 **4 Claims**

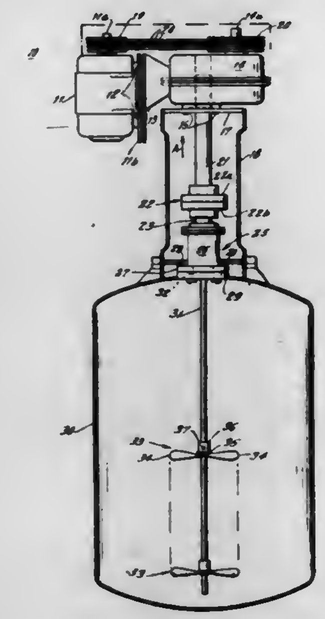
A fence post having a slot or recess in one edge with a keeper to enable easy insertion of the fence wire but resiliently biased to prevent withdrawal thereof. The

keeper is a U-shaped piece of wire with arms of unequal length. Each arm has an end portion which is bent over toward the other arm and these end portions are inserted into two holes which are drilled through the post.



3,606,260
AGITATOR SEAL CARTRIDGE

Isadore Rubin, South Orange, N.J., assignor to Industrial Process Engineers, Newark, N.J.
Filed Jan. 23, 1969, Ser. No. 793,252
Int. Cl. B01f *7/16;* **F16j** *15/16*
U.S. Cl. 259—1 **15 Claims**



This invention describes a new agitator mechanical seal cartridge assembly which may be rapidly removed for maintenance and replaced by a spare or by itself, after repair, without essentially disturbing the remaining agitator components, such as drives (motors or gear reducers) shaft and impellers. This assembly, while designed for agitators, may be employed with pumps or other machinery using rotating shafts where a seal is required.

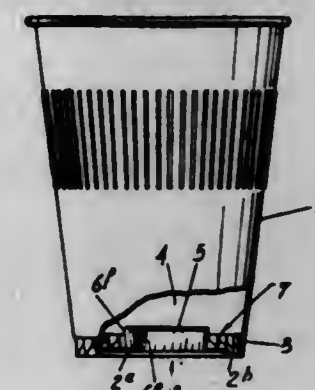
3,606,261
PROCESS FOR THE CONTINUOUS CONTROL OF HOMOGENIZATION OF A MIXTURE OF TWO OR MORE MATERIALS

Zdenek Severa, Prague, and Antonin Benda and Petr Vachalovsky, Roztoky, Czechoslovakia, assignors to Spofa, United Pharmaceutical Works, Prague, Czechoslovakia
No Drawing. Filed Mar. 12, 1969, Ser. No. 806,716
Int. Cl. B01f *3/00*
U.S. Cl. 259—1R **2 Claims**

A process for the continuous control of homogenization of a mixture of two or more materials. There is added to a mixture a small amount of a magnetically orientated indicator material in powder form. This indicator material is dispersed into the mixture by the homogenizator. One or more instruments are mounted in the homogenizator for measuring the magnetic field intensity of the mixture. Upon the receiving of an even signal from the measuring instrument, the homogenization process of the mixture is completed.

3,606,262
CUP, MUG OR OTHER DRINKING VESSEL, MORE ESPECIALLY MADE OF PLASTIC

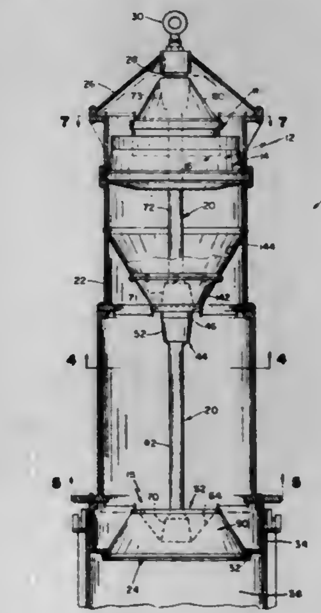
Teunis van't Hoff, Rotterdam, Netherlands, assignor to Impromex A.G., Freibourg, Switzerland
Filed Apr. 1, 1969, Ser. No. 811,908
Claims priority, application Netherlands, Apr. 2, 1968, 6804631
Int. Cl. B01f *3/00*
U.S. Cl. 259—1 **6 Claims**



In a cup, mug or similar drinking vessel, having directly in the cup wall a series of inward projections, teeth or cams, which protrude into the cup cavity in order to facilitate and promote the mixing of ingredients fed to the cup cavity, a raised portion of the bottom faces with its upright side wall parts these wall projections, teeth or cams concavely in order to increase the whirling effect exerted thereby on the mixture ingredients and to thereby ameliorate the taste of the mixture.

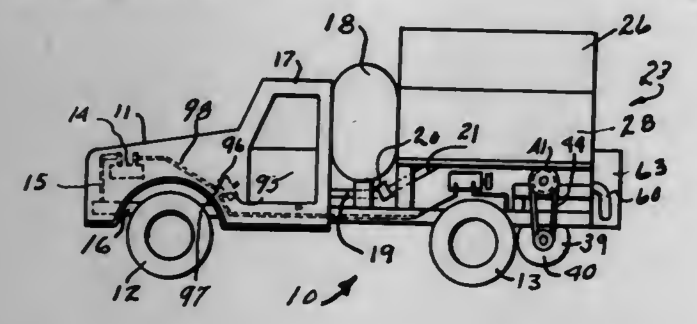
3,606,263
FORCE DISTRIBUTING STRUCTURE

Caperton B. Horsley, East Walpole, Mass., assignor to Braxton Corporation, Medfield, Mass.
Filed Oct. 8, 1969, Ser. No. 864,751
Int. Cl. B01f *11/02*
U.S. Cl. 259—1 **14 Claims**



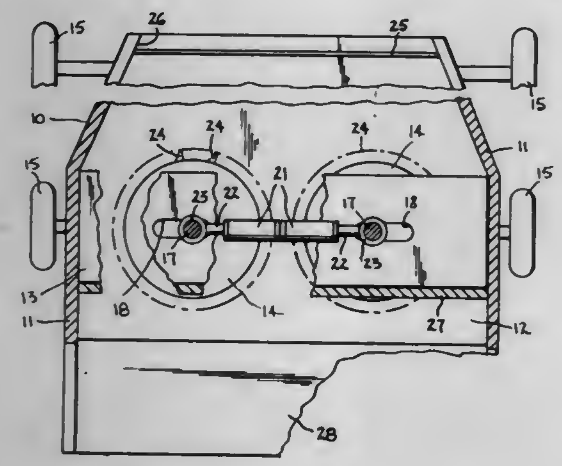
A force distributing structure comprising: a distribution cone having an apical portion for receiving a concentrated axial force applied interior to the distribution cone and a basal edge; a first truncated cone, having a truncated edge and a basal edge, concentric with and opening in the opposite direction from the distributing cone and having its truncated edge attached to the basal edge of the distribution cone; structure providing an extended surface to which the axial force is distributed which is of greater area than the cross sectional area of the apical portion, the surface being supported by the basal edge of the first truncated cone; and, a second truncated cone, having a truncated and a basal edge, concentric with and opening in the same direction as the distribution cone and having its truncated edge attached to and supporting the surface.

3,606,264
MARKING MEANS UTILIZING COLORED LIQUID AT THE EDGE OF A STRIP IN AN OPEN FIELD OR COUNTRY
Clifford L. Rosselot, P.O. Box 183,
Owensville, Ohio. 45160
Filed May 7, 1969, Ser. No. 822,434
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **4 Claims**



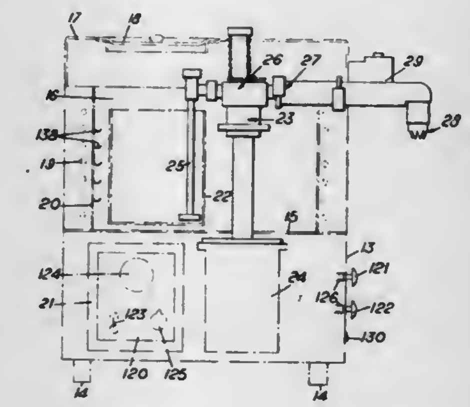
The strip marker of the present invention effects the marking of a strip in an open field or land that is being treated by insecticides, fertilizing material, or the like and wherein said field edge markings are by means of a colored liquid that is readily distinguishable from a distance, the said marking mechanism is adapted to be attached to the land strip conditioner and which is generally a self-contained and self-propelled truck and from the power mechanism of the truck or tractor the said field marker is operated. This field marker while marking by colored liquid is not a continuous strip but is merely spots of the said liquid marking material.

3,606,265
FRAGMENTIZING APPARATUS WITH VERTICALLY MOUNTED DRUM
Herbert T. Cobey, R.F.D. 2,
Galion, Ohio 44833
Filed Apr. 3, 1969, Ser. No. 813,011
Int. Cl. B01f *7/16, 15/02;* **B02c** *2/04*
U.S. Cl. 259—8 **13 Claims**



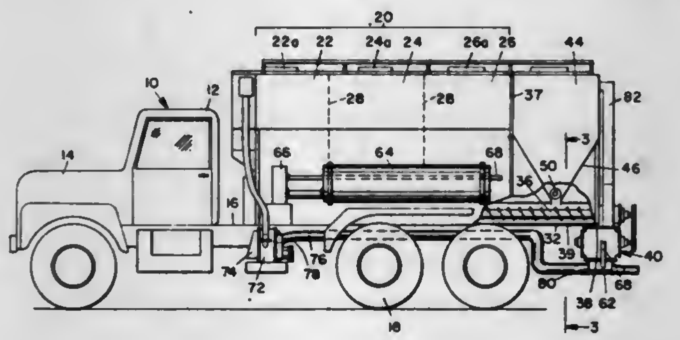
A stationary or mobile fragmentizing apparatus provided with one or more rotors or drums mounted for rotation about a vertical axis and having impact or shearing projections thereon for fragmentizing agricultural or waste materials which are fed to the apparatus. Means are provided for adjusting the spacing between adjacent drums for fragmentization control as well as for providing temporary clearance for the passage of an injurious obstruction. Such drum separating or spacing means can be made load responsive. For convenient and inexpensive replacement of the individual impact projections, a continuous bracket formed by a helix of angle iron is secured to the drum and serves as a mounting plate for the impact projections.

3,606,266
MACHINE FOR PRODUCING AERATED TOPPINGS
John MacManus, 143—16 22nd Road,
Whitestone, N.Y. 11357
Filed Dec. 10, 1969, Ser. No. 883,867
Claims priority, application Great Britain, Dec. 31, 1968, 61,986/68; Feb. 13, 1969, 7,982/69; Sept. 5, 1969, 44,032/69
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **34 Claims**



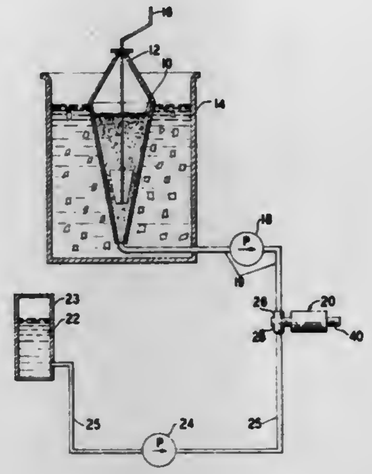
The machine includes a motor-driven pump having an inlet connected both to an air intake and to an unpressurized liquid product container, whereby the liquid product and air are simultaneously drawn into the pump. The pump outlet is connected to a static, narrow-orifice homogenizer which emulsifies the liquid and air mixture. A solenoid-operated valve is located at the outlet of the homogenizer and an electrical control system simultaneously opens the valve and starts the motor.

3,606,267
TRUCK FOR MIXING AND DELIVERY OF BLASTING COMPOSITIONS
Donald J. Pederson, Tucson, Ariz., assignor to Hercules Incorporated, Wilmington, Del.
Filed Jan. 22, 1970, Ser. No. 5,071
Int. Cl. B01f *7/08*
U.S. Cl. 259—6 **5 Claims**



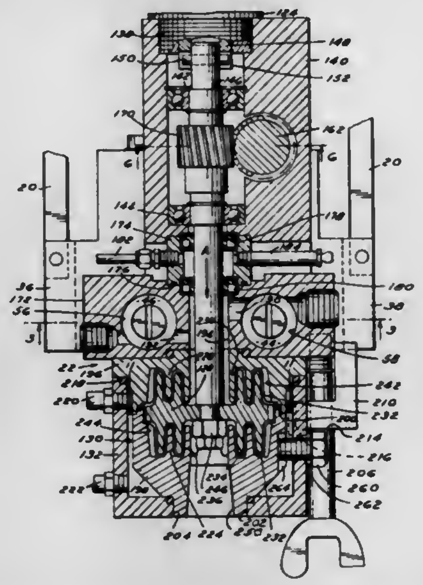
An improved truck for mixing and delivery of ammonium nitrate-fuel oil blasting compositions containing a second solid fuel in addition to the ammonium nitrate is provided. The truck has separate storage tanks and conveyors for the ammonium nitrate, fuel oil and second solid fuel. The conveyors are connected together for simultaneous operation with a hydraulic drive system. The solids are fed through an air lock to a mixing chamber where they are mixed with fuel oil and are discharged from the mixing chamber with pneumatic pressure. A vent pipe is connected between the air lock and the solids outlets from the storage tanks and releases pneumatic pressure which escapes from the mixing chamber through the air lock which allows the solids to be fed to the mixing chamber in adjustable and precisely controlled amounts.

3,606,268
MIXING PROCESS AND APPARATUS
Joseph J. Grabauskas, Chicago, Ill., assignor to Union Carbide Corporation
Continuation of application Ser. No. 674,575, Oct. 11, 1967. This application Apr. 29, 1969, Ser. No. 820,716
Int. Cl. B01f *5/08, 7/02*
U.S. Cl. 259—7 **3 Claims**



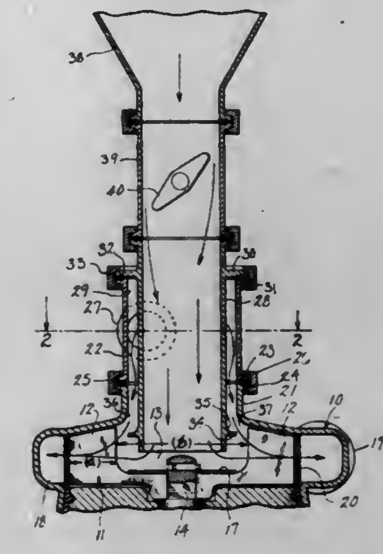
An air-free collagen slurry can be mixed with an air-free swelling agent and the mixture can then be subjected to shearing action to obtain a uniformly swollen collagen dispersion from which collagen structures can be subsequently fabricated.

3,606,269
MIXING DEVICE
Donald E. Trumbull, Sunnyvale, Calif., assignor to Pyles Industries, Inc., Wixom, Mich.
Filed Feb. 10, 1970, Ser. No. 10,142
Int. Cl. B01f *7/16*
U.S. Cl. 259—8 **1 Claim**



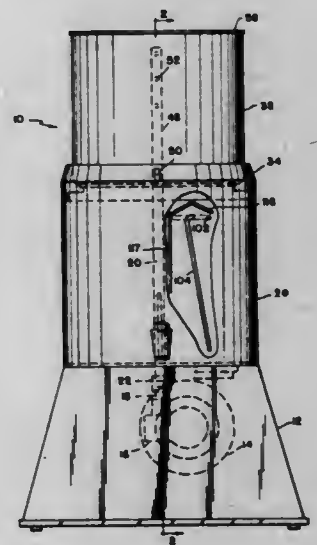
Shown herein a mixing device for receiving plural component flowable materials and mixing them together and dispensing them. A mixer, whose design provides for large face-to-face area of closely spaced relatively moving interrupted surfaces, offsets the otherwise high pressure drop across it by providing a pumping action within the mixer assisting the passage of the components being mixed therethrough. The mixing device further provides for a quick disconnect of the mixer and its associated motor and monitor as an assembly from the remainder of the device to allow flushing of the mixer. Rack and pinion operation of the plural component delivery valves assures simultaneous start and stop of the components' flow.

3,606,270
CONTINUOUS POWER BLENDER
Robert D. Zimmerly, Kenosha, Wis., assignor to Ludish Co., Cudahy, Wis.
Filed May 14, 1970, Ser. No. 37,214
Int. Cl. B01f *7/26*
U.S. Cl. 259—8 **10 Claims**



Particulate material from a hopper is fed through a feed tube into the eye of the impeller of a centrifugal pump and liquid is also directed into the eye by a tube which is concentric with and surrounds the first tube, both materials then traveling through the impeller together, there being a peripheral casing portion surrounding the impeller from which the mixture is discharged tangentially, and there optionally being a central screen surrounding the impeller to insure proper mixing.

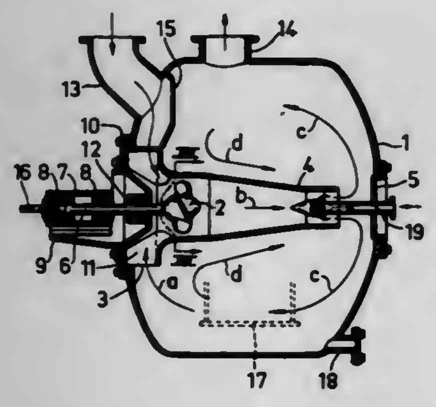
3,606,271
AUTOMATIC MIXER
Robert T. Schmidt, Port Huron, Frederick J. Sicheneder, Washington, and Paul W. Rowe, Bay City, Mich., assignors to Ruffy Research & Engineering, Inc., Detroit, Mich.
Filed Aug. 4, 1969, Ser. No. 847,295
Int. Cl. B01f *7/16*
U.S. Cl. 259—24 **13 Claims**



An automatic mixer is provided for mixing a liquid and powdered material together. The mixer includes a mixing tank and a reservoir for powdered material. The tank is first filled with liquid. Powder in a desired volume is then dispensed into the tank. The contents of the tank are agitated. Electrical circuitry is provided to automate the entire cycle of operation.

3,606,272
MIXING APPARATUS

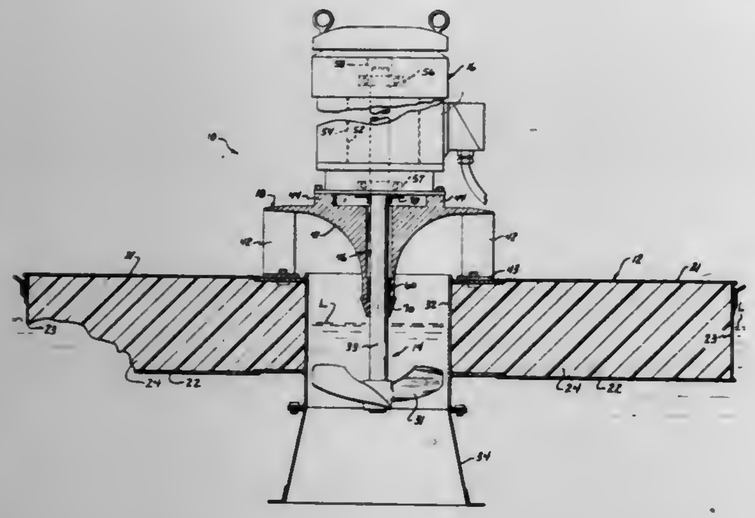
Karl Erik Bergstedt, Timra, Sweden, assignor to Sunds Aktiebolag, Sundsbruk, Sundsvall, Sweden
Continuation-in-part of application Ser. No. 702,580, Feb. 2, 1968. This application Mar. 23, 1970, Ser. No. 21,878
Claims priority, application Sweden, Feb. 27, 1967, 2,701/67
Int. Cl. B01f *7/02*
U.S. Cl. 259—25 **14 Claims**



Apparatus for mixing suspensions of materials while admixing additional treating materials therewith in which the suspension is circulated through a sleeve-shaped casing entirely within a container. The treating materials are added to the suspension while it is being impelled through the sleeve-shaped casing. The outlet end of the casing is spaced from the wall of the container which provides a surface for impingement of the treated suspension to provide turbulent mixing thereof.

3,606,273
FLOAT, PUMP AND MOTOR ASSEMBLY

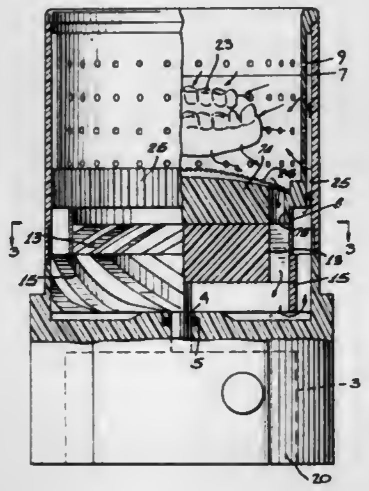
John K. Johnson, Rockford, Ill., assignor to Aqua-Aerobic Systems Inc., Rockford, Ill.
Filed Jan. 15, 1970, Ser. No. 3,074
Int. Cl. B01f *5/12*
U.S. Cl. 259—95 **11 Claims**



The assembly includes a float, a vertical propeller pump and a motor. Combined radial and thrust bearings are provided at the motor for supporting a one-piece shaft on which the propeller is mounted. The motor is supported on a casting which serves as a diffuser for the liquid pumped. A deflection bearing is mounted on the casting in spaced relation to the shaft and is operative to engage the shaft when it is deflected. A deflector hub is mounted on the shaft and engages the lower end of the deflection bearing to form a seal therewith. The unique shape of the deflector hub is best understood by reference to the drawings.

3,606,274
DENTURE WASHER

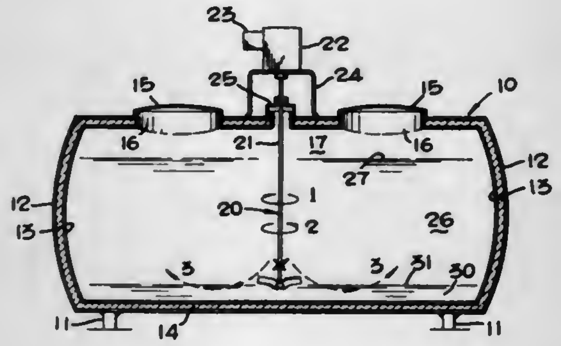
Gabriel S. Nelson, Box 133, R.D. 1, Station Road, New Paltz, N.Y. 12561
Filed May 18, 1970, Ser. No. 38,164
Int. Cl. B01f *5/12*
U.S. Cl. 259—95 **3 Claims**



A denture washer which circulates washing fluid within a hollow denture washing housing. A fluid impeller is mounted at the bottom of the housing having two coaxial impellers including a larger diameter impeller for forcing fluid upwardly into the denture support housing and a smaller impeller for pulling the fluid downwardly. A perforated cylindrical stack or divider is placed in the housing with its lowermost portion positioned intermediate the impellers to separate the respective fluid flows.

3,606,275
PADDLE ASSEMBLY FOR BULK MILK TANKS

Nathan B. Oberg, Bernard H. Heimann, and Hugo W. Holtmeier, Washington, Mo., assignors to Zero Manufacturing Company, Washington, Mo.
Filed May 6, 1969, Ser. No. 822,250
Int. Cl. B01f *7/16*
U.S. Cl. 259—107 **4 Claims**

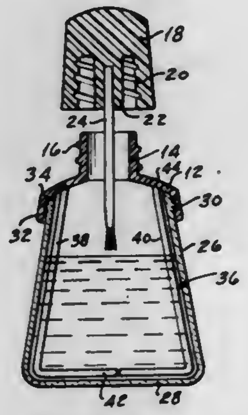


This cooling and cleaning system provides a paddle assembly performing both the cleaning and cooling functions in a bulk milk tank. The paddle assembly includes a shaft depending from a variable speed, reversible drive means. Upper and lower paddles are provided at the remote end of the shaft to provide the circulating action

at a relatively slow rotational speed during the cooling cycle. The lower paddle includes spatter blades immersible in a cleaning fluid when the tank is empty of milk, the spatter blades benig rotatable at a relatively high speed in a reverse direction during the cleaning cycle.

3,606,276
CONTAINER WITH AGITATOR

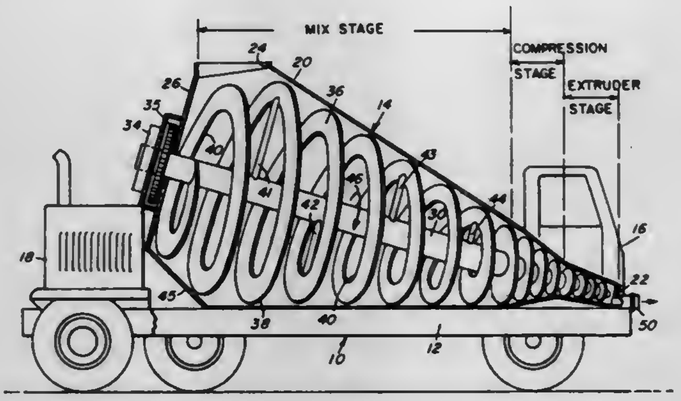
Sylvia Jackson, Atlanta, Ga., assignor to Product Development and Market Consultants, Inc., Jefferson Parish, La.
Filed Oct. 23, 1968, Ser. No. 770,019
Int. Cl. B01f *7/16*
U.S. Cl. 259—108 **10 Claims**



A container for a suspension of particles in which an agitator disposed adjacent the container base agitates and returns to the suspension settled particles of pigment in response to relative rotation between upper and lower parts of the container which have been assembled with an airtight seal. One of the two parts of the container carries a removable lid or cap providing a one-time airtight factory seal for the dispensing opening. The arrangement is such that the container parts may be relatively rotated to agitate the suspension without destroying the factory seal.

3,606,277
TRANSIT-MIX CONCRETE TRUCK

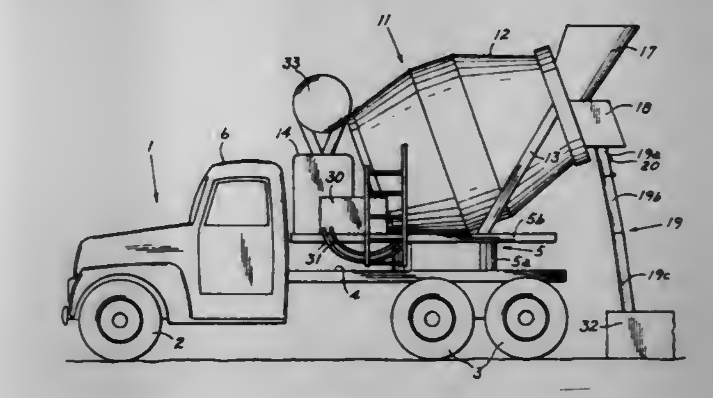
Brahim Ijac Kader, 3724 Norman Bridge Road, Montgomery, Ala. 36108
Filed Sept. 22, 1969, Ser. No. 859,821
Int. Cl. B28c *7/16*
U.S. Cl. 259—169 **17 Claims**



A transit-mix concrete truck is disclosed which utilizes a stationary mixing drum in which is located a rotatable conical helix screw. The screw is coaxial with the drum and has substantially the same diameter as the inner diameter of the drum, with the screw and the drum both being tapered to form truncated cones. The screw is constructed in three stages, the first stage having a large average diameter and coarse pitch for mixing concrete. This large diameter screw tapers toward the second stage which is of smaller average diameter and finer pitch to compress concrete during delivery. The third stage, which is smallest in diameter and finest in pitch, serves as an extrusion stage which provides sufficient pressure to extrude concrete through an orifice and into a delivery line. Rotation of the spiral screw in one direction causes the concrete to move toward the rear of the drum, forcing it to spill over the inner edges of the screw for mixing and agitating. Rotation of the screw in the opposite direction causes the concrete to be moved into the compression and extrusion stages at the front of the drum for subsequent conveyance under pressure to a suitable distribution head.

3,606,278
CONCRETE MIXING VEHICLE

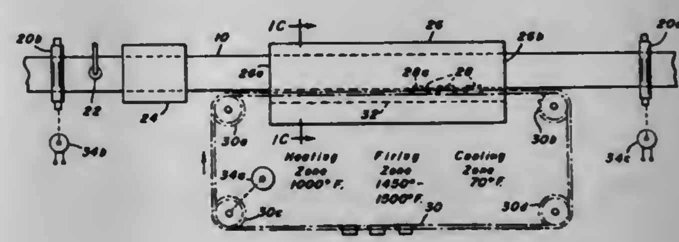
Robley Winfrey II, Englewood, Colo., assignor to Rocky Mountain Prestress, Inc., Englewood, Colo.
Filed Apr. 9, 1970, Ser. No. 26,963
Int. Cl. B28c *7/16*
U.S. Cl. 259—172 **11 Claims**



A concrete mixing vehicle having a hopper assembly movably mounted on the vehicle body is disclosed. A discharge chute which projects downward in a substantially vertical direction is mounted on the hopper assembly for receiving and channeling concrete discharged therefrom. Hydraulic means are disclosed for selectively positioning the hopper assembly relative to the vehicle body whereby to position the discharge portion of the hopper assembly so as to determine the location at which concrete is poured.

3,606,279
APPARATUS FOR HEAT TREATING A SHEET

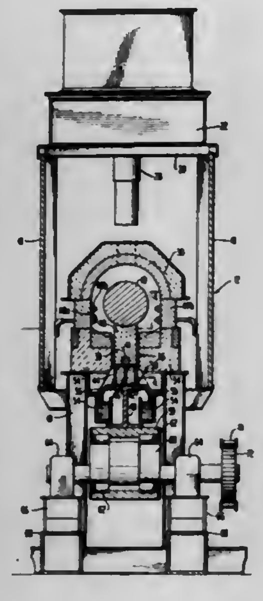
Robert G. Auger, Monroeville, Pa., assignor to United States Steel Corporation
Filed Oct. 8, 1969, Ser. No. 864,680
Int. Cl. F27b *9/28*
U.S. Cl. 263—3 **14 Claims**



Apparatus for heat treating a sheet while disposed at a substantially vertical plane without contacting opposite treated sides of the sheet is disclosed. The apparatus has a furnace for heat treating the sheet, positioning means adjacent the furnace in engagement with the sheet for positioning the sheet in the substantially vertical plane, supporting means in the furnace in engagement with the bottom of the sheet for guiding the sheet through the furnace and drive means connected to one of the positioning means and the supporting means for moving the sheet through the furnace.

3,606,280
WALKING BEAM FURNACE CONSTRUCTION

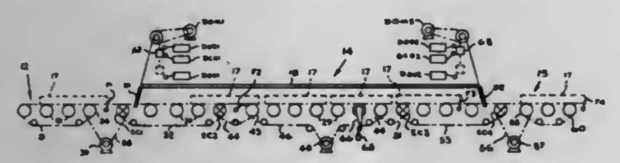
Charles B. Gentry, Grand Rapids, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.
Filed Nov. 14, 1969, Ser. No. 876,666
Int. Cl. F27b *9/14*
U.S. Cl. 263—6A **7 Claims**



This disclosure relates to a walking beam furnace for heating billets to high temperatures in which the billets are supported at the sides of the walking beam by spaced, removable refractory blocks. Metal caps are placed on the corners of the refractory blocks to reduce wear on the corners as a result of continued contact with the billets during their movement through the furnace. Sloping surfaces are formed between the refractory blocks to facilitate the enveloping of the billets with a high heat intensity flame while the billets are supported by the refractory blocks.

3,606,281
ROLLER HEARTH FURNACE WITH ROLL OSCILLATION CONTROLLER

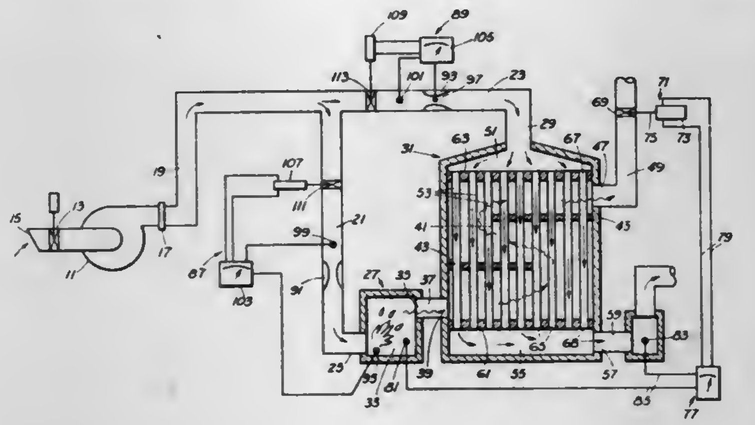
Talmadge F. Price and Robert R. Walton, Shelbyville, Ind., assignors to General Electric Company
Filed May 22, 1970, Ser. No. 39,725
Int. Cl. B27b *4/14*
U.S. Cl. 263—6C **17 Claims**



A roller hearth furnace includes a furnace section for heating work articles and an exit section adjacent the furnace section for receiving heated articles from the furnace section. The articles are supported by a plurality of spaced parallel rotatable rolls with the rolls in the furnace section being rotated by a reversible electric motor. A roll oscillation controller is provided for automatically reversing the direction of rotation of the motor each time one of the rolls rotates through a complete revolution to thereby oscillate the rolls for oscillating articles back and forth in the furnace section. Means are provided for operating the oscillation controller either manually or automatically, the automatic operation being in response to arrival of an article at a position in the furnace section near its exit end while an article is positioned in the exit section so as to prevent a jam of articles.

3,606,282
HIGH TEMPERATURE HEAT EXCHANGER AND METHOD OF OPERATING

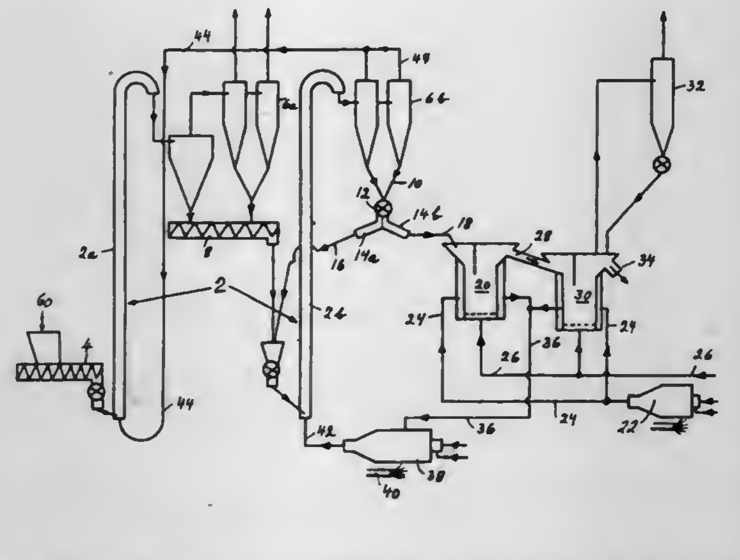
Kenneth W. Stookey, Markle, Ind., assignor to Torrax Systems, Inc., North Tonawanda, N.Y.
Filed May 6, 1970, Ser. No. 34,960
Int. Cl. F23l *15/04*
U.S. Cl. 263—20 **15 Claims**



A heat exchanger of the refractory tube type is provided with pressure control means whereby the entire heat exchanger system is operable at high pressures without detrimental effects by maintaining a low predetermined pressure differential across the walls of the heat exchanger tubes. Control means are provided to regulate the flow of the hot gases through the system and adjust the pressure thereof in response to changes in the pressure of the gases or fluid in opposite sides of the system.

3,606,283
PROCESS FOR THE CONVERSION OF HYDRATED HALIDES INTO ANHYDROUS SALTS AND APPARATUS THEREFOR

Wilhelm Georg Weber, Pratteln, Switzerland, assignor to Buss A.G., Basel, Switzerland
Filed July 23, 1969, Ser. No. 844,042
Claims priority, application Switzerland, July 31, 1968, 11,732/68
Int. Cl. F27b *15/00*
U.S. Cl. 263—21A **9 Claims**

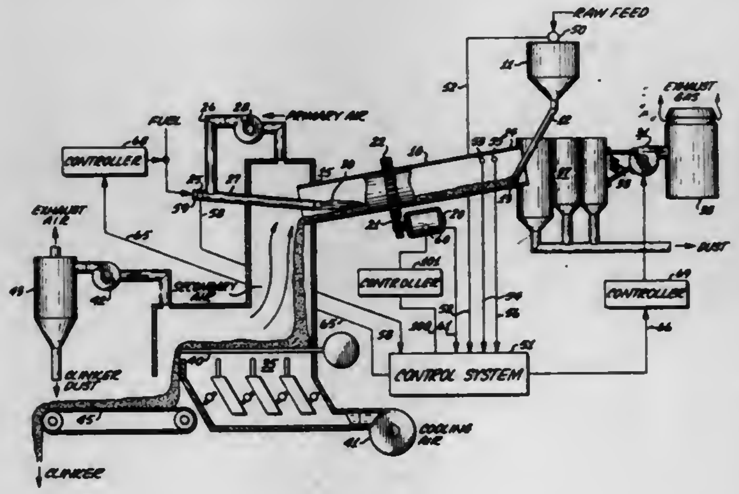


A process for the continuous conversion of hydrated halides into anhydrous salts, which comprises pre-calcining the moist hydrate in a first step by heating it with

vigorous agitation to a temperature at which the total surface moisture and part of the crystal water are removed, and thereafter further heating the pre-calcined salt in stepwise operation in a gently moving layer until the temperature for complete calcination is reached. For bringing about the moving action, dry gas is introduced into the layer of pre-calcined salt while it is being further heated for complete calcination, said gas also serving for entraining the steam formed during the drying process. The invention further relates to an apparatus for carrying out the calcination.

3,606,284
METHOD AND APPARATUS FOR CEMENT KILN CONTROL

Myron Robert Hurlbut, Peabody, Mass., and James William Lane, Houston, Tex., assignors to General Electric Company
Filed Sept. 26, 1969, Ser. No. 861,423
Int. Cl. F27b *7/00*
U.S. Cl. 263—32 **13 Claims**

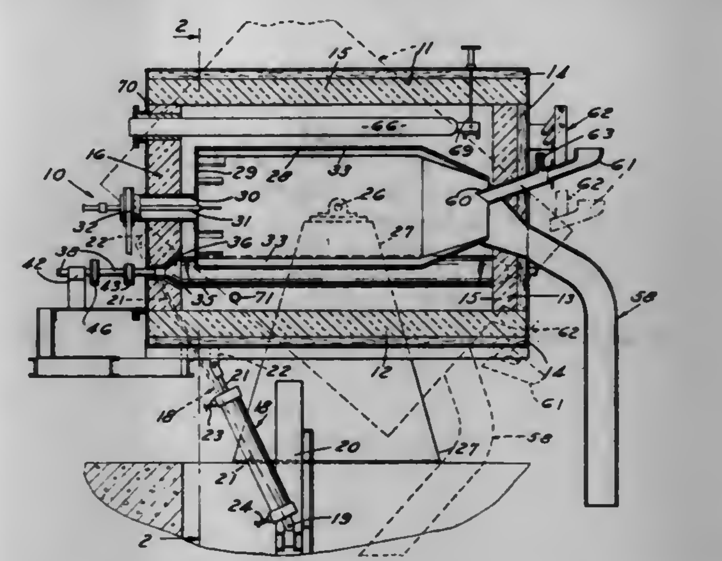


A method and apparatus for improving the control of a rotary cement kiln wherein the fuel rate set point and the exit gas rate set point are normally controlled. During a normal range of kiln disturbances, the control of fuel rate set point is based upon kiln drive motor torque measurements in conjunction with feedback signals generated by a dynamic kiln model which stores a record of past control actions. Control of the exit gas rate set point is based upon measurements of gas temperature at a selected intermediate area of the kiln. Oxygen content of the exit gas is monitored and employed to exercise overriding control to insure that no combustibles which might cause an explosion appear in the exit gas. Abnormal disturbances alter the kiln speed to thereby effect a more rapid process response to the abnormal disturbance.

3,606,285
BARREL-TYPE BATCH GAS CARBURIZING FURNACE

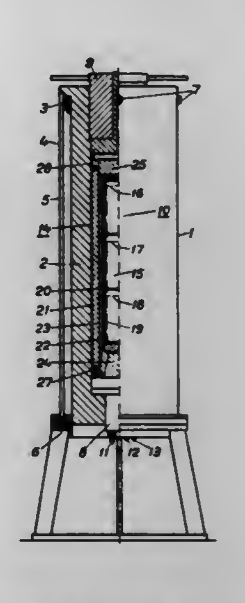
Edward C. Bayer, Dearborn, Mich., assignor to Holcroft & Company, Livonia, Mich.
Filed Oct. 20, 1969, Ser. No. 867,460
Int. Cl. F27b *7/08*
U.S. Cl. 263—34 **19 Claims**

A rotary barrel-type retort is positively driven, along with a pair of elongated supporting rollers cradling the same, by drive means disposed in the entirety thereof externally of a cylindrical furnace heating chamber in which the retort is concentrically located for rotation. Part loading and unloading chute components are at the same axial end of the heating chamber, with the retort being rotatively supported in part, in supplementation of its cradling support rollers, by a trunnion at the opposite axial end of the heating chamber. Means for rotating the retort are associated with the trunnion, in common with means for rotating the retort-supporting rollers; and in each case the retort and roller drive means are entirely external of the hot heating chamber. In one embodiment of the furnace direct firing gas burners discharge products of combustion into the heating chamber in a direction generally tangential of the retort. In another embodiment, U-type radiant heaters are employed. Atmosphere gas is introduced to the retort via an inlet passage in the retort journalling trunnion, emerging at the other retort end and flowing into the combustion chamber then out the furnace flues. A gas inlet is also contemplated in the part loading chute at a heating chamber end, supplementing the supply of atmosphere gas through the retort trunnion.



3,606,286
FURNACE FOR HEAT TREATING OBJECTS UNDER HIGH PRESSURE

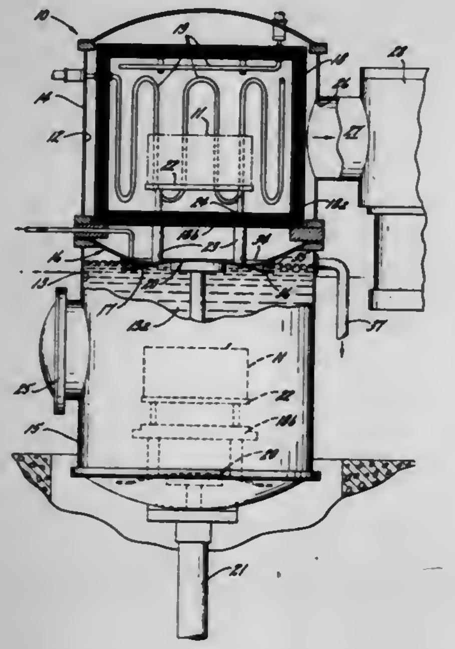
Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Electriska Aktiebolaget, Vasteras, Sweden
Filed Sept. 15, 1969, Ser. No. 857,752
Claims priority, application Sweden, Sept. 18, 1968, 12,545/68
Int. Cl. F27b *5/00*
U.S. Cl. 263—40 **15 Claims**



A cylindrical furnace for treating material at high temperature in a gaseous atmosphere under high pressure includes a pressure chamber and an insulating hollow body arranged inside the pressure chamber with a space therebetween. The insulating body includes a cylindrical sheath having an insulating lid and bottom sealing its ends. A furnace chamber is arranged within the insulating hollow body. Connections are provided near the top and bottom of the furnace chamber between the furnace chamber and the space. An arrangement is also provided for normally obstructing through-flow through at least one of these connections. This member can be opened, for example by melting a part of it, by a flow of electrical current or destroying such a part by an explosion, so as to permit gas influenced by pressure differences due to the temperature difference to flow out of the furnace chamber and down between the hollow body and the wall of the pressure chamber so as to be cooled by the wall of the pressure chamber.

3,606,287
HEAT TREATING APPARATUS FOR METAL WORKPIECES

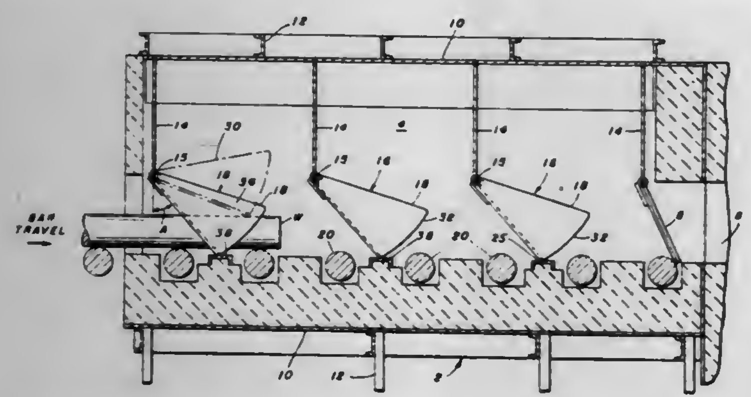
Irvin P. Bielefeldt, Loves Park, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.
Filed Nov. 24, 1969, Ser. No. 879,168
Int. Cl. C21d *1/66*
U.S. Cl. 266—4R **12 Claims**



A seal of frozen quenching liquid is formed in a heat treating apparatus between the sealing surfaces of a flange defining an opening in a heating chamber and a closure member for blocking the opening, the seal being gastight so that the atmosphere within the chamber can be controlled.

3,606,288
FURNACE SEAL

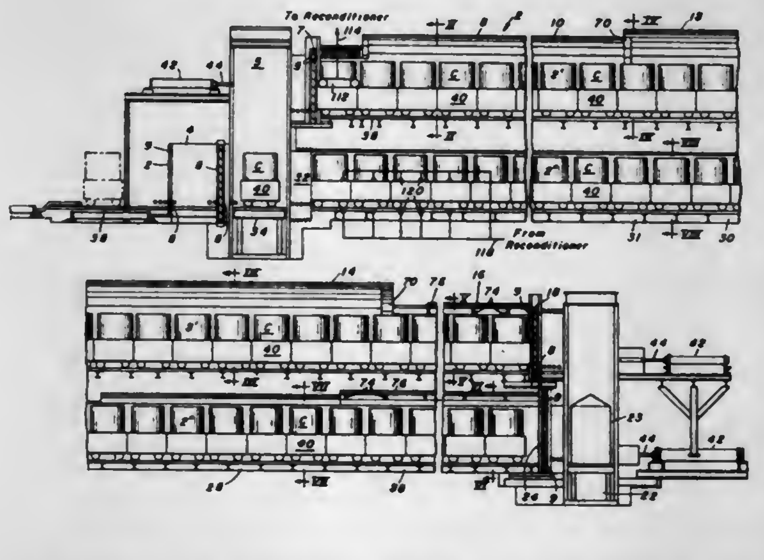
William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Feb. 2, 1970, Ser. No. 7,721
Int. Cl. C21d *1/00*
U.S. Cl. 266—5R **10 Claims**



A sealing system for a furnace, such as a continuous bar annealing furnace having a plurality of sealing elements supported across the opening to the furnace in a side-by-side relationship. Each element of the seal has two parallel planar sides in alignment with the direction of entry into the furnace. Material entering the furnace contacts one or more elements causing them to be displaced, permitting the material to enter the furnace. The dimension of the planar sides of each element in the direction of displacement is of such magnitude that the side of one element remains in a continually overlapping relationship with the side of an adjacent element when one of the elements is displaced by the material entering the furnace.

3,606,289
APPARATUS FOR ANNEALING STEEL COILS

William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.
Filed Feb. 26, 1969, Ser. No. 802,548
Int. Cl. C21d *1/00*
U.S. Cl. 266—5R **15 Claims**

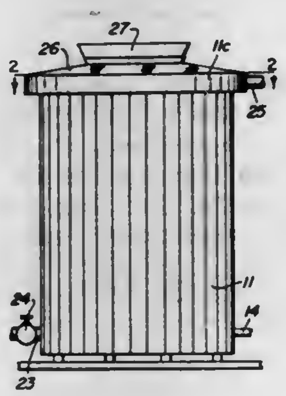


A furnace for annealing whole coils of silicon steel which includes a welded gas tight shell lined with varying thickness refractory material defining a plurality of independently controllable heating and cooling zones and in which a hydrogen atmosphere is maintained; the furnace having cars of special design for transporting the coils therethrough, special heating elements extending along the furnace walls of the heating zone and a supplemental cooling arrangement for the coils to provide a controlled heat treatment.

3,606,290
APPARATUS FOR THE PRECIPITATION OF METALS FROM SOLUTION

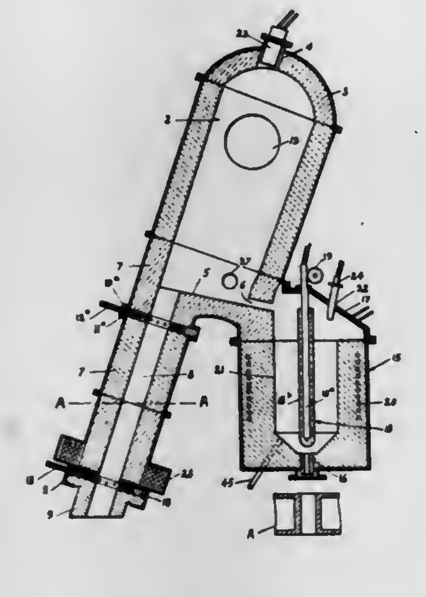
Nealand Lynn Ransom, Chuquicamata, Chile, assignor to Kennecott Copper Corporation, New York, N.Y.
Original application Jan. 23, 1967, Ser. No. 610,946. Divided and this application Sept. 10, 1969, Ser. No. 870,973
Int. Cl. C22b *3/02*
U.S. Cl. 266—22 **7 Claims**

Apparatus for precipitating metal values from solution on massed descrete pieces of solid precipitant. A precipitation vessel of inverted conical formation is charged with the precipitant, and the pregnant solution containing the metal values is injected under pressure into the mass of precipitant through a nozzle located at the downwardly-directed apex of the vessel. The nozzle is of special formation comprising an outwardly divergent channel member of conical formation inset into a discharge orifice to provide an annular nozzle opening concentrically surrounding a central nozzle opening. The force of the incoming solution creates a void in the mass of precipitant immediately above the nozzle, and, as pieces of partially consumed precipitant fall into the void above the nozzle, their surfaces are scrubbed clean of adherent precipitate which is carried upwardly by the solution to overflow through a screen that extends preferably vertically upwardly from the overflow rim of the vessel.



3,606,291
MOLTEN STEEL DEGASSING APPARATUS AND METHOD

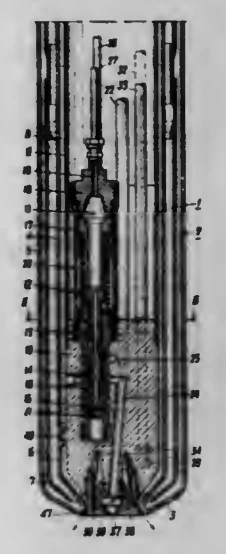
Philip E. Schneider, Mount Lebanon, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 522,547, Jan. 24, 1966. This application May 15, 1969, Ser. No. 852,955
Int. Cl. C21c *7/10*
U.S. Cl. 266—34V **5 Claims**



There is disclosed a method and apparatus for the degassing of molten metal, particularly steel, wherein there is a vertically elongated degassing chamber having its axis inclined away from the vertical. There is a hearth at the bottom of the degassing chamber that slopes from the high side toward the low side with an outlet port for discharging metal at the low side. There is a riser leg that opens through the hearth at the high side and extends downwardly from the hearth for a length ranging between two and two and one-half times the length of the barometic column of molten metal that may be drawn up into the leg above the level of molten metal in the ladle. When the apparatus is operating, provision is made for introducing gas into the riser leg at a level below the top of the barometric column. The metal is carried by expanding gases up the length of the tube above the top of the barometric column as droplets and expelled into the degassing chamber, falling back onto the sloping hearth clear of the riser leg. A receiving vessel is connected to the outlet port into which alloying ingredients may be introduced into the degassed metal.

3,606,292
BURNER-LANCE

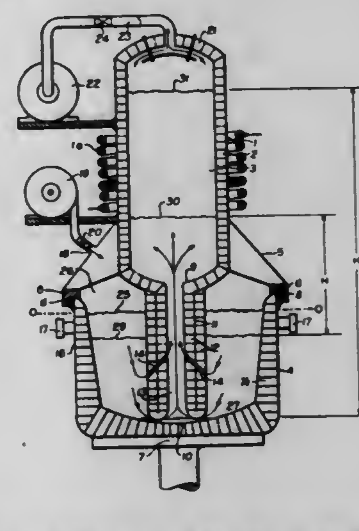
Meinhard Truppe, Hellmuth Smejkal, Matthias Schernthaner, Günter Poferl, and Johann Hartl, Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Apr. 9, 1970, Ser. No. 26,897
Claims priority, application Austria, Apr. 18, 1969, A 3,755/69
Int. Cl. C21c *7/00*
U.S. Cl. 266—34L **10 Claims**



The invention proposes a burner-lance comprising in a cooling jacket a burner insertion including conduits for liquid fuel and a flush gas such as compressed air, a control block at the mouth end of the lance for selectively connecting said conduits to the nozzle outlet, and a steam pipe surrounding said conduits to keep the system warm, an annular canal for the suppply of the oxygen containing gas being formed between said burner insertion and said cooling jacket. This burner-lance is destined for heating or melting down a solid metal charge and when pure oxygen is used it is particularly well suited for refining. The burner-lance according to the invention meets high safety standards. Operation is readily started and terminated and choking of the nozzle parts is avoided.

3,606,293
METHOD AND APPARATUS FOR PURIFICATION OF MOLTEN METAL

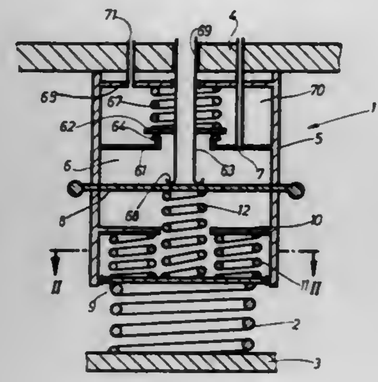
Frank F. Erdely, Raleigh, N.C., assignor to Walter Sieckman, Allegheny County, Pa.
Original application Mar. 29, 1966, Ser. No. 538,296, now Patent No. 3,508,743, dated Apr. 28, 1970. Divided and this application Sept. 29, 1969, Ser. No. 871,143
Claims priority, application Switzerland, Apr. 2, 1965, 4,617/65
Int. Cl. C21c *7/00*
U.S. Cl. 266—34V **11 Claims**



This disclosure relates to the purification of metals. It more particularly refers to the degasification of metals and especially to such metal degasification from metals which are molten.

3,606,294
BALANCING VALVE FOR A LOAD-RESPONSIVE BRAKE PRESSURE REGULATOR

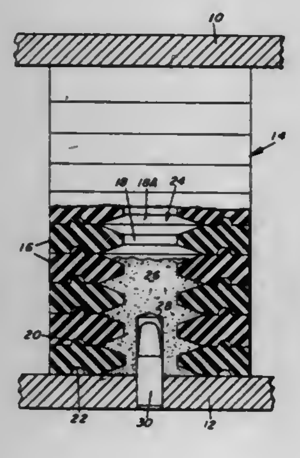
Hans Pöllinger, Munich, Germany, assignor to Knorr-Bremse G.m.b.H., Munich, Germany
Filed July 25, 1969, Ser. No. 844,778
Claims priority, application Germany, July 26, 1968, P 17 80 045.2
Int. Cl. B60g *13/02*
U.S. Cl. 267—8 **10 Claims**



A load-responsive brake pressure regulator for railway vehicles has a balancing or weighing valve mounted between the frame and suspension on the undercarriage. The valve has a housing mounted on the frame and a pressure plate fastened upon the suspension moveable within the housing. The housing has a chamber connected to the air braking system closed by a diaphragm with valve means regulating the pressure within the chamber in response to the weight of the vehicle. A number of spring elements are uniformly distributed between the pressure plate and annular surface within the housing and at least one spring element is between the pressure plate and the diaphragm. An annular member of a resilient synthetic plastic material may be used between the pressure plate and annular surface and a cylindrical member of like material between the pressure plate and diaphragm.

3,606,295
SHOCK ABSORBER

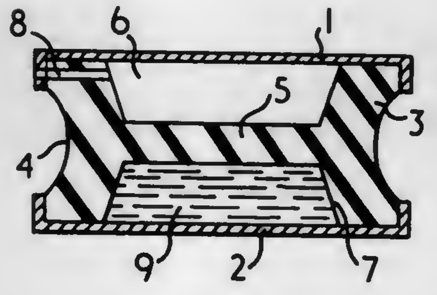
Bernard Simon Appleton, Woodmere, N.Y., assignor to Unilan A.G., Chur, Switzerland
Filed Oct. 17, 1969, Ser. No. 867,216
Claims priority, application Italy, Nov. 12, 1968, 53,852A/68
Int. Cl. B60g *11/22;* **B61g** *11/00;* **F16f** *1/36*
U.S. Cl. 267—63 **12 Claims**



A spring or shock absorber adapted for vehicle suspension systems and the like comprising a stack of elastomeric discs lying one on the other and an axially extending bore through the stack filled with a flexible plastic foam which joins the discs together into a unitary structure.

3,606,296
APPARATUS FOR ABSORBING SHOCKS AND VIBRATIONS

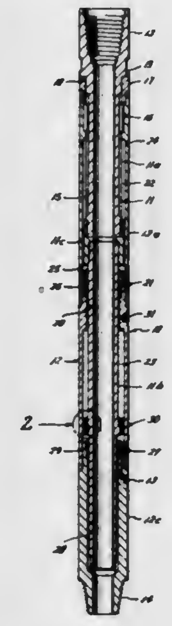
Pierre Chassagne, Chamalieres, France (% Fort Dunlop, Erdington, Birmingham 24, England)
Filed Feb. 24, 1969, Ser. No. 801,493
Claims priority, application France, Mar. 5, 1968, 22,186
Int. Cl. F16f *9/10*
U.S. Cl. 267—113 **7 Claims**



An anti-vibration mounting comprising a rubber sleeve sealed at each end and divided internally into one compartment vented to the atmosphere and a second compartment filled with a liquid, the sleeve being shaped so that the side walls buckle radially inwardly when compressed axially.

3,606,297
ENERGY ACCUMULATOR AND SHOCK ABSORBING DEVICE FOR WELL PIPE STRINGS

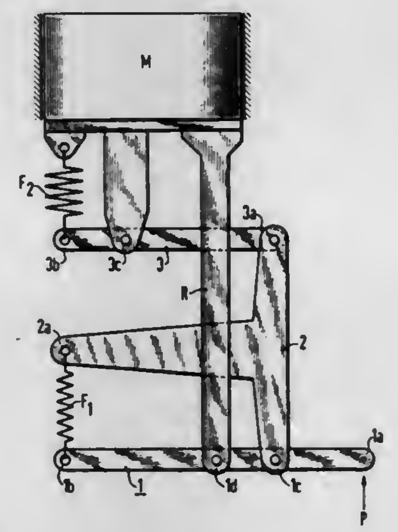
Derrel D. Webb, Houston, Tex., assignor to Houston Engineers, Inc., Houston, Tex.
Filed Dec. 18, 1969, Ser. No. 886,221
Int. Cl. E21b *17/00;* **E21c** *5/00,* **E16f** *9/02*
U.S. Cl. 267—125 **2 Claims**



A well tool comprising telescopically arranged tubular members connectable in a well string for relative longitudinal movement between extended and contracted positions. A piston on the inner tubular member is sealably slidable within a closed chamber formed in the annular space between the tubular members. The piston has a check valve which permits flow past the piston upon movement in the chamber in one direction. A means is also provided for relieving excessive pressure in the chamber upon movement of the piston in the opposite direction within the chamber.

3,606,298
METHOD AND APPARATUS FOR SUPPRESSING THE TRANSFER OF MECHANICAL OSCILLATIONS

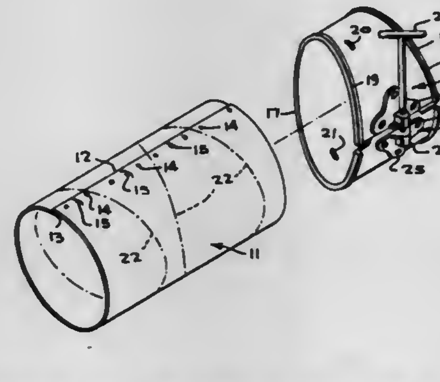
Fritz Schaumann, 28 Ringstrasse, (D 52) Siegburg, Germany
Filed Jan. 13, 1969, Ser. No. 790,639
Claims priority, application Germany, Jan. 18, 1968, P 16 75 019.9
Int. Cl. F16f *15/00*
U.S. Cl. 267—137 **13 Claims**



The transmittal of mechanical oscillations or impulses is suppressed according to the invention by the cooperation of spring members having different spring rates, with translational gear or drive means having translation or reduction ratios which are variable in response to the amplitude and/or slope of the characteristic of said oscillations or impulses whereby an excursion of a point of a first drive means is transferred to a second drive means at a predetermined, preferably at a reducing ratio, said spring member for the first drive means being softer than the spring member of the second drive means.

3,606,299
JIG DEVICE

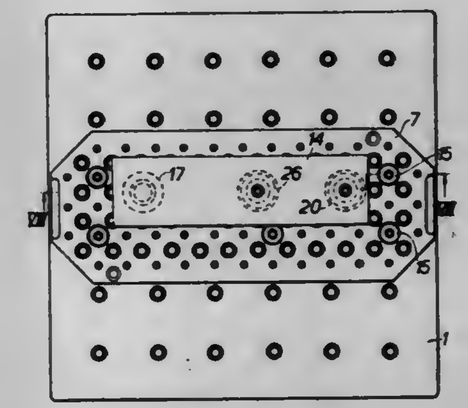
Raymond F. Twickler, Sr., 65 Sedgefield Drive, Harahan, La. 70123
Filed Feb. 26, 1969, Ser. No. 802,593
Int. Cl. B25b *5/00*
U.S. Cl. 269—2 **1 Claim**



A jig suitable for use with a workpiece having alignment means including means mountable on the workpiece, and the mountable means having means for guiding working means along the workpiece, means cooperable with the alignment means of the workpiece to position the guide means relative to the workpiece and means for detachably securing the mountable means on the workpiece.

3,606,300
DEVICES FOR SUPPORTING WORKPIECES

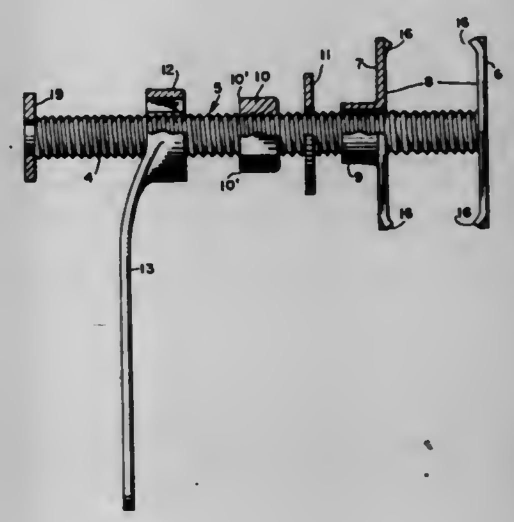
Peter Grant Davis, London, England, assignor to Molins Machine Company Limited, London, England
Filed Jan. 13, 1969, Ser. No. 790,780
Claims priority, application Great Britain, Jan. 15, 1968, 2,139/68
Int. Cl. B23g *3/00*
U.S. Cl. 269—296 **6 Claims**



For fixing a workpiece to a pallet having tapped fixing holes at the junctions of a square grid, an intermediate plate member is provided having holes by which it may be secured to the pallet at different positions by means of screws passing into the tapped holes in the pallet. The plate member also has fixing holes at the junctions of a square grid, but of closer spacing for securing supports for the workpiece. A support device is disclosed comprising a housing having a screwed part to screw into a fixing hole in the plate member. The housing contains a spring loaded screw to be screwed into a tapped hole in the workpiece.

3,606,301
CLAMPING DEVICE

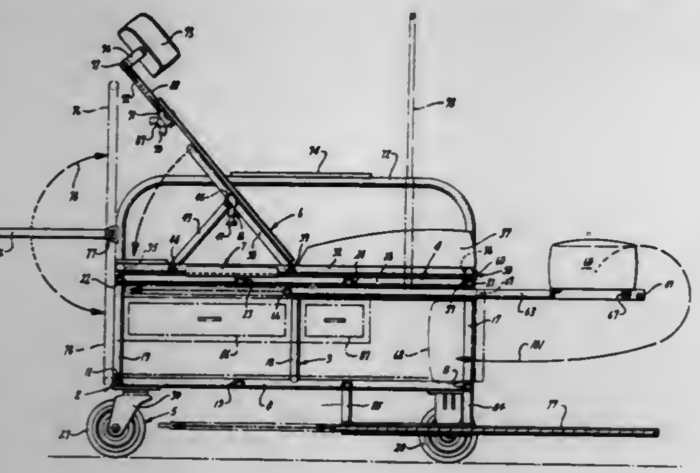
Frank D. Ultimo, 406 9th St., Brooklyn, N.Y. 11215
Filed June 25, 1969, Ser. No. 836,443
Int. Cl. B25b *5/10*
U.S. Cl. 269—243 **5 Claims**



A simple and rugged clamping device useful for various purposes in many trades but particularly adaptable in carpentry for holding together two angularly disposed timbers while they are being nailed, one to the other.

3,606,302
LIFE SUPPORT CART

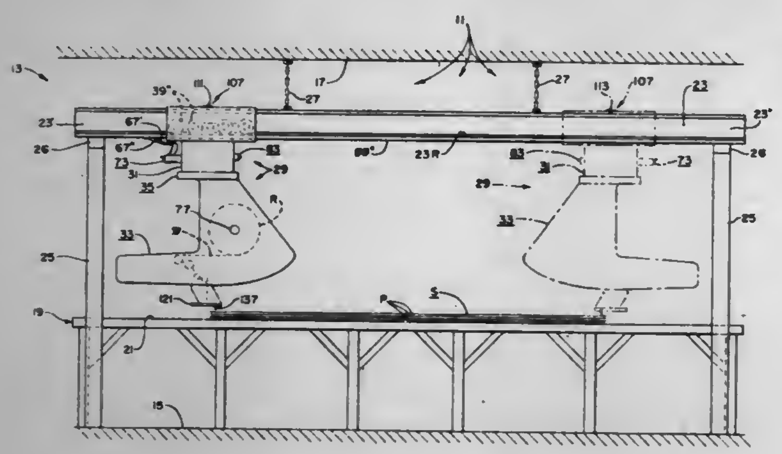
Charles D. Allard, 1620 Hickory Ave., San Leandro, Calif. 94579; Eugene R. Allard, 1809 A Pearl St., Alameda, Calif. 94501; and Robert Ross Newlon, 2060 E. St., Hayward, Calif. 94577
Filed June 2, 1969, Ser. No. 829,643
Int. Cl. A61g *13/00*
U.S. Cl. 269—325 **7 Claims**



A wheeled patient transporting and life supporting cart having the essential equipment for sustaining life under certain emergency conditions consisting of a frame, a detachable multi-position patient supporting member, extendible leg rest for the supine position and an extendible foot rest for the sitting position.

3,606,303
CLOTH SPREADING APPARATUS

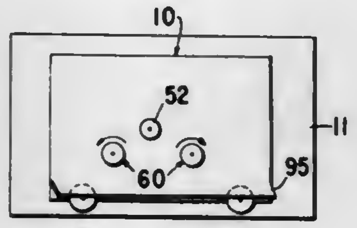
Kelly J. Johnson, 3513 General Hood Trail, Nashville, Tenn. 37204
Filed Oct. 30, 1969, Ser. No. 872,618
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **8 Claims**



Rolled fabric cloth spreading or cloth laying apparatus adapted for use in the cutting room of a garment factory and operative for use in intermittently severing and dispensing the severed fabric web material of a cloth roll on a cutting table and to form a multi-layer stack of fabric plies preparatory to pattern-cutting the layered stack of cloth material. The fabric spreading apparatus includes trackway structure elevatingly arranged over the cutting table and includes cloth dispensing trolley means pendantly supported from the trackway means and movable back and forth along the trackway. The trolley means includes a cloth roll carrying and cloth dispensing lower section pendantly turnably supported from the trolley upper section. The cloth roll carrying lower section is pivotally turnably 180° on a vertical pivot axis and is operative for turning the front of the trolley lower section leftward or rightward at longitudinally spaced apart portions of the overhead trackway structure. The trolley means is adapted for dispensing cloth as it travels in one or the other direction along the trackway structure. The spreading apparatus is particularly adapted for face-one-way type cloth spreading procedure and for use in depositing a multi-layer stack of cloth on a cutting table with a particular side surface of each cloth layer being in corresponding arrangement.

3,606,304
MATERIAL SEPARATION DEVICES AND METHODS

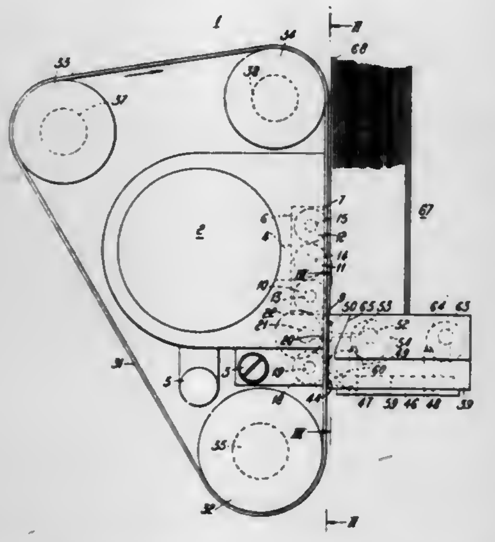
Peter Hrinko, Jr., Fairlawn, N.J., assignor to The Singer Company, New York, N.Y.
Filed May 2, 1969, Ser. No. 821,190
Int. Cl. B65h *3/02*
U.S. Cl. 271—21 **5 Claims**



A method and apparatus for separating fabric material in seriatim from a stack thereof by a pneumatic rotary actuation unit that is brought into engagement with the top ply of the stack. The unit is rotated through a predetermined angle to break the frictional engagement between the top ply and the one below it and to twist and lift the top ply uncovering the ply of fabric below it. A clamp is pneumatically brought to bear on the stack on all but the top ply to hold the stack firmly. The rotary unit is removed from engagement with the stack and a transfer device carries the separated ply to another station while the clamp remains in place.

3,606,305
DOCUMENT FEEDING DEVICE

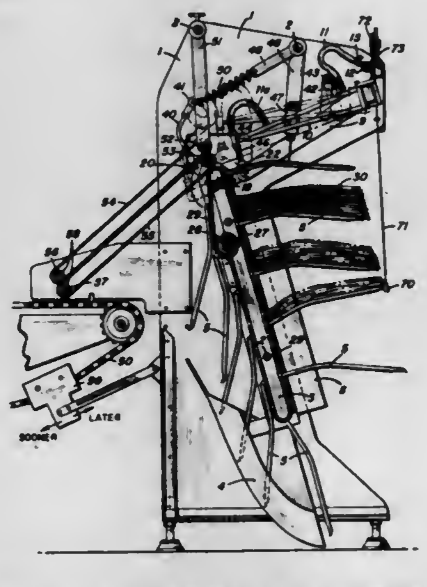
Raymond Gilbert Remigius-Dominicus Debackere, Edegem, and Willy Alfons Franciscus Mens, Wommelgem, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 15, 1969, Ser. No. 850,406
Claims priority, application Netherlands, Aug. 23, 1968, 6812027
Int. Cl. B65h *3/12*
U.S. Cl. 271—26 **11 Claims**



Apparatus for sorting documents by means of vacuum chamber application through a perforated conveyor belt. The apparatus is characterized by providing means for preventing two or more documents from being simultaneously separated from the stack contained in a magazine. Pressurized air is directed against the leading transverse edge of the documents in an oblique direction relative to the document plane. A vacuum is created substantially opposite the vacuum chamber for applying to the opposite side of the documents suction directed perpendicular to the plane thereof. The documents are subjected also to a second air pressure in the same direction as the abovementioned perpendicular vacuum.

3,606,306
PAPER BAG FEEDER

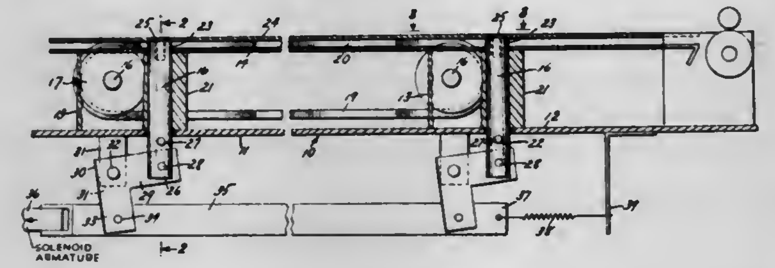
Charles K. Brown, Jr., and David K. Brown, Richmond, Va., assignors to Brown-Fielder, Inc., Richmond, Va.
Filed Jan. 22, 1969, Ser. No. 793,133
Int. Cl. B65h *1/18*
U.S. Cl. 271—31 **8 Claims**



An accumulating conveyer and single feeder for folded sheets, especially of multiple ply such as bag tubes, is provided. A stack of bag tubes is presented vertically upward upon horizontal loading arms. Single bag tubes are removed from the top of the presented stack by transfer arms having vacuum cups. Hold-back elements consolidate each bag tube by a draping bend. This locks the plys together preventing fan-out for trouble-free transfer into a double belt conveyer for a subsequent operation.

3,606,307
MOVING TABLE SHEET TRANSPORT FOR COPYING MACHINES

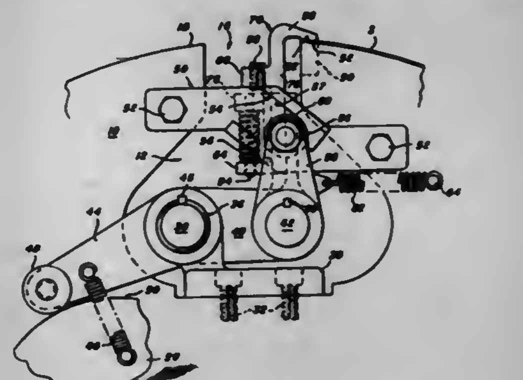
David L. Herman, 63 Catherine Road, Scarsdale, N.Y. 10583
Filed Mar. 11, 1969, Ser. No. 806,269
Int. Cl. B65h *5/02*
U.S. Cl. 271—46 **1 Claim**



Sheet transportation means for use with photocopying machines comprising a plurality of belts moving in a relatively fixed path of motion, a table having slotted openings in the plane thereof through which said belts may pass, means for raising said table with respect to said belts whereby paper resting upon said table is moved free of contact with said belts, and for lowering said table below the level of the uppermost continuous segment of the belts, whereby the under surface of the sheet is engaged by the belts to be transported in a plane parallel to that of the table.

3,606,308
SHEET GRIPPING DEVICE

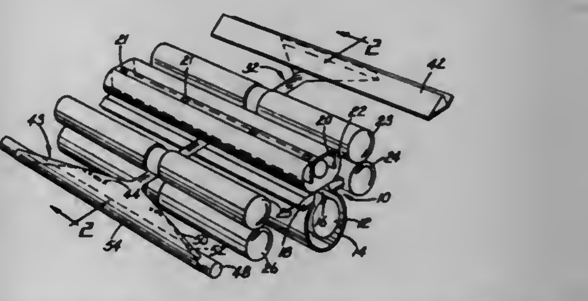
Harry E. Mowry, Louis A. Ricardo, and Guy V. Carricato, Pittsburgh, Pa., assignors to Miller Printing Machinery Co., Pittsburgh, Pa.
Filed June 20, 1969, Ser. No. 835,062
Int. Cl. B65h *5/14*
U.S. Cl. 271—53 **14 Claims**



A sheet gripping device includes a gripper assembly nonrotatably mounted on a gripper shaft. An link member rotatably supports the gripper shaft adjacent one end and is nonrotatably secured to an intermediate shaft adjacent the other end. A first cam follower lever is connected to the intermediate shaft and is arranged to oscillate the end of the link member supporting the gripper shaft. A second cam follower lever is nonrotatably connected to the gripper shaft and has a cam roller urged into abutting relation with a cam surface fixed on the cylinder. Movement of the link member by the first cam follower moves the gripper along a path similar to the cam surface against which the cam roller on the second cam follower is urged. The configuration of the cam members determines the path followed by the gripper assembly. The gripper assembly includes a lever nonrotatably secured at one end to the gripper shaft with a bracket extending laterally therefrom. The gripper member has a laterally extending gripper finger that abuts a gripper pad on the cylinder with an end portion extending laterally therefrom. The gripper member also has an intermediate portion with an adjusting screw movable longitudinally relative to the gripper member. The gripper member is slidably positioned on the lever and a spring between the bracket and gripper member end portion urges the gripper finger against the gripper pad. Upon upward movement of the lever, the bracket thereon contacts the adjusting screw on the gripper member and lifts the gripper finger from the gripper pad.

3,606,309
SHEET SEPARATING DEVICE FOR PHOTOCOPYING MACHINE

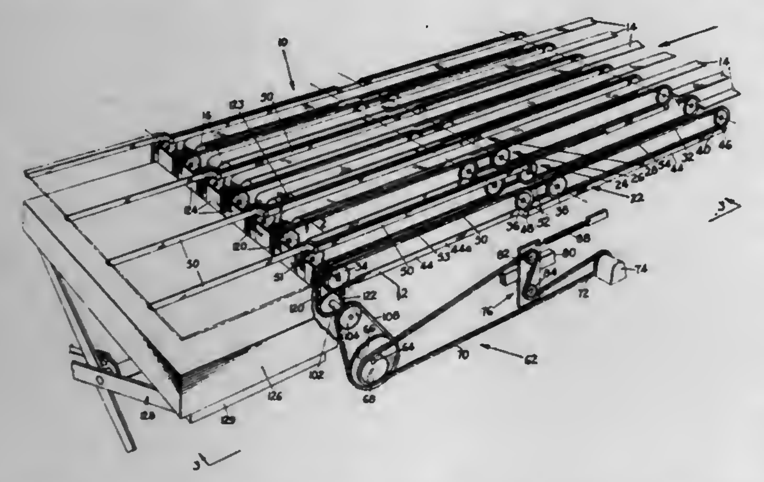
Edward J. Petrick, Euclid, and Raymond J. Schmidlin, Lyndhurst, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed May 1, 1970, Ser. No. 33,674
Int. Cl. B65h *29/64*
U.S. Cl. 271—64 **9 Claims**



A sheet separating device for an electrostatic contact type copying machine. The separating device is formed of a thin web of transparent material which has on the exit side a sheet diverter formed of a pair of diverging sections each of which sections flare outwardly.

3,606,310
STACKING APPARATUS

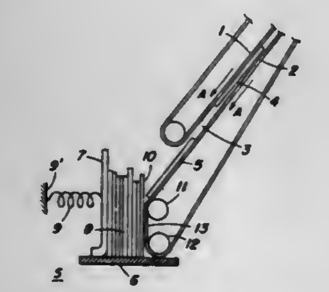
Charles L. Larson, Grants Pass, Oreg., assignor to Jedeloh Bros. Sweed Mills, Inc., Gold Hill, Oreg.
Filed Mar. 4, 1970, Ser. No. 16,333
Int. Cl. B65h *29/34*
U.S. Cl. 271—68 **7 Claims**



Stacking apparatus including a pair of parallel, laterally spaced, elongated conveyor belts for supporting the undersides of articles and conveying them forwardly along a horizontal path. A pair of endless, elongated chains are mounted in tandem between the conveyor belts with their upper reaches paralleling and beneath the path of the conveyor belts. An elongated stacker arm paralleling the conveyor belts is connected to the chains. The arm is connected to the chains in such a manner that powered movement of the chains with their upper reaches moving forwardly causes the arm to move successively first upwardly, to a raised position above the path of the conveyor belts to lift an article from the conveyor belts, then forwardly to a raised extended position, thence downwardly and below such path, and thence rearwardly, to a lowered retracted position. Another stacker arm connected to a matching pair of chains is moved out-of-phase with the first-mentioned arm. A stop member mounted forwardly of the conveyor belts engages an article carried by either arm as the arm is retracted, and operates to move the article off the arm. Motor-powered means moves both stacker arms at variable speeds. An elevator with platform receives articles moved off the arms.

3,606,311
STACKING APPARATUS FOR CARD LIKE ITEMS

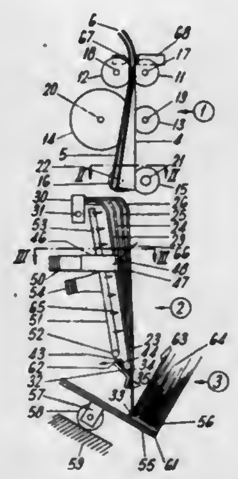
Shoichiro Yoshimura, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed Apr. 30, 1969, Ser. No. 820,456
Claims priority, application Japan, May 1, 1968, 43/28,790
Int. Cl. B65h *29/68*
U.S. Cl. 271—68 **6 Claims**



Stacking apparatus for card like items is provided in accordance with this invention for use in conjunction with card handling systems. According to an exemplary embodiment of the present invention, stacking apparatus including conveyor means and stacking chamber means is provided wherein such conveyor means is positioned intermediate a path of incoming card like items and said stacking chamber means. The conveyor means is adapted to be driven at a speed which is less than the velocity of the incoming card like items presented thereto, and in addition, said conveyor means is provided with projecting fin means fixedly mounted thereto so as to form discrete pockets thereon. As thus provided, said conveyor means acts upon an incoming stream of card like items to divide such incoming card like items into small subgroups which are each inserted and conveyed toward said stacking chamber means in one of the discrete pockets formed on said conveyor means. Thus, in spite of an overlapping relationship between some of the card like items present in the incoming stream of card like items, small subgroups of said card like items are individually and separately conveyed to said stacking chamber means so that accurate and orderly stacking may take place.

3,606,312
DOCUMENT STACKING DEVICE

Willy Alfons Franciscus Mens, Dasstratt, and Raymond Gilbert Remigius-Dominicus Debackere, Perd, Verbiestlaan, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 14, 1969, Ser. No. 850,047
Claims priority, application Netherlands, Aug. 30, 1968, 6812347
Int. Cl. B65h *29/22, 29/52, 31/06*
U.S. Cl. 271—71 **15 Claims**

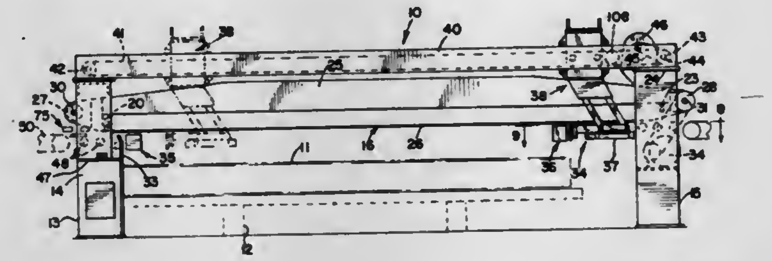


Apparatus for stacking at high speeds documents ranging in weight from the very light to the relatively heavy, comprising document propelling means, guiding and air blowing means, and a stacking receptacle. The invention includes a curved guide frame which provides the document with a certain beneficial stiffness. Pressurized air is blown through the guide frame perpendicular to the passing documents to aid in the transfer thereof from the propelling means to the stacking receptacle, and further, to provide for the prevention of transverse ripple of the documents. Second air blow means, responsive to document length detecting means, are included to prevent the folding or buckling of extra long documents.

3,606,313
SHEET PILER HAVING MOVABLE SIDE GUIDES

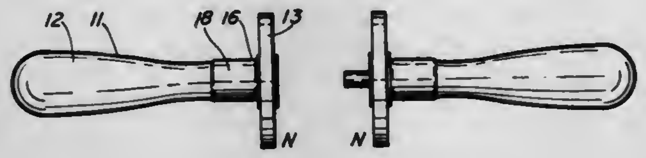
Dario Buccicone, Gary, Ind., assignor to Buccicone Engineering Co., Inc., Gary, Ind.
Filed July 30, 1969, Ser. No. 845,949
Int. Cl. B65h *31/20, 31/36*
U.S. Cl. 271—86 **9 Claims**

A machine for piling metal sheets which employs an overhead conveyor for advancing sheets for deposit on a lift, or the like, at a piling area, end stop and back stop mechanisms, and side edge guide mechanisms for cooperation with the end stop and back stop mechanisms, which side guide mechanisms are arranged in pairs, adjustable laterally of the path of travel of the sheets. One pair of the side guide mechanisms is in a fixed position at the entrance end of the machine and another pair thereof is carried on a longitudinally adjustable end stop carriage. The side guide members, which are reciprocated as the sheets are dropped to facilitate the piling of sheets delivered off center, are carried on support arms which may pivot upward so as to avoid damage upon accidental raising of the lift sufficient to strike the guides. A drive motor for adjusting all the side guides simultaneously, drives an adjusting screw for the pair of side guides at the entrance end of the machine and is connected by a chain drive with a screw for adjusting the pair of side guides on the end stop carriage, with a clutch arrangement for preventing operation while the end stop carriage is being repositioned.



3,606,314
MAGNETIC TEACHING GAME

Charles G. Popp, 1712 S. Clifton, Park Ridge, Ill. 60068
Filed July 16, 1969, Ser. No. 842,209
Int. Cl. A63b *21/00*
U.S. Cl. 272—57R **3 Claims**

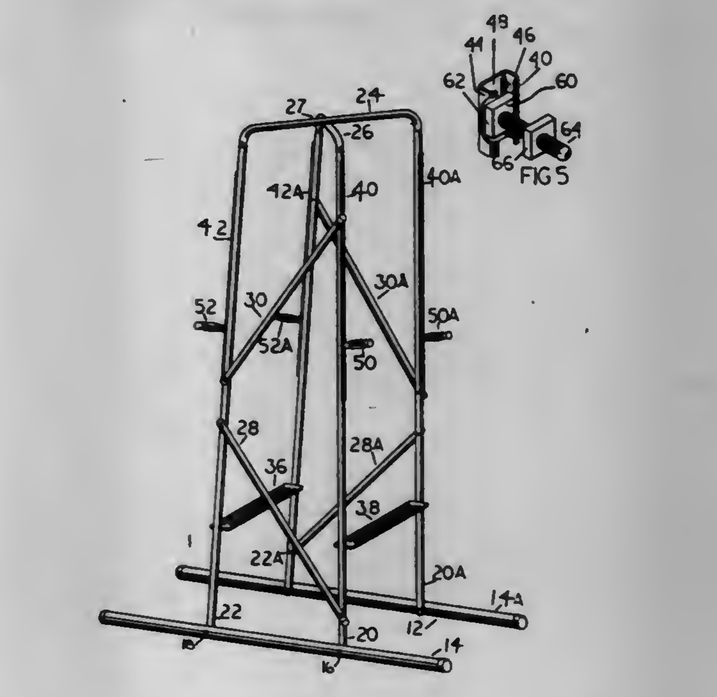


Magnetic game apparatus to be played-used by the physically and mentally handicapped. Comprises, with various refinements, a pair of circular, repelling magnets which are adapted to mate with each other. The student develops manual dexterity and the ability to follow simple instructions by attempting to mate the two magnets in opposition to the repelling forces.

3,606,315
HAND CLIMBER

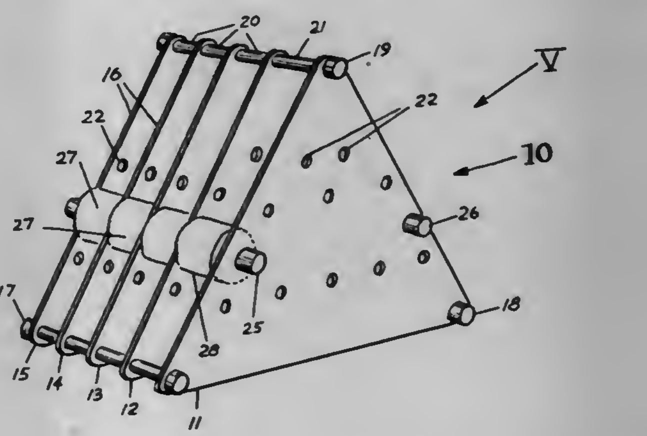
Martin Green, Mahwah, N.J., assignor to No Limit Inventions, Inc., Mahwah, N.J.
Filed Mar. 18, 1969, Ser. No. 808,270
Int. Cl. A63b *17/00*
U.S. Cl. 272—60 **2 Claims**

A hand climber where children can compete in climbing. A cage is mounted on a base with outer rails. The rails have inwardly flanged walls. Instead of pegs, elongated peg-like handles are used which have a sliding element at one end disposed in the rail for vertical movement therealong in parallel spaced relationship so that a person can grasp one with each hand. Children and learners can exercise safely with the device since the handles will not come out of the tracks and when gripped will not slide down. Also, the handles, unlike pegs do not have to be inserted into holes so that there is no missing and slipping. The device provides a means for children to start obtaining the skill which they will require in the future, and if necessary prepares athletes for using pegs with holes.



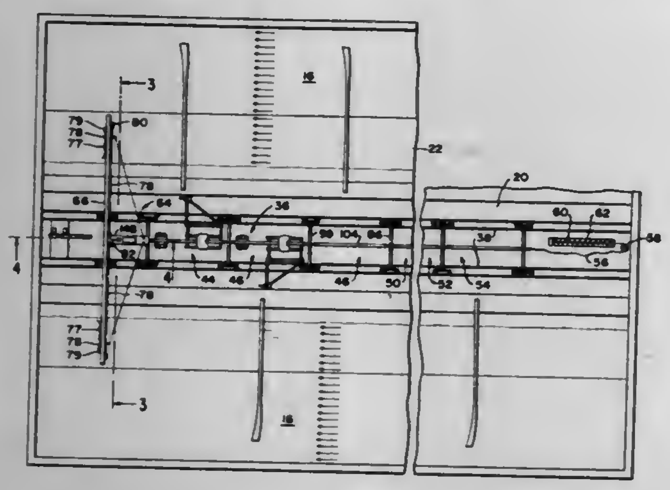
3,606,316
FINGER AND HAND MUSCLE EXERCISE DEVICE

Semyon E. Krewer, 514 W. 110th St., New York, N.Y. 10025
Filed May 28, 1969, Ser. No. 828,515
Int. Cl. A63b *11/08*
U.S. Cl. 272—67 **19 Claims**



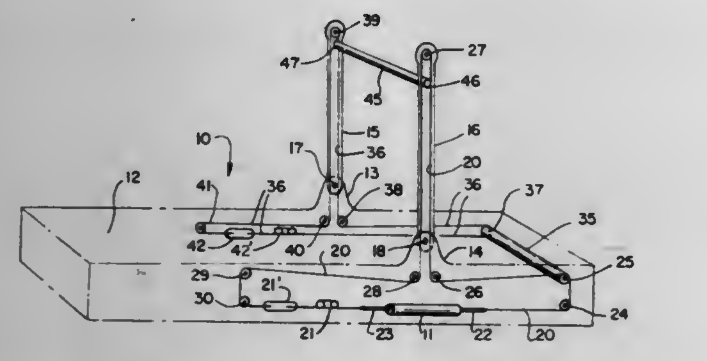
A support forms a rest for the palmar side of the proximal phalanx in the region of the bone insertion of the intrinsic muscle and the metacarpal-phalangal joint of the second to fifth fingers to rest thereon; a plurality of walls, forming slots for the fingers therebetween in the order of a width of a finger, extend in a direction generally perpendicularly away from said support adapted to confine and separate the fingers therebetween, so that the fingers can fan out from the support. The walls are sufficiently rigid to act as a resistance for isometric exercise of finger abduction and adduction thereagainst with transverse holes therethrough for the insertion of stop pins against which the fingers may be exercised, and around which rubber bands may be looped for additional exercising of finger and hand muscles. The support may be a molded plastic structure, integral with the walls, or it may be a cushioned support rod for the proximal phalanx, extending between the walls.

3,606,317
ROWING SIMULATOR
Jack H. Frailey, 9 Martha's Point Road,
Concord, Mass. 01742
Filed Oct. 13, 1969, Ser. No. 865,687
Int. Cl. A63b *69/06*
U.S. Cl. 272—72 **19 Claims**



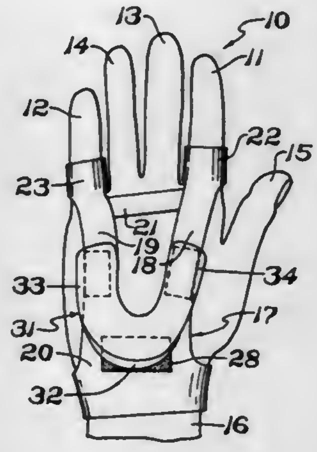
A simulator for rowing includes a rail-supported train of rolling dollies each having a suspended cradle mounting a sliding seat, a footboard and a rigger. The rails stand on a pier between a pair of flumes for pumped circulating water in which the oars are swept. The drag of water friction on the hull of a shell is simulated by the force of the flowing water on vanes supported on a yoke that is carried by the train. The vane positions are adjustable to compensate for rolling friction and are automatically responsive to control the mean longitudinal position of the train in relation to the pier. Alternatively or additionally, a servo control automatically varies the pump speed and thereby the water speed to control the train's position.

3,606,318
FLUID RESISTANT TYPE EXERCISING DEVICE
James B. Gilstrap, 8440 Thames St.,
Springfield, Va. 22151
Filed July 3, 1969, Ser. No. 839,001
Int. Cl. A63b *21/00*
U.S. Cl. 272—79R **10 Claims**



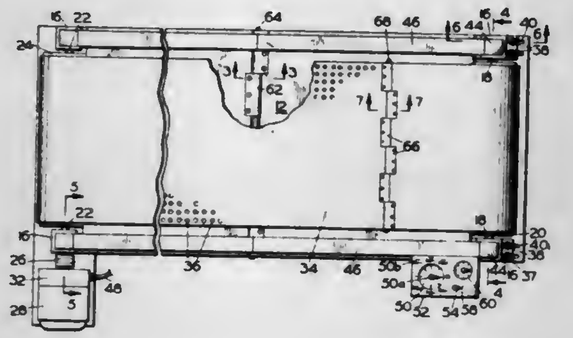
A fluid control apparatus comprising a pair of fluid chambers in fluid communication with each other and including pistons for moving the liquid from one chamber to the other through restricted valve openings, the size of the valve opening being dependent upon the magnitude of an external force applied to the pistons. An adjusting device sets the amount of the fluid force required to open the valve. The pistons are connected to a manually movable cross bar. The rate of movement of this cross-bar is dependent upon the force exerted by the exerciser on the bar.

3,606,319
BOWLING AID
Fred L. Borden, Akron, Ohio, assignor to
Gold Palm Enterprises, Inc., Akron, Ohio
Filed Dec. 29, 1969, Ser. No. 888,411
Int. Cl. A63b *71/14*
U.S. Cl. 273—54B **11 Claims**



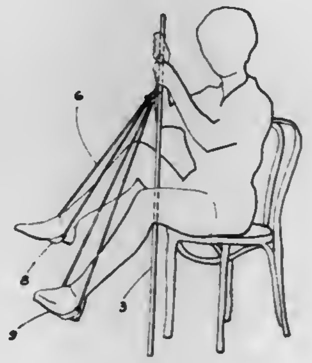
A bowling aid comprising a U-shaped panel member having a pair of leg portions with a connecting member holding the outer end portions of the leg portions in position with a pair of finger loops at the respective ends of the leg portions thereof for receiving the index finger and little finger and having a wristband portion integrally formed with the base of the panel member for encirclement about the wrist to support the wrist and firmly secure such panel member to the hand. A contoured rigid U-shaped member is adjustably attached to the panel member for positioning and cradling a bowling ball prior to delivery of the bowling ball.

3,606,320
TREADMILL
Curtis L. Erwin, Jr., 5010 SE. 41st Ave.,
Portland, Oreg. 97202
Filed June 6, 1968, Ser. No. 735,008
Int. Cl. A63f *23/06*
U.S. Cl. 272—69 **1 Claim**



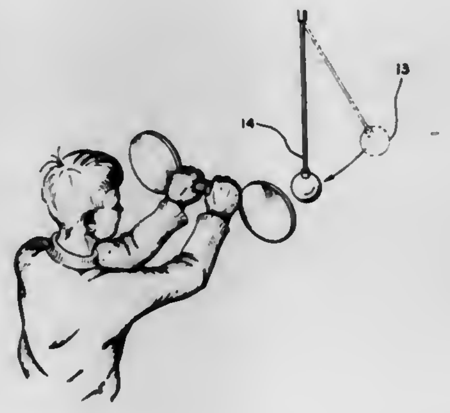
A frame has a pair of end drums over which operates an endless belt. One of the drums is driven by a variable speed electric motor to cause traveling movement of the belt whereby a person can exercise by running on the belt. An odometer is connected into the drive system to measure the distance traveled by the belt. The odometer has a distance indicating dial, preferably miles and fractions thereof, and operates a switch in the circuit to the drive motor to control operation of the motor. Also provided are variable speed control means for the motor and also a time indicator, the speed control means operating a switch in the circuit to the drive motor and arranged to control off and on operation of the motor. A hand rail is provided on the frame, and a housing is mounted on the handrail for supporting the odometer, speed control means and time indicator in a conveniently accessible and viewable position. The belt has a roughened surface for conditioning the feet. The frame and belt have a disconnectable joint allowing them to be folded into a compact package for shipment and storage.

3,606,321
ELASTIC TYPE LEG EXERCISING DEVICE
Nicholas D. Macoulis, 19231 Victory Blvd.,
Reseda, Calif. 91335
Filed Jan. 27, 1969, Ser. No. 801,220
Int. Cl. A63b *23/02, 23/04*
U.S. Cl. 272—73 **1 Claim**



An exercising pole having a pair of elongate elastic members attached thereto. The elastic members have attached stirrups into which the user may insert his feet while in a seated position. One end of the pole is placed on the floor and the user may simulate a cycling action for controlled exercise.

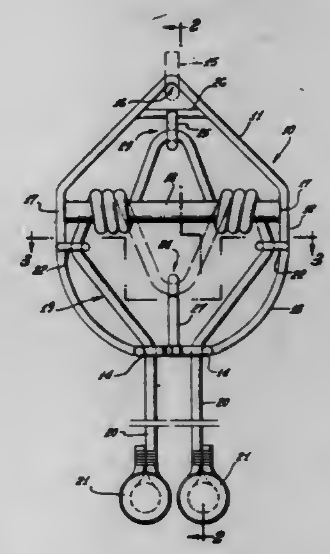
3,606,322
MULTIPLE IMPACT MEMBERS WITH GRIPPING MEANS INTERDISPOSED FOR STRIKING A FLEXIBLY SUSPENDED OBJECT
Walter J. Kersch, 331 Hampton Ave.,
Rensselaer, N.Y. 12144
Filed Oct. 29, 1968, Ser. No. 771,432
Int. Cl. A63b *59/00, 67/10*
U.S. Cl. 272—76 **2 Claims**



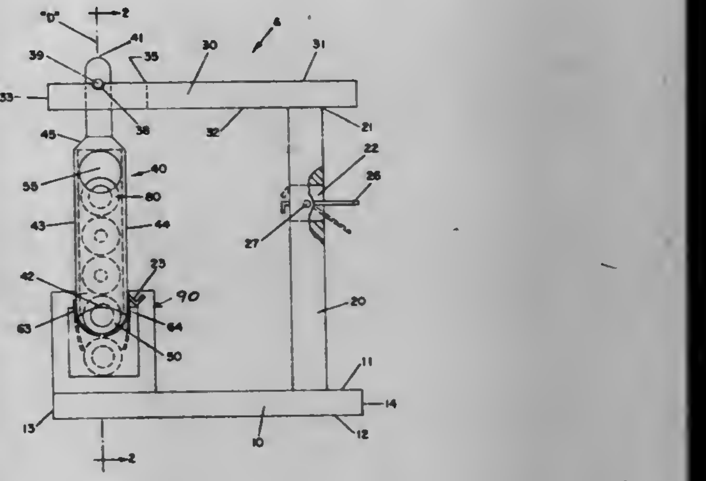
This invention relates to a practice and training game wherein a flexibly suspended object is struck in rhythmic succession by impact members formed integrally and alternately with gripping means. The training game serves to develop manual dexterity in combination with visual, mental and muscular coordination.

3,606,323
LINE PULLING FRICTION TYPE EXERCISE DEVICE
Peter Ottaviani, 7260 Hillside, Suite 306,
Hollywood, Calif. 90028
Filed June 11, 1968, Ser. No. 736,145
Int. Cl. A63b *21/00*
U.S. Cl. 272—79A **8 Claims**

An integrated physical exercise device of the type utilizing a rope having terminals to be pulled against variable resistances, the device having an open frame structure within which is mounted shaft means about which multiple rope turns are wound, and pull resistance control means spaced outwardly from the shaft means to support an intermediate extent of the wound rope in a manner permitting variation of the number of rope turns and therefore the rope pull resistance.



3,606,324
PENDULUM LANCEMANSHIP GAME
Dale K. Welbourn and Norma J. Welbourn,
both of Neola, Iowa 51559
Filed Apr. 23, 1969, Ser. No. 818,519
Int. Cl. A63f *9/00*
U.S. Cl. 273—1R **4 Claims**



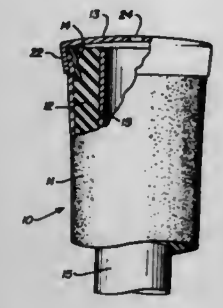
A pendulum lancemanship game including an internal elongated slot for the pendulum extending linearly upwardly from the pendulum lower free end and adapted to receive a plurality of annular target members releasable downwardly consecutively from the pendulum lower free end through convergent resiliently-deflectable straps which also support the several targets. The pendulum is suspended from an upright support. A hook is provided on the pendulum and a releasable catch is provided on the pendulum support to engage the hook and hold the pendulum free end in an offset position. A removable apertured shield is also provided to make the lancing task more difficult.

ERRATUM

For Class 273—54 see:
Patent No. 3,606,319

3,606,325
GOLF CLUB GRIP

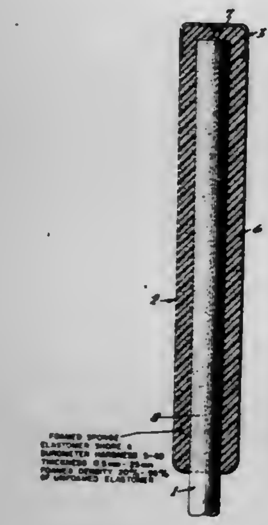
Robert E. Lamkin, Downers Grove, and Joseph P. Lamkin, Chicago, Ill., assignors to Lamkin Leather Company, Chicago, Ill.
Filed Apr. 27, 1970, Ser. No. 32,103
Int. Cl. A63b ***53/14***
U.S. Cl. 273—81.5 **6 Claims**



A grip for golf club shafts comprising an elongated open-ended tube of an elastically expandable material and having a reduced diameter portion at its upper end which tapers upwardly and outwardly. About this upper portion is a metal clamp ring, correspondingly tapered, and having at its upper edge an outwardly extending flange. A gripping surface material is affixed about the elastic tube and clamp ring. An end cap is disposed atop the tube and is crimped to frictionally lock the upper end of the gripping surface material between its inside walls and the outer wall of the clamp ring.

3,606,326
GRIP FOR HAND POWERED IMPLEMENTS

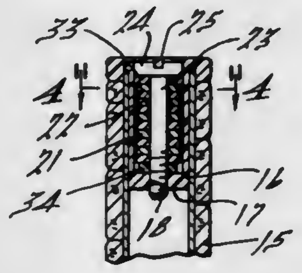
William J. Sparks, Westfield, N.J. (5129 Granada Blvd., Coral Gables, Fla. 33146), and Charles E. Sparks, Westfield, N.J. (102 Evans Lane, Cherry Hill, N.J. 08034)
Filed Sept. 25, 1968, Ser. No. 773,689
Int. Cl. A63b ***53/14***
U.S. Cl. 273—81R **9 Claims**

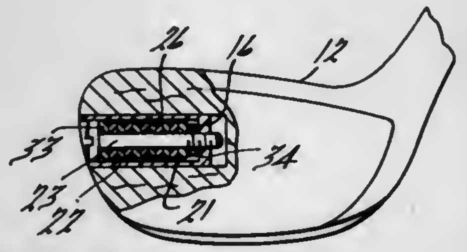


The shaft portion of a hand operated and hand powered tool or club is covered by a superimposed layer of a foamed sponge elastomer to form an improved grip. The grip is especially useful for golf clubs. On swinging the club the grip improves precision, prevents slippage, and reduces shock at the time of impact. The elastomer has a Shore A durometer hardness ranging from about 5 to 40, and a thickness from about .5 mm. to 25 mm. In one embodiment, the elastomer is a foamed filled neoprene.

3,606,327
GOLF CLUB WEIGHT CONTROL CAPSULE

Joseph M. Gorman, 15418 Mansfield, Detroit, Mich. 18227
Continuation-in-part of application Ser. No. 470,007, July 7, 1965. This application Jan. 28, 1969, Ser. No. 794,701
Int. Cl. A63b ***53/08, 53/14***
U.S. Cl. 273—81A **1 Claim**

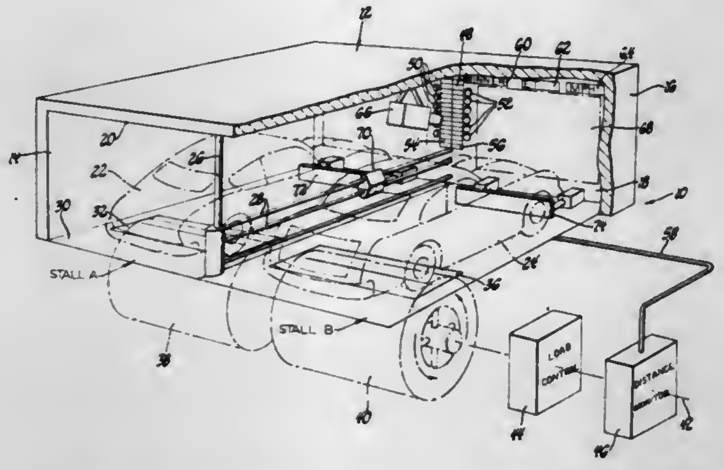




A golf club has a like number of dissimilar washers in an aperture in the golf head and in the golf club shaft so arranged that the washers are interchangeable. This permits the weight of the golf head to be altered without changing the overall weight of the golf club. The washers are slidably mounted on a screw with an elastomeric washer against the head and on the end to retain the washers in the screw when moved and for sealing the head end when disposed in a cavity.

3,606,328
VEHICLE DRAG RACING SIMULATOR ASSEMBLY

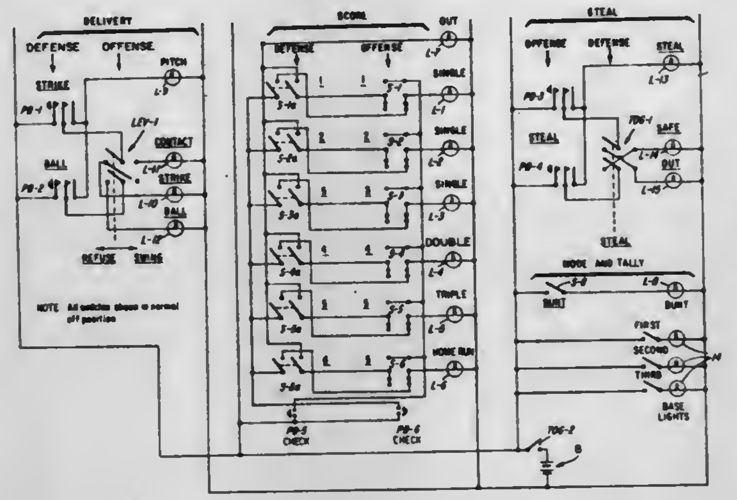
John B. Delphia, Jr., 2052 Portlock, Union Lake, Mich. 48085
Filed Jan. 2, 1970, Ser. No. 143
Int. Cl. A63g ***33/00;*** **F16h** ***37/00;*** **G07f** ***1/00***
U.S. Cl. 273—86R **18 Claims**



A drag race simulator assembly including a building enclosing two racing stalls, dynamometer type traction rolls in each stall and signal lights including stagging lights and progress lights and other indicators for simulating racing conditions. The assembly is coin operated.

3,606,329
ELECTRIC BASEBALL GAME

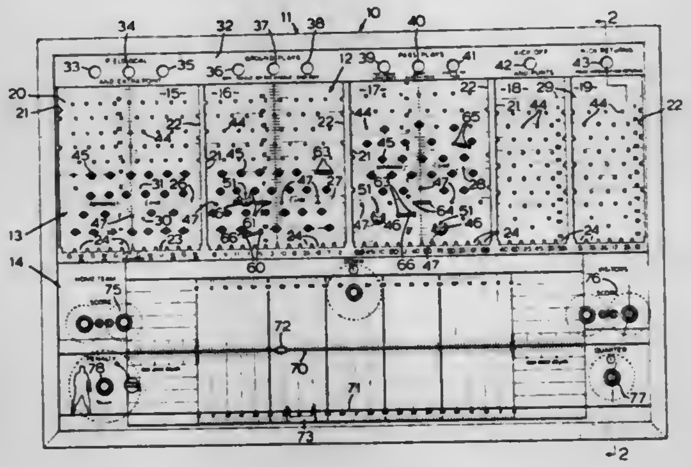
Harold U. Wilson, 1630 Dartford Road, Baltimore, Md. 21221
Filed Apr. 8, 1969, Ser. No. 814,315
Int. Cl. A63f ***7/06***
U.S. Cl. 273—88 **8 Claims**



An electric type baseball board game which can be utilized for amusement purposes. The game includes a playing field representation, together with lights for indicating plays on the board. Offense and defense panels are provided, each including switches for initiating plays of the game. Chance circuitry is provided interconnecting the switches of the offense and defense panels, and the indicator lights. Operation of selected ones of the offense and defense switches causes selected ones of the indicator lights to light, in accordance with the chance circuitry, to indicate the result of a given play. A shunt circuit is provided to review and indicate which of the offense switches have been selected on any given play.

3,606,330
TOY FOOTBALL GAME

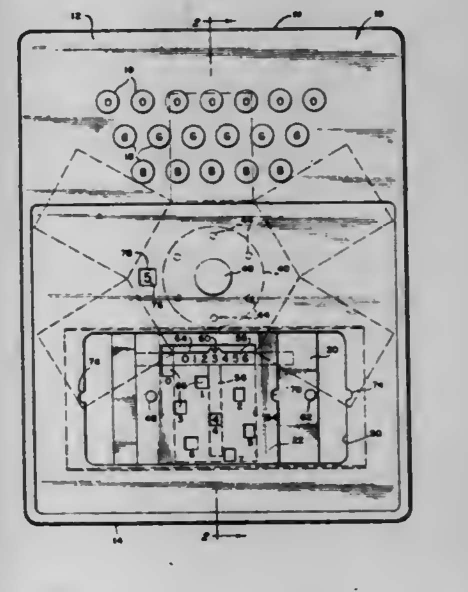
Frederick George Chapman, 1538 Boxwood Way, Port Credit, Ontario, Canada
Filed Oct. 29, 1969, Ser. No. 872,187
Claims priority, application Canada, Sept. 29, 1969, 62,726
Int. Cl. A63f ***7/06, 7/14***
U.S. Cl. 273—94R **10 Claims**



A toy football game in which the individual plays are determined by the movement of a playing ball over a selected one of a number of inclined playing surfaces each with upstanding pins and game pieces. Each of the playing surfaces represents an individual kind of football play. The positioning of the pins is predetermined on each surface as is the position of most of the game pieces, but certain of the game pieces are movable into a limited number of chosen positions. These latter game pieces are shaped to receive the playing ball, and, in the chosen positions may be rotated by interaction with the ball. The result of the play is determined by the final resting position of the playing ball either, in the case of the ball coming to rest against a game piece or pin, from markings on the play area floor relative to a scrimmage line, or, when the ball rests in one of a series of terminal stall, from the markings indicated on the individual stall. Penalties are incurred by the movement of the playing ball over the predetermined paths and determined by random selection. Provision is also made for indicating the state of the game by a representation of a football field, a movable miniature football, and movable yardage markers.

3,606,331
COMPUTER-CONTROLLED APPARATUS FOR PLAYING GAME OF NIM

David Morris, Brooklyn, N.Y., assignor to Educomp Science Corporation, Dover, Del.
Filed Feb. 13, 1969, Ser. No. 798,907
Int. Cl. A63f ***3/00***
U.S. Cl. 273—130R **13 Claims**

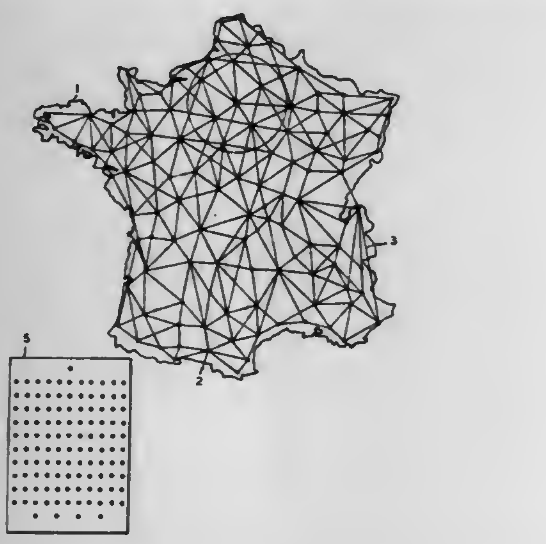


Apparatus for playing the game of NIM in which three rows of playing pieces are received by a base panel which also supports a computer comprising a rotatable disc and a pair of sliders mounted beneath the base panel The upper surface of the disc has a plurality of sets of indicia, each of which may be aligned with a window in the base panel, and the sliders are superimposed upon the disc beneath the window and have apertures which may be aligned to display a move determined by the computer. Color coding of the playing pieces, the disc, the sliders, and the indicia greatly facilitate the playing of the game.

3,606,332
BOARD GAME APPARATUS

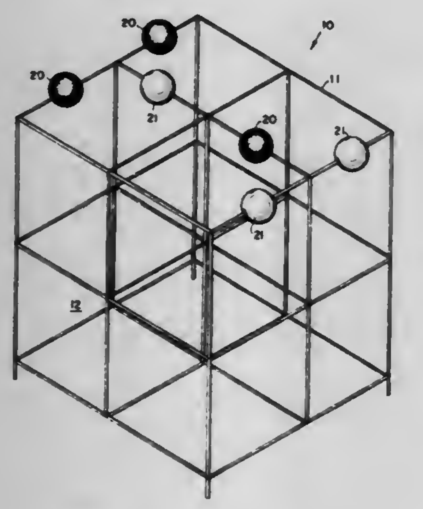
Salomé Gerstler, Avenue Minerve No. 21, Brussels 19, Belgium
Filed Dec. 16, 1968, Ser. No. 783,837
Claims priority, application Belgium, Jan. 10, 1968, 53,142
Int. Cl. A63f ***3/02***
U.S. Cl. 273—131BB **3 Claims**

Means for playing a board game comprise a plurality of duplicate copies of a map, one for each player, each said map comprising a plurality of perforations each representing a town in a country, and a plurality of counting units for insertion in said perforations, markings on the map indicating distances between perforations. Further the game playing means include a device for adding distances in the form of a board having columns of numbers.



3,606,333
THREE-DIMENSIONAL BOARD GAME APPARATUS

Lawrence E. Green, 271 Columbus Ave.,
San Francisco, Calif. 94133
Filed Nov. 14, 1969, Ser. No. 876,634
Int. Cl. A63f *3/02*
U.S. Cl. 273—131A **4 Claims**

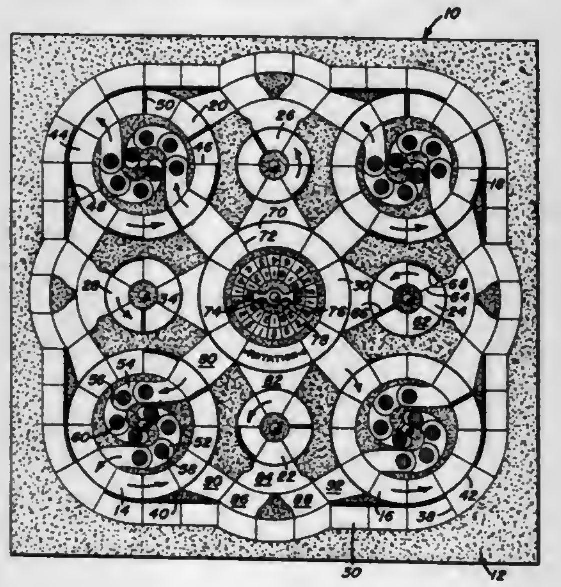


A three-dimensional game comprising a hexahedral framework of rods arranged to form a compact array of eight hexahedral elements substantially equal in size, and a plurality of game pieces each formed with a partially bisecting slot arranged to intersect and removably engage rods of the framework. In one example the framework rods are formed of magnetically permeable material, and an elongate magnet is seated along the base of the bisecting slot of each game piece for magnetically engaging the rods of the framework.

3,606,334
GAMEBOARD WITH ROTATABLE DISCS

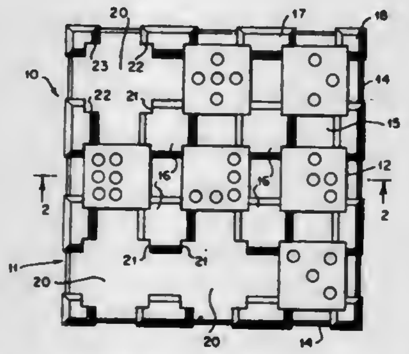
Gary L. Pippin, 1859 S. 31st,
Kansas City, Kans. 66106
Filed Feb. 3, 1970, Ser. No. 8,367
Int. Cl. A63f *3/02*
U.S. Cl. 273—134E **5 Claims**

A rigid gameboard having a substantially planar playing surface with a plurality of paths of movement for game pieces delineated thereon with a plurality of rotatable discs associated with the paths of movement to control the movement of the game pieces along with a chance device indicating the number of movements to be made by a game piece with the object being to move the game pieces from a start position to a final position on the gameboard.



3,606,335
BOARD GAME APPARATUS

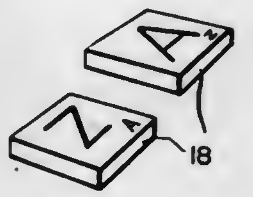
Lawrence L. Reiner, Woodbury, Donald Rouse, New York, and John O'Shaughnessy and John Rich, Staten Island, N.Y., assignors to Reiner and Rouse, New York, N.Y.
Filed Feb. 12, 1970, Ser. No. 10,886
Int. Cl. A63f *3/00*
U.S. Cl. 273—135R **6 Claims**



Game apparatus including a board with a field of play having rows of upwardly opening recesses, and light permeable playing pieces each having a characteristic pattern of markings, the playing pieces being superposable in the recesses to visually present a predetermined array of markings.

3,606,336
WORD ASSOCIATION GAME

Jack R. Krause, Alexandria, La.
(802 N. Puget St., Olympia, Wash. 98501)
Filed May 29, 1968, Ser. No. 733,119
Int. Cl. A63f *3/00*
U.S. Cl. 273—135D **1 Claim**

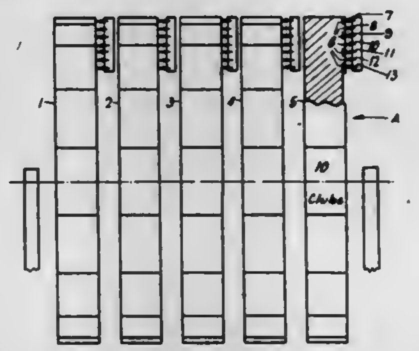


A word association game which includes an indicator board having a series of alphabet letters and a series of numerals peripherally spaced thereon, with a rotatable pointer associated therewith to be spun to indicate a number and a letter, to aid in starting the game, and to be

spun to indicate a numeral to aid in continuing the game. Lettered playing pieces, each having a first letter on two opposed faces, and an index letter on each of the two opposed faces differing only in size from the letter on the opposite face, are provided to enable the building of words as indicated by the chance selected letter and number for the starting play and by chance selected numbers to form subsequent words. The second word is formed at a right angle to the first word, the initial letter of which is the last letter of the preceding word, subsequent words are formed at a right angle to the preceding word in like manner. The words formed must have an associated thought suggestion with the preceding word.

3,606,337
POKER MACHINE HAVING BINARY CODED ROTATABLE DRUMS

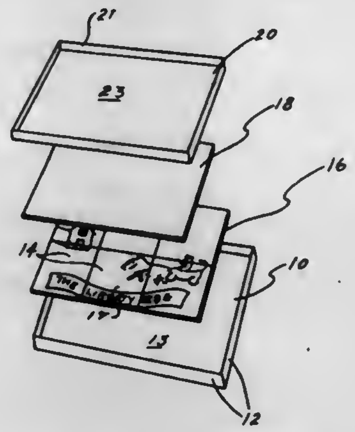
Laurie Edward Larsen, Auburn, New South Wales, and Roger Mark Michie, Wentworthville, New South Wales, Australia, assignors to Standard Telephones and Cables Pty, Limited, Alexandria, New South Wales, Australia
Filed Mar. 24, 1969, Ser. No. 809,511
Int. Cl. A63f *1/18*
U.S. Cl. 273—143R **12 Claims**



A poker machine of the type having five reels on which indicia of cards are displayed and winning combinations determined according to particular combinations displayed in a window characterized by coding each of the reels on a side surface thereof with electrical information in digital form corresponding to the indicia on the adjacent periphery. The digital information of the stopped reels is fed to a logic unit to determine the presence of winning combinations and cause the appropriate pay off.

3,606,338
METHOD OF PREPARING A COMPLETED JIGSAW PUZZLE FOR FRAMING

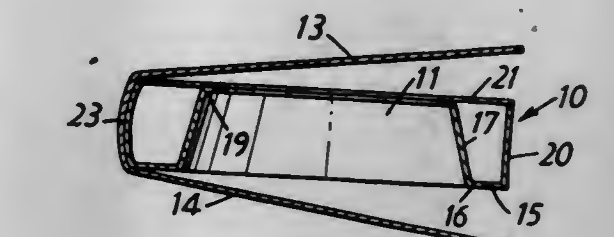
James V. Cannata, 48 Green Pond Road,
East Falmouth, Mass. 02536
Filed May 13, 1969, Ser. No. 824,139
Int. Cl. A63f *9/10*
U.S. Cl. 273—157 **3 Claims**



A completed jig-saw puzzle in a first receptacle having sides, receives a flat support plate on its picture face surface, another receptacle having sides is placed on said plate, the assembly is turned upside down, and said first receptacle is removed. The support plate with the puzzle on it, picture-face down, is placed in the first receptacle, an adhesive is provided on the face surface of said other receptacle and the latter is pressed onto the back surface of the puzzle, thus uniting the two, which are then ready for transfer to a picture frame.

3,606,339
GOLF PRACTISING DEVICES

Keith B. Marshall, Fawkham, Kent, England, assignor to Dependable Electronic Equipment Limited, London, England
Filed Nov. 29, 1968, Ser. No. 780,121
Claims priority, application Great Britain, Oct. 21, 1968, 49,862/68
Int. Cl. A63b *57/00*
U.S. Cl. 273—180 **4 Claims**

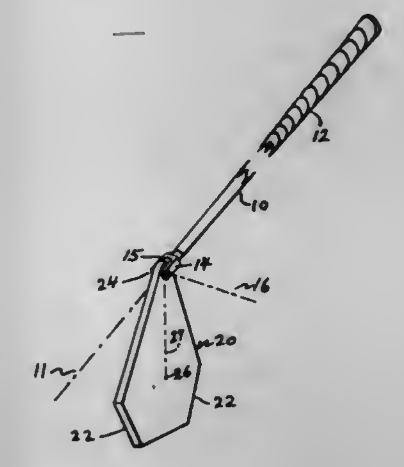


A golf practising device comprising a body having a hole extending completely through it, which hole has a larger diameter at one end than the other, and two lids pivotally attached to the body on opposite sides thereof.

The body and lids may simulate the appearance of a book. The holes may be used as putting cups and the lids as ramps extending toward the holes. The body may be made by vacuum molding one sheet of material to form an apertured flanged member and securing a face forming apertured sheet to the flange portion thereof.

3,606,340
PRACTICE GOLF DEVICE

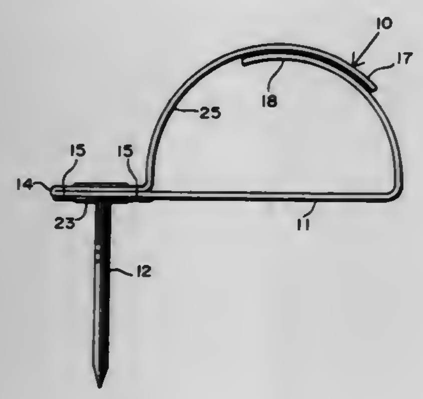
Ralph H. Tiller, 455 W. K St.,
Brawley, Calif. 92227
Filed Feb. 13, 1970, Ser. No. 11,260
Int. Cl. A63b *69/36*
U.S. Cl. 273—186A **4 Claims**



A golf "club" for practice swings has the usual club head replaced by a mass eccentrically pivoted for free swinging movement on a pivot axis perpendicular to the length of the shaft and parallel to the swing direction. The mass is freely swingable through a range of positions that include the position wherein the center of gravity of the mass is aligned with the shaft. The mass may take the form of a flat blade and it may include a lofted portion which can be used effectively for hitting a golf ball. Certain swing errors are signalled to the player by dynamic reaction of the mass.

3,606,341
GOLFER'S FOOT HOLDING DEVICE

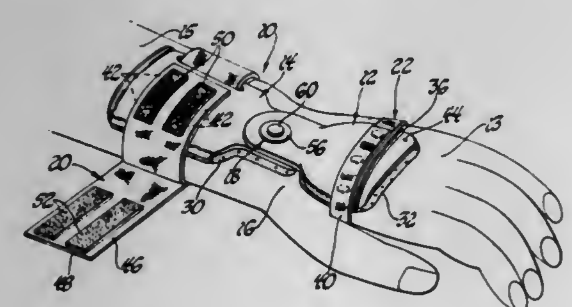
Harlan V. Honbarger, Miami, Fla.
(2350 NW. 81 Ave., Sunrise Golf, Valley, Fla. 33313)
Filed Feb. 20, 1970, Ser. No. 13,048
Int. Cl. A63f *69/36*
U.S. Cl. 273—188R **3 Claims**



A golfer's foot holding device consisting of an elongated pliable member adapted to be wrapped about the golfer's lead foot and having a spike attached to a folded midportion thereof for securing the device to the ground whereby the golfer's foot is held in position while he is permitted to shift his weight and lift his heel in executing a proper golf swing. A pair of washers disposed on opposite sides of the head of the spike are sandwiched between the folded midportion and a pliable securing member.

3,606,342
WRIST CONTROL DEVICE

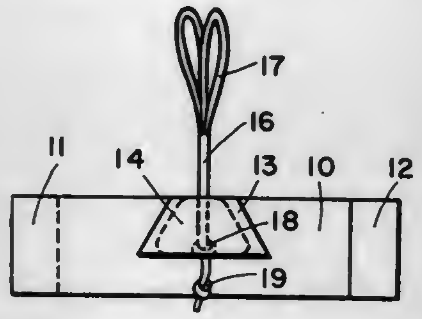
Stanley E. Albertson, Jr., 34037 Burton Lane,
Livonia, Mich. 48154
Filed June 30, 1969, Ser. No. 837,663
Int. Cl. A63b *69/36*
U.S. Cl. 273—189R **21 Claims**



A wrist control device including a hand member having at least a portion thereof being frusto-conical and an arm member pivotally connected to the hand member. A plate is pivotally connected to the top surface of the hand member, and a first strap means is connected to the plate so that the device may be utilized on either the right or left hand. A second strap means is connected at one end to the top surface of the hand member and extends about the opposite side and through a slot in the hand member and then back about the opposite side to a second end. The first and second strap means are respectively removably connected to the respective members and each have coacting means at the respective ends thereof for releasably connecting the ends of the respective strap means together. A cushioning material is disposed on the under surfaces of the respective members.

3,606,343
WRIST RESTRAINT FOR GOLFERS AND BOWLERS

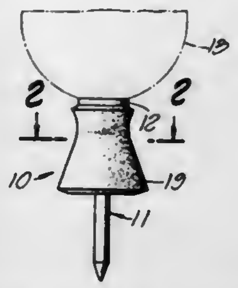
George E. Lemon, 286 Lora Ave.,
Youngstown, Ohio 44504
Filed Apr. 4, 1969, Ser. No. 813,546
Int. Cl. A63b *69/36;* **A63d** *5/00*
U.S. Cl. 273—189R **2 Claims**



A wrist restraint and hand tensioning device for use by golfers and bowlers. A wrist encircling band of elastic or cloth is provided. Finger-encircling loops are connected to one end of a cord which extends along the back of a hand to the wrist encircling band. A flat retaining plate is held in a pocket on the band and engages the free end of the cord which is provided with a series of knots.

3,606,344
SET OF PROTECTIVE SHROUDS FOR GOLF TEES

Robert J. Ball, 2846 Santa Anita,
Altadena, Calif. 91001
Filed May 28, 1969, Ser. No. 828,631
Int. Cl. A63b *51/00*
U.S. Cl. 273—202 **4 Claims**

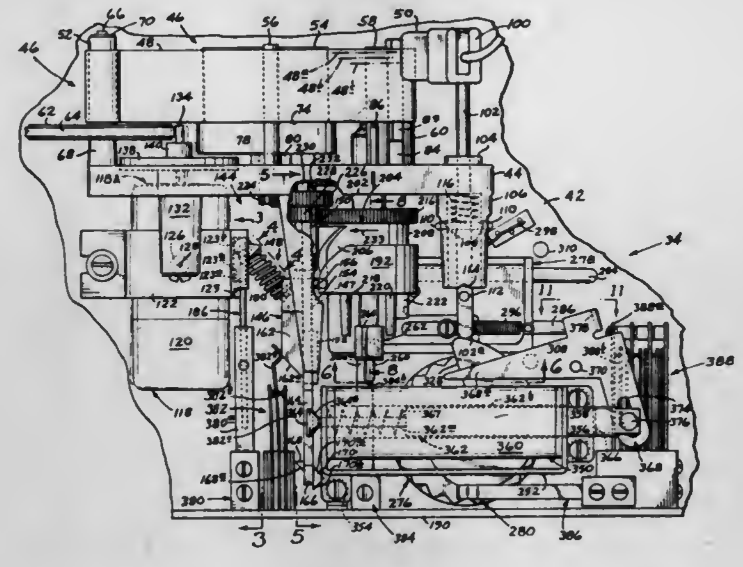


A golf tee and club protector comprising a soft resilient ring sized to telescope about and grip the lower head portion of a golf tee and to have its lower end bear against the ground to aid in supporting the golf tee at a desired playing height. The protector safeguards both the face of the club and the tee against damage and is preferably provided in sets of assorted lengths. The protectors are reusable repeatedly and brightly colored to facilitate sighting if displaced by the club in play.

3,606,345
TAPE DRIVE FOR TELEPHONE ANSWERING DEVICE

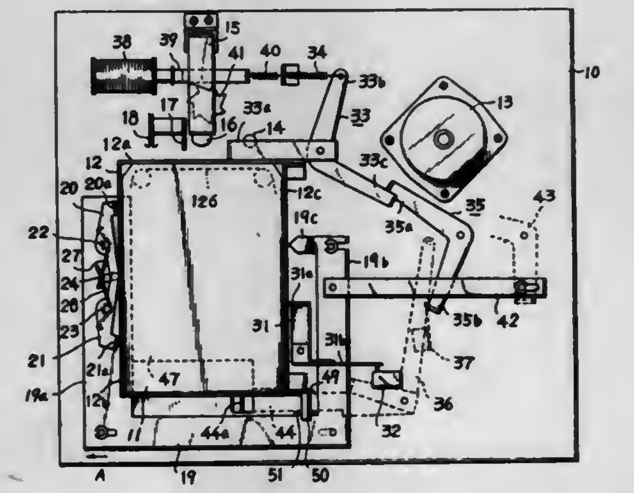
James F. Cranor, Milwaukie, and Claude M. Faust, Portland, Oreg., assignors to Ford Industries, Inc., Portland, Oreg.
Filed Feb. 14, 1969, Ser. No. 799,381
Int. Cl. G11b *5/00*
U.S. Cl. 274—4R **5 Claims**

A telephone answering device, wherein tape support mechanism supports a magnetic tape for reversible movement past a recording and playback head, with drive for the mechanism supplied by a motor which is moved alternatively to two different positions drivingly engaging the mechanism to produce reversible operation thereof. The motor is moved to such different positions automatically by a toggle assembly which is driven by the motor through the tape support mechanism. The recording and playback head is mounted for shifting to different selected positions transversely of the tape, and mechanism is provided which automatically shifts the head at appropriate times.



3,606,346
AUTOMATIC TAPE CARTRIDGE PLAYER

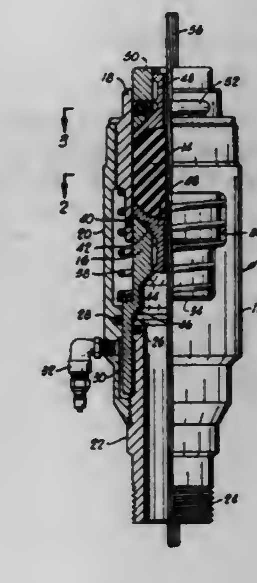
Katsuhiko Okabe, Tokorozawa, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan
Filed Mar. 17, 1969, Ser. No. 807,617
Claims priority, application Japan, Mar. 15, 1967 (utility model), 42/22,330; Apr. 12, 1967 (utility model), 42/31,269; Mar. 19, 1968, 43/17,524 (utility model), 43/21,108; Dec. 13, 1968, 43/90,997; Dec. 31, 1968 (utility model), 44/1,662
Int. Cl. G11b *5/00*
U.S. Cl. 274—4F **4 Claims**



An automatic tape cartridge player comprising a magnetic head for reproducing and playing a lowermost tape cartridge out of a plurality of tape cartridges loaded in layers in a casing, a cam-operated lever means for dropping and discharging or releasing said lowermost tape cartridge after termination of playing from its loaded position, and cam-operated lever means for supporting the loaded cartridges other than the discharged one during operation of the discharging means. One of said loaded cartridges immediately above the discharged one is then dropped to the lowermost position in the casing after operation of said discharge means.

3,606,347
WIRELINE WIPERS

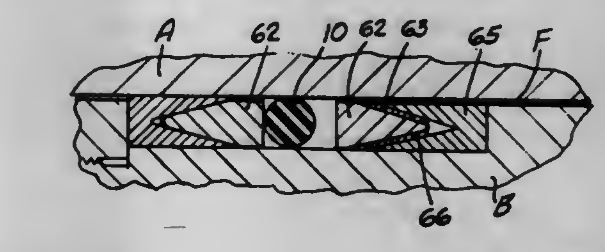
Norman W. Read and Morgan L. Crow, Dallas, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 28, 1969, Ser. No. 803,227
Int. Cl. E21b *33/00;* **F16j** *9/00, 15/00*
U.S. Cl. 277—2 **10 Claims**



A wiper assembly is disclosed herein that is useful in connection with a wireline that extends into a conduit located in a well bore or the like. The wiper assembly includes a body that is adapted for connection with the conduit in encircling relationship to the wireline. A deformable wiping element is positioned in the body and is arranged to be deformed into sealing engagement with the body and with the wireline. To deform the wiping element, a piston is slidingly positioned in the body and has an upper end that engages, in non-sealing relationship, the wiping element. The piston is arranged to be moved in the body in response to a fluid pressure exerted thereon. The piston is also arranged so that the well pressure, to which the piston is exposed, either has no effect on the piston or is arranged whereby the well pressure tends to move the piston into tighter engagement with the wiping element.

3,606,348
SEALS

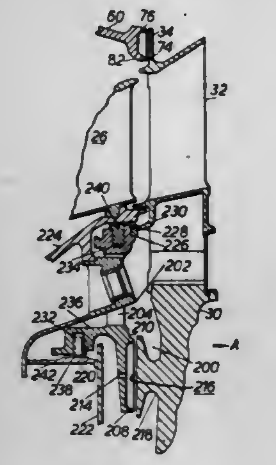
Arthur T. Taylor, 2102 Crosby Road,
Carrollton, Tex. 75006
Filed Mar. 11, 1970, Ser. No. 18,628
Int. Cl. F16j *15/00*
U.S. Cl. 277—26 **25 Claims**



Seal assemblies having a primary initial seal means operative for sealing between two members at varying conditions of pressure at normal temperatures below a predetermined elevated temperature, and secondary malleable metallic seal means which is movable by fluid pressure acting through the primary seal to provide a metal to metal seal between said members upon occurrence of a temperature at said seal assemblies equal to or in excess of said predetermined elevated temperature. Means is provided for holding or restraining the secondary seal means in non-sealing position until the occurrence at least of the predetermined elevated temperature, and which is yieldable or releasable to permit said secondary seal means to be moved to an effective sealing position by the pressure acting on said primary seal prior to destruction or damage of primary seal as a result of the elevated temperature. Several types of primary and secondary seals are illustrated.

3,606,349
SEAL WITH PRESSURE RESPONSIVE TOLERANCE CONTROL

James A. Petrie, Littleover, Willie Williamson, Shelton Lock, Thomas Steel, Littleover, and James I. Hammond, West Heath, Birmingham, England, assignors to Rolls Royce Limited, Derby, England
Filed Sept. 16, 1969, Ser. No. 858,325
Claims priority, application Great Britain, Aug. 7, 1969, 39,609/69
Int. Cl. F16j *15/16*
U.S. Cl. 277—27 **3 Claims**

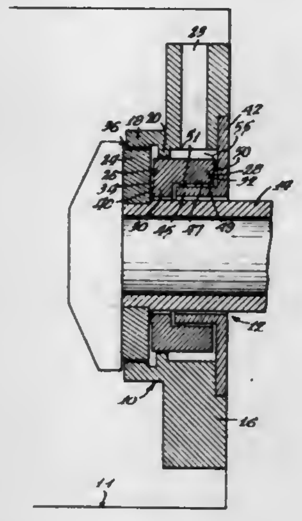


A sealing device mounted for axial movement on a stationary portion of a gas turbine engine and arranged to seal against the upstream face of the high pressure turbine of the engine. The sealing device is annular in form and has two lips defining an annular channel and a number of radial lands extending between the lips thereby defining a plurality of equi-spaced recesses. In operation, the recesses in combination with the turbine disc form a number of chambers which are subjected to a variable pressure, the chambers being in communication with a source of high pressure gas. If the clearance between the sealing device and the turbine disc decreases the pressure in the chambers increases and vice-versa, the resultant pressure on the sealing device acting to maintain the clearance at a substantially constant value. The sealing device may also include an axial sealing element which co-operates with a sealing element provided on the turbine disc so that the pressure loss in the chamber when the clearance is large is restricted.

3,606,350
HYDROSTATIC SHAFT SEAL

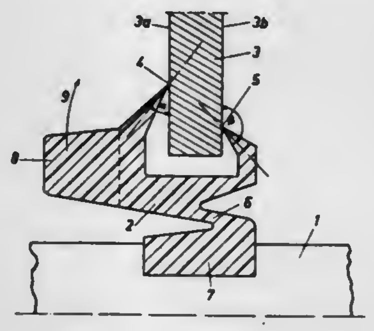
Homer E. Gravelle, Denver, Colo., assignor to Sundstrand Corporation
Filed July 2, 1969, Ser. No. 838,496
Int. Cl. F16j *15/34*
U.S. Cl. 277—27 **6 Claims**

A hydrostatic shaft seal including an annular sealing ring rotatable with the shaft having a radial sealing surface adjacent to a stepped hydrostatic sealing surface on a floating freely rotatable nosepiece that is centered radially on a stationary centerpost located therewithin by an additional hydrostatic sealing fluid film.



3,606,351
SEAL FOR CIRCULAR SLOTS

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden
Filed Oct. 31, 1969, Ser. No. 872,810
Claims priority, application Sweden, Nov. 8, 1968, 15,176/68
Int. Cl. F16j *15/42, 15/54*
U.S. Cl. 277—25 **5 Claims**



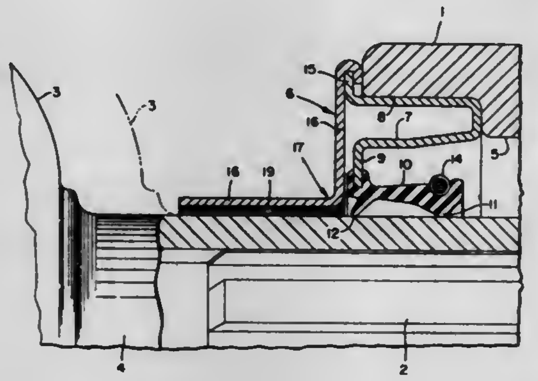
A seal adapted to be mounted on a rotatable shaft or the like and provide a seal with a member having a sealing surface comprising an annular body portion, a bellows section projecting from said body portion, a seal section including at least two sealing lips projecting from said bellows section and disposed at an angle other than 90° to the sealing surface, said seal section including a mass portion operable to generate centrifugal forces upon rotation of the shaft tending to pivot the seal section about said bellows section to increase the pressure applying relation of one of said lips relative to said sealing surface and decrease the pressure applying relation of another of said lips relative to said sealing surface.

3,606,352
FLUID SEAL ASSEMBLY

Walter A. Lutz, Lexington, Ky., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Apr. 18, 1969, Ser. No. 817,319
Int. Cl. F16j *9/06;* **F02f** *5/00*
U.S. Cl. 277—32 **3 Claims**

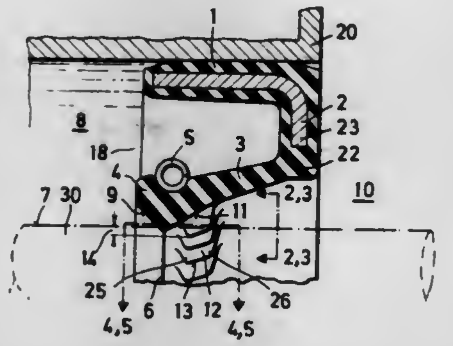
A fluid seal assembly having a sealing portion adapted to be mounted in a housing to make fluid sealing engagement with a reciprocating and/or rotating shaft which

extends into said housing, said assembly also having a rigid tubular shield portion which extends axially along said shaft to protect the latter from scratching, marring, or other damage thus to prolong the life of the sealing portion of said assembly, but without impeding rotation and reciprocation of said shaft.



3,606,353
SEALING RING

Werner Heinl, Burscheld, Germany, assignor to Goetzewerke Friedrich Goetze A.G., Burscheld, Germany
Filed Apr. 3, 1969, Ser. No. 813,126
Claims priority, application Germany, Apr. 4, 1968, P 17 50 169.8
Int. Cl. F16j *15/32*
U.S. Cl. 277—134 **6 Claims**

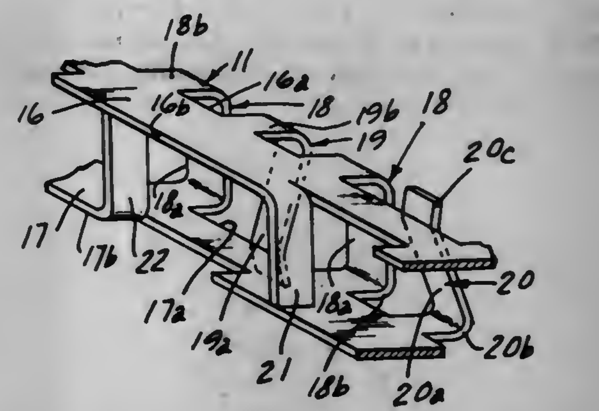


A shaft sealing ring includes an annular connecting portion, an annular sleeve portion joined to the connecting portion, and an annular sealing portion joined to the sleeve portion and having an annular sealing edge. A plurality of circumferentially distributed elastic tongues extend radially from the sealing portion. Each tongue has a portion which extends beyond the maximum radial dimension of the sealing edge. As a result the tongues engage with tension a shaft surface. The tongues are axially spaced from the sealing edge and the region of each tongue which is closest to the sealing edge extends radially the furthest beyond the maximum radial dimension of the sealing edge.

3,606,354
PISTON RING

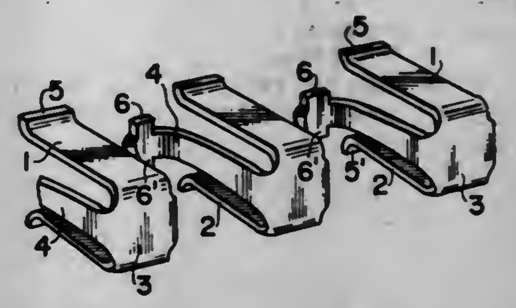
Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, Mo., assignors to Ramsey Corporation, St. Louis, Mo.
Filed Feb. 26, 1969, Ser. No. 802,351
Int. Cl. F16j *9/06, 15/56*
U.S. Cl. 277—140 **5 Claims**

A spacer-expander ring for piston oil ring assemblies which can be economically and easily manufactured in continuous strip form, rolled and cut into split rings of desired size and heat treated to snap into a closed continuous ring with a diameter less than the diameter of the piston for which it is intended. The ring is circumferentially continuous, its ends will not overlap and it has individual spring fingers at its innermost periphery to engage the inner peripheries of thin split rail rings supported thereon.



3,606,355
SPACER EXPANDER

Hiroshi Minegishi, Kawagoe-shi, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Aug. 5, 1969, Ser. No. 847,651
Int. Cl. F16j *9/06*
U.S. Cl. 277—140 **4 Claims**

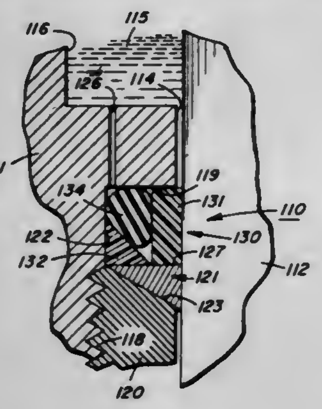


A channel type spacer expander is used with a pair of side rails as a piston ring of an internal combustion engine and takes the form of a discontinuous circle composed of a plurality of equally-spaced unitary channels having a C-shaped cross-section and is provided with a pair of projections at the outer edges thereof and a plurality of U-shaped bent portions, each disposed between the adjacent unitary channels. The connecting portion between the unitary channel and the U-shaped bent portion has curved edges to reinforce the connection therebetween. A pair of projections protrude on the opposite sides of the closed portion to prevent the associated side rails from deflecting in excess of 0.1 mm. The whole surface of the spacer expander is chrome-plated and/or the inner and outer peripheral surfaces of the associated side rails are then coated with poly-tetra-fluoride-ethylene to provide better mechanical properties.

3,606,356
HIGH-PRESSURE SEAL ASSEMBLY

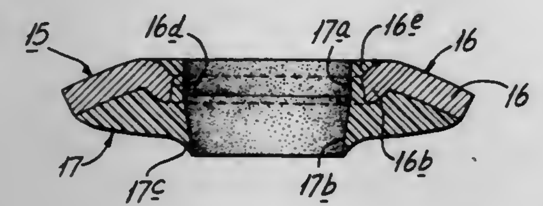
John Edward Beroset, Alsace Township, Berks County, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Nov. 19, 1968, Ser. No. 777,061
Int. Cl. F16j *15/40*
U.S. Cl. 277—165 **9 Claims**

This disclosure is directed to a high-pressure seal assembly which is useful for preventing leakage of a high pressure fluid through the interface between a housing and a member extending therethrough, particularly where the housing and member are movable relative to each other, e.g. a piston movable into a pressure vessel for pressurizing fluid contained therein. A high-pressure seal assembly according to the present disclosure may include a high-pressure seal sub-assembly including an annular beveled anti-extrusion ring; and a low-pressure seal subassembly including an annular ring of rectangular cross-section, an annular ring of triangular cross-section and a resilient O-ring, all mounted in an annular channel on the high pressure side of the anti-extrusion ring. This disclosure is also directed to an anti-extrusion ring with taper angles which provide improved results with regard to frictional engagement between the anti-extrusion ring and a fluid pressurizing piston, and with regard to tolerance to wear of the anti-extrusion ring.



3,606,357
SELF-SEALING AND ALIGNING MEMBER

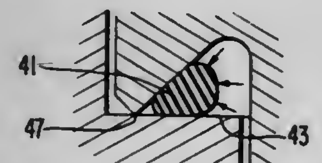
John L. Yonkers, 2030 Sunset Ridge Road, Northbrook, Ill. 60062
Filed June 24, 1968, Ser. No. 739,314
Int. Cl. F16b *35/00, 43/00;* **F16j** *15/00*
U.S. Cl. 277—166 **10 Claims**



There is provided a self-sealing and aligning member including a generally concave washer provided with an inwardly turned flange, and a ring-shaped plastic filler joined to the concave side of the washer and defining a generally arcuate outer surface.

3,606,358
HIGH-PRESSURE SEALING DEVICES

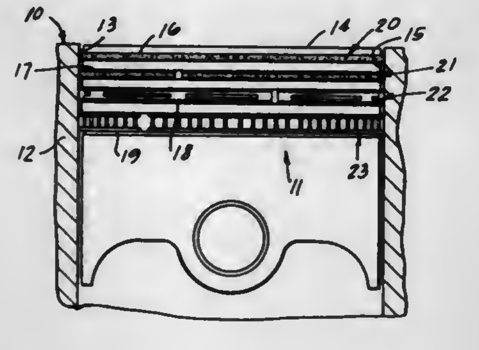
Werner Tobler, Winterthur, Switzerland, assignor to Kistler Instruments AG, Winterthur, Switzerland
Filed Dec. 6, 1968, Ser. No. 781,807
Claims priority, application Switzerland, Dec. 6, 1967, 17,119/67
Int. Cl. F16j *15/06*
U.S. Cl. 277—170 **7 Claims**



A high-pressure sealing arrangement for components which are provided with a lip portion defined by a groove and adapted to seat directly on the seating surface around the groove.

3,606,359
TUNGSTEN CARBIDE COATED PISTON RINGS

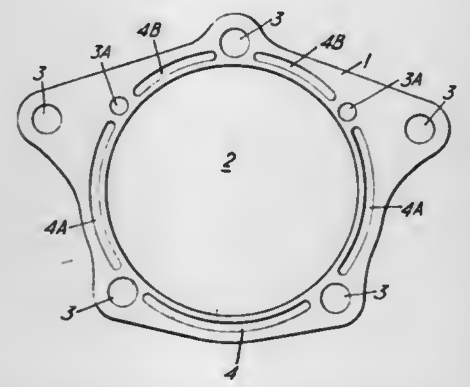
Harold E. McCormick, Ballwin, Mo., assignor to Ramsey Corporation, St. Louis, Mo.
Filed Aug. 8, 1969, Ser. No. 848,623
Int. Cl. F16j *9/00*
U.S. Cl. 277—224 **10 Claims**



Piston rings, including compression and oil control rings, for internal combustion engine pistons, having a bearing face of an alloy formed in situ on the ring from a plasma jet stream. The alloy is composed of refractory metal carbides such as tungsten carbide in solid solution with another metal, such as cobalt, to provide a hard wear phase with the carbide particles relatively free from sharp edges and corners and a somewhat softer matrix phase composed of metals such as nickel, chromium, boron, and aluminum. The aluminum should be present in a minor amount such that even minor scuffing of engine cylinders is avoided. The coating is very hard and refractory, possesses a higher tensile strength than heretofore used piston ring facings, does not scuff, has improved abrasive wear resistance, and operates compatibly with the engine cylinders. The carbides in the coating will not pull out in operation of the ring because they are in solid solution and do not have a sharp particulate form. The nickel, chromium and boron in the alloy provide binders improving the mechanical strength of the coating and the hardness of the matrix.

3,606,360
JOINT-MAKING GASKETS

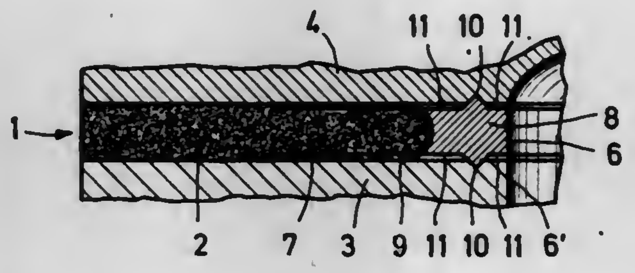
John R. Barker, Leamington Spa, England, assignor to British Leyland (Austin-Morris) Limited (formerly The British Motor Corporation Limited), Longbridge, Birmingham, England
Filed Oct. 8, 1969, Ser. No. 864,800
Claims priority, application Great Britain, Oct. 15, 1968, 48,701/69
Int. Cl. F16j *15/08, 15/14*
U.S. Cl. 277—227 **1 Claim**



A joint comprises a sealing gasket provided with bolt holes and slots in areas between the bolt holes subjected to less clamping pressure than the areas around the bolt holes. The slots are filled with a fluent sealing compound.

3,606,361
FLAT GASKET FOR THE CYLINDER HEAD OF COMBUSTION ENGINES AND PROCESS FOR MAKING SAME

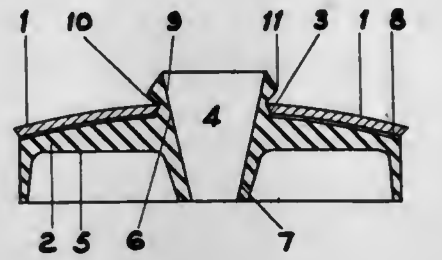
Ulrich Pohl, 40 Lerchenauerstrasse, 8 Munich 13, Germany; Otto Stulle, 214 Parksiedlung, 8042 Oberschleissheim, Germany; Lambert Riehl, 52 Augsburgerstrasse, 7910 Neu-Ulm, Germany; and Walter Stadelmann, 1 Zimtweg, 7 Stuttgart-Heumaden, Germany.
Filed Mar. 14, 1969, Ser. No. 807,220
Claims priority, application Germany, Mar. 15, 1968, P 16 75 356.3; May 14, 1968, B 75,755; Nov. 29, 1968, P 18 11 789.0
Int. Cl. F16j *15/06*
U.S. Cl. 277—235B **10 Claims**



A flat cylinder head gasket includes a sealing ring, formed as a split ring, around at least one opening, with a metal shield surrounding the split ring and, when inserted in place, causing the abutting ends of the split ring to be tightly joined together. The sealing ring is formed by stretching and winding a profiled wire on a helical form and cutting the helix in a longitudinal direction, and the rings are radically compressed by the inward deformation of the surrounding metal shield.

3,606,362
SEALING WASHERS

Sydney J. Wainstein and Bernard M. Sherman, Johannesburg, Transvaal, Republic of South Africa, assignors to National Plant Hire (Proprietary) Limited, Jeppe, Johannesburg, Transvaal, Republic of South Africa
Filed Dec. 20, 1968, Ser. No. 785,627
Int. Cl. F16j *15/00*
U.S. Cl. 277—235 **7 Claims**

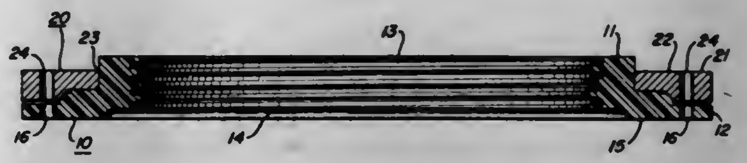


A sealing washer assembly for the retention of cladding material to building frames and particularly roof structures consisting of the combination of a metal outer washer with a resilient liner wherein the two parts are held together by resilient engagement of a part of the liner with a suitable edge portion of the metal washer.

3,606,363
INTERNALLY THREADED SEAL

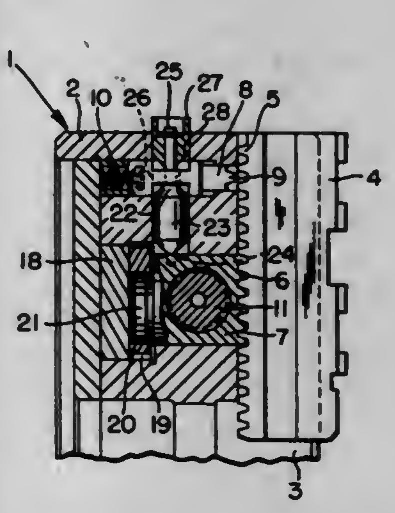
James F. Jordan, Orchard Park, N.Y., assignor to Bethlehem Steel Corporation
Filed Dec. 23, 1969, Ser. No. 887,604
Int. Cl. F16j *15/16*
U.S. Cl. 277—237 **3 Claims**

An internally threaded seal for sealing between a rotating threaded shaft and a stationary body containing a threaded bore. The seal is threadably connected to the shaft and fastened to the stationary body. The seal performs two functions: (a) prevents contamination of lubricated moving parts contained within the stationary body, and (b) retains lubricant within the stationary body.



3,606,364
JAW CHUCK IMPROVEMENTS

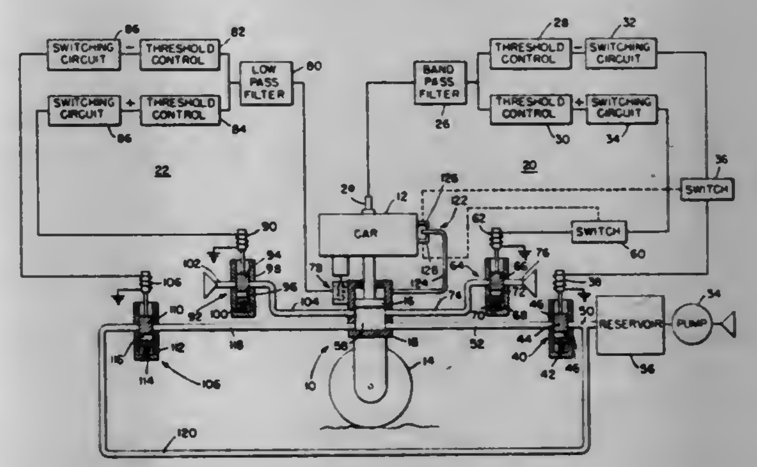
Milton L. Benjamin and Wilbur N. Miles, Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio
Continuation-in-part of application Ser. No. 781,460, Dec. 5, 1968. This application Aug. 13, 1969, Ser. No. 863,736
Int. Cl. B23b *31/16*
U.S. Cl. 279—121 **9 Claims**



Jaw chuck embodying automatic lock means which must be manually released from the jaws before the latter may be radially adjusted or removed from the chuck body for turning end for end or for replacement.

3,606,365
ACTIVE SUSPENSION SYSTEM FOR A VEHICLE

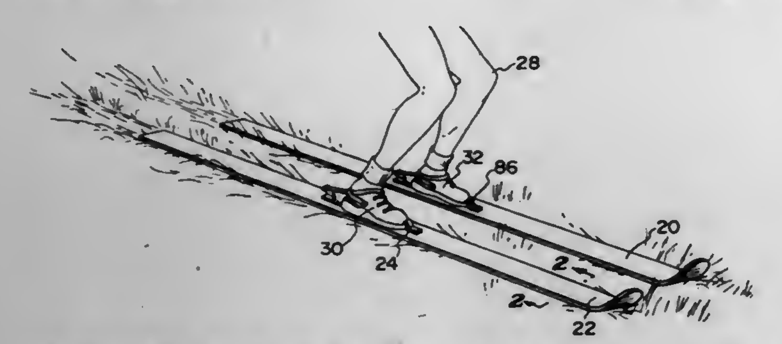
Philip M. Strong, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Nov. 3, 1969, Ser. No. 873,261
Int. Cl. B60g *17/04*
U.S. Cl. 280—6H **9 Claims**



An active suspension system includes a fluid operated piston to compensate for irregular movements of a main body of a vehicle. A detector detects the movement of the body out of a predetermined plane of movement and controls the amount of fluid actuating the piston to maintain the body close to its predetermined plane as it is moved.

3,606,366
SUMMER SKIS

Joseph F. Engelberger, R.F.D. 1, Taunton Hill Road, Newtown, Conn. 06475
Filed Jan. 21, 1969, Ser. No. 792,274
Int. Cl. A63c *5/04*
U.S. Cl. 280—11.1 **11 Claims**

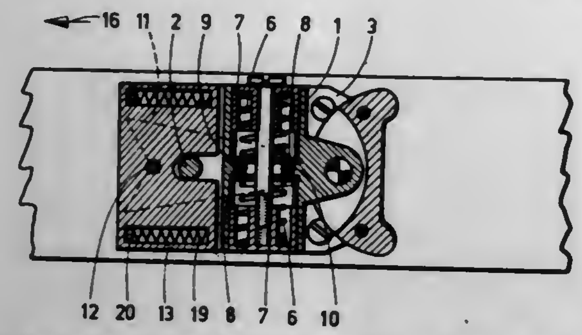


A modified form of skiing is achieved at any time of the year and in any climate by providing a layer of ice on the bottom of the ski which is of sufficient thickness to last for a substantial downhill run. The ice coated skis can be used with particular facility on hills that are covered with long grass but many other types of natural ground covering material may also be used.

Conventional skis may be adapted for such use by the application of a layer of suitable material to the running surfaces of the skis and by the development of an icy layer that clings to this material and presents a slippery surface to the ground covering. The icy layer will wear off or melt during the run and the skis may be recoated with ice by suitable freezing apparatus at the top of the hill before starting a downhill run.

3,606,367
SKI BOOT TOE SAFETY CLAMPING DEVICE

Georges P. J. Salomon, 34 Avenue de Loverchy, Annecy, Haute-Savole, France
Filed Jan. 3, 1969, Ser. No. 788,759
Claims priority, application France, Jan. 10, 1968, 13,561
Int. Cl. A63c *9/04*
U.S. Cl. 280—11.35T **9 Claims**

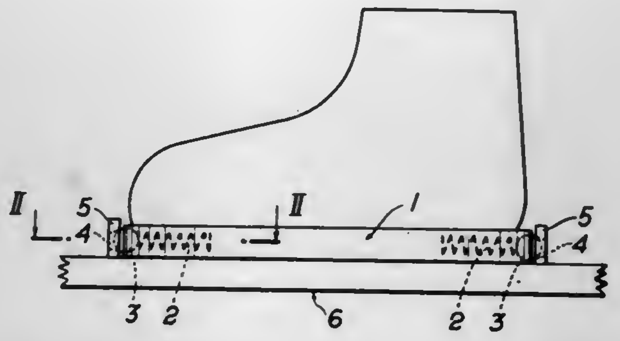


In a ski harness, a ski boot toe safety clamping device which can be released by the user, for instance by means of a ski pole to disengage the boot.

3,606,368
SAFETY SKI BINDING

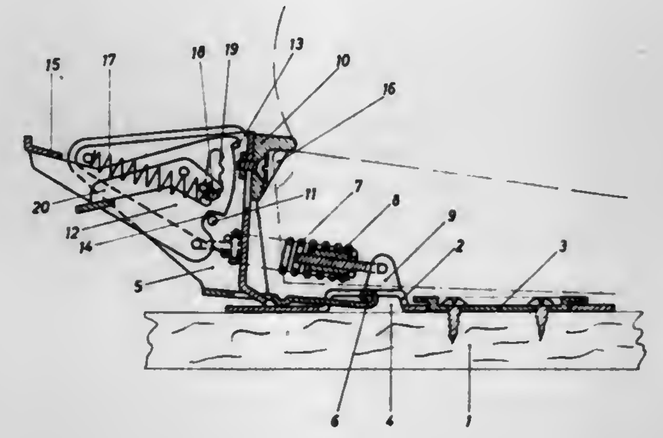
Thomas G. Smolka and Johann Zelinka, Vienna, Austria, assignors to Wiener Metallwarenfabrik Smolka & Co., Wien-Mauer, Austria
Filed Jan. 13, 1969, Ser. No. 790,705
Claims priority, application Austria, Jan. 12, 1968, 348/68
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35D **11 Claims**

A safety ski binding in which pairs of releasable members are arranged at either or both of the toe and heel of a ski shoe, one part of said locking members being arranged on the ski and the other part being arranged on, or as a part of, the ski shoe. One preferred form contemplates the location of tensioned releasable means within the sole of the ski shoe and the part against which said tensioned means operate being mounted on the ski. Alternatively, the tensioned releasable means may be mounted primarily within the ski with a sole gripping portion projecting therefrom and arranged for engaging the sole of the ski shoe. In the first-named form, recess means are mounted fixedly, or longitudinally adjustably as desired, onto the ski and projecting means are mounted at least partially within the ski shoe and projecting outwardly therefrom for engaging said recess means, said projecting means being resiliently urged into engaging position but retractible in response to pressure applied thereto. Where said tensioned releasable means are provided at both ends of the ski shoe, same may be independently adjustable or common means may be provided for simultaneously adjusting the tension on both of said tensioned releasable means. Similarly, connecting means may be provided between tensioned releasable means at both the toe and heel of the ski shoe whereby the release effected at either thereof will mechanically and positively release the other.



3,606,369
ARRANGEMENT FOR CONNECTING A SKI BOOT TO A SKI

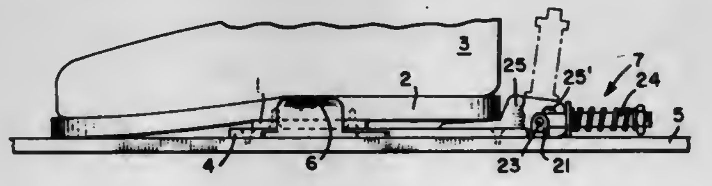
Heinz Batal, Ruckersdorf, Germany, assignor to Carl Braun Camera-Werke, Nuremberg, Germany
Filed July 14, 1969, Ser. No. 841,369
Claims priority, application Germany, July 25, 1968, P 17 03 891.4
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35T **5 Claims**



In the context of a safety arrangement for connecting a boot with a ski, comprising a heel holding means which can be swung so as to fit over an edge of the heel of the boot, and automatically snaps into position on placing the boot in the arrangement and automatically releases the boot on an excessive load being applied, and an opening part which can be actuated by hand for opening the arrangement for release of the boot, the present improvement provides that the heel holding means extends below and behind the heel of the boot, and in that the arrangement includes a pin by which the heel holding means is connected below the heel of the boot in such a manner as to allow tilting, a swivel plate attached to the ski and having a recess running in the direction of the ski, the heel holder being attached in the recess and elastic connecting parts for fixing the heel holder in the longitudinal direction of the ski.

3,606,370
SAFETY BINDING MECHANISM

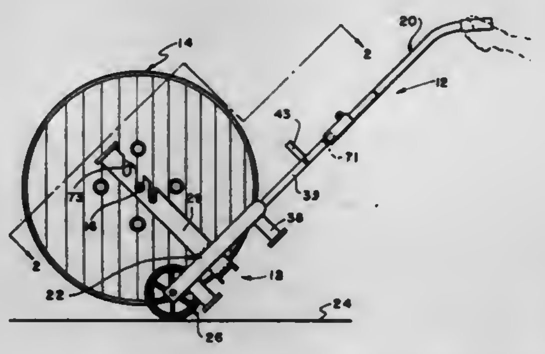
Richard G. Spademan, 933 Addison Ave., Palo Alto, Calif. 94301
Continuation-in-part of abandoned application Ser. No. 769,682, Oct. 22, 1968. This application Oct. 7, 1969, Ser. No. 868,271
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35T **11 Claims**



A safety binding for use with snow skis and boots consisting of two separable but coacting parts comprising a lever mechanism and a rigid fixed plate. The plate and lever mechanism are each adapted to engage or be engaged by cooperating elements of the other. The lever mechanism comprises a moveable longitudinally-extending spring-biased connecting strip having a wedge shaped end which mates freely with conforming surfaces of a pivotable lever. As the strip is moved, the lever is caused to pivot so as to engage or be engaged by the rigid fixed plate for providing a releasable connection between the plate and the lever mechanism which resists all degrees of relative movement between the ski boot and ski without the necessity of a toe restraining device. The lever mechanism can be mounted in the sole of the booth with the fixed plate mounted on the ski or alternatively the mounting of the parts may be reversed.

3,606,371
STORAGE AND CARRYING APPARATUS

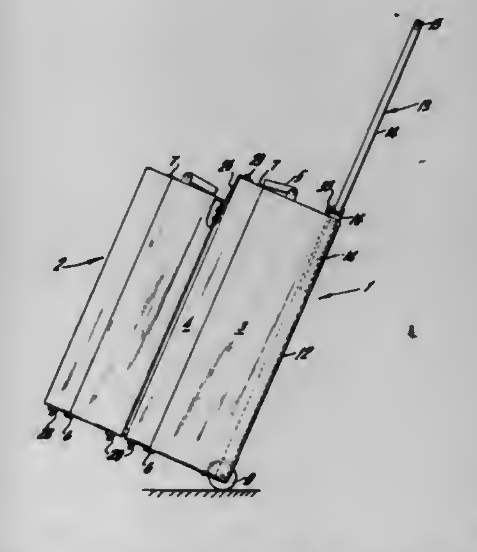
Kenneth E. Rousseau and Corwin E. Adams, Wichita, Kans., assignors to Harper Trucks, Inc., Wichita, Kans.
Filed Aug. 25, 1969, Ser. No. 852,781
Int. Cl. B62b *1/20, 1/22*
U.S. Cl. 280—47.24 **4 Claims**



This invention is a storage and carrying apparatus operable to convey items such as a cable or hose reel and readily converted from a storage condition to the usage condition through lift and storage means. More particularly, this invention is a support and conveyance means operable to be moved through lift and storage means including a lift handle assembly releasably connected to a connector assembly whereupon the handle assembly is readily movable from a horizontal lift condition to an upright storage condition.

3,606,372
WHEELED LUGGAGE

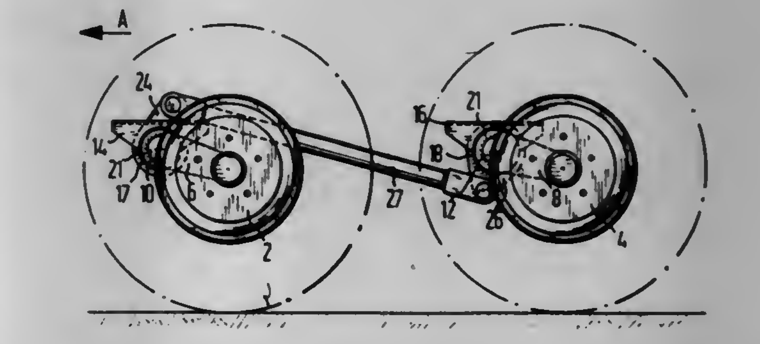
Arthur J. Browning, Downers Grove, Ill.
(P.O. Box 234, R.R. 7, Mount Vernon, Ill. 62864
Filed May 21, 1969, Ser. No. 826,405
Int. Cl. B62b *1/04*
U.S. Cl. 280—47.17 **15 Claims**



A luggage ensemble comprised of a plurality of suitcases provided with wheels and a retractable handle. The luggage ensemble utilizes the shape of respective suitcases and means, such as a strap or belt, to retain them in secured relationship and to facilitate storage in conventional terminal lockers.

3,606,373
TANDEM WHEEL UNDERCARRIAGE

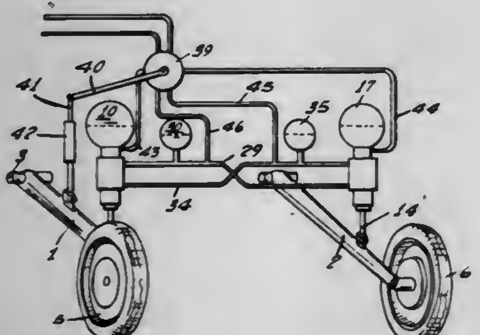
Valentin Knott, 15 Obinger Strasse, 8201 Eggstatt, Germany, and Ernst Pelzl, 79 Hemhof, 8201 uber Rosenheim, Germany
Filed Aug. 25, 1969, Ser. No. 852,818
Int. Cl. B60g *19/02*
U.S. Cl. 280—104.5 **6 Claims**



The four wheels of a tandem wheel undercarriage for a trailer are mounted on the free ends of radial arms projecting from outer ends of individual shafts, the inner ends of each pair of shafts being received in a tubular member. Annular rubber torsion springs connect the inner shaft ends to the enveloping tubular member and the outer shaft ends to bearing blocks on the undercarriage frame in which the outer shaft ends are rotatably received. The radial arms normally extend obliquely downwardly and rearwardly from the associated shafts in a common direction. The two tubular members are coupled by two rods hinged to lugs on the tubular members in such a manner that the tubular members turn simultaneously in opposite directions about their axes.

3,606,374
SELF-ADJUSTING HYDRO-PNEUMATIC SUSPENSION

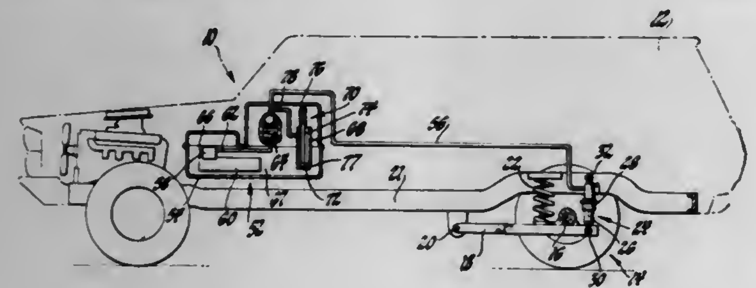
Rene Capgras, Paris, France, assignor to Whittaker Corporation, Los Angeles, Calif.
Filed Mar. 19, 1969, Ser. No. 808,399
Int. Cl. B60g *19/04*
U.S. Cl. 280—112 **4 Claims**



A pneumatic suspension system for a motor vehicle having a pair of laterally spaced road wheels, the system comprising a respective piston-and-cylinder assembly connected between each of the wheels and the vehicle body, each of the assemblies having a cylinder and a triple-acting differential piston slidable in the cylinder and subdividing the same into a first chamber, a second chamber and a third chamber, respective main gas cushions communicating with said first chamber of said assemblies, respective conduit means connecting the second chamber of the assemblies with the third chamber of the other assembly, a pair of auxiliary gas cushions, each connected with a respective one of the conduit means, and a hydraulic distributor responsive to the spacing between the body and the ground surface for modifying the fluid pressure in the chambers to maintain the vehicle height substantially constant.

3,606,375
ELECTRIC CONTROLLER FOR VEHICLE LEVELING SYSTEM

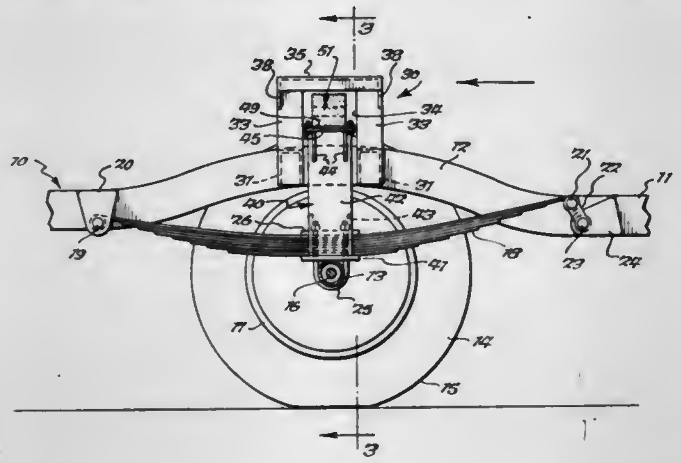
George W. Jackson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 23, 1970, Ser. No. 5,230
Int. Cl. B60g *17/00*
U.S. Cl. 280—124 **8 Claims**



In preferred form, a controller for a vehicle leveling system that has an auxiliary load-supporting air spring for maintaining a vehicle height. An electrical switch is mounted on the air spring and is responsive to the height of the vehicle chassis to selectively control either energization of an electric motor driven compressor to exhaust or pump-down the air spring or energization of a solenoid controlled valve to communicate a storage tank with the air spring during a pump-up or inflation phase of operation. The switch includes a pressure sensing chamber in communication with the air spring and a pressure responsive piston operated by pressure in the air spring to condition the switch to shut-off the compressor.

3,606,376
SECOND STAGE SPRING SUSPENSION

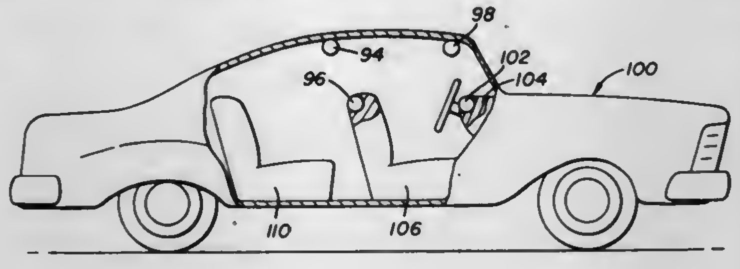
Albert F. Hickman, 8009 N. Gowanda State Road, Eden, N.Y. 14057
Continuation-in-part of application Ser. No. 641,000, May 25, 1967. This application July 22, 1969, Ser. No. 843,727
Int. Cl. B60g *9/04, 11/40*
U.S. Cl. 280—124RS **4 Claims**



As a helper spring for the rear end of a conventional through axle pick-up truck or the like, a frame and an axle bracket have base parts secured at each axle end, intermediate parts extending along the inner side of each wheel, and end parts adjacent and preferably radially in line with and above the tire treads. A resilient rubber body, preferably acted on in generally vertical compression to expand and contract horizontally, is interposed between each pair of these end parts, and preferably are located to provide high and widely spaced spring centers for stable support of the load on the truck.

3,606,377
VEHICLE CRASH RESTRAINT SYSTEM

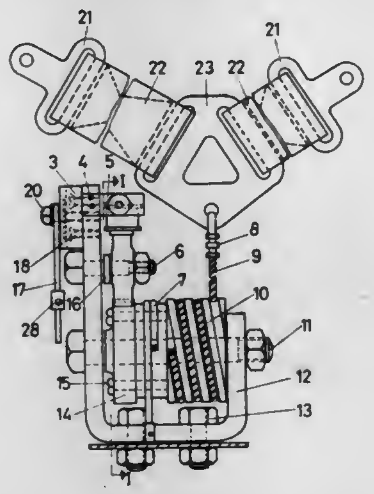
Robert L. Martin, Detroit, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Nov. 4, 1968, Ser. No. 773,269
Int. Cl. B06r *21/10*
U.S. Cl. 280—150AB **3 Claims**



Safety apparatus for protecting an occupant of a vehicle during an acident comprises an inflatable confinement supported on the vehicle. The confinement is supported in an inoperative collapsed condition and is expanded to an operative condition upon the occurrence of an accident. Expansion of the confinement is accomplished by the use of a zero or low pressure gas generating reaction within the confinement which is initiated upon the occurrence of an accident. Cooling means may be employed to absorb the heat resulting from combustion of the fluid generating material.

3,606,378
INERTIAL ELECTROMAGNETIC LOCKING MECHANISM FOR SAFETY BELTS IN MOTOR VEHICLES

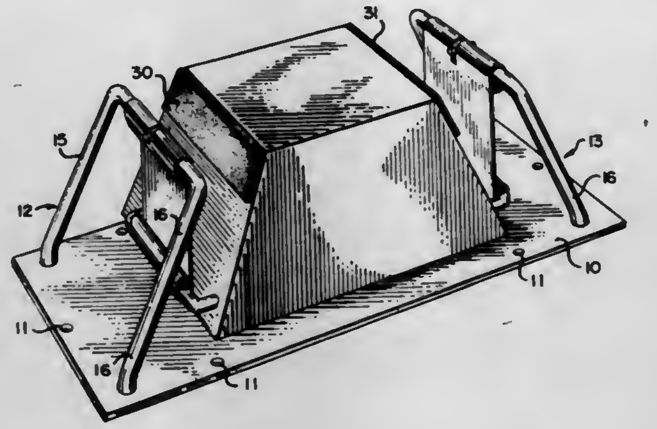
Luka Prostran, 50 Jakuba Kuburovica, Zemun-Beograd, Yugoslavia
Filed June 18, 1969, Ser. No. 834,395
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 **4 Claims**



The holder of a safety belt is connected to a cable which is wrapped around a spring-loaded drum which is rotatably supported on a carrier attached to a vehicle such that the holder can be moved towards and away from the carrier by winding and unwinding of the cable on the drum. A toothed member rotates with the drum and is engageable by a spring loaded pawl to lock the drum when the pawl is acted on by an energized electromagnet, the latter being energized by closing of a switch of an energizing circuit by a swinging pendulum when the vehicle acceleration or deceleration exceeds a predetermined magnitude.

3,606,379
STABILIZED MOTOR VEHICLE AND STABILIZING DEVICE THEREFOR

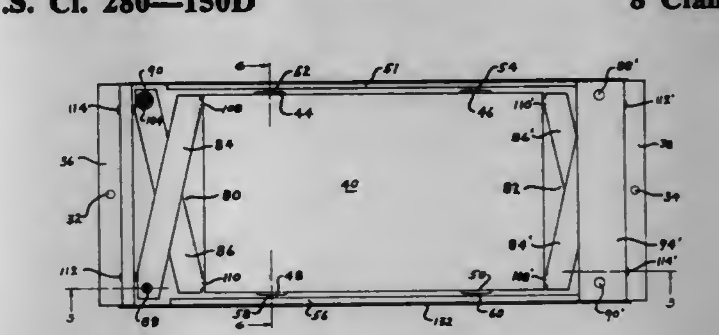
William E. Anglin and Paul E. Anglin, Dallas, Tex., assignors to William E. and Paul E. Anglin and Trammell Crow Investment Company, all of Dallas, Tex., fractional part interest to each
Filed July 31, 1969, Ser. No. 846,480
Int. Cl. B60m *27/00*
U.S. Cl. 280—150D **14 Claims**



A stabilized, wheeled motor vehicle using a pair of pendulum-like weight masses so positioned as to provide a new geometry of stability for such vehicles. The invention also involves a new and improved stabilizing device. This device includes a base mounting plate or frame from which project upwardly a pair of spaced supporting brackets. A heavy weight mass is suspended from these brackets for swinging movement longitudinally only of the base plate. The pair of pendulum-like masses are positioned on the floor of the vehicle body as closely as possible to the rear corners, with the base plates positioned transversely of the longitudinal axis of the vehicle. The swinging pendulum movement of the weight masses thus takes place transversely of the vehicle body, with no fore and aft movement. The spaced units so placed balance and stabilize the vehicle, providing positive control during blow-outs, wet surface skids, emergency stops, and vehicle sway caused by soft shoulders and rough road surfaces, preventing or reducing vehicle skidding.

3,606,380
VEHICLE STABILIZING DEVICE

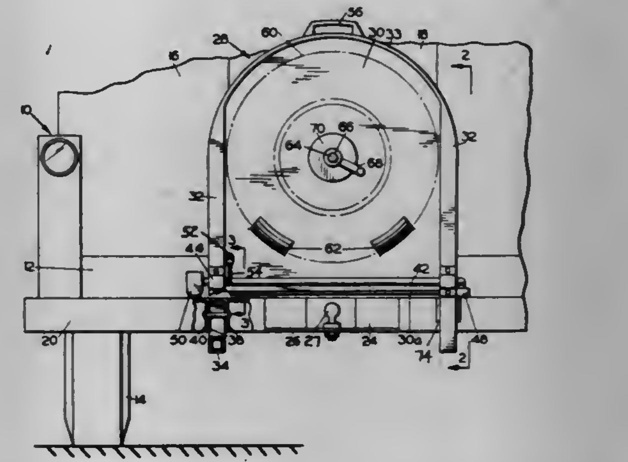
James W. Lewis, 218 Barber St., Edwardsburg, Mich. 49112
Filed Nov. 24, 1969, Ser. No. 879,444
Int. Cl. B60r *27/00*
U.S. Cl. 280—150D **8 Claims**



A vehicle stabilizing device in which a weight is mounted on a base for linear reciprocating movement in response to rear end centrifugal forces of the vehicle. A resilient means including two crossed levers pivotally connected to the base at each end of the weight transmits the counteracting forces of the weight to the base and thence to the vehicle. Springs may be interposed between the levers and base or between the weight and levers to enhance the resiliency of the reacting lever means.

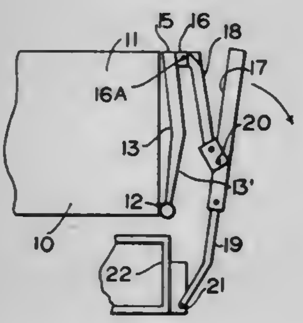
3,606,381
COMBINATION SPARE WHEEL HOLDER AND STEP FOR PICKUP TRUCKS

George J. Betz, 4720 NE. 31st Ave., Portland, Oreg. 97211
Application May 31, 1968, Ser. No. 736,926, now Patent No. 3,507,514, dated Apr. 21, 1970, which is a continuation-in-part of application Ser. No. 654,776, July 20, 1967. Divided and this application June 12, 1969, Ser. No. 870,719
Int. Cl. B60r *3/02*
U.S. Cl. 280—164 **6 Claims**



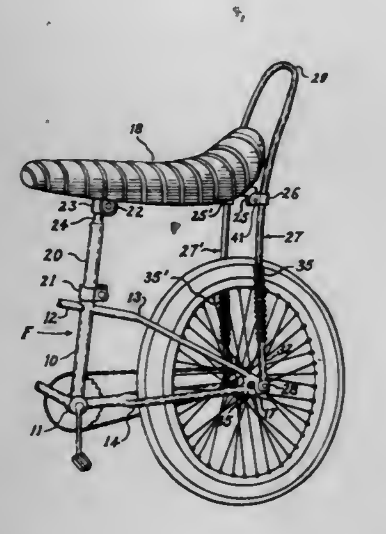
A wheel holder has a threaded lug and supporting arm for securing a spare wheel flatwise thereagainst. This holder has lower extension capable of being pivotally connected to a utility bumper of a pickup truck. A spring-operated catch is used for maintaining the wheel holder in a vertical position and when released allows the holder to lower to a horizontal position. The vertical supporting position of the body member comprises the normal or traveling position, and the horizontal position comprises a position for use as a step. In a first embodiment the spring catch is engageable with a detent on the bumper for maintaining the holder in its vertical position and forms a part of a cross shaft having a foot lever for rotating the shaft to a release position of the catch. A second embodiment has a pair of bumper brackets to which the holder is pivotally attached. In this latter embodiment, the bumper brackets also pivotally support a pair of rods slidable in guide brackets on the holder and having compression springs supported thereon to oppose lowering rotative movement of the holder.

3,606,382
TRUCK TAIL GATE STEPS
Lloyd C. Pollock, Box 66, Vermillion Bay, Ontario, Canada
Filed Mar. 14, 1969, Ser. No. 807,170
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **1 Claim**



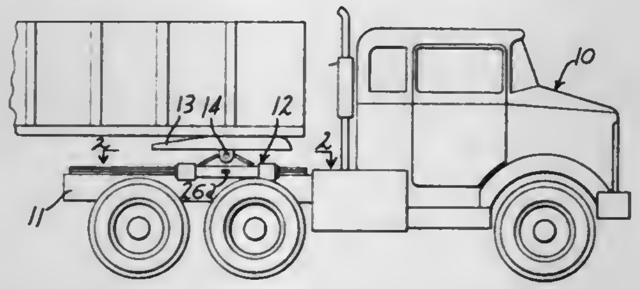
Folding steps attached to a truck tail gate and linked to the frame so that when the tail gate is lowered the steps unfold and when the tail gate is raised the steps fold up flush with the outer surface of the tail gate.

3,606,383
ADJUSTABLE BICYCLE SADDLE SUPPORTS
Robert H. Mesinger, Lakecrest Drive, Aunt Hack Ridge, Danbury, Conn. 06810
Filed June 11, 1969, Ser. No. 832,053
Int. Cl. B62j *1/02*
U.S. Cl. 280—283 **5 Claims**



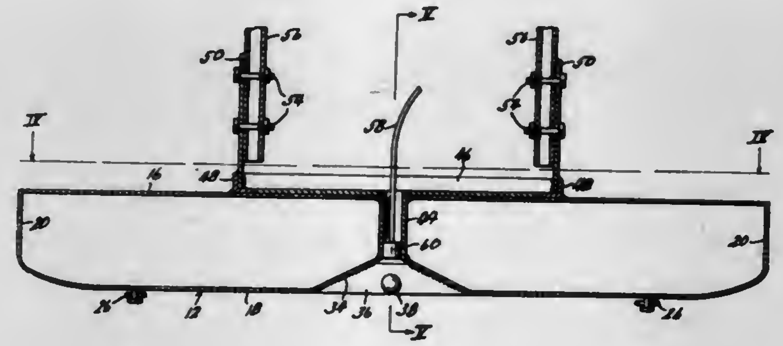
An elongated type bicycle saddle is vertically adjustably mounted on a bicycle frame by a vertically adjustable seat post secured under the front portion of the saddle and by support bars at the rear portion, the lower ends of the support bars being secured to the bicycle frame parts outside of the rear wheel, and the rear of the saddle being secured to the bars by clamps which encircle the bars, which clamps can be loosened and tightened to provide vertical positioning of the saddle along the bars. Preferably the bars include telescoping portions within coil springs that have lower ends secured to the lower parts of the bars and upper coil portions secured to the upper parts of the bars.

3,606,384
SLIDE MOUNT FOR FIFTH WHEELS
John P. K. Fontaine, Box 784, Rte. 11, Birmingham, Ala. 35210, and William D. Benson, Birmingham, Ala.; said Benson assignor to said John P. K. Fontaine
Filed May 18, 1970, Ser. No. 37,991
Int. Cl. B62d *53/06*
U.S. Cl. 280—407 **7 Claims**



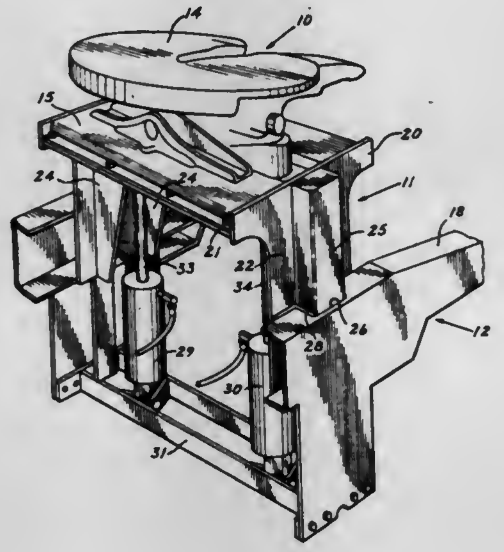
A slide mount for fifth wheels having a base frame mounted on the tractor and a slide mounted on the base frame and which carries the fifth wheel. The base frame rails carry individually formed spaced apart retainers providing tapered pockets to receive locking members, the locking members being carried by the slide and being spring biased to locking positions and operatively connected to a common handle for withdrawing them to free the slide for fore and aft movement.

3,606,385
COMBINATION MOTOR VEHICLE BUMPER
John H. Johannes, Rte. 1, Robinson, Kans. 66532
Filed Nov. 5, 1968, Ser. No. 773,481
Int. Cl. B60d *1/06, 1/08;* **B60r** *11/06*
U.S. Cl. 280—422 **2 Claims**



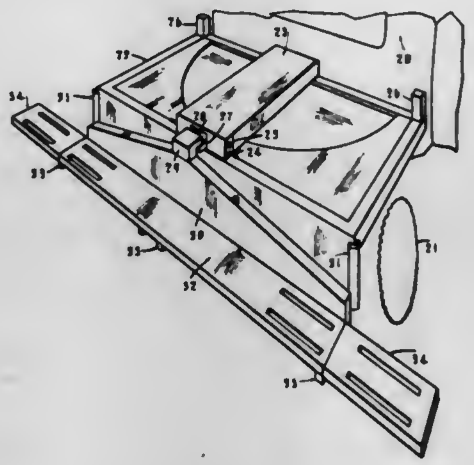
A bumper constituting a tool box adapted to be mounted at the rearward end of a truck in the position of and to perform the functions of a buffer, with a hitch and an electrical socket for trailers, farm implements and the like recessed in the rearward side thereof.

3,606,386
FIFTH WHEEL ELEVATABLE MOUNTING FOR TERMINAL TRACTOR
Russell John Dorn, Aurora, Colo., assignor to CEG Corporation
Filed May 11, 1970, Ser. No. 36,043
Int. Cl. B62d *53/08*
U.S. Cl. 280—425 **2 Claims**



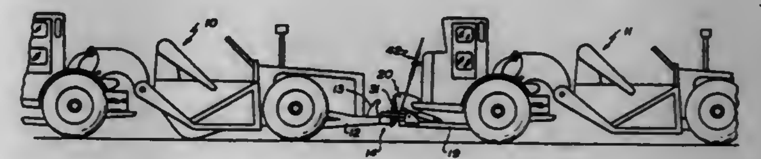
A terminal tractor for shuttling and spotting semi-trailers in a terminal or dock area is provided with an adjustably mounted fifth wheel structure. The fifth wheel is mounted on a carriage platform which is guided for vertical movement upon the tractor chassis by spaced rail engaging channels. Hydraulic lifting hoists are provided for raising and lowering the carriage platform and fifth wheel vertically to raise or lower the semi-trailer.

3,606,387
SELF-ADJUSTING CLOSE-COUPLED TRAILER HITCH
Delmer James Hill, Grosse Pointe Woods, Mich. (3133 Cortland Drive, Vestal, N.Y. 13850)
Filed May 29, 1969, Ser. No. 828,943
Int. Cl. B62d *53/00*
U.S. Cl. 280—446 **7 Claims**



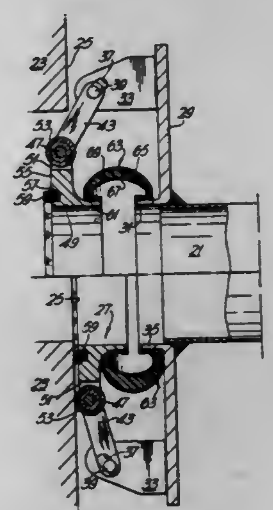
A device for towing mobile and sectional homes in a close-coupled manner when the longitudinal axes of towing vehicle and trailer are aligned, and automatically spacing the proximate surfaces of said towing vehicle and trailer in a turn, either way, up to 90°, to the extent necessary to preclude contact between said proximate surfaces.

3,606,388
VEHICLE COUPLING
Louis A. Campbell, 4632 1st St. SE., Box 5160 Postal Station A, Calgary 9, Alberta, Canada
Filed Mar. 4, 1969, Ser. No. 804,212
Int. Cl. B62d *53/00*
U.S. Cl. 280—477 **14 Claims**



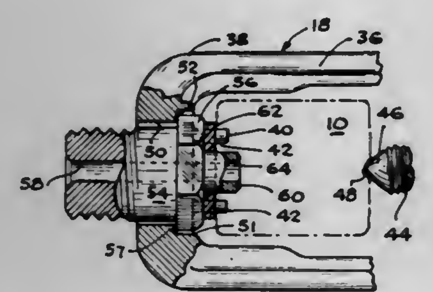
A push-pull hitch for coupling a pair of self-powered traction vehicles for alternate selective pulling effort of the leading vehicle upon the following vehicle and pushing effort of the following vehicle upon the leading vehicle. For pushing effort, a pair of registering bumper assemblies are mounted respectively on the rear portion of the leading vehicle and the forward portion of the following vehicle, sized and positioned for mutual registration when the two vehicles are substantially misaligned. For pulling effort, a hook member is mounted on one vehicle, and a U-shaped drawbar is mounted on the second vehicle; the drawbar is adapted to be selectively lowered into engagement with the hook member and disconnected therefrom when the two vehicles are substantially misaligned and in motion.

3,606,389
CONNECTOR FOR USE WITH REFRIGERATED CONTAINERS
Rupert Munton, Surrey, Hal Capper, London, and Kenneth White Pearson, Somerset, England, assignors to Shipowners Refrigerated Cargo Research Association, London, England
Filed Oct. 13, 1969, Ser. No. 865,547
Int. Cl. F16l *25/00*
U.S. Cl. 285—9R **6 Claims**



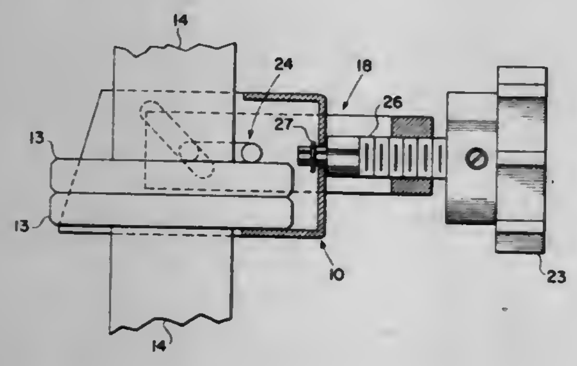
A coupling device for connecting transportable refrigerated containers to a supply of fluid under pressure and in particular for connecting such containers with a refrigeration system, the coupling comprising a mounting bracket for connection with a supply of fluid under pressure, a flexible extendible annular body which is impervious and thermally insulating connected at one end to the mounting bracket and at its other end to a support ring, said support ring having in its opposite surface an annular groove in which a plurality of resiliently deformable strands of material are mounted, the strands being arranged to abut against a sealing plate surrounding an aperture in the container and the bracket being connected to the duct leading to the supply of fluid, the annular ring being biased towards the container and the arrangement being such that the coupling is fully automatic and is provided with cam means which engage the container as the container is moved into the coupling station, the arrangement being such that when the container is in the coupling station it is connected to the supply of fluid and the coupling permits limited movements of the container in every direction yet still maintains a seal.

3,606,390
SWIVEL YOKE
Arthur R. Taylor, Alameda, Calif., assignor to Chemetron Corporation, Chicago, Ill.
Filed Apr. 1, 1969, Ser. No. 812,183
Int. Cl. F16l *35/00*
U.S. Cl. 285—39 **1 Claim**



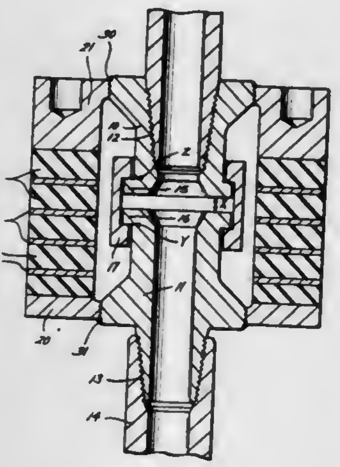
A yoke for connecting to a valve body, the yoke having a tubular stem rotatably and slidably received in a through bore having an axis generally parallel to the plane of the yoke and fastening means to secure a head on the stem between a circumferential shelf surrounding the bore and the valve body.

3,606,391
QUICK DISCONNECT CONDUIT CLAMP
John E. Sinnott, Richmond, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed June 24, 1970, Ser. No. 49,390
Int. Cl. F16l *23/00*
U.S. Cl. 285—38 **7 Claims**



A first clamp member has a bearing surface for engaging a clamping surface of one flange of a pair of mating flanges. The first clamp member also has two sides with each side having a slot therein that is positioned obliquely to the bearing surface. A second clamp member includes a pair of pins. Each pin passes through a corresponding slot. A screw drive is used to separate the two clamp members and in so doing causes the pins to slide down along the slots, clamping the pair of mating flanges between the pins and the bearing surface.

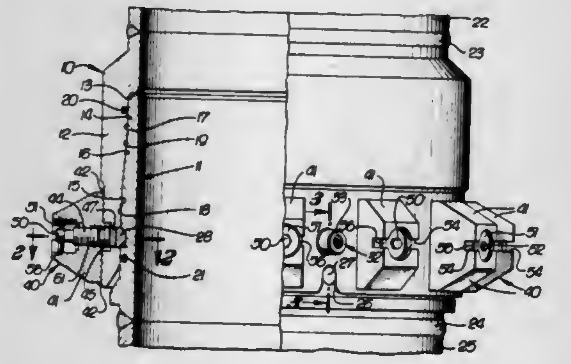
3,606,392
VIBRATION DAMPENER
William R. Garrett, Midland, Tex., assignor to Smith Industries International, Inc., Midland, Tex.
Filed Apr. 14, 1969, Ser. No. 815,854
Int. Cl. F16l *11/12*
U.S. Cl. 285—49 **7 Claims**



A vibration dampener may be used between the drill steel and power swivel of a boring machine. An annular stack of alternating rubber and metal rings bonded together and vulcanized, and including offset portions, provide means to transmit fluid, torque, and compression.

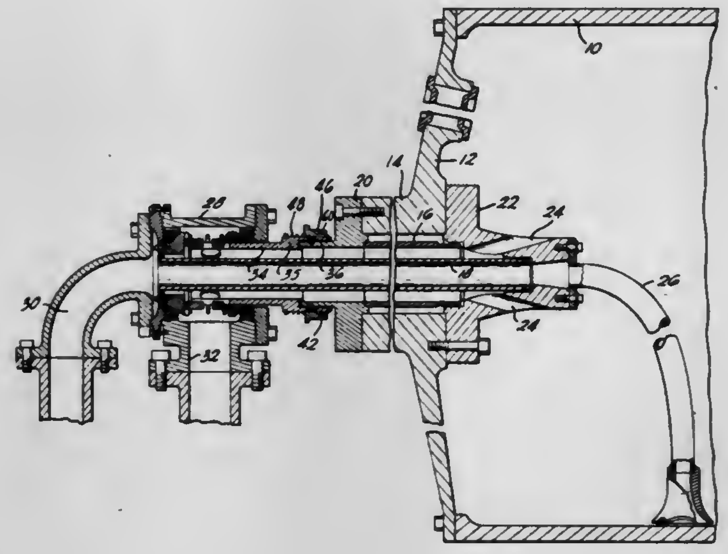
A pair of tubes with a lost motion connection therebetween disposed inside the annular stack provides means to transmit tension.

3,606,393
PIPE CONNECTORS
Carl F. Huntsinger, Ojai, and Fritz R. Huntsinger, Jr., Joseph H. Hynes, and George B. Bulgin, Ventura, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Sept. 5, 1969, Ser. No. 855,535
Int. Cl. F16l *15/00*
U.S. Cl. 285—90 **11 Claims**



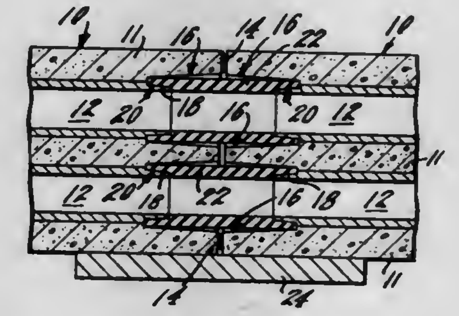
A marine riser connector for underwater well head equipment, the riser connector having a pin member provided with a groove for receiving a resilient lock ring carried by a box member. The lock ring has overlapped ends and is centralized in a groove in the box by spring-loaded centralizer pins. The lock ring is actuatable into locking engagement within the groove in the pin by actuator screws having lock ring engaging pads; and lock plates are provided to prevent rotation of the actuator screws except when they are engaged by a driving tool.

3,606,394
QUICK DISCONNECT JOINT
Richard Maurer, Three Rivers, Jack A. Hughey, Moore Park, and Ralph W. Gotschall, Wilfred L. McEnroe, and John E. Bonebright, Three Rivers, Mich., assignors to The Johnson Corporation, Three Rivers, Mich.
Filed June 12, 1969, Ser. No. 832,786
Int. Cl. F16l *39/04*
U.S. Cl. 285—134 **1 Claim**



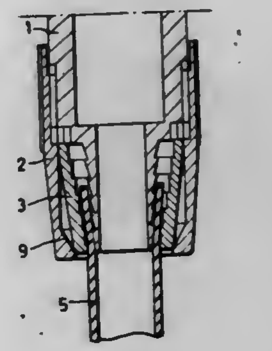
Adaptor structure for rotary pressure joint for communicating a rotating cylinder of a paper dryer, or the like, with a fluid source, the joint having a nipple driven by the dryer, there being means for connecting and disconnecting the driven nipple without interruption of the rotation of the dryer to effect joint repair and replacement.

3,606,395
METHOD AND APPARATUS USING PREFORMED CONDUITS
Phillip Salerno, Brooklyn, and Michael Sammaritano, Bayshore, N.Y., assignor of a fractional part interest to Angelo Raffa
Continuation-in-part of application Ser. No. 808,452, Mar. 19, 1969. This application Aug. 4, 1969, Ser. No. 847,342
Int. Cl. F16l *39/00*
U.S. Cl. 285—137R **5 Claims**



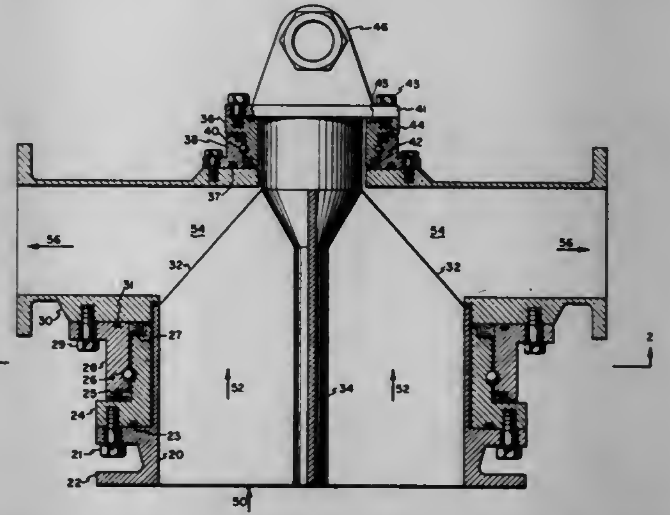
A method and apparatus used in laying underground cables, electrical wires and the like consists of preforming conduit sections having a plurality of spaced ducts for the electrical cables, wires and the like. The preformed conduit sections are placed in a trench below the normal level of the ground and their longitudinal ends are joined to one another to form continuous ducts within the conduit sections. The preformed conduit sections are sealed by a sealing compound between the longitudinal ends of two conduit sections to be joined.

3,606,396
UNIVERSAL PIPE GRIPPING UNION
Giordano Prosdocimo, Via Montereale 9, and Giacomo Brusadin, Via De Paoli 25, both of Pordenone, Italy
Filed Oct. 20, 1969, Ser. No. 867,685
Claims priority, application Italy, Oct. 23, 1968, 60,251-A/68
Int. Cl. F16l *33/00*
U.S. Cl. 285—177 **3 Claims**



Pipe gripping union adapted to be coupled to tubes of various diameter and thickness by a conical indented rubber carrying spigot and a mating elastic tube locking ring.

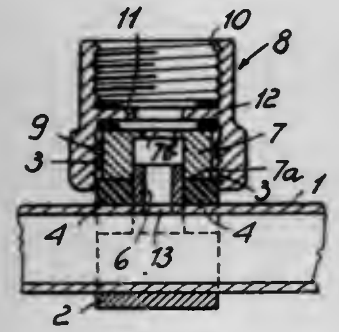
3,606,397
FLUID SWIVEL WITH LOAD BEARING SHAFT
John F. Flory, Morristown, N.J., assignor to Esso Research and Engineering Company
Filed Sept. 9, 1969, Ser. No. 856,259
Int. Cl. F16l *27/08*
U.S. Cl. 285—190 **10 Claims**



A submersible fluid swivel joint capable of carrying substantial axial and bending loads, capable of conducting fluid, and adapted to be installed along the longitudinal axis of a load bearing fluid conduit is provided and comprises a swivel member rotatable with respect to a stationary sleeve and shaft, said swivel member being disposed circumferentially with respect to said shaft, and having an outlet port in fluid communication with said sleeve, said shaft being capable of supporting substantial axial and bending loads and being reinforced by radial webs disposed within said sleeve, the supporting webs integrally connecting said sleeve and said shaft.

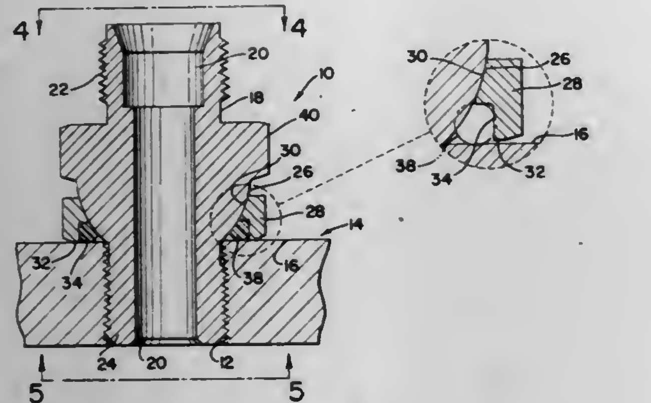
3,606,398
PIPE UNION DEVICE OF RAPID APPLICATION FOR FLUID FEEDLINE OFFTAKES
Franco Bocceda, Via Stefini 8, Milan 20125, Italy
Filed May 19, 1969, Ser. No. 826,305
Int. Cl. F16l *41/04*
U.S. Cl. 285—197 **3 Claims**

A pipe union device of rapid application for deriving offtakes from fluid feedlines which includes a forked member for circumscribing a fluid feedline at a bore provided therein, a resilient member inserted between the arms of said forked member and arranged around said bore, a tubular member passing through said resilient member and extending to said fluid feedline and screwing means for clamping said forked member to said fluid feedline and urging said tubular member against said fluid feedline.



3,606,399
O-SEAL FITTING

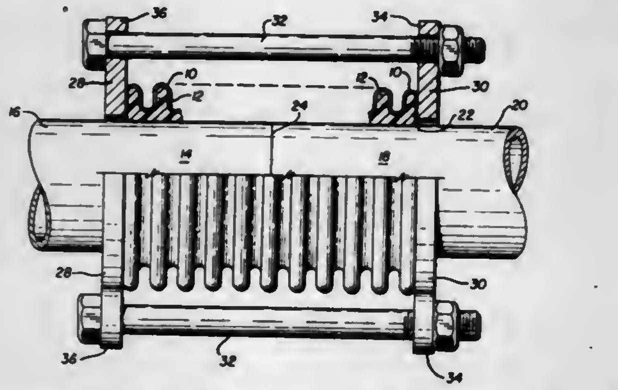
Emery J. Zahuranec, Solon, Ohio, assignor to Crawford Fitting Company, Solon, Ohio
Filed Apr. 30, 1970, Ser. No. 33,222
Int. Cl. F16l *15/00*
U.S. Cl. 285—220 **9 Claims**



An O-seal fitting of the type used for connecting pipe or tubes to threaded ports. The disclosed fitting comprises a body member with an axial flow passage and a first threaded end portion adapted to be received in the threaded port. The opposite end portion is preferably arranged for connection to a pipe or tube through a standard coupling or the like. Seal means are positioned about the body to provide a fluid tight seal between the body and the outer end of the threaded port. The seal means shown in the drawings include a surface formed on the body member intermediate the ends and surrounding the first threaded end portion. An annular, relatively rigid ring member having an axial opening substantially larger than the diameter of the threaded end is positioned on the body and in engagement with the body surface. The ring member and the body surface are arranged so they can shift relative to one another. Preferably, the ring member has a concave spherical surface and the body surface is a convex spherical surface for engaging the body. On the side of the ring member opposite the spherical surface there is a recess which extends about the body and receives an O-ring seal that engages the body, the ring, and the surface surrounding the port. Because of the arrangement of the body portion and the ring, the ring can shift to assure proper mating and sealing of the O-ring with the area surrounding the threaded port even when the area is not perpendicular to the axis of the port.

3,606,400
PIPE CONNECTOR

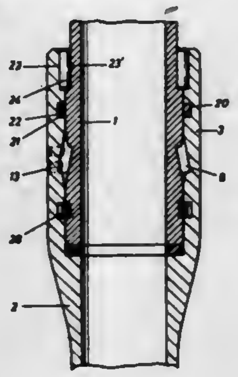
Vernon C. Hines, 1400 South Lipan St., Denver, Colo. 80223
Filed Nov. 12, 1969, Ser. No. 875,766
Int. Cl. F16l *21/00*
U.S. Cl. 285—235 **10 Claims**



A connector for the adjacent ends of pipes, tubes or the like, seals the joint between the hollow members by means of a light weight metal bellows filled with a flexible resilient material, when the flexible material is forced onto the outside of the hollow members and over the joint by compressing the ends of the bellows toward each other.

3,606,401
CONNECTING SLEEVE

Walter Schwarz, Vienna, Austria, assignor to Integral Industriebedarf-Gesellschaft m.b.H., Vienna, Austria
Filed July 22, 1969, Ser. No. 843,365
Claims priority, application Austria, July 22, 1968, A 7,081/68
Int. Cl. F16l *13/00*
U.S. Cl. 285—294 **26 Claims**

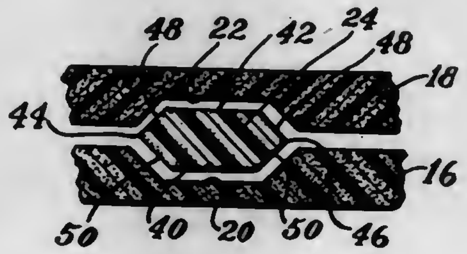


A connecting sleeve, particularly for glass fiber reinforced pipes of synthetic material, which comprises pipes to be connected having an outer face, and a sleeve defining an inner wall. The outer face of the pipe and the inner wall have oppositely disposed grooves, the latter defining jointly an annular space having an outwardly leading bore for filling the annular space with a hardening cast mass. The outer face of the pipe and the inner wall have an additional pair of grooves. A resilient ring is received in the additional pair of grooves. Means for securing the ends of the pipes against rotary and axial displacement are arranged and a tension cage surrounds the sleeve. At the ends of the pipes the grooves cross the engaging face of the sleeve and the pipe with conical faces along a common line.

3,606,402
LOCKING MEANS FOR ADJACENT PIPE SECTIONS

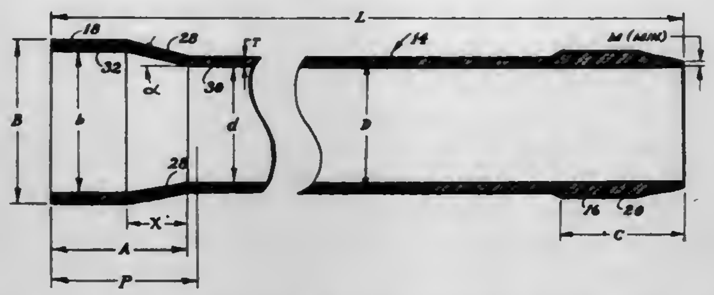
Jonas Medney, Oceanside, N.Y., assignor to Fiberglass Resources Corporation, Farmingdale, N.Y.
Filed July 2, 1969, Ser. No. 838,390
Int. Cl. F16l *37/00*
U.S. Cl. 285—305 **15 Claims**

A key adapted to be inserted into a channel defined by opposed grooves in telescoped pipe sections provides means for releasably locking the pipe sections to each other. The key is, in cross section, an hexagonal polygon having two surfaces that are radially spaced apart and parallel to the longitudinal axis of the pipe. The dimension between the radially spaced surfaces is less than that of the axially spaced vertices of the key. The vertices of the key are defined by side walls that are positioned at an angle not greater than 45° with respect to the longitudinal axis of the pipe.



3,606,403
PIPE JOINT

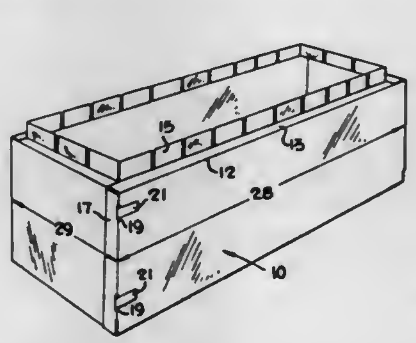
Jonas Medney, Oceanside, N.Y., assignor to Fiberglass Resources Corporation, Farmingdale, N.Y.
Filed July 2, 1969, Ser. No. 838,402
Int. Cl. F16l *25/00*
U.S. Cl. 285—334.4 **6 Claims**



In a filament wound, resin reinforced pipe an improved joint is provided by means of an internal or female taper at one of each lengths and a plurality of contiguous external or male tapers at the opposite end thereof. Preferably the male tapers are three in number with the innermost one being at a greater angle than the female taper, the middle male taper being at less of an angle than the female taper and the outermost male taper being at substantially the same angle as the female taper.

3,606,404
DUCT-TO-REGISTER CONNECTOR

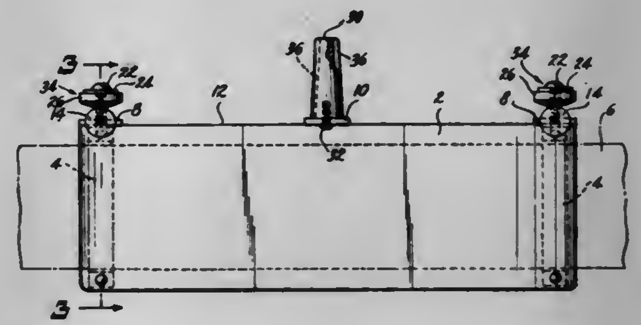
John L. McGann, Jr., Affton, Mo., assignor to Intertherm, Inc., St. Louis, Mo.
Filed Dec. 18, 1968, Ser. No. 784,814
Int. Cl. F16l *25/00*
U.S. Cl. 285—424 **2 Claims**



Openings in air ducts, beneath floor and wall surfaces, are cut by a routing process; and connected to rectangular surface register apertures by a readily installed duct connector section. Using the surface for alignment and its aperture edge for guiding a circular bearing guide, a routing tool projects through the aperture to cut a registering, smaller rectangular duct opening. Onto the margin around the duct opening is installed the inward end of a duct connector section, whose projecting tabs are manually bent into the opening for securement.

3,606,405
FISHLINE TYING DEVICE

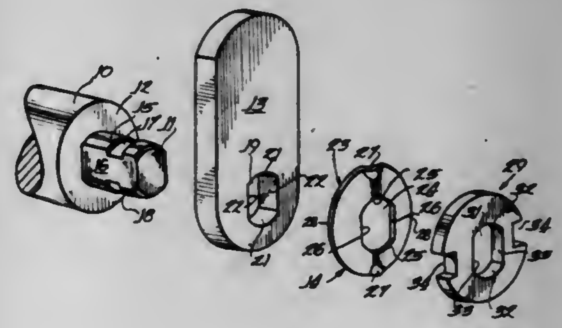
Robert E. Lally, 10153 Camwood Drive, El Paso, Tex. 79925
Filed Oct. 29, 1969, Ser. No. 872,115
Int. Cl. D03j *3/00*
U.S. Cl. 289—17 **5 Claims**



A curved sheet metal base having belt loops and outwardly bent ears respectively supporting spaced resilient line grippers and a central post. The post tapers upwardly and the ear on which it is mounted is notched on opposite edges. The post has longitudinal grooves on opposite sides, facing said line grippers.

3,606,406
SNAP ACTION RETAINER

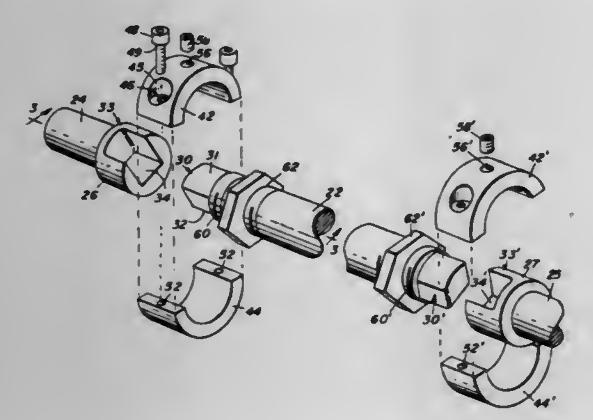
Russell W. Walters, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Nov. 26, 1969, Ser. No. 880,222
Int. Cl. F16b *9/00*
U.S. Cl. 287—20 **10 Claims**



A snap action retaining structure for releasably securing a member onto a post or stud formed on a support where the post is generally cylindrical beyond a support shoulder with a pair of opposed flattened sides and an undercut channel or groove. The member to be retained has an opening conformably receiving the modified post circumference as does a stationary retainer spring having opposed detents on the periphery thereof. A retainer has a central opening conformably receiving the post and opposed peripheral notches initially 90° removed from the detents on the spring. Rotation of the retainer relative to the member and spring through an arc of 90° within the groove causes the notches to receive the detents on the spring to resiliently hold the retainer in retaining position.

3,606,407
BREAK-AWAY SHAFT

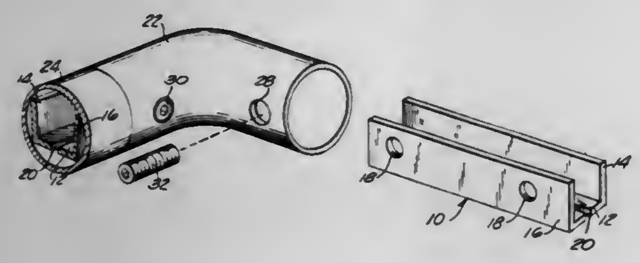
Lawrence Pendergast, 3403 Division St.,
St. Cloud, Minn. 56301
Filed Apr. 7, 1970, Ser. No. 26,236
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.01 4 Claims



The subject disclosure relates to a break-away shaft which permits a tool such as a brush, grinding or polishing wheel or the like to be removed from a machine shaft without the necessity of disassembling the machine and removing the shaft from the machine bearings. The break-away shaft comprises a center shaft having shaped ends which are inserted into two shaft stubs having corresponding shaped recesses so that a torque transferring joint is formed. The shaft stubs are separately mounted in spaced machine bearings, with one of the shaft stubs extending through its bearing mounting for engagement by a driving means. A removable securing collar encircles each joint to hold the joint in position and the center shaft portion in alignment with the stubs. A holding member is carried on each end of the center shaft to secure a tool mounted on the center shaft.

3,606,408
COUPLING DEVICE FOR TUBULAR MEMBERS

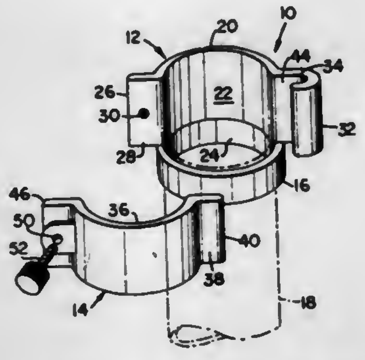
Adolph A. Wagner, 3454 N. Shepard Ave.,
Milwaukee, Wis. 53211
Filed Apr. 1, 1969, Ser. No. 812,048
Int. Cl. E04g *7/00*
U.S. Cl. 287—54 1 Claim



A connector for coupling a pair of tubular members in end-to-end relationship comprising a connector member of elongated channel shape having a base portion and a pair of leg portions adapted for insertion into the open ends of the tubular members. A plurality of set screws are threaded through threaded openings in one leg of the connector member for tightening into engagement with the inside face of the other member to thereby cause the leg portions to be expanded into tight gripping engagement with the inside surface of the tubular members. Access to the set screws is provided by openings in the walls of the tubular members. The base portion of the connector member is provided with a longitudinally extending slot to thereby weaken the base portion to facilitate expansion of the leg portions.

3,606,409
CLAMPING DEVICE

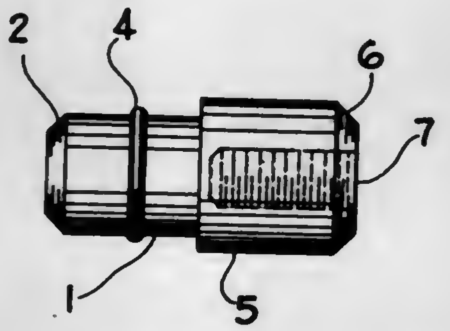
Norman L. Hawkins, Jr., Lafayette, Calif., assignor to Hawkins-Hawkins Co., Inc., Berkeley, Calif.
Filed Sept. 30, 1969, Ser. No. 862,205
Int. Cl. F16b *2/10, 7/10;* F16m *11/00*
U.S. Cl. 287—58CT 5 Claims



A device for releasably securing a first, elongated inner member to a second tubular member when the inner member is telescoped within the tubular member. The device includes a first part rigidly coupled to one end of the tubular member and a second part which mates with the first part and is releasably coupled thereto to clamp the inner member against the first member to thereby hold the members against movement relative to each other. The first part has a hook-shaped extension which receives a lateral extension on the second part, whereby the extensions form a pivot for rotating the parts relative to each other through a limited arc even though the parts are separable and can be connected together at locations substantially diametrically opposed to the extensions by a suitable fastener.

3,606,410
PUSH IN AND PULL OUT LINE UP DOWEL

Anthony J. Inserra, 26 Center St.,
Jamestown, N.Y. 14701
Filed May 5, 1969, Ser. No. 829,841
Int. Cl. F16b *13/00*
U.S. Cl. 287—127 1 Claim

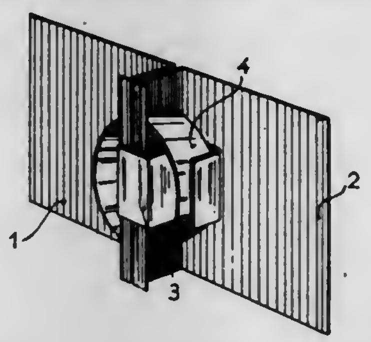


A dowel made up of two cylindrical parts integrally connected together, one being of greater diameter than the other, and in the smaller cylindrical part a circular O-ring is disposed in a groove, and an axially threaded hole is formed in the large end. The dowel is suitable for attaching two members together by inserting it in a threaded hole.

3,606,411
FIXING ARRANGEMENTS

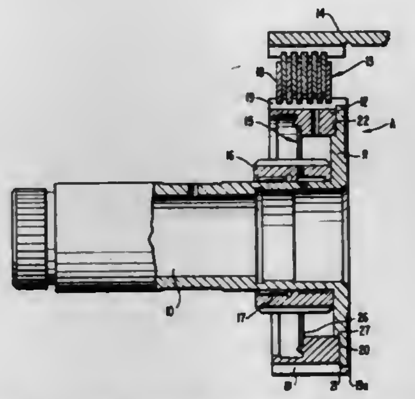
Yves Didry, 44 Avenue Paul Vaillant Couturier, Montreuil-sous-Bois, France
Filed Oct. 24, 1968, Ser. No. 770,175
Claims priority, application France, Oct. 26, 1967, 126,021
Int. Cl. F16b *5/06*
U.S. Cl. 287—189.36 6 Claims

Two or more cooperating bent edges of a plurality of sheet metal or the like members are releasably assembled through the use of a single or multi-channeled stirrup member which straddles the bent edge portions of the sheet members to be joined. A resilient flexible clip is positioned against one side wall of the stirrup device within one of the channels so as to biasingly engage the bent edge portion of an associated sheet member thereby forcing it into abutting assembled relationship with a cooperating bent edge portion of a similar sheet member which may be arranged in common or perpendicular plane. The stirrup device may have one or more channel members dependent upon the shape and position of the sheet members relative to one another and upon the number of clips necessary to provide a biasing force on the bent edge portions of the sheet members so as to maintain them in assembled abutting relationship.



3,606,412
FORM-LOCKING CONNECTION OF TORQUE TRANSMITTING STRUCTURAL PARTS, ESPECIALLY IN AUTOMATIC MOTOR VEHICLE TRANSMISSIONS

Josef Helmer, Aich, Kreis Nurtingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed May 16, 1969, Ser. No. 825,272
Claims priority, application Germany, May 16, 1968, P 17 50 586.1
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 7 Claims

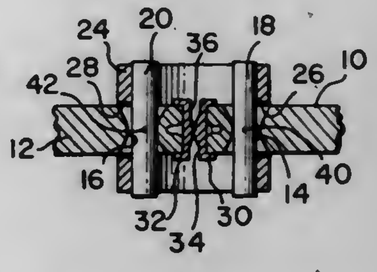


A form-locking connection between a first structural part provided with external teeth and a second structural part; the external teeth of the first structural part are extended beyond its end face, and the second structural part is provided with external teeth engaging into the overhanging portion of the external teeth of the first structural part.

3,606,413
MECHANICAL COUPLING

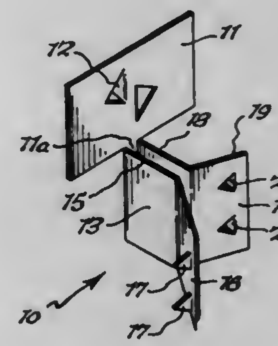
Dieter Hedermann, Immenstaad am Kippenhorn, Germany, assignor to Dornier G.m.b.H., Friedrichshafen/Bodense, Germany
Filed June 11, 1969, Ser. No. 832,225
Claims priority, application Germany, Aug. 10, 1968, P 17 75 466.4
Int. Cl. F16b *7/00*
U.S. Cl. 287—94 2 Claims

A pair of movable members have holes in the adjacent ends thereof, and a substantially cylindrical connecting member is disposed within each of these holes and extends on opposite sides of the associated movable member. An annular spring has passages therein receiving the movable members and is disposed around said connecting members with the inner periphery of the spring in engagement with the connecting members. End caps are mounted on the ends of each of the movable members and have arcuate inter-engaging surfaces thereon permitting angular movement of the movable members with respect to one another.



3,606,414
FASTENER

Thomas J. Haley, Griffin, Ga., assignor to Osmose Wood Preserving Co. of America, Inc., Buffalo, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,352
Int. Cl. F16b
U.S. Cl. 287—189.35 10 Claims

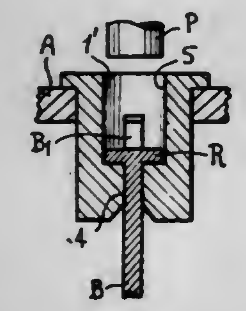


A fastener for securing to a first member, for example a stud, at one surface thereof a second and, if desired, also a third member, for example drywall panels, at the edge thereof. A uniplanar base member is mounted to the stud by cut-out anchor points driven therein. A leg member extending from the base overlays the edge of the panel when it is positioned against the stud, which leg is secured to the panel by cut-out anchor points driven therein.

3,606,415
CONNECTING DEVICE FOR FASTENING TOGETHER TWO THIN PLATES IN RELATIVE ANGULAR POSITION

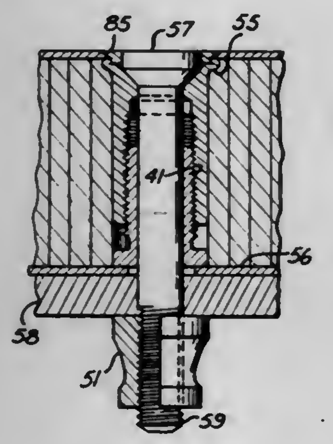
Gerard Friedling, Vernier, and Marcel Chuard, Meyrin, Switzerland, assignors to Technicair S.A., Vernier-Geneve, Switzerland
Filed Apr. 7, 1969, Ser. No. 813,958
Claims priority, application Switzerland, Apr. 5, 1968, 5,134/68
Int. Cl. F16b *17/00*
U.S. Cl. 287—189.35 7 Claims

A mechanical device for connection of two thin plates in relative angular position, preferably of aluminum sheets, comprising a member adapted to be inserted into an opening of one of the plates, and including an enlarged head portion at one end forming an abutment shoulder, adapted to limit the insertion of the member into the opening and to abut the one of the plates adjacent the opening. The member has a slot starting from the insertable end of the member and extending substantially longitudinally in the member and passing crosswise through the member and adapted to receive the other of the plates and oriented in an angular position relative to that of the one of the plates. The head portion has a recess accessible from the one end thereof and extends longitudinally therefrom overlapping the slot and at least partially extending therein and terminating in a recess end spaced from the insertable end. The recess is adapted to receive a tool and is adapted to receive a flange formation formed on the other of the plates and to project beyond the slot, in order to attach the other of the plates to the member.



3,606,416
HONEYCOMB FASTENER

Edwin E. Hatter and William D. Tarrant, Fountain Valley, Calif., assignors to Hi-Shear Corporation, Torrance, Calif.
Filed Feb. 11, 1970, Ser. No. 10,474
Int. Cl. F16f *7/00*
U.S. Cl. 287—189.36 **9 Claims**

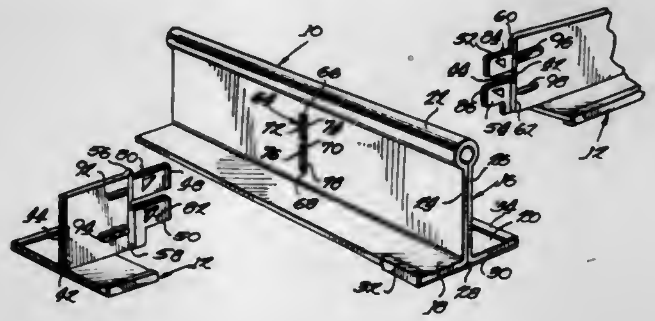


A fastener for attaching a structure to a honeycomb body comprising a sleeve and a spacer that are threadedly attached to each other. The sleeve bears means for attachment to one of the skin sheets of the honeycomb body, and the spacer has an abutment surface adapted to be threaded down into contact with the other of said skin sheets so as to clamp said other sheet between itself and a workpiece which is to be attached to the body. The fastener transfers both shear and tensile loads to the honeycomb body, and the threaded joinder of the sleeve and spacer makes the grip range delicately adjustable, and protects the honeycomb body from crushing while the fastener is being set.

3,606,417
CEILING SUSPENSION

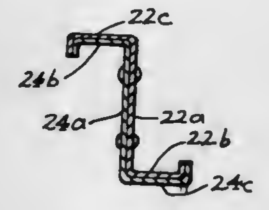
Donald L. Rousey, Des Plaines, Ill., assignor to Questor Corporation, Toledo, Ohio
Filed Mar. 26, 1970, Ser. No. 22,810
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36 **6 Claims**

A ceiling suspension system for supporting ceiling tiles including a longitudinal frame member having an upstanding web and laterally extending tile supporting flanges, and transverse frame members having pairs of tongues at opposite ends thereof, the tongues of each pair being oppositely offset and being adapted to extend through slot means in the vertical web of the longitudinal frame member, the tongues having oppositely projecting elements thereon engageable behind opposite edges of the slot means for retaining the transverse frame member with respect to the longitudinal frame member.



3,606,418
STRUCTURAL MEMBER

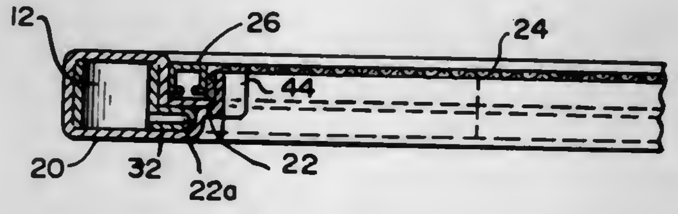
Paul S. Buker, Richard D. Shepard, and David P. Wenaas, Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Filed Mar. 10, 1969, Ser. No. 805,666
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36R **1 Claim**



A single uniform structural member that may be lapped on a like member to form a structurally continuous member capable of carrying axial and flexural stresses.

3,606,419
MOLDED PLASTIC CORNER LOCK

Perry L. Virkler, Chatsworth, and Thomas A. Vaughn, Piper City, Ill., assignors to Homeshield Industries Inc., Chatsworth, Ill.
Filed June 18, 1969, Ser. No. 834,474
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36H **1 Claim**



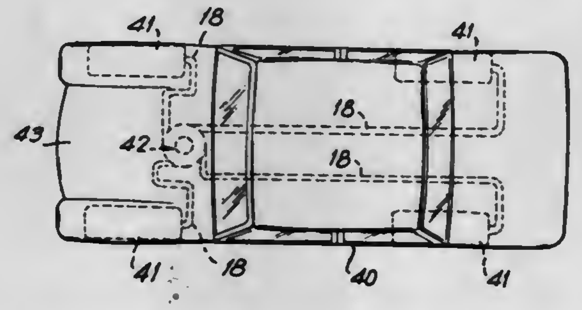
A corner lock for screen frames having right angularly disposed legs telescoped into the ends of perpendicular tubular screen frame members. The apex of the corner lock includes a projecting spacer extending diagonally on the top and bottom surface and extending vertically on the inner and outer surfaces of the apex to engage the adjacent ends of the screen frame members.

ERRATUM

For Class 289—17 see:
Patent No. 3,606,405

3,606,420
FLUID TRACK SANDING APPARATUS

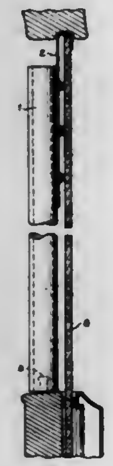
Carl Lennart Hultstrom, Vallingby, Bolik Anders Eriksson, Johanneshov, and Elvin Efraim Arksten, Vallingby, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 17, 1970, Ser. No. 12,060
Int. Cl. B60b *39/08;* **B61c** *15/10;* **F04d** *25/06*
U.S. Cl. 291—3 **11 Claims**



This invention relates to apparatus for sanding the regions of a road or passage adjacent to the wheels of a vehicle to prevent skidding. Sand is conducted by gravity from a downwardly directed spout of a hopper to the air inlet of the casing of a centrifugal blower having a motor driven bladed rotatable member therein. A plurality of air outlets are distributed about the periphery of the casing. The sand is substantially uniformly divided between the air outlets and propelled by air under pressure through hose connections to the regions of the road or passage adjacent to the wheels of the vehicle, a separate hose connection being provided from each air outlet to a different one of the regions of the road or passage. In order to prevent sand moving by gravity from the hopper into the air inlet of the casing and filling the latter with sand before the motor is energized to drive the bladed rotatable member, a single valve structure is provided at the spout of the hopper. The valve structure is closed, when the rotatable member is stationary and is opened when the rotatable member is running.

3,606,421
ANTIPILFERING DEVICE FOR A GLASS WINDOWED AUTOMOBILE DOOR

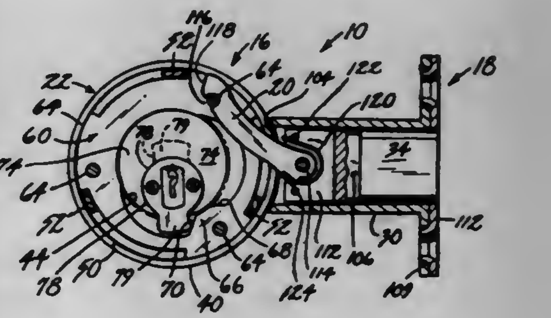
Arthur D. Reichenbach, 900 SW. 12th St., Fort Lauderdale, Fla. 33315
Filed May 18, 1970, Ser. No. 38,037
Int. Cl. E05c *21/00;* **G05g** *5/00*
U.S. Cl. 292—1 **5 Claims**



An antipilfering device for automobiles which, when in place, prevents the unlocking of the door from the outside except by use of the key, the device preventing the raising of the lock button by making access to it impossible, until the window glass is lowered far enough to free the device for removal.

3,606,422
LOCK ASSEMBLY

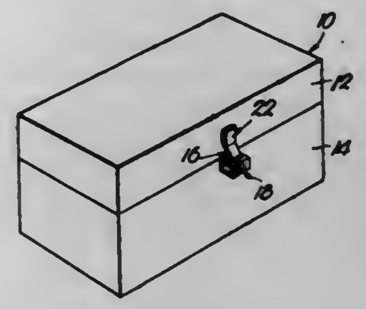
Thomas F. Hennessy, Bristol, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Sept. 4, 1968, Ser. No. 757,311
Int. Cl. E05b *9/08, 65/06;* **E05c** *1/06*
U.S. Cl. 292—139 **25 Claims**



A reversible cylindrical lock assembly having an operating unit including a cylindrical casing containing a rotary operating ring, a bolt unit having a housing supporting a movable deadbolt, and an operating link providing motion transmission connection between the ring and the bolt. Manually operable inner and outer operating assemblies mounted on the casing impart rotational movement to the ring to move the bolt to projected and retracted positions. Fasteners releasably secure the bolt unit to the operating unit and also secure the operating assemblies to the latter unit. These fasteners are inaccessible when the bolt is projected and in engagement with an associated strike.

3,606,423
LOCK PROTECTING ASSEMBLY

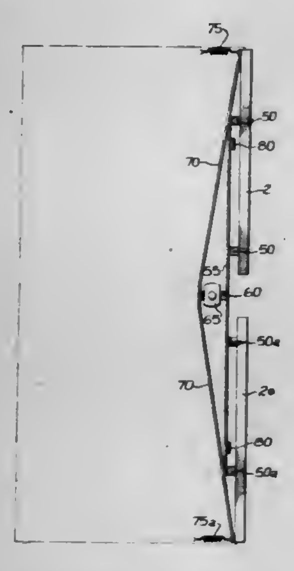
William P. McCarthy, Kansas City, Mo., assignor to Ridgewood Instrument Company, Kansas City, Mo.
Filed Dec. 19, 1969, Ser. No. 886,682
Int. Cl. E05b *67/38;* **E05c** *1/04*
U.S. Cl. 292—148 **3 Claims**



A locking assembly incorporating a padlock wherein the latter is housed within a rigid, protective enclosure when the assembly is locked. A rigid tongue is configured to pass through an opening in a wall of the enclosure and the padlock shackle when the padlock is open, but to be retained between the shackle and the padlock body when the padlock is closed, thereby retaining the padlock within the enclosure and denying unauthorized access to the shackle.

3,606,424
DOOR LOCKING DEVICE

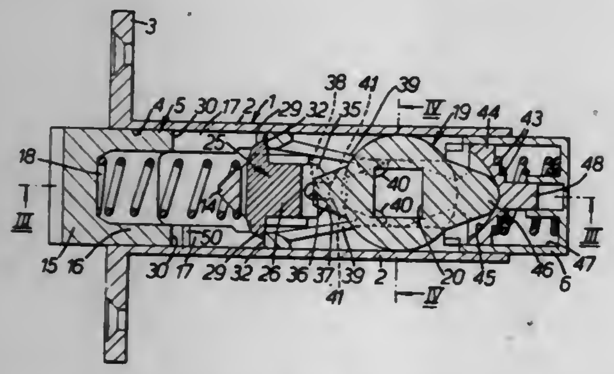
Roger Lucas, 106 Cours Albert-Thomas,
Lyon 8e, Rhone, France
Filed Nov. 13, 1969, Ser. No. 876,232
Claims priority, application France, Oct. 9, 1969,
6934884
Int. Cl. E05c *1/02*
U.S. Cl. 292—157 **5 Claims**



A door locking device in which an elongated vertically extending locking plate having a length substantially equal to the height of the door is mounted within a slot formed along one edge of the door to be movable from a locking position wherein the locking plate projects beyond the edge of the door and an unlocked position wherein the locking plate is withdrawn within the slot, behind the edge. The locking plate is connected to a vertically extending link rod by means of a set of short lugs connected, on the one hand, to the locking plate and connected, on the other hand, to the link rod. The said link rod is secured at the center to one end of a latch bolt operable to be displaced in a reciprocating horizontal motion. A vertically extending brace is centrally connected to the other end of the latch bolt and to the upper and lower ends of the locking plate. Return springs are provided at the top and bottom of the door, having one end fixed to the door and the other end fixed to one of the ends of the locking plate.

3,606,425
DOOR LATCHES

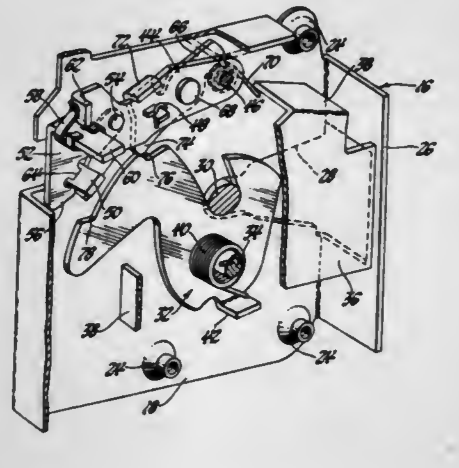
Michael Joseph James, Charlton Kings, Cheltenham, England, assignor to Micro & Precision Mouldings (Cheltenham) Limited, Cheltenham, England
Filed May 20, 1969, Ser. No. 826,185
Claims priority, application Great Britain, May 27, 1968,
25,325/68
The portion of the term of the patent subsequent to
Mar. 3, 1987, has been disclaimed
Int. Cl. E05c *1/16*
U.S. Cl. 292—173 **5 Claims**



A tubular mortice latch has a rotary actuating member for coupling to a door handle and an intermediate follower member. Both members pivot within a housing about parallel axes, and the actuating member engages and turns the follower member which in turn engages a bolt to withdraw the latter into the housing. There is a peg and slot connection between the members, and the slotted member is moulded from a resilient material with the slot having a reduced mouth so that during assembly it snaps on to the peg.

3,606,426
CLOSURE LATCH

Wieslaw S. Zaydel, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 19, 1970, Ser. No. 3,813
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **5 Claims**

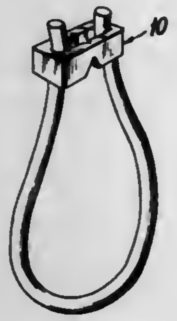


A vehicle body door lock includes a bolt pivotally mounted on a frame for movement between latched and unlatched positions and a detent carrier pivoted on the frame and carrying a pivoted locking member which is normally spring biased into engagement with a frame tab to lock the carrier against movement. A detent is pivoted to the carrier for unitary movement therewith and movement independently thereof. When the carrier is in locked position, a detent shoulder is normally located in the path of movement of a bolt shoulder to hold the bolt in latched position. A solenoid is operable to extend the armature thereof and engage the locking member to sequentially first release the locking member from engagement with the frame tab and then engage the locking member with the carrier to swing the carrier relative to the frame. The carrier moves the detent to a position wherein the shoulder thereof is out of the path of movement of the bolt shoulder to permit the bolt to move to unlatched position. When the solenoid is deenergized, a tension spring between the carrier and frame returns the carrier to its initial position and the locking member again engages the latch frame. The bolt shoulder ratchets past and into engagement with the detent shoulder when the bolt moves from unlatched to latched position. The detent moves independently of the carrier during such movement of the bolt, and the carrier remains locked to the frame.

3,606,427
POWDERED METAL FRANGIBLE SEAL

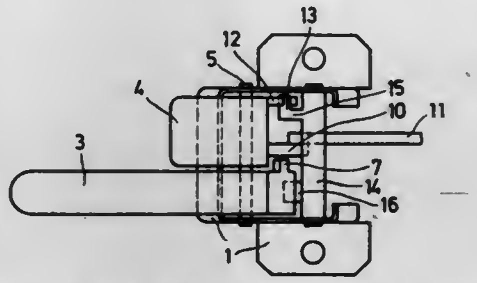
Francis A. O'Loughlin, Scotch Plains, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Apr. 27, 1970, Ser. No. 31,957
Int. Cl. B65d *33/34*
U.S. Cl. 292—307R **7 Claims**

A frangible seal is disclosed as including a powdered metal sleeve which includes a weakened area. The frangible seal is designed to firmly grip two or more members adjacent each other and upon the members being pulled away from each other fracture the sleeve along its weakened area to provide a visual indication of the members having been separated from each other.



3,606,428
SAFETY DEVICE FOR MOTOR VEHICLE DOOR LOCKS

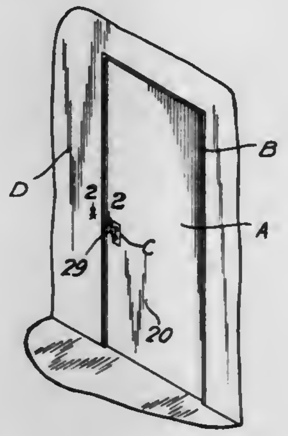
Karl Erck and Gunter Rafelt, Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed July 9, 1969, Ser. No. 840,278
Claims priority, application Germany, July 9, 1968,
P 17 03 776.2
Int. Cl. E05b *3/00;* **E05c** *1/04*
U.S. Cl. 292—336.3 **5 Claims**



A safety device for the door locks of motor vehicles having an inside operating lever with a safety button mounted adjacent and together with the operating lever and with the operating rod and coupling means for the safety button with an intermediate shaft which extends behind the operating lever.

3,606,429
ANTITHEFT LOCK CONSTRUCTION

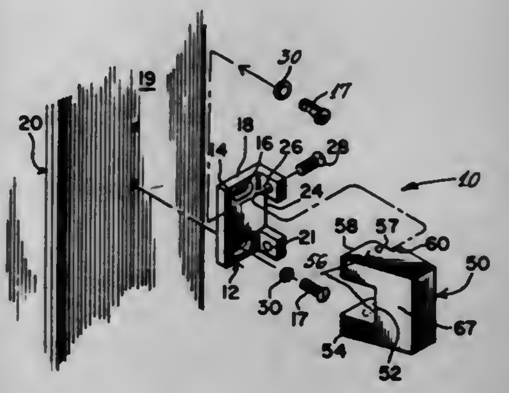
Charles E. Palmer, 10 Elizabeth St. S.,
Port Credit, Ontario, Canada
Filed June 16, 1969, Ser. No. 833,354
Int. Cl. E05b *15/02*
U.S. Cl. 292—340 **2 Claims**



The present disclosure relates to a safety lock plate which is mounted on the door edge confronting the jamb and which is formed with a rectangular or other shaped opening, through which the bolt passes. Integral with the plate at its inner edge parallel to the jamb is a flange which is bent back toward the jamb.

3,606,430
SPLIT LOCK KEEPER

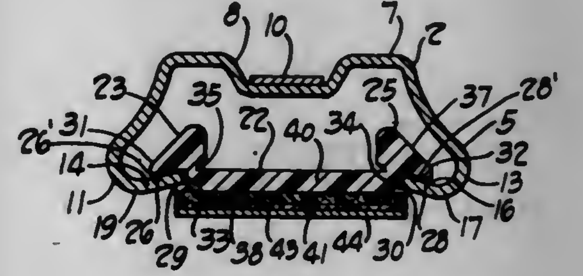
Ernest J. Parmel, Jr., Long Island City, N.Y., assignor to Traulsen & Co., Inc., College Point, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,927
Int. Cl. E05b *15/02*
U.S. Cl. 292—341.18 **7 Claims**



A two-part or split lock keeper includes a bracket or retainer mountable on a cabinet wall by screws. A U-shaped keeper body which engages the bolt of a lock on a door is attached to the bracket by further screws. Legs of the keeper body cover the screws holding the bracket. When the door is closed it covers and conceals screws holding the keeper body on the bracket.

3,606,431
VIBRATION ABSORBING MOLDING RETAINER CLIP

Alex Kunevicius, Independence, Ohio, assignor to Custom Trim Products, Inc., Cleveland, Ohio
Continuation-in-part of application Ser. No. 601,473, Dec. 13, 1966, now Patent No. 3,439,950, and a division of application Ser. No. 752,578, Aug. 14, 1968, which is a continuation-in-part of said application Ser. No. 601,473, which in turn is a continuation-in-part of application Ser. No. 477,273, Aug. 4, 1965. This application Feb. 24, 1970, Ser. No. 14,086
Int. Cl. B60j *11/00;* **B60r** *19/08;* **E04f** *19/02*
U.S. Cl. 293—1 **24 Claims**

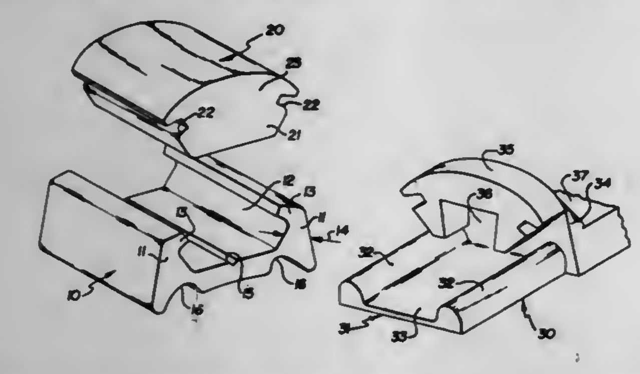


A cushioning clip for retaining metal and other moldings on vehicles and other surfaces which is self adhering, resists dislodgment due to vibration, shock, and the like, and obviates the need to puncture or otherwise provide apertures in the surface for the fasteners or holders which retain the molding in place.

3,606,432
PROTECTOR STRIP

Robert W. Honatzis, 545 W. 10th Ave., Vancouver, British Columbia, Canada
Filed Dec. 2, 1968, Ser. No. 780,342
Int. Cl. B60r *13/04*
U.S. Cl. 293—1 **1 Claim**

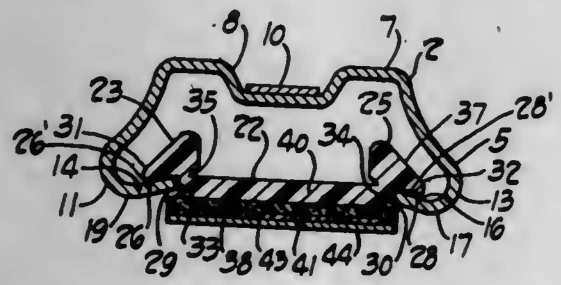
An automobile protector strip comprising an aluminum extrusion with an insert receiving groove on the side outermost from the vehicle contacting side adapted to form, with the panel of the vehicle to which it is secured, a



socket and an end cap for the strip having a plug shaped to be received within the socket.

3,606,433
MOLDING RETAINER CLIP

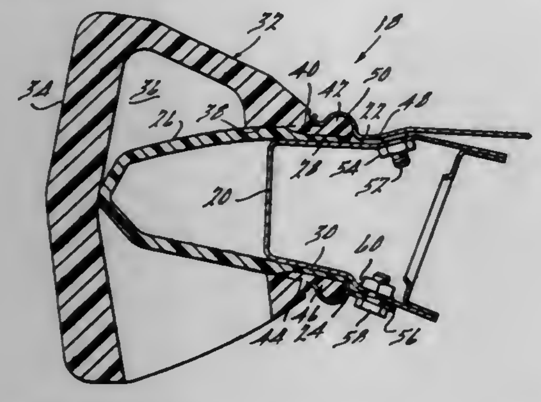
Alex Kunevicius, Independence, Ohio, assignor to Custom Trim Products, Inc., Cleveland, Ohio
Continuation-in-part of application Ser. No. 601,473, Dec. 13, 1966, now Patent No. 3,439,950, which is a continuation-in-part of application Ser. No. 477,273, Aug. 4, 1965, now abandoned. This application Aug. 14, 1968, Ser. No. 752,578
Int. Cl. B60j *11/00;* **B60r** *19/08;* **E04f** *19/02*
U.S. Cl. 293—1 **24 Claims**



A clip for retaining metal and other moldings on vehicles and other surfaces which is self-adhering, resists dislodgment due to vibration, shock, and the like, and obviates the need to puncture or otherwise provide apertures in the surface for the fasteners or holders which retain the molding in place.

3,606,434
RESILIENT BUMPER ASSEMBLY FOR A MOTOR VEHICLE

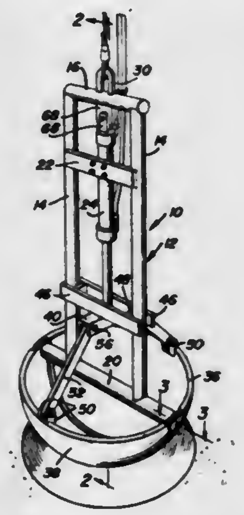
David W. Barton, Birmingham, and George H. Muller, Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 27, 1969, Ser. No. 853,350
Int. Cl. B60r *19/08*
U.S. Cl. 293—64 **9 Claims**



A resilient bumper assembly for a motor vehicle. This assembly includes a resiliently deformable bumper and at least one resiliently deformable bumper guard having a vertical dimension greater than the vertical dimension of the bumper. The bumper and bumper guard are secured to a vehicle structural member and to each other by one of a plurality of clamp arrangements. These clamps function without the necessity of fasteners extending through holes in the resilient members, but rather engage enlarged beads formed on the resilient members or the clamps are molded partially within these members.

3,606,435
BORE HOLE CLAM BUCKET

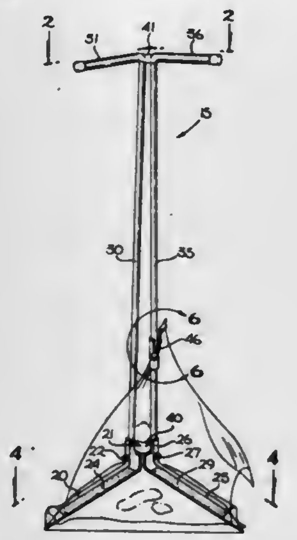
Alman A. Weber, P.O. Box 35564, Houston, Tex. 77035
Filed Oct. 20, 1969, Ser. No. 867,600
Int. Cl. B66c *3/00*
U.S. Cl. 294—70 **4 Claims**



An upstanding frame including a lower horizontal cross-bar to whose opposite ends corresponding portions of opposing quarter circular bucket sections are oscillatably supported for swinging movement about an axis extending longitudinally of the bar. The bucket sections are swingable from abutting positions defining an upwardly opening half spherical bucket toward open positions with remote portions thereof disposed on opposite sides of the axis of oscillation of the bucket sections swung upwardly whereby a jaw opening is formed between the lower opposing marginal portions of the bucket sections. An actuator is supported from the frame and operatively connected to the remote upwardly swingable portions of the bucket sections for swinging the latter between the open positions thereof and the closed abutting positions thereof.

3,606,436
RECEPTACLE DEVICE

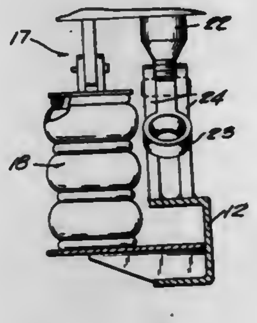
Robert D. Lynch, 3520 5th Ave., Los Angeles, Calif. 90018
Filed Mar. 10, 1970, Ser. No. 18,260
Int. Cl. A47f *13/08*
U.S. Cl. 294—19R **10 Claims**



Portable device for picking up small objects underfoot, having a pair of blade-like members secured in superincumbent relationship to the lower ends of a pair of operating rods and arranged for pincers-like movement upon manipulation of the rods. A limp bag is invertedly mounted with its mouth secured to the blade-like members. The blade-like members are placed to straddle the object and the rods manipulated to bring the members together beneath the bag and to close the bag, crossing of the members then urging the object into a sagging portion of the bag.

3,606,437
TRUCK TRACTOR CAB SUSPENSION SYSTEM

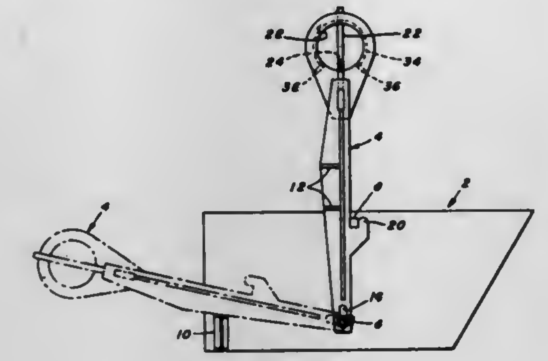
William G. Pierce, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Aug. 21, 1969, Ser. No. 852,020
Int. Cl. B62d *23/00*
U.S. Cl. 296—35 **3 Claims**



A suspension system for truck tractor cabs includes low rate cushion devices as front cab-to-chassis mounts and relatively rigid cab-to-chassis mounts placed near the pitch nodal axis of the tractor chassis, at the rear of the cab, thus substantially isolating the cab from the pitch of the tractor chassis.

3,606,438
SCRAP-BOX BAIL ADAPTED FOR ENGAGEMENT BY COIL LIFTER

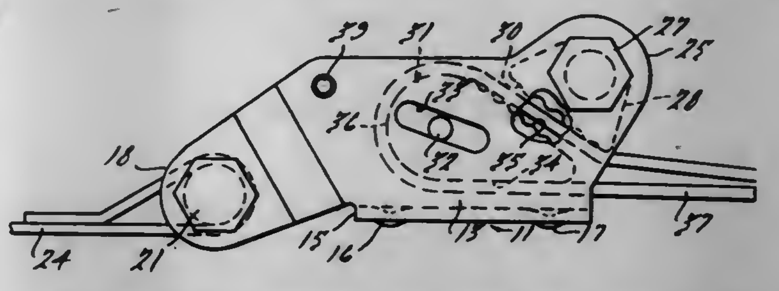
Paul Feczko, Gary, Ind., assignor to United States Steel Corporation
Filed Nov. 18, 1968, Ser. No. 776,651
Int. Cl. B66c *3/00*
U.S. Cl. 294—73 **2 Claims**



Disclosed is an improved lifting bail for containers such as industrial scrap boxes. The bail is constructed with a pair of parallel lifting eyes disposed normal to a conventional lifting eye in the spreader bar of the bail. The disclosed structure makes it possible for the bail to be manipulated by a conventional hoisting crane hook or by an auxiliary lifting means, such as a motorized coil lifter, attached to a conventional crane hook.

3,606,439
WEBBING GRIPPER

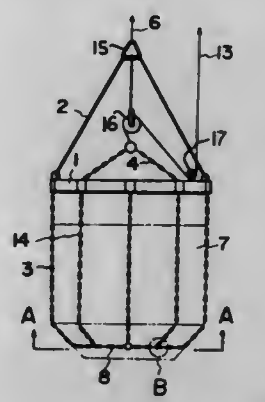
Louis W. Rutan, Clark Lake, Mich., assignor to Aeroquip Corporation, Jackson, Mich.
Filed Feb. 19, 1969, Ser. No. 800,618
Int. Cl. B66c *1/12*
U.S. Cl. 294—74 **1 Claim**



A device for adjusting the length of webbing legs in cargo slings. A U-shaped body has a wedge extending between the side walls, with pins guided by slots in these walls. A smooth surfact of this wedge faces the central body section and a serrated surface faces a similar serrated surface on a stationary pressure bar extending between the side walls. The webbing to be adjusted is wrapped around the rounded large end of the wedge and passes between the wedge and the pressure bar on one side, and the wedge and central body section on the other side. The slots are inclined, and tension on the webbing thus forces the wedge toward both the central body section and pressure bar to grip the webbing on both sides. A cross pin bridges the side walls adjacent the wide end of the wedge and prevents an excessive-sized loop from forming in the webbing should it be momentarily loosened.

3,606,440
SCRAP BLOCK INSERTION APPARATUS

Saburoji Ozeki, Tokyo, and Soichi Shimasaki and Osamu Kadota, Yokohama-shi, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed May 26, 1969, Ser. No. 827,870
Int. Cl. B66c *1/12*
U.S. Cl. 294—76 **7 Claims**

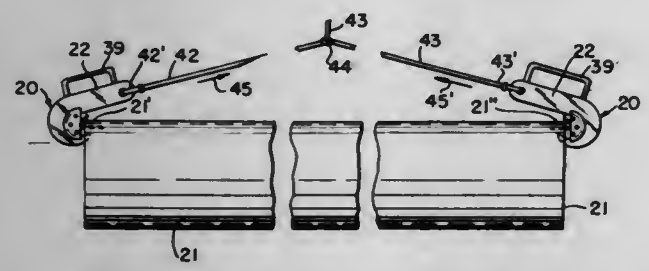


An improved recoverable apparatus for insertion of scrap blocks into a furnace, such as an electrical steel making furnace, wherein removable connecting pins are used to releasably secure the ends of the block holding chains together to retain the block. An auxiliary chain is coupled to the pins for removal of the pins to release the block in the furnace.

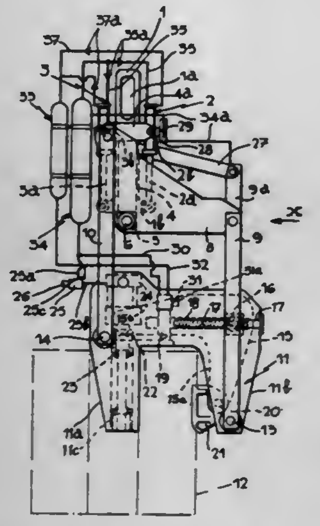
3,606,441
HOIST HOOK DEVICE

Leland M. Ridgely, 1711 Jacquelyn 21, Houston, Tex. 77055
Filed Nov. 12, 1969, Ser. No. 875,678
Int. Cl. B66c *1/34*
U.S. Cl. 294—78R **4 Claims**

The invention comprises a J-shaped hoist hook. The hook has a cylinder mounted in the apex of the hook, with the hook being rotatable relative to cylinder. The cylinder has a radial cut out to receive the outer edge of a cylindrical pipe, a curved plate is fixed to the cylinder along an edge of the radial cut out for engaging and supporting the underside of the edge of the pipe. The hook can rotate relative to the cylinder and pipe to adjust to different angles when lifting the pipe.



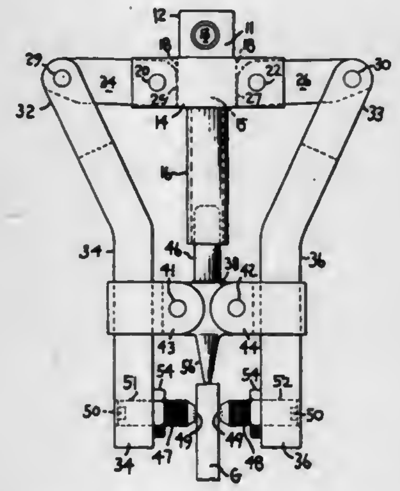
3,606,442
HANDLING AND SWIVELLING TONGS FOR REELS OF SHEET METAL
Ghislain Antoine-Jean-Marie Martelee, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz en abrége "Cockerill," Seraing, Liege, Belgium
Filed June 20, 1969, Ser. No. 835,120
Claims priority, application Belgium, June 27, 1968, 717,285
Int. Cl. B66c *1/44*
U.S. Cl. 294—88 **13 Claims**



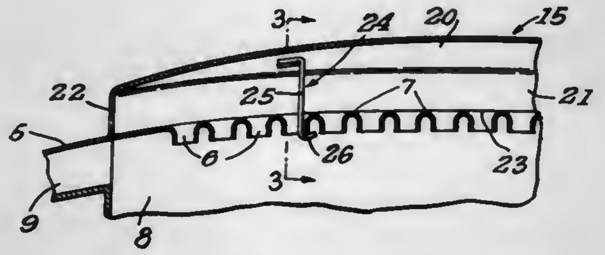
Tongs for handling and swivelling a coil of metal sheet from a vertical to a horizontal position and vice versa, comprise a suspension rod with an opening for a lifting hook. A sliding column is moved on and relative to the suspension rod by hydraulic suspension jacks, and two triangles are hingedly mounted at the base of the column near one apex. Vertical tie rods are pivotally connected to the other two corners of the triangles, and a gripping element is pivotally mounted at the lower end of the tie rods. The gripping element carries a locking jaw for locking the coil, and a compression spring acts on the locking jaw, while a hydraulic motor is provided for displacing the locking jaw against the action of this spring. A pivoting jack pivots the triangles and thus swivels the gripping element.

3,606,443
GLASS GRIPPING TONGS
Frank F. Painter, Tarentum, and Samuel L. Seymour, Oakmont, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 27, 1968, Ser. No. 787,337
Int. Cl. B66c *1/48*
U.S. Cl. 294—106 **5 Claims**

Tongs having a pair of lever arms pivoted to a lower tong member and extending beyond the lower tong member to carry glass engaging members, a pair of links pivoted between an upper tong member and one or the other tong arms and alignment means coupling said upper and lower tong members in such a manner to maintain the tongs in vertical alignment so that the glass engaging members at the lower end of the lever arms are horizontally aligned when the tongs engage a glass sheet suspended for thermal treatment.

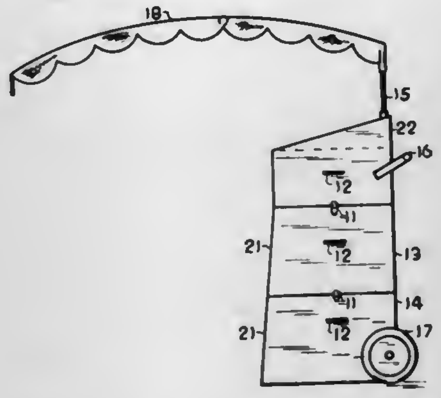


3,606,444
AIR SCOOP MEANS FOR AUTOMOTIVE VEHICLES
Howard M. Allenbaugh, Los Angeles, Calif., assignor to Louis Martin Majera, Norwalk, and Charles R. Goebel, Glendale, Calif., fractional part interest to each
Filed Sept. 4, 1969, Ser. No. 855,098
Int. Cl. B60h *1/30*
U.S. Cl. 296—1S **1 Claim**



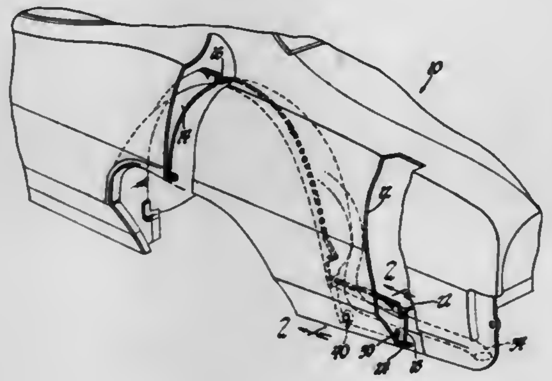
A snap-retention air scoop means operatively associated with either the ventilating system, or induction of air to service the engine of an automotive vehicle, or both.

3,606,445
CAMPING CABINET
William C. Wunderlich, 8602 Glenhaven St., San Diego, Calif. 92023
Filed Aug. 4, 1969, Ser. No. 847,015
Int. Cl. B60p *3/00*
U.S. Cl. 296—23 **1 Claim**



A camping cabinet consisting of a plurality of vertically stacked sections each having a storage space therein with separate handles, each section being locked to an adjacent section; the top section having a wide handle and the bottom section having a pair of wheels for portability; the top section having a pair of extending spring brackets for cooperation with a canopy frame; the canopy frame carrying a canopy extending over the cabinet; the bottom two sections having a front taper for gravity closing doors thereon.

3,606,446
DRAIN HOLE PLUG ASSEMBLY
James D. Leslie, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 27, 1969, Ser. No. 869,793
Int. Cl. B62d *39/00*
U.S. Cl. 296—28R **7 Claims**

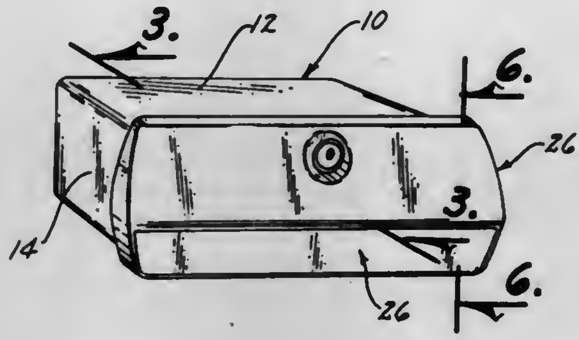


A plug assembly to seal a drain hole opening in a vehicle body panel, the plug assembly including a retainer plug having a plug body portion which is inserted into the drain hole of a panel and secured therein, the retainer plug supporting a flexible washer serving as a flap valve which is retained against the outer face of the panel by an annular flange of the retainer plug, with the flexible washer being protected from heat by an annular flange on the plug retainer which extends outwardly and is spaced from the flexible washer.

ERRATA

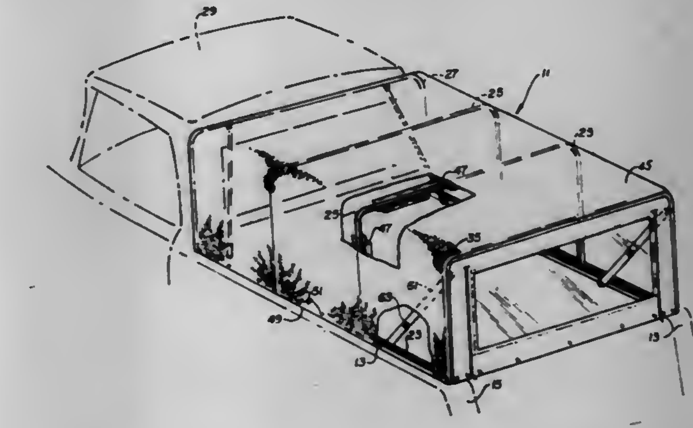
For Classes 296—37 and 339—14 see:
Patent Nos. 3,606,437 and 3,606,155

3,606,447
VEHICLE STEREO TAPE AND GLOVE COMPARTMENT
Ronald A. Ryding, Woodland Hills, Calif. (2831 Topaz Drive, Apt. C, Riverside, Calif. 92507)
Filed June 30, 1969, Ser. No. 837,436
Int. Cl. B60r *7/00*
U.S. Cl. 296—37 **4 Claims**



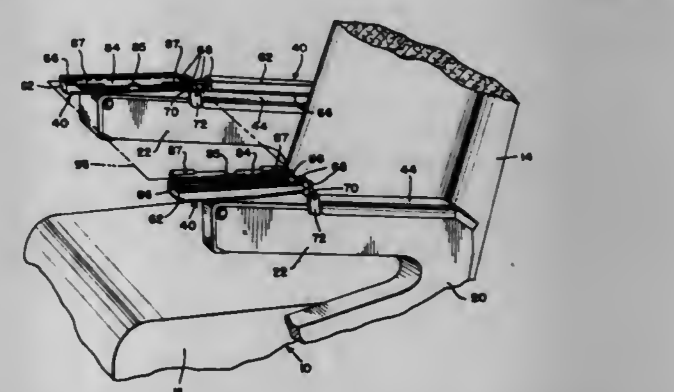
An enclosure for tape players and tape cartridges having a reversible mounting bracket permitting the compartment to be mounted under the dashboard of the vehicle or on the tunnel over the power drive shaft. The mounting bracket provides a theft proof installation. The interior of the compartment is provided with upstanding cartridge guide shoulders for maintaining the tape cartridges in a stored condition on opposite sides of the tape player. Appropriately shaped depressions are formed in the inner surface of the compartment door for holding refreshment containers or the like.

3,606,448
TRUCK BED COVER
John W. Walker, Arroyo Grande, Calif., assignor to Jack Vincent Feather
Filed Aug. 29, 1969, Ser. No. 854,168
Int. Cl. B62d *25/00*
U.S. Cl. 296—105 **1 Claim**



A collapsible pickup truck bed cover supported by U-shaped cover support bows having their lower ends slidably engaged to channel members secured to the rails of the truck bed.

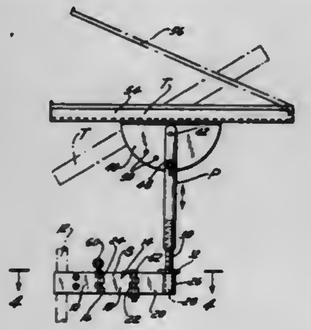
3,606,449
TRAY HOLDER FOR SEATS
Clifford Wayne Whybrew, Saugus, and Ralph G. Marrujo, Valencia, Calif., assignors to Fairchild Hiller Corporation, Bay Shore, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,875
Int. Cl. A47c *7/68*
U.S. Cl. 297—115 **4 Claims**



A tray-holding arrangement for use in conjunction with vehicle seats in which each of the arms of a seat is provided with a dual, or paired, armrest arrangement. The upper armrest of each pair is movable away from lower, stationary armrest and includes a storable shelf which can be folded outwardly for supporting and holding a tray.

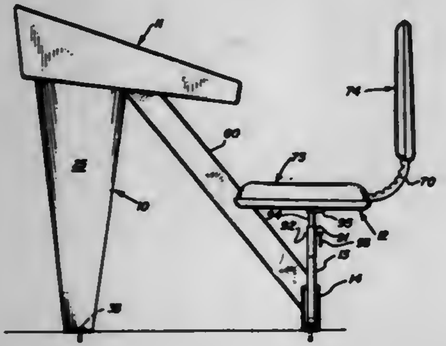
3,606,450
WHEELCHAIR TABLE-DESK
Earl K. Sedgwick, 42 Carlton Place, Rutherford, N.J. 07073
Filed July 7, 1969, Ser. No. 839,224
Int. Cl. A47b *37/02*
U.S. Cl. 297—149 **10 Claims**

A wheelchair table-desk comprising a table-desk top, spaced posts mounting said top and a support for the same, the support and mounting posts being constructed and designed to enable a handicapped person to (a) adjustably move the table top horizontally to a substantial variety of positions, (b) to move the table top to vertically adjusted positions within a wide latitude, (c) to adjustably move the same to a number of inclined positions, and (d) to permit ready detachable attachment of the table top to and from a wheelchair, all adjustments and operations being capable of being accomplished by hand manipulation of the parts of the table-desk by the patient rapidly and without resort to any tools or aids.



3,606,451
COMBINATION DESK AND SEAT CONSTRUCTION

James B. Brownfield and Edward E. Nation, Cheyenne, Wyo., assignors to Cannon Aeronautical Center, Cheyenne, Wyo.
Filed Mar. 19, 1969, Ser. No. 808,553
Int. Cl. A47c *39/00*
U.S. Cl. 297—174 **15 Claims**

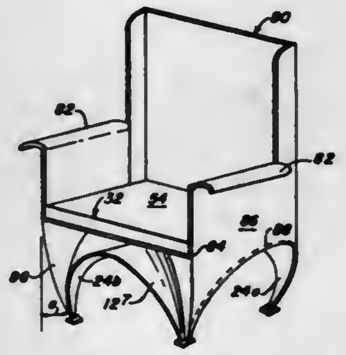


The combination desk and seat construction comprises a plurality of deck tops located side by side, supported by a vertical standard, a brace connected to adjacent desk tops and engaging a base fastened to a floor rearwardly of standards, a seat for each desk mounted on an inclined supporting bar, two of said bars extending sidewise in opposite directions from one base for supporting two seats. Each standard comprises a plurality of vertically elongated generally triangularly shaped panels connected together and providing an upper edge for supporting the major width of a desk top and a relatively small lower end bearing on the floor. Each seat comprises an integrally formed curved frame which has similar cushioned members mounted on opposite sides of one end to form a seat and has similar cushioned members mounted on opposite sides of the other end to form a backrest.

3,606,452
VEHICLE SEAT

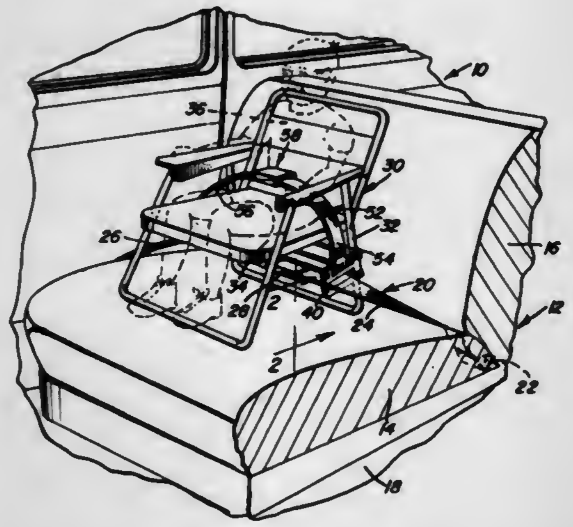
William J. Riffe, Scott Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed Feb. 2, 1970, Ser. No. 7,652
Int. Cl. B60r *21/10*
U.S. Cl. 297—216 **28 Claims**

An armored seat for an armored vehicle such as a tank, jeep, airplane, helicopter or the like is disclosed. The armored vehicle has a floor and the seat has a base provided with a side-to-side barrel vault intersecting a front-to-back barrel vault to provide a plurality of resilient base legs mounted on the floor and for crash attenuation. A seat portion is secured to the base. The base provides a curved surface wherein the angle of obliquity with a normal to the surface point at which a projectile strikes the surface is greater than zero, thereby deflecting from the seat portion the projectile and the resulting spall from the surface point.



3,606,453
SEAT BELT EXTENSION ASSEMBLY FOR CHILD'S CHAIR

James J. Cicero, 321 N. 7th St., River Falls, Wis. 54022
Filed Oct. 29, 1968, Ser. No. 771,410
Int. Cl. A47d *1/10*
U.S. Cl. 297—254 **9 Claims**

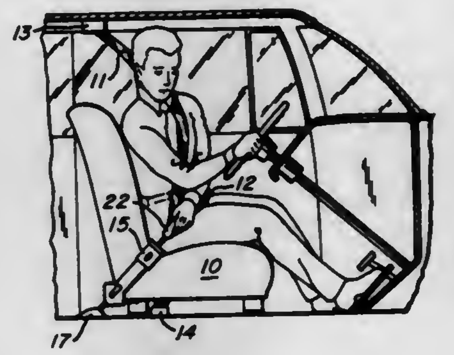


An elongated anchor for positioning beneath the seat portion of a child's seat supported from a vehicle seat above the cushion and forward of the backrest thereof. The anchor may or may not be secured to the child's seat, but includes a supplemental seat belt with opposite end portions attached to opposite ends of the anchor and for securement over the lap of a child disposed in the seat. Also, the anchor includes lower opposite end portions for anchored engagement with the conventional vehicle seat belt, whereby the latter will anchor the child's seat to the vehicle seat and the supplemental seat belt will anchor the child in his seat.

3,606,454
SEAT BELT

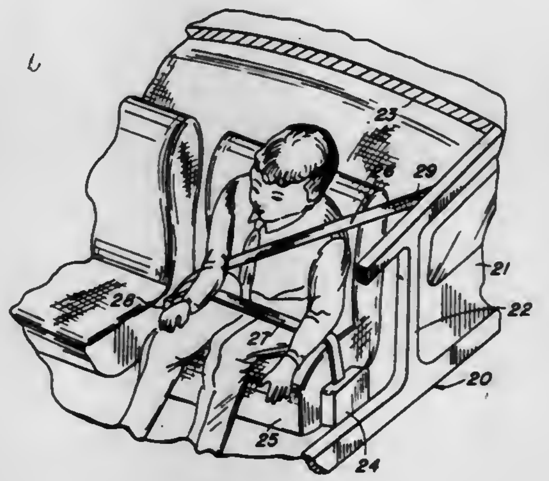
Harold G. Dorn, 4717 Manchester Drive, Middletown, Ohio 45042
Filed Aug. 21, 1969, Ser. No. 851,822
Int. Cl. B60r *21/10*
U.S. Cl. 297—385 **13 Claims**

A seat or safety belt device in which one of the usual pair of interconnecting belt segments is eliminated. The single belt element used is adapted for insertion in a receptacle installed between a seat and backrest, which receptacle is uniquely adapted to accommodate adjustment of the seat. Manipulative means on the belt element utilized permits the locking and release of the belt using only one hand.



3,606,455
SAFETY HARNESS

Andrew G. Carter, 50 Market NW., Grand Rapids, Mich. 49502
Filed Apr. 29, 1969, Ser. No. 820,079
Int. Cl. A62b *35/00;* **B60r** *21/00*
U.S. Cl. 297—386 **3 Claims**

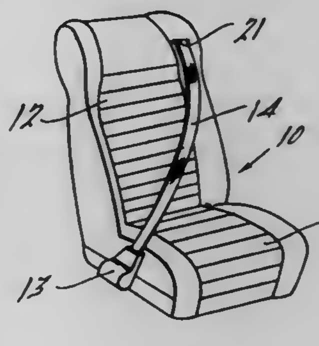


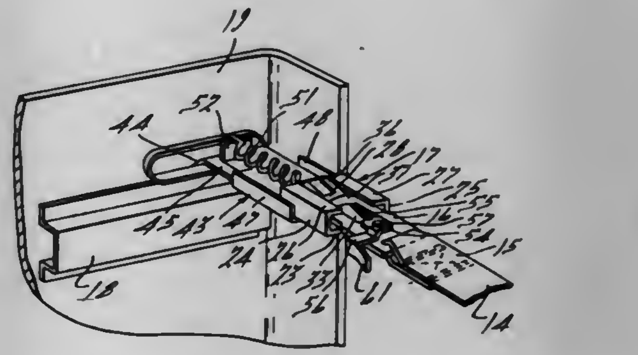
A safety harness formed by a buckle interposed on a continuous belt between a roof terminal at one side of a seat and a floor-mounted locking take-up on the same side, the buckle being engageable with a floor-mounted terminal on the opposite side of the seat. The buckle has releasable restraint against relative movement along the belt toward the take-up, providing resistance to a movement of the belt through the buckle which extends the section of belt between the buckle and the roof terminal.

3,606,456
SEATBELT SYSTEM

Dennis C. Cazabon, Grosse Pointe, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 3, 1970, Ser. No. 60,488
Int. Cl. A44b *11/20;* **A47d** *17/00;* **B60r** *21/10*
U.S. Cl. 297—388 **9 Claims**

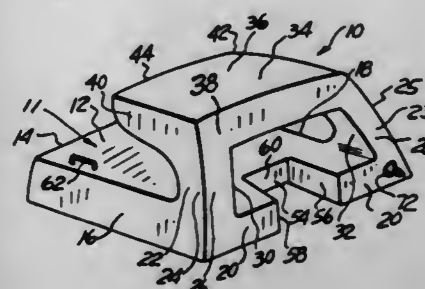
A seatbelt system in which the buckle device adapted to receive a tongue member secured to the free end of a seatbelt is mounted on a seat frame and is enclosed, except for an access aperture, by the heat upholstery trim. The buckle device is slidably mounted on a guide and is springloaded to be urged into a retracted position. The tongue member when coupled to the buckle device also becomes concealed. Upon a pull being exerted on the belt in a direction away from the seat trim, the coupled buckle device and tongue member are pulled through the aperture a sufficient distance to expose a latch release actuator mounted on the tongue member. This actuator is operable to disengage the latch plate of the buckle device from the tongue member to permit the latter to be uncoupled from the buckle means.





3,606,457
PASSENGER RESTRAINT DEVICE

Robert R. Reay, Grosse Pointe Woods, Mich., assignor to International Engineering Service, Inc., Birmingham, Mich.
Filed Sept. 5, 1969, Ser. No. 855,555
Int. Cl. B60r *21/10*
U.S. Cl. 297—390 **8 Claims**

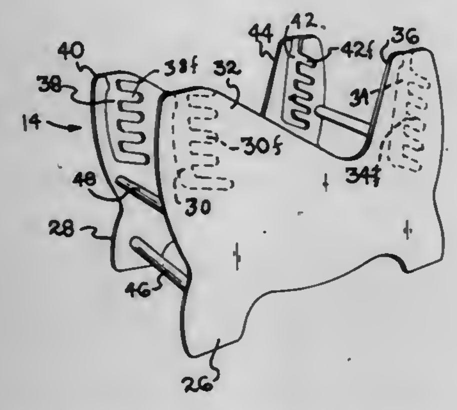


An inflatable passenger restraint device for restraining an occupant of a vehicle seat during sudden deceleration of the vehicle including a seat member for positioning beneath the passenger, a pair of side members extending upwardly from the seat member and a shield joining the upper ends of the side members and located in front of a portion of the upper torso of the seated passenger. A pair of loops are formed on the lateral edges of the seat member for threading a conventional vehicle lap belt therethrough, holding the device and the seated passenger in position.

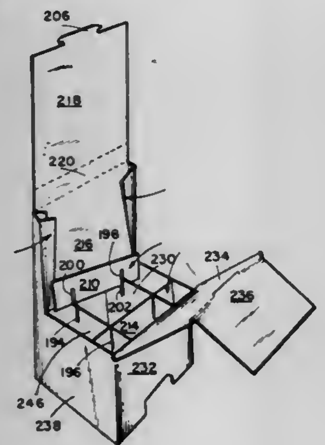
3,606,458
LEG SUPPORTING STOOL

Alvin J. Attinger, 749 W. State Line Road, Toledo, Ohio 43612
Filed June 9, 1969, Ser. No. 831,339
Int. Cl. A47c *7/50, 9/12*
U.S. Cl. 297—439 **5 Claims**

A stool for supporting the legs of a person sitting in a chair, having a pair of opposed footed side members joined together by cross bars, there being a vertical groove and a series of downwardly inclined finger extensions from the groove on the forward and rearward portions of the inner face of each side member, a generally horizontal leg receiving cushion of L shape in longitudinal cross section with the base of the L shape directed upwardly to provide a foot abutting surface, pins extending outwardly and laterally from the lower edges of the cushion near the ends thereof, said pins being adapted to enter selected fingers of the grooves for holding the cushion at the desired height and angle.



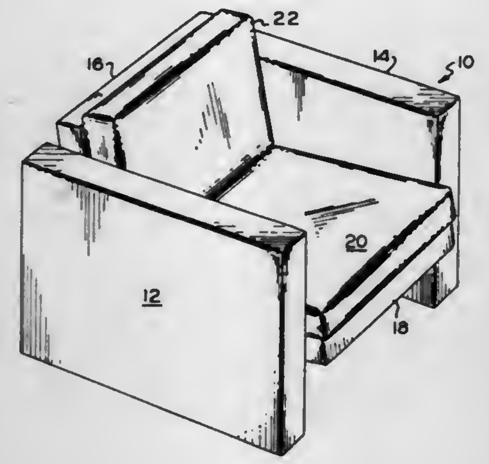
3,606,459
COLLAPSIBLE CHAIR OF IMPROVED STRENGTH
Martin Krone, 60 E. 42nd St.,
New York, N.Y. 10017
Filed Aug. 21, 1969, Ser. No. 851,884
Int. Cl. A47c *7/00*
U.S. Cl. 297—440 **6 Claims**



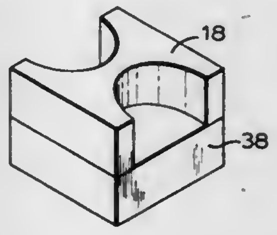
A collapsible chair of improved strength, made of suitable stiff sheet material such as relatively stiff cardboard or corrugated paperboard, formed of a blank which has been adapted by means of a plurality of fold, cut and score lines in such a way that when the blank is folded along the fold lines a chair having a reinforced back will be defined thereby, the cut lines forming wing sections imparting additional reinforcement to the back, the score lines defining removable sections which, when removed, are effective to simultaneously form supports for the seat and act as a removable lock for the chair.

3,606,460
FURNITURE CONSTRUCTION
Michael J. Shannon, 130 Greenwood Ave.,
Bend, Oreg. 97701
Filed Jan. 21, 1969, Ser. No. 792,468
Int. Cl. A47c *4/02, 7/00, 7/54*
U.S. Cl. 297—445 **14 Claims**

A furniture construction wherein a plurality of slab-like members having a box-like construction are edge-glued together at butt joints with high strength adhesive to form various articles of furniture such as chairs, sofas, beds, tables, dressers and the like. Each slab-like member is composed of a sandwich including outer layers of semi-rigid paper, wood or other thin sheet material separated by an inner filler material such as cardboard or other honeycomb or cellular material and a laterally rigid edge strip.



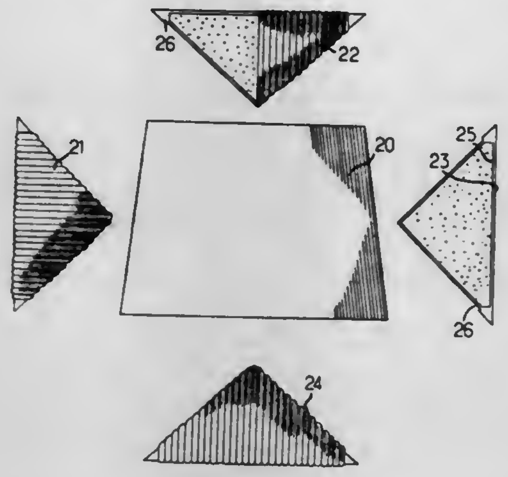
3,606,461
MODULAR FURNITURE
Raymond Moriyama, 56 Indian Grove,
Toronto 154, Ontario, Canada
Filed Nov. 3, 1969, Ser. No. 873,371
Int. Cl. A47c *1/12, 13/00, 7/02*
U.S. Cl. 297—445 **10 Claims**



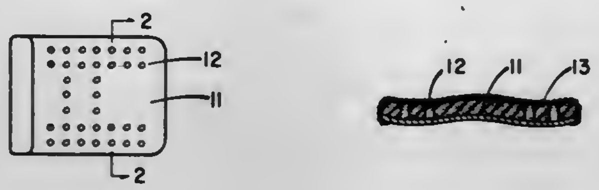
Modular furniture wherein the dimensions of each piece of furniture within a grouping are based on the dimensions of a cube, a one-half cube, or a one-quarter cube. The modular furniture may comprise a base element and a furniture function defining element in juxtaposed position thereto; and at least two of the effective dimensions of length, width and height of any one of the structural elements which goes to make up the modular furniture will equal at least two of those dimensions in another one of the structural elements which also goes to make up the modular furniture.

3,606,462
STRAW PLATE FOR PIECE OF FURNITURE SUCH AS CHAIR AS WELL AS CHAIRS FITTED WITH SAID PLATE
Pierre Bruniaux, 8 Rue des Bouchers,
Cambrai, Nord, France
Filed Jan. 3, 1969, Ser. No. 794,470
Claims priority, application France, Apr. 4, 1968,
147,013; Sept. 23, 1968, 167,227
Int. Cl. A47c *7/02*
U.S. Cl. 297—452 **18 Claims**

Straw plate for a piece of furniture such as a chair, made of as many free units as the pattern of the straw work desired necessitates, each unit being covered with coating fibre, adequate means being provided for the assembly of the covered units between them, which allows to get rid of the manpower required for usual straw work in which covering fibres interlace, while a similar appearance of the chair plate is obtained when finished, said plate being self-bearing.

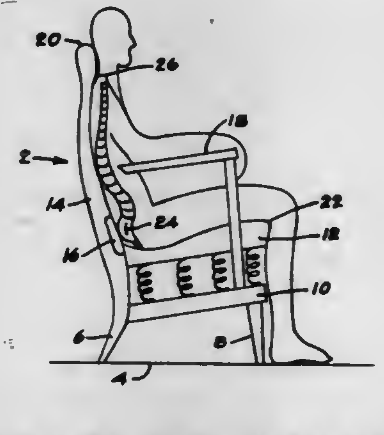


3,606,463
VEHICULAR SEATING SYSTEM USING BOUNCING PUTTY
William Thomas Brooks, Midland, Mich., assignor to
Dow Corning Corporation, Midland, Mich.
Filed May 21, 1969, Ser. No. 826,561
Int. Cl. A47c *27/20;* **B60n** *1/06*
U.S. Cl. 297—455 **6 Claims**



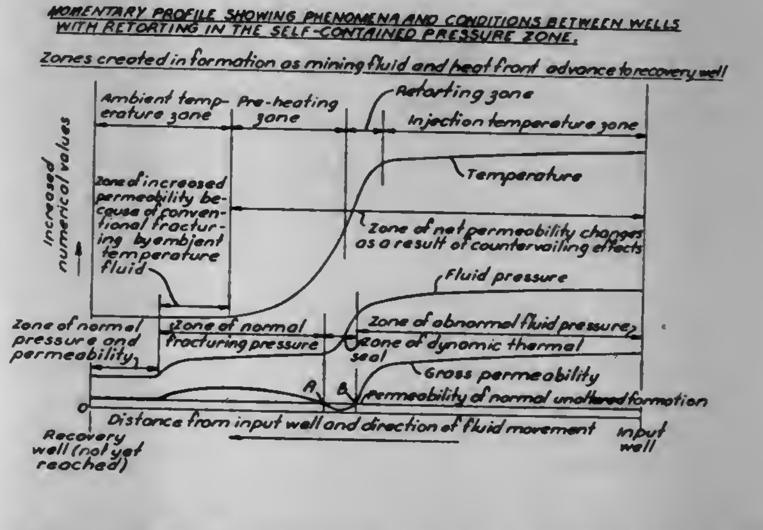
A vehicular seating system which comprises a rigid backing member supporting a cellular cushion of elastomeric material having a plurality of voids extending through the cushion, the voids being filled with silicone bouncing putty resiliently confined by the elastomer. The system is suitable for both land vehicles and aircraft and serves to limit injuries.

3,606,464
CHAIR
Theodore K. Arbuthnot, 3233 NE. 34th St., Apt. 1210,
Fort Lauderdale, Fla. 33308
Filed Mar. 24, 1969, Ser. No. 809,562
Int. Cl. A47c *7/00, 7/20*
U.S. Cl. 297—460 **6 Claims**



A chair having the length of the seat approximately equal to the distance from the front of the seat to the chair to the floor, with the sacral brace tilting backward at an angle of 95° from the floor to the sacral brace to support the sacrum, the seat tilting downwardly from the front of the seat to the back of the seat between five and eight degrees of declination, arm rests parallel to the seat with the relationship of the distance from the back of the arm rest to the back of the seat and the back of the seat to the floor at a ratio of three to five, and the back of the chair tilting backward at an angle of one hundred degrees from the floor to the back of the chair.

3,606,465
METHOD OF RECOVERING MINERAL VALUES FROM AN UNDERGROUND FORMATION
Alden W. Hanson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 12, 1969, Ser. No. 806,606
Int. Cl. E21b *43/24*
U.S. Cl. 299—4 **19 Claims**

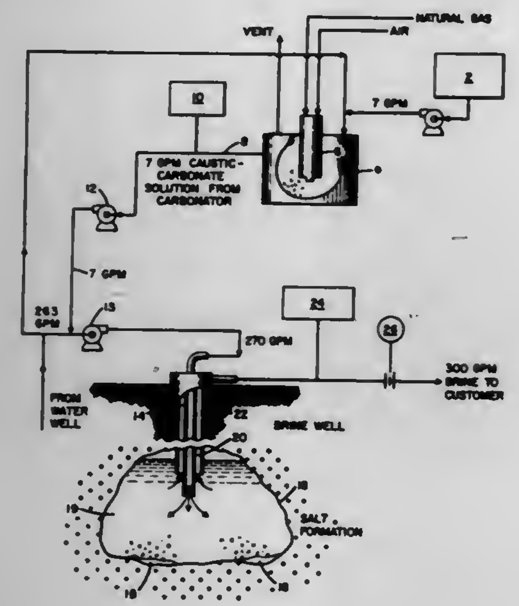


A heated fluid-pressurized zone in a substantially non-permeable underground earth formation, such as a clay-type shale, is substantially dynamically self-containing as to pressure and is largely retentive of fluids so long as it remains at a temperature at least 10 centigrade degrees, and preferably at least 100 centigrade degrees, above the ambient temperature of the formation. Such a self-contained zone when substantially static in size is useful as a storage place for gaseous or liquid materials such as natural gas, or brine. Such a self-contained, heated, fluid-pressurized zone, most generally when dynamically expanding, is useful in a process for mining hydrocarbon deposits, e.g., shale, or soluble mineral deposits, in a process wherein the mineral values are separated from the matrix material by heat and/or solvent action within the self-contained zone, and are taken up by the mining fluid employed for pressurization and heat transfer, with or without concurrent retorting on account of the temperature of the mining fluid or partial in situ combustion on account of oxygen supplied to carbon, hydrocarbon, and metallic sulfide material in the underground formation, and thereafter mining fluid and mineral values are recovered from the zone by means of recovery wells, or possibly, the injection well itself. The self-contained heated, fluid-pressurized zone is created by injecting at least 20,000 gallons of a mining fluid, such as, water, brine, oil or sulfuric acid, into a borehole in a substantially non-permeable underground formation at least 1000 feet deep over a period of at least 30 days with no more than temporary pumping stoppages, during which the pressure against the formation is substantially not relieved, and the mining fluid at the wellhead has a temperature at least 100 centigrade degrees above the temperature of the underground formation. Typically, pumping of a much larger volume is carried out over a one year period or more. The underground formation critically has an inherent permeability not substantially greater than a clay-type shale such as the Antrim shale.

3,606,466

SUBTERRANEAN BRINE PURIFICATION

Dudley P. Fernandes, Ypsilanti, Mich., assignor to Marathon Oil Company, Findlay, Ohio
Filed Dec. 4, 1969, Ser. No. 882,240
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 7 Claims

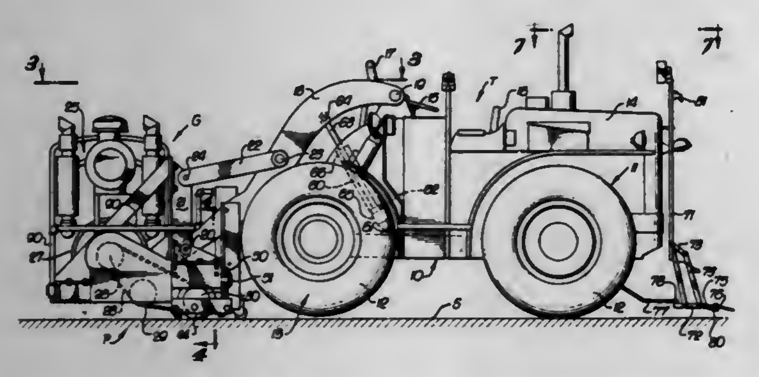


To remove impurities (largely calcium chloride and magnesium chloride) from brine recovered from the solution mining of sodium chloride deposits, alkali metal carbonate and alkali metal hydroxide are added to the water injected into the formation to dissolve the salt. The calcium carbonate and magnesium hydroxide thus formed will precipitate and settle within the salt cavity. Thickening agents or other coagulants can optionally be used to speed coagulation and settling.

3,606,467

MACHINES FOR CUTTING GROOVES IN CONCRETE AND SIMILAR ROADWAY SURFACES

Frank L. Christensen and Takeshi Mori, Salt Lake City, Utah, assignors to Christensen Diamond Products Company, Salt Lake City, Utah
Filed Aug. 19, 1969, Ser. No. 851,193
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 16 Claims

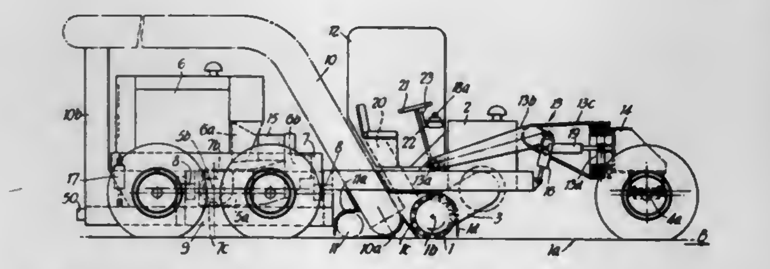


A four wheel vehicle carries a grooving unit that rotates a gang of saw discs or cutters in contact with a concrete pavement to cut parallel grooves therein to a desired depth. The grooving unit can be raised from the pavement to permit all four wheels of the vehicle to engage the roadway for transporting the vehicle rapidly between locations. The grooving unit is lowered to contact its saw discs with the pavement and elevate a pair of vehicle wheels (such as non-steerable wheels) from the pavement so that the entire weight of the vehicle and grooving unit is supported by the pavement engaging portions of the grooving unit and the other pair of steerable vehicle wheels, thereby insuring ample cutting weight and force of the saw blades against the pavement while the entire combination is moved by the powered steerable wheels along the pavement.

3,606,468

MACHINES FOR PLANING ROAD-LIKE SURFACES

William James Walker, Pontefract, and John Halbert, Ossett, England, assignors to British Jeffrey-Diamond Limited, Wakefield, Yorkshire, England
Filed Sept. 29, 1969, Ser. No. 861,555
Claims priority, application Great Britain, Oct. 3, 1968, 47,050/68
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 7 Claims

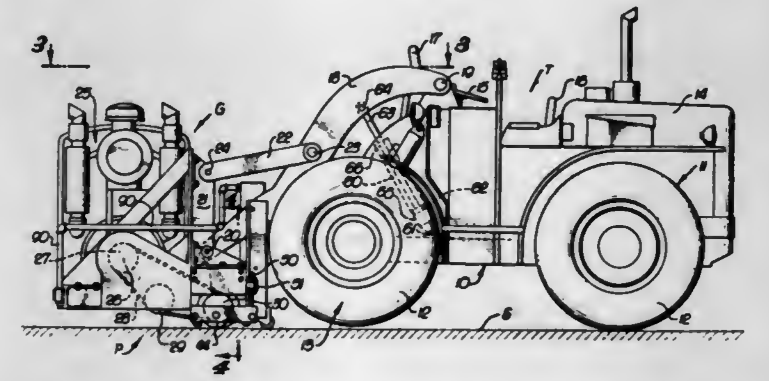


A machine for planing a road-like surface includes a cylindrical cutting element incorporating cutting pick means. The cutting element is mounted in said machine for rotation about the longitudinal axis of the element and is mounted in such manner that the cutting pick means can be brought into engagement with the road-like surface.

3,606,469

APPARATUS FOR CUTTING CONCRETE AND SIMILAR ROADWAY SURFACES

Warren J. Hughes, Centerville, Utah, assignor to Christensen Diamond Products Company, Salt Lake City, Utah
Filed Sept. 5, 1969, Ser. No. 855,538
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 20 Claims

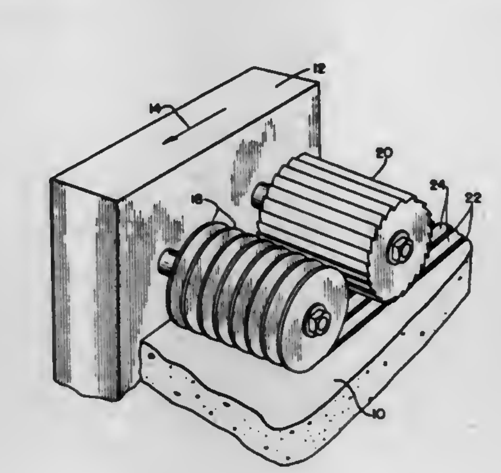


A four wheel vehicle carries a cutting unit that rotates a gang of saw discs or other cutters in contact with a concrete pavement to perform a cutting action thereon, such as to cut parallel grooves in the pavement to a desired depth. The cutting unit is disposed behind the vehicle rear wheels, with the cutters located between such wheels, a power source of the cutting unit rotating the cutters. The cutting unit can be raised from the pavement to permit all four wheels of the vehicle to engage the roadway for transporting the vehicle rapidly between locations. It can be lowered to contact its cutters with the pavement and elevate the vehicle rear wheels from the pavement so that the entire weight of the vehicle and cutting unit is supported by the pavement engaging portions of the cutting unit and the vehicle steerable front wheels, thereby insuring ample cutting weight and force of the cutters against the pavement while the entire combination is moved by the powered steerable wheels along the pavement.

3,606,470

ROCK SAMPLING

Philip Blum, Lexington, Mass., assignor to National Research Corporation
Original application Jan. 24, 1967, Ser. No. 611,414. Divided and this application Aug. 6, 1968, Ser. No. 768,942
Int. Cl. B28d *1/18;* **E21c** *13/00*
U.S. Cl. 299—67 4 Claims

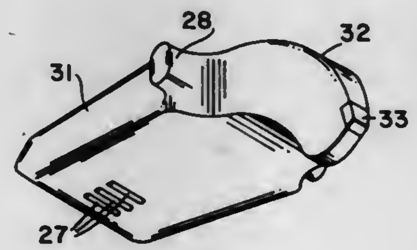


An apparatus for sampling rock and other brittle materials and for controlling resultant particle sizes. The device includes grinding means for cutting grooves in the rock surface and to provide a grouping of thin, shallow, parallel ridges and cutter means to reduce these ridges to a powder specimen. Collection means is provided for the powder.

3,606,471

TRENCHING DEVICES

Clifford J. Evans, Glen Rose, Tex., assignor to Jetco, Inc., Alhambra, Calif.
Filed Mar. 25, 1969, Ser. No. 810,214
Int. Cl. E21c *37/18;* **E02f** *9/28*
U.S. Cl. 299—79 4 Claims



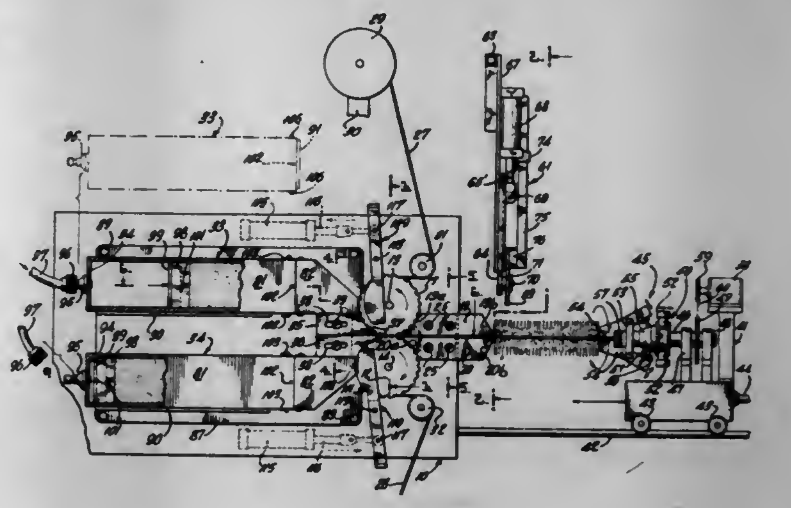
A curved tooth for use on a moving excavation apparatus having a tapered contact point of hardened material which is about one-half to one-fourth the width of the shank portion of the body of the tooth, the thickness of the digging portion being non-tapering and at least as thick as the shank portion of the body.

3,606,472

APPARATUS FOR MANUFACTURING ARTICLES SUCH AS BRUSHES AND SIMULATED TREE BRANCHES

Edward J. Rutkowski, Old Forge, and Edward R. Johnson, Levittown, Pa., assignors to Poloron Products, Inc., New Rochelle, N.Y.
Filed Jan. 27, 1970, Ser. No. 6,134
Int. Cl. A46d *9/00*
U.S. Cl. 300—2 12 Claims

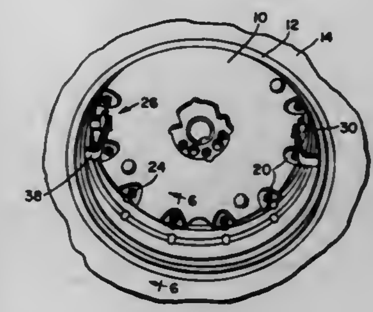
Apparatus for manufacturing simulated tree branches, brushes and the like utilizing picker wheels, means for continuously feeding wires about said wheels with the wires emerging from between and tangentially of said wheels and bristle feeding means for feeding bristles to said picker wheels wherein the feeding means includes a hopper and means for interchanging hoppers without interrupting operation of the apparatus. When hoppers are used in connection with each picker wheel, means are employed for selectively controlling the bristles fed from each of the hoppers to provide variations in color, contour and the like.



3,606,473

ADJUSTABLE WHEEL AND RIM ASSEMBLY

Norman Frederick Lemmon, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Nov. 5, 1969, Ser. No. 874,137
Int. Cl. B60b *23/12*
U.S. Cl. 301—9TV 1 Claim



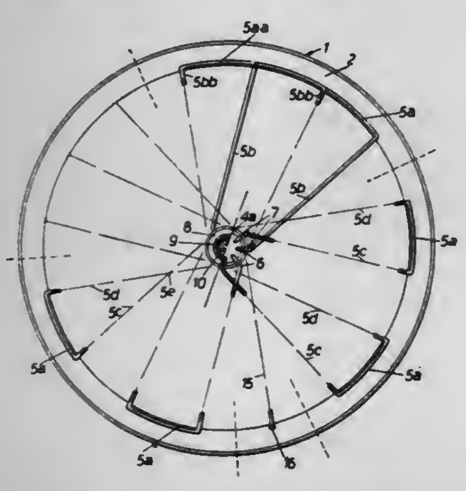
A rim having axially spaced apart seats on its inner periphery is selectively axially positionable on a wheel by means of releasable seat-engaging clamps and means cooperates between the wheel and rim to guide the rim axially during shifting and to prevent axial escape of the wheel from the rim.

3,606,474

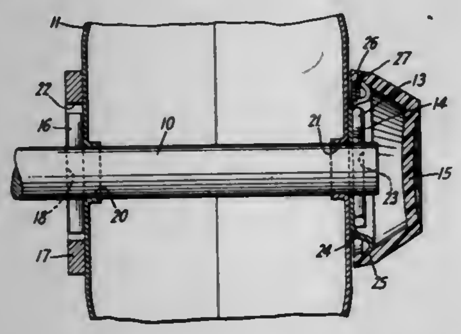
WHEELS

Ian G. Meiklejohn, Kirkcaldy, Fife, Scotland, assignor to I. G. Meiklejohn & Company Limited, Kirkcaldy, Fife, Scotland
Filed June 30, 1969, Ser. No. 837,515
Claims priority, application Great Britain, July 3, 1968, 31,815/68
Int. Cl. B60b *1/04*
U.S. Cl. 301—60 9 Claims

A wire-spoked wheel of the type used on perambulators, golf caddie carts, cycles and the like, wherein a plurality of wire spokes engage a rim and extend substantially radially to an axle bearing assembly comprising a hub tube and sleeving within the hub tube, the inner end portions of the spokes being received in apertures in the hub tube and having axial portions anchored between the sleeving and the hub tube so that the rim is rigidly supported on the axle bearing assembly, the construction obviating the need for threaded nipples engaging the rim and the spokes.

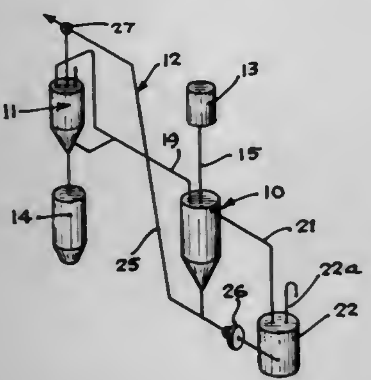


3,606,475
WHEEL ASSEMBLY
Carter E. Quisenberry, Olney, Ill., assignor to
AMF Incorporated
Filed Aug. 6, 1969, Ser. No. 847,911
Int. Cl. B60b *27/06*
U.S. Cl. 301—112 5 Claims



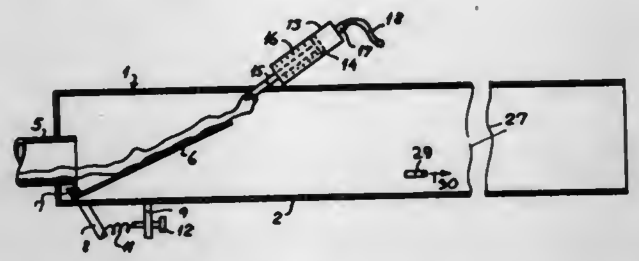
The wheel is retained on its axle by a flanged washer and straight cotter pin. The cotter pin is inserted into the axle cotter pin hole through a slot formed in the washer flange, and the cotter pin and washer are covered by a hub cap which is snap engaged with the washer flange.

3,606,476
FLUIDIZED LEAD SHOT CONVEYER
Walter R. Krueger and Allen H. Rogers, Lake Jackson, Tex., assignors to Nalco Chemical Company, Chicago, Ill.
Filed July 24, 1970, Ser. No. 58,000
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 9 Claims



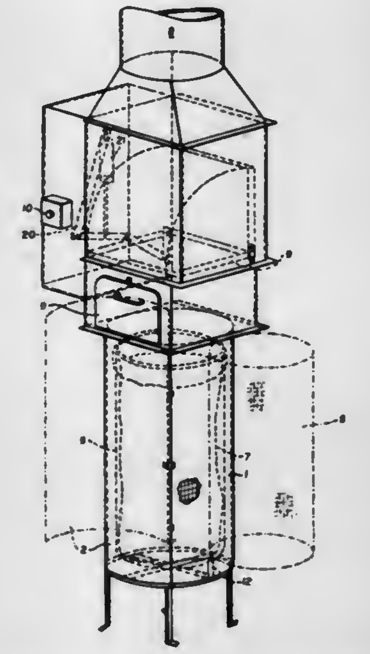
A conveyer for transporting lead shot from a lead shot manufacturing facility to an electrolytic cell lead shot hopper includes a feed vessel receiving lead shot and an organic liquid for wetting the lead shot, and an outlet for the vessel. The wetted lead shot is gravitationally fed from the vessel outlet into a main pipeline being charged with the organic liquid under pump pressure to fluidize the lead shot and move it in the pipeline to the cell hopper. A drain is provided in the hopper for removing the liquid from the lead shot, and an outlet at the bottom of the hopper allows the lead shot to be discharged into the cell.

3,606,477
APPARATUS FOR THE FLAT LAYING OF STOCKINGS
Nels Hartmann Sorensen, Holte, Denmark, assignor to Hans Christian Anderson, Kastanienbaum, Switzerland
Filed Dec. 9, 1969, Ser. No. 883,399
Claims priority, application Denmark, Dec. 10, 1968, 6,039
Int. Cl. B65g *47/36, 47/42*
U.S. Cl. 302—2R 5 Claims



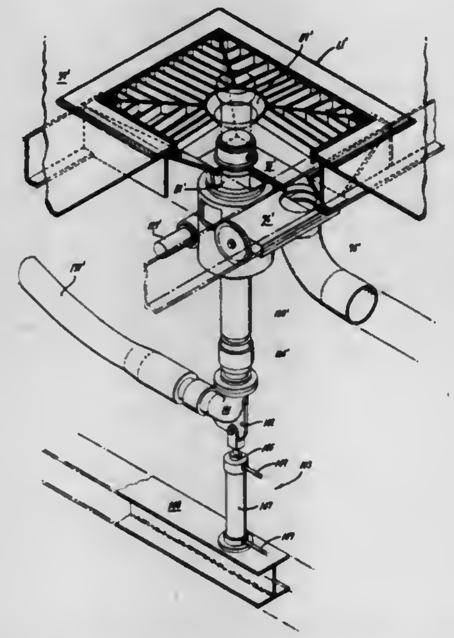
An apparatus for the flat laying of stockings in which the stockings are conveyed by a flow of air to one end of an elongated container, a guide means being provided at that end of the container to guide the stocking in an upwardly inclined path towards a gripping needle at the top wall of the container, while permitting the bulk of the stocking to continue its movement through the container so as to be straightened by a direct continutaion of the flow of air by means of which the stocking was conveyed to the container.

3,606,478
TRASH AND REFUSE DEPOSITORY SYSTEM
Bruce T. E. Boon, Wayne, N.J., assignor to Eastern Cyclone Industries, Inc., Fairfield, N.J.
Filed July 23, 1970, Ser. No. 57,590
Int. Cl. B65g *53/00*
U.S. Cl. 302—2 10 Claims



A novel pneumatic, automatic trash and refuse depository system and station which comprises a bag for receiving trash and refuse positioned for the introduction of the trash. Door means are also provided to be opened when desired so as to impose a vacuum pressure on the bag to remove it from the perforated or mesh support and to introduce the bag containing the trash and refuse into the conveying system for transmission to a central collection station.

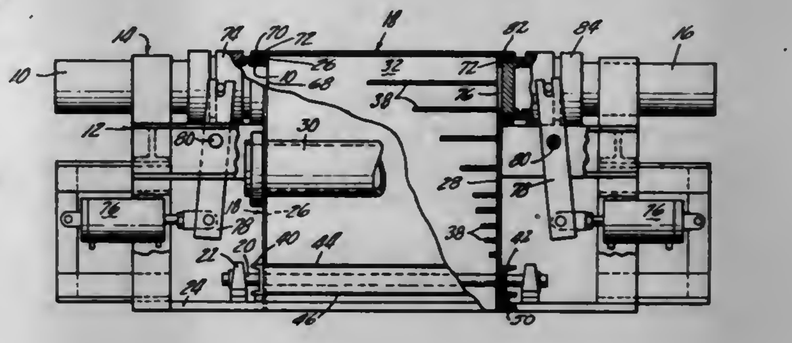
3,606,479
METHOD AND APPARATUS FOR THE STORAGE AND PULPING OF MATERIAL ORES AND COMPARABLE PARTICULATE MATTER
Charles W. Robinson and Glenn E. Craig, San Francisco, and Emmett J. Murphy, Woodside, Calif., assignors to Marcona Corporation, San Francisco, Calif.
Continuation-in-part of application Ser. No. 827,300, May 23, 1969. This application July 10, 1969, Ser. No. 863,001
Int. Cl. B65g *53/30*
U.S. Cl. 302—16 33 Claims



Method for the storage, handling and pulping of discrete or particulate minerals (e.g. iron ore solids) and comparable particulate matter. Assuming that the mineral solids are to be stored on a ship or like carrier, the ship is provided with cargo carrying holds having bottom and side walls forming storage vessels into which the mineral solids are introduced. In a shore based installation, a storage vessel is utilized which also has bottom and side walls. The bottom wall of each such storage vessel is equipped with one or more sumps from which slurry is removed. When it is desired to remove the discrete mineral solids from a vessel, water jets are discharged to form a pulping zone near the bottom of the vessel and directly overlying its bottom. These water jets are directed and traversed in such a manner that the solid minerals are acted upon and pulped progressively in the pulping zone, and the zone is moved as the water jets are traversed to thereby progressively cover all of the region overlying the entire bottom wall. Simultaneously, the freshly formed slurry is removed as rapidly as possible to prevent flooding. As the freshly formed slurry is removed, the remainder of the overlying solids progressively move downwardly to the pulping zone under the influence of gravity, and may slide or cave in in such a manner that the energy of the fall aids in breaking up the material.

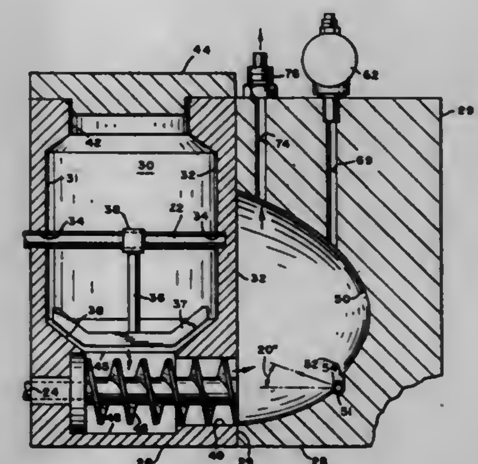
3,606,480
DROPOUT SWITCH
Edgar A. Barber, Newaygo, Mich., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Mar. 4, 1970, Ser. No. 16,513
Int. Cl. B65g *53/04*
U.S. Cl. 302—28 12 Claims

A switch for directing a stream of fluidized particulate material from a pipeline conveyor pipe either through a bypass conduit to a continuation of the pipe or through an enlarged conduit to a receptacle or hopper. The conduits form a unit pivoted to swing transversely of the conveyor pipe and selectively align and connect either the bypass conduit inlet or the enlarged conduit inlet with the conveyor pipe. The enlarged conduit forms an expansion chamber having stream turning baffles directing the stream through the chamber to an outlet in the bottom.



The outlet carries an O ring seal member which is forced into sealing relation around a discharge passageway in a plate, forming the upper portion of a hopper, by the swinging movement of the switch and seals the joint between the chamber outlet and the plate. The pivot is positioned at one side of the switch member center of gravity so that the weight of the switch member will assist in the sealing. The seal mechanism for the bypass outlet is used to resist the end thrust on the switch.

3,606,481
POWDER FEEDING ASSEMBLY
Mille Stand, New York, and Albert H. Streicher, Bronx, N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,487
Int. Cl. B65g *53/40*
U.S. Cl. 302—50 3 Claims



A powder feed assembly having a housing provided with a powder reservoir and a powder fluidizing chamber. The reservoir has a sump at its lower end and a conveyor in the sump to deliver powder to the fluidizing chamber. A conduit delivers a carrier gas under pressure to the chamber. Another conduit connects the chamber with the reservoir to equalize the pressure therein and valve means can vary the pressure. There is also a valve for rapidly venting pressure in the chamber intermittently and a delivery conduit from its chamber for the fluidized powder.

3,606,482
SULFUR-HYDROCARBON SLURRY PIPELINE TRANSPORTATION CONTAINING CORROSION AND PLUGGING INHIBITORS

Mary Frances Vondrak, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Oct. 30, 1968, Ser. No. 774,218
Int. Cl. B65g *65/04*
U.S. Cl. 302—66 **7 Claims**

An improved method of transporting sulfur-liquid hydrocarbon slurries through pipelines without causing plugging or corrosion of the pipelines.

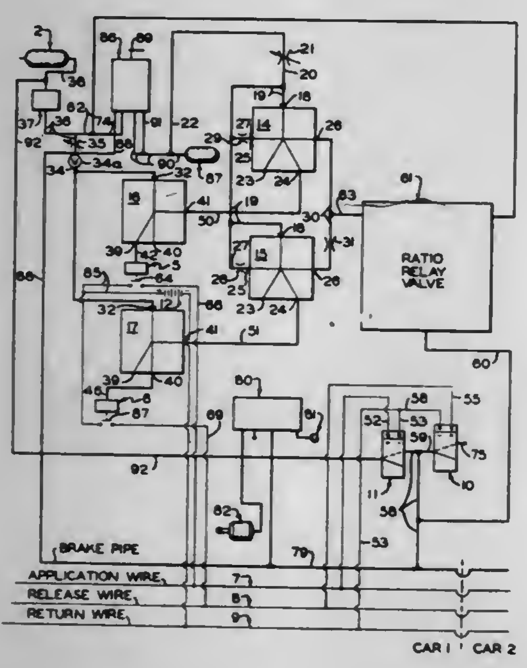
3,606,483
SLURRYING OF SULFUR IN LIQUID CARRIER

Charles M. Gable, Layafette, Calif., and Ernest R. Freitas, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Apr. 28, 1969, Ser. No. 820,012
Int. Cl. B65g *53/04*
U.S. Cl. 302—66 **7 Claims**

An improved method of transporting sulfur-liquid hydrocarbon slurries through pipelines without causing sulfur agglomeration, sticking, deposition or plugging of the pipeline.

3,606,484
FLUIDIC CONTROL SYSTEM FOR VEHICLE BRAKES

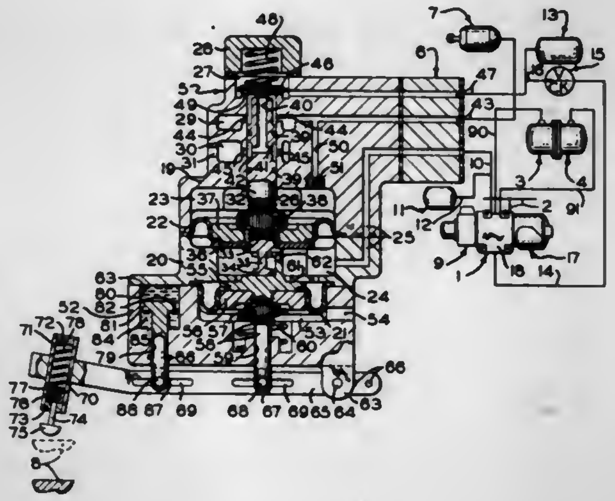
Edward T. Dressler, Jr., Mars Estates, Essex, Md., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Jan. 2, 1970, Ser. No. 247
Int. Cl. B60t *13/68, 13/70*
U.S. Cl. 303—20 **23 Claims**



An electro-pneumatic brake control apparatus for a train of self-propelled coupled cars, in which the pressure in a train line pipe is controlled by appropriate energization and deenergization of release and application magnet valve devices provided on each car in the train for supplying fluid under pressure locally to the train pipe or releasing fluid under pressure therefrom. The energization and deenergization of the magnet valve devices is controlled via train line wires by pneumatically operated switch devices on the lead car in the train. These switch devices are selectively operated by a plurality of pure fluid devices in correspondence to the operation of a brake valve also on the lead car to establish suitable control circuitry via the train line wires to the release and application magnet valve devices so as to cause either the charging of or a reduction of pressure in the train line pipe, it being understood that variations of the fluid pressure in the train line pipe are effective to control brake applications and brake releases on the cars in the train.

3,606,485
EMPTY-LOAD RELAY VALVE DEVICE

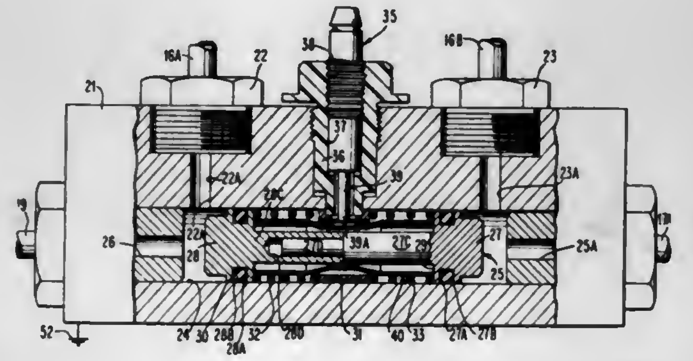
Daniel G. Scott, Apollo, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Dec. 29, 1969, Ser. No. 888,583
Int. Cl. B60t *8/18*
U.S. Cl. 303—23 **15 Claims**



This invention relates to a railway vehicle relay valve device for interposition between a brake control pipe and a brake cylinder and includes a mechanism adjustable according to the load carried by the vehicle to so condition the relay valve device that its operation by fluid under pressure from the brake control pipe always provides a supply of fluid pressure to the brake cylinder, the value of which is in accordance with the weight of the load carried by a spring-supported (or sprung) part of the vehicle between which and an unsprung part, the relay valve device is interposed for effecting operation of the load-measuring mechanism thereof in accordance with changes in the load carried by the spring-supported part.

3,606,486
BRAKE INDICATING SAFETY VALVE

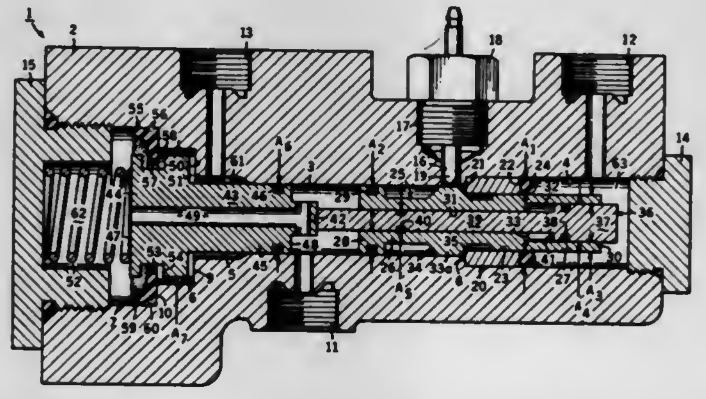
Roger E. Doerfler, Baltimore, Md., assignor to Hydrasearch Co., Inc., Annapolis, Md.
Filed Oct. 28, 1969, Ser. No. 871,844
Int. Cl. B60t *11/34, 17/22*
U.S. Cl. 303—6C **8 Claims**



This patent discloses a pressure differential or brake indicating safety valve particularly adapted for use in hydraulic brake systems having dual master brake cylinders. The valve is adapted for use on motor vehicles having either all shoe, all discs, or hybrid (a brake system having disc brakes on one set of wheels and shoe brakes on the other set of wheels) brake systems. The pressure differential valve includes a tubular body having an axially extending bore and mounted therein pressure responsive means which are slidably disposed in the bore. First and second hydraulic fluid inlets are connected respectively to opposite ends of the pressure responsive means and the inlets, or other apertures in communication therewith, may be connected by conventional hydraulic piping to the front and rear brakes respectively of the brake system, and to the outlets of the dual master cylinder. Switch means are mounted in the housing and switch actuating means are carried by the pressure responsive means, there being indicating means, in the present instance lights and the like, connected to the switch means. In addition, there are means for maintaining the switch actuating means in its actuated position upon a predetermined pressure differential occurring between the first and second inlets which causes the switch actuating means to engage the switch means. The valve is adapted to receive a metering valve, or a proportioning valve, or a combination of each without necessitating major modification.

3,606,487
CONTROL VALVE

Raymond J. Kersting, Dellwood, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Nov. 4, 1969, Ser. No. 873,900
Int. Cl. B60t *8/26, 11/34, 17/22*
U.S. Cl. 303—6C **15 Claims**

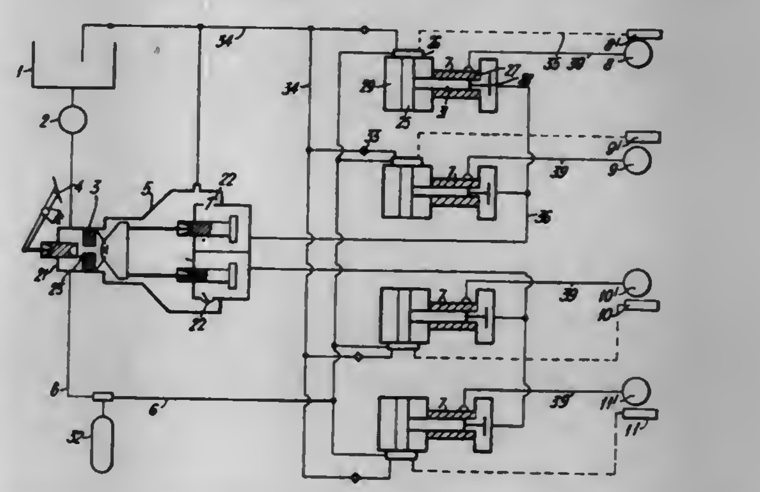


A control valve for use in a dual or split brake system having a switch operating piston movable from a centered position toward opposed translated positions in response to a predetermined differential between separately supplied fluid pressures acting thereon. The switch operating piston also includes driving means subjected to the separately supplied fluid pressures and drivingly engaged with a metering piston, said driving means being responsive to the supplied fluid pressures in excess of a predetermined value to drive said metering piston toward a position effecting a metered application through said control valve of one of the supplied fluid pressures.

3,606,488
ANTISKID BRAKE SYSTEM FOR VEHICLES

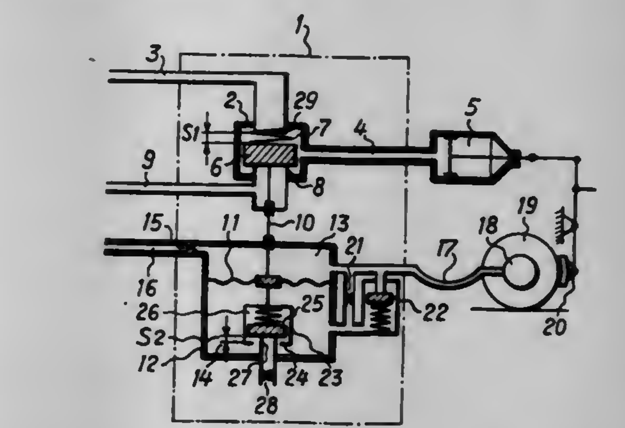
Friedrich Paul Beuchle, Frankfurt am Main, and Otto Depenheuer, Bad Homburg, Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 15, 1970, Ser. No. 3,119
Claims priority, application Germany, Jan. 17, 1969, P 19 02 186.4
Int. Cl. B60t *8/12, 13/14*
U.S. Cl. 303—21F **5 Claims**

An antiskid control for a pump powered hydraulic brake including a valve in each brake line for cutting off brake pressure and releasing the pressure in response to a wheel deceleration threshold signal. Each valve is movable by a hydraulic actuator having a movable partition forming two chambers. The brake booster may be connected to either chamber to open or close the valve depending on the deceleration signal.



3,606,489
ANTISLIP DEVICE FOR A COMPRESSED AIR BRAKE

Siegfried Keller, Effretikon, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed Mar. 10, 1970, Ser. No. 18,065
Claims priority, application Switzerland, Mar. 26, 1969, 4,564/69
Int. Cl. B60t *8/12*
U.S. Cl. 303—21CG **4 Claims**

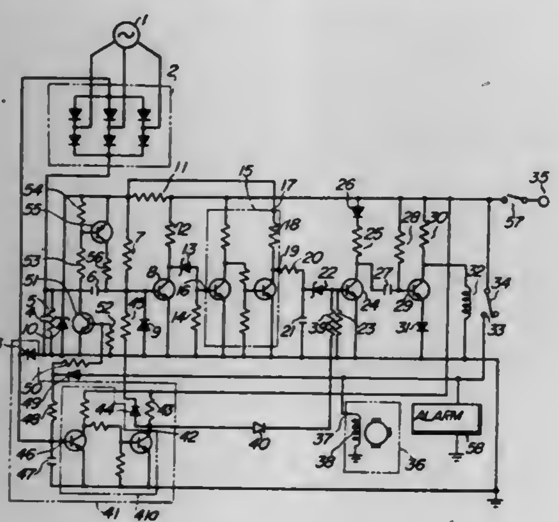


An antislip device for compressed air brakes with a double-seated valve having a valve member connected to a piston which divides a first chamber communicating with a deceleration detector from a second chamber which is in communication with the first chamber through a throttling constriction, in which the piston is connected to a part of a telescopic valve for exhausting the second chamber, and the length of the stroke of the telescopic valve is less than the length of the stroke of the valve member of the double-seated valve.

3,606,490
ANTI-SKID CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

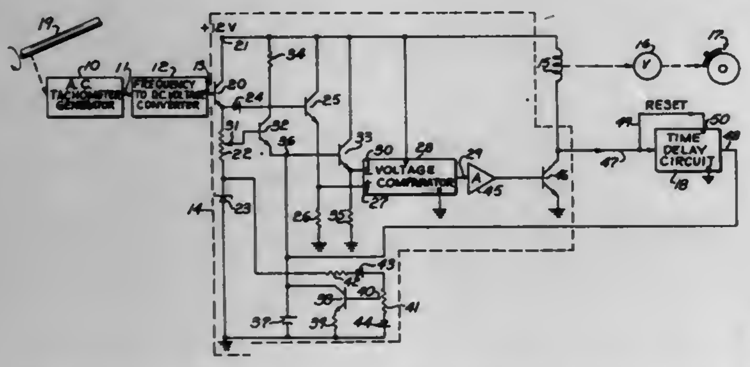
Noriyoshi Ando, Kariya-shi, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan
Filed Dec. 17, 1968, Ser. No. 784,351
Claims priority, application Japan, Jan. 25, 1968, 43/4,521; Apr. 8, 1968, 43/23,255
Int. Cl. B60t *8/08*
U.S. Cl. 303—21BE **10 Claims**

An anti-skid control system for automotive vehicles, which is operative in such a manner that when the angular deceleration of the wheel has reached a value equal or higher than a first set value for which the angular deceleration is to be detected, a braking force applied to the wheel is released and at the same time said set value is elevated to a second higher set value, and further when the angular deceleration of the wheel has reached said set value and the wheel has stopped rotating, the released braking force state is maintained with the braking force being applied to the wheel again when the wheel has started rotating.



3,606,491
ANTI-WHEEL LOCK BRAKE CONTROL FOR AUTOMOTIVE VEHICLE

William J. Walsh, Birmingham, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Feb. 24, 1969, Ser. No. 801,556
Int. Cl. B60t *8/08, 17/22*
U.S. Cl. 303—21AF **13 Claims**

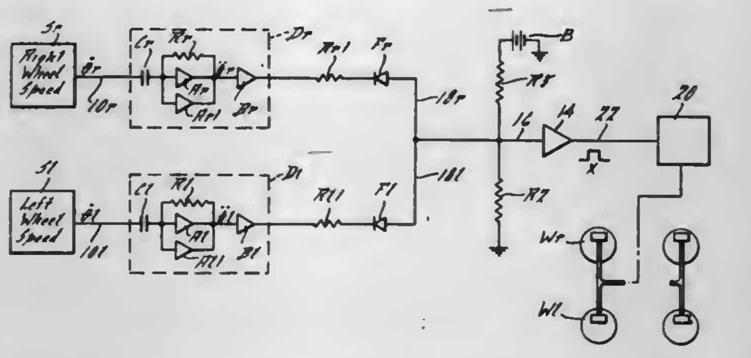


Anti-wheel lock control for the braking system of an automotive vehicle to avoid skidding by releasing the rear brakes if the rotational wheel velocity becomes significantly less than the apparent ground velocity of the vehicle. The anti-wheel lock control is temporarily disabled by a time delay circuit if the rear brakes are not re-applied automatically within a time interval sufficient for the wheel lock-up condition to be relieved. This time delay circuit monitors the performance of the anti-wheel lock control and also corrects the errors in the apparent vehicle velocity caused by travel downhill or uphill.

3,606,492
SKID CONTROL SYSTEM

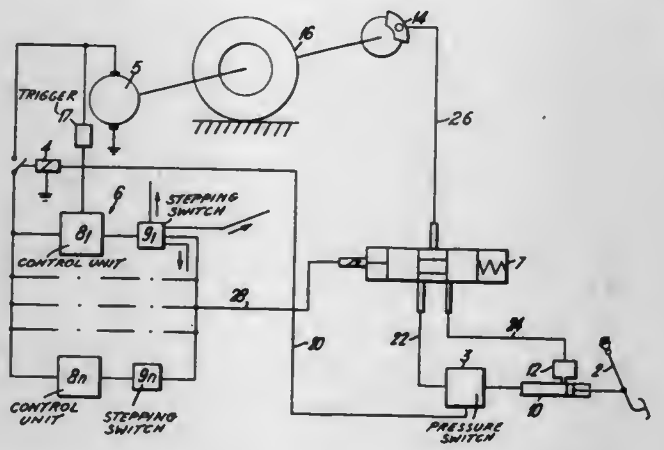
Edward J. Hayes, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Mar. 7, 1969, Ser. No. 805,318
Int. Cl. B60t *8/08*
U.S. Cl. 303—21EB **13 Claims**

A skid control system for a wheeled vehicle having a plurality of wheels and a brake system for the wheels with at least two of the wheels being connected to a common brake pressure modulating device which is actuated to relieve brake pressure in response to both of the two wheels being in a skid condition and in one form, actuated to reapply brake pressure in response to either of the two wheels spinning up or, in another form, actuated to reapply brake pressure in response to both of the two wheels spinning up.



3,606,493
ANTI-SKID BRAKE SYSTEM

Erwin Schlitz, Heusenstamm, and Werner Fink, Frankfurt am Main, Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed July 25, 1969, Ser. No. 845,013
Claims priority, application Germany, Aug. 2, 1968, P 17 80 121.7
Int. Cl. B60t *8/08*
U.S. Cl. 303—21CF **3 Claims**

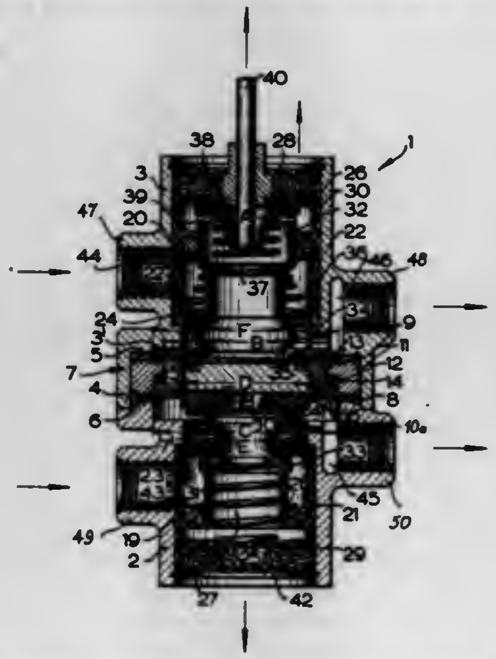


A speed dependent anti-skid brake control system for vehicles having hydraulic brakes, including a voltage generator for producing a voltage signal proportional to wheel speed and a series of controls responsive to different voltage signal levels for controlling brake pressure. The controls are successively operated, either in response to a timer or reduced brake pressure, to provide stepped regulation at a series of decreasing speed levels.

3,606,494
MULTI-CYCLE CONTROL VALVE ASSEMBLY

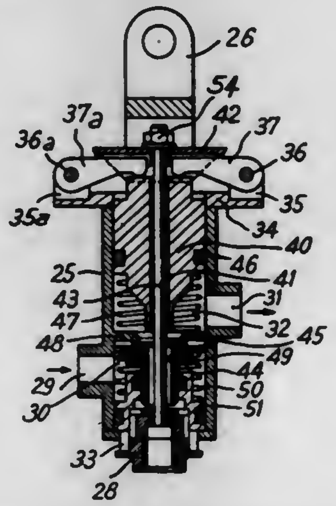
Kurt Frank, Stuttgart-Feuerbach, and Wilfried Kirchner, Backnang, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Aug. 28, 1969, Ser. No. 853,891
Claims priority, application Germany, Sept. 19, 1968, P 17 80 480.7
Int. Cl. B60t *15/04, 13/26*
U.S. Cl. 303—52 **10 Claims**

A two-cycle control valve assembly for compressed air comprises a plunger which can be moved axially with reference to the valve body to thereby open a first inlet valve which admits compressed air to a first consumer. The resulting pressure buildup in the body causes a composite diaphragm and a reducing element between the components of the diaphragm to effect the opening of a second inlet valve which admits compressed air to a second consumer. If the pressure buildup fails to materialize on mechanical opening of the first inlet valve, the reducing element effects mechanical opening of the second inlet valve. The resistance which an operator meets to displacement of the plunger is the same regardless of whether both cycles are operative or whether the one or the other cycle is out of commission.



3,606,495
PRESSURE FLUID CONTROL VALVE

Jacques Bion, Aulnay-sous-Bois, France, assignor to Societe Anonyme dite: Compagnie des Freins et Signaux Westinghouse
Filed June 17, 1969, Ser. No. 834,038
Claims priority, application France, June 17, 1968, 155,225
Int. Cl. B60t *13/36*
U.S. Cl. 303—54 **6 Claims**

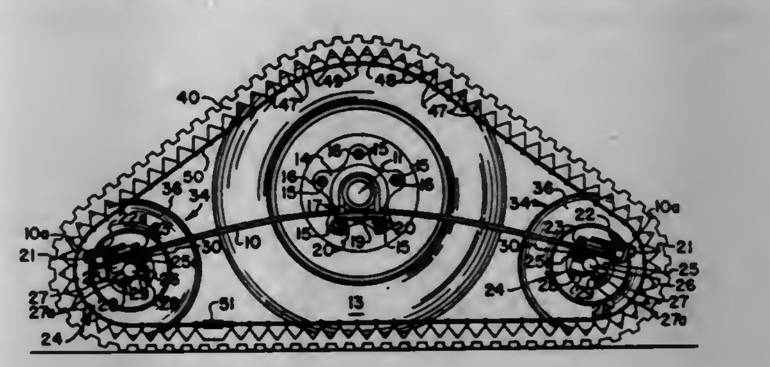


A pressure fluid control valve arranged to be connected in mechanical brake linkage of a tractor to control a supply of pressure fluid to a pressure fluid operated trailer brake has a flap member opened by brake forces in the linkage via a piston, the pressure fluid passed by the valve tending to close the flap member, and force transmitting levers fulcrumed on a body portion of the device to transmit forces between the body portion, the piston and an actuator rod.

3,606,496
TRACK UNIT FOR WHEELED VEHICLES

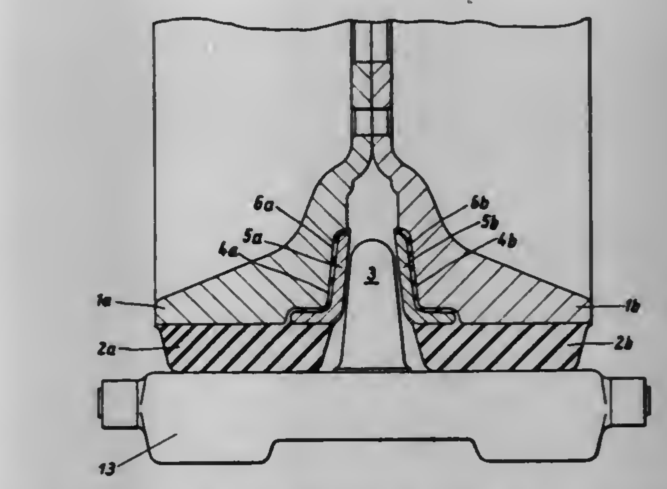
Cal J. Haycock, 591 Malibu Drive,
Salt Lake City, Utah 84107
Filed Jan. 21, 1969, Ser. No. 792,311
Int. Cl. B62d *55/16*
U.S. Cl. 305—29 **3 Claims**

An adapter unit comprising a spring-type support beam, a guide roller resiliently carried by the beam, and arranged to be aligned with a vehicle drive wheel, and an endless track adapted to fit around the drive wheel and roller and to be powered by operation of the drive wheel.



3,606,497
WEAR-PROTECTED WHEEL FOR A TRACKLAYING VEHICLE

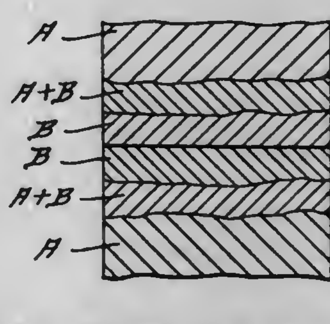
Martin Gilles, Cologne-Weidenpesch, Germany, assignor to Franz Clouth Rheinische Gummewarenfabrik AG, Cologne-Nippes, Germany
Filed Jan. 22, 1969, Ser. No. 793,013
Claims priority, application Germany, Jan. 26, 1968, P 16 80 323.9
Int. Cl. B62d *55/14*
U.S. Cl. 305—56 **7 Claims**



A wheel for a tracklaying vehicle has two flanges defining an annular recess for two cushions, each of which includes a steel ring and a rubber layer bonded to the ring and to one of the flanges. The teeth of the track enter the gap between the steel rings.

3,606,498
BEARINGS

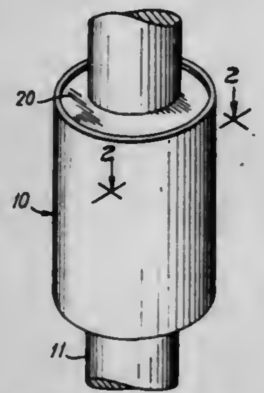
John M. Ohno, Plymouth, Mich., assignor to The Bendix Corporation
Continuation of application Ser. No. 582,818, Sept. 29, 1966. This application Mar. 3, 1969, Ser. No. 808,363
Int. Cl. F16c *25/02, 33/24*
U.S. Cl. 308—3R **12 Claims**



Bearings and the like for high vacuum, high temperature environments having at least one bearing surface of zirconium, ruthenium or uranium.

3,606,499
ANTIFRICTION BEARING ASSEMBLY HAVING AN ORBITING ROLLER ARRANGEMENT

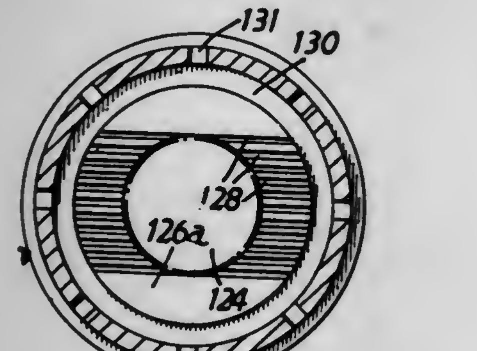
Herman Ganser, 116—19 219th St., Cambria Heights, N.Y. 11411, and Alfred Ganser, 86—9 208th St., Apt. 2F, Queens Village, N.Y. 11427
Filed Nov. 25, 1969, Ser. No. 879,712
Int. Cl. F16c *29/00*
U.S. Cl. 308—6C **6 Claims**



An antifriction linear bearing assembly for receiving a cylindrical guide pin or post consisting of a plurality of spaced-apart segments having endless raceways for receiving a plurality of concave roller bearings which recirculate or orbit within the raceways in response to the movement of the bearing assembly or guide pin.

3,606,500
GAS BEARING ASSEMBLY

William C. Dee, "Greenacres" 64, Canford Bottom, Colehill, Wimborne, Dorset, England
Filed Jan. 14, 1969, Ser. No. 792,220
Claims priority, application Great Britain, Oct. 15, 1968, 48,931/68
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **1 Claim**

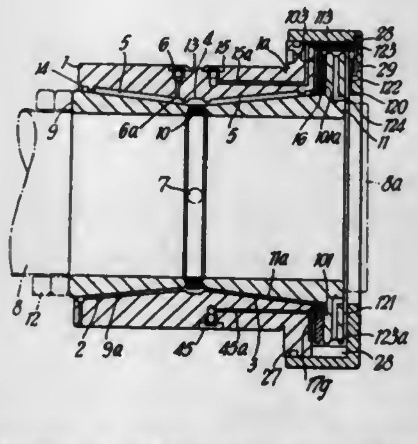


A fluid bearing has two or more gas feed slots opening at one or more axial positions into a bearing gap defined between two relatively movable bearing members, the slots being defined between two contiguous elements of one of the bearing members.

3,606,501
HYDROSTATIC BEARING ASSEMBLIES

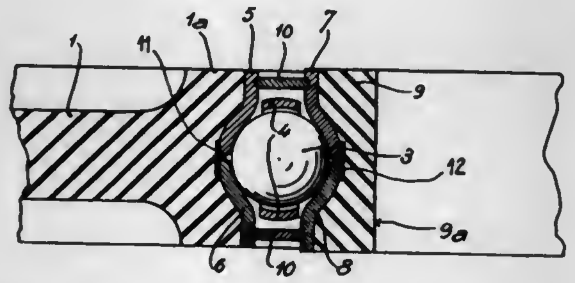
Gerald Andrew Pearson Waplington, Colchester, England, assignor to Gamet Products Limited, Hythe, Colchester, Essex, England
Filed Nov. 20, 1969, Ser. No. 878,277
Claims priority, application Great Britain, Dec. 24, 1968, 61,277/68
Int. Cl. F16c *17/10, 21/00*
U.S. Cl. 308—122 **36 Claims**

The specification discloses a hydrostatic bearing assembly in which two frusto-conical sleeve members are mounted on a shaft in axial relationship with the frusto-conical surfaces converging towards their adjacent ends, the frusto-conical sleeve members being mounted within an outer bearing element having a pair of frusto-conical surfaces complementary to the frusto-conical surfaces of the sleeve members and in opposed relationship thereto, means being provided to form hydrostatic pads between each pair of opposed frusto-conical surfaces, said pads providing restraint against movement both in a radial sense and in an axial sense of the outer bearing element relative to the shaft and in which auxiliary bearing means is provided between at least one sleeve member and the outer bearing element to provide additional restraint to relative axial movement between the outer bearing element and the shaft in at least one sense of axial direction.



3,606,502
ANTIFRICTION BEARING ASSEMBLY

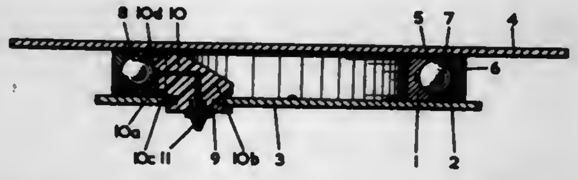
Hubert de Germond, Villa "Les Presles," Menthon-Saint-Bernard, Haute-Savole, France
Filed Aug. 25, 1969, Ser. No. 852,611
Claims priority, application France, Aug. 30, 1968, 50,345
Int. Cl. F16c *13/06*
U.S. Cl. 308—196 **7 Claims**



A ball bearing assembly in which the outer race of the bearing assembly is constituted by two outer annular, metallic cheeks. The plastics material is injected onto the two cheeks which are mounted on the ball bearings inside a mould. The two cheeks are not connected rigidly to each other so that the pressure exerted by the plastics material being injected ensures that the cheeks in contact with the ball bearings are correctly centered.

3,606,503
ROLLING BEARING

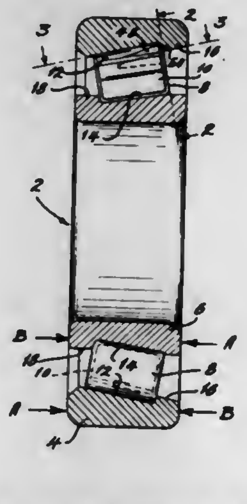
Sture Asberg, Savedalen, Sweden, and Hendrikus J. M. Timmer, Ede, Netherlands, assignors to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden
Filed Mar. 17, 1969, Ser. No. 807,545
Claims priority, application Norway, Nov. 14, 1968, 16,232, 16,233
Int. Cl. F16c *43/06*
U.S. Cl. 308—198 **6 Claims**



A rolling bearing assembly comprising inner and outer annular members spaced apart to define a space between said annular members having confronting circumferentially extending raceways, a plurality of rolling elements in the space between the annular members, a support member for each of said annular members, means securing the annular members to their respective support member, and means defining an access opening in one of said annular members to permit assembly of the rolling elements therethrough into the annular space.

3,606,504
UNITIZED TAPERED ROLLER BEARING AND METHOD OF ASSEMBLING THE SAME

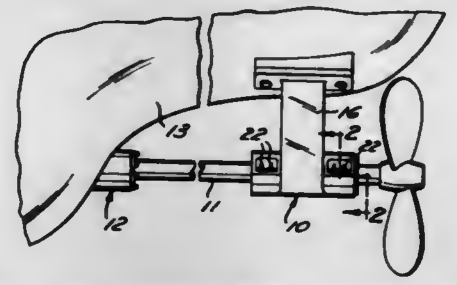
Stanley Wojciechowski, 4508 Edwin Drive NW., Canton, Ohio 44718
Filed Mar. 19, 1970, Ser. No. 21,169
Int. Cl. F16c *19/14*
U.S. Cl. 308—214 **17 Claims**



A unitized tapered roller bearing has a cup and cone provided with tapered raceways along which tapered rollers run. The cup at the large diameter end of its raceway is provided with an integrally formed thrust rib, and, likewise, so is the cone at the small diameter end of its raceway. Individual separators are positioned between the rollers to maintain the proper circumferential spacing between those rollers, and those separators are retained in the bearing by the thrust ribs. The separators, however, may be distorted sufficiently to enable them to pass between the cup thrust rib and the cone and into the space between the raceways, thus enabling assembly of the bearing.

3,606,505
MARINE BEARING

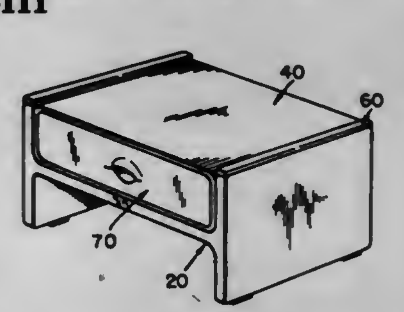
James Glenn Satterthwaite, 1 Dogwood Trail, Chesapeake, Va. 23320, and James B. Macy, Jr., 107 Holly Lane, Morehead City, N.C. 28557
Continuation-in-part of application Ser. No. 515,395, Dec. 21, 1965, now Patent No. 3,407,779, dated Oct. 29, 1968. This application July 17, 1967, Ser. No. 653,796
Int. Cl. F16c *27/00*
U.S. Cl. 308—238 **16 Claims**



A marine bearing provided with a plurality of staves formed entirely of elastomeric material. The staves are assembled in a housing with clearance and are then subjected to releasable compressive stress to produce locking pressure between the exterior of each stave and the interior of the housing. The compressive stress may be applied radially or axially. The stave may be formed of concentric layers of different hardness or compounding. Close tolerances and small clearances may be provided because the bearing may be assembled and disassembled in place around the shaft. Critical resonant vibration within the normal shaft speed operating range is minimized or eliminated by properly selecting the amount of clearance, the amount of prestressing, the relative composition, and the relative hardness of the elastomeric material.

3,606,506
MODULAR UNITS FOR FURNITURE AND CABINET CONSTRUCTION

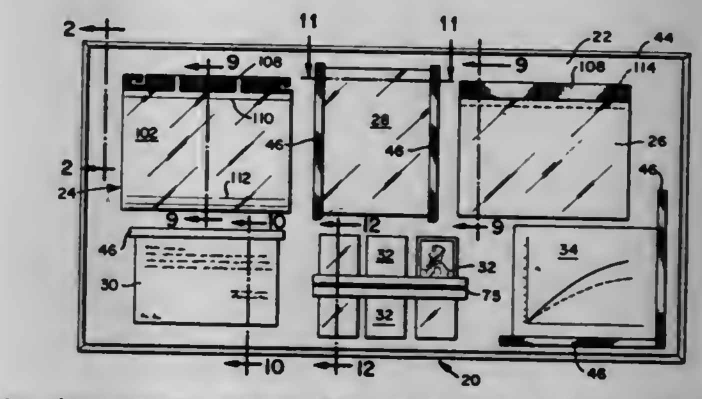
Nicholas A. Ungaro, Louisville, Ky., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Mar. 5, 1969, Ser. No. 804,499
Int. Cl. A47b *77/00*
U.S. Cl. 312—111 **19 Claims**



A plurality of modular units, fabricated from high impact strength plastic are provided with integrally formed means for enabling the various units to be securely though releasably interlocked in the construction of furniture, cabinets and the like, using various combinations of said modular units.

3,606,507
MAGNETIC SHEET HOLDERS, OPEN-ENDED SLIDES AND AN INFORMATION PRESENT-RETRIEVE COMMUNICATIONS SYSTEM EMPLOYING THE SAME

Paul Gilmore Williams, Jr., Westport, Conn., assignor to Williams Inlan Corporation, Westport, Conn.
Continuation-in-part of application Ser. No. 751,278, Aug. 8, 1968. This application May 19, 1969, Ser. No. 825,896
Int. Cl. A47b *63/00;* **G09f** *3/18*
U.S. Cl. 312—184 **9 Claims**



An integrated system for presenting and retrieving moveable pictures or icons. A transparent suspension file folder has magnets attached thereto for instant display of material on a iron plate display board.

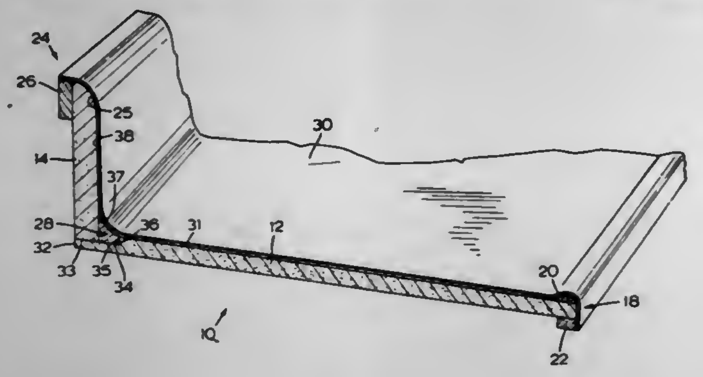
The iron surface of the display board is covered with a washable plastic material so that it can be written on with washable ink. The magnets are so placed on the file folder that they cooperate in temporarily affixing the same against the iron bed of an opaque, or the iron frame of a transparency, projector.

Magnetic instant display transparent art folders are also disclosed.

One form of magnet disclosed is a U-shaped magnetic spine which is easily attachable and detachable from the transparent file folders of the invention. Another takes the form of one or two, preferably flexible, magnetic strips adhered to one side of a transparent file folder along one or both the long edges thereof.

3,606,508
COUNTER TOP

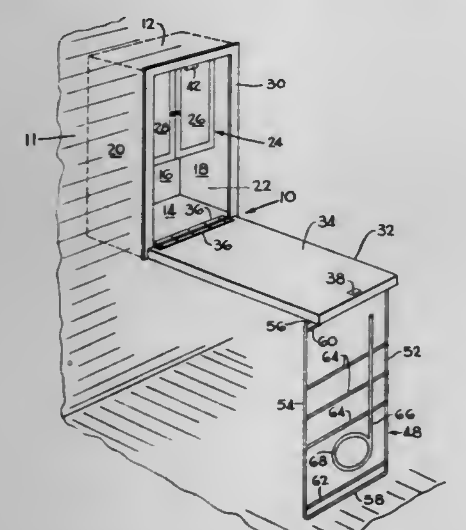
Harry E. Burnes, 34 Highway Ave.,
London, Ontario, Canada
Filed Dec. 24, 1969, Ser. No. 887,930
Int. Cl. A47b *96/18*
U.S. Cl. 312—140.3 **5 Claims**



A counter top is provided which includes a relatively strong joint between a horizontal and an upright section. The counter top includes a base structure which is preferably made by attaching unfinished strips to a panel and then forming the required curves on the strips and the panel. The panel is then cut longitudinally to form the horizontal and upright sections and the sections are then glued together. The horizontal section has a recessed step at the joint between the sections and a filler strip is glued in the recess and to the front face of the upright section. The filler strip has a concave curve which merges smoothly into the exposed adjacent surfaces of the horizontal and upright sections for supporting a laminate of plastic or the like.

3,606,509
WALL CABINET

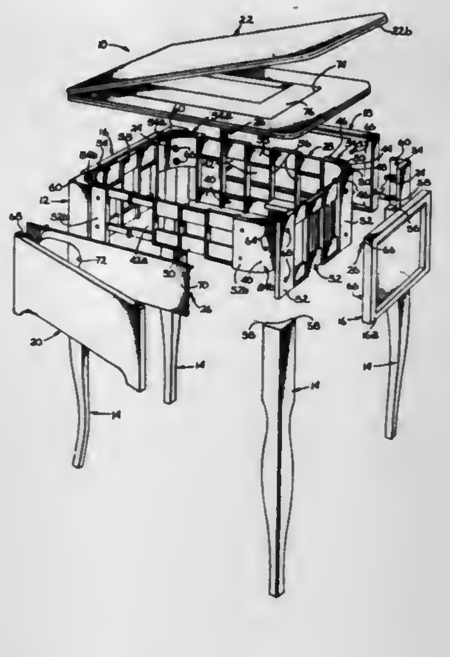
Thomas H. Bennett, 202 DeWitt St.,
Buffalo, N.Y. 14213
Filed Sept. 18, 1969, Ser. No. 858,941
Int. Cl. A47b *67/02, 85/00*
U.S. Cl. 312—242 **4 Claims**



A self concealing wall cabinet adapted to be fitted into a wall recess. The cabinet is provided with a hingedly mounted closure panel for covering the opening of the cabinet and which is utilized as a serving platform or bar when extended. A support in the form of a decorative plaque is suspended in front of the closure panel in its horizontal extended position of use.

3,606,510
MODULAR FURNITURE EMBODYING A COMMON CHASSIS AND INTERCHANGEABLE STYLING FEATURES

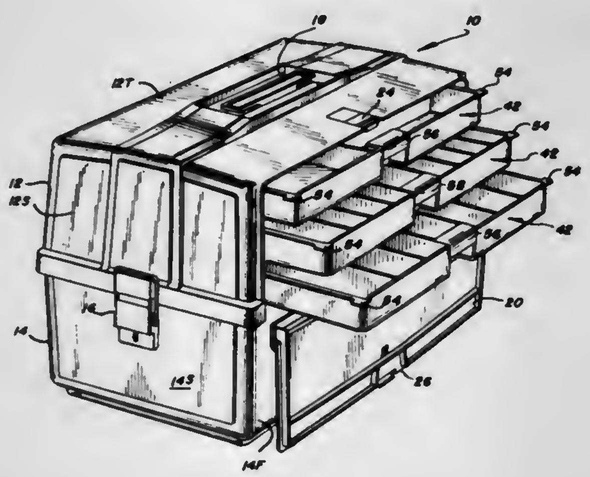
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, New York, N.Y.
Filed Apr. 10, 1969, Ser. No. 815,119
Int. Cl. A47b *43/00, 47/00*
U.S. Cl. 312—257 **17 Claims**



Modular furniture composed of separately formed parts including a skeleton chassis, supporting legs, and ornamental side and top panels which may be assembled to provide a finished article of furniture, such as a table, cabinet, chest, or the like. The furniture parts are preferably injection molded or heat formed from plastic and are constructed and arranged in such a way that different leg and panel configurations may be assembled on a given chassis configuration to provide a variety of furniture styles all using the same basic chassis configuration.

3,606,511
TACKLE BOX

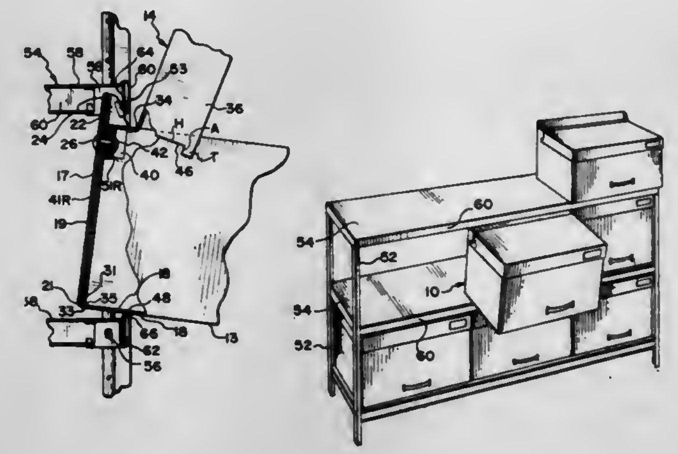
James L. Henning, Aurora, and Robert E. Pierson, Sugar Grove, Ill., assignors to Plano Molding Company, Plano, Ill.
Filed Aug. 3, 1970, Ser. No. 62,226
Int. Cl. A47b *51/00*
U.S. Cl. 312—266 **9 Claims**



Tackle box includes a plurality of storage drawers guidingly supported for selective horizontal movement by trays which are cantilevered.

3,606,512
STEEL SHELF DRAWER

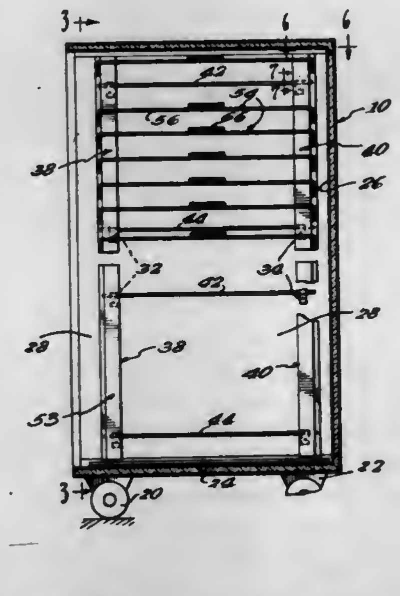
Irwin J. Ferdinand, Glencoe, Irwin R. Kulbersh, Morton Grove, and Gerald D. Cassiere, Chicago, Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed Feb. 11, 1970, Ser. No. 10,357
Int. Cl. A47b *88/06*
U.S. Cl. 312—323 **16 Claims**



A knockdown, top-opening, hinged-cover, drawer-type receptacle for closed storage of objects between two lightweight steel shelves. An upstanding lip at the rear of the receptacle engages depending shelf flanges along the front and rear of the upper shelf to prevent accidentally moving the unit off of the lower shelf. This interengagement at the front flange also serves to support the receptacle in its access position, preferably tilted to some degree, or lifted out for removal. A cover member, easily assembled and hinged at the rear, cooperates with the upper edge of the receptacle to hold the cover in its fully open position when opened.

3,606,513
ROD TYPE TRAY SLIDE

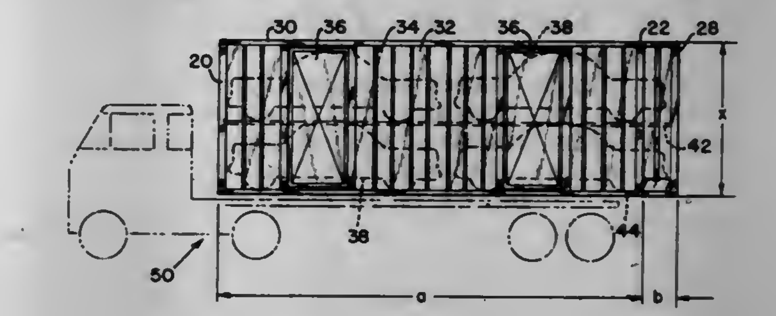
Carter Clifford Hoffmann, Lake Forest, and Richard R. Berger, Antioch, Ill., assignors to Carter-Hoffmann Corp.
Filed Apr. 23, 1970, Ser. No. 31,193
Int. Cl. A47b *77/00*
U.S. Cl. 312—351 **11 Claims**



An insulated food serving cart is provided with removable rack assemblies having pivoted tray support members structured in such a way as to positively support vertically spaced trays without the tray support members interfering with the contents of the tray and at the same time allowing for variations in the tray dimensions.

3,606,514
CONTAINER FOR TRANSPORTING VEHICLES

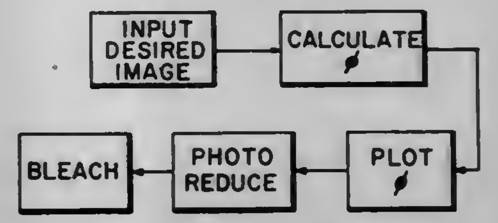
Ronald M. Katims, 10 Clydesdale Road,
Scotch Plains, N.J. 07076
Filed June 16, 1969, Ser. No. 833,521
Int. Cl. A47b *97/00*
U.S. Cl. 312—352 **8 Claims**



A box-like container for transporting vehicles secured therein and capable of being stacked in interlocked, superposed relation with containers of various lengths. Doors have been provided along the container side wall and positioned to correspond with the driver door of each vehicle secured within the container for providing access to and from the vehicles.

3,606,515
METHOD OF MANUFACTURING WAVE SHAPING OBJECTS

Peter M. Hirsch, James A. Jordan, Jr., and Louis B. Lesem, Houston, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 25, 1968, Ser. No. 778,525
Int. Cl. G02b *27/38*
U.S. Cl. 350—3.5 **15 Claims**

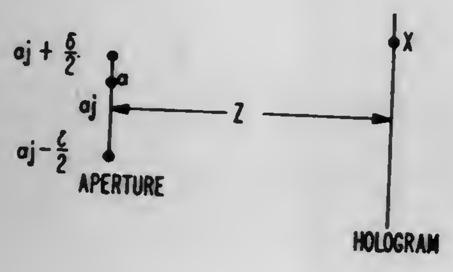


The technique is for arbitrarily altering a physical (e.g., electromagnetic or sound) wavefront, in which the wavefront is shaped by modifying its phase in a controlled manner. A first assumption is made that the image to be formed is of an object made up of point sources with the phases of the rays from each source being random. The random phases assumption permits the second and further assumption that the amplitude of the wavefront, incident on a plane, is constant. Therefore, the wavefront is shaped solely by operating on its phase.

The wavefront scattered from an object is first, in the preferred embodiment, calculated digitally and the calculation is identical to that used to calculate the wavefront as in conventional digital holography when a point aperture object assumption is made. The phase of each point in the wavefront is determined and a plot tape written for a plotter, the phase information scaled from 0 to 2π over the gray levels available, such that a photographic film is produced, the darkening of which over its area is a measure of phase. The thus produced film is then photo-reduced to give a phase distribution at the appropriate wavelength of light. The photo-reduction is then bleached such that the emulsion is of uniform transmissivity but with an etched surface, the etch depth of which is proportional to emulsion darkening. Upon illumination the waves incident upon the photo-reduction are selectively retarded by the thickness differences of the emulsion such that the resultant interference at an image plane produces the desired image.

3,606,516
DISCRETE APERTURE METHOD OF MAKING SYNTHETIC KINOFORMS AND HOLOGRAMS

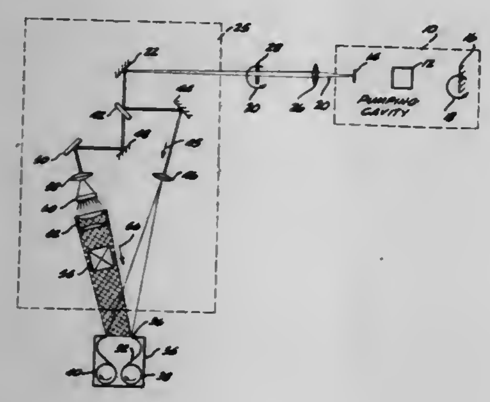
Peter Max Hirsch, James Adam Jordan, Jr., and Louis Bernard Lesem, Houston, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 29, 1969, Ser. No. 794,977
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **11 Claims**



A method of constructing the image of a mathematically defined object which may or may not exist in real form. An assumption is made that the image to be formed is of an object made up of equally spaced point sources with the phases of the rays from each source being random.

3,606,517
HOLOGRAPHIC MOTION PICTURE SYSTEM

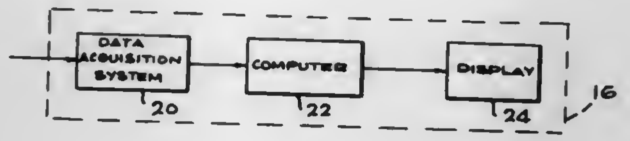
Alexander D. Jacobson, Los Angeles, and Viktor Evtuhov, Pacific Palisades, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 14, 1969, Ser. No. 799,290
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **11 Claims**



A holographic motion picture system is disclosed for producing a succession of holograms capable of faithfully reproducing the continuous motion of a moving subject. The system includes a continuously pumped ruby laser operated in the repetitive Q switched mode to produce light pulses at a rate of 160 p.p.s. Every eighth pulse is used to produce a hologram of a moving subject on a moving light sensitive film.

3,606,518
WAVEFRONT RECONSTRUCTION PROCESS AND SYSTEM

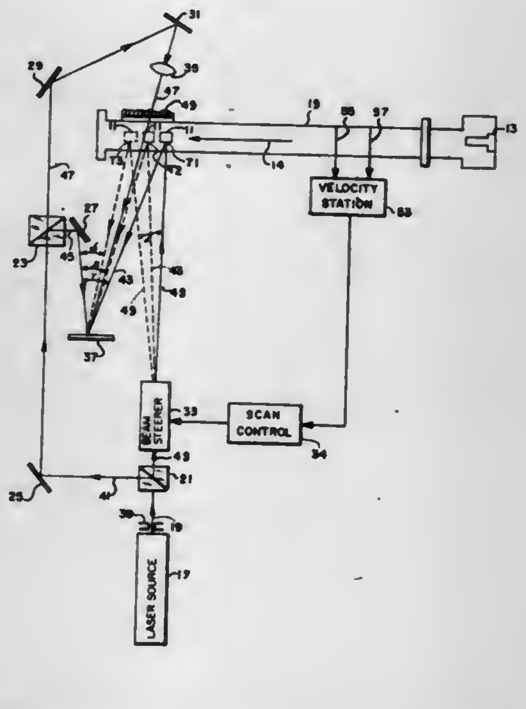
Alexander F. Metherell, Newport Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed May 14, 1969, Ser. No. 824,399
Int. Cl. G02b *27/22;* **G01s** *9/66;* **G01v** *1/00*
U.S. Cl. 350—3.5 **10 Claims**



A new process for creating a hologram is disclosed which utilizes a computer to interpolate the phase of impinging radiation as between discrete transducers in an array and to calculate the location of lines of equal phase as between transducers of the waves of reconstructing radiation. A photographic record, equivalent to a diffraction grating, is created using the computer output and the record can be used as a hologram to generate real and virtual images.

3,606,519
MULTIPLE IMAGE STORING SYSTEM FOR HIGH SPEED PROJECTILE HOLOGRAPHY

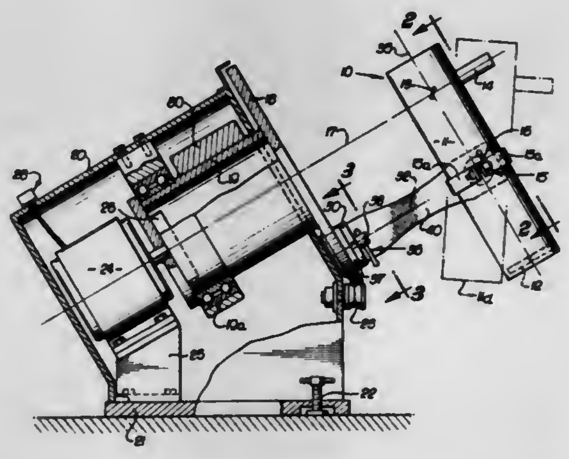
Robert L. Kurtz, Blacksburg, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Feb. 2, 1970, Ser. No. 7,867
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **5 Claims**



A three beam system for obtaining a holographic record on film of a high speed projectile, wherein a coherent beam of radiation is divided into a reference beam, a direct signal beam and a reflected signal beam. The reference beam is directed without modulation to a photographic plate and the direct signal beam is directed to the photographic plate after transmission by the projectile. The reflected signal beam is directed into a beam steerer which allows the synchronous tracking of the projectile with the reflected signal beam. On reflection from the projectile the reflected signal beam is incident on the photographic plate. As the included angle between the reference beam and the reflected signal beam changes, multiple images of the target will be stored in the thick emulsion of the photographic plate.

3,606,520
TRACKING INSTRUMENT MOUNT

Thomas B. Rockwell, 2318 Rockinghorse Road, Miraleste, Calif. 90731
Filed Sept. 30, 1968, Ser. No. 763,633
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **1 Claim**



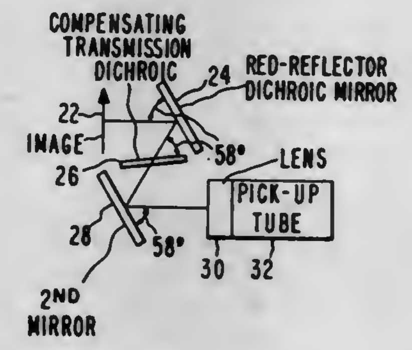
The disclosure concerns a mount for an instrument used in tracking celestial objects, and enabling comfortable sustained viewing by the observer using the instrument, for extended time periods.

ERRATUM

For Class 350—162 see:
Patent No. 3,606,542

3,606,521
APPARATUS FOR COMPENSATING FOR ANGULAR VARIATION OF DICHROIC MIRROR CHARACTERISTICS

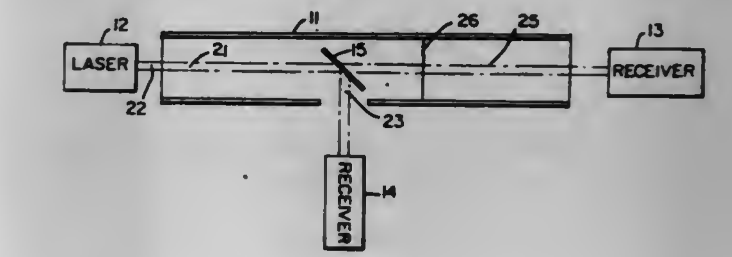
Skipwith W. Athey, Portola Valley, Calif., assignor to International Video Corporation, Sunnyvale, Calif.
Filed Mar. 11, 1970, Ser. No. 18,466
Int. Cl. G02b *5/28*
U.S. Cl. 350—166 **3 Claims**


COMPENSATING TRANSMISSION DICHROIC
24
RED-REFLECTOR DICHROIC MIRROR
22
IMAGE
58°
LENS
26
PICK-UP TUBE
28
58°
30
32
2ND MIRROR

An optical filter including a dichroic transmission filter and a dichroic reflecting mirror, the transmission filter having substantially the same light-passing characteristics so that as the angle of incidence between a beam and the reflecting mirror is varied, variation in the reflection characteristics of the optical system is substantially reduced.

3,606,522
OPTICAL FREQUENCY WAVEGUIDE AND TRANSMISSION SYSTEM

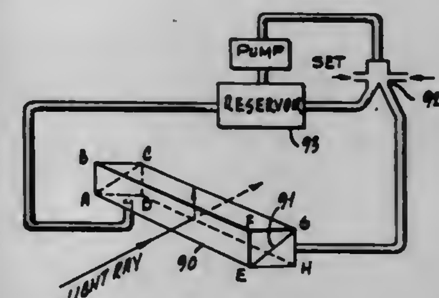
Charles H. Townes, Cambridge, Raymond Y. Chiao, Boston, and Elsa M. Garmire, Cambridge, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Original application Oct. 11, 1965, Ser. No. 494,739, now Patent No. 3,556,634, dated Jan. 19, 1971. Divided and this application Jan. 24, 1969, Ser. No. 822,089
Int. Cl. G02b *5/14, 27/14*
U.S. Cl. 350—171 **10 Claims**



A method and system of transmitting and distributing optical frequency radiation are disclosed. The power level of the radiation beam is maintained at a level which is a function of the pressure and dielectric constant of a gas through which the beam is transmitted. The beam through the gas generates its own waveguide to prevent beam divergence through the gas.

3,606,523
FLUID VARIABLE LIGHT DEFLECTOR

George William Taylor, Princeton, and Philip Goldstein, North Brunswick, N.J., assignors to RCA Corporation
Filed May 14, 1968, Ser. No. 728,957
Int. Cl. G02b *1/06, 3/12;* **G06m** *1/12*
U.S. Cl. 350—179 **6 Claims**

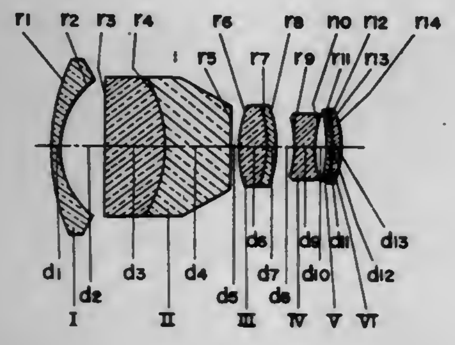


A light deflection apparatus using hollow optical elements in the form of lenses and prisms and means for selectively introducing differing refractive index fluid into the elements to alter the optical properties of the elements. A further apparatus embodiment uses a longitudinally divided prism for changing the prism exit direction of a transitory light beam by selectively creating total reflection at an interface within the prism between a permanent transparent medium and a selectively introduced transparent fluid.

3,606,524
INVERTED TELEPHOTO TYPE WIDE-ANGLE LENS SYSTEM

Toshinobu Ogura, Sakai-shi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 29, 1969, Ser. No. 829,028
Claims priority, application Japan, June 1, 1968, 43/37,355
Int. Cl. G02b *9/62*
U.S. Cl. 350—215 **4 Claims**

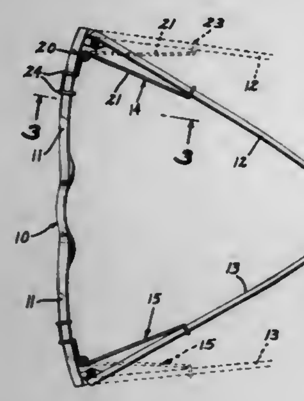
An inverted telephoto type wide-angle lens system used for a photographic or cinecamera, which is composed of an air spaced 6-group lens comprising seven or eight lenses, and more particularly an inverted telephoto type wide-angle lens system capable of making a good image, which second lens group is provided with a thick lens interposed therebetween in order to decrease the aperture of the suitable front lens for cameras for large size pictures.


r1 r2 r3 r4 r5 r6 r7 r8 r9 r10 r11 r12 r13 r14
d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13
I II III IV V VI

ERRATUM

For Class 352—91 see:
Patent No. 3,606,529

3,606,525
SPRING FOR EYEGLASS FRAMES
Bert J. Landree, 6009 Ewing St. S., Edina, Minn. 55410
Filed Oct. 24, 1969, Ser. No. 869,113
Int. Cl. G02c *5/16*
U.S. Cl. 351—113 3 Claims



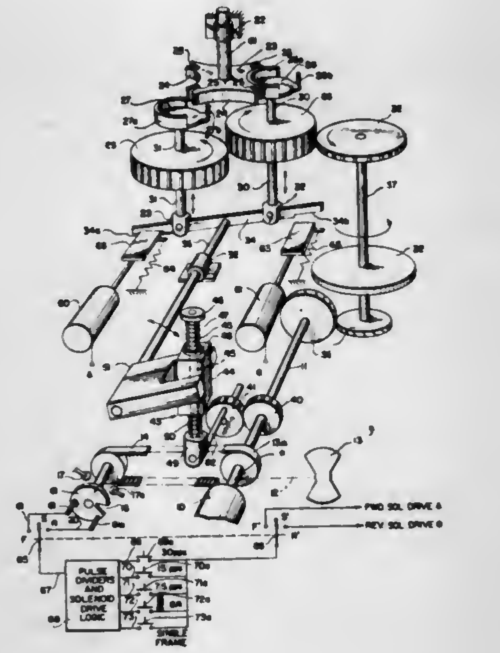
An elongated piece of resilient wire formed into a torsion coil spring with end portions extending outwardly therefrom, the end portions formed to engage the frame to prevent relative transverse movement therebetween while allowing longitudinal movement and biasing the arms of the frame inwardly toward the lens holding portion.

ERRATA

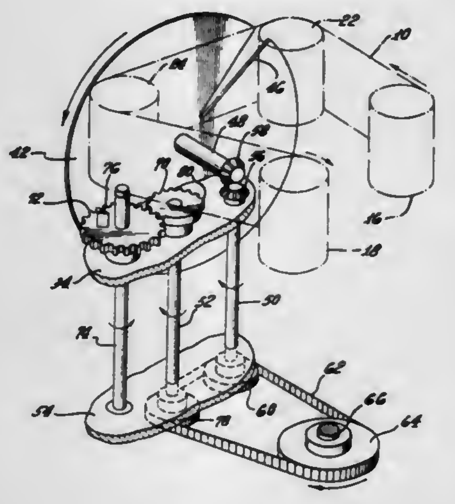
For Classes 352—12 and 352—116 see:
Patent Nos. 3,606,543 and 3,606,544

3,606,526
INDEXING DRIVE MECHANISM
Elliott P. Smith, Huntington, Robert P. Mason, Setauket, and William L. Kacin, Northport, N.Y., assignors to LogEtronics Inc., Springfield, Va.
Filed Mar. 13, 1970, Ser. No. 19,232
Int. Cl. G03b *1/38*
U.S. Cl. 352—166 10 Claims

An indexing drive mechanism is provided to transport film in a flickerless projection viewer. The indexing mechanism includes a Geneva star and a pair of Geneva drivers positioned adjacent opposed camming surfaces of the star. The two Geneva drivers are mechanically interlocked and synchronously driven for both rotational and axial reciprocating motion relative to the Geneva star, the arrangement being such the drivers normally operate to lock the Geneva star in fixed position. The reciprocating motion of the drivers is selectively interrupted to cause a selected one of the drivers to effect 90° rotation of the star in a selected one of two opposite directions.

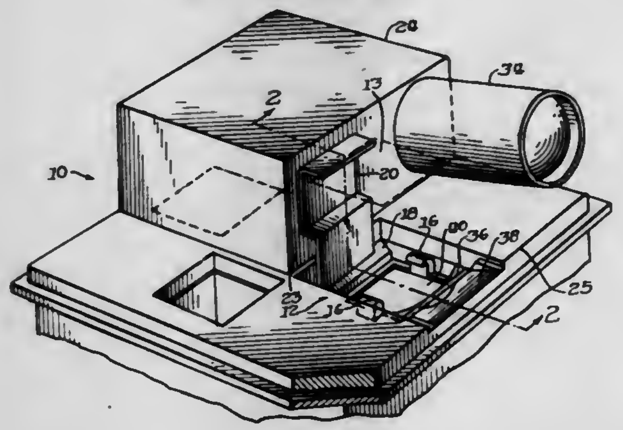


3,606,527
INTERMITTENT DRIVE FOR SURVEILLANCE CAMERA
Bernard F. McNamee, Arcadia, Calif., assignor to Dressen-Barnes Electronics Corp., Pasadena, Calif.
Filed Feb. 17, 1969, Ser. No. 799,651
Int. Cl. G03b *1/24*
U.S. Cl. 352—190 6 Claims



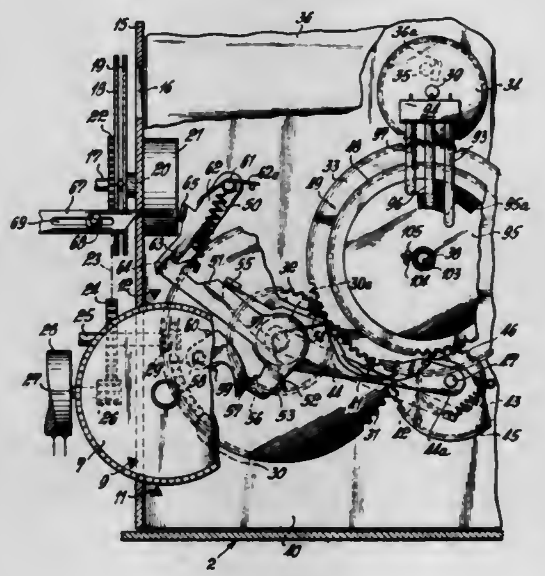
The surveillance camera when started takes a series of still pictures in relatively rapid progression. A continuously rotated shutter disc has a slit aperture in exposure position about one-third of the time. The film sprocket is advanced during the time when the shutter is closed by a simple gear mechanism. The driven gear connected to the sprocket is a complete gear and the driving gear synchronized with the shutter is a mutilated gear. A simple yielding mounting for the mutilated driving gear constitutes the sole means for ensuring proper meshing of the gears. A belt transmission between the sprocket and the takeup spool ensures against the imposition of any tension on the film during exposure that might cause a blurred image.

3,606,528
PRE-VIEWING STATION
Carl C. Costanza, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 23, 1969, Ser. No. 860,385
Int. Cl. G03b *21/00*
U.S. Cl. 353—21 8 Claims



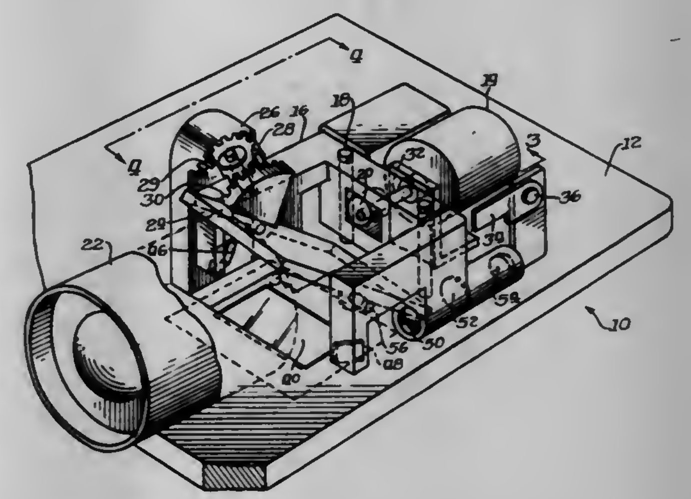
A novel pre-viewing station in a slide projector that facilitates removal and insertion from the station. The slides when present at the pre-viewing station are oriented in a horizontal plane and viewed from the normal operating position are in the same orientation as when projected.

3,606,529
MOTION PICTURE CAMERA WITH DISSOLVING SHUTTER
Herbert Reinsch, Kongen, and Albert Schnell, Stuttgart, Germany, assignors to Robert Bosch Elektronik und Photokino GmbH, Berlin and Stuttgart, Germany
Filed Sept. 8, 1969, Ser. No. 855,885
Claims priority, application Germany, Sept. 11, 1968, P 17 97 312.5
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 19 Claims



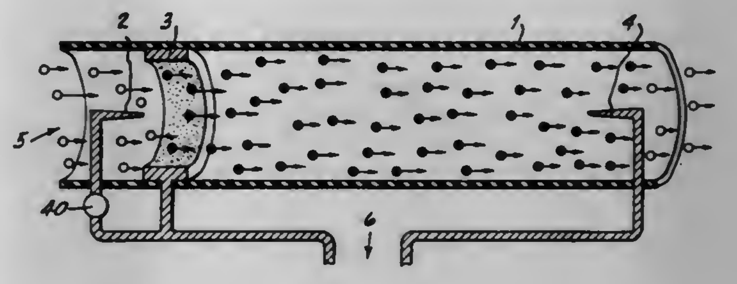
The knob which adjusts the dissolving shutter of a motion picture camera during fade-out and fade-in serves to start the timer mechanism which automatically terminates the fade-out and to prevent rotation of the take-up reel in the film-containing cassette in response to starting of a fade-out effect. The film which is exposed during fade-out is looped in the cassette and is thereupon transported rearwardly prior to fade-in.

3,606,530
FOCUS MAINTAINING DEVICE
Edward J. Hennessy, Hoffman Estates, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 23, 1969, Ser. No. 860,858
Int. Cl. G03b *3/12*
U.S. Cl. 353—101 3 Claims



A focus maintaining film projector that maintains focus by altering the position of a reflecting surface in a folded projection system.

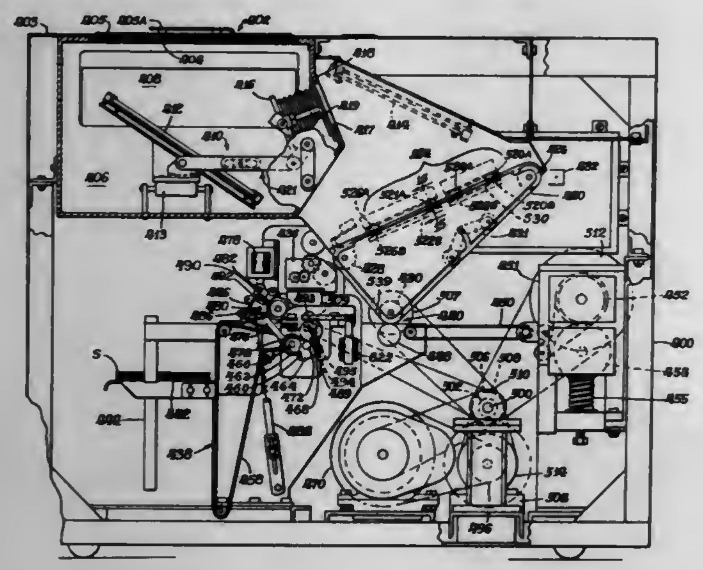
3,606,531
IMAGE REPRODUCTION USING ELECTROGASDYNAMICS
Meredith C. Gourdine, West Orange, N.J., assignor to Gourdine Systems, Inc.
Filed Sept. 30, 1968, Ser. No. 763,854
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 10 Claims



A method and means for reproducing an image on a dielectric sheet, or irregular or curved surface, comprising the use of an electrogasdynamically produced space charge cloud of ionized ink to develop an image of a light pattern projected onto a conventional xerographic plate. The developed ink image is of improved quality by virtue of the tendency of electrogasdynamically produced particles to achieve a uniform charge distribution on a dielectric surface.

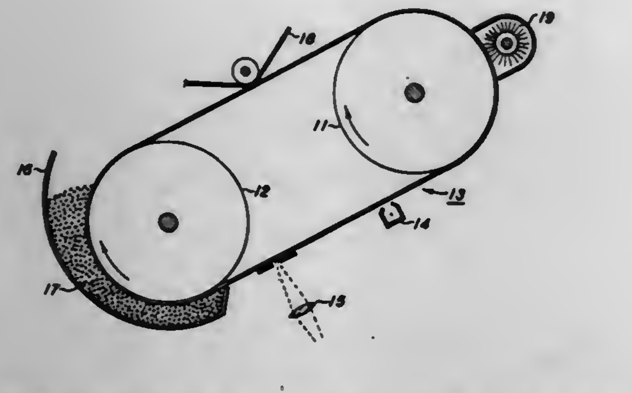
3,606,532
PHOTOELECTROSTATIC DUPLICATOR
Loren E. Shelffo, Palatine, Henry A. Mathisen, Northbrook, and Frank L. Schwager, Mount Prospect, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed Jan. 21, 1969, Ser. No. 762,617
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 42 Claims

An automatic photoelectrostatic copier duplicator capable of making reproductions on plain paper using electrostatic printing techniques. The apparatus is equipped with a photoconductive medium formed into a continuous belt which carries a transferable powder image and which image is transferred to a receiving sheet of plain paper fed from a supply to a transfer station in timed relation with the arrival thereat of the transferable powder image.



The belt is provided with a marker which is recognized by sensing devices which are part of an electrical control system.

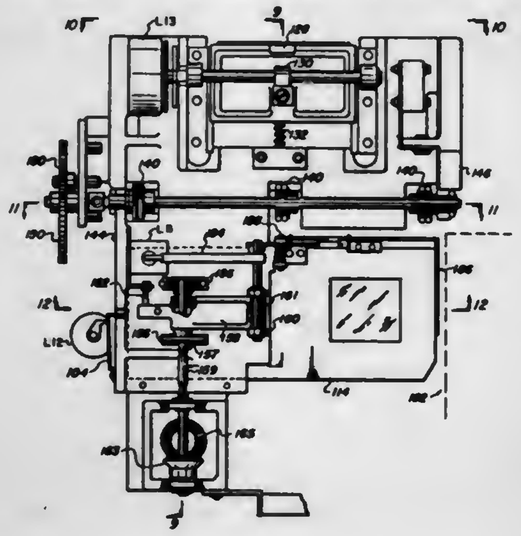
3,606,533
XEROGRAPHIC DEVELOPMENT
Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Original application Feb. 21, 1966, Ser. No. 528,846, now Patent No. 3,503,776, dated Mar. 31, 1970. Divided and this application July 2, 1969, Ser. No. 870,834
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **5 Claims**



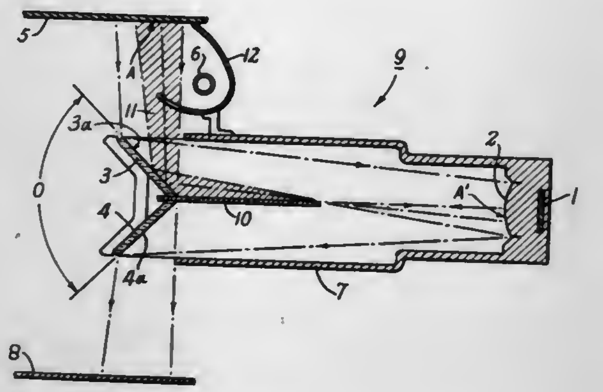
Images are formed on an arcuate imaging surface bearing an electrostatic latent image by transporting the imaging surface in a generally ascending arcuate path in a contact zone with a bath of developer material supported in a concave chamber adjacent to the lower face of the imaging surface, the contact zone extending upwardly from about the lowermost point of the arcuate path to a point sufficient to allow frictional contact between the developer and imaging surface along the contact zone to circulate the developer in the bath.

3,606,534
MULTIPLE SIZE RECORDING APPARATUS
Lawrence C. Alman, Jr., and Jack R. Hauber, Webster, and Frank R. Hynes, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 14, 1969, Ser. No. 824,539
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 **4 Claims**

An improved xerographic copying/duplicating system arranged in conjunction with an improved aperture card handling and scan system and sheet feed apparatus which are controlled by an improved control circuit and drive system such that high quality copies of film images of varied size are reproduced on copy sheet of varied corresponding size or the same sheet size. Cut sheets are fed from the sheet feed apparatus in response to control signals to correspond with image size. Also control signals are operative to enable a preselected sheet size irrespective of the image size.



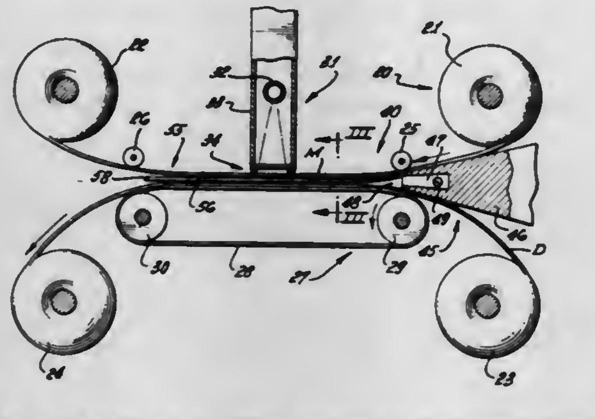
3,606,535
DEVICE FOR RECTIFYING UNEVEN DISTRIBUTION OF ILLUMINATION INTENSITY IN A SLIT EXPOSURE MECHANISM
Yutaka Koizumi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Feb. 14, 1969, Ser. No. 799,435
Claims priority, application Japan, Feb. 17, 1968, 43/11,519
Int. Cl. G03b *27/70*
U.S. Cl. 355—66 **1 Claim**



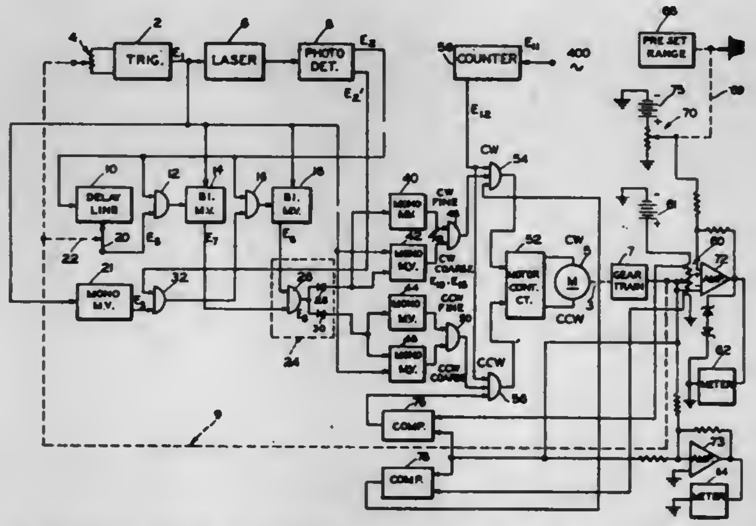
A slit exposure photo-copying device having an optical system with two reflecting mirrors joined at a right angle for projecting an image along a path parallel to the parallel planes of the document to be copied and the photosensitive surface. A contoured shield plate is inserted into the system at the joint of the mirrors in order to rectify the uneven distribution of illumination intensity of light reflected from the document to the photosensitive surface.

3,606,536
APPARATUS FOR CONTACT PRINTING
Robert Beispel, Westlake Village, Calif., assignor to Extek Microsystems, Inc., Van Nuys, Calif.
Filed Sept. 11, 1969, Ser. No. 857,173
Int. Cl. G03b *27/20*
U.S. Cl. 355—91 **8 Claims**

An apparatus for contact printing from an image-bearing master to duplicate or work stock in which the master and duplicate stock are continuously moved through an exposure zone which includes a light source and a device for maintaining the master and duplicate stock in registry during exposure including an entrance vacuum device. In one embodiment, the registry device includes elongated members disposed between the marginal edges of the master and duplicate stock so as to define longitudinally extending spaces which are in fluid communication with the entrance vacuum device so as to evacuate the spaces by withdrawing air therefrom along longitudinal paths so as to effect atmospheric compression of the master and duplicate stock to prevent relative movement therebetween. The elongated members for separating the marginal edges of the master and duplicate stock may be movable or stationary. The entrance vacuum device may comprise a vacuum region for evacuating the air between the master and duplicate as they are guided together along a gradually converging path. The vacuum region may be provided through wedge-shaped device disposed at the entry end of the exposure zone and between the master and duplicate stock or through rollers in non-sliding contact along a continuous line between a pair of sidewalls which define a converging vacuum space or region from which the air is withdrawn to effect initial compression and registry of the master and duplicate stock.

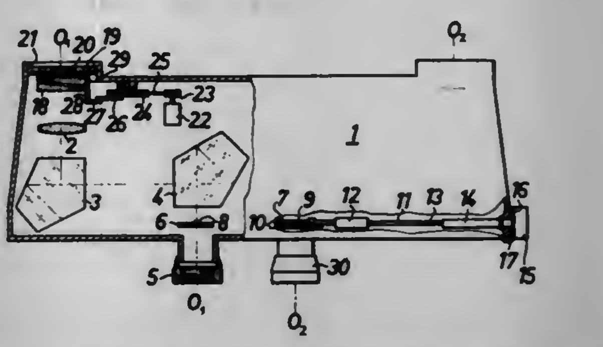


3,606,537
LASER RANGING SYSTEM USING MAGNETOSTRICTIVE DELAY LINE
John F. Yurasek, Passaic, and Arthur Simon, Fair Lawn, N.J., assignors to The Bendix Corporation
Filed Dec. 9, 1968, Ser. No. 782,378
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **5 Claims**



A system using a magnetostrictive delay line for converting the interval between pulses corresponding to the firing of a laser beam at a target and corresponding rebound pulses into a target range indication. The interval between the laser firing and rebound pulses is compared to the delay line interval and a motor is driven in response to the difference between the intervals for automatically tracking the target. A position sensor connected to the motor shaft senses target range information for providing a continuous target range display.

3,606,538
STEREOSCOPIC VIEWING SYSTEM
Siegfried Hesse, Jena, Germany, assignor to VEB Carl Zeiss, Jena, Germany
Filed Apr. 25, 1969, Ser. No. 819,498
Int. Cl. G01c *3/14*
U.S. Cl. 356—12 **3 Claims**

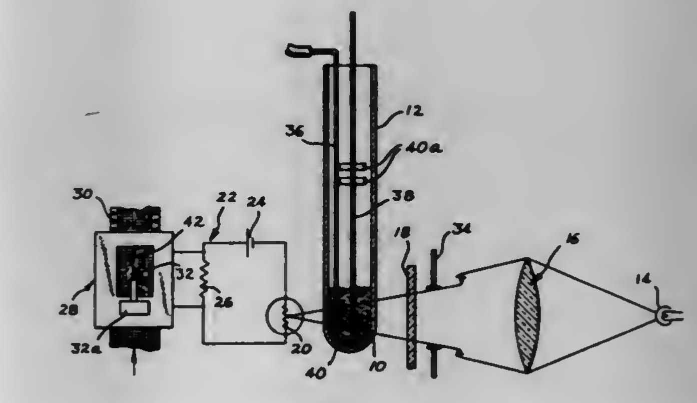


A system for stereoscopic observation of a pair of images of an object includes at least one stereoscopic mark. Accuracy of stereoscopic measurement is increased by periodical relative motion of the object or the pair of images on the one hand and the stereoscopic mark on the other. The frequency f and the amplitude A of the relative motion are respectively 10 $\text{min.}^{-1} \leq f \leq 50\ \text{min.}^{-1}$ and

$$1\frac{\Delta w}{\Gamma} \leq A \leq \frac{\Delta w}{\Gamma}$$

Δw being the mean width revolving power of the human eye; and Γ, the angular manification of the observation system.

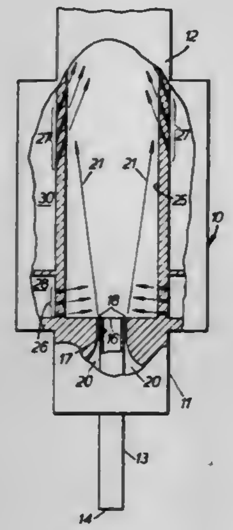
3,606,539
APPARATUS AND METHOD FOR MEASURING OSMOTIC FRAGILITY OF RED BLOOD CELLS
Michael L. Polanyi, Webster, Mass., and Henry Lustig, Poughkeepsie, N.Y., assignors to American Optical Corporation, Southbridge, Mass.
Filed Nov. 13, 1968, Ser. No. 775,465
Int. Cl. G01n *21/06, 21/26, 33/16*
U.S. Cl. 356—39 **9 Claims**



Measuring osmotic fragility of erythrocytes for diagnosis of blood dyscrasias. A blood sample, diluted in an isotonic saline solution, is placed in a test tube which in turn, is positioned in apparatus for measuring osmotic fragility of erythrocytes in the sample. In the apparatus, distilled water is delivered directly into the sample at a predetermined constant rate with continuous mixing to maintain equilibrium of tonicity throughout the sample. The sample is transilluminated during such dilution and light transmittance through the sample is photoelectrically measured and recorded to indicate the rate and percent of hemolysis versus time or tonicity. Tonicities of the sample at which hemolysis starts, ends and/or reaches other values are determined from the recording for interpretation of erythrocytic osmotic fragility.

3,606,540
ANALYSIS OF MOLTEN MATERIALS

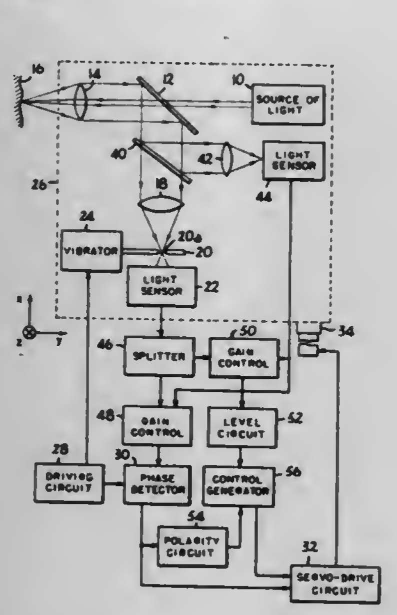
Royson Vaughan Williams, Staines, Bruce Bennett Fulford, Harrow, and Edmund Arthur du Bois, Purley, England, assignors to The British Iron and Steel Research Association
Filed Sept. 29, 1969, Ser. No. 861,929
Claims priority, application Great Britain, May 23, 1969, 26,554/69
Int. Cl. G01j *3/30, 3/42*
U.S. Cl. 356—86 **9 Claims**



This invention concerns molten material analysis apparatus in which there is means for reducing or preventing build up of particulate material sample on the wall of a conduit carrying said sample from an atomizer which extracts the sample from a melt towards an analysis station. The invention also concerns plasma jet apparatus for analysing a particulate sample which apparatus has means for preventing sample build up between the delivery end of a conduit feeding the sample to the apparatus and a proximate electrode of the apparatus.

3,606,541
CONTACT-LESS PROBE SYSTEM

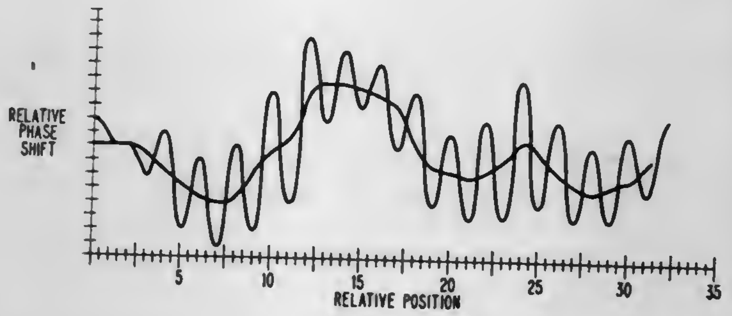
Tutomu Sugano and Makoto Kikuchi, Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Filed Sept. 23, 1969, Ser. No. 860,263
Claims priority, application Japan, Sept. 28, 1968, 43/70,538
Int. Cl. G01b *11/30*
U.S. Cl. 356—120 **2 Claims**



A collimated light reflected from an object is passed through a vibrating pinhole and converted into an AC and a DC component controlled in gain with the light intensity. The polarity of the AC component is phase detected and cooperates with the level of the DC component to determine if the system is within its operative region. When the system is outside the operative region, the phase detected component and the DC level cause the system to enter the operative region. When in its operative region, the system controlled by the phase detected component is maintained in a predetermined position.

3,606,542
COMPLEX-VALUED SPATIAL FILTER USING PHASE MODULATION ONLY

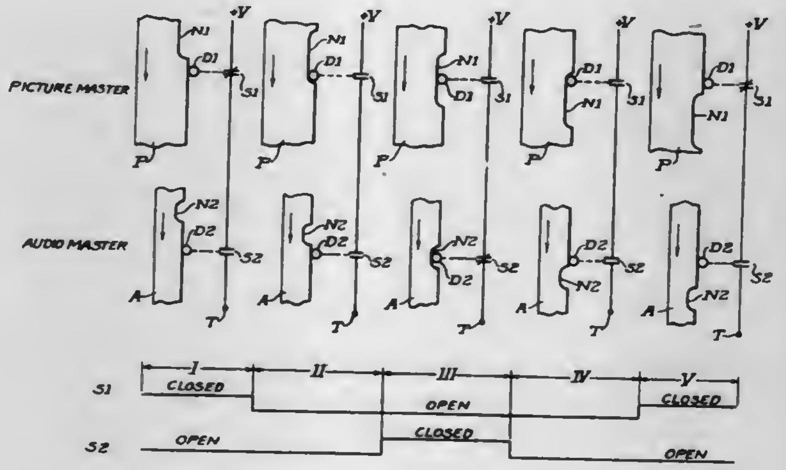
Joseph P. Kirk and Andrew J. Lavin, Endicott, and William C. Rodgers, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,741
Int. Cl. G02b *5/18*
U.S. Cl. 350—162SF **3 Claims**



An improved optical spatial filter to produce a transform (image) representing phase and amplitude modulation of the incident wave. The filter is non-absorptive and achieves amplitude modulation of the desired image in a selected diffraction order by diffracting the unwanted light into non-selected orders. The filter is fabricated using only phase filter techniques. Other applications for the filter include conversion of a wave emanating from a given object into a wave representing a given image. Either a transmitted or reflected wave can be used to construct the image.

3,606,543
OUT-OF-SYNC DETECTOR FOR FILM PRINTERS

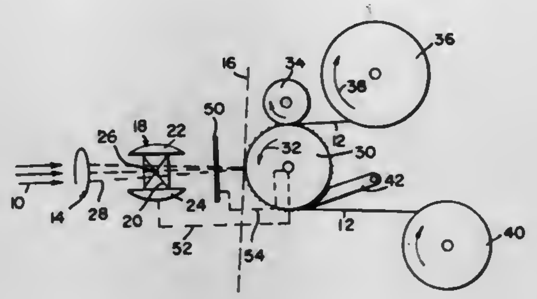
Andrew Balint, Park Ridge, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed July 28, 1969, Ser. No. 845,168
Int. Cl. G03b *31/04*
U.S. Cl. 352—12 **5 Claims**



An out-of-sync detector for film printers wherein film copies are made by continuous printing from closed loop picture and audio masters. Indicia are located on each master loop and are sensed by detectors. The detectors control the opening and closing of serially connected switches. As long as the two master loops move in synchronism, the switches close at different times, however, if the two master loops drop out-of-sync, both switches are closed at the same time and complete a circuit that shuts down the operation of the printer.

3,606,544
REFRACTIVE SHUTTER FOR ROTATING PRISM CAMERAS

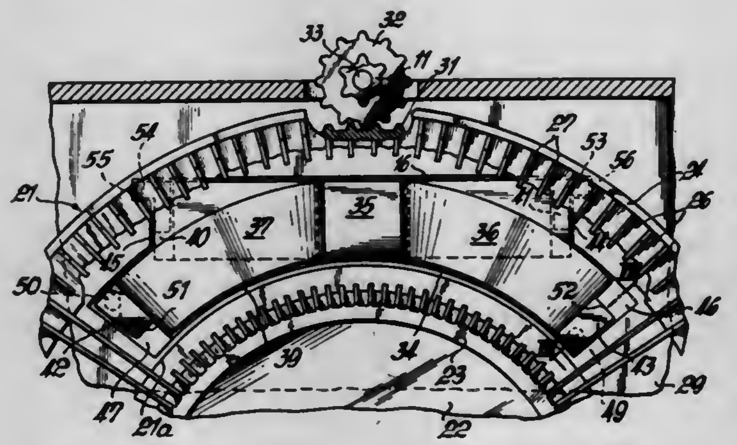
Joseph H. Arndt, Boulder, Colo., assignor to TRW Inc., Redondo Beach, Calif.
Continuation of application Ser. No. 550,327, May 16, 1966. This application Aug. 18, 1969, Ser. No. 866,444
Int. Cl. G03b *41/06, 41/08*
U.S. Cl. 352—116 **3 Claims**



A rotating prism is used as a shutter to intermittently transmit light to film that is moved in timed relation with the rotating prism shutter. The prism shutter contains an interface between two media of different index of refraction. The interface orientation and the index of refraction to pass light are adjusted such that desirable light passing through the prism will meet the interface at an angle of incidence which is less than the critical angle, and, hence, will pass through the interface. Unwanted light will be incident to the interface at an angle greater than the critical angle and, hence, will be totally reflected and not pass through the interface.

3,606,545
CONVERTIBLE SLIDE PROJECTOR

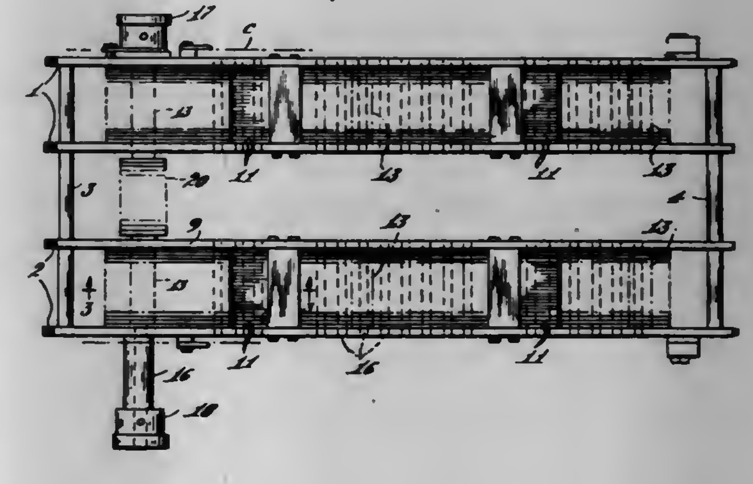
Rolf Heinzmann Stuttgart-Bad Cannstatt and Albert Stieringer, Calmbach, Germany, assignors to Robert Bosch Elektronic und Photokino GmbH, Stuttgart-Unterturkheim, Germany
Filed Sept. 5, 1968, Ser. No. 757,647
Claims priority, application Germany, Sept. 8, 1967, P 15 72 587.8
Int. Cl. G03b *23/04, 23/06*
U.S. Cl. 353—117 **10 Claims**



A convertible slide projector which can operate with circular or straight slide trays has a lifting unit which is composed of two ramps each adapted to lift slides in one type of trays. The lifting unit can be inserted into the bottom wall of the projector housing in either one of two positions in each of which one of the ramps extends upwardly and into a channel provided in the bottom panel of the corresponding type of tray. A straight slide tray is formed with a straight channel and co-operates with a straight ramp which serves to lift those slides which reach the slide changing station to a level above a lateral ledge of the straight tray so that the slide changer can transport the thus raised slides to projection position and back into the respective compartments of the straight tray. The bottom panel of the circular tray is formed with a ring-shaped channel which receives an arcuate ramp.

3,606,546
PHOTOCOPIER

John S. Dudley, Douglas, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed May 13, 1969, Ser. No. 824,100
Int. Cl. G03b *27/62*
U.S. Cl. 355—40 **7 Claims**

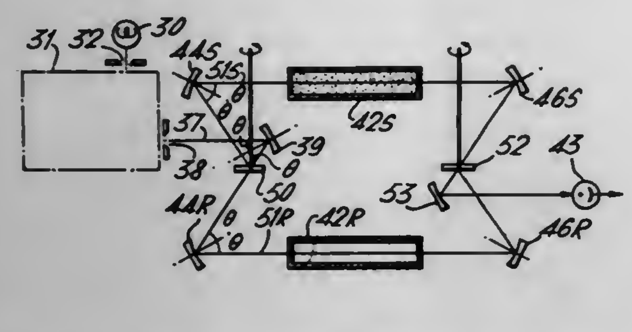


A photocopier for simultaneously copying printed matter and indicia side by side to make articles such as piece-rate tags having severable sections corresponding to the operations performed by successive operators, each section indicating the nature of the operation and the characteristics of the article operated on, each operator tearing off the section corresponding to his operations for use in collecting his piece-work payments. The different operations are copied from a printed sheet and the characteristics of the article operated on are copied from wheels carrying indicia on their peripheries.

3,606,547
SPECTROPHOTOMETER

Kenji Iwahashi, Osaka, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto, Japan
Filed Dec. 22, 1969, Ser. No. 887,390
Claims priority, application Japan, Dec. 31, 1968, 44/731
Int. Cl. G01j *3/08, 3/42*
U.S. Cl. 356—97 **1 Claim**

A spectrophotometer which includes an optical system arranged between the exit slit of a monochromator and the sample cell so that the meridional and sagittal image planes of the optical system are axially displaced from each other, thereby causing the bundle of monochromatic light rays to have a well defined, very thin and substantially equal cross sectional area for a long distance along the optical axis of the system. Within this distance the sample cell is placed so that the cell can be made longer than the cells used in the prior art spectrophotometers, with the cross sectional area of the bundle of monochromatic light rays passing through the sample in the cell substantially corresponding to the cross sectional area of the sample through the whole length of the cell. This ensures efficient and accurate measurement of samples, especially those of relatively low concentrations.

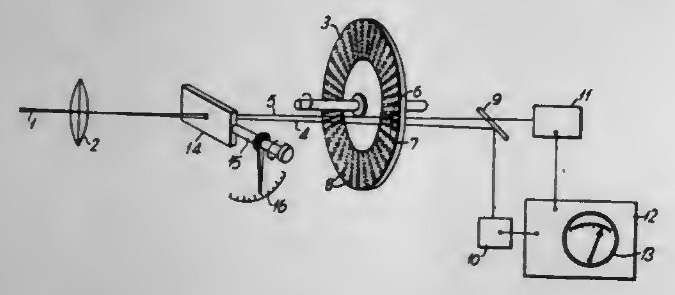


ERRATUM

For Class 356—103 see:
Patent No. 3,606,564

3,606,548
MEASUREMENT OF DISPERSION OF LIGHT

James Dyson, East Molesey, England, assignor to National Research Development Corporation, London, England
Filed Oct. 10, 1968, Ser. No. 766,591
Claims priority, application Great Britain, Oct. 16, 1967, 47,133/67
Int. Cl. G01n *21/46;* **G01j** *3/48*
U.S. Cl. 356—128 10 Claims

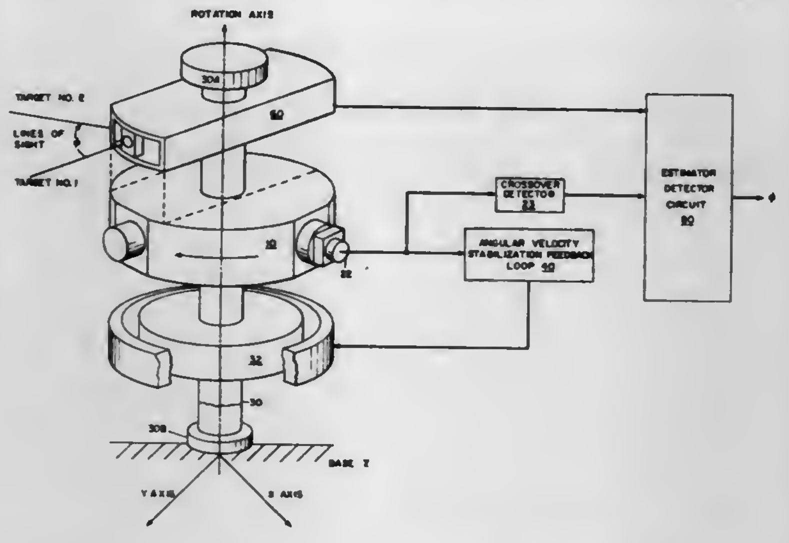


An apparatus for measuring the dispersion of light during its passage through the atmosphere in which a ray of light is modulated by a rotating chopper. Light of differing wave-lengths in the ray is chopped at different instants due to the lateral displacement of images of the source of the ray formed by light of differing wavelengths resulting from dispersion of the light by the atmosphere. The phase difference of the modulations for two colours, which is related to the dispersion, is measured.

3,606,549
RING LASER INERTIAL ANGLE ENCODER

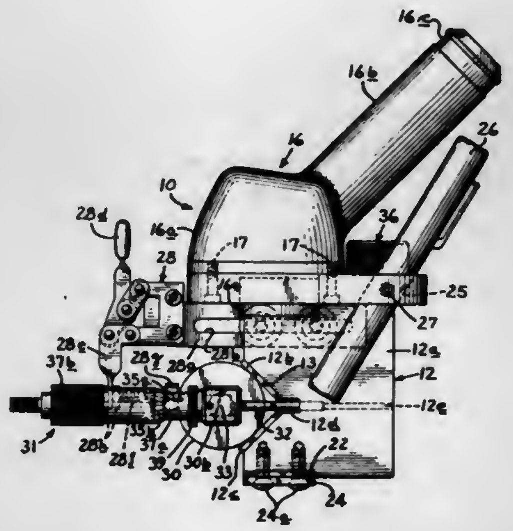
Joseph D. Coccoli, Brighton, and John R. Lawson, Lincoln, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Apr. 14, 1969, Ser. No. 815,786
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 10 Claims

A ring laser angle encoder which measures the angular difference in inertial positions of two targets and provides a highly accurate, continuous, digital readout thereof. The encoder comprises a rotatable ring laser maintained at a constant inertial angular rotation rate above a predetermined threshold value such as to generate a digital count directly proportional to the angle through which the laser has rotated; a scanner-photometer rigidly affixed to the laser and rotatable therewith about the laser's rotation axis, which converts the light intensity of each target scanned into an electrical signal having a frequency proportional thereto; and an estimator-detector circuit coupled to the output of the ring laser and the photometer, which estimates the center of each target scanned and records the laser's digital count (and fraction thereof) existing when each target center is scanned. The first target scanned is scanned and estimated again upon completion of a full rotation cycle of 360° for purposes of self-calibration. The resulting digital counts for the aforementioned three detectors are combined to provide a digital output from the estimator-detector circuit which is a highly accurate indication of the angular difference between the two targets of interest.



3,606,550
METHOD AND APPARATUS FOR SETTING THE POSITION OF A BORE CUTTING TOOL

Arthur J. Proksa, Elmwood Park, Ill., assignor to Everede Tool Company, Chicago, Ill.
Filed Apr. 21, 1969, Ser. No. 817,976
Int. Cl. B27g *23/00*
U.S. Cl. 356—171 13 Claims

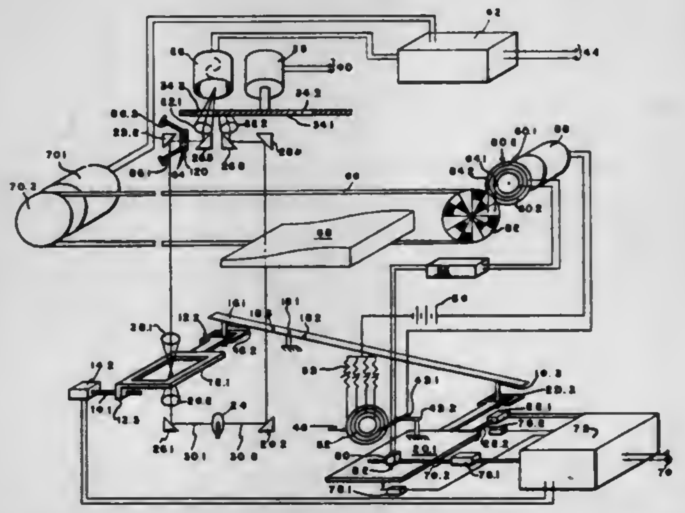


A light-in-weight magnifying device is provided having an adjustable boring bar receiving support frame and a magnifying viewing means providing a viewing field in which the adjustable tip portion of the boring bar tool bit or a radially extended portion of a dummy boring bar is visible in magnified form. The viewing field of the magnifying viewing means is provided with a reference marker, and the magnifying viewing member includes adjusting means for adjusting the relative position of the support frame and the viewing means so that the tip portion of the magnified image within the viewing field can be adjusted relative to said reference marker thus providing an indication of the exact radial extent from the axis of

the boring bar or the dummy boring bar. The dummy boring bar carries a micrometer unit attached thereto, the micrometer unit having a radially extending member adjustable in position in precisely measurable amounts from the axis of the dummy boring bar body thus providing means for setting an initial radius dimension which is set up in the viewing field of the magnifying viewing means by adjusting the support frame so the top of the radially extending member of the micrometer unit is in registry with the reference marker. The magnifying device is then placed over the boring bar mounted on the head of a machine tool and the tool bit is adjusted to bring the tip thereof in registry with the reference marker.

3,606,551
OPTICAL FILTERING METHODS AND STRUCTURES FOR INCREMENTAL SCANNING SYSTEMS

Richard J. Becherer, Chelmsford, George B. Parrent, Jr., Carlisle, and Thomas J. Skinner, Chelmsford, Mass., assignors to Technical Operations, Incorporated, Burlington, Mass.
Filed Apr. 15, 1968, Ser. No. 721,472
Int. Cl. G01n *21/06, 21/22*
U.S. Cl. 356—203 6 Claims

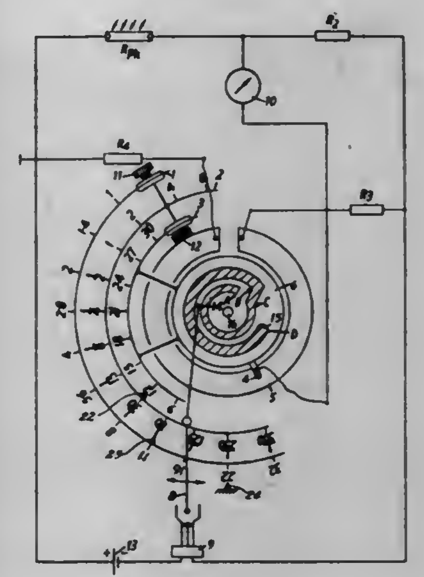


This disclosure depicts a method for producing isophote records from a photographic transparency record or the like. The disclosure further depicts novel apparatus for assisting in practicing the described method, comprising a microdensitometer for optically scanning a specimen carrying information in terms of density differences combined with a write-out device responsive to the microdensitometer for forming an isophote record characterizing the density variations in the scanned specimen. The disclosure emphasizes linear filtering methods and structures for use in microdensitometry with particular attention to scanning aperture filters having transmittance functions optimized to accomplish desired filtering operations. An exemplary filter for suppressing grain noise is shown.

3,606,552
PHOTOGRAPHIC EXPOSURE MEASURING DEVICE

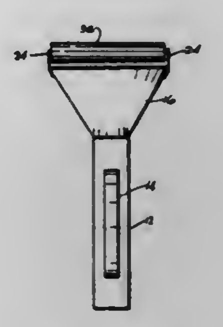
Dieter Ambrosius, Dresden, Germany, assignor to Kombinat Veb Pentacon Dresden Kamera- und Kinowerke, Dresden, Germany
Filed Mar. 12. 1969, Ser. No. 806,651
Int. Cl. G01j *9/42*
U.S. Cl. 356—227 6 Claims

A photo-electric exposure measuring device includes in a housing an exposed measuring circuit having an indicating device connected with a photo sensitive device influenced by prevailing light conditions. A plurality of exposure factor setting devices influence a summation element rotatably mounted on the housing which summation element influences the indication of the indicating device. The summation element is provided with guide means engageable by a lever for operating a switch. In use, the measuring circuit is connected to a source of supply potential via the switch. The switch is operative via the lever and guide means and disconnects the source of supply potential when the combination of exposure factor settings are outside the range of the measuring device.



3,606,553
WALLPAPER REMOVING TOOL

Concetta M. Petrus, 45 Midian Ave., Windsor, Conn. 06095
Filed June 25, 1969, Ser. No. 836,337
Int. Cl. A46b *11/00, 17/08*
U.S. Cl. 401—39 1 Claim

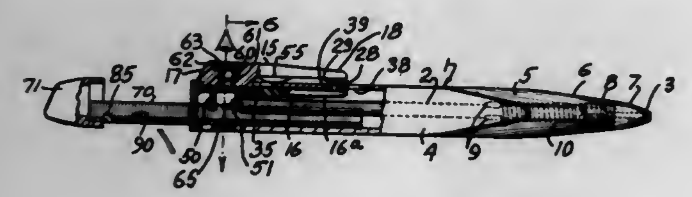


A tool for aiding in the removal of wallpaper. The tool has a hollow, elongated container adapted to be filled with a fluid for loosening wallpaper from a wall. The container has a funnel for directing the fluid onto a roller detachably mounted on pivot arms connected to the funnel. The funnel furthermore has a channel in the outer portion thereof for supporting a perforated plate for permitting passage of fluid from the hollow container to the roller when the roller is positioned adjacent the perforated plate and also for supporting a scraper plate when the roller is removed.

3,606,554
BALL-POINT PEN

Jorgen O. de Bang, P.O. Box 4605, Nassau, Bahamas, and Henrik J. Rolighed, Vedskolle, pr. Vallo, Denmark
Filed July 7, 1969, Ser. No. 847,485
Int. Cl. B43k *7/12, 29/12*
U.S. Cl. 401—105 4 Claims

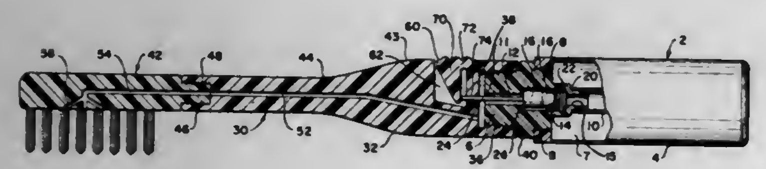
The device includes a cartridge having a ball-point and axially positioned within a barrel. Inner and outer clips, connected together are movable internally and externally of the barrel. The inner clip engages the inner end of the cartridge to move it when the outer clip is moved. Locking means holds the inner clip in position under control of the outer clip. Both clips and the barrel have bores



which align when the cartridge is retracted within the barrel. A slide carrying transparencies is movable within the barrel for viewing when the bores are aligned, the bores being unaligned when the cartridge is extended.

3,606,555
TOOTHBRUSH HANDLE FOR INTERCONNECTING A BRISTLED HEAD AND A PRESSURIZED TOOTHPASTE CONTAINER

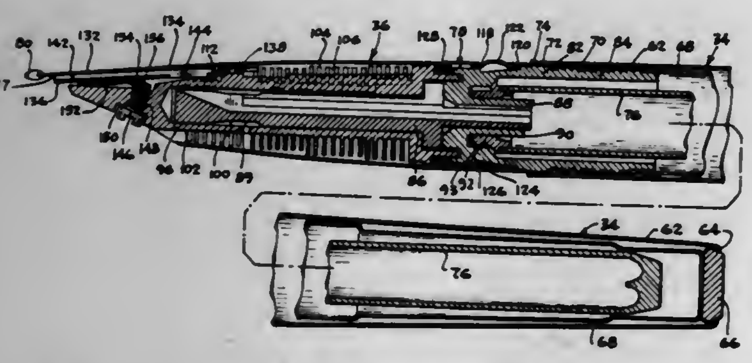
Tomaso Ferro, 533 Grand St., Alameda, Calif. 94501
Filed Oct. 8, 1969, Ser. No. 864,642
Int. Cl. A46b *5/02, 11/02*
U.S. Cl. 401—190 **7 Claims**



A toothbrush handle for connecting a pressurized container of toothpaste with a bristled toothbrush head, and comprising an elongated, hand-holdable component provided with a longitudinally extending supply passage and a valve control eleemnt. The supply passage communicates adjacent one end with the discharge port of the pressurized toothpaste container and adjacent the other end with a paste distribution passage in the brushing head. The valve control element is operatively connected with and controls a paste discharge valve on the pressurized container so as to permit selective delivery of paste to the brushing head.

3,606,556
FOUNTAIN PEN

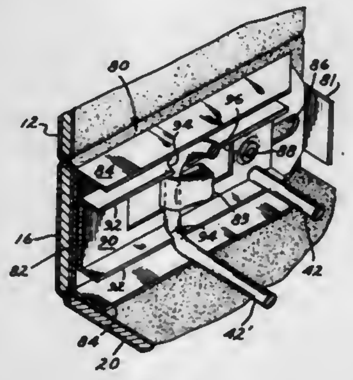
Homer T. Green, Milton, and Frederick R. Wittnebert, Whitewater, Wis., assignors to The Parker Pen Company, Janesville, Wis.
Filed Apr. 29, 1970, Ser. No. 32,868
Int. Cl. B43k *1/02*
U.S. Cl. 401—231 **22 Claims**



A fountain pen having an integral nibbed-point and shell portion providing greater collector capacity; a clutch ring having elements adapted to extend through openings in the integral portion for firmly attaching the portion to internal pen structures and for frictionally resisting movement of a cap assembly when said cap is covering the point end of the pen; adjustable members exert, a force on tines comprising the nib to vary their separation for regulating variations in line breadth resulting from use of the pen.

3,606,557
ARCHED RING-WIRE POST BINDER

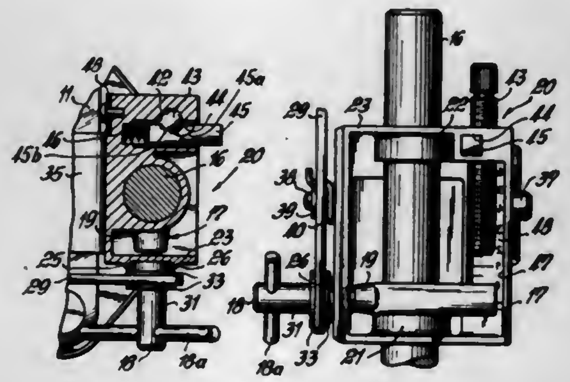
Frank Stanley Schade, Holyoke, Mass., assignor to National Blank Book Company, Inc., Holyoke, Mass.
Continuation-in-part of application Ser. No. 699,906, Jan. 23, 1968. This application Dec. 3, 1968, Ser. No. 784,533
Int. Cl. B42f *3/02*
U.S. Cl. 402—31 **3 Claims**



An arch-type ring binder with cover members and hinged thereto an assembly of hingedly connected back panel sections comprising opposed side panel sections and a connecting panel section, an arched split ring loose leaf toggle mechanism fixed on one side panel and means on one of said other back panel sections, preferably the other side panel section, for releasably locking the arched rings thereto, said binder with the rings in locked condition providing a post binder type assembly with a loose leaf ring mechanism, and with the rings in unlocked condition having the operational advantages and usefulness of a ring binder type of loose leaf unit.

3,606,558
SUPPORT FOR PORTABLE DRILLING MACHINES OR THE LIKE

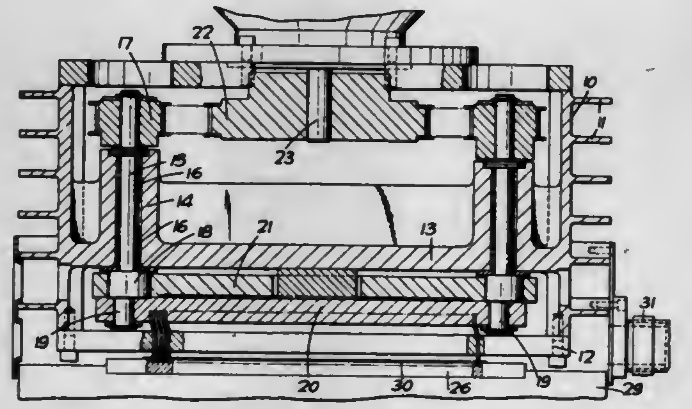
Herbert Dieterle, Scharnhausen, Alfred Hettich, Echterdingen, Kurt Paule, Stuttgart-Heumaden, Eberhard Vogel, Schonaich, and Max Burklin, Waldenbuch, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed July 17, 1969, Ser. No. 842,463
Claims priority, application Germany, July 24, 1968, P 17 52 837.9
Int. Cl. B23b *45/14, 49/00*
U.S. Cl. 408—16 **9 Claims**



A support for portable drilling machines comprises a column extending upwardly from a work supporting base, a clamp movable along the column, an arm movable along the column with reference to the clamp and having means for holding a drilling machine so that the tip of the drilling tool extends toward the base, and a feed depth selecting device including an externally threaded gage in a vertical bore of the arm and a locking bolt having threads which normally mate with the threads of the gage. The bolt can be disengaged from the gage in response to application of finger pressure and the gage abuts against the clamp when the arm moves the machine to the lowermost position in which a workpiece mounted on the base is formed with a hole of desired depth. A scale on the arm cooperates with an index on the clamp to indicate the position of the arm with reference to the clamp.

3,606,559
MULTIPLE SPINDLE HEADS FOR DRILLING AND LIKE MACHINES

Clifford Kingsbury Fitch, Ditchling, Sussex, and David Henry Hemming, Loughton, England, assignors to Kingsbury Fitch (Developments) Limited, London, England
Filed July 8, 1969, Ser. No. 839,903
Claims priority, application Great Britain, May 7, 1969, 23,387/69
Int. Cl. B23b *39/16*
U.S. Cl. 408—53 **9 Claims**



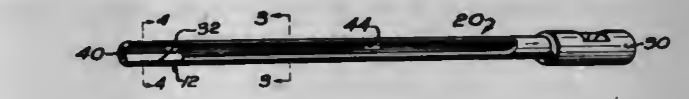
A multiple spindle head for a drilling machine comprises a carrier, a plurality of spindles rotatable in bearings in the carrier, each spindle having an eccentric crank pin and the crank pins engaging a drive member capable of gyratory movement relatively to the carrier and about an axis parallel to the axes of the spindles, in such a manner as to rotate the spindles. Each crank pin is coupled to the spindle by a crank portion the axis of which is inclined at an angle θ of less than 90° to the axis of the spindle, and the spacing of at least some of the spindles is such that the crank portions of adjacent spindles are interleaved.

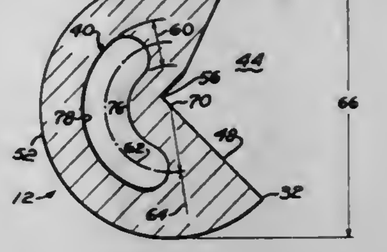
The drive member is rotationally balanced by a balancing member arranged to gyrate 180° out of phase with the drive member, the two members having bearing surfaces one of which engages and rolls around the other, in epicyclic fashion, as the two members gyrate.

3,606,560
DRILL

Morton McClennan, 17259 Chillicothe Road, Chagrin Falls, Ohio 44022
Continuation of application Ser. No. 729,232, May 15, 1968. This application July 1, 1970, Ser. No. 56,101
Int. Cl. B23b *51/06*
U.S. Cl. 408—59 **4 Claims**

An improved drill includes a body having a first passage therethrough for conducting fluid and an extruded tungsten carbide cutting tip having a second passage therethrough forming a continuation of the first passage. The second passage has a cross-sectional area which is no greater than the cross-sectional area of the first passage and which is more than one and a half times as great as

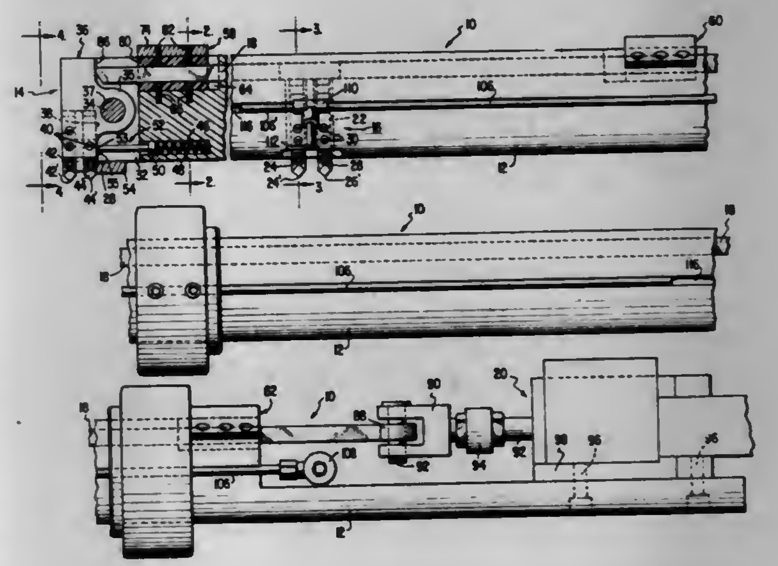




the area of a circle having a diameter equal to the width of the cross section of the second passage.

3,606,561
SWIVEL HEAD BORING BAR

John D. Davis, Ellettsville, Ind., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Mar. 12, 1970, Ser. No. 18,968
Int. Cl. B23b *29/034*
U.S. Cl. 408—146 **7 Claims**

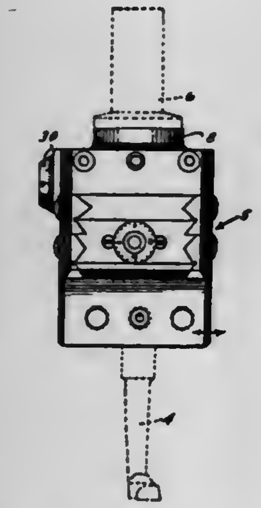


An axially movable boring bar carries a plurality of radially directed tools at longitudinally spaced position with one of the tools being adjustably positioned about a pivot axis perpendicular to shaft axis to reduce the overall travel of the boring bar.

3,606,562
OFFSET BORING HEAD

Marvin Wills, 2630 E. Willamette Ave., Colorado Springs, Colo. 80909
Filed May 19, 1969, Ser. No. 825,629
Int. Cl. B23b *29/034*
U.S. Cl. 408—181 **4 Claims**

An adjustable precision boring head for machine tools having coarse and fine adjustment means comprising four slidably interconnected elements in stacked relation and wherein the coarse adjustment for lateral movement of the cutting tool comprises screw means for moving the first and second of said elements with respect to each other along a single axis, and where the fine adjustment comprises further means interconnecting the second and third elements wherein they are movable with respect to each other at an angle of ninety degrees to the direction of longitudinal movement between the first and second elements, and further having means interconnecting the third and fourth elements in such a manner that they are movable with respect to each other along two mutually

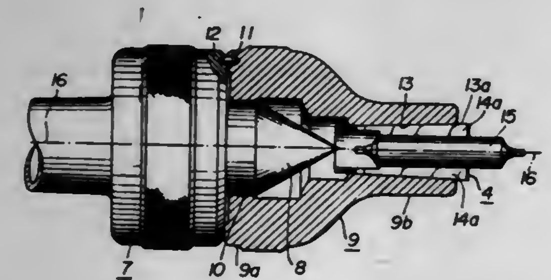


perpendicular axes, where, because of the operation of guides, the second and fourth elements are restricted in their relative movement to a direction which is parallel to the direction of relative movement between the first and second of the stacked elements.

3,606,563

CENTERING DEVICE

Masakazu Matsumoto, 1945 Ishikiri-machi,
Higashi-Osaka-shi, Osaka-fu, Japan
Filed Feb. 10, 1969, Ser. No. 797,983
Int. Cl. B23b *49/04, 43/02*
U.S. Cl. 408—200 **1 Claim**



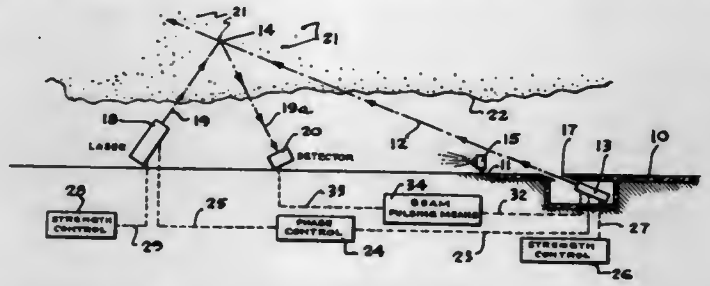
A centering device comprising a rotary center body rotatably mounting a center shaft, and a center drill mounting member removably connected to said rotary center body. The center drill mounting member is formed at one end with a bore for receiving therein said center shaft and mounting a collet at the other end thereof for holding a center drill on the extension of the center axis of said center shaft. This centering device permits to readily and quickly effect connection and disconnection of the center drill to and from the rotary center in effecting centering of a workpiece.

3,606,564

METHOD AND APPARATUS FOR VISIBILITY DETERMINATION AT AIRPORTS

Dennis J. Lisack, Chicago, Ill.
(Box 286 APO, San Francisco, Calif. 96328)
Filed June 5, 1969, Ser. No. 830,658
Int. Cl. G01n *21/00;* **G01b** *9/02*
U.S. Cl. 356—103 **12 Claims**

A beam of coherent light of a given frequency is directed up along the glide path at the approach end of an airport runway. At a first location below the level of said glide path and some distance from said approach end, a second beam of coherent light of said frequency is directed at a point on the glide path so that the second beam will be reflected to a second location by particles in clouds

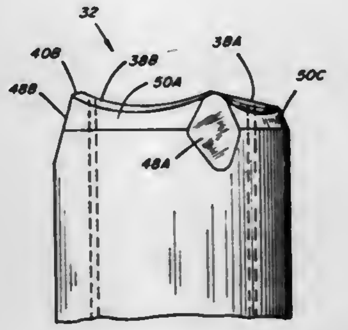


at said point. The beams are so arranged that destructive interference between the two beams at said point occurs when the visibility along said glide path is at least equal to the prescribed minimum.

3,606,565

SELF-PUNCHING T FITTING

Eldon W. Morain and Jerry W. Riggs, Tulsa, Okla., assignors to Continental Industries, Inc., Tulsa, Okla.
Filed June 26, 1969, Ser. No. 836,927
Int. Cl. B23b *41/08, 51/04*
U.S. Cl. 408—204 **6 Claims**

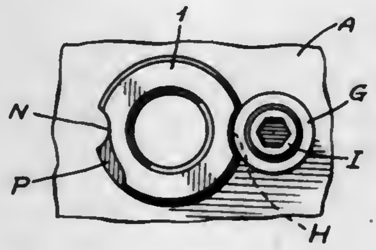


This invention relates to a self-punching T fitting. More particularly, the invention relates to an improved punch face configuration for a punch member as utilized in a self-punching T fitting, the punching member serving to punch a hole in a pipe, such as a gas main, by rotation axial advancement of the punch against the pipe, the improved punch face serving to penetrate the pipe to which the self-punching T fitting is attached and to augment the grasping of the coupon punched out of the pipe so that the coupon is retained and retracted rather than being deposited into the interior of pipe.

3,606,566

BUSHING FOR DRILL JIGS AND THE LIKE

Dale L. Bethke, 2924 Nesa Drive,
West Covina, Calif. 91790
Filed June 23, 1969, Ser. No. 835,618
Int. Cl. B23b *49/02*
U.S. Cl. 408—241 **1 Claim**

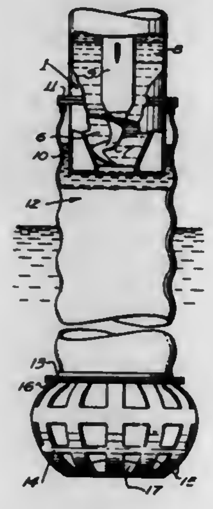


A guiding bushing for drills and reamers and more particularly to an improved form of interchangeable bushing which may be readily replaced to accommodate different sizes of drills in a single location or to provide a means for interchange to accommodate wear. The holding means is optionally arrangeable for either contingency.

3,606,567

TRANSPORTING APPARATUS FOR SOLIDS-LIQUID MIXTURES

Martin Stähle, % Hidrostal, S.A., Avda Argentine 2842,
Lima, Peru
Filed Nov. 13, 1969, Ser. No. 876,466
Int. Cl. F01b *25/00*
U.S. Cl. 415—47 **9 Claims**

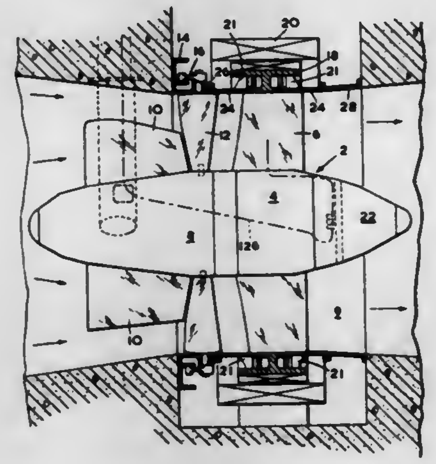


An apparatus which utilizes a suction pump designed to pass a solids-liquid mixture with minimal damage to the solids and an extensible tube terminating in a weighted strainer capable of passing solids which will pass the pump; the depth of submergence being variable depending on the suction pressure produced by the pump whereby on encountering excess solids content the tube and strainer raises automatically to a less dense region, and on reduction in solids content, extends automatically to a lower level.

3,606,568

WATER TURBINES AND PUMPS

Michael Braikevitch and Emil Goldwag, Netherton, England, assignors to The English Electric Company Limited, Strand, London, England
Filed Mar. 5, 1969, Ser. No. 804,438
Claims priority, application Great Britain, Mar. 5, 1968,
10,672/68
Int. Cl. F01b *11/08;* **B65d** *53/00*
U.S. Cl. 415—175 **5 Claims**



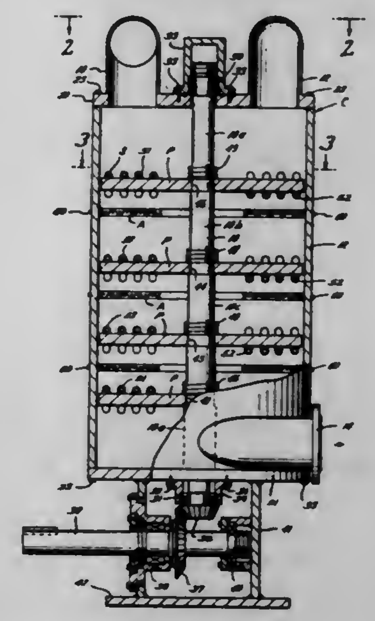
The invention relates to water turbines and pumps.

The invention provides a water sealing means for reducing to a low value the escape of water from the water flow duct of such a machine between cooperating stationary and rotating parts thereof. In such sealing means one of the said parts carries a rigid circular sealing surface, and the other carries a flexible compliant circular sealing surface which is automatically controlled at all parts around its circumference to lie closely adjacent but not touching the rigid sealing surface, by two opposing forces provided respectively by a biasing fluid under pressure and by the water escaping between the rigid and compliant sealing surfaces.

3,606,569

MULTI-STAGE COMPRESSOR

William A. Wallace, 2438 Lord Baronof,
Anchorage, Alaska 99503
Filed July 15, 1969, Ser. No. 841,928
Int. Cl. F01d *1/02*
U.S. Cl. 415—199 **4 Claims**

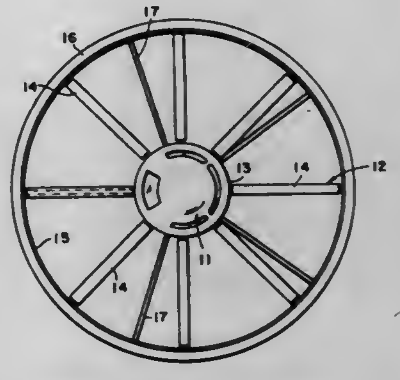


A multi-stage compressor wherein a plurality of disks are mounted on a shaft, with each of the disks having a plurality of tubular scoops, whereby air is compressed upon rotation of the discs by the pulling of air through the scoops in successive stages of compression to thereby provide a simplified low cost air compressor.

3,606,570

ROTOR ASSEMBLY FOR ROTARY WING AIRCRAFT

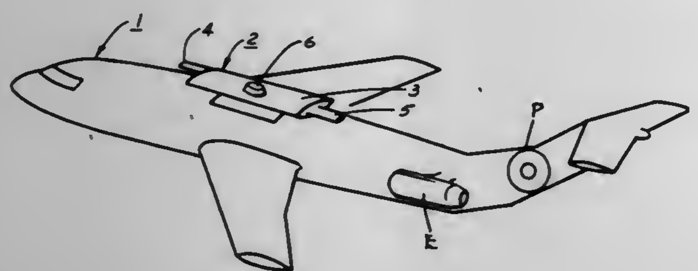
Willett H. Haggerty, Corpus Christi, Tex., assignor to The VLM Corporation, Fort Worth, Tex.
Filed Aug. 11, 1969, Ser. No. 848,990
Int. Cl. B64c *27/20*
U.S. Cl. 416—2 **11 Claims**



A rotary wing, vertical lift aircraft includes a central fuselage and a rotor consisting of an inner annular hub rotatably supported on and encircling the fuselage, radially extending rotor blades, and an outer supporting ring. The rotor is adapted to be driven by a turbine device associated with the rotor outer ring and an outer track nonrotatably attached to the fuselage. Each rotor blade is attached to a support member in the hub structure, and the support members are interconnected by tension members designed to separate from the support members under predetermined load whereby the rotor structure will separate fom the body in the event that one rotor blade is lost creating an unbalance in the rotor.

3,606,571
STOWED ROTOR

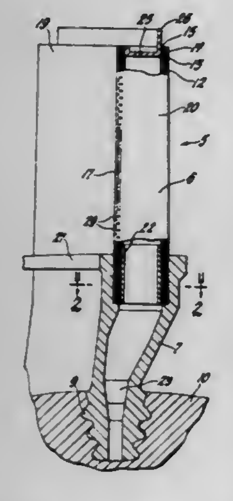
Reginald T. Wood, 1150 Atlanta Road,
Marietta, Ga. 30060
Filed Mar. 7, 1969, Ser. No. 805,166
Claims priority, application Great Britain, Mar. 8, 1968,
11,501/68
Int. Cl. B64c *27/22*
U.S. Cl. 416—87 **4 Claims**



A stowed rotor arrangement is disclosed which is adapted for mounting atop the fuselage of an airplane or the like and comprises a rotatable housing unit mounted on a vertical shaft and provided with telescopically related rotor blade units together with means for extending and retracting the rotor blade units from the housing unit, these units being for the purpose of providing vertical lift for the aircraft so as to facilitate take-off and landing operations.

3,606,572
AIRFOIL WITH POROUS LEADING EDGE

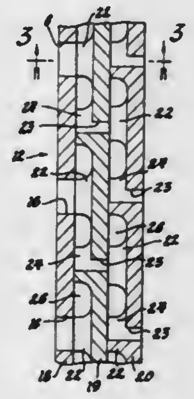
Ronald P. Schwedland, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 25, 1969, Ser. No. 852,555
Int. Cl. F01d *5/08*
U.S. Cl. 416—90 **10 Claims**



A hollow airfoil for use as a turbine vane or blade is made up of a number of sheet metal layers bonded together and folded at the leading edge. Holes for transpiration cooling of the blade are formed in the leading edge, the holes in the successive layers being disposed in spanwise rows with the holes in each layer partially overlapping the holes in the corresponding row in adjacent layers. These holes improve the folding properties of the leading edge. Some of them are connected to conduct air to the forward portion of the porous side walls of the airfoil.

3,606,573
POROUS LAMINATE

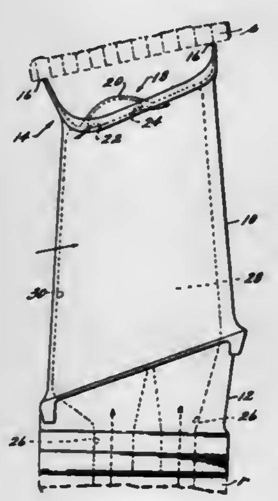
Calvin W. Emmerson, Mooresville, and Jack E. White, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1969, Ser. No. 850,567
Int. Cl. F01d *5/08*
U.S. Cl. 416—90 **11 Claims**



A porous sheet adapted for transpiration cooling, as in turbine blades, is made up of plural layers of metal bonded together with bosses projecting from the surfaces of the layers to create a space or passage between layers and with pores through the layers, the pores in each layer being out of register with those in the adjacent layer or layers. The pores extend through the sides of the bosses thus reducing the mass of the bosses and facilitating control of the permeability of the sheet.

3,606,574
COOLED SHROUDED TURBINE BLADE

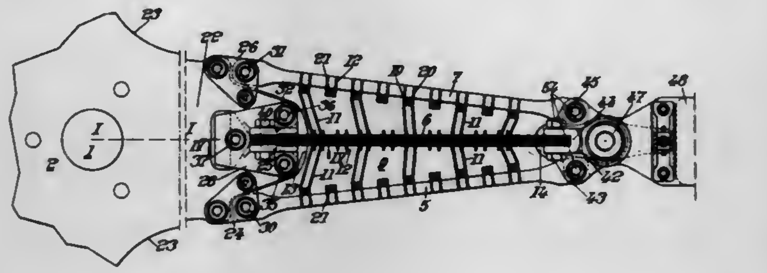
Henry J. Brands, Joseph W. Savage, and Frederick C. Herzner, Cincinnati, Ohio, assignors to General Electric Company
Filed Oct. 23, 1969, Ser. No. 868,785
Int. Cl. F01d *5/18*
U.S. Cl. 416—96 **2 Claims**



A hollow turbine blade is provided with a circumferential shroud segment at its outer end. A circumferential plenum directs cooling fluid from the blade to holes which extend to the inner surface of the shroud segment to provide for cooling of the shroud. The plenum is of arched construction for maximum strength.

3,606,575
RIGID HUBS FOR VARIABLE PITCH ROTORS

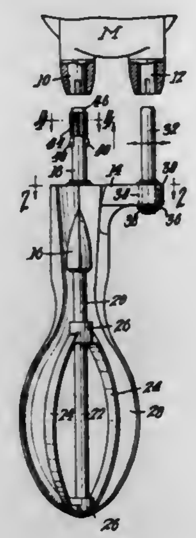
Lucien Edmond Lermusiaux, Saint-Etienne, France, assignor to Societe de Construction et d'Exploitation de Materiels et Moteurs S.C.E.M.M., Paris, France
Filed Feb. 10, 1969, Ser. No. 797,997
Claims priority, application France, Feb. 12, 1968,
139,576
Int. Cl. B64c *27/38*
U.S. Cl. 416—135 **22 Claims**



The hub comprises a rotary axle, a hub body rigidly secured to this axle, and arms fixed to the hub body, The variable pitch blades are fixed to the free ends of the arms. Each arm comprises at least three bundles of piled strips, these bundles being distrbuted about the pitch variation axis of the corresponding blade. The bundles of any one arm are connected to each other and to the hub body by holding means—namely rigid collars and sheets—such that the arm possesses a high resistance to flexion and a relatively low resistance to torsion.

3,606,576
DRIVE FOR A PORTABLE MIXING APPLIANCE

Frederick G. J. Grisé, Ware Point Road,
West Brookfield, Mass. 01585
Filed Dec. 5, 1969, Ser. No. 882,674
Int. Cl. B01f *7/00*
U.S. Cl. 416—170 **6 Claims**

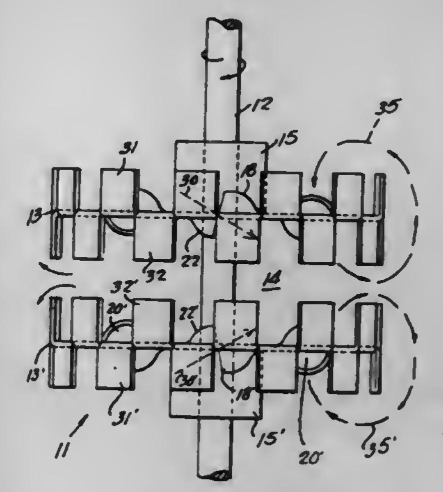


A single beating element for operation by an electric motor having a pair of rotary driving members, including a shaft to be clutched to one of said driving members and a rod for non-clutching engagement with the other of said driving members.

3,606,577
ROTOR BLENDER

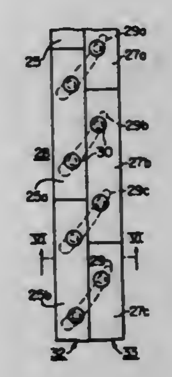
Leroy J. Conn, 11 S. Marion St., Warren, Pa. 16365
Filed Feb. 20, 1969, Ser. No. 801,061
Int. Cl. B67d *5/56*
U.S. Cl. 416—181 **7 Claims**

A double-blade cutting and blending rotor consisting of a pair of axially-spaced symmetrically oppositely-designed circular blades having impeller cups and vertical or inclined peripheral material-cutting teeth. The opposing symmetrical arrangement is such as to push liquid and solid material carried therein from above and below into the space between the blades, from whence the liquid and material travels outwardly and is subjected to cutting action by the vertical or inclined outwardly-projecting cutting teeth.



3,606,578
CONTINUOUS SHROUDING-RIVETED CONSTRUCTION

Ralph J. Ortolano, Eastview, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 30, 1969, Ser. No. 862,282
Int. Cl. F01d *5/22*
U.S. Cl. 416—191 **5 Claims**

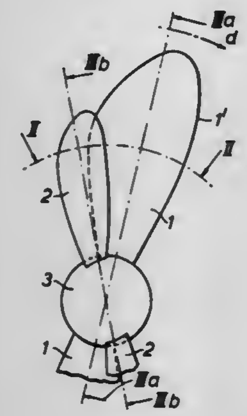


A circular shrouded rotor blade structure for an elastic fluid axial flow turbine or compressor comprising an annular row of blades and an annular series of arcuate segments associated with the blades and arranged in end-to-end relationship to form a continuous 360° shroud, wherein each pair of neighboring shroud segments is firmly riveted to a blade common to both with each segment being riveted to at least two blades. There may be more than one row of arcuate segments forming the shroud.

3,606,579
PROPELLER

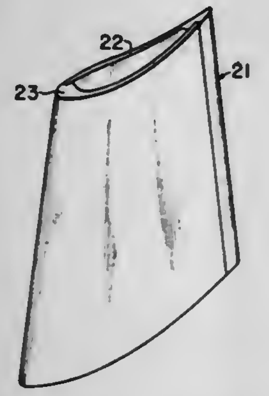
Henry Mehus, Kampens plass 12, Stavanger, Norway
Filed Jan. 22, 1969, Ser. No. 792,972
Int. Cl. B63h *1/26*
U.S. Cl. 416—200 **1 Claim**

A propeller of the marine screw type having a main blade and an auxiliary blade located at the discharge end of the main blade, said blades having a slot running therebetween at the trailing edge of the main propeller blade. The width of the slot in cross sectional area reduces its size from the pressure side of the blade towards the suction side of the blade to create a throttle effect resulting in an increase in water flow velocity through the slot and a reduction of the pressure in the suction side of the propeller. The structure so presented reduces cavitation and improves performance of the propeller by reducing turbulence on the suction side of the propeller blade.



3,606,580
HOLLOW AIRFOIL MEMBERS

Ralph O. Kaufman, Sr., Titusville, Pa., assignor to Cyclops Corporation, Universal-Cyclops Specialty Steel Division, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 823,924, May 12, 1969. This application Sept. 10, 1969, Ser. No. 864,927
Int. Cl. F01d *5/18*
U.S. Cl. 416—232 **3 Claims**

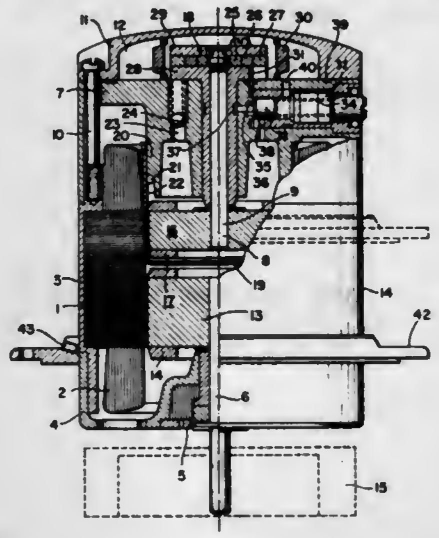


A hollow airfoil member comprising at least two connected wrought metal components, each component having a specially formed edge configuration and a plain formed remaining portion. The hollow airfoil member is formed by connecting the plain formed portion of the first component with the specially formed edge configuration of the second component and connecting the plain formed portion of the second component with specially formed edge configuration of the first component, these connections being inward from the outer extremities of the specially formed edge configurations.

3,606,581
MOTOR, PUMP AND BLOWER ARRANGEMENT FOR OIL BURNERS

Kyrre G. Sjotun, Langeso, near Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 6, 1969, Ser. No. 863,793
Claims priority, application Germany, Oct. 16, 1968, P 18 03 315.3
Int. Cl. F04b *31/00, 49/00, 49/06*
U.S. Cl. 417—45 **4 Claims**

The invention relates to an electric motor driven pump and blower assembly for oil burners. The assembly includes a single stage asynchronous motor having first and second independently rotatable rotors and a common stator. The rotors are respectively of greater and lesser inertia with the blower being connected to the first rotor and the pump being connected to the scond rotor. The pump operates to pump oil when turned in one direction but is inoperative in the opposite direction. This apparatus is operated with a secondary winding and switching means so that, upon starting, the pump is first turned in the inoperative direction and, upon the blower reaching its normal operating speed, the pump direction is reversed so that there is a lag between the time the blower begins operating and the pump begins pumping. Upon stopping, both rotors are de-energized at the same time but the larger inertia of the blower rotor will cause the blower to rotate after the pump rotor has stopped.



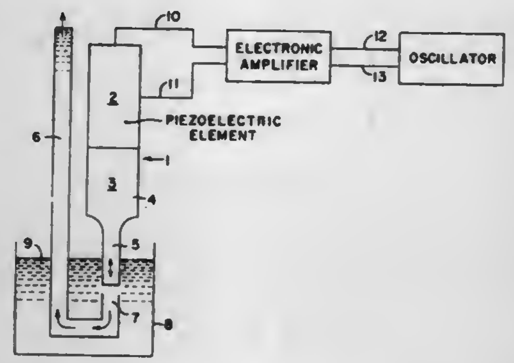
3,606,582
SORBENT FOR VACUUM PUMP AND METHOD FOR THE UTILIZATION OF SAID SORBENT

Francois Prevot, Antony; and Zbigniew Sledziewski, Cachan, France, assignors to Commissariat a l'Energie Atomique, Service du Developpement Industriel, Paris, France
No Drawing. Filed Sept. 18, 1969, Ser. No. 859,171
Claims priority, application France, Sept. 25, 1968, 167,483
Int. Cl. C09c *1/36;* **F04b** *37/02;* **H01j** *7/18*
U.S. Cl. 417—48 **5 Claims**

Titanium monoxide is employed as novel getter material for capturing and retaining gases by means of a sorption pump. Compared with titanium, the novel material possesses an appreciably higher absorption capacity at all temperatures below −120° C. and especially below −195° C., displays lower selectivity for gases, is capable of absorbing the rare gases and exhibits a high probability of capture of rare gas molecules.

3,606,583
ULTRASONIC PUMPS

Donald J. Coughenour, Morristown, N.J., and James N. Tomlinson, Boalsburg, Pa., assignors to The Singer Company, New York, N.Y.
Filed July 25, 1969, Ser. No. 844,875
Int. Cl. F04f *7/00*
U.S. Cl. 417—53 **6 Claims**

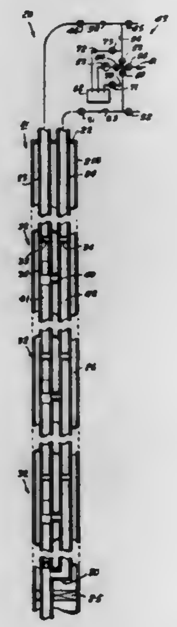


A pump for ultrasonically pumping liquids has a stepped ultrasonic resonator, a conduit and means to vibrate the resonator. The tip of the resonator is submerged in

the liquid to be pumped, wherein the tip is disposed adjacent to and facing the open mouth of the conduit through which the liquid is to be pumped. The vibrating tip of the resonator forces the liquid into the mouth of the conduit. A succession of impulses, caused by the vibrating tip, pumps the liquid through the conduit.

3,606,584
WELL TOOLS

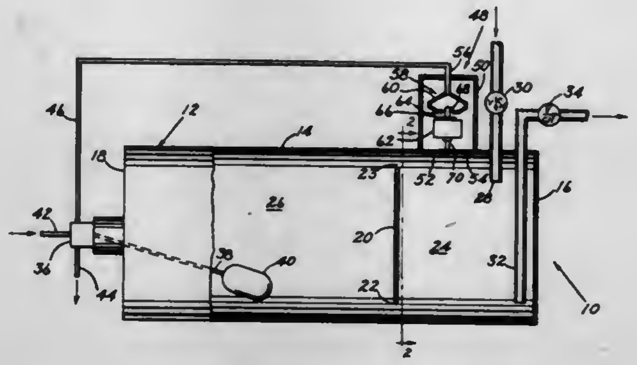
Phillip S. Sizer, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Feb. 19, 1969, Ser. No. 800,539
Int. Cl. F04f *1/18;* **E21b** *43/00*
U.S. Cl. 417—109 **26 Claims**



A well tool system, particularly adapted to producing wells by gas lift, including spaced parallel tubing strings interconnected by cross-over assemblies for introducing lift gas into a well through one tubing string and production of well fluids through the other tubing string independently of the casing annulus which may remain liquid full during the gas lift procedure.

3,606,585
FLUID PRESSURE DRIVEN PUMP

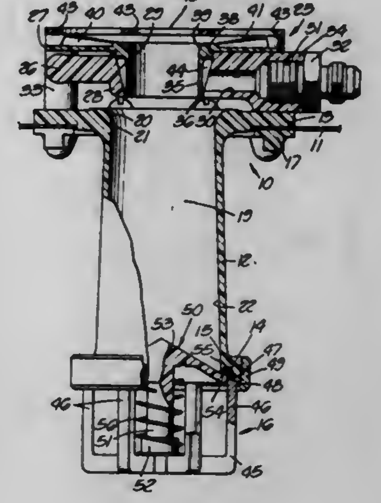
Leon C. Graves, P.O. Box 381
Rock Springs, Wyo. 82901
Filed Oct. 20, 1969, Ser. No. 867,504
Int. Cl. F04f *1/06*
U.S. Cl. 417—127 **1 Claim**



A pump for moving liquids wherein the prime mover is pressurized gas acting to force liquid from a vessel. Continuous pumping action is accomplished through the interaction of a float-controlled two-way valve in the pressurized gas supply line and check valves in the liquid lines to control and time the periods and directions of fluid flow through the vessel.

3,606,586
AIR INJECTION PUMP

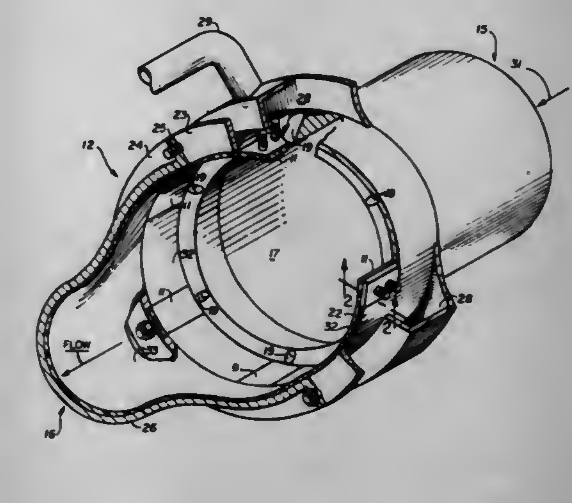
Meyer Piet, Arcadia, and Murray A. Chilcoat, Monterey Park, Calif., assignors to Futurecraft Corporation, City of Industry, Calif.
Filed July 14, 1969, Ser. No. 841,412
Int. Cl. F04f *5/48, 5/18*
U.S. Cl. 417—177 **2 Claims**



An air injection pump in which a nozzle has parts in fixed coacting relation to form an outlet opening for discharging an annular stream of pressurized fluid at a relatively high velocity into the throat end of a venturi passageway for inducing a large quantity of ambient outside fluid such as air to enter the passageway through flow paths interiorly and exteriorly of the annular nozzle discharge stream, so as to provide a combined flow of the streams through the passageway which will have a substantially uniform velocity gradient across the passageway, and thereby produce greater efficiency of the pumping operation.

3,606,587
WEAR RESISTANT SHOE FOR PUMPS

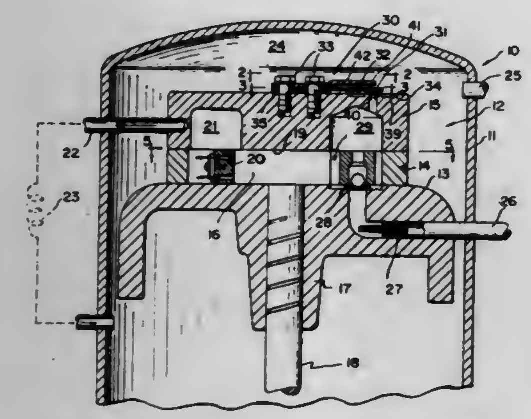
William G. Fraser, Castro Valley, Calif., assignor to Fruehauf Corporation
Filed Feb. 26, 1969, Ser. No. 802,522
Int. Cl. F04f *5/36, 5/46*
U.S. Cl. 417—195 **4 Claims**



A jet pump having multiple peripheral jet orifices is provided with individually replaceable wear resistant shoes downstream of the jet nozzle at the point of greatest wear to the pump wall due to the abrasive action of particles entrained in the fluid being pumped by the jet of fluid emitted from the nozzles.

3,606,588
PRESSURE EQUALIZING MEANS FOR COMPRESSORS AND THE LIKE

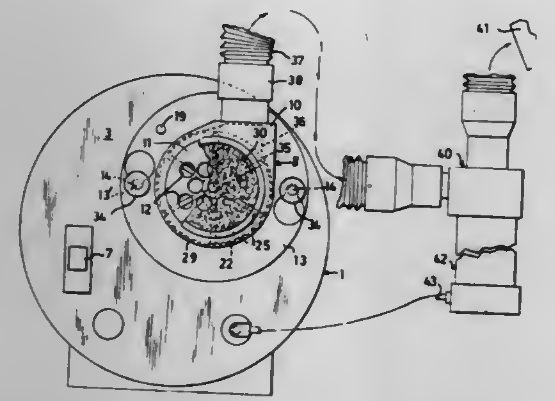
Bert W. Romerhaus, Haubstadt, Ind., assignor to Whirlpool Corporation
Filed Apr. 10, 1969, Ser. No. 814,908
Int. Cl. F04b *49/00*
U.S. Cl. 417—292 **5 Claims**



A pressure equalizing device for a compressor wherein a valve controlled passage between a high pressure chamber and a suction chamber of the compressor is provided for equalizing the pressure in the suction chamber and the high pressure chamber during start-up of the compressor. The compressor comprises a rotary compressor having a rotor disposed in the compression chamber for compressing fluid such as refrigerant fluid which is precooled and then delivered to the high pressure chamber for delivery to associated apparatus such as refrigeration apparatus. The fluid is returned to the suction chamber of the compressor through a return inlet which is provided with a check valve for preventing reverse flow from the suction chamber.

3,606,589
BLOWER STRUCTURE FOR RESPIRATORY AIR

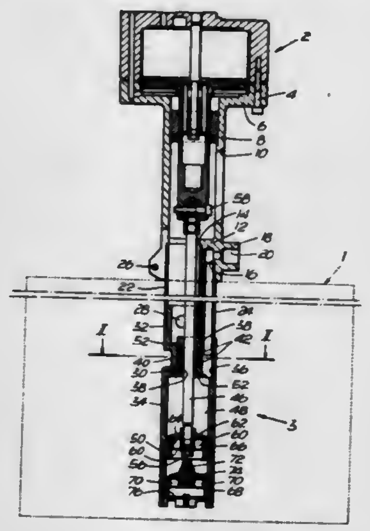
Leon Robert Cameto and Raleigh Joseph Harris, Oakland, Calif., assignors to Mist O_2 Gen Equipment Co., Oakland, Calif.
Filed July 16, 1970, Ser. No. 55,337
Int. Cl. F04b *17/00;* **F04d** *29/00*
U.S. Cl. 417—360 **4 Claims**



Apparatus for circulating air for inhalation and for incorporating in said air, therapeutic aerosol, which apparatus includes a conduit having a motor-driven blower therein, through and past which blower the air for respiration by a patient is moved. Said blower and conduit are substantially isolated from the motor housing, but are carried thereby and are quickly removable from the motor and its housing for sterilization, and are quickly reattached.

3,606,590
GLUE PUMP

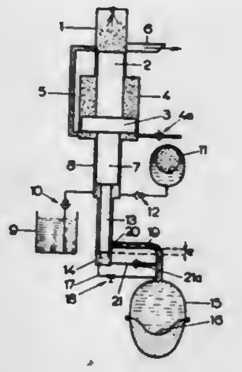
Fritz Gebhardt, Nurtingen, and Anton Abt, Oberboihingen, Germany, assignors to Karl M. Reich Maschinenfabrik, Nurtingen, Germany
Filed Sept. 2, 1969, Ser. No. 854,433
Claims priority, application Germany, Sept. 13, 1968, G 67 50 882
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—360 **2 Claims**



A pump of a very simple construction in which a piston is reciprocated by a compressed air motor within a cylinder which may be inserted into a container from which glue or another fluid may be drawn into the cylinder and pumped under pressure from the pump outlet. The pumping effect is produced by the reciprocation of the piston in cooperation with the alternative operation of two check valves one of which is provided on the piston and the other in the free lower end of the cylinder. The pump is designed so as to permit the most easily worn parts to be very easily and quickly exchanged when necessary.

3,606,591
PUMP AND DRIVING MOTOR ASSEMBLY

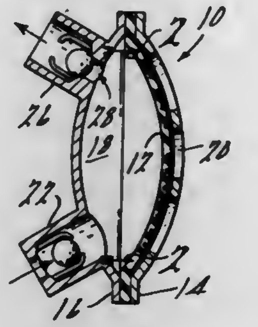
Theodorus Gerhardus Potma, Oosteinde 124, Berkhout, Netherlands
Filed Oct. 8, 1969, Ser. No. 864,580
Claims priority, application Netherlands, Oct. 8, 1968, 6814405
Int. Cl. F02b *71/00;* **F04b** *31/00*
U.S. Cl. 417—364 **5 Claims**



A pump is driven by an internal combustion motor of the so-called free piston type. The motor piston is fixedly attached to the pump piston. The return stroke of the motor piston is effected by the application of a pressure medium either to the pump piston or to a separate resetting piston fixedly attached to the motor piston. The working frequency of the assembly is controlled by means of a regulating valve restricting the flow of the pressure medium in a first portion of the return stroke.

3,606,592
FLUID PUMP

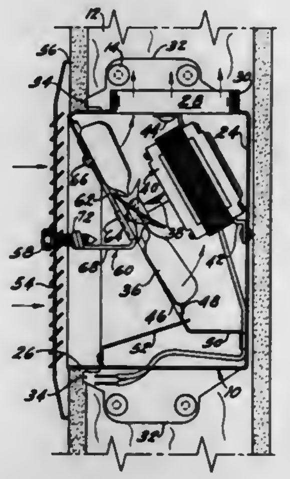
Joseph P. Madurski and Ambrose Tomala, Royal Oak, Mich., assignors to The Bendix Corporation
Filed May 20, 1970, Ser. No. 39,952
Int. Cl. F04b *19/02, 43/02*
U.S. Cl. 417—413 **6 Claims**



A displacement element for a fluid pump comprised of opposed, connected members of a memory heat treatable material such as 55–Nitinol with an electrical control circuit used to alternately cause each of the members to assume its memory heat treated configuration, thereby causing cyclical movement of the members. This movement is utilized to create the pumping action by embedding these elements in a diaphragm element to create a diaphragm pump.

3,606,593
EXHAUST FAN

Robert E. Steiner, Creve Coeur, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed June 30, 1969, Ser. No. 837,471
Int. Cl. F04d *25/06;* **F24f** *7/00;* **H02k** *17/10*
U.S. Cl. 417—423 **6 Claims**

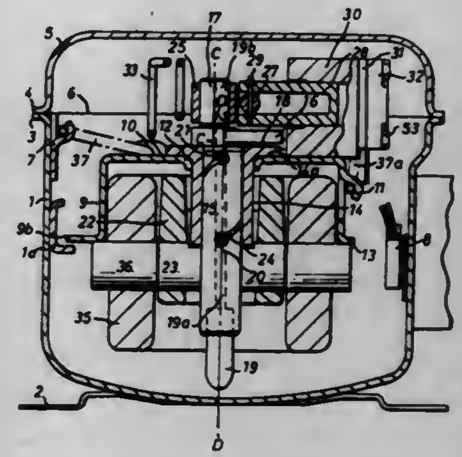


A compact, low-cost, exhaust fan for mounting within a room partitioning wall or ceiling comprising, a blower housing having an outlet offset from and perpendicular to its inlet and an axial flow type fan therein, with its axis centered in the inlet and lying at an acute angle thereto and arranged to move air through the housing by centrifugal force as well as by the pitch of the fan blades.

3,606,594
HERMETICALLY SEALED MOTOR/COMPRESSOR APPARATUS

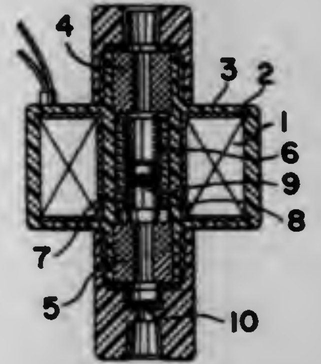
Ronald William Lewis and Eric Smith, Bognor Regis, England, assignors to Lec Refrigeration Limited, Bognor Regis, England
Filed May 25, 1970, Ser. No. 40,314
Claims priority, application Great Britain, Aug. 27, 1969, 42,681/69
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—415 **20 Claims**

The present invention relates to hermetically sealed motor compressor apparatus and methods of assembling them, such apparatus being for instance used in the cooling systems of mechanical refrigerators. Apparatus according to the invention comprises a casing formed from at least two parts to contain a motor compressor with its resilient support, flexible refrigerant discharge pipe and electric connections. The parts register hermetically to embrace a plurality of pre-formed component members which are incorporated and housed therein in accordance with the method of the invention.



3,606,595
ELECTROMAGNETIC PUMP UTILIZING A PERMANENT MAGNET

Hideo Takamizawa, Higashi-Matsuyama-shi, Japan, assignor to Jidosha Kiki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 20, 1970, Ser. No. 4,286
Claims priority, application Japan, Feb. 3, 1969, 44/7,346
Int. Cl. F04b *35/04*
U.S. Cl. 417—417 **1 Claim**

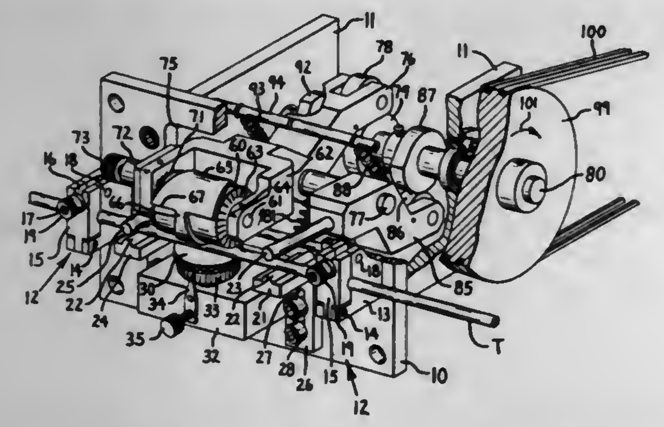


An electromagnetic pump in which a fluid can be pumped up by means of a reciprocating motion of a magnetic armature moved by attractive and repulsive forces which act alternately between two permanent magnets inserted in a resin molded pump body and the movable magnetic armature magnetized by an alternating current.

3,606,596
DRUG DISPENSING PUMP

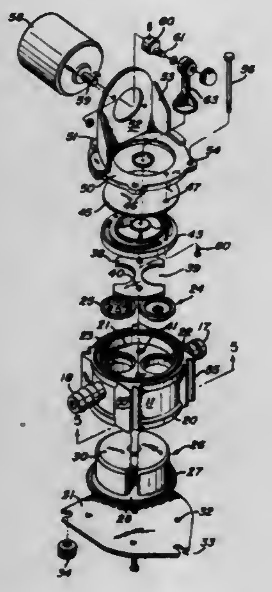
Miles Lowell Edwards, 13191 Sandhurst Place, Santa Ana, Calif. 92705
Filed Apr. 14, 1970, Ser. No. 28,364
Int. Cl. F04b *43/08*
U.S. Cl. 417—479 **12 Claims**

A positive displacement elastic tube pump having two separate adjustments for varying the rate of flow through a wide range. A portion of the tube between inlet and outlet pinch valves is alternately compressed against a platen and released by a reciprocating pressure shoe which bears against a variable length of the tube. The pressure shoe comprises a drum having a variable length effective surface acting on the tube which is adjustable by rotation of the drum. The effective length of stroke of the pressure shoe is variable by adjusting the platen toward and away from the pressure shoe. The pump is adapted to be driven by a blood pump so that when the proper dosage of medication for the blood is set on the drug pump, a change in speed of the blood pump will not alter the blood-medicine ratio.



3,606,597
PUMP

Linus E. Russell, Springfield, Ohio, assignor to Peters and Russell, Inc., Springfield, Ohio
Filed June 5, 1969, Ser. No. 830,761
Int. Cl. F04b *11/00*
U.S. Cl. 417—542 **3 Claims**



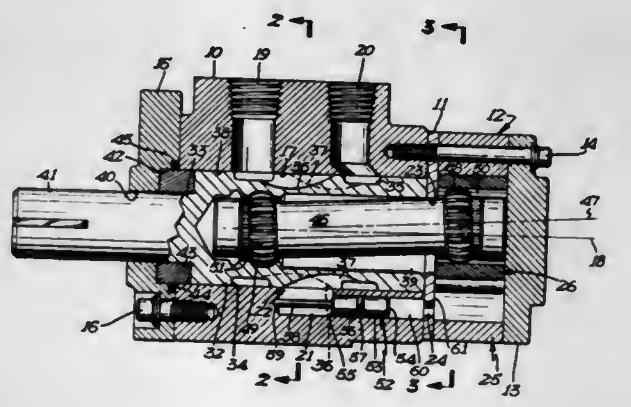
This invention relates to a simple, small, relatively quiet and economical, high efficiency fluid pump. It is distinguished by a pump housing constituted by a tube section compartmented by a diametral plate angled to the line of flow and capped by end plates simply interconnected, one of which mounts thereon an eccentric drive for a diaphragm type pumping element bridging an opening in the housing.

This invention relates, accordingly, to improvements in pumps and will be illustrated, more particularly, by preferred embodiments in the nature of diaphragm type pumps.

3,606,598
FLUID OPERATED MOTOR

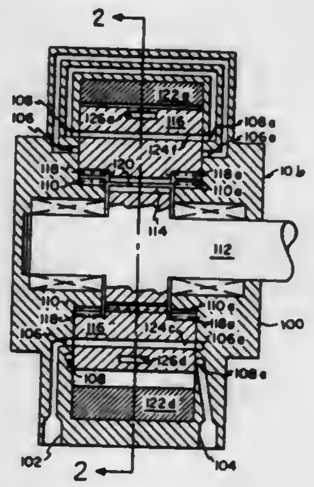
Kenneth A. Albers, Bloomington, Minn., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Apr. 8, 1970, Ser. No. 26,636
Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04b** *35/02*
U.S. Cl. 418—61 **8 Claims**

A fluid operated motor of the gerotor displacement mechanism and axial valve type wherein the gerotor displacement mechanism and fluid displaced therein is isolated from operating fluid controlled by the motor valve and wherein the displacement mechanism fluid is responsive to operating fluid controlled by the valve thereby increasing the efficiency of the motor.



3,606,599
FLUID POWERED ACTUATOR HAVING FLUID DISPLACEMENT CHAMBERS FORMED BETWEEN HOUSING AND RING GEAR

Kenneth W. Verge, Farmington, Mich., and George I. Boyadjieff, Woodland Hills, Calif., assignors to The Bendix Corporation
Original application Oct. 30, 1967, Ser. No. 678,951, now Patent No. 3,516,765, dated June 23, 1970. Divided and this application Apr. 10, 1970, Ser. No. 27,276
Int. Cl. F01c *1/02, 1/42*
U.S. Cl. 418—61 **4 Claims**

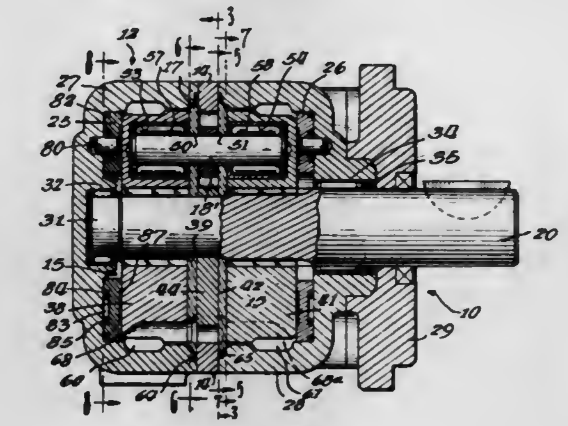


A fluid actuated integrated motor-transmission unit in which an output gear and a coaxial stationary gear coact with a driven eccentric ring gear that is free floating and meshes therewith to provide for a direct drive of the output gear by driving the ring gear so that the axis thereof orbits about the output gear axis. The ring gear is driven by sequentially pressurizing and exhausting a series of fluid displacement chambers formed between the floating ring gear and an enclosing housing.

3,606,600
HYDRAULIC MOTOR

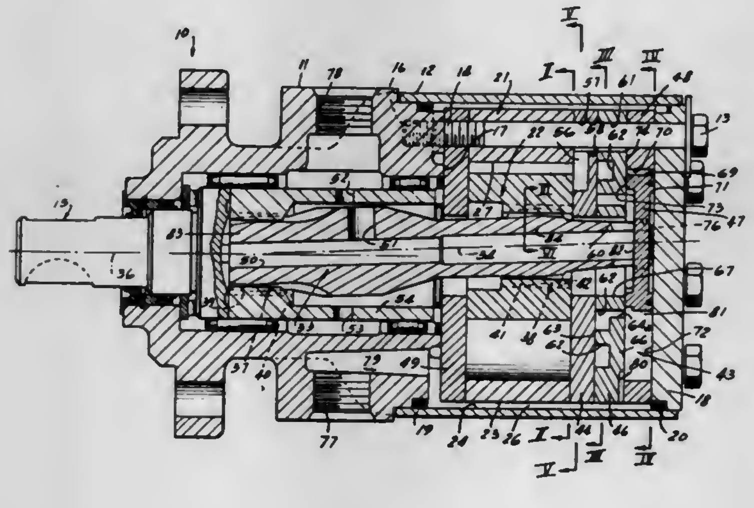
Frederic W. Pollman, Rockford, Ill., assignor to Sundstrand Corporation
Filed June 12, 1969, Ser. No. 832,637
Int. Cl. F01c *1/22, 19/08*
U.S. Cl. 418—61 **8 Claims**

A low speed, high torque motor having a stationary ring gear with internal teeth and an output shaft mounted carrier which supports a plurality of planet gears that interengage the ring gear and form expanding and contracting fluid chambers as the carrier rotates with respect to the ring gear. The carrier has portions sealingly and slidably engaging the sides of the ring gear dividing the housing into chambers on either side of the gears, either of which may be the inlet or outlet chambers, depending upon the desired direction of rotation. Communicating with one of the chambers are a plurality of ports that extend axially through the carrier and communicate continuously with the expanding fluid chambers defined by the planetary gears and the ring gear, and communicating with the other chamber in the housing are a plurality of axially extending ports in the carrier that communicate with the contracting fluid chambers defined by the gears, there being provided pressure balancing plates at each axial end of the carrier for the purpose of pressure balancing the carrier.



3,606,601
HYDRAULIC DEVICE

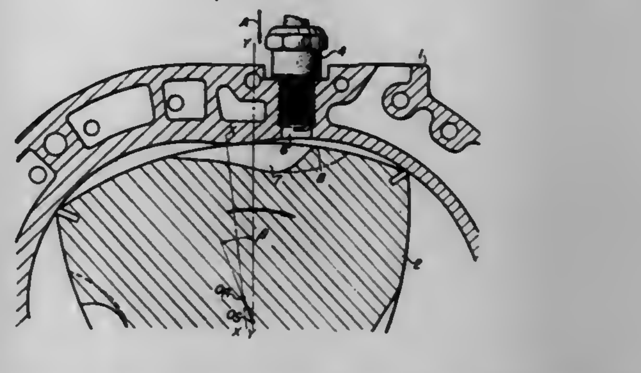
Hollis N. White, Jr., West Lafayette, and Max K. Biery, Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio
Filed Oct. 21, 1969, Ser. No. 868,151
Int. Cl. F01c *1/02, 1/42*
U.S. Cl. 418—61 **1 Claim**



A hydraulic device having a gerotor gear set including a pair of gears one of which rotates and orbits relative to the other, a work shaft rotatable on a fixed axis and an intermediate or wobble shaft interconnecting said one gear and said work shaft for joint rotation. The wobble shaft is connected to said one gear and to said work shaft by spline connections the male tooth portions of which comprise more than fifty percent and no more than sixty percent of the circular pitches thereof.

3,606,602
COMBUSTION CHAMBER OF ROTARY PISTON ENGINE

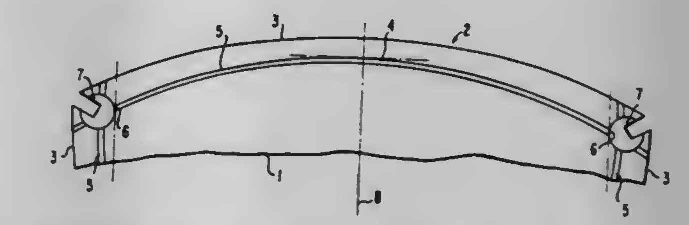
Yoshitugu Hamada and Noritoshi Taniguchi, Nagahama-shi, Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan
Filed Oct. 23, 1969, Ser. No. 868,848
Claims priority, application Japan, Nov. 15, 1968, 43/99,071
Int. Cl. F01c *1/02, 1/42*
U.S. Cl. 418—61 **3 Claims**



A recess having the leading end portion thereof bifurcated is formed in each section of the rotor at such a location that the time when said recess is brought into communication with an inner opening of the ignition plug mounting hole in the cylindrical housing coincides or substantially coincides with the time when the ignition plug sparks.

3,606,603
SEALING STRIP AT THE PISTON OF A ROTARY-PISTON INTERNAL COMBUSTION ENGINE

Karl-Walter Schmidt, Rommelshausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Nov. 24, 1969, Ser. No. 879,182
Claims priority, application Germany, Nov. 22, 1968, P 18 10 363.4
Int. Cl. F01c *19/08*
U.S. Cl. 418—142 **2 Claims**

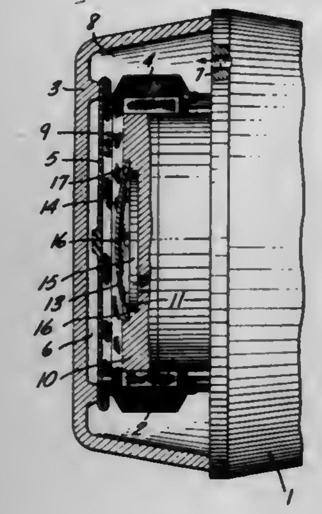


A sealing strip of a rotary-piston internal combustion engine, especially of trochoidal construction, wherein the sealing strip is arranged in grooves of the end walls of the piston and extends in an arch from a sealing bolt in one corner of the piston to a sealing bolt in the adjacent corner of the piston. The sealing strip abuts the sealing bolts with its butt ends; the butt ends are substantially flat and essentially parallel to a line perpendicular to a tangent at the apex of the sealing strip arch.

3,606,604
LIQUID PUMP WITH AUTOMATIC VARIABLE SUCTION CONTROL

Jorgen H. Petersen, Fribjerg 30, Nordborg, Denmark
Filed June 23, 1969, Ser. No. 835,637
Int. Cl. F01c *1/10*
U.S. Cl. 418—191 **3 Claims**

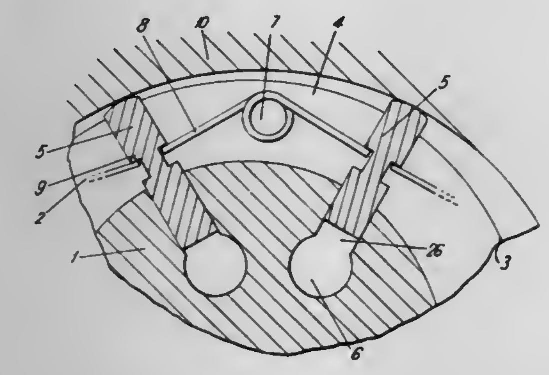
This relates to an improvement in a suction pump and more particularly to a gear pump used to pump fuel oil to a burner. A partition plate is placed over an orifice which leads to a suction port of the pump and the partition plate is provided with a plurality of angularly spaced notches positioned around the periphery thereof. The cumulative size of all the notches is chosen such that the volume of liquid which can pass through all the holes is more or less equal to the capacity of the pump. The



notches ensure that any air that is drawn by the pump is whipped around and intermixed with the liquid to such an extent that the resulting size of the air bubbles have no effect upon a flame of the fuel burner.

3,606,605
ROTARY VANE PUMP

Fritz Ostwald, Buchschlag, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 15, 1970, Ser. No. 3,135
Int. Cl. F01c *1/00;* **F04c** *1/00, 15/00*
U.S. Cl. 418—253 **6 Claims**

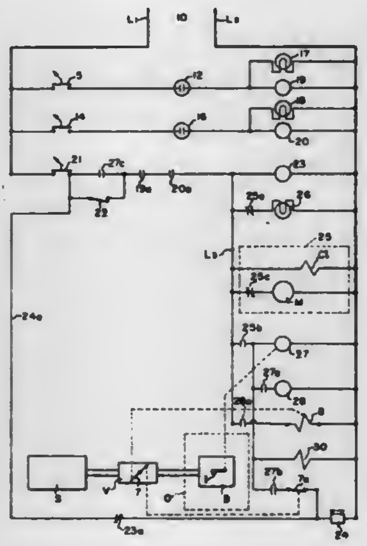


A rotary sliding vane pump in which the vane springs are positioned in the working chambers and engage recesses in the sides of the vanes to press the vanes outward against the cam plate.

3,606,606
OVEN BURNER CONTROL SYSTEMS

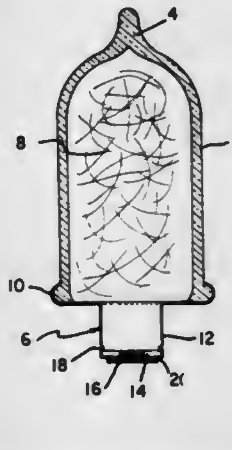
Gerald J. Luther, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Filed Oct. 6, 1969, Ser. No. 864,128
Int. Cl. F23n *5/00*
U.S. Cl. 431—66 **12 Claims**

An oven burner control system for maintaining the operation of the oven burner system of a baking oven for bakery products during power failures of short duration. The oven burners are adapted to be connected with a source of gaseous fuel through an electrically controlled valve adapted to be connected with a source of electrical power. The control valve is manually movable to an open fuel supplying position and a control element is operable to hold the control valve in the open position so long as the electrical signal from the power source remains substantially constant. Electrically operable and normally continuously energized fuel ignitors are provided for igniting the fuel. Timer apparatus is provided for precluding operation of the fuel ignitors for a predetermined time at the commencement of a baking cycle to accomplish purging of the oven prior to ignition. At the end of the cycle the timer is reset when the power is turned off. To prevent the timer from being reset during a momentary interruption of power and from commencing its timing cycle when power is resumed, power is supplied to the timer for a short time after there is a power source interruption. Relay means is connected in parallel with the timer apparatus for controlling the fuel ignitors. Time delay control apparatus is connected in circuit with the control valve, the relay apparatus, the timer, and the power source to delay the effect which an electrical signal interruption otherwise would have on the control valve, relay apparatus, and timer. Interchangeable connectors are provided for selectively connecting the time delay control apparatus into the circuit.



3,606,607
PHOTOFLASH LAMP

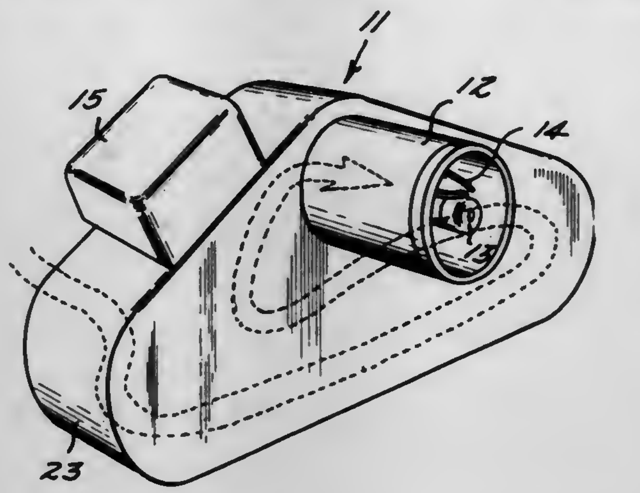
John W. Shaffer, Montoursville, and William C. Fink, Williamsport, Pa., assignors to Sylvania Electric Products, Inc.
Filed Sept. 25, 1967, Ser. No. 670,237
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **2 Claims**



A percussive-type photoflash lamp having an anvil with a flat working face seated on a rim around a coined depression formed in the bottom of the primer shell.

3,606,608
ENCASEMENT AND FUEL BURNER ASSEMBLY

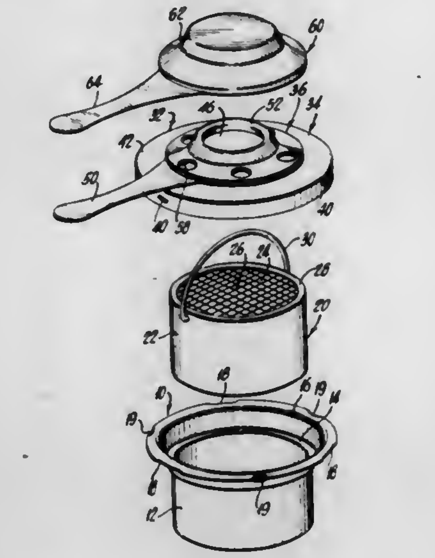
Lorin G. Miller and James H. Miller, both of 220 S. River, Eaton Rapids, Mich. 48910, and William W. Miller, 6022 Rolf St., Lansing, Mich. 48827
Filed Feb. 28, 1969, Ser. No. 802,583
Int. Cl. F23d *11/38*
U.S. Cl. 431—121 **4 Claims**



A housing and consequent mounting arrangement for fan, pump and fuel burner components, and controls therefor and in which encasement air is circulated in heat exchange relation to the components thereof and injected in preheat relation to the fuel burner as primary, secondary and tertiary air supply.

3,606,609
BURNER FOR CHAFING DISH AND THE LIKE

Herman A. Lipper, 36 Hickory Road, Woodmere, N.Y. 11598, and Yukinari Itoh, 68 Fukuzumi-cho, Nakagawa-ku, Nagoya, Japan
Filed Dec. 9, 1969, Ser. No. 883,421
Int. Cl. F23q *25/00;* **F24c** *5/00*
U.S. Cl. 431—152 **7 Claims**

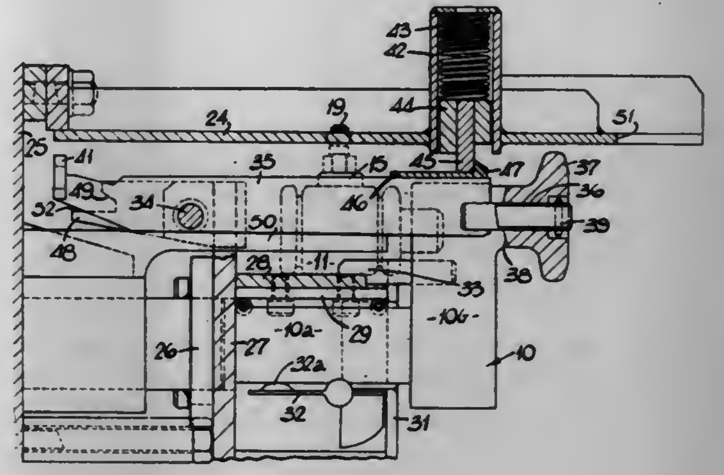


A burner adaptable for use with either liquid fuel or solid fuel, including a removable receptacle for liquid fuel which is replaceable by a standard-sized can of solid fuel.

3,606,610
FUEL BURNER ASSEMBLIES

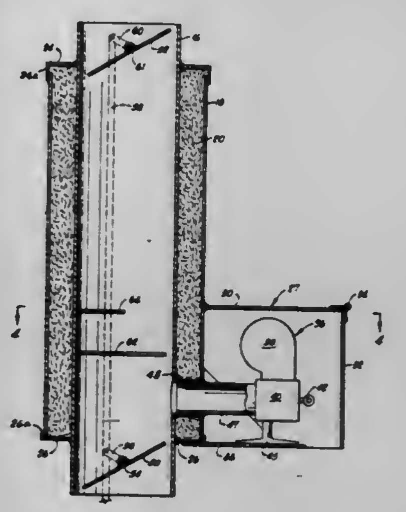
Harold William Leach, Liverpool, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Oct. 3, 1969, Ser. No. 863,590
Int. Cl. F23d *11/36*
U.S. Cl. 431—153 **7 Claims**

A fuel burner assembly comprising a burner, a support structure for the burner and a fixed structure on which the support structure is mounted, the support structure and burner being movable between a first position in which the burner is in the hot zone of a boiler and in which position the burner cannot be removed from the support structure since a clamp cannot be released, and a second position in which the burner can be removed from the support structure by releasing the clamp, and the fixed structure and support structure carrying respective parts whereby the burner cannot be inserted into the support structure unless the latter occupies its second position, the support structure carrying a valve which is only in the on position when the burner and support structure are in the first and operative position.



3,606,611
AFTERBURNER

Nelson R. Wright, Oklahoma City, Okla., assignor to Environmental Control Sales Corporation, Oklahoma City, Okla.
Filed Oct. 24, 1968, Ser. No. 770,274
Int. Cl. F23d *13/20*
U.S. Cl. 431—202 **10 Claims**

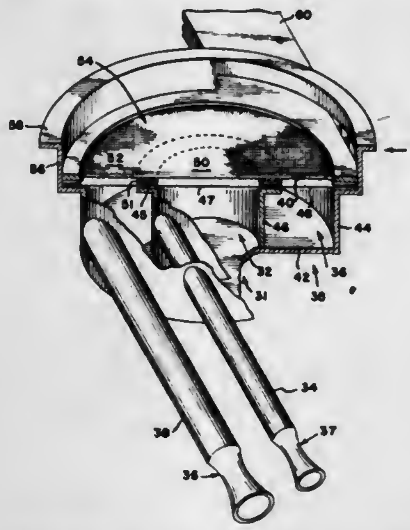


An afterburner for attachment to stacks and flues for the purpose of burning residual products of incomplete combustion, the afterburner including an elongated titanium inner sleeve concentrically surrounded by a shorter metallic outer sleeve with a thermal insulating material positioned between the inner and outer sleeves. A pair of damper plates are located in the upper and lower ends of the inner sleeve, and are movable to selected positions of closure within the inner sleeve. A burner is secured to the side of the inner sleeve at a location above the lower damper plate, and is constructed to burn a mixture of fuel and air and direct the flame in a generally tangential direction into the lower end of the inner sleeve. A pair of vertically spaced, circumferentially staggered, semicircular baffle plates are secured within the inner sleeve at a location above the burner and function to impart a spiralling or helical motion to gases moving upwardly in the inner sleeve.

3,606,612
GAS BURNER AND CONTROL

Edward A. Reid, Jr., Columbus, Ohio, assignor to Columbia Gas System Service Corporation, New York, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,722
Int. Cl. F23q *9/08*
U.S. Cl. 431—281 **19 Claims**

A gas burner having two concentric combustion sections with each combustion section having a separate gas supply nozzle. A single gas discharge chamber for the two sections is located above the burner and is closed except for a gas discharge flue. Heat is transmitted by infrared radiation through a glass plate top and by conduction from the glass plate.



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 20TH DAY OF SEPTEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
  Ault, Wayne E., 3,605,902.
  Latina, Roland N., 3,605,117.
AB Casco: *See—*
  Heden, Ake E.; and Ulfvarson, Ulf O., 3,605,688.
AB Gustavsbergs Fabriker: *See—*
  Nilsson, Sten Lennart, 3,605,816.
AB Tetra Pak: *See—*
  Hegardt, Christian, 3,606,136.
AB Volvo Penta: *See—*
  Bergstedt, Karl Abdon, 3,605,677.
Abraham, James G.: *See—*
  Willke, Herbert L.; and Abraham, James G.,3,606,251.
Abromavage, John C.; and George, James F., to Advanced Management Engineering & Research Co. Instrument transport and positioning system. 3,606,045, Cl. 214-89.
Abt, Anton: *See—*
  Gebhardt, Fritz; and Abt, Anton,3,606,590.
ACF Industries, Incorporated: *See—*
  Hammonds, James C.; and Dare, Roy R., 3,606,219.
  Hammonds, James C.; Randolph, Robert W.; and Yeates, Richard P., 3,606,220.
  Wynn, Robert O., 3,605,948.
Acme Highway Products Corporation: *See—*
  Bowman, Thomas C., 3,605,586.
Acme-Hamilton Manufacturing Corporation: *See—*
  Bauman, Joseph F.; and Caserta, Thomas A., 3,605,189.
  Bauman, Joseph F.; Kurtz, Edward, Jr.; and Cini, Adrian V., 3,605,817.
Adams, Corwin E.: *See—*
  Rousseau, Kenneth E.; and Adams, Corwin E.,3,606,371.
Adams, Lenard P.; and Adams, Roy S. Automatic fish catcher. 3,605,315, Cl. 43-16.
Adams, Roy S.: *See—*
  Adams, Lenard P.; and Adams, Roy S.,3,605,315.
Adams, Wilbur Henry. Polyhedrons having depressible vertices and internal means for restoring shape. 3,605,324, Cl. 46-42.
Addmaster Corporation: *See—*
  Clary, John G., 3,605,612.
Addressograph-Multigraph Corporation: *See—*
  Maloney, William R.; and Pleitt, Richard J., 3,605,692.
  Petrick, Edward J.; and Schmidlin, Raymond J., 3,606,309.
  Shelffo, Loren E.; Mathisen, Henry A.; and Schwager, Frank L., 3,606,532.
Adler, Michael, to Maschinenfabrik Loesch GmbH. Apparatus for distributing objects. 3,605,982, Cl. 198-30.
Advance Construction Equipment, Inc.: *See—*
  Stephens, Billy R., 3,606,237.
Advanced Management Engineering & Research Co.: *See—*
  Abromavage, John C.; and George, James F., 3,606,045.
Adwest Engineering Limited: *See—*
  Millard, Barry John, 3,605,933.
  Millard, Barry John, 3,605,934.
Aerojet-General Corporation: *See—*
  Coon, Seneca G. Jr., 3,605,999.
  McGouch, Charles B., 3,605,408.
  Wagoner, Robert B.; and Kinghorn, John S., 3,606,071.
Aeroquip Corporation: *See—*
  Crissy, Charles F., 3,605,205.
  Rutan, Louis W., 3,606,439.
AGA Aktiebolag: *See—*
  Westberg, Johan Eric Hayden, 3,606,142.
Aikawa, Kentaro; and Tahara, Mamoru, to Mitsubishi Jukogyo Kabushiki Kaisha. Transporting means and equipment for jet energy of geothermal power plant. 3,605,403, Cl. 60-26.
Ainsworth, Laine J., to Kelsey-Hayes Company. Steerable driving axle. 3,605,930, Cl. 180-43.
Air Pollution Research & Developing Corporation: *See—*
  Erwin, Jimmy R.; Lockhart, Edward Ray; and Justice, Robert Lee, 3,605,386.
Air Preheater Company, Inc., The: *See—*
  Brunell, Richard L., 3,605,874.
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  Pryor, John A.; and Rowles, Howard C., 3,605,422.
Air-Spread, Inc.: *See—*
  Wall, George B., 3,506,097.
  Wall, George B., 3,606,097.
Akashi, Goro; Fujiyama, Masaaki; and Hirakawa, Takashi, to Fuji Photo Film Co., Ltd. Cassette encapsulating magnetic recording tape. 3,606,203, Cl. 242-199.
Akers, Richard L., to Du Pont de Nemours, E. I., and Company. Plural cycle cam yarn winding process and packages produced thereby. 3,606,197, Cl. 242-176.
Aktiebolaget Electrolux: *See—*
  Hultstrom, Carl Lennart; Eriksson, Bolik Anders; and Arksten, Elvin Efraim, 3,606,420.
Aktiebolaget Svenska Kullagerfabiken: *See—*
  Hallerback, Stig Lennart, 3,606,351.
Aktiebolaget Svenska Kullagerfabriken: *See—*
  Asberg, Sture; and Timmer, Hendrikus J. M., 3,606,503.
Alarcon, Peter G., to Gateway Industries, Inc. Safety belt buckle. 3,605,209, Cl. 24-230.
Albers, Kenneth A., to Eaton Yale & Towne, Inc., mesne. Fluid operated motor. 3,606,598, Cl. 418-61.
Albertson, Stanley E., Jr. Wrist control device. 3,606,342, Cl. 273-189.
Alcan Aluminum Corporation: *See—*
  Vecchiarelli, Francis, 3,605,852.
Alco Standard Corporation: *See—*
  Bielefeldt, Irvin P., 3,606,287.
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Alexander, James, to Scandia Packaging Machinery Company. Machine for securing tab to package. 3,605,379, Cl. 53-134.
All States Plastic Manufacturing Co., Inc.: *See—*
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Allard, Charles D.; Allard, Eugene R.; and Newlon, Robert Ross. Life support cart. 3,606,302, Cl. 269-325.
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  Bloom, William M., 3,606,289.
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  Buttler, John Allen,3,605,389.
Allenbaugh, Howard M., 1/3 to Majera, Louis Martin, and 1/3 to Goebel, Charles. Air scoop means for automotive vehicles. 3,606,444, Cl. 296-1.
Allied Chemical Corporation: *See—*
  Fullam, James J., 3,605,776.
Allied Control Company, Incorporated: *See—*
  Heard, George Waller, 3,606,196.
Allied Industrial Components: *See—*
  Westbrook, James V., 3,605,792.
Allied Power Industries, Inc.: *See—*
  Sessody, Donald W., 3,605,569.
Allis-Chalmers Manufacturing Company: *See—*
  Rowland, Chester A., Jr., 3,606,173.
  Schott, Robert E.; and Khatti, Ramkishan, 3,605,391.
  Worrix, Matthew L., 3,605,805.
Allison, Robert D., to United States Envelope Company. One-piece envelope with integral, detachable coupons contained therein. 3,606,138, Cl. 229-70.
Allmanna Svenska Electriska Aktiebolaget: *See—*
  Lundstrom, Hans, 3,606,286.
Allred, Arthur L. Crank for fishing reel. 3,606,193, Cl. 242-84.1
Alman, Lawrence C., Jr.; Hauber, Jack R.; and Hynes, Frank R., to Xerox Corporation. Multiple size recording apparatus. 3,606,534, Cl. 355-8.
Aluminum Company of America: *See—*
  Dunn, Lloyd Graham, 3,606,075.
  Kutcher, Howard R.; Trimble, Robert M.; and Von Stocker, Selmer G., 3,605,249.
Ambrosius, Dieter, to Kombinat Veb Pentacon Dresden Kamera-und Kinowerke. Photographic exposure measuring device. 3,606,552, Cl. 356-227.
Amco Production Company: *See—*
  Dauben, Dwight L., 3,605,893.
Amengual, Jean. Process and apparatus for automatically and continuously dyeing a textile thread. 3,605,146, Cl. 8-151.1
American Can Company: *See—*
  Hanke, Edward Herman; and La Croce, Leonard Thomas, 3,606,076.
  Kuchenbecker, Morris W., 3,606,082.
  Meyers, George Le Roy, 3,606,133.
  Mueller, David Charles; and Asman, Norman John, 3,605,374.
American Cyanamid Company: *See—*
  Beaty, Gerald A.; and Lynch, Frederick L., 3,605,309.

- American Home Products Corporation: *See*—
  - McGinley, William L., 3,605,684.
- American Machine & Foundry Company: *See*—
  - Gianese, Goffredo, 3,605,838.
  - Roels, Hans, 3,606,021.
- American Optical Corporation: *See*—
  - Polanyi, Michael L.; and Lustig, Henry, 3,606,539.
- American Potato Company: *See*—
  - Beck, Roderick G.; Harmon, James F.; Shatila, Mounir A.; Richins, David A.; and Lach, John H., 3,605,647.
- American Stair Corporation, Inc.: *See*—
  - Seegers, Glen A., 3,606,236.
- American Standard Inc.: *See*—
  - Progelhof, Richard Carl; and Govesky, Gerald George, 3,605,490.
  - Progelhof, Richard Carl; and Shilling, Norman Zethward, 3,605,494.
  - Ruggles, Kay L.; and Van Skyhawk, Norman, 3,605,352.
- American Sterilizer Company: *See*—
  - Haering, Floyd F., 3,605,134.
- AMF Incorporated: *See*—
  - Quisenberry, Carter E., 3,606,475.
  - Stapf, William E., 3,606,100.
- Amicel, Charles G.: *See*—
  - Jacquot, Michel J.; and Amicel, Charles G.,3,605,301.
- AMP Incorporated: *See*—
  - Wise, Joseph Agusta, 3,606,000.
- Amsted Industries, Incorporated: *See*—
  - George, Howard E., 3,605,156.
  - Lohman, Gordon R., 3,605,861.
- Amtron, Inc.: *See*—
  - Fagan, John C.; and Billingsley, Robert L., 3,606,117.
- Amundsen, Paul D., to Fendall Company. Headband adjuster. 3,605,204, Cl. 24-171.
- Ancra Corporation: *See*—
  - Prete, Ernest, Jr., 3,605,637.
- Andale Company: *See*—
  - Wurster, Alfred; and Tanner, Robert C., 3,605,187.
- Anderholm, Nordin C.; and Goodman, Albert, to United States of America, Atomic Energy Commission. Method and apparatus for measuring adhesion of material bonds. 3,605,486, Cl. 73-95.
- Andermont, Gilbert: *See*—
  - Quercia, Marcel; and Andermont, Gilbert,3,605,133.
- Andersen, Thor W., to National Distillers and Chemical Corporation. Continuous process and apparatus for drying titanium sponge. 3,605,273, Cl. 34-15.
- Anderson Company, The: *See*—
  - Moorhead, John P.; and Wubbe, Leo J., 3,605,168.
- Anderson, Erik. Machine for wrapping rolls. 3,605,382, Cl. 53-380.
- Anderson, Hans Christian: *See*—
  - Sorensen, Nels Hartmann, 3,606,477.
- Anderson, Kelvin G.: *See*—
  - Zelnick, Seymour; and Anderson, Kelvin G.,3,605,283.
- Anderson, Maurice N. Insulated grill and fire bucket. 3,606,066, Cl. 220-9.
- Anderson, Robert H., to Tektronix, Inc. Optical apparatus including a pair of mosaics of optical imaging elements. 3,605,593, Cl. 95-18.
- Anderson, Thomas W.: *See*—
  - Kistner, Charles R.; and Anderson, Thomas W.,3,605,231.
- Anderson, Victor F., to Shell Oil Company. Modular furniture embodying a common chassis and interchangeable styling features. 3,606,510, Cl. 312-257.
- Ando, Kinji: *See*—
  - Igarashi, Teiji; and Ando, Kinji,3,605,734.
- Ando, Noriyoshi, to Nippon Denso Company Limited. Anti-skid control system for automotive vehicles. 3,606,490, Cl. 303-21.
- Ando, Noriyoshi: *See*—
  - Nakano, Yoshiaki; Okamoto, Atutoshi; Ando, Noriyoshi; Taniguchi, Koichi; and Toyama, Koichi,3,605,813.
- Andres, Rudolf: *See*—
  - Wilfert, Karl; and Andres, Rudolf,3,605,932.
- Andrews, George M., to Vega Industries, Inc. Fireplace hood and trim structure. 3,605,719, Cl. 126-139.
- Angle, Lewis H., to Methods and Improvements Corporation. Programmed character printing means for stamping tubing material. 3,605,976, Cl. 197-6.
- Anglin, Paul E.: *See*—
  - Anglin, William E.; and Anglin, Paul E., 3,606,379.
- Anglin, Paul E.: *See*—
  - Anglin, William E.; and Anglin, Paul E.,3,606,379.
- Anglin, William E.,: *See*—
  - Anglin, William E.; and Anglin, Paul E., 3,606,379.
- Anglin, William E.; and Anglin, Paul E., 36.8% to Anglin, William E., 36.8% to Anglin, Paul E., and 26.4% to Trammell Crown Investment Company. Stabilized motor vehicle and stabilizing device therefor. 3,606,379, Cl. 280-150.
- Anthon, Frederick B. Abrasive finishing article. 3,605,349, Cl. 51-402.
- Appel, David W.; and Sanford, Charles L., to Kimberly-Clark Corporation. Picker for divellicating pulp. 3,606,175, Cl. 241-18.
- Appoleton, Bernard Simon, to Unilan A. G. Shock absorber. 3,606,295, Cl. 267-63.
- Aqua-Aerobic Systems Inc.: *See*—
  - Johnson, John K., 3,606,273.
- Aquino, Frank J.: *See*—
  - Petix, Robert F.; Aquino, Joseph A.; and Aquino, Frank J.,3,605,648.
- Aquino, Joseph A.: *See*—
  - Petix, Robert F.; Aquino, Joseph A.; and Aquino, Frank J.,3,605,648.
- Arai, Hajime: *See*—
  - Ishihara, Tomoo; Suzuki, Katsuya; Arai, Hajime; Nishikawa, Hisaji; and Ito, Shin,3,605,507.
- Arbuthnot, Theodore K. Chair. 3,606,464, Cl. 297-460.
- Arce, Raul Olvera. Hypodermic syringe. 3,605,743, Cl. 128-218.
- Ardito, Gerald J.; Newman, Jerome S.; and Sarris, Samuel E., to Inventions Unlimited Incorporated. Push-pull container and cap assembly. 3,606,107, Cl. 222-546.
- Arksten, Elvin Efraim: *See*—
  - Hultstrom, Carl Lennart; Eriksson, Bolik Anders; and Arksten, Elvin Efraim,3,606,420.
- Armand, Marcel; Charveriat, Michel; and Givord, Jean-Pierre, to Ugine Kuhlmann. Metallurgical bonding. 3,605,254, Cl. 29-473.7
- Armco Steel Corporation: *See*—
  - Buker, Paul S.; Shepard, Richard D.; and Wenaas, David P., 3,606,418.
  - Willke, Herbert L.; and Abraham, James G., 3,606,251.
- Armstrong Cork Company: *See*—
  - Ungaro, Nicholas A., 3,606,506.
- Arndt, Joseph H., to TRW Inc. Refractive shutter for rotating prism cameras. 3,606,544, Cl. 352-116.
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  - Weston, David C.; and Arnott, Adrian A.,3,606,039.
- Aronoff, Edward I. Method for treating tubular fabrics. 3,605,226, Cl. 28-74.
- Arscott, John Rowland, to Imperial Chemical Industries Limited. Laminated webs. 3,606,139, Cl. 229-87.
- Asberg, Sture; and Timmer, Hendrikus J. M., to Aktiebolaget Svenska Kullagerfabriken. Rolling bearing. 3,606,503, Cl. 308-198.
- Asman, Norman John: *See*—
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- Associated Engineering Limited: *See*—
  - Smith, Peter Roy; Bemrose, Colin Raymond; and Levington, Henry John, 3,605,882.
- Athey, Skipwith W., to International Video Corporation. Apparatus for compensating for angular variation of dichroic mirror characteristics. 3,606,521, Cl. 350-166.
- Atlas Spokane, Inc.: *See*—
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  - Stepek, Thaddeus, 3,605,332.
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- Atwood Vacuum Machine Company: *See*—
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- Ault, Wayne E., to A-T-O Inc. Reinforced fusible element. 3,605,902, Cl. 169-42.
- Automated Building Components (N.Z.) Limited: *See*—
  - Dagley, Edgar Edward, 3,605,608.
- Automatic Bander Corporation: *See*—
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- Automatic Drilling Machines, Inc.: *See*—
  - Bromell, Raymond J.; and Homanick, George, 3,605,919.
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  - Fisk, Stanley J., 3,605,241.
- Avant Industries, Inc.: *See*—
  - Ettlinger, Ralph, Jr.; and Schneider, Walter M., 3,605,767.
- Avery, Carl F., Jr.; Pearson, Ernest A.; and Winters, Lloyd V., to Medical Supply Company. Swab cutting, forming, and assembling mechanism. 3,605,240, Cl. 29-208.
- Axce, Charles William: *See*—
  - Mitchell, Cecil Patrick Michael; and Axce, Charles William,3,605,831.
- Ayers, Robert C., Jr., to Esso Production Research Company. Oil recovery process by miscible displacement. 3,605,891, Cl. 166-273.
- Babson Bros. Co.: *See*—
  - Thomas, Chester A.; and Shulick, Robert J., 3,605,694.
  - Thomas, Chester A.; and Shulick, Robert J., 3,605,695.
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  - Kuster, Kaspar, 3,605,506.
- Bader, Frank; and Berger, Martin J., to New England Merchants National Bank, mesne. Antenna mast construction. 3,605,359, Cl. 52-146.
- Badzioch, Stanislaw; and Hawksley, Peter G. W., to Coal Industry (Patents) Limited. Monitoring dust concentration. 3,605,485, Cl. 73-28.
- Baginski, Albert R.; Okada, David T.; Schlau, Floyd E.; and Stastny, Edwin O., to Mattel, Inc. String projecting toy. 3,605,326, Cl. 46-44.
- Bagwell, Dennis P. Self-cleaning dining table. 3,605,769, Cl. 134-115.
- Baker, James G., to Polaroid Corporation. Corrected optical system for shallow camera or the like, and components thereof. 3,605,592, Cl. 95-15.
- Baker Perkins, Inc.: *See*—
  - Luther, Gerald J., 3,606,606.

- Baker, William R.: *See*—
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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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NOTE.—First number, class; second number, subclass; third number, patent number

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AMENDMENT

The notice entitled Identification of Goods and Services in Trademark Applications which appeared in the Federal Register of July 16, 1971 (36 F.R. 13232) and the OFFICIAL GAZETTE of Aug. 3, 1971, specified an incorrect method of payment for securing a copy of the English edition of "International Classification of Goods and Services to which Trademarks are Applied." Due to problems in international monetary exchange, the British Patent Office no longer accepts an ordinary check drawn on an American bank in dollars. The paragraphs in the identified notice relating to methods of payment (the last two paragraphs and concluding table) should read as follows:

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Certificates of Correction for the Week of Sept. 21, 1971

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3,580,067
3,581,378
3,581,394
3,881,624
3,581,844
3,582,399
3,583,145
3,583,583
3,585,018

PATENTS AND TRADEMARKS

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92–34.

Public Law 92–34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92–34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

(a) Applicant(s) for patent or trademark registration;
(b) Patentee(s) or trademark registrant;
(c) Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceeding in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statuory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71–10469; Filed 7–22–71; 8:52 am]

36 F.R. 13694; July 23, 1971

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 7, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-05-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-09-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-20-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-03-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-01-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	12-29-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-31-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-14-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-21-70
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-14-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	8-17-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-06-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	5-15-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-04-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	9-14-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	7-27-70

Expiration of patents: The patents within the range of numbers indicated below expire during September 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,688,133 to 2,690,559, inclusive
Plant Patents	Numbers 1,300 to 1,307, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 21, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T890,001

PROCESS FOR THE QUANTITATIVE DETERMINATION OF THE PRESENCE OF PHENOLICS

Charles Eugene Hamilton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 19, 1969, Ser. No. 859,573
Int. Cl. G01n *33/18*
U.S. Cl. 23—230R
No Drawing. 5 Pages Specification

Method of quantitatively determining the presence of phenolic compounds having an open para-ring position by contacting them with 2,6-dibromoquinone chlorimide at a pH of from 8.5 to 10.5 to form a dibromoindophenol dye. In the known process, the dye is analyzed colorimetrically to determine the concentration of the phenolic in the solution. The improvement comprises contacting the reactants at a temperature within the range from 45° to 50° controlled to ±0.5° C. By carrying out the reaction within this temperature range, the formation of the dibromoindophenol dye takes place in less than 1 hour as compared to a reaction time of as high as 24 hours at room temperature. Reaction times as short as 15 minutes are possible at temperatures within the range of 50±0.1° C.

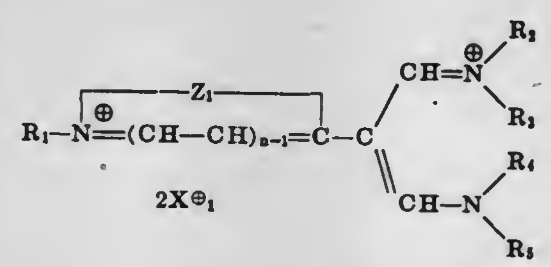
T890,002

PREPARATION OF ALLYLIDENE AND BISALDEHYDE DYE INTERMEDIATES AND CORRESPONDING PHOTOGRAPHIC DYESTUFFS

John R. Owen, 1999 Lake Ave., Rochester, N.Y. 14650
Filed Mar. 26, 1970, Ser. No. 23,011
Int. Cl. C09b *23/00*
U.S. Cl. 260—240.1
No Drawing. 25 Pages Specification

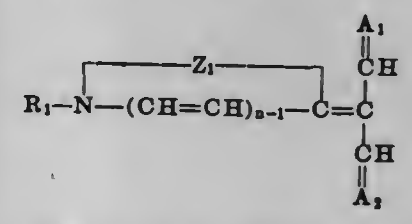
A novel process is provided for preparing substituted allylidene dye intermediate having the formula:

(I)



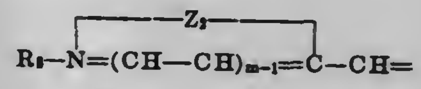
wherein R_1 represents alkyl, alkenyl or aryl, R_2, R_3, R_4 and R_5 each may be the same or different and represent alkyl, Z_1 represents the nonmetallic atoms required to complete a heterocyclic nucleus of the type used in photographic spectral sensitizing and desensitizing dyes containing from 5 to 6 atoms in the heterocyclic ring which nucleus can contain a second hetero atom such as oxygen, nitrogen, selenium, or sulfur and may contain one or more fused rings, *n* represents a positive integer from 1 to 2 and X represents an acid anion. The above allylidene dye intermediates may be used directly to prepare spectral sensitizing dyes or may be first hydrolyzed to the corresponding bisaldehyde which may then be used to prepare spectral sensitizing dyes having the formula:

(II)



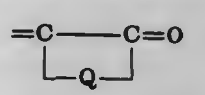
wherein R_1, Z_1 and *n* are as defined above, A_1 and A_2 may be the same or different and represent oxygen, nuclei having the following formula:

(III)



wherein R_6 represents alkyl, alkenyl or aryl, *m* represents a positive integer of from 1 to 2 and Z_2 is as defined for Z_1 above, or nuclei having the formula:

(IV)



wherein Q represents the nonmetallic atoms required to complete a heterocyclic nucleus containing 5 to 6 atoms in the heterocyclic ring, which ring preferably contains from 3 to 4 carbon atoms, 1 nitrogen atom and 1 atom selected from the group consisting of nitrogen, oxygen and sulfur. An example of the preparation of an allylidene dye intermediate by the process disclosed is the preparation of 3 - dimethylamino - 2 -(2 - benzothiazolylmethoperchlorate)allylidene dimethylammonium perchlorate which comprises reacting (a) 2,3 - dimethylbenzothiazolium p-toluenesulfonate with (b) the complex formed by the reaction of phosphorous oxychloride with N,N-dimethylformamide. An example of the preparation of a spectral sensitizing dye by the process of the disclosure is the preparation of 2-bis-(1,3-diethyl-2,4,6-trioxohexahydropyrimidinylidenemethyl)methylene - 3 - methylbenzoxazoline which comprises: (1) reacting (a) 3-ethyl-2-methylbenzoxazolium iodide with (b) the complex formed by the reaction of phosphorous oxychloride with N,N-dimethylformamide to form the intermediate 3-dimethylamino-2-(2-benzoxazolyl ethoperchlorate)allylidene dimethylammonium perchlorate; and (2) reacting said intermediate with 1,3-diethylbarbituric acid.

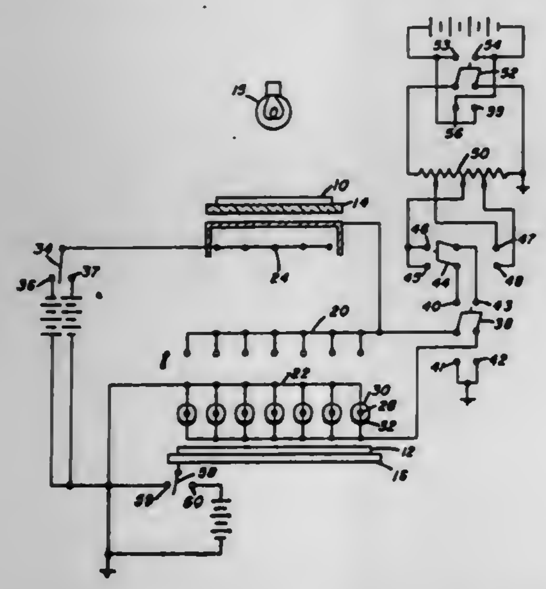
T890,003

LATITUDE IN PHOTOCONDUCTIVELY CONTROLLED CORONA CHARGING

Joseph Y. Kaukeinen, Kodak Park Works, Rochester, N.Y. 14650
Filed May 4, 1970, Ser. No. 34,286
Int. Cl. G03g *13/00*
U.S. Cl. 250—49.52C
1 Sheet Drawing. 12 Pages Specification

A metal coating is applied to one side of the photoconductor coated grid used to control corona charging.

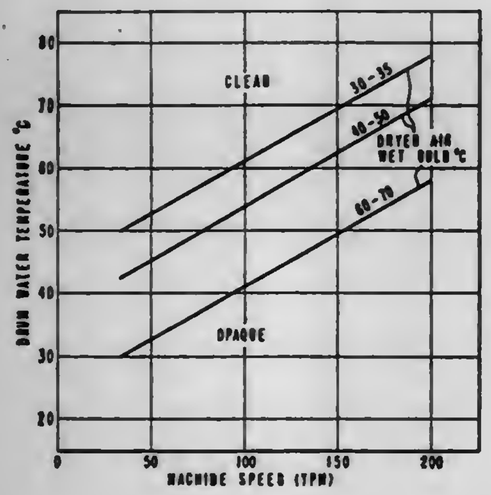
The coating is applied to the side which is not directly exposed to the incident radiation and serves to reduce discharge of the photoconductor coated grid caused by reflection of diffuse radiation from the copy receiving sheet.



T890,004
COALESCENCE OF COATINGS ON THERMOSENSITIVE SUBSTRATES

Larry Eugene Seever, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 20, 1970, Ser. No. 38,927
Int. Cl. B44d *1/48*
U.S. Cl. 117—119.6
1 Sheet Drawing. 10 Pages Specification



In a continuous process for coating a thermosensitive thermoplastic substrate such as film prepared from polyesters, polyolefins, vinyl acetate polymers and vinylidene chloride polymers with a coalescible coating material such as a 10–65 weight percent dispersion of vinylidene chloride and vinylidene chloride copolymerized with methyl acrylate, acrylic acid, methyl methacrylate, acrylonitrile and methacrylic acid in which an aqueous dispersion of the coating material is applied to the substrate and dried by the evaporation of the aqueous vehicle with heated air, the improvement which comprises:

(a) Determining the wet bulb temperature of heated drying air and the coalescence temperature of the coating material and

(b) Increasing the wet bulb temperature of the heated air to at least the coalescence temperature of the coating material. Preferably, the wet bulb temperature of the heated air is increased by an increment sufficient to raise the temperature of the coating to at least the minimum coalescence temperature of coating material during the drying cycle and more preferably, this increase is at least about 20 centigrade degrees above the coalescence temperature of the coating material.

The improved drying process of this invention can be incorporated into conventional drying apparatus such as drum dryers, arch dryers, or floater dryers in which the film is unsupported during drying, and the wet bulb temperature is conveniently increased by the addition of steam to the drying air.

T890,005
SYNTHESIS OF 1,12-DODECANEDIOIC ACID TO REDUCE LEVEL OF MONOBASIC ACID IMPURITIES

John Ejnar Fallon, Wilmington, Del., and Thomas Whitfield Wilson, Glassboro, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 569,815, Aug. 3, 1966. This application June 12, 1970, Ser. No. 45,943
Int. Cl. C07c *55/04*
U.S. Cl. 260—533C
No Drawing. 10 Pages Specification

In a process for the oxidation of cyclododecane to 1,12-dodecanedioic acid comprising the steps of oxidizing cyclododecane with oxygen to an initial oxidate mixture comprising cyclododecanol and cyclododecanone, distilling to remove volatile materials including by-products and uncovered cyclododecane from the mixture, oxidizing the resulting cyclododecanol/cyclododecanone mixture with nitric acid to form 1,12-dodecanedioic acid, and recovering 1,12-dodecanedioic acid, the additional step of washing the initial oxidate with an aqueous solution of sodium hydroxide, potassium hydroxide, ammonium hydroxide, or calcium hydroxide at a temperature in the range of 120–230° C. to reduce the amount of monobasic acid impurities therein, said additional step being conducted between the steps of oxidizing cyclododecane with oxygen and oxidizing the cyclododecanol/cyclododecanone mixture with nitric acid, i.e., either before or after the distillation step.

T890,006
MONOMERIC PHOTOSENSITIZERS

Fulton Floyd Rogers, Jr., Richmond, Va., and Allen G. Kirk, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 851,722, Aug. 20, 1969. This application June 18, 1970, Ser. No. 48,915
Int. Cl. B01j *1/00;* C08d *1/00*
U.S. Cl. 204—159.15
No Drawing. 9 Pages Specification

A process for photocrosslinking polymers selected from polypropylene, ethylene/sulfur dioxide copolymer, natural rubber, styrene-butadiene copolymer, chlorosulfonated polyethylene and ethylene/polypropylene/1,4-hexadiene terpolymer for the improvement of physical properties, including broadening of heat sealing ranges, and increasing resistance to solvents; which process comprises incorporating into the polymer about from 0.1–10% by weight of monomeric p-acryloxybenzophenone and subsequently exposing the polymer to radiation having a wavelength of about from 2,000 to 7,000 angstroms.

T890,007
CHLORINATED CARBOXYL GROUP CONTAINING RUBBERS

Paul D. Folzenlogen, Windell C. Watkins, and Hugh J. Hagemeyer, Jr., all of P.O. Box 2068, Longview, Tex. 75603

Continuation of application Ser. No. 819,112, Apr. 24, 1969. This application Sept. 21, 1970, Ser. No. 74,231
Int. Cl. C08c *5/02;* C08d *5/04;* C08f *27/03*
U.S. Cl. 260—78.4D
No Drawing. 12 Pages Specification

This invention relates to chlorinated carboxyl group containing rubbers which can be prepared by chlorinating a carboxyl group containing rubber. These rubbers are useful in forming coating compositions which have excellent adhesion to substrates such as metal, wood, and concrete.

T890,008
SULFUR DIOXIDE RECOVERY FROM STACK GASES EMPLOYING OXIDATION INHIBITOR

Archie V. Slack, Wilson Lake Shores, Sheffield, Ala. 35660, and John M. Potts, 1010 Linwood Ave., Florence, Ala. 35630

Filed Oct. 7, 1970, Ser. No. 78,662
Int. Cl. B01d *47/00, 47/02*
U.S. Cl. 23—2SQ
2 Sheets Drawing. 16 Pages Specification

An improved process for scrubbing power plant stack gas with lime or limestone slurries to remove sulfur oxides which consists of feeding lime or limestone along with recycle liquor and makeup water to a delay tank; circulating the slurry formed through a gas scrubber to remove sulfur dioxide from stack gas; advancing slurry equivalent to that made in the above delay tank countercurrent to the gas and using it in another scrubbing stage or stages; removing a similar amount of slurry from this scrubbing stage and separating solids and calcining them to produce usable sulfur dioxide; returning separated liquor to scrubbing circuit; and reusing calcined solids in scrubbing circuit for removal of sulfur dioxide. Oxidation inhibitor is added to keep the sulfur in easily regenerable calcium sulfite form. The calcium sulfite is heated to drive off sulfur dioxide for sulfuric acid manufacture and simultaneously regenerate lime for reuse in scrubbing stack gas. Unwanted calcium sulfate unavoidably formed is coarser than calcium sulfite or regenerated lime and is separated by size classification and discarded. Fly ash, if present, can be removed ahead of the sulfur dioxide scrubbers by wet scrubbers or electrostatic precipitators.

T890,009
COATING COMPOSITIONS CONTAINING TITANIUM DIOXIDE FLUX-CALCINED DIATOMACEOUS EARTH AND A BUTADIENE/METHYL METHACRYLATE/METHACRYLIC ACID TERPOLYMER

Achim R. Krueger, Upper Darby, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 832,826, June 12, 1969, which is a continuation-in-part of application Ser. No. 539,321, Apr. 1, 1966. This application Oct. 21, 1970, Ser. No. 82,807
Int. Cl. C09d *5/02*
U.S. Cl. 260—29.7
No Drawing. 8 Pages Specification

A coating composition comprising water, a butadiene/methyl methacrylate/methacrylic acid terpolymer, and a pigment of

(a) particulate flux-calcined diatomaceous earth, and
(b) particulate rutile titanium dioxide.

T890,010
STABILIZATION OF POLYPHOSPHATE FERTILIZER SOLUTIONS BY FLUORIDES OR FLUOSILICATES

Alva W. Frazier, 2219 Randolph St.,
Florence, Ala. 35630

Continuation-in-part of application Ser. No. 30,264, Apr. 20, 1970. This application Oct. 21, 1970, Ser. No. 82,809
Int. Cl. C05b *7/00, 13/06*
U.S. Cl. 71—34
No Drawing. 22 Pages Specification

Wet-process phosphoric acids contain metallic impurities—mostly magnesium, aluminum, and iron—dissolved in the acidulation of the parent phosphate rock. Ammonium polyphosphate fertilizer solutions prepared therefrom deposit sludges of phosphates of the metallic impurities that interfere seriously with mechanical handling of the liquids. Formation of the sludges can be prevented, however, by addition of fluorine as either fluoride or fluosilicate.

A minor excess of fluoride over that required to form the most common sludge phase, water-insoluble salt

$$MgAl(NH_4)_5(P_2O_7)_2F_2 \cdot 6H_2O$$

in ammonium and potassium polyphosphate liquid fertilizer solutions prevents the precipitation of these metallic impurities. The precipitation of less common solid phases such as $Mg(NH_4)_2P_2O_7 \cdot 4H_2O$,

$$Al(NH_4)_2P_2O_7OH \cdot 3H_2O$$

and

$$Mg(NH_4)_6(P_2O_7)_2 \cdot 6H_2O$$

is prevented when the fluoride concentration is increased to give a sequestration ratio (S.R.) of about 0.5 at a 50% polyphosphate content or 0.14 at a polyphosphate value of 10% of the total P_2O_5, said sequestration ratio being determined by the empirical equation:

$$S.R. = \frac{\text{Wt. percent F}}{\text{Wt. percent MgO} + 3 \text{ wt. percent } Al_2O_3 + 0.33 \text{ wt. percent } Fe_2O_3}$$

Effectively, this increase in fluoride content shifts the solution composition from a region of stability for these insoluble salts to a region where water-soluble compounds, such as dimorph II of $MgAl(NH_4)_5(P_2O_7)_2F_2 \cdot 6H_2O$, are the stable phases, thus sequestering the metallic cations.

T890,011
TRILOBAL NYLON FILAMENTS CONTAINING POLY(ALKYLENE ETHER)

Ashok J. Champaneria, 402 William St., Seaford, Del. 19973; Thomas P. Doherty, 3321 Rockfield Drive N., Devonshire, Wilmington, Del. 19810; and Robert R. Moneymaker, 43 Read St., Seaford, Del. 199873

Filed Oct. 26, 1970, Ser. No. 84,242
Int. Cl. D02g *3/22*
U.S. Cl. 161—174
No Drawing. 5 Pages Specification

Synthetic trilobal filaments with a modification ratio of 1.55 to 1.75 containing 3 to 8% by weight of a high molecular weight, water-soluble poly(alkylene ether) are soil-resistant and have a reduced tendency to change color when wet. Preferably, the filaments are nylon and have a tip radius of 0.3 to 0.5; the preferred poly(alkylene ether) is poly(ethylene ether) glycol.

T890,012
STABILIZATION OF POLYPHOSPHATE FLUID FERTILIZERS BY OXIDIZING AGENTS

Alva W. Frazier, 2219 Randolph St.,
Florence, Ala. 35630

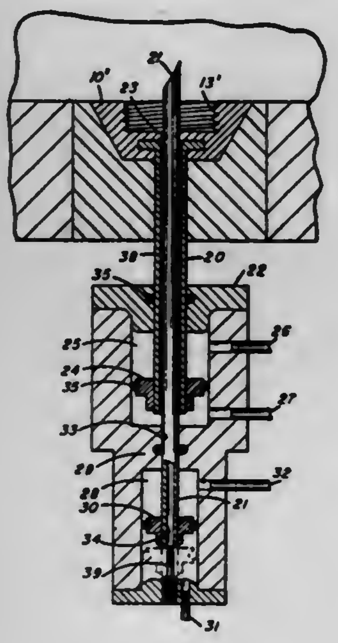
Filed Dec. 23, 1970, Ser. No. 101,094
Int. Cl. C05b *7/00, 13/06*
U.S. Cl. 71—34
No Drawing. 14 Pages Specification

Very small quantities of ferrous iron, i.e., about 0.4 percent, can result in 20 to 25 percent sludge fraction in ammonium and potassium polyphosphate liquid fertilizers even after 1–2 weeks of storage, whereas ferric iron can attain concentrations up to 4.0 percent without the formation of sludge constituents. It has been discovered that treating the wet-process phosphoric acid with a very minor quantity (usually about 0.3 percent) of ammonium nitrate while the acid is warm (about 60° C.) will convert the iron to the ferric state and prevent the undesirable sludge formation of $Fe(NH_4,K)_2P_2O_7 \cdot 2H_2O$. Other nitrate sources which may be utilized as oxidizing agents are $NaNO_3$ or KNO_3.

Common oxidizing agents such as permanganates, dichromates, peroxides, chlorites, hypochlorites, and others are equally effective but are not as inexpensive and unique as ammonium nitrate which is not usually considered as an oxidizing agent. The requirement for this treatment and quantity of ammonium nitrate needed can be readily determined by a simple titration of the acid using a standardized potassium permanganate solution.

T890,013
APPARATUS FOR BLOW MOLDING UNDERCUT ARTICLES

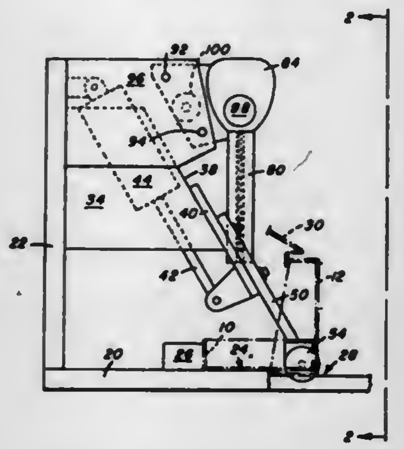
Ray H. Lawrence, West Henrietta, N.Y.
(1669 Lake Ave., Rochester, N.Y. 14650)
Filed Feb. 1, 1971, Ser. No. 111,383
Int. Cl. B29d *23/03*
U.S. Cl. 18—5BB
1 Sheet Drawing. 11 Pages Specification



An apparatus for use in the blow molding of articles having undercut portions, such as neck threads. The undercut portion is cooperatively molded by means of sector-shaped inserts mounted on mutually inclined slideways formed in one of the mold halves. Sliding movement in one direction causes the inserts to merge and form a mold for the undercut portion, while movement in the opposite direction separates the inserts from the finished article. The inserts are centrally engaged and driven by a hollow actuator rod which is itself reciprocally driven by a piston in one chamber of a double-chambered fluid pressure cylinder. A blow pin, reciprocally driven by a piston in the other chamber, is slidably received within the actuator rod for movement independent thereof. The blow pin is also freely movable at all times with respect to the inserts since, depending upon the position of the inserts, the pin may pass either through a cooperatively formed aperture or between the separated inserts. A stationary plug seals the blow pin at its trailing end and prevents premature blowing by restricting the entry of blowing fluid into the pin until the pin has moved forward a sufficient distance to pierce the parison.

T890,014
HORIZONTAL EYELETER

Eugene Lemieux, Albion, and Kenneth N. Ross and Hendrik Vandermeulen, Rochester, N.Y. (all of 1669 Lake Ave., Rochester, N.Y. 14650)
Filed Mar. 1, 1971, Ser. No. 120,012
Int. Cl. B21j *15/02, 15/14*
U.S. Cl. 29—526
2 Sheets Drawing. 17 Pages Specification



Method and apparatus for horizontally inserting eyelets comprising a horizontally operable ram member having a horizontally disposed spindle at one end thereof. An anvil member is arranged in horizontal spaced alignment with the spindle. The ram member and the anvil member are mounted on a frame member arranged for movement between a first retracted position and a second fastener-setting position in a direction transverse to the horizontal motion of the ram member, with the ram member and the anvil member being maintained in alignment throughout their movement between the first and second positions. An eyelet supply means, including a track means, extends between the ram member and the anvil member when they are in the first position with the track means arranged to present an eyelet in alignment with the spindle. The eyelet supply means is arranged to horizontally move the track means toward the ram member to engage the eyelet in the track means with the spindle, and then to return the track means to the original position when the ram member and the anvil member are in the second position. The track member is arranged to release the eyelet engaged by said spindle upon movement of the spindle towards the second position. The ram member and the anvil member are disposed on opposite sides of the article when they are in the second position. The ram member is then driven toward the anvil member to drive the spindle and the eyelet through the article and to impact the eyelet on the anvil member to set the eyelet in the article. The ram member and spindle are then retracted from the anvil member and the ram member and anvil member are returned to the first position.

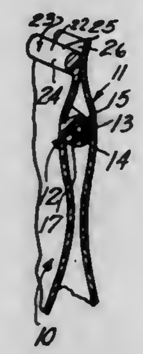
REISSUES

SEPTEMBER 21, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,174
RECLOSABLE BAGS WITH RIB AND GROOVE ELEMENTS FORMED OF DIFFERENT MATERIALS

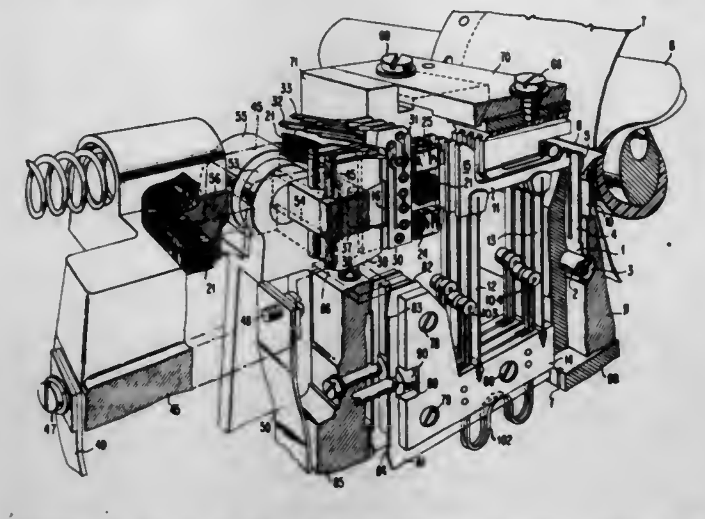
Steven Ausnit, 124 E. 61st St., New York, N.Y. 10021
Original No. 3,371,696, dated Mar. 5, 1968, Ser. No. 500,652, Oct. 22, 1965. Application for reissue Jan. 23, 1970, Ser. No. 5,293
Int. Cl. B65d *33/24*
U.S. Cl. 150—3 10 Claims



A sheet with an integral flexible closure including a plastic film with raised integral rib and groove elements thereon shaped for releasably interlockingly joining each other and the plastic film formed of a thermoplastic having a first physical property and the rib and groove elements formed of a thermoplastic having a second different physical property.

27,175
PRINT HAMMER UNIT FOR HIGH SPEED PRINTERS

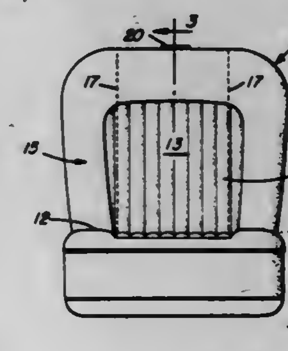
Sieghard Arnold, Hildrizhausen, Gerold Buhrmann, Stuttgart, Jurgen Haasis, Boblingen, Horst Heinrich, Berlin, Manfred Nitschke, Stuttgart-Rohr, Gunter Schacht, Boblingen, and Eberhard Spieth, Holzgerlingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Original No. 3,359,921, dated Dec. 26, 1967, Ser. No. 473,093, July 19, 1965. Application for reissue Apr. 29, 1968, Ser. No. 728,093
Claims priority, application Germany, July 25, 1964, J 26,273
Int. Cl. B41j *9/00;* **B23p** *19/00*
U.S. Cl. 101—93 20 Claims



Printing apparatus for a high speed printer having an elongated print hammer with an upstanding armature portion at the end remote from the print line and a pair of parallel flat springs supporting the print hammer. An electromagnet having a hold winding for producing magnetic flux to hold the print hammer in a retracted position and means for reducing the magnetic flux below the holding value to permit the support springs to actuate the hammer to a printing position.

27,176
ORTHOPEDIC SEAT SUPPORT

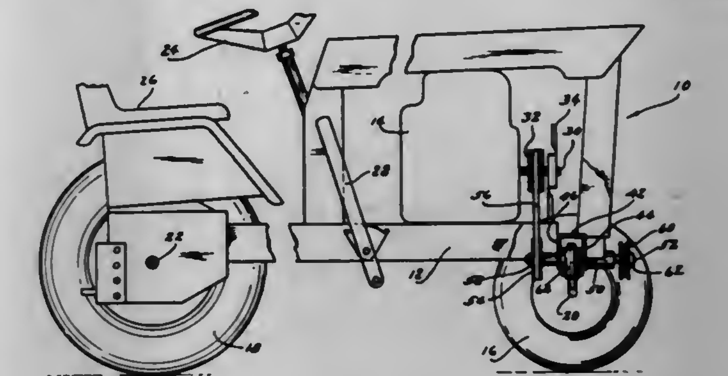
Edward Froelich, 5408 Eastview Park, Chicago, Ill. 60615
Original No. 3,321,241, dated May 23, 1967, Ser. No. 558,719, June 20, 1966, which is a continuation-in-part of Ser. No. 463,237, June 11, 1965. Application for reissue May 16, 1968, Ser. No. 731,362
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 4 Claims



Seat back with vertically adjustable contoured orthopedic element or device. The back comprises an inner core with an outer cover therefor, a fabric portion being intermediate cover and core and secured to the cover by spaced parallel stitching to form a pocket to accommodate the orthopedic element. Provision is made by means attached to the orthopedic element and extending through an aperture provided in the outer cover for vertically adjusting the orthopedic device to a desired position and removably securing the same in such position.

27,177
FRONT AXLE AND PTO SHAFT

William J. Schlapman and Elmer E. Croisant, Winneconne, Wis., assignors to J. I. Case Company, Racine, Wis.
Original No. 3,349,631, dated Oct. 31, 1967, Ser. No. 528,924, Feb. 21, 1966. Application for reissue Dec. 13, 1968, Ser. No. 786,503
Int. Cl. F16h *37/00*
U.S. Cl. 74—15.63 13 Claims



A power take-off drive for a tractor including a power take-off shaft at the front end of the tractor that is rotat-

ably mounted in an axle assembly. The axle assembly is mounted for pivotal movement relative to a U-shaped support bracket, which is secured to the frame of the tractor. The power take-off shaft is rotated through a drive train including a sheave on the tractor crankshaft, a sheave on the power take-off shaft, and a belt interconnecting the sheaves.

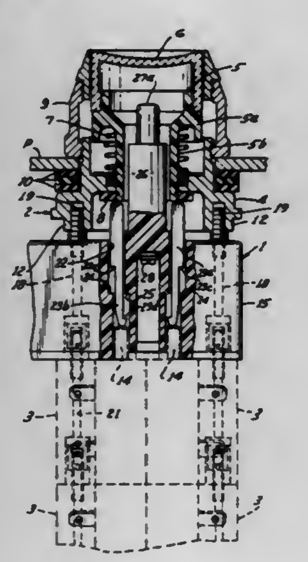
27,178
LIGHT MODULE AND COMBINATION THEREOF WITH PUSH BUTTON OPERATOR AND SWITCH

Richard C. Rothweiler, Asheville, N.C., and Josef Bierenfeld, Shorewood, and Carl B. Sohns, Whitefish Bay, Wis., assignors to Square D Company, Park Ridge, Ill.

Original No. 3,315,060, dated Apr. 18, 1967, Ser. No. 506,696, Nov. 8, 1965. Application for reissue Feb. 19, 1970, Ser. No. 12,872

Int. Cl. H01h *9/18*

U.S. Cl. 200—167A **8 Claims**



A light module for an illuminated pushbutton type electrical switching unit. The module is arranged to be mounted between an illuminated pushbutton type operator and one or more switch units and includes passages which receive pins to transmit movements of the operator to the switches and an internal cavity which receives a transformer or resistors so that the voltage of the supply for the switching unit is made compatible with the requirements of the lamp which is positioned by the module to illuminate the pushbutton.

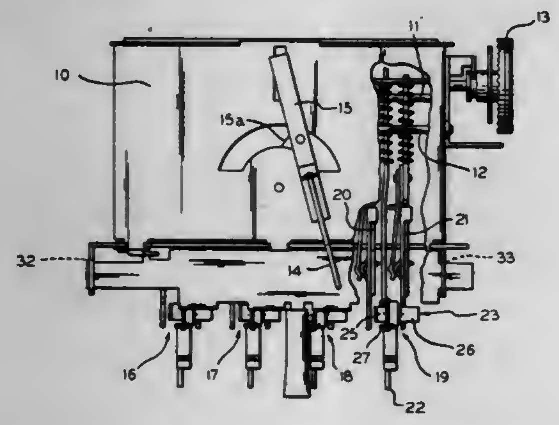
27,179
TUNER ACTUATING MECHANISM

Gilead H. Newman, Des Plaines, Ill., assignor to TRW Inc., Cleveland, Ohio

Original No. 3,357,264, dated Dec. 12, 1967, Ser. No. 522,433, Jan. 24, 1966. Application for reissue Apr. 29, 1969, Ser. No. 830,553

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.27 **7 Claims**



A pushbutton slide is selectively engageable with one or the other of an actuating device on each side of the slide. A toggle lever carried by the slide is movable into engagement with the selected actuating device to render the same operational.

27,180
IMPRINTING AND OBLITERATING APPARATUS

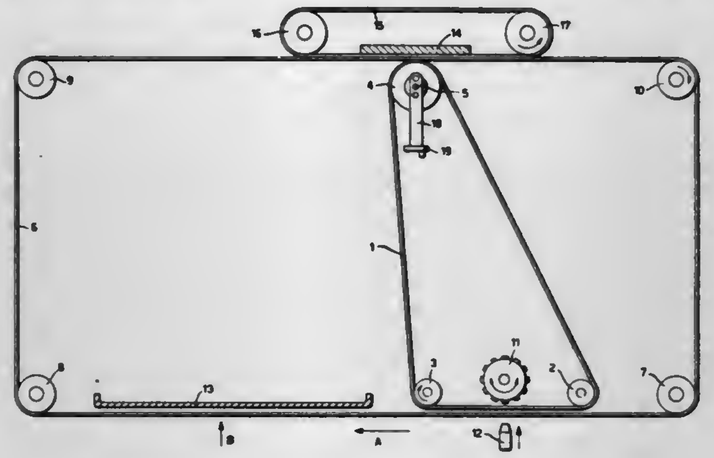
Victor Spreter, Geneva, and Max Schonfelder, Petit-Lancy, Geneva, Switzerland, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Original No. 3,421,611, dated Jan. 14, 1969, Ser. No. 563,130, July 6, 1966. Application for reissue May 11, 1970, Ser. No. 36,193

Claims priority, application Switzerland, July 8, 1965, 9,692/65

Int. Cl. B41z *1/32*

U.S. Cl. 197—49 **9 Claims**



A printing device is provided which ink prints with a non-diffusible endless inking ribbon onto an endless plastic band of polyester resin, such as polyethylene terephthalate, and then at a later station, after passing reading position, rubs the same inking ribbon over the plastic band to effect obliteration and reabsorption of the ink imprint back onto the inking ribbon.

27,181
MANUFACTURE OF OIL-FILLED ELECTRIC CABLES

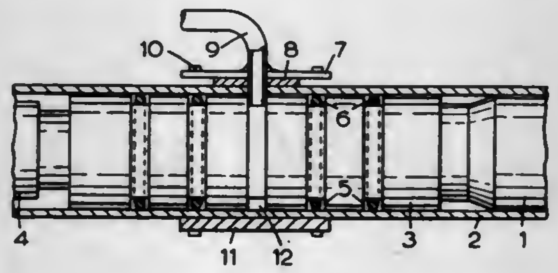
Maurice Dudley Lambert, Fairoak, Eastleigh, England, assignor to Pirelli General Cable Works Limited, London, England

Original No. 3,455,347, dated July 15, 1969, Ser. No. 506,209, Nov. 3, 1965. Application for reissue Feb. 24, 1970, Ser. No. 13,740

Claims priority, application Great Britain, Nov. 5, 1964, 45,115/64

Int. Cl. B65b *31/04, 1/04*

U.S. Cl. 141—65 **4 Claims**



In evacuated sheathed electric cables, air from the atmosphere has a tendency to leak in between the cable end plug and surrounding sheath. This is prevented in the present invention by a guard system which is clamped on and around the sheath covering the end plug. The guard system includes a vacuum line passing through the sheath into an annular guard-ring formed in the plug where such air collects, and a packing element and external surrounding shield through which the vacuum line is passed.

27,182
ONE-PIECE BELT-TYPE BEDDING CARRIER

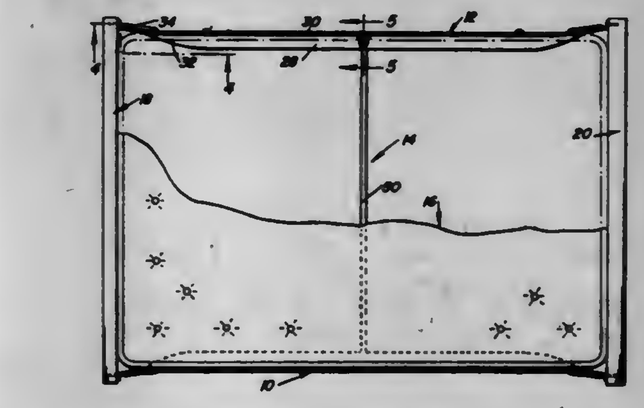
Harry Fredman, 908 SW. Washington, Peoria, Ill. 61602

Original No. 3,118,151, dated Jan. 21, 1964, Ser. No. 186,400, Apr. 10, 1962. Application for reissue June 7, 1971, Ser. No. 146,569

Int. Cl. A47c *19/02, 23/00*

U.S. Cl. 5—238 **8 Claims**

A slatless bed assembly comprising a pair of side rails, a pair of end boards interconnecting and extending perpendicularly to the side rails and a spring assembly supported on and between the side rails and between the end boards. Each of the side rails is of one-piece metallic cosntruction and has a right angular cross-sectional configuration substantially over a major portion of its length. The side rails associate with a tension member which pulls the rails inwardly from their respective at-rest positions so that the vertical flanges of the rails contact the spring assembly, and so that the horizontal flanges extend under the spring assembly throughout a major portion of the length of the side rails. Such a construction eliminates the necessity of slats, notwithstanding variations in the width of the end boards.



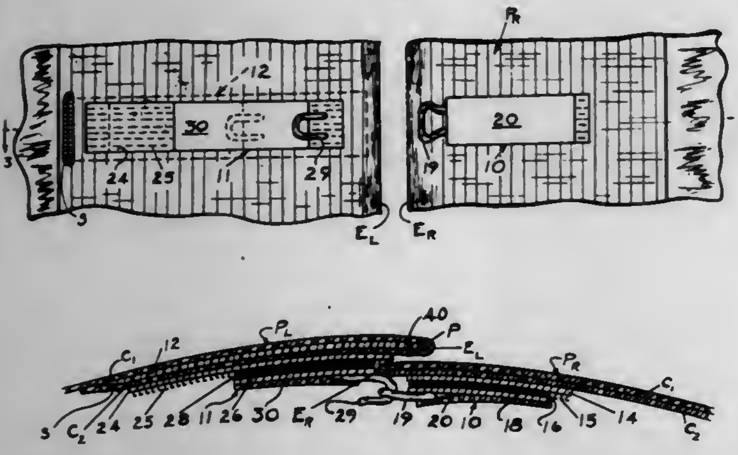
PATENTS

GRANTED MAY 11, 1971

GENERAL AND MECHANICAL

3,606,613
GARMENT FASTENER

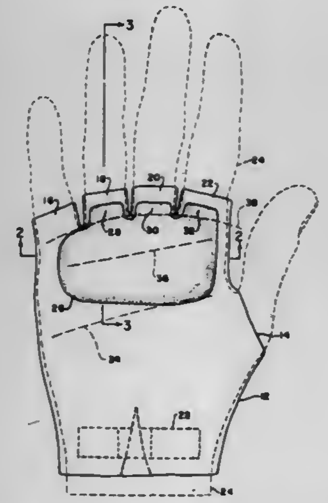
William C. Johnson, Jr., 308, LaPrado Circle,
Birmingham, Ala. 35209
Filed Sept. 19, 1969, Ser. No. 859,465
Int. Cl. A41d *1/00;* **A44b** *17/00, 13/00*
U.S. Cl. 2—96 **3 Claims**



A device for fastening garments having overlapping panels including a first releasable fastening element having a loop thereon attached to the inside of one of the panels and a complementary second fastening element adjustably attached to the inside of the other panel and having a hook portion thereon. The hook portion on the second element is selectively engageable with the loop on the first element to fasten the panels together. The adjustability of the second element permits the amount of overlap of the panels to be selectively varied. The first and second elements are attached to the panels of the garment through a gripping material commonly known as Velcro and a stiffener is provided to maintain the shape of the overlapping panel.

3,606,614
SPORTS GLOVE

Thomas G. Dimitroff, 512 Maxine Drive,
Oxford, Ohio 45056
Filed Sept. 15, 1969, Ser. No. 857,715
Int. Cl. A41c *19/00*
U.S. Cl. 2—159 **2 Claims**



The invention relates primarily to a glove to be worn by a quarterback in football to teach proper control of the ball for passing. Essentially, the glove comprises a partial hand enclosure which leaves at least two joints of each finger and the thumb free and not covered. A pad is positioned on the palm to cover the inner joints of each finger and force the user of the glove to hold the ball on his fingertips to effect passing control thereof. The pad on the palm fills the cup-shaped opening portion of the palm adjacent the knuckles or inner joint of the fingers and prevents a player from palming the ball while handling it in one hand for passing.

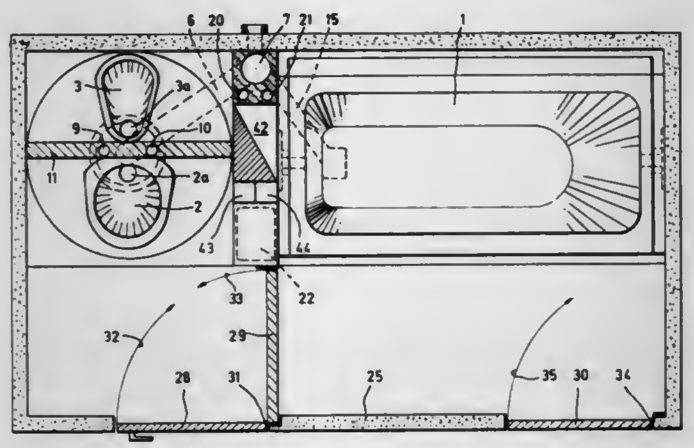
3,606,615
TOOTH PROSTHESES AND SURGICAL IMPLANTS

Otto Rudiger, Essen-Heldhausen, Alfred Hoffmann, Erkrath, and Dieter Hirschfeld, Essen, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
No Drawing. Filed Apr. 21, 1970, Ser. No. 30,602
Claims priority, application Germany, Nov. 12, 1969,
P 15 58 448.2
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **16 Claims**

An alloy for making tooth prostheses and surgical implants. This alloy consists essentially of 5 to 15 percent chromium, 5 to 15 percent nickel, 4 to 11 percent titanium, and remainder cobalt.

3,606,616
PREFABRICATED SANITARY UNIT

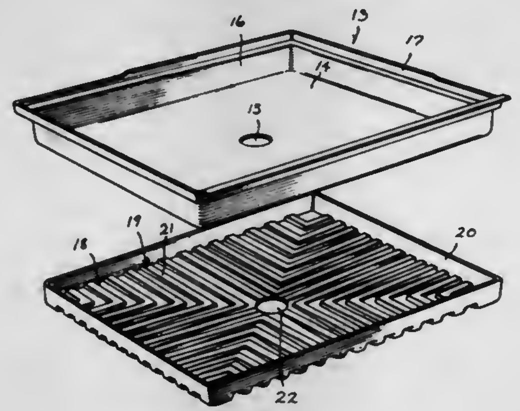
Rene Bucher, Stockackerstrasse 17,
Reinach, Switzerland
Filed Apr. 8, 1970, Ser. No. 26,679
Claims priority, application Switzerland, Apr. 15, 1969,
5,657/69
Int. Cl. A47k *4/00*
U.S. Cl. 4—2 **9 Claims**



A prefabricated sanitary unit is based on a main structural member in the form of a rotatable platform. At least one vertical partition on the platform spatially separates a plurality of compartments, and a sanitary fitting is installed in each compartment. The sanitary fittings are plumbed into a common discharge pipe which is coaxial with the axis of rotation of the platform. On rotation of the platform each sanitary fitting is in turn brought to a common position permitting access to the fitting for use. Arrangements are made to supply water to the fittings as necessary. The fittings are preferably a water closet and a bidet, and a shower and wash basin may also be provided.

6,606,617
BATHING FIXTURE

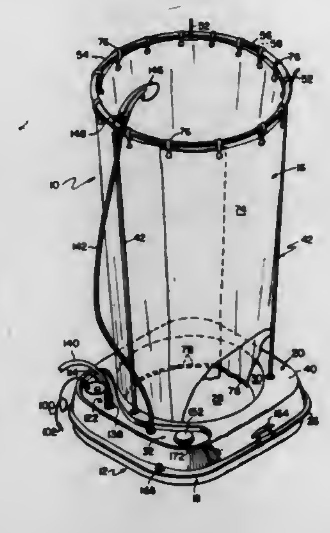
Eldon R. Frazier, Sturgis, Mich., assignor to
Silvercote Products, Inc., Elkhart, Ind.
Filed June 25, 1969, Ser. No. 836,327
Int. Cl. A47k *3/00*
U.S. Cl. 4—145 **7 Claims**



A bathing fixture, such as a shower pan or tub, comprising an upper fluid retainer member having an inclined bottom wall with a drain opening therein, and a lower support member receiving the fluid retainer member and having a bottom wall which includes rib portions conforming to the incline of the bottom wall of the fluid retainer member and engagingly supporting the same.

3,606,618
PORTABLE SHOWER BATH

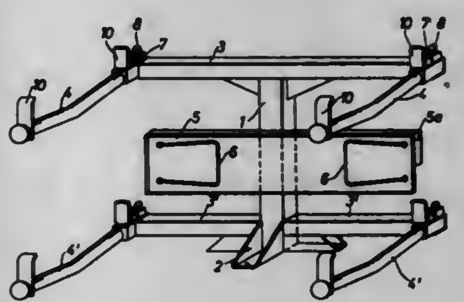
Robert D. Veech, 11 Yates Ave.,
Commack, N.Y. 11725
Filed Mar. 31, 1970, Ser. No. 24,269
Int. Cl. A47k *3/22;* **F24h** *1/06*
U.S. Cl. 4—147 **25 Claims**



A self-contained portable shower bath in which all of the component parts are packed in a suitcase sized, hand portable, compact unit, in which there is a main body portion comprising a fluid reservoir and a basin platform, shower curtain assembly, a showerhead and plumbing therefor, all of which are demountable for stowing in the basin or between the basin and the inside of a cover designed to fit over and enclose the body portion, in which there is a motor driven pump, fluid lines and valves adapted to be selectively arranged to pump fluid from the reservoir to the showerhead, to drain the basin, to recirculate water from the basin to the showerhead, and to provide a fluid supply to the showerhead from an outside water line.

3,606,619
APPARATUS FOR ACCOMMODATING A STRETCHER

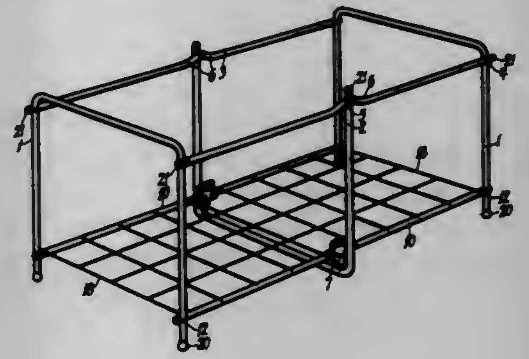
Hans Stollenwerk, Dellbrucker Haupstr. 197/201,
Cologne-Dellbruck, Germany
Filed June 27, 1969, Ser. No. 837,063
Claims priority, application Germany, June 29, 1968,
P 17 66 664.7
Int. Cl. A47c *17/40;* **A61g** *7/10*
U.S. Cl. 5—9 **13 Claims**



This disclosure provides an apparatus for supporting at least one stretcher in a substantially horizontal position within a vehicle enclosure. The apparatus is especially useful when mounted within an ambulance. A single columnar member is mounted in a substantially vertical position within the vehicle enclosure. A horizontal support means extends in substantially opposite directions from the columnar member. At least two cantilever arms are connected to the horizontal support means. The cantilever arms are laterally displaced with respect to each other and have free ends in a projecting position on which a stretcher is suspended above the bottom of the vehicle enclosure. Various means for folding the apparatus into a storage position are also disclosed.

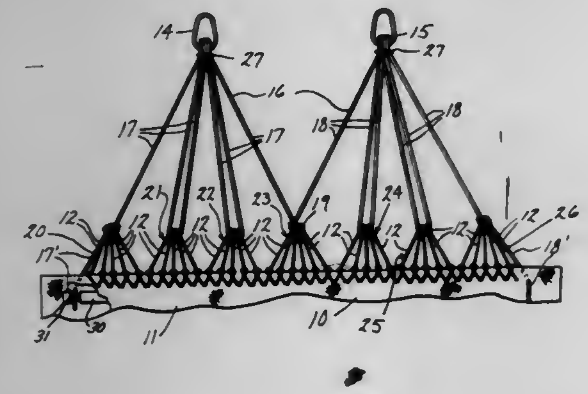
3,606,620
FOLDABLE COT FOR INFANTS

James Frederick Glover, 19 Marriott St.,
Parkdale, Victoria 3194, Australia
Filed Sept. 8, 1969, Ser. No. 856,921
Int. Cl. A47c *2/00, 27/08*
U.S. Cl. 5—99 **7 Claims**



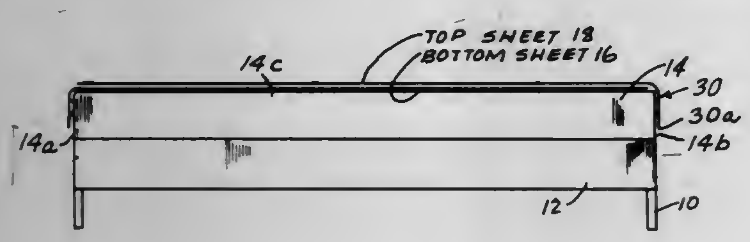
A foldable cot for infants comprising two end frames and a mid frame, upper link members pivotally connecting the end frames to the mid frame, central fittings, lower link members pivotally connecting the end frames to the central fittings and means for releasably connecting said central fittings to the mid frame, wherein said cot is foldable by first disconnecting said central fittings from the mid frame and then allowing the said end frames to move towards each other so that the said link members pivot about the points of connection of the associated end frames and towards the associated end frames.

3,606,621
HAMMOCK STRINGING METHODS AND ASSEMBLIES
Joseph V. Bertsche, Milwaukee, Wis., assignor to Algoma Net Company, Algoma, Wis.
Filed Nov. 13, 1969, Ser. No. 876,477
Int. Cl. A45f *3/22*
U.S. Cl. 5—122 **8 Claims**



A hammock stringing assembly wherein the string loops formed across the end of the hammock bed are gathered together in spaced, upwardly-converging sets and the center portion of an elongated cord is arranged in the form of a loop which is inserted through the middle set of said strings, the free ends of said cord being projected through said cord looped portion and drawn taut and the elongated cord strands then being progressively strung in opposite directions back and forth between said sets of string loops and supporting rings carried on the hammock stand.

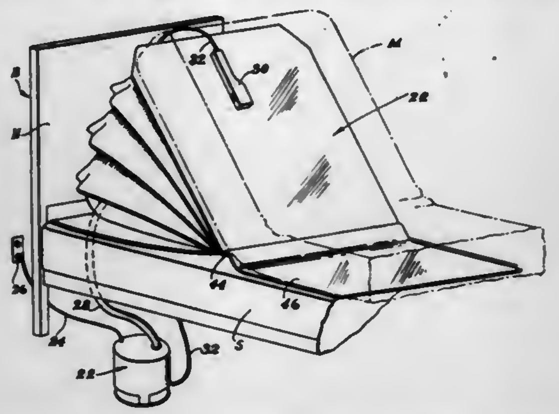
3,606,622
BED SHEET HOLDER
William K. Williams and Charles P. Williams, both of 809 Golden Ave., Golden City, Mo. 64748
Filed Sept. 29, 1969, Ser. No. 861,756
Int. Cl. A47c *21/02*
U.S. Cl. 5—320 **5 Claims**



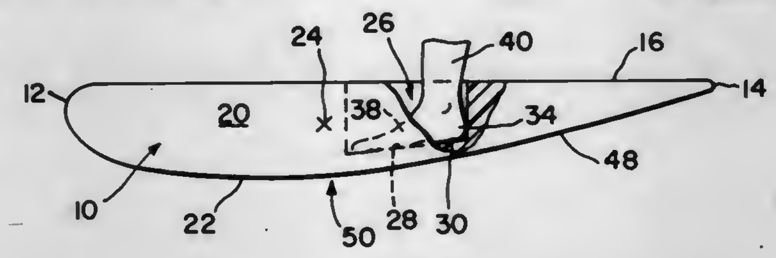
A bed sheet holder comprises two like holder sections, one for the top sheet, one for the bottom sheet, for holding both sheets in place at the foot of the bed and holding the bottom sheet in place at the head of the bed.

3,606,623
ADJUSTABLE BEDREST WITH IMPROVED BELLOWS STRUCTURE
Julian Robert Aymar, North Merrick, N.Y.; Michael R. Aymar, administrator of the estate of said Julian Robert Aymar, assignor to Surgical Dynamics, Inc., Berkeley Heights, N.J.
Filed Jan. 9, 1970, Ser. No. 1,727
Int. Cl. A47c *21/00*
U.S. Cl. 5—327B **11 Claims**

A bellows assembly for a pneumatically operated adjustable bedrest is provided with integral channel means whereby pressurized air is introduced into what will ultimately be the wider end of the inflated bellows and is then channelled down into the opposed end or apex of the V-shaped bellows. From the apex the pressurized air is then free to move into the separate chambers defined by the channels and the adjacent confronting layers of the bellows. This provides a mechanical advantage which permits smooth elevating action.

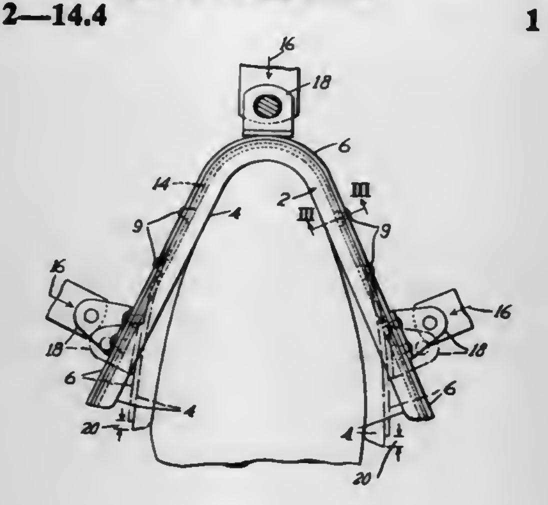


3,606,624
BUOYANT PROPULSION MEANS
Clement La Rocca, 153—24 Sanford Ave., Flushing, N.Y. 11358, and Bernard Schwartz, 5 Argyle Road, Bethpage, N.Y. 11714
Filed June 25, 1969, Ser. No. 836,494
Int. Cl. A63c *15/00*
U.S. Cl. 9—310D **8 Claims**



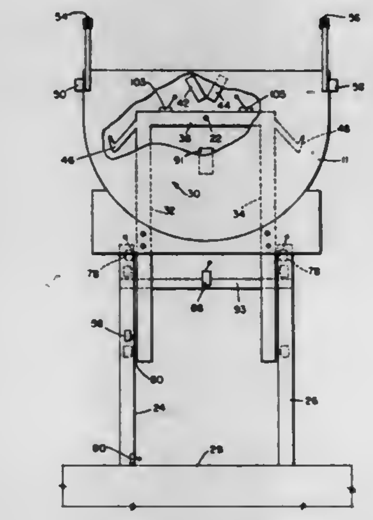
A flotation propulsion device, adapted to be used by an operator such as a human being, constructed of a buoyant material and having a foot platform positioned so that the heel of the operator will be behind the center of gravity of the device, whereby when the operator bears down on the foot platform, the device will displace greater volume in a liquid such as water, and when the weight of the operator is lessened, the forward portion of the device and the center of gravity will rise more quickly than the rear portion of the device causing it to move forward.

3,606,625
BAND FOR OPERATING ON SHOES
Charles J. Ioannilli, West Roxbury, and John S. Bialek, Ipswich, Mass., assignors to USM Corporation, Boston, Mass.
Filed Feb. 2, 1970, Ser. No. 7,909
Int. Cl. A43d *21/00*
U.S. Cl. 12—14.4 **1 Claim**



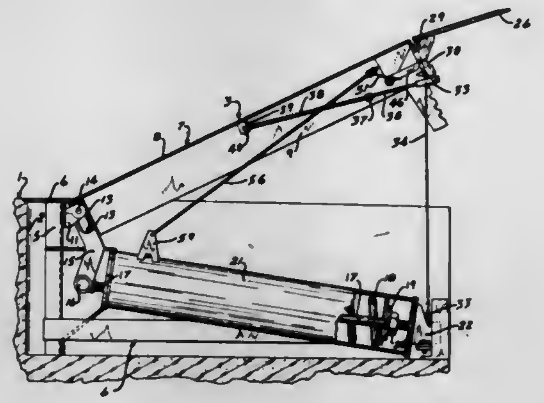
A flexible band for wrapping about a shoe contour and having superposed portions secured together by headed fasteners in a T-slot so as to move relatively as the band is wrapped around a shoe contour.

3,606,626
MOTOR CONTROL ELECTRICAL SYSTEM
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.
Filed Dec. 30, 1969, Ser. No. 889,109
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **5 Claims**



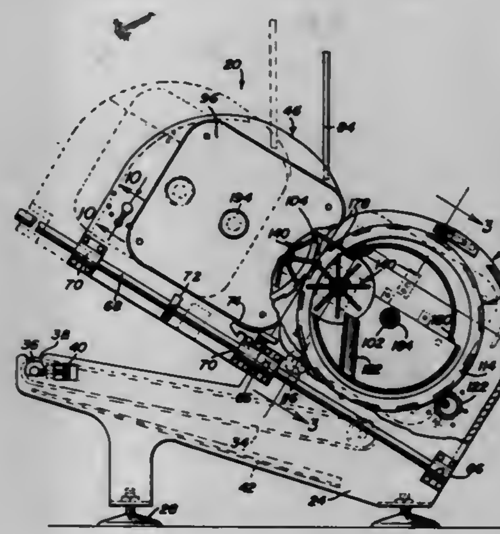
An electrical system is provided to limit the degree of expandable and rotatable movement of a passenger ramp of a vehicle adapted to provide a walkway from the vehicle to a terminal. Proper alignment of the ramp is assured during expansion and retraction operations.

3,606,627
LIP LATCHING MECHANISM FOR A DOCKBOARD
Roderick B. Potter, Milwaukee, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.
Filed Jan. 26, 1970, Ser. No. 5,864
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **11 Claims**



An improved lip latching mechanism for a dockboard adapted to span the gap between a loading dock and the bed of a carrier. The dockboard includes a ramp mounted on the dock and an extension lip is hinged to the forward edge of the ramp and is movable with respect to the ramp from a pendant position to an extended position. When the ramp is elevated the lip is pivoted to the extended position and simultaneously a lip latch is pivoted into engagement with one of a series of notches on a lug attached to the undersurface of the lip to hold the lip in the extended position. The lip latch is moved to the operative position by a control rod having one end connected to the supporting structure and the opposite end acts through a torsion spring against the latch. As the ramp is lowered, the spring force on the latch is withdrawn enabling the latch to pivot by gravity to its inoperative position.

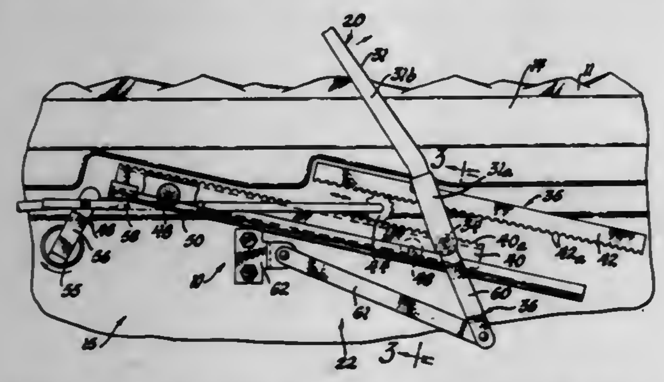
3,606,628
TABLE MOUNTABLE MEAT CLEANING MACHINE
Herman F. Russell, 13900 Cherrylawn St., Detroit, Mich. 48238
Continuation-in-part of application Ser. No. 734,729, June 5, 1968, now Patent No. 3,478,380, which is a continuation-in-part of applications Ser. No. 583,206, Sept. 30, 1966, now Patent No. 3,389,414, and Ser. No. 704,971, Jan. 15, 1968, now Patent No. 3,439,369. Said application Ser. No. 704,971, being in turn a continuation-in-part of applications Ser. No. 570,616, Aug. 5, 1966, Ser. No. 583,206, Sept. 30, 1966, and Ser. No. 659,397, Aug. 9, 1967. This application Nov. 17, 1969, Ser. No. 877,229
Int. Cl. A22c *17/08*
U.S. Cl. 15—3.17 **15 Claims**



A compact table mountable meat cleaning machine incorporating a pair of elongated sections, one mounted for lateral movement away from the other at an upwardly inclination relative thereto. Each of the sections mount a rotating wire-like gripping roller, the two rollers engaging and moving cuts of meat therebetween for a cleaning of the opposed sides thereof by a pair of elongated rotating brushes located within the rollers. The movable section is biased toward the other section by gravity whereby a constant pressure is maintained on a received cut of meat. A conveyor underlies the two sections for a removal of the cleaned meat. Scrap receiving containers are positioned within each roller and generally about the associated brush.

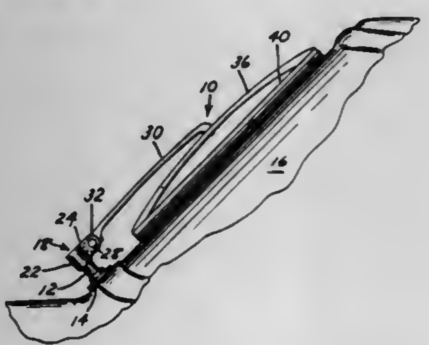
3,606,629
SYMMETRICAL OVERLAP
Eric G. Parker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 14, 1970, Ser. No. 37,213
Int. Cl. B60s *1/26*
U.S. Cl. 15—250.21 **4 Claims**

In a preferred form, this disclosure relates to a windshield wiping apparatus in which the windshield wiper is simultaneously pivoted and moved transversely of the windshield between inboard and outboard positions. The windshield wiping apparatus includes a drive mechanism having a pinion gear which is in meshed engagement with fixed and movable racks and which is reciprocated to cause the movable rack to be reciprocated and a wiper connected to the rack to be moved transversely of the windshield. The drive mechanism further includes a linkage means operatively connected with the wiper to cause the latter to pivot between its inboard and outboard positions in response to reciprocal movement being imparted to the movable rack.



3,606,630
WINDSHIELD WIPER

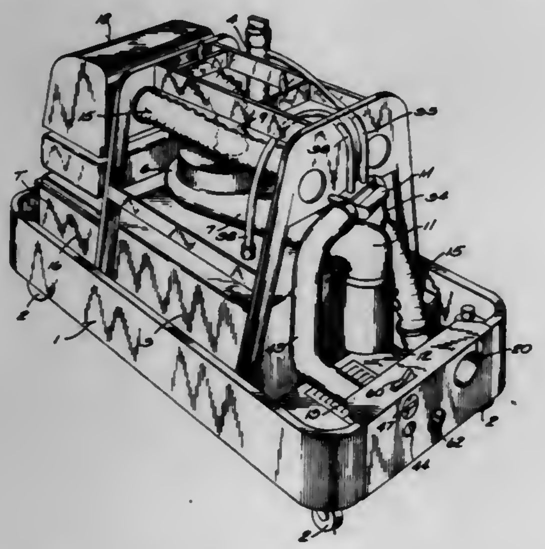
Charles A. Haas, Dover-Chester Road, Ironia, N.J. 07845
Continuation of application Ser. No. 633,572, Apr. 25, 1967. This application Sept. 15, 1969, Ser. No. 858,190
Int. Cl. A47l *1/00;* **B60s** *1/02*
U.S. Cl. 15—250.36 **1 Claim**



A windshield wiper in which the wiping surface is a solid fluorocarbon polymer is disclosed.

3,606,631
PORTABLE CLEANING MACHINE

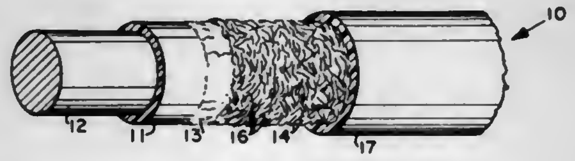
Joe F. Vassh, Racine, Wis., and Carl F. Yandt, La Crescent, Minn., assignors to Von Schrader Manufacturing Co., Racine, Wis.
Filed June 1, 1970, Ser. No. 42,266
Int. Cl. A47l *11/34*
U.S. Cl. 15—321 **20 Claims**



A cleaning machine for upholstery, carpeting, fabrics, or the like which generates a foam from a cleaning solution. The machine first vacuums the article to be cleaned, then applies the foam through a cleaing head which includes counter-rotating brush elements, and then the soiled foam and liquid are vacuum from the article. The counter-rotating brushes are driven by an electric motor in the head. The foam generated in the machine is passed through a hose to the head and around the motor, thereby cooling the motor and warming the foam, after which the foam goes out through the brushes.

3,606,632
EXTRUDED CABLE COVERING WITH FIBROUS INTERLAYER AND APPARATUS

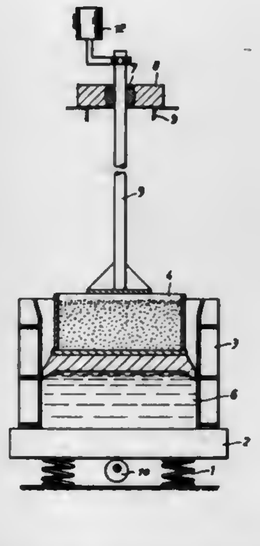
Steve Bunish, County of Grant, Ind., and Rosario J. Perrone, County of Cuyahoga, Ohio, assignors to Anaconda Wire and Cable Company
Application Jan. 19, 1968, Ser. No. 714,388, now Patent No. 3,487,149, dated Dec. 30, 1969, which is a division of application Ser. No. 589,879, Oct. 27, 1966, now Patent No. 3,406,248. Divided and this application Sept. 22, 1969, Ser. No. 864,938
Int. Cl. B29f *3/10;* **B32b** *1/00; 25/02*
U.S. Cl. 18—4S **3 Claims**



In the manufacture of cables with multi-layered covering, fibrous material is introduced between the layers during the extrusion operation.

3,606,633
JARRING APPARATUS FOR PRODUCING MOLDED BODIES

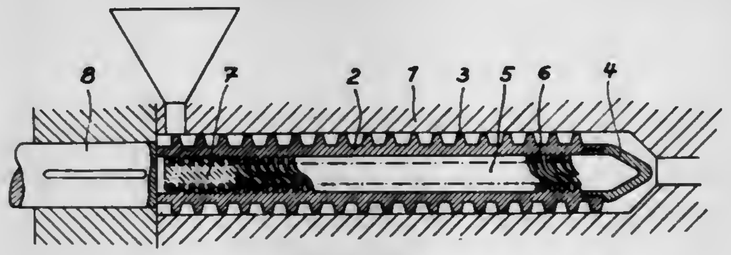
Jakob Engelmann, Cologne-Mulheim, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany
Filed Sept. 12, 1969, Ser. No. 857,459
Claims priority, application Germany, Sept. 28, 1968, P 17 83 078.3
Int. Cl. B29c *5/04*
U.S. Cl. 18—5R **2 Claims**



A jarring device for producing molded bodies which is provided with a jarring table on top of which is attached a mold box into which the material to be molded is introduced. A cover weight extends from above into the mold box to rest on the molding material therein. A guide rod extends vertically upwardly from the center of the cover weight and extends with its upper end slidably through a spherical guide member which is pivotally supported in a spherical bearing.

3,606,634
WORM EXTRUDERS FOR THE TREATMENT OF SYNTHETIC MATERIALS

Manfred Weinert, Metzkausen, Germany, and Klaus-Peter Fahnenstich, Springfield, Vt., assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Nov. 20, 1968, Ser. No. 777,236
Claims priority, application Germany, Nov. 28, 1967, P 17 29 344.6
Int. Cl. B29f *3/02*
U.S. Cl. 18—12SM **7 Claims**

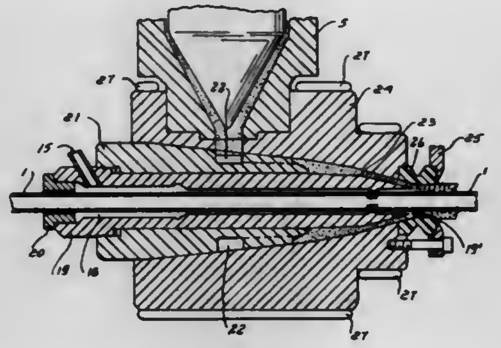


A worm extruder for the treatment of synthetic materials, wherein heat is withdrawn from the part of the worm towards the outlet end by a cooling medium provided in an axial cavity in the worm, this bore being partially filled with the cooling medium at room temperature and at a pressure below atmospheric pressure, so that the cooling liquid is subjected only to its own vapour pressure, the cavity then being hermetically sealed.

Internal screw threads may be provided in the cavity, to impel the liquid towards the tip of the worm when the worm is revolving; and a plug may be adjustably screwed into these internal screw threads to vary the area of the heat-exchange surface.

3,606,635
APPARATUS FOR JACKETING TUBULAR STOCK

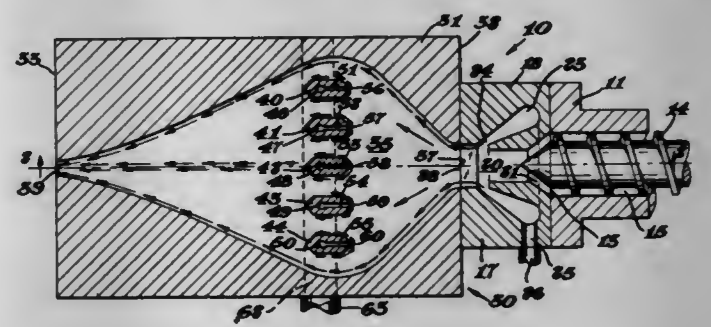
Helmut Benteler, Bielefeld, and Wilhelm Lachenmayer, Berlebeck, Germany, assignors to Benteler-Werk AG, Paderborn, Germany
Filed Sept. 20, 1968, Ser. No. 761,221
Claims priority, application Germany, Sept. 29, 1967, P 16 29 716.8
Int. Cl. B29f *3/10*
U.S. Cl. 18—13H **8 Claims**



An apparatus for jacketing tubular stock. Metallic tubular stock is advanced in a predetermined direction through an extruding die in the extruding head of an extruder. In this extruding die a jacket consisting of a mixture of pre-plasticated synthetic plastic material and a blowing agent as extruded onto the outer circumferential surface of the advancing tubular stock and undergoes foaming while still within the confines of the die. As the jacketed stock issues from the die it passes through an annular member having an inner diameter slightly smaller than the outer diameter of the foamed jacket so that the peripheral surface layer of the jacket is deformed into a continuous smooth skin. Subsequently, the resulting jacketed tubular product is cooled.

3,606,636
EXTRUSION DIE

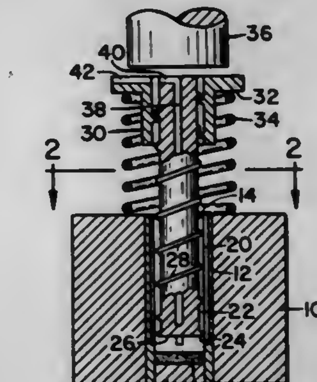
Henry L. Glass, Midland, and Walter J. Schrenk, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Original application May 5, 1967, Ser. No. 636,481, now Patent No. 3,511,903. Divided and this application Sept. 30, 1969, Ser. No. 871,156
Int. Cl. B29d *7/02, 23/04*
U.S. Cl. 18—13P **6 Claims**



A multi-component extrusion die is shown which is particularly suited for handling corrosive polymers wherein a corrosive or degradable polymer is encapsulated by a countercurrent flow of an encapsulating polymer.

3,606,637
APPARATUS FOR COMPRESSING MATERIALS

William Nicholas Lawless, Corning, N.Y. assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 8, 1968, Ser. No. 719,536
Int. Cl. B30b *11/02*
U.S. Cl. 18—16R **6 Claims**

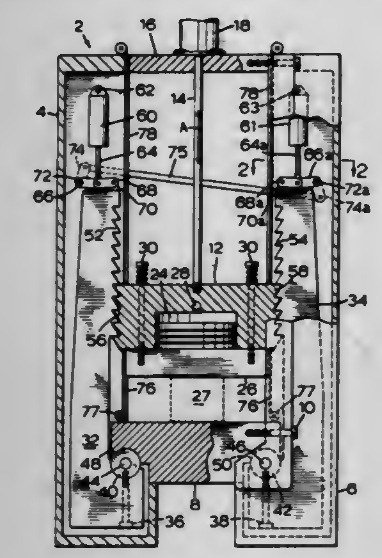


An improved hot-pressing apparatus is disclosed in which a material, such as a powder, is compressed into a highly densified body free from excessive contamination by impurities and free from porosity due to the entrapment of gases therein. Raised ribbing formed upon the body of a movable cylindrically shaped die permits ease of insertion and removal of the die in the die bore. Channels formed in the bore defining surface of the apparatus which extend from the bore entrance along a portion of the length thereof facilitate the rapid removal of gases from the material and apparatus.

3,606,638
PRESS WITH TIE BAR MECHANISM

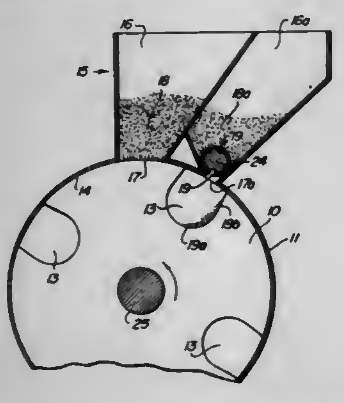
Ladislao (Wladyslaw) Putkowski, Toronto, Ontario, Canada (21 Limarick Ave., Weston, Ontario, Canada)
Continuation-in-part of application Ser. No. 623,929, Mar. 17, 1967. This application Nov. 3, 1969, Ser. No. 873,540
Int. Cl. B29c *3/00*
U.S. Cl. 18—16R **30 Claims**

A press having a pair of platens between which an object to be pressed is located. At least one of the platens is movable towards and away from the other to adjust the spacing between the platens. After such spacing has been adjusted, a pair of sturdy tie bars are moved to engage both platens and lock them together. Force is then applied to the object, the resultant reaction forces being resisted by the locked together platens.



3,606,639
APPARATUS FOR MAKING ARTIFICIAL FIREPLACE LOGS HAVING COLORED FLAMES

William Hughes Brockbank, 777 East South Temple, Salt Lake City, Utah 84102
Filed June 20, 1969, Ser. No. 835,089
Int. Cl. B29c *3/04, 7/00*
U.S. Cl. 18—20C **4 Claims**

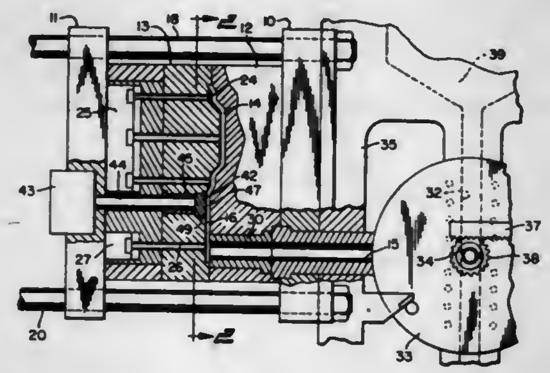


An apparatus for producing artificial fireplace logs having flame colorants as additives which provide colored flames continuously during the burning of the entire log. The apparatus has means for forming and dropping an elongate, slender mass of discrete particles of pyrogenic coloring matter into the cavity of an elongate artificial log mold; means for filling the log mold with artificial log mix, preferably containing an additional quantity of flame colorants admixed therewith; and means for compressing the log mix in the mold to form a log. The discrete particles of coloring matter found within the mold adhere superficially to the surface of the log, preferably along a localized area of the log corresponding to the top and front side of the log as it is positioned in a fireplace.

3,606,640
INJECTION MOLDING APPARATUS

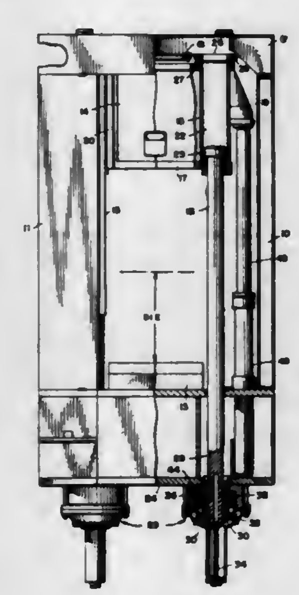
William H. Schwartz, University Heights, Ohio, assignor to Lester Engineering Company, Cleveland, Ohio
Filed June 23, 1969, Ser. No. 793,406
Int. Cl. B29f *1/05*
U.S. Cl. 18—30RV **5 Claims**

An injection molding machine having relatively movable die platens adapted to support separable molds which include a gate runner leading from the shot cylinder to the die cavity, a cut-off plate actuated by a hydraulic piston-cylinder assembly to move into the gate runner cutting off the gate to the cavity, such plate being of the same configuration as the gate runner.



3,606,641
INJECTION MOLDING MACHINE

Louis F. Carrieri, La Grange Park, and Norton D. Skinner, Palos Heights, Ill., assignors to U.S. Industries, Inc., New York, N.Y.
Filed June 6, 1969, Ser. No. 831,098
Int. Cl. B29f *1/00*
U.S. Cl. 18—30LV **6 Claims**

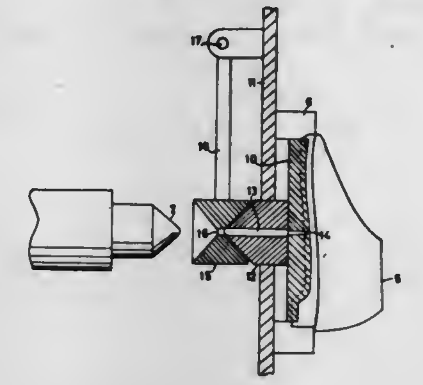


A vertical injection molding machine where the upper die member is held in the upper position by hydraulic pressure which, when relieved, allows the die member to move downwardly by gravity into contact with the lower die member. Fixed tension rods are secured at their lower ends to clamping units and extend at their upper ends into cavities in the upper slide. The slide and die move downwardly with respect to the tension rods and when the two dies are in contact with each other they become locked with the tension rods. Hydraulic fluid under pressure is then introduced into the clamping units at the bottom of the press, thereby exerting pressure downwardly on the tension rods and upwardly on the press bed, thus clamping the upper and lower die members together during the injection process.

3,606,642
INJECTION MOLDING MACHINES

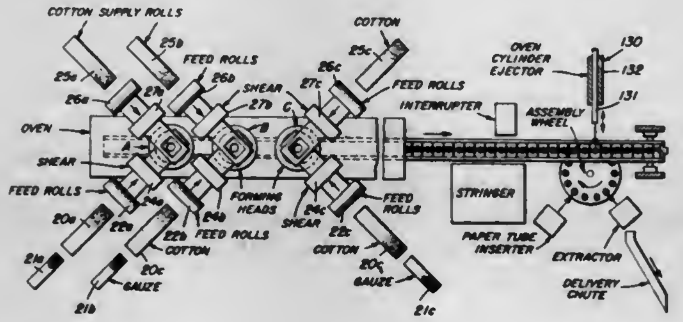
Petrus Robert De Ryck, Oordegem, Belgium, assignor to Daco Machinenfabriek N.V., Oordegem, Belgium
Filed July 1, 1969, Ser. No. 838,070
Claims priority, application Belgium, July 5, 1968, 717,645
Int. Cl. B29f *1/12*
U.S. Cl. 18—30US **6 Claims**

An injection molding apparatus comprising, for each mold, a displaceable coupling member for connecting the injection head to the mold. The coupling member is provided with two opposite cavities which fit respectively onto the injection head and the conical extremity of the part containing the injection channel for the mold. The cavities are interconnected by a conical channel the opening of which is narrower on the injection head side. In this manner, after the coupling member has been displaced, the molding bead presents an outer extremity of a certain length which can be easily grabbed by a plier-like extractor device.



3,606,643
MULTI-PHASE LINEAR FLOW MACHINE FOR MAKING TAMPONS

John Russell Mooney, Fort Worth, Tex., assignor to Mayfield Laboratories, Inc., Fort Worth, Tex.
Original application Jan. 6, 1966, Ser. No. 519,125, now Patent No. 3,465,390, dated Sept. 9, 1969. Divided and this application Aug. 15, 1969, Ser. No. 870,936
Int. Cl. A61l *15/00*
U.S. Cl. 19—144.5 **3 Claims**

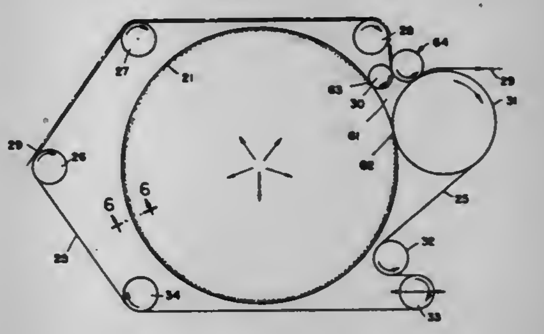


In a machine for making tampons, a plurality of tampon forming means, spaced relative to each other for synchronously forming tampons and loading same in an intermittently movable oven cylinder chain, including an assembly wheel for extracting the tampon from the cylinder chain and thereafter discharging the tampon from the machine.

3,606,644
MACHINE FOR FORMING CELLULOSIC PRODUCT

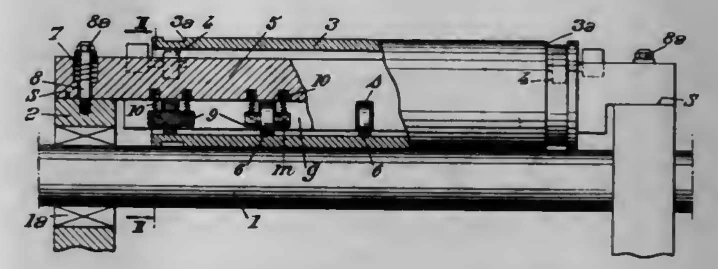
Eugene W. Wittkopf, Little Suamico, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed June 11, 1969, Ser. No. 832,299
Int. Cl. A61l *15/00*
U.S. Cl. 19—145 **7 Claims**

A machine for continuously forming cellulosic products such as sanitary napkins, in which fluff is deposited on a carrier web from a rotating drum, sealing means provided at the point of web transfer from the drum, means for advancing the web-supported fluff napkins toward horns employed for ensleeving the napkins with a gauze tube, and cut-off means for separating individual napkins with the leading portions of the wrapping overfolded.



3,606,645
CLEANING DEVICE FOR TEXTILE CARDING MACHINE

Louis Vignon, Geneva, Switzerland, assignor to Hispano Suiza (Suisse) S.A., Geneva, Switzerland
Filed July 8, 1969, Ser. No. 839,949
Claims priority, application Luxemburg, July 12, 1968, 56,477
Int. Cl. D01g *15/00*
U.S. Cl. 19—200 **7 Claims**

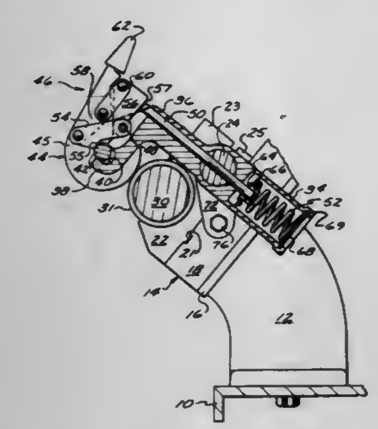


The machine is provided with a cleaning device comprising a driving cylinder and a hollow pressure cylinder disposed parallel to and tangentially along the driving cylinder. The pressure cylinder is maintained by simply resting tangentially on the driving cylinder and on retaining rollers carried by the frame, so that the pressure cylinder is in a stable situation. The hollow pressure cylinder is traversed by a non-rotatable application bar mounted on the frame with the possibility of moving away from its supporting surface against the action of return springs. The application bar coacts with the hollow pressure cylinder exclusively by the intermediary of a plurality of application rollers subjected to the action of elastic suspension means. These application rollers are placed at intervals along the application bar and bear against the internal wall of the pressure cylinder along a generatrix of contact. The overall force of the suspension means is smaller than the force of the return springs of the application bar.

3,606,646
DRAFTING ROLL WEIGHTING MECHANISM

Philip B. Tarbox and Gordon C. Anderson, Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.
Filed Aug. 28, 1969, Ser. No. 853,773
Int. Cl. D01h *5/50*
U.S. Cl. 19—279 **4 Claims**

In a spinning machine, an upper drafting roll mounting and weighting mechanism is disclosed for properly receiving and urging the upper drafting roll in engagement against the lower driving drafting roll at any or all of the front, middle and rear drafting roll assemblies. The mechanism includes an upwardly directed, open-face bearing which loosely supports the central arbor of the upper roll of any of said assemblies, and a toggle linkage which is activated to bring a bearing pressure downwardly against the central arbor thereby urging the enlarged ends of the upper roll into engagement with the lower roll. Also disclosed is a tilting subassembly for positioning the mechanism so that the upper roll may engage the lower roll at any desired position about its circumference.



3,606,647

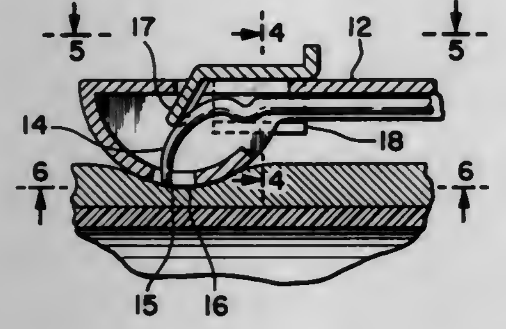
LOCKING PIN CLIP

Fay S. Lincoln, R.D. 1, Centre Hall, Pa. 16828

Filed Aug. 21, 1969, Ser. No. 852,051

Int. Cl. B43k *25/00*

U.S. Cl. 24—11M **4 Claims**



This invention provides secure fastening means for a pen or pencil in a garment pocket, to prevent loss of the article such as occurs when a conventional type clip fails.

3,606,648

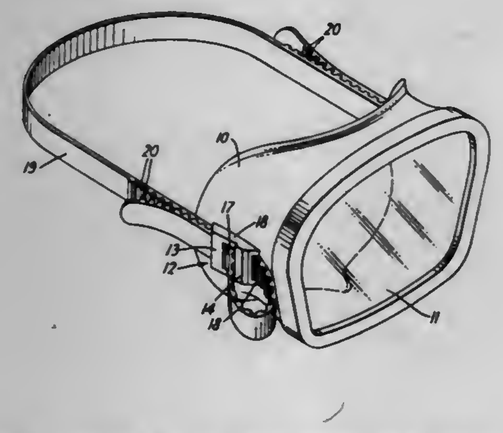
FASTENING STRAP AND BUCKLE

Manfred Schuler, Newport Beach, Calif., assignor to AMF Incorporated, Jersey City, N.J.

Filed Oct. 8, 1969, Ser. No. 864,741

Int. Cl. A61f *9/02;* **B65d** *63/00*

U.S. Cl. 24—16PB **2 Claims**



A rubberlike swim fin or face mask has integral buckles formed thereon and a rubber like ridged strap has opposite ridged ends threaded through the buckles so that the ridges make locking engagement with the buckles and with each other.

3,606,649

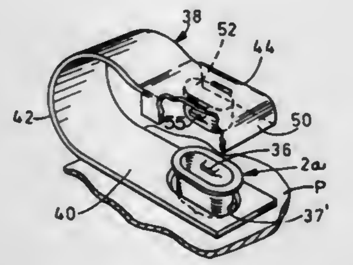
FASTENING DEVICE

Albert T. Buttriss, Westlake, and Clarence R. Van Niel, North Olmsted, Ohio, assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio

Continuation of application Ser. No. 733,570, May 3, 1968. This application Feb. 24, 1970, Ser. No. 13,731

Int. Cl. A44b *21/00*

U.S. Cl. 24—735A **29 Claims**



A fastening device for welded securement with a support member having a body made from a metallic material, and a tip-like projection made from the material of the body and extending outwardly therefrom for securement by electrical welding to the support member. In one form, the body is of a partially closed construction, such as an inverted cup-like shape, having an exterior flange construction and/or an interior lug construction for interior or exterior mounting of other mating attachment fasteners to the support member. In other forms, the body has a generally open, such as generally U-shaped or generally inverted U-shaped, constructions having one or more of the tip-like projections for welded securement to the support member.

3,606,650

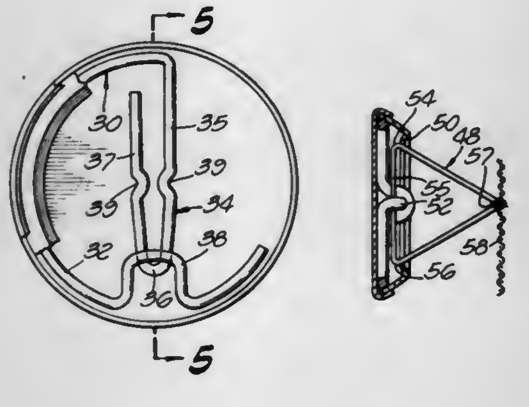
DETACHABLE BUTTON AND FASTENING MEANS THEREFOR

Wayne E. Saari, Box 1533, Santa Barbara, Calif. 92702

Filed Jan. 29, 1968, Ser. No. 701,190

Int. Cl. A44b *1/18, 1/26*

U.S. Cl. 24—90 **14 Claims**



A garment fastening system comprising a button having a diametrically extending attaching means adapted to engage an appropriate loop, or similar fastening means, attached to a garment, with the attaching means having means for centering the button on the loop, whereby said buttons can be detached and interchanged as desired.

3,606,651

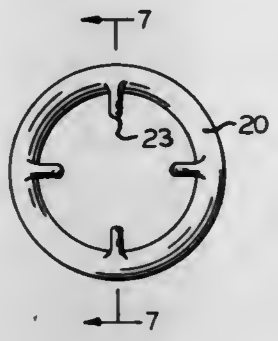
CLAMPING DEVICES

Robert H. Goodman, 4654 Parkside Drive, Wauwatosa, Wis. 53226

Filed May 8, 1969, Ser. No. 823,083

Int. Cl. A44b *21/00*

U.S. Cl. 24—255BS **3 Claims**



A hoop-like clamping device especially useful for clamping together articles of clothing during the laundering thereof.

3,606,652

APPARATUS FOR APPLYING BRIDGING MEANS TO A CONTOURED ROOFING TILE

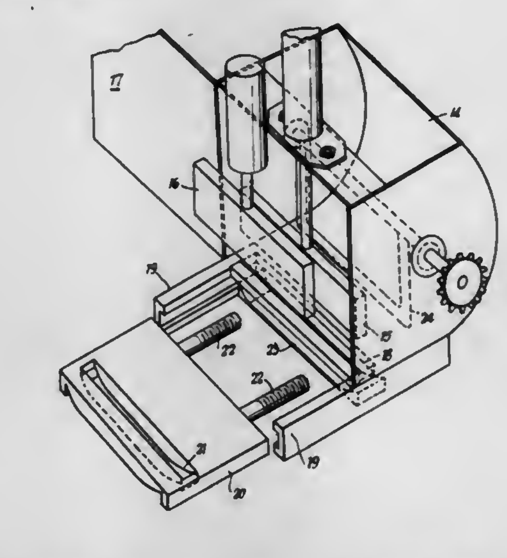
Leslie Gerald Hammond, Bletchley, England, assignor to Anchor Building Products Limited, Leighton Buzzard, Bedfordshire, England

Filed Oct. 16, 1968, Ser. No. 768,146

Claims priority, application Great Britain, Feb. 9, 1968, 22,692/68

Int. Cl. B28b *13/06*

U.S. Cl. 25—103 **6 Claims**



Apparatus for applying a bridge across the trough of a contoured roofing tile in order to inhibit or prevent rain water penetrating between overlapping tiles when in position on a roof; comprising, a member defining a chamber which is charged from a hopper with a sand and cement mixture by operation of a first plunger, the member then being moved to a position above the tile, whereupon the charge is pressed into the tile by operation of a second plunger.

3,606,653

STUFFER CRIMPER FOR TEXTILE MATERIAL

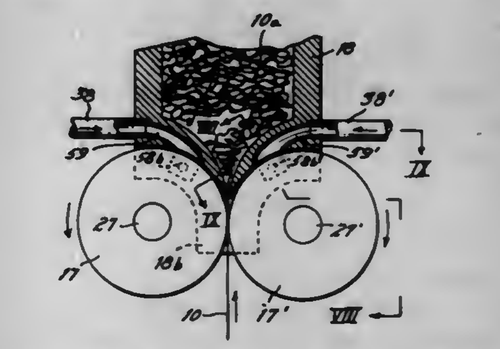
Robert K. Stanley, Media, Pa., assignor to Techniservice Corporation, Kennett Square, Pa.

Continuation-in-part of application Ser. No. 675,919, Oct. 17, 1967, now Patent No. 3,491,420, dated Jan. 27, 1970. This application May 21, 1969, Ser. No. 826,411

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.6 **18 Claims**

This invention relates to apparatus for stuffer crimping of textile material, usually in the form of a relatively coherent strand or the like. It provides for fluid cooling of the contacting surfaces of at least the feed rolls of stuffer crimpers, thereby enabling preheated material to be stuffer crimped without localized frictional heating from the stuffing thereof.



3,606,654

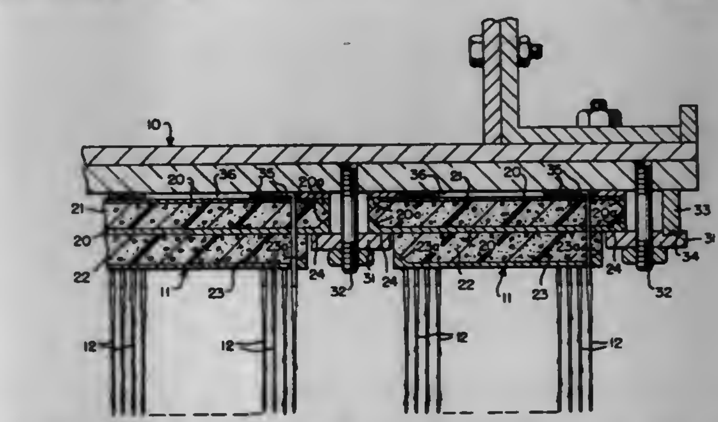
NEEDLE SUPPORT FOR FELTING MACHINE

Richard S. F. Dilo, Eberbach-Neckar, Germany

Filed Dec. 22, 1969, Ser. No. 886,890

Int. Cl. D04h *18/00*

U.S. Cl. 28—4R **8 Claims**



A needle bar for use in felting machines or the like comprising alternate laminations of metal strips and plastic layers. The needles extend through aligned holes in the metal strips and through the plastic layers. The plastic is held under compression for expanding the plastic and thus securing the needles in place.

3,606,655

PROCESS AND APPARATUS FOR THE CONTINUOUS TENSION-FREE FIXING AND SHRINKING OF CABLES OF UNCRIMPED FILAMENTS

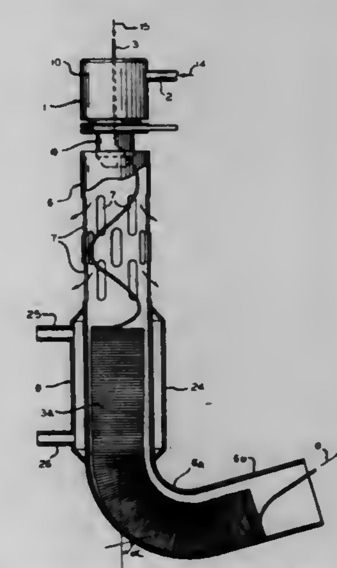
Siegfried Oberlander, Kolpingstr. 4, Erlenbach am Main, Germany, and Karl Ostertag, Rosenstr. 18, Elsenfeld am Main, Germany

Filed Sept. 22, 1969, Ser. No. 859,957

Claims priority, application Germany, Oct. 9, 1968, P 18 01 976.6

Int. Cl. D02g *1/16;* **D06c** *1/00*

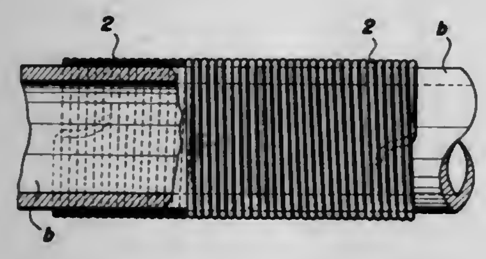
U.S. Cl. 28—59 **5 Claims**



Process for the continuous, tension-free fixing and shrinking of cable of uncrimped filaments, yarns or the like wherein the cable is conducted by means of a compressible medium in coiled or spiral form through a tubular treatment zone, and during the passage through the said zone is subjected to a fixing and shrinking treatment; and apparatus therefor embodying a vertical tube and a rotating, cable injector on the upper end of the tube, the outlet opening of which tube lies eccentrically in respect to the axis of rotation of the injector.

3,606,656
METHOD OF COVERING POLES, SHAFTS AND SIMILAR OBJECTS

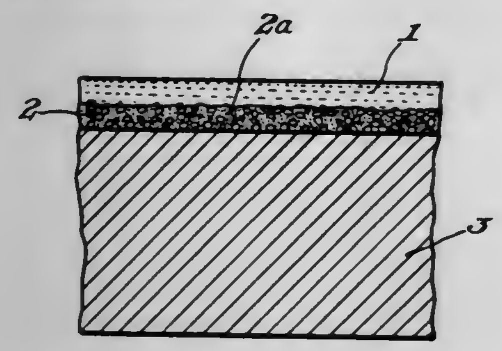
Takashi Kumagai and Tasuku Miyanabe, Tokyo, Japan, assignors to Olympic Fishing Tackle Co., Ltd., Saitama-ken, Japan
Filed June 29, 1970, Ser. No. 50,371
Int. Cl. D06 *1/00*
U.S. Cl. 28—76T **7 Claims**



Method of covering the surface of a shaft or other bar member, using a cylindrical woven sleeve, wherein the woof is made of a heat shrinking fiber and the warp of a soluble fiber. The cylindrical woven sleeve is disposed to loosely cover the desired portion of the shaft and is then heated and washed by the solvent. The warp dissolves and is removed while the woof shrinks so as to tightly wrap around the surface of the shaft.

3,606,657
METHOD OF MAKING BEARINGS AND OTHER ANTIFRICTION MEMBERS FROM A SYNTHETIC RESIN MATERIAL CONTAINING LUBRICANT

Masayuki Horikawa, Tokyo, Japan, assignor to Oiles Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of abandoned application Ser. No. 606,389, Dec. 30, 1966. This application Aug. 20, 1969, Ser. No. 851,717
Int. Cl. B23p *11/00*
U.S. Cl. 29—149.5NM **6 Claims**

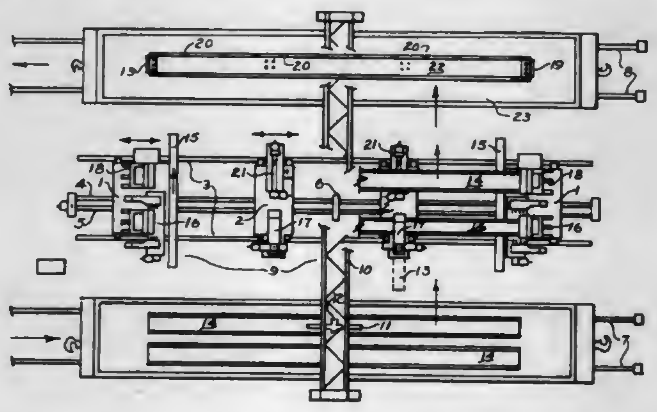


In this method, thermoplastic polyacetal synthetic resin powders are mixed with an excess of a lubricant oil heated to a temperature not lower than the melting point of the synthetic resin during agitating, and allowed to settle to obtain a precipitate deposit.

The resulting precipitate was pulverized to produce lubricant containing thermoplastic synthetic resin powders, and the powders obtained are impregnated and coated on a porous powder metallurgical layer of bronze alloy sintered on the surface of a steel plate, which plate has a layer of lubricant free synthetic resin thereon, thereby manufacturing composite bearings.

3,606,658
STRUCTURAL MEMBER FABRICATING PROCESS

John R. McConnell, 148 Woodside Ave., Ridgewood, N.J. 07450
Continuation-in-part of application Ser. No. 737,654, June 17, 1968. This application May 19, 1970, Ser. No. 38,668
Int. Cl. B23p *17/00, 19/00*
U.S. Cl. 29—155R **9 Claims**

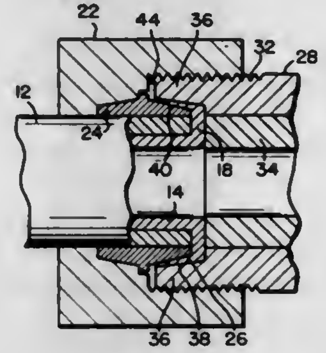


A method is disclosed of handling and completely fabricating structural steel floor members from raw steel shapes into precisely fitting interlocking unit elements that form with the necessary columns a multiple-cell cage for the support of floors, roofs, walls and other elements. In a typical application of the process a trailer-load or car-load of raw shapes from the steel rolling mills is shunted alongside a longitudinally-disposed multiple fabricating apparatus, that includes a travelling hoist operable along a transverse overhead gantry runway spanning the apparatus and the necessary parallel delivering and shipping vehicles. Successive raw shapes are hoisted out of the delivering vehicle and lowered to the adjacent dual conveyor belts that transversely move them individually into the operating area of the dual end-located three way drills that simultaneously drill the webs and flanges of the shape near the ends for attachment of pairs of end connection angles to the web of the shape. The flange holes permit the attachment to wind-bracing brackets located on the supporting columns. The intermediately located vertically pivotable drills drill the web for floor beam connections. Moved on to the forward half of the apparatus multiple rivets attached to a lower connection angle are heated, the angle is assembled to the beam web, an upper mating connection angle is placed over the projecting rivets and plural air hammers head the rivets over the three assembled pieces of steel. This operation is performed at each end of the shape. The now completed member is lifted off the dual belts and stacked in an empty parallel vehicle for outbound shipping. This overall process is applicable to other combinations of different fabricating operations, in part and in simplified abbreviated versions.

3,606,659
METHOD OF COUPLING AND/OR JOINING LINED PIPE

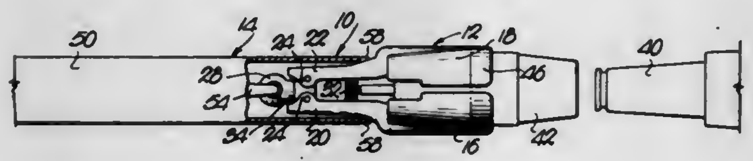
James F. Robbins, Westford, Mass., assignor to Sybron Corporation, Rochester, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,746
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*
U.S. Cl. 29—157 **4 Claims**

Disclosed is a coupling and a method for joining tin lined tubings wherein a portion of the tubing is removed to expose a portion of the tin lining. The exposed lining is then flared over the end of the tubing so that during connection of the tubing to a fitting by conventional ferrule and nut means, the flared tin is forced against and over the ferrule to form a joint completely lined with tin including a layer of tin between the opposed pipe and fitting faces.



3,606,660
REMOTE OPERATING TOOL FOR ELECTRICAL APPARATUS

John P. Davis, Hallsville, Mo., assignor to A. B. Chance Company, Centralia, Mo.
Filed Nov. 25, 1969, Ser. No. 879,796
Int. Cl. B25b *27/02;* **H01r** *43/00*
U.S. Cl. 29—203 **7 Claims**

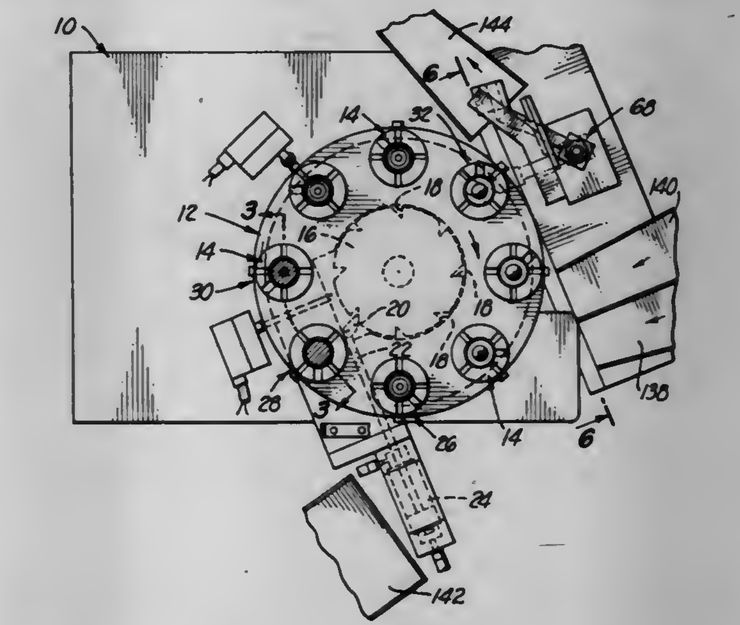


An electrically insulated gripping tool has a pair of opposed, concavo-convex jaws joined to respective, hingedly interconnected, spring-loaded arms. The arms are coupled to a manually reciprocable plunger carried within an open-ended tube, and extension or retraction of the plunger causes opposed outer cam surfaces on the arms to engage the tube at its open end and effect opening or closing of the jaws respectively. The leading ends of the jaws are configured to provide clearance for the terminal leg of a connecting elbow held by the tool, and opposed open areas on the jaws define respective sections of an aperture for clearing the transverse cable leg of the elbow.

3,606,661
PRODUCTION ASSEMBLY MECHANISM FOR TELESCOPICALLY ASSEMBLED AND INTERFERENCE FORMED PARTS INCLUDING TRANSFER ARM MECHANISM

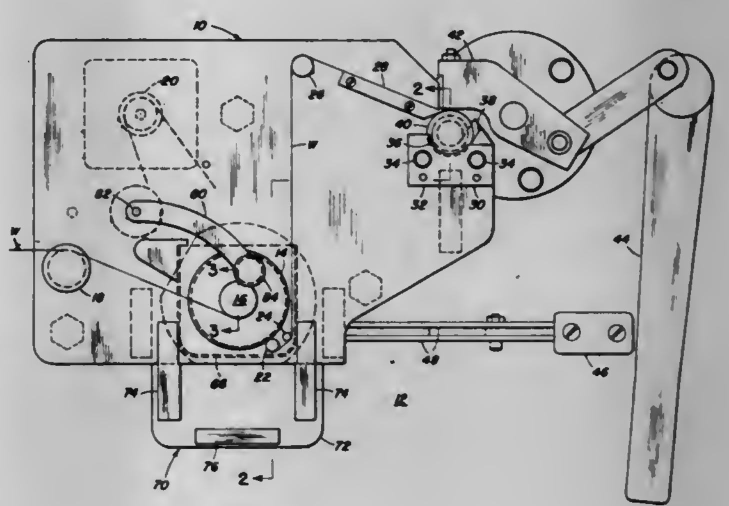
Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631, and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif. 92805
Filed Aug. 22, 1969, Ser. No. 852,316
Int. Cl. B23p *19/04*
U.S. Cl. 29—208D **16 Claims**

A series of spaced fixtures are mounted on a rotatable indexing table progressively movable between first and second and third assembly stations and a fourth pick-off station so that production parts, such as three parts of a ball cock lower assembly, may be recevied at the first assembly station in an initially telescoped condition, formed into an intermediate telescoped condition at the second assembly station by an intermediate assembly ram, formed into a final telescoped and interengaged condition at the third assembly station by a final assembly ram and automatically removed from the indexing table at the fourth pick-off station by a pick-off mechanism. The fixtures include resiliently urged pivotal holding fingers maintaining proper part alignment and permitting the various telescoping and reforming operations, while the intermediate and final assembly rams operate together, one preferably being mounted directly on the other. The pick-off mechanism includes a cam controlled, vertically and horizontally movable arm having releasable pick-up means thereon automatically engaging and retaining finally assembled parts at the fourth pick-off station and removing the parts both vetrically and horizontally to a location remote from the indexing table.



3,606,662
FILM WINDING AND STAKING APPARATUS

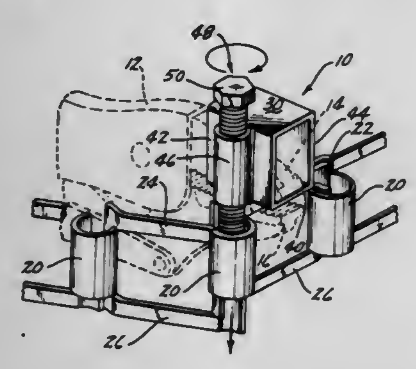
James E. Hoover, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Original application June 30; 1967, Ser. No. 679,052, now Patent No. 3,518,746, dated July 7, 1970. Divided and this application Sept. 2, 1969, Ser. No. 870,862
Int. Cl. B23p *19/04;* **B65b** *53/04, 63/04*
U.S. Cl. 29—240 **8 Claims**



This invention relates to a film winding and staking apparatus and method. A continuous segment of film is wound or spooled upon a spindle which is then replaced by a film cartridge body. The trailing end of the film is staked to a scroll disc or take-up core and then superimposed on the cartridge body. Subsequently, the assembled film and components are conveyed or slid to a pivotable guide plate, which is rotated to an angular inclination to facilitate the enclosure of the film and cartridge components by a film cartridge cover.

3,606,663
TOOL FOR DETACHING CHAIN LINKS

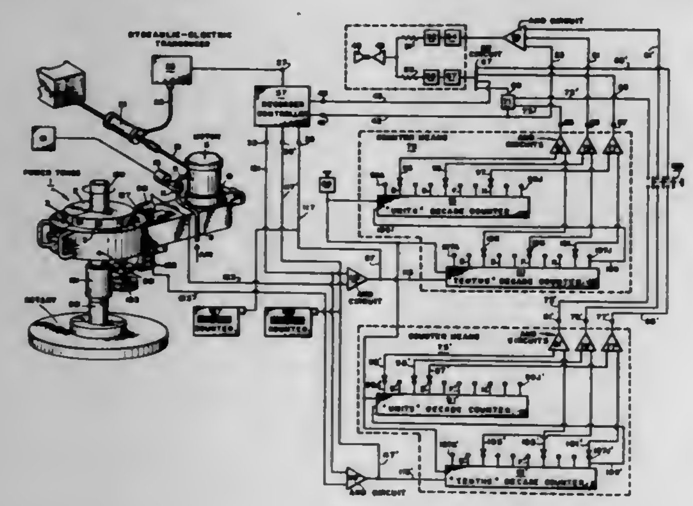
Joseph Leo Ahart, Sr., R.R. 1, Dow City, Iowa 50017
Filed May 16, 1969, Ser. No. 825,326
Int. Cl. B23p *19/04*
U.S. Cl. 29—256 **4 Claims**



A tool for detaching chain links comprising a hollow rectangular tube having an internally threaded sleeve secured to one side thereof which threadably receives a bolt member therein. The bottom side of the tube has a guide means thereon to enable the tube to be properly aligned on the outside of the chain link. A clamp-type adjustable wrench is used to maintain the tool on the chain link. The chain links are detached by threadably turning the bolt member in the sleeve which causes the lower end of the bolt member to extend into the slotted sleeve of one chain link and to force the pintle pin of the attached chain link therefrom.

3,606,664
LEAK-PROOF THREADED CONNECTIONS

Peter D. Weiner, Bryan, Tex., assignor to
Esso Production Research Company
Filed Apr. 4, 1969, Ser. No. 813,573
Int. Cl. B23p *17/00*
U.S. Cl. 29—400 **17 Claims**



Method and apparatus for obtaining leak-proof threaded pipe connections for either double-end makeup or single-end makeup. In each instance, one pipe section is rotated and the torque required for such rotation is measured and the number of turns of the rotated pipe section are counted. The number of turns of the coupling are also counted in double-end makeup. Signals indicative of such torques and turns are fed to apparatus for control of connection makeup.

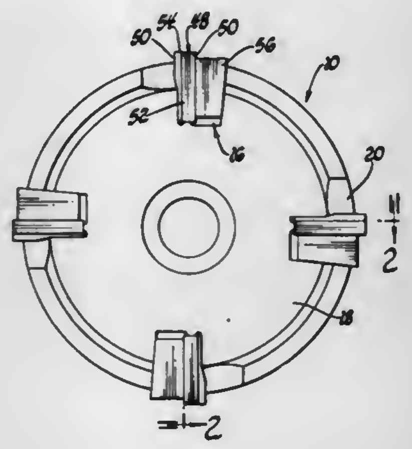
3,606,665
METHOD OF RESTORING WORN BRAKE SURFACES

Harold Glucoft, 1351 Sunset Ave.,
Santa Monica, Calif. 90405
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,212
Int. Cl. C23c *1/00, 1/10*
U.S. Cl. 29—401 **10 Claims**

Worn brake drums or discs are rebuilt by spraying the worn brake-shoe engaging surfaces with a mixture of molten copper and steel to form a layer of a thickness at least that of the material worn away or if more, it is machined to the proper dimension. New brake drums as furnished by the manufacturer may also be provided with a braking surface according to the above method.

3,606,666
METHOD OF ASSEMBLING CUTTING TOOL

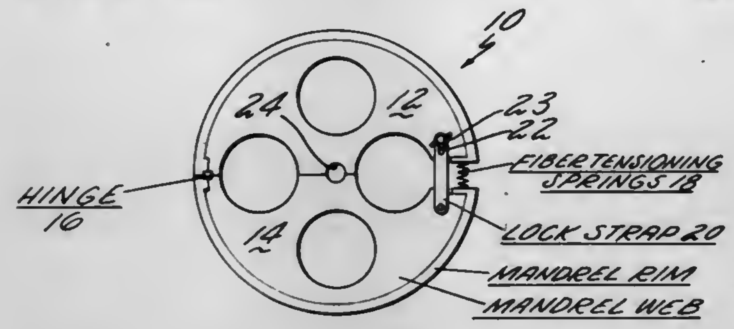
Charles T. Briggs, Jr., Royal Oak, Mich., assignor to
Kysor Industrial Corporation, Farmington, Mich.
Filed Dec. 22, 1969, Ser. No. 886,851
Int. Cl. B23q *17/00;* **B23p** *9/00*
U.S. Cl. 29—407 **11 Claims**



A method of assembling a plurality of substantially identical cutter blades within a predetermined runout tolerance, in this case .0004 inch, in respective ones of a plurality of spaced blade-receiving stations in the body of a rotatable cutting tool having a back face defining a reference plane. More specifically, the method comprises mounting a master cutter blade in a first one of the stations of the cutter body and gauging a reading in inches to four decimal places of the face runout of the master cutter blade relative to the aforementioned reference plane. Thereafter, the master cutter blade is successively mounted in all other stations of the cutter body and, while disposed in such other stations, the respective positions of the master cutter blade are gauged and readings taken in inches to four decimal places of the face runout thereof when disposed in the aforementioned first station of the cutter body. In the event that the position of the master cutter blade in any of the aforementioned other stations is lower than its position in the aforementioned first station of the cutter body, thereby giving one or more negative readings, any such negative reading is eliminated by adding to each reading an amount equal to the difference between .0000 inch and the greatest negative reading. Two shims are provided having thicknesses which differ by substantially .0005 inch. Preferably, these shims have thicknesses of .001 and .0015, respectively. If the reading at the highest station ends in any digit from 0 to 4, one of the thinner shims (.001) is added to such station, and if the reading at the highest station ends in any digit from 5 to 9, one of the thicker shims (.0015) is added to such station. Thereafter, the two shims may be added in whatever quantities and thicknesses are required to all other stations to bring them to a face runout within .0004 inch of the shimmed highest station; that is, to provide the predetermined runout tolerance. In this step method, it is preferable for the purpose of simplicity that at least one of the thniner shims is added to all stations, other than the highest station, ending in any digit from 0 to 4 and that one of the thicker shims (.0015) is added to all stations, other than the highest station, having a reading ending in any digital from 5 to 9. After shims are mounted in all of the stations, a plurality of cutter blades, each being substantially identical to the master cutter blade and hence to each other, are mounted in each station.

3,606,667
METHOD OF FABRICATING FIBER-REINFORCED ARTICLES

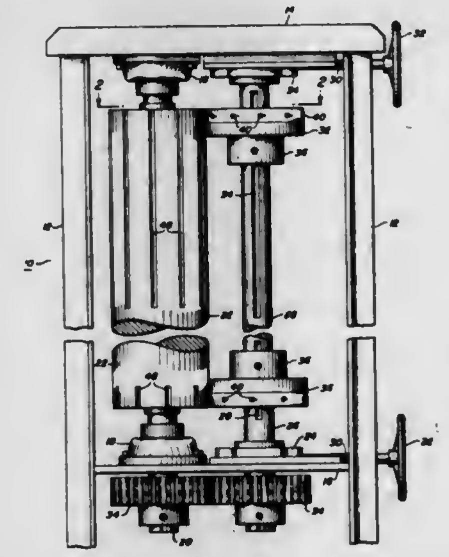
Kenneth G. Kreider, Glastonbury, Conn., assignor to
United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 27, 1968, Ser. No. 763,278
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **17 Claims**



Filaments characterized by high strength, high rigidity, and high resistance to deterioration at elevated temperatures are utilized in a process of fabricating a multilayer fiber-reinforced metal matrix composite by winding a filament on a foil-covered, spring-loaded mandrel, preheating the mandrel, plasma arc spraying metal matrix material in coalescent form onto the filament windings so as to form a monolayer tape, and diffusion bonding a plurality of such tapes together in layers, the process being characterized by a high degree of reproducibility.

3,606,668
APPARATUS FOR EMBOSSING STEEL STRIP AND METHOD OF TREATING SAME

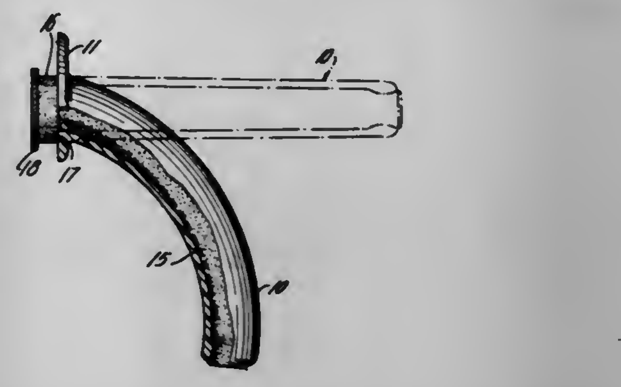
Harold K. Young, Herbert Wald, and William O. Blanch, Baltimore, Md., assignors to Bethlehem Steel Corporation
Filed Mar. 20, 1969, Ser. No. 808,927
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **2 Claims**



Steel strip is passed through an embossing apparatus which produces a series of spaced projections along each edge of the strip. The male embossing members each comprise a wheel having a plurality of protuberances disposed along the periphery thereof, the spacing between each pair of adjacent protuberances differing about the periphery. The strip is then coiled about a vertical axis whereby substantially all of said projections abut undeformed portions of strip convolutions adjacent thereto. Heated gas is subsequently passed between the convolutions of the coil to change the characteristics of the metal strip, after which the projections are removed from the edges of the strip and the strip is tightly coiled.

3,606,669
METHOD OF MAKING TRACHEAL TUBE DEVICE

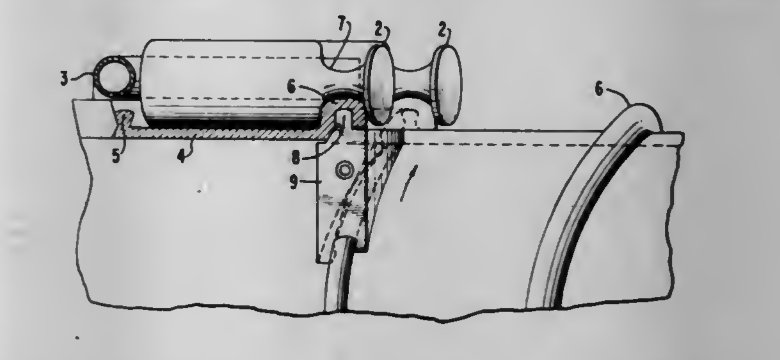
Mern S. Kemble, Clarion, Pa., assignor to
Philip Morris Incorporated, New York, N.Y.
Filed May 26, 1969, Ser. No. 827,771
Int. Cl. B23p *19/00;* **B29c** *17/02;* **A61b** *17/24*
U.S. Cl. 29—434 **4 Claims**



A tracheal tube device having an outer tube and an inner tube insertable in and removable with respect to the outer tube is made by a method in which the outer tube is cast in initially straight form from a thermoplastic material and before cooling is bent into the desired radius and upon cooling the tube is relatively rigid and stiff in the pre-set curved form; the inner tube likewise being cast in a straight form but of an elastomeric material which remains flexible when cooled. In use the inner tube is inserted in the outer tube and readily conforms to the radius and shape thereof. The inner tube is disposable and is easily removed and replaced by a new sterile tube.

3,606,670
METHOD FOR FORMING SPIRAL WOUND SYNTHETIC PIPES

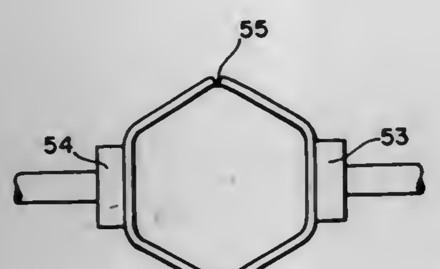
Michael Wienand, Siegburg, Klaus Jensen, Buisdorf, Franz Primessing, Mondorf, and Franz Werner Alfter, Oberlar, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Oct. 2, 1968, Ser. No. 764,427
Claims priority, application Germany, Oct. 2, 1967,
D 54,252
Int. Cl. B23p *11/02*
U.S. Cl. 29—450 **7 Claims**



A pipe is continuously formed by spirally winding a band onto the cylindrical portion of a mandrel after the band exits from a synthetic material extruding machine while still thermoelastic or after a preformed band is passed through the suitable heating device. One longitudinal edge of the band is provided with a radially outwardly widening tongue and the other longitudinal edge of the band is provided with a radially inwardly widening channel. In forming the pipe, the tongue is cooled to be rigid and inserted into the thermoelastically heated channel of an adjacent lap of the spirally wound band.

3,606,671
METHOD AND APPARATUS FOR FORMING POLE-LIKE STRUCTURES

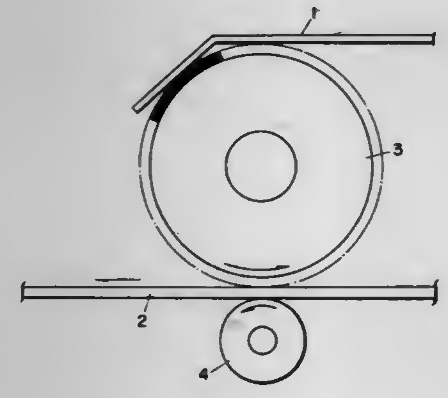
Eugene W. Pearson, Orinda, Calif., assignor to Pacific Press & Shear Corp.
Filed July 10, 1968, Ser. No. 743,693
Int. Cl. B23k *31/02*
U.S. Cl. 29—477.7 **5 Claims**



A pole-like structure of polygonal section formed from a blank by first similarly bending and bevelling a pair of opposite marginal portions, forming a series of longitudinal bends in said blank intermediate said marginal portions, to bring said marginal portions toward each other to form a structure having an open seam at one corner, clamping the open seam structure under sufficient pressure to bring the marginal portions into substantial contact with each other to form a trough, welding the seam along the trough and shaping the welded corner to conform to the others.

3,606,672
METHOD OF MANUFACTURING A CLAD PLATE OF ALUMINUM AND OTHER METALS

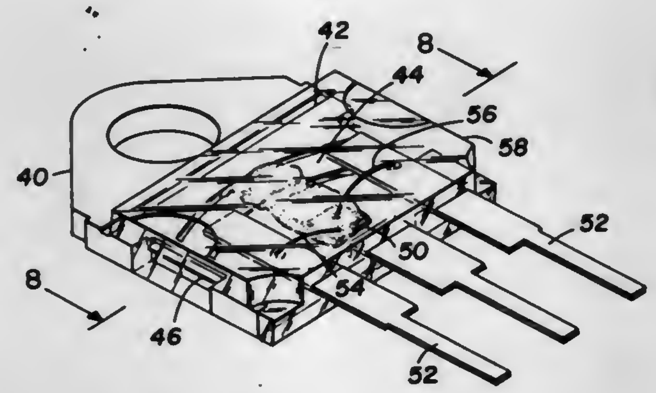
Shiro Terai and Michiki Hagiwara, Nagoya-shi, Japan, assignors to Sumitomo Light Metal Industries Limited, Tokyo, Japan
Filed May 7, 1968, Ser. No. 727,153
Claims priority, application Japan, May 15, 1967, 42/30,748
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—488 **3 Claims**



This disclosure relates to a method of manufacturing a composite metal plate of aluminum and clad with a dissimilar metal in which an enhanced affinity between the two metals thus combined is obtained, and wherein one of the two component metal plates which is harder than the other is roughened on its surface, and particles of the other metal which is softer than the harder metal are blown against the roughened surface of the harder metal plate, and thereafter the softer metal plate which is of the same material as the blown metal particles is laid on and laminated with the surface of the former metal plate and the thus combined metals are then subjected to hot rolling at a temperature of 400° to 450° C.

3,606,673
PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICES

James H. Overman, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 15, 1968, Ser. No. 752,822
Int. Cl. B01j *17/00;* **H01l** *1/10*
U.S. Cl. 29—588 **8 Claims**



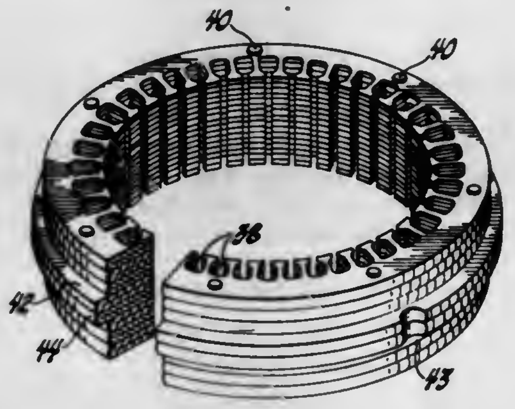
A plurality of semiconductor devices are encapsulated simultaneously in a thermosetting plastic by a process that includes the use of transfer molding techniques. Discrete semiconductor devices, such as transistors, are strip molded as a unit and separated after the thermosetting plastic has cured. Prior to the molding process, an array of lead wires interconnected by partially sheared tie-bars are staked to individual heat sinks also formed in a strip. A semiconductor device is mounted to each of the individual heat sinks and whisker lead wires are bonded to the active regions of the device and the lead wires. To prevent contamination of the semiconductor junctions with atmospheric impurities, the wafers are coated with a protective material. Grooves are coined into the heat sink to limit the wafer coating material to a restricted area. After the strip molding step has been completed, the individual semiconductor devices are separated by cutting the tie-bars and sawing the individual heat sinks.

3,606,674
METHOD OF MANUFACTURING MAGNETIC CORES FOR DYNAMOELECTRIC MACHINES AND LAMINATIONS THEREFOR

David E. Givan, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 28, 1969, Ser. No. 811,412
Int. Cl. H02k *15/00, 15/14, 15/16*
U.S. Cl. 29—596 **9 Claims**

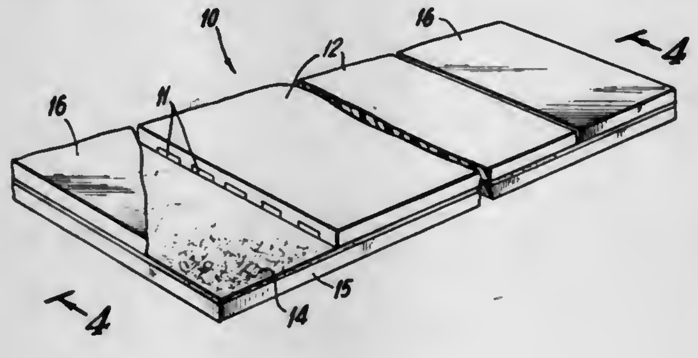
A method of manufacturing magnetic cores such as stator cores for dynamoelectric machines and the method of manufacturing the stator laminations that form the magnetic core. In performing the method of this invention a length of steel tubing is formed to provide a part that has a concave inner wall and a convex outer wall. This part is then folded such that half sections of the concave inner wall are forced together to form an annular

disk. In practicing the method of this invention it is possible to simultaneously fold and coin the metal part to thereby provide a lamination which is useful in forming a finished magnetic core. As an alternative to this method this invention contemplates folding the metal material without coining, stacking the annular disks formed by the folding operation and then coining the stacked laminations to form a finished stator core. Following the folding of the metal material or following the simultaneous folding and coining of the metal material the disk is provided with slots for receiving a stator winding. The method of this invention reduces the amount of scrap produced as compared to conventional methods of fabricating stator laminations and stator cores.



3,606,675
METHOD OF MAKING A KEEPERED WORD-LINE STRUCTURE FOR A THIN MEMORY PACKAGE

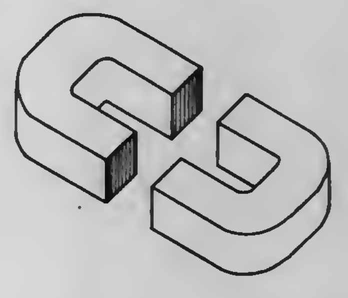
David J. Crimmins, Stockton, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Nov. 17, 1969, Ser. No. 877,334
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **3 Claims**



Strips of high permeability metal material which is magnetically conductive, but which is non-electrically conductive, are embodied in a one-sided flat conductor cable. Next, location or registration holes are formed precisely located relative to the high permeability metal strips, and then the one-sided cable is laminated to a thin layer of a partially cured epoxy sheet such as pre-preg (of greater length than the one-sided cable), with the magnetic conductors faced down against the pre-preg. A strip of electrically conductive material is laminated to the pre-preg at each end of the one-sided cable, while a sheet of electrically conductive material is laminated to the opposite side of the pre-preg. Using the registration holes as a guide, the electrically conductive strips and the electrically conductive sheet is etched to produce the word-lines and turn-arounds, thereby completing the keepered word-line structure.

3,606,676
SILICATE BONDING OF MAGNETIC CORES

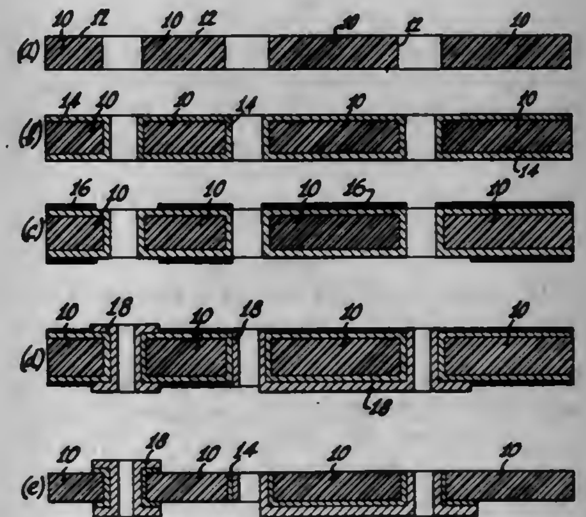
Dale M. Kohler, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
Filed Mar. 21, 1969, Ser. No. 809,268
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **6 Claims**



A method of bonding the contiguous windings of a wound core of magnetic strip material by the steps which include coating said strip with a silicate solution and drying in situ prior to or after winding into said core. During a subsequent stress relief anneal, the silicate fuses the core together thereby effecting the bond.

3,606,677
MULTILAYER CIRCUIT BOARD TECHNIQUES

Robert J. Ryan, Trenton, N.J., assignor to RCA Corporation
Filed Dec. 26, 1967, Ser. No. 693,672
Int. Cl. B41m *3/08*
U.S. Cl. 29—625 **7 Claims**

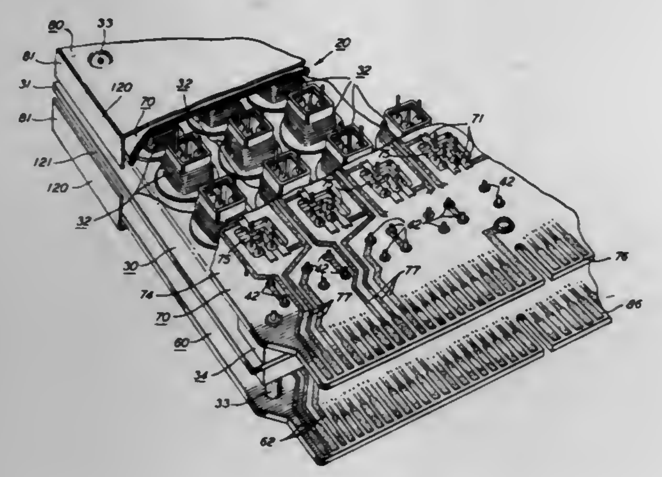


The disclosed technique comprises the lamination of two or more circuit boards using a controlled flow adhesive layer; the controlled flow adhesive permitting through holes to remain unobstructed after lamination. Final interconnection is made by plating through the holes, thereby providing the requisite interconnections between surfaces.

3,606,678
METHOD FOR MAKING A FERREED SWITCH HAVING PRINTED CIRCUIT BOARD WIRING

Norman Wasserman, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Original application May 28, 1968, Ser. No. 732,608, now Patent No. 3,500,267. Divided and this application July 31, 1969, Ser. No. 871,076
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **4 Claims**

A ferreed switch is disclosed in which a shunt plate assembly wired in a standard pattern, partially assembled by simultaneously positioning all of the reed switches with a magnetic jig, and located between two printed circuit boards is housed in a protective cover and equipped with lever arms adapted to facilitate installation in an operating environment. The shunt plate assembly and printed circuit boards are assembled so that at each crosspoint a coil support in the shunt plate assembly is in register with a set of small holes in one printed circuit board and a large hole in the other. Moreover, each coil support is sealed at one end, internally divided into compartments by a separator, and perforated by a lead hole in each compartment. Finally, each reed switch in the coil supports is located in a separate compartment, has been positioned so that its airgap is in register with a magnetically, conducting portion of the shunt plate assembly, has one lead extending through a lead hole in the coil support to a point of attachment in a small hole in one printed circuit board, and has the other lead extending through a large hole in the other printed circuit board to a point of attachment with a flexible locating tab.



3,606,679

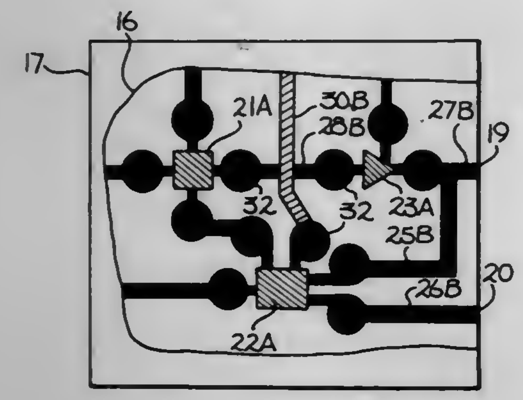
METHOD FOR INTERCONNECTING SOLID STATE DEVICES SUCH AS INTEGRATED CIRCUIT CHIPS

Jon M. Schroeder, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Filed Oct. 29, 1969, Ser. No. 874,532

Int. Cl. G03c *5/04*

U.S. Cl. 29—626 **1 Claim**



A method for interconnecting device chips such as integrated circuit chips on a substrate is disclosed. A photographic mask is made from a transparent sheet which is placed on a diagram of a circuit containing the chips. Templates representative of the device chips and strips representative of the interconnecting leads are imposed on the transparent sheet. Separate masks for the crossover leads and for forming holes in a dielectric to allow the connections between the crossover leads and the remainder of the circuit are formed from second and third transparent sheets. The masks made from these transparent sheets are utilized to form the interconnections in the circuit by photofabrication techniques.

3,606,680

METHOD FOR PRODUCING ELECTRICAL CONTACT ELEMENTS

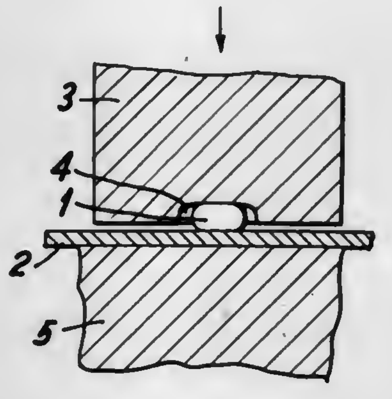
Akira Shibata, Tokyo, Japan, assignor to Chugai Electric Industrial Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1968, Ser. No. 776,336

Claims priority, application Japan, June 21, 1968, 43/42,967

Int. Cl. H01r *9/16*

U.S. Cl. 29—630C **8 Claims**



A contact metal having good cold-pressure bonding properties is bonded to a metal substrate which normally has a low propensity for cold-pressure bonding. The contact metal, e.g. silver, is placed on the metal substrate, such as stainless steel, and the contact metal immediately cold deformed by contact with a punch until a balance is achieved between the applied pressure and the deformation resistance of the contact metal, whereby the contact metal is brought into intimate crystallographic contact with the substrate. Immediately thereafter, while the contact metal is still under pressure, the contact metal is heated to above its recrystallization temperature and below its melting point to complete the deformation of said metal and effect metallurgical bonding to the substrate.

3,606,681

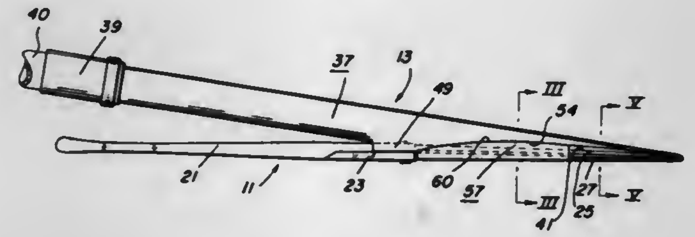
VACUUM ATTACHMENT FOR SCISSORS

Elmer T. Rogers, Rte. 1, Wildersville, Tenn. 38388, and Charles E. Johnson, Rte. 2, Lexington, Tenn. 38351

Filed Feb. 5, 1970, Ser. No. 8,886

Int. Cl. B26b *13/22*

U.S. Cl. 30—133 **4 Claims**



A device for adapting a pair of typical barber scissors to a typical vacuum fan having a suitable reservoir for collecting the accumulation of clippings of hair. The device includes an elongated tubular member having at the one end a mouthlike portion adjacent and secured to the one blade of the scissors with the other end terminating at a swivel connector and a flange member attached to the other blade which increases and decreases the size of the mouth as the scissors are opened and closed respectively.

3,606,682

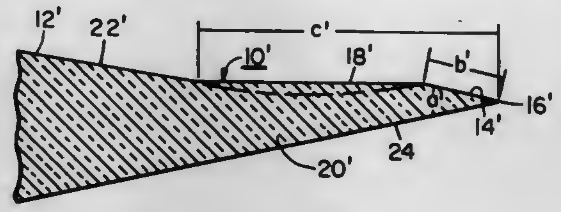
RAZOR BLADES

Harold E. Camp and James W. Evans, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Original application Oct. 30, 1967, Ser. No. 678,846, now Patent No. 3,514,856, dated June 2, 1970. Divided and this application June 26, 1969, Ser. No. 862,548

Int. Cl. B26b *25/54*

U.S. Cl. 30—346.55 **3 Claims**



Razor blade construction having defined angular and dimensional limits of the converging surfaces forming the cutting edge and an effective recessed portion immediately adjacent thereto for improved cutting ease and shaving comfort.

3,606,683

METHOD AND APPARATUS FOR CONTINUOUSLY SEPARATING CURD AND WHEY

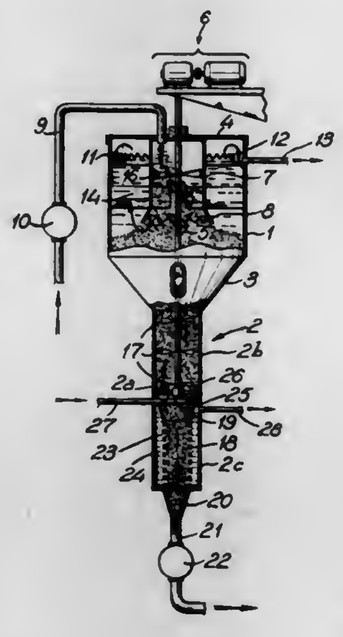
Jean-Louis Fernand Joux, Epinay-sur-Seine, and Maurice Blanchet, Champigny-sur-Marne, France, assignors to Fromageries Bel-La Vache Qui Rit, Paris, Seine, France

Filed Mar. 12, 1968, Ser. No. 712,541

Claims priority, application France, Mar. 15, 1967, 98,867

Int. Cl. A01j *25/00, 25/11;* **A23c** *19/02*

U.S. Cl. 31—46 **4 Claims**



A mixture of curd and whey is continuously introduced into a decanting zone at the top of a vertical vessel. The mixture passes downward through an axial diffusing zone and whey is decanted near the top of the vessel. The curd continues downward in the vessel and enters a vertical pressing zone having a perforated wall for separation of whey remaining with the curd, and the curd is continuously extracted at the bottom of the pressing zone. A vertical washing zone may be positioned between the decanting zone and the pressing zone.

3,606,684

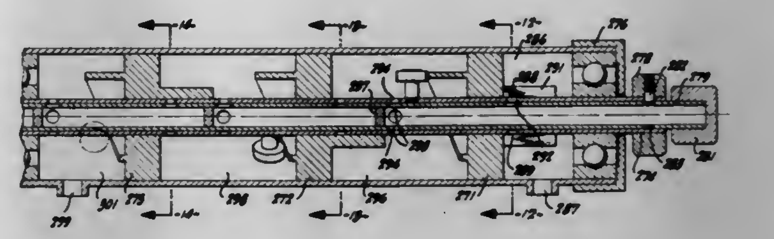
DISPLACEMENT ENGINE ESPECIALLY FOR DENTAL USE

Lloyd P. Flatland, 15 Quisisana Drive, Kentfield, Calif. 94904

Filed Oct. 17, 1969 ,Ser. No. 867,267

Int. Cl. A61c *1/08*

U.S. Cl. 32—26 **7 Claims**



A displacement engine has a cylinder with an axis. The cylinder is closed at one end and mounts a hollow shaft rotatable on the axis as a center and held against displacement along the axis. A piston is reciprocable in the cylinder and along the shaft by means of a sleeve cam surface at one end remote from the closed end of the cylinder and engaging a cam follower extending radially from the shaft. Pressure fluid is admitted to the cylinder adjacent the closed end. An exhaust port open through the shaft wall between the piston and the closed cylinder end is alternately opened and closed as the shaft rotates by means of an arcuate valve wall fast on the piston.

3,606,685

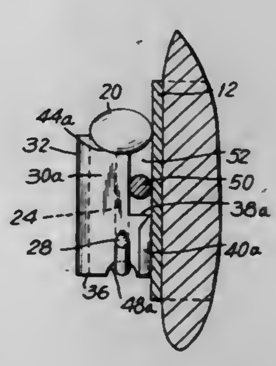
ORTHODONTIC APPLIANCE

Ernest Schwartz, 33—31 163rd St., Flushing, N.Y. 11354

Filed Oct. 13, 1969, Ser. No. 865,716

Int. Cl. A61c *7/00*

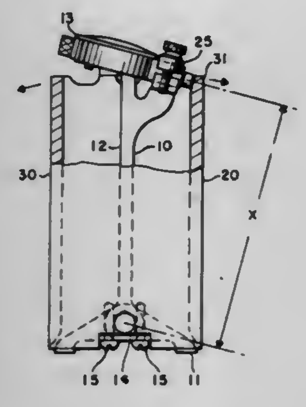
U.S. Cl. 32—14A **8 Claims**



An orthodontic appliance for maintaining an arch wire properly positioned with respect to a tooth. The appliance includes a symmetrically constructed guidance pin having an oval head and an elongated tail extending perpendicularly with respect to the major axis of the oval head. This pin is received in a bracket, with the tail extending between side walls of the bracket. The side walls extend substantially vertically and terminate in upper surfaces respectively formed with recesses extending around the major axis of the oval head and receiving the latter to form a seat therefor. The bracket side walls are formed at inner edges with upwardly directed shoulders which with the oval head and the outer surface of a band which carries the bracket define an enclosure through which the arch wire extends. When the pin is initially placed in the bracket the tail extends substantially parallel to an axis of a cylinder of which the band forms a part, with this tail being situated forwardly of the band without being inclined toward the latter.

3,606,686
ANGULAR DEVIATION GAUGE

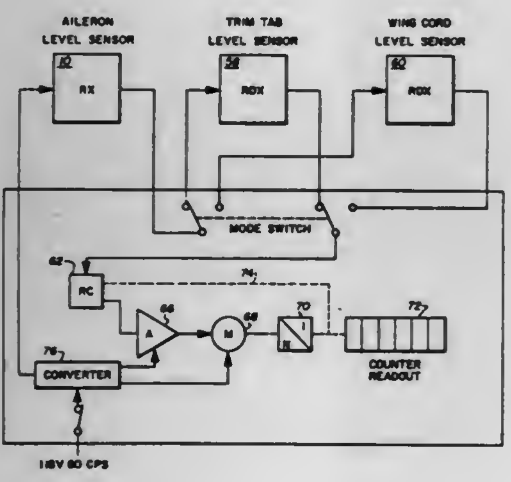
Walter H. Righter, 12912 Malena Drive,
Santa Ana, Calif. 92705
Filed July 22, 1969, Ser. No. 843,292
Int. Cl. G01b *5/20, 5/24*
U.S. Cl. 33—174 10 Claims



Disclosed is a measuring device for determining the angular relation between fixed surfaces. The device includes a base and a shell-like member pivotally mounted thereon. Measuring means mounted on the base determines the movement of the pivoting member with respect to the base to determine the angular relationship of the workpiece surfaces contacted by the faces of the measuring device.

3,606,687
PENDULOUS SYNCHRO LEVEL SENSOR

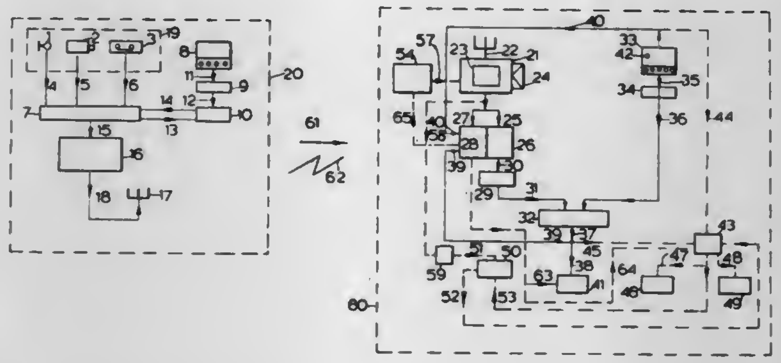
John N. Richardson, Hillsdale, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.
Filed Jan. 18, 1968, Ser. No. 698,847
Int. Cl. G01c *9/16*
U.S. Cl. 33—215 1 Claim



A module system to determine the tilt of two planes relative to each other and to the Earth horizontal/vertical. A module is affixed to each plane, below the plane. Each module has a resolver with a pendulum attached to the resolver shaft. The output of one module resolver is fed to the other module resolver and the output of the second module resolver then provides the tilt angle.

3,606,688
METHOD AND APPARATUS FOR TEACHING A MULTIPLICITY OF STUDENTS

Jakob Zawels and Eric D. Renaud, Pretoria, Republic of South Africa, assignors to Associated Research Laboratories (Proprietary) Limited, Pretoria, Republic of South Africa
Filed July 11, 1969, Ser. No. 840,918
Claims priority, application Republic of South Africa, July 19, 1968, 68/4,656
Int. Cl. G09b *7/02*
U.S. Cl. 35—9R 15 Claims



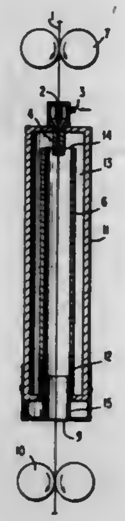
A method and apparatus for simultaneously teaching in real-time from a teaching centre a multiplicity of students located remotely from the centre. A typical teaching centre is a television studio suitably modified. There can be virtually an unlimited number of students scattered over a virtually unlimited area, the limitation being the quality of reception at a student locality. Each student is able to respond to questions which appear to him on his output means, e.g. a television screen and each obtains a personal immediate indication as to whether he is right or wrong and in some instances, the probable flaw in his reasoning if he is wrong. Typically, this is made possible by transmitting together with questions (or requests) from the teaching centre, potential responses including the correct answers to the questions, and, in some instances, several likely wrong answers to the questions, together with remarks relevant to each wrong answer. At each student locality the questions (or requests) are put to the students on their output means. The correct answers are, however, hidden from the students and are used for comparing with each student's response. The result of the comparison is used to give the appropriate information to the student.

3,606,689
APPARATUS FOR HEAT TREATMENT OF FILAMENT

Tatsuki Matsuo, Takashi Fukuda, Shosuke Nanri, Katsuya Ishitobi, Ryunosuke Masuda, and Hiroshi Okano, Otsu-shi, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan
Filed Feb. 20, 1969, Ser. No. 801,092
Claims priority, application Japan, Feb. 20, 1968, 43/11,001; Feb. 26, 1968, 43/12,454; Aug. 13, 1968, 43/57,847
Int. Cl. F26b *13/10*
U.S. Cl. 34—155 6 Claims

An apparatus for treatment of filament in the relaxed state with hot gas stream which comprises a heating

cylinder, an inlet portion for the filament provided at one end of the cylinder, an outlet for the filament provided at the other end, and an inlet for a secondary gas stream provided near the inlet portion, the filament being joined by the primary gas stream at the inlet portion and then introduced through the inlet portion into the cylinder. By the use of such apparatus, a filament can be heat-treated in the relaxed state at a high efficiency of operation.

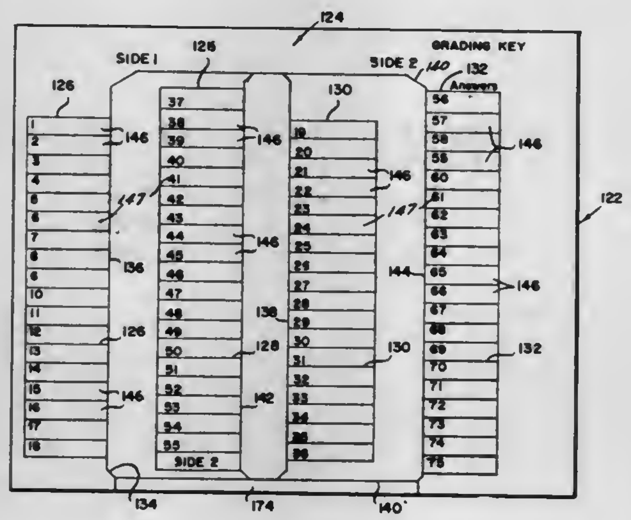


ERRATUM

For Class 35—9 see:
Patent No. 3,606,688

3,606,690
TEST CORRECTING AND SCORING DEVICE

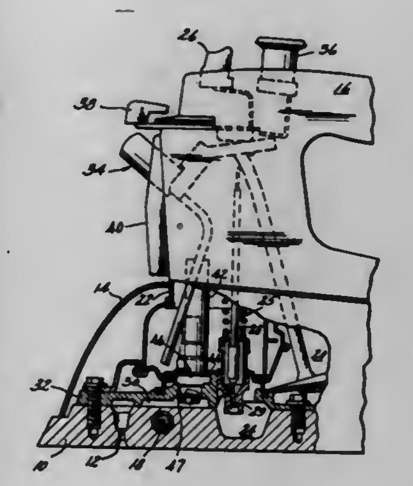
Robert H. Murray, 800 North West St.,
Alexandria, Va. 22314
Filed July 18, 1969, Ser. No. 842,922
Int. Cl. G09b *3/00*
U.S. Cl. 35—48A 19 Claims



A test scoring device comprising an answer card and a grading card; one of the cards overlying the other of the cards; one of the cards being larger in width than the other of the cards; including a guide line on one of the cards for longitudinally positioning the other of the cards thereon; the other of the cards when underlying the one of the cards having a margin extending beyond at least one of the side edges on the one of the cards; the cards including horizontal aligning means for cooperatively horizontally aligning the one of the cards with the other of the cards; the aligning means including parallel lines on at least one of the cards coinciding with the parallel lines on the other card.

3,606,691
STEAM-POWERED SPRAY IRON

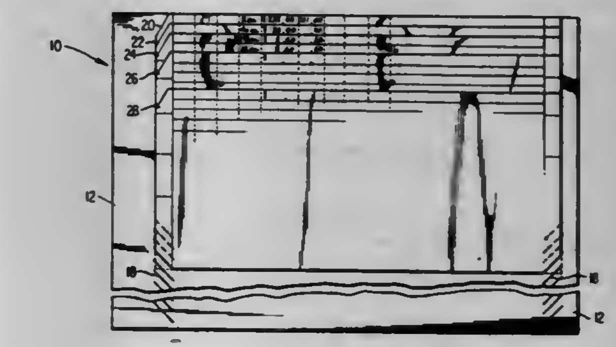
William E. Davidson, Ontario, and Kaj Toft, Upland, Calif., assignors to General Electric Company
Continuation-in-part of application Ser. No. 23,884, Mar. 30, 1970. This application June 18, 1970, Ser. No. 47,229
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.5 9 Claims



The invention discloses a steam-powered spray iron which uses a pressure regulating valve between the water tank and steam generator for maintaining a substantially uniform steam pressure in the generator for operating the spray. The pressure regulating valve is improved to increased reliability, to reduce the number of parts, the overall height, and the cost of the iron.

3,606,692
INFORMATION STORAGE AND DISPLAY SYSTEM

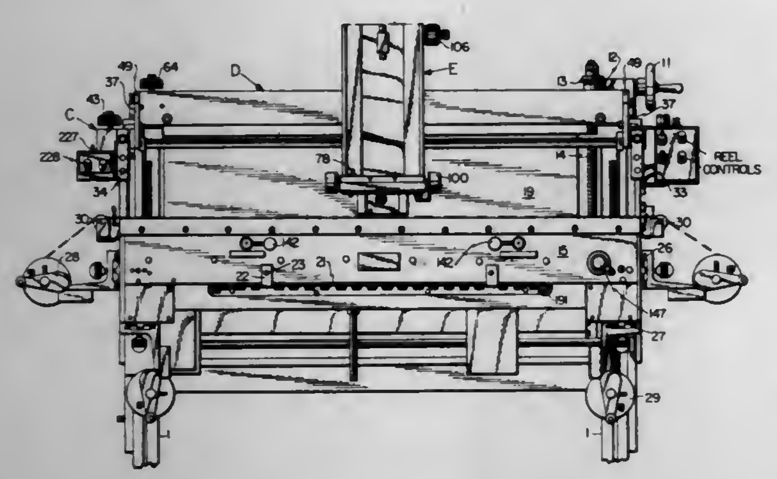
Robert A. Rivers, 52 Orlando Ave.,
Winthrop, Mass. 02152
Filed Dec. 9, 1969, Ser. No. 883,409
Int. Cl. G09f *3/10*
U.S. Cl. 40—10 4 Claims



An information storage and display system including a carrier having a pair of columns of vertically spaced slits and a plurality of cards the lower corners of which removably project through a set of slits. Each of the cards includes a number of information lines and the cards are assembled on the carrier such that a desired number of lines of each card and the information contained thereon are visibly displayed. The cards are locked in place on the carrier in the desired pattern to prevent any card from being inadvertently lost from the carrier.

3,606,693
FILM VIEWING MEANS

David D. Grimes, Fairfax, and Earl E. Kasdorf, Falls Church, Va., assignors to The Richards Corporation, McLean, Va.
Filed Mar. 10, 1969, Ser. No. 805,491
Int. Cl. G09f *11/28*
U.S. Cl. 40—31 22 Claims

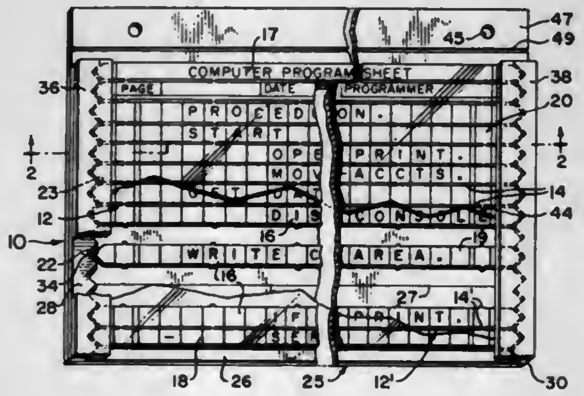


A film viewing means for viewing large films for interpretation, especially stereo interpretation, of aerial photographs and the like which includes a film handling table containing illumination means that produce optimum light intensity over prolonged periods of time via oil immersed light tubes, a shiftable viewing stage and associated film transport means including a compact film loop take-up arrangement which in cooperation with the shiftable stage provides all possible film threading configurations. A master overhead carriage system is included that features a quick release coupling between an X travel unit and a Y travel unit, and a Z travel instrument carrying unit on the X travel unit having a rotary instrument supporting ring. The mounting and feed arrangement for the carriage and associated instrument carrying unit is provided which produces zero backlash in X, Y and Z travels, provides for coarse and fine adjustments in the Z travel via a gravity feed, thus preventing feeding of the instrument into the stage while permitting rapid instrument elevation, and a manually operated clamp or lock is included for adjusting the instrument around the Z axis. Further an electrical clutching arrangement is provided which automatically couples X and Y fine feed means and includes an electrical decoupling, permitting rapid instrument positioning along the X and Y axes.

3,606,694
DEVICE FOR AIDING PREPARATION OF LISTS

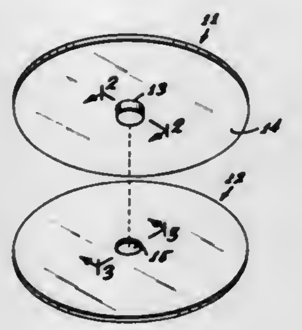
Seymour Bosworth, 9 Forest Drive,
Plainview, N.Y. 11803
Filed June 27, 1968, Ser. No. 740,726
Int. Cl. G09f *9/00*
U.S. Cl. 40—63 4 Claims

A device for aiding preparation of lists such as computer programs, directories, registers and the like in the form of a sheet separable along scored, parallel, transverse lines into a multiplicity of narrow strips. A flat, rectangular frame holder is provided for holding a complete sheet or a sheet divided into any number of parts or individual strips. Opposite ends of each strip are shaped to detachably engage with correspondingly shaped lateral marginal side pieces or portions of the holder. The holder is reusable any desired number of times for different replacement sheets.



3,606,695
ROTARY INDEXING INDICIA-CARRYING MECHANISM

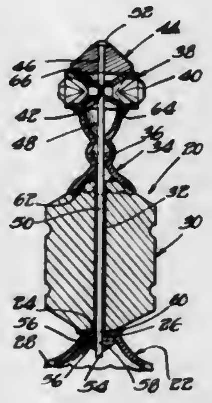
Lloyd L. Robbins, 1627 South 13th East,
Salt Lake City, Utah 84105
Filed Dec. 12, 1968, Ser. No. 783,272
Int. Cl. G09f *11/04*
U.S. Cl. 40—70R 1 Claim



Disclosed is indicia displaying apparatus comprising a pair of disks at least one of which is transparent having sandwiched therebetween indicia-carrying means. The disks are rotatable with respect to each other and by such rotation the indicia-carrying means is manipulated so as to selectively display a predetermined portion of said indicia as desired by the user.

3,606,696
DOLL HOUSE FURNISHING ACCESSORIES AND METHOD OF PRODUCING SAME

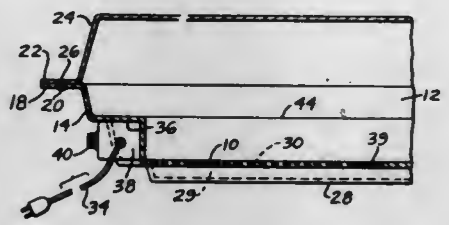
Jewel E. Berman, 4628 Wolf Road,
Western Springs, Ill. 60558
Filed May 28, 1969, Ser. No. 828,650
Int. Cl. A63h *3/52*
U.S. Cl. 46—14 9 Claims



Miniature furnishing accessories are produced by assembling a plurality of bead-like elements on a straight headed pin to provide the desired configuration of a bottle, lamp, dish and the like. Glue is applied between the elements and the pin whereupon an end of a pin is forced into a mounting board to clamp the elements together until the glue is dried. Thereafter, the excess length of the pin is removed.

3,606,697
TRAY FOR SEED GERMINATION AND THE LIKE

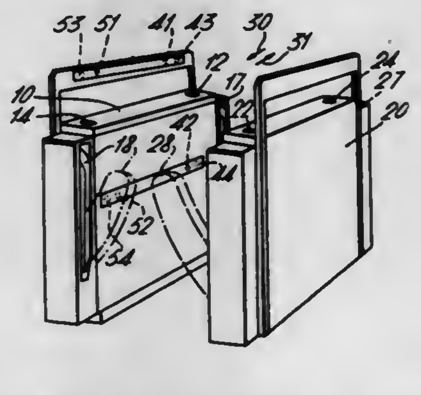
Douglas H. Eden, Harmony, Pa., assignor to
F. B. Leopold Co., Inc., Zelienople, Pa.
Filed Aug. 22, 1969, Ser. No. 852,159
Int. Cl. A01g *9/24*
U.S. Cl. 47—17 6 Claims



The invention pertains to a tray for use in connection with seed germination and plant growth and takes the form of a container formed of reinforced polyester resin with an electric heating element embedded in the bottom wall for supplying heat to a medium contained in the tray. Controls for the heating element are mounted in a recess on an end wall of the tray and the side walls of the tray inclined outwardly so the trays can be stacked when not in use.

3,606,698
AUTOMATIC TICKET GATE

Toshio Tanaka and Keisuke Osaki, Kyoto, and Tokio Hosoda, Ibaragi, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan
Filed June 3, 1969, Ser. No. 829,891
Claims priority, application Japan, June 14, 1968, 43/41,260
Int. Cl. E05b *65/00*
U.S. Cl. 49—35 6 Claims

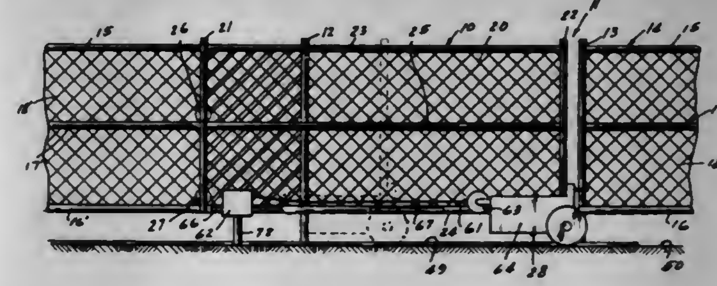


An automatic ticket gate in which once the direction in which passengers are permitted to pass through the gate has been determined, any person who tries to pass through the gate in the opposite direction is blocked, but wherein even if any person has entered the gate in the impassable direction, the gate is not instantly closed, but a warning is first given and if the person noticing the warning turns back, the gate is kept open for passengers to come in.

3,606,699
GATE CONTROL DRIVE UNIT

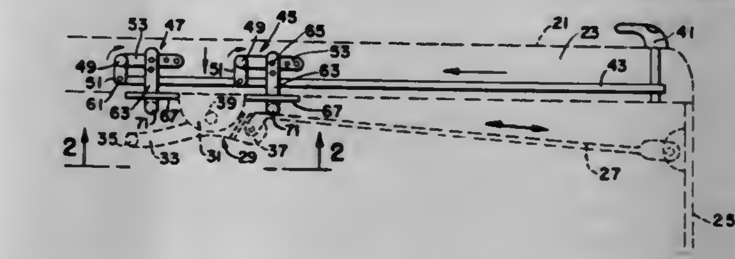
John J. Robinson, Jr., Box 1015, Fabens, Tex. 79838
Filed Sept. 16, 1969, Ser. No. 858,383
Int. Cl. E05f *15/14*
U.S. Cl. 49—280 3 Claims

A sliding gate structure supported at one end by rollers engaging tracks on a fence structure and at the other end by a drive unit having a reversible electric motor driving a ground engaging wheel and a second grooved wheel riding on a track disposed across the opening in the fence structure. The drive unit is rigidly attached to the gate and supports the other end and provides a mounting surface for a solenoid actuated latching device which engages a latch member attached to a gate post of the fence to hold the gate in the closed position.



3,606,700
DOOR LOCKING AND UNLOCKING APPARATUS

Earl Eugene Davis, Box 21, Guernsey, Wyo. 82214
Continuation-in-part of abandoned application Ser. No. 776,544, Nov. 18, 1968. This application Oct. 24, 1969, Ser. No. 871,508
Int. Cl. E05b *65/06*
U.S. Cl. 49—394 26 Claims



This disclosure described an apparatus for aiding the locking or unlocking of a door closed and opened by an off-center mechanism. The apparatus includes a lockable door handle mounted outside of the door to be locked. The lockable door handle is connected by a control rod or a flexible cable to a bell crank or cam mechanism. Attached to the bell crank or cam mechanism is a slideable rod, strap, or plate. The bell crank or cam mechanism is rotated when the control rod is moved by the rotation of the lockable door handle. When the bell crank mechanism is rotated, the slideable rod, strap or plate is moved toward the off-center mechanism. The ends of the rod, strap or plate include rubber bumpers which impinge on the handle of the off-center mechanism and move it from its off-center locked position or its off-center unlocked position as the case may be. Thereafter, the door can be unlocked or locked by simply pushing it open or closed as desired.

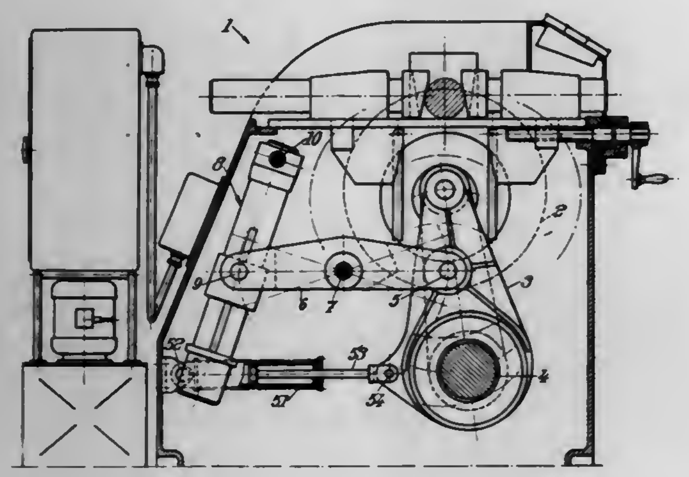
3,606,701
SECTIONING MACHINES COMPRISING MEANS CONTROLLING THE MOVEMENTS OF THE CUTTING TOOL

Jean Favot, 20 Rue Charles Martel, Nancy 54, France, and Rene Willaume, 163 bis, Rue de Vaugirard, Paris 75, France
Filed Mar. 11, 1969, Ser. No. 806,110
Claims priority, application France, Mar. 12, 1968, 143,413
Int. Cl. B24b *27/06*
U.S. Cl. 51—98 15 Claims

The infeed of the cutting tool in a sectioning machine is controlled by a hydraulic unit constituted by

(a) a "cutting" unit of which the two elements (piston, cylinder) are movable, but one of which is rigid with a mechanical member controlling the movements of the cutting tool,

(b) a depth of cut "regulating" unit of which the two elements are movable, one of these elements being movable through the intermediary of a one-way abutment by that of the elements of the "cutting" unit which is rigid with this member, and



(c) an "approach" unit, one element of which is movable and rigidly connected to the two movable elements of the other units, other than those which may make a one-way abutment and of which the other element is connected to the frame of the machine.

3,606,702

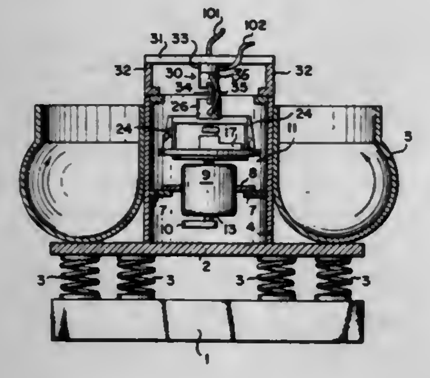
APPARATUS FOR TREATING ARTICLES THEREFOR

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Kalamazoo, Mich.

Original application May 29, 1967, Ser. No. 641,762, now Patent No. 3,466,815, dated Sept. 16, 1969. Divided and this application Jan. 8, 1969, Ser. No. 789,904

Int. Cl. B24b *31/06;* **F16h** *33/02*

U.S. Cl. 51—163 **9 Claims**



Novel method for treating articles, e.g., finishing metal parts, by introducing the articles into a treating zone, if desired together with treating material, moving the articles in an orbital path and, while continuing orbital movements, subjecting the articles to periods of increased and decreased velocity of linear processional motion in a direction substantially perpendicular to the plane of orbital motion, thereby facilitating control of dwell time within the treating zone and facilitating discharge of articles from the treating zone. Apparatus for carrying out said method, e.g., a finishing machine, comprising a curvilinear trough, e.g., annular or helical, resiliently mounted for vibration, having a vertically mounted vibratory motor provided with eccentric weights on its shaft, and including means for changing phase relationship between the eccentric weights while the vibratory motor is in operation, thereby increasing and decreasing the linear processional motion along the chamber for attaining the desired results already stated is claimed.

3,606,703

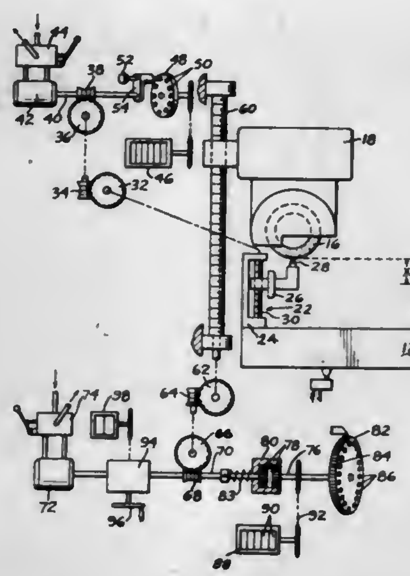
APPARATUS FOR GRINDING

Frederick G. Krafft, 2975 Fox Hollow Road, and William G. Baldenhofer, 4222 Grant Road, both of Springfield, Ohio 45502

Filed May 12, 1969, Ser. No. 823,788

Int. Cl. B24b *49/18*

U.S. Cl. 51—165 **11 Claims**



The invention relates to a grinding machine having a wheel truing device mounted on the grinding machine table that supports the workpiece with a mechanism for raising or lowering the truing tool of the device and having an indicating counter connected with the driving mechanism to indicate the elevation of the truing tool. The grinding wheel also has a mechanism for moving it vertically and has a counter connected with the mechanism to indicate the elevation of the grinding wheel. Both of the counters are driven through clutch devices that will permit adjustment of the counters relative to each other so that the absolute position of the grinding wheel relative to the surface to be ground thereby can be indicated on its counter.

3,606,704

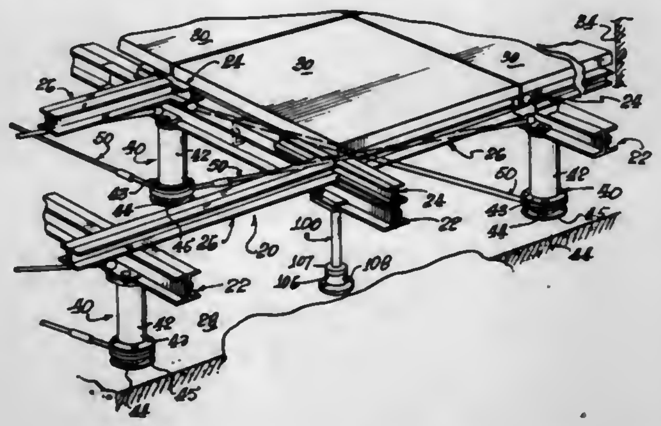
ELEVATED FLOOR STRUCTURE

Clyde T. Denton, West Covina, Calif., assignor to Resilient Services Incorporated, Los Angeles, Calif.

Filed May 2, 1969, Ser. No. 821,396

Int. Cl. E04b *1/98;* **E04h** *9/02*

U.S. Cl. 52—167 **10 Claims**



This elevated floor structure comprises a rigid frame carrying the floor proper and supported above the subfloor by a plurality of springs that are vertically compressible to accommodate local deformations of the subfloor. Each spring unit is mechanically prevented from expanding beyond a predetermined length, representing prestressing of the spring to a force that is related to the anticipated total load. The floor proper comprises individual cast metal panels coated with seamless, electrically insulating, resilient material. Special tie-rod brackets, resilient tie-down links and adjustable shims, are described. A modified structure, suitable for missile launching installations and the like, accommodates large amplitude vibrations by permitting the entire floor frame to move both horizontally and vertically with respect to the subfloor, with displaceable perimeter panel structures between the floating floor and the building sidewalls. The floor frame is yieldably urged toward normal position in response to both gravity and resilient forces.

3,606,705

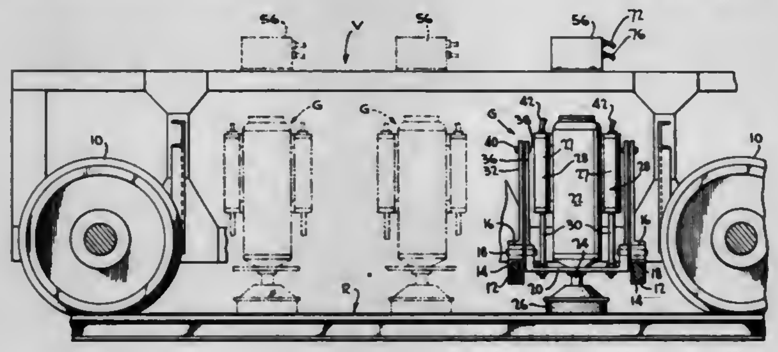
RAIL GRINDER

Albert Rivoire, North Syracuse, N.Y., assignor to Frank Speno Railroad Ballast Cleaning Company, Inc., Ithaca, N.Y.

Filed July 30, 1969, Ser. No. 845,952

Int. Cl. B24b *23/00*

U.S. Cl. 51—178 **10 Claims**



A grinding head including a rotary grinding wheel is supported from a vehicle for movement along and in grinding engagement with a rail. A portion only of the weight of the grinding head is supported from the vehicle by fluid pressure means including an expansible chamber the volume of which varies with variations in the operating level of the grinding head. The unsupported weight of the grinding head is applied as operative pressure of the grinding wheel against the rail. A pressure control unit in communication with the expansible chamber automatically varies the pressure of fluid in such chamber as the grinding head deviates from a predetermined operating level to abruptly increase the operating pressure as the grinding head falls below said level and to abruptly decrease such pressure as the grinding head rises above such predetermined level.

3,606,706

ELECTRICALLY-DRIVEN HAND TOOL WITH ROTATING TOOL MEMBER

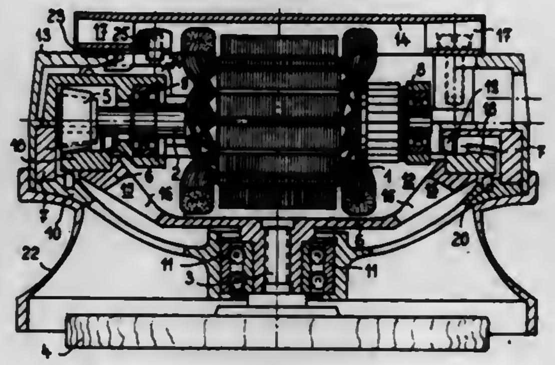
Josef Geimer, Amalia van Solmsstraat 31, Drunen, Netherlands

Filed Feb. 6, 1969, Ser. No. 797,112

Claims priority, application Germany, Feb. 8, 1968, P 16 52 051.7; Dec. 28, 1968, P 18 17 333.6

Int. Cl. B24b *23/00*

U.S. Cl. 51—170T **10 Claims**



In an electrical hand tool having a rotating tool member (grinding, polishing, etc. wheel) and including a speed reduction gearing betwen the motor and tool shafts, the gearing consists of a dish-shaped carrier fitted at its outer end with bevel gear teeth meshing with a bevel pinion fast with the motor shaft. The carrier forms a shroud closely enveloping a part of the motor and having its inner and connected to the tool shaft journalled in the frame of the device. In a modified construction, the tool member is directly connected to the inner end of the carrier the outer toothed end of which forms the inner race of a ball bearing having an outer race connected to the frame.

3,606,707

ARRANGEMENT AT AN ENGINE CHAIN SAW FOR MOUNTING A CIRCULAR CUTTING TOOL TO THE FRAME OF CHAIN SAW

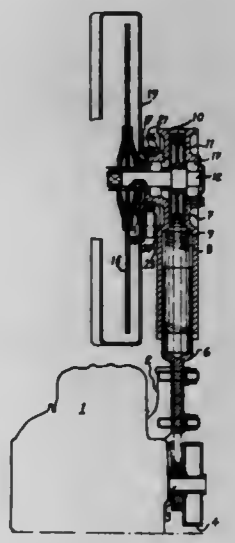
Ulf Vilhelm Naslund, Huskvarna, Sweden, assignor to Husqvarna Vapenfabriks Aktiebolag, Huskvarna, Sweden

Filed Jan. 17, 1969, Ser. No. 792,085

Claims priority, application Sweden, Jan. 18, 1968, 691/1968

Int. Cl. B24b *19/00*

U.S. Cl. 51—241 **4 Claims**



There is provided a device in motor saws by which a circular shaped cutting tool can be attached to the frame of said saw; said device including an arm which projects outwardly from the frame and which carries a shaft driven by the motor and forming the rotary shaft of the cutting tool; and in which the rotary shaft of the tool is journaled perpendicularly to the arm in a bearing capable of being turned round the longitudinal direction of the arm, and supplied with a locking device, and wherein the rotary shaft can be adjusted to and locked in any angular position, in a plane through the bearing perpendicular to the arm, and wherein a cover plate arranged concentrically to the rotary shaft and at least partly enclosing the tool is capable of being rotated perpendicularly to the rotary shaft and is provided with a locking device.

3,606,708

ROLLING AND BURNISHING OF CONTACT SURFACES

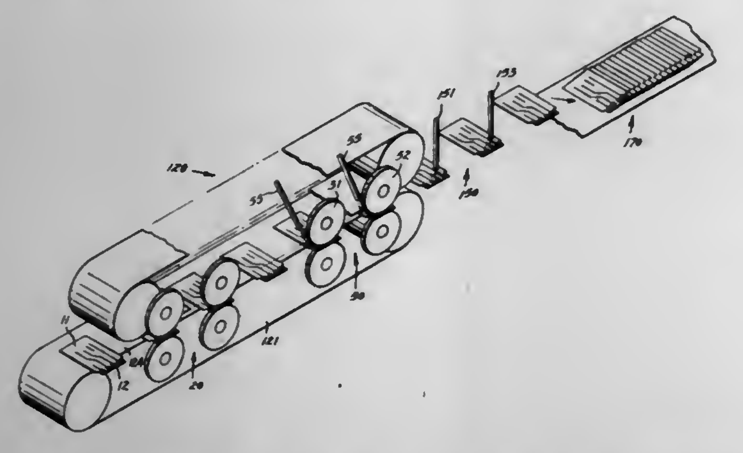
George J. Plichta, Fords, and Hans Weller, Roselle Park, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 7, 1969, Ser. No. 789,580

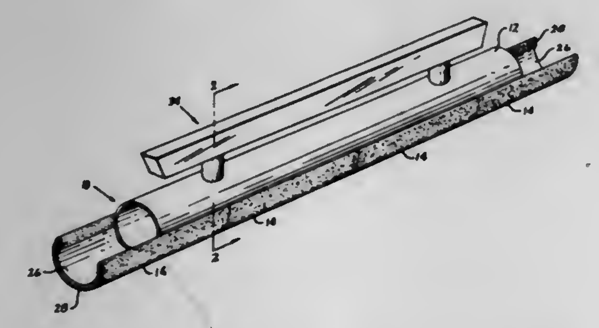
Int. Cl. B24b *1/00*

U.S. Cl. 51—323 **3 Claims**

Method and apparatus for smoothing metal coated surfaces by successive rolling and burnishing operations. The apparatus performs rolling and burnishing operations automatically, using hard polished rollers and a flexible burnishing wheel having automatic compensation for wheel wear. The workpiece is advanced through the rolling and burnishing stations by two opposed conveyor belts which grip the pieces therebetween with the portion to be rolled and burnished protruding to one side of the belts.

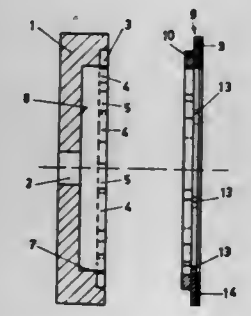


3,606,709
FINISHING TOOL
James H. Countryman, 3324 Trailon Road,
Dayton, Ohio 45439
Filed Apr. 22, 1968, Ser. No. 722,885
Int. Cl. B23d *71/00;* **B24d** *9/02*
U.S. Cl. 51—375 24 Claims



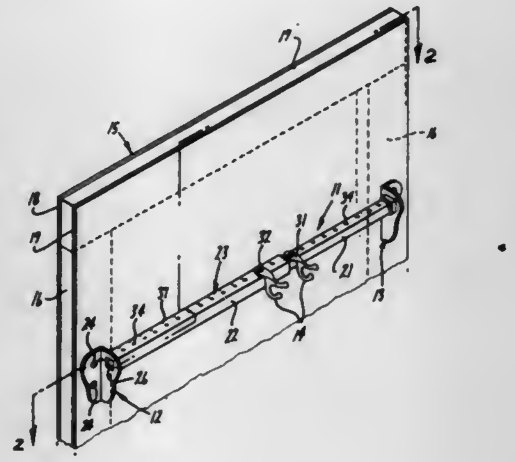
Several abrading tool assemblies are disclosed each having a finishing shoe resiliently and detachably clipped onto a tubular holder.

3,606,710
GRINDING WHEEL AND LUBRICANT ARRANGEMENT
Henri Juillerat, 9 Rue du Chanet,
2014 Bole, Switzerland
Continuation of application Ser. No. 653,557, July 14, 1967. This application May 11, 1970, Ser. No. 37,401
Claims priority, application Switzerland, July 26, 1966, 10,803/66
Int. Cl. B24b *55/02*
U.S. Cl. 51—356 5 Claims



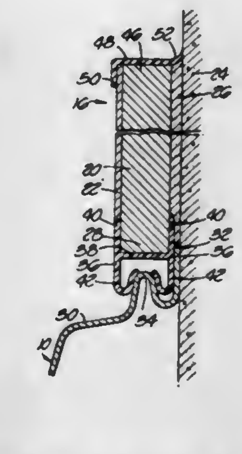
A grinding wheel assembly is provided with a plurality of individual lubricating chambers which supply a fluid lubricant to the grinding surface of a grinding disc during a grinding operation. The lubricating chambers are formed by a plurality of wedge-shaped ribs on a support plate cooperating with a plurality of wedge-shaped projections on a grinding plate and during rotation of the grinding wheel, the fluid lubricant is centrifuged to the grinding surface through holes in the grinding disc in fluid communication with the lubricating chambers.

3,606,711
TELESCOPIC DOOR HANGER
Frank J. Lodato, 83 Spencer Lane,
Atherton, Calif. 94025
Filed Mar. 17, 1969, Ser. No. 807,535
Int. Cl. A47h *1/08;* **E04c** *2/28, 2/34*
U.S. Cl. 52—27 6 Claims



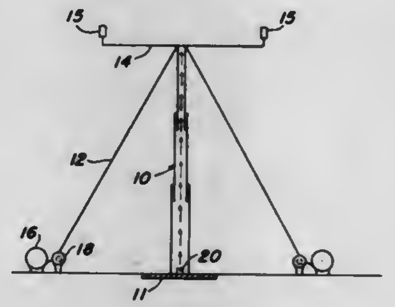
An adjustable door hanger including a telescoping rod assembly, mounting brackets, and hooks removably mounted on the rod. The mounting brackets enable the hanger to be secured to a solid structure, even though the hooks themselves are mounted over a surface which could not otherwise support them.

3,606,712
WALL PANELING STRUCTURE FOR BATHING RECEPTACLES
Richard H. Moir, San Diego County, Calif., assignor to Hemisphere Industries, Incorporated, Las Vegas, Nev.
Filed May 1, 1969, Ser. No. 820,967
Int. Cl. A47k *3/16*
U.S. Cl. 52—35 1 Claim



A decorative paneling structure for covering the walls around bathing receptacles, such as bathtubs and shower stalls. The structure comprises a decorative panel having its rear surface secured to a bathroom wall and its bottom edge secured to one of the upper side edges of the bathtub or shower stall by a flexible plastic fitting. The fitting provides a water-tight connection between the decorative panel and the bathtub, and is made of a springy plastic material having a memory. The fitting comprises a pair of substantially parallel side walls having their center portions connected by an integral web. The side walls of the fitting have upper portions which cooperate with the integral connecting web to form a generally U-shaped channel for snugly receiving the bottom edge of the decorative panel, and deformable lower portions which are turned inwardly for snugly receiving an upwardly protruding, longitudinally extending bead along the upper side edge of the bathtub. A flexible plastic covering strip is provided across the top edge of the decorative panel and bears against the wall to which the panel is secured to form a moisture-proof seal between the top of the panel and the wall.

3,606,713
REMOTE CONTROL FOR COLLAPSIBLE TOWERS
Ernest M. Runquist, San Diego, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Oct. 24, 1969, Ser. No. 869,031
Int. Cl. E04h *12/18, 12/34*
U.S. Cl. 52—115 1 Claim

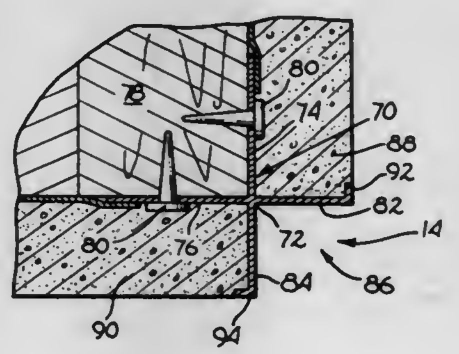


A mast consisting of two or more telescoping tubes stands vertically and is guyed with cables. A hydraulic or pneumatic system raises and lowers the mast, winches with slip clutches being used to play out the guys. A vertical laser beam centered in the mast signals the operator when the mast tilts off the vertical.

ERRATUM

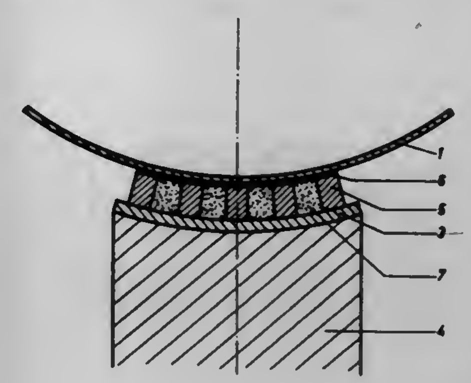
For Class 52—167 see:
Patent No. 3,606,704

3,606,714
MOLDING STRIP FOR USE AS QUIRK OR REVEAL
Robert W. Arnett, Pasadena, Calif. (% Fry Reglet Corp., 3028 Dolores St., Los Angeles, Calif. 90065)
Continuation-in-part of application Ser. No. 747,385, July 24, 1968. This application Nov. 5, 1969, Ser. No. 874,328
Int. Cl. E04b *1/70;* **E04f** *19/04*
U.S. Cl. 52—255 16 Claims



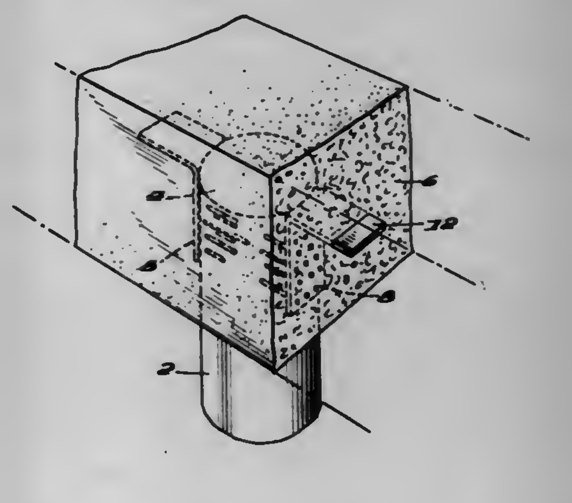
An extruded molding strip is fitted near or at a corner of a structural base to form a quirk or reveal, eliminating the task of joining similar or dissimilar finish materials at a corner, and at the same time providing an attractive decorative effect.

3,606,715
SPHERICAL STORAGE TANK FOR GASES AND LIQUIDS AND SUPPORTING BASE THEREFOR
Walter Wyss, Pratteln, Switzerland, and Peter Feuerlein, Redingstr. 12, Basel, Switzerland
Continuation-in-part of application Ser. No. 706,518, Feb. 19, 1968. This application Nov. 7, 1969, Ser. No. 874,901
Int. Cl. B65d *87/04;* **E02d** *27/28*
U.S. Cl. 52—294 5 Claims



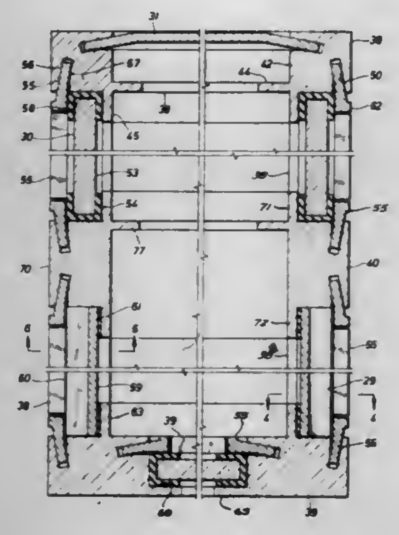
A mounting for a spherical tank holding gases or liquids which is supported on a rigid concrete foundation in a region of the vertical axis of the tank, the mounting consisting essentially of a spaced array of support elements of cellular or sponge structure, such as neoprene or Buna N rubber within a matrix of stiff plastic filler which is elastic and non-hardening, such as a quick-setting epoxy resin or polyethylene sulfide filling material which contains a high proportion of filler. The upper surface of the array of cellular elements and matrix is coated with a bonding adhesive to adhere the mounting to the steel surface of the tank, preferred adhesives being a thermosetting polyethylene sulfide adhesive or a thermosetting epoxy resin. The lower surface of the array is coated with the same bonding adhesive to secure the array to the concrete foundation.

3,606,716
TIMBER PILING CONSTRUCTION
David R. Norcross, Washington, D.C., and Hubert T. Dudley, Arlington, Va., assignors to Timber Engineering Company, Washington, D.C.
Filed July 31, 1969, Ser. No. 846,510
Int. Cl. E04c *3/34;* **E02d** *5/54*
U.S. Cl. 52—301 5 Claims



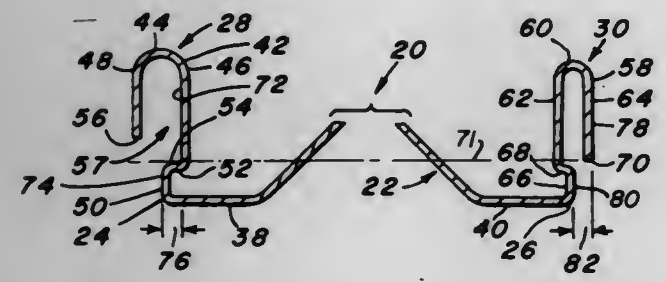
A timber piling construction including an upright timber pile and a concrete slab supported on the upper end of the pile. A pair of connector plates are rigidly secured on opposite sides of the pile. The connector plates are in the shape of an angle with one leg having a plurality of nail holes for receiving nails driven into the wood pile. The other leg of the connector projects outwardly at the upper end of the pile. Concrete is cast over the connector and the upper end of the pile to form a unitary structure.

3,606,717
PANEL MOUNTING APPARATUS
Buell Moore, Houston, Tex., assignor to
Esquire, Inc., New York, N.Y.
Filed Apr. 10, 1969, Ser. No. 815,167
Int. Cl. E06b *3/54*
U.S. Cl. 52—476 **11 Claims**



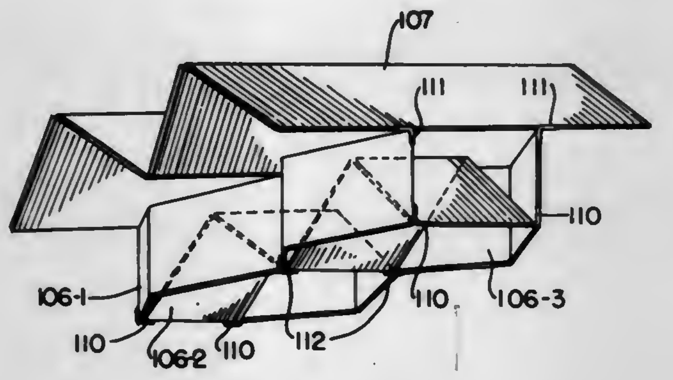
Apparatus for mounting a removable panel comprising a frame including a plurality of frame members forming the sides of the frame and connected together at the corners of the frame. Each frame member has a main body and a flange extending from the inner side of the main body to provide a supporting surface for a side edge of the panel. There is a slot in the main body of each frame member having opposite walls extending at an acute angle to and from its inner to its outer portion in direction away from supporting surface. Each of a plurality of bars equal in number to the frame members has opposite side walls slidably engageable with the side walls of the slot for insertion therein and another side wall extending at an acute angle to the opposite side walls for bearing on and urging the side edge of the panel against the supporting surface of the frame member.

3,606,718
BUILDING PANEL AND SIDE JOINTS THEREFOR
Bernard E. Curran, Sewickley, Pa., assignor to
H. H. Robertson Company, Pittsburgh, Pa.
Filed Aug. 21, 1969, Ser. No. 851,799
Int. Cl. E04c *1/10;* **F16b** *5/07*
U.S. Cl. 52—542 **14 Claims**



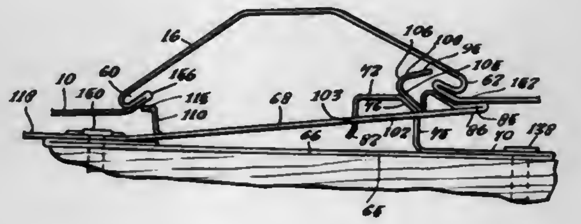
A building panel having a central pan of desired profile and improved marginal connecting means along opposite pan edges, providing an improved side joint between adjacent ones of the building panels. Both marginal connecting means comprise upstanding U-shaped channels. One channel is adapted to fit within the other channel to provide a gasket-free, essentially weather-tight joint having an interlock to prevent disengagement.

3,606,719
ERECTABLE STRUCTURES
Thomas G. Berry, Washington, D.C., assignor to
Fairchild Hiller Corporation, Hagerstown, Md.
Continuation of application Ser. No. 432,780, Feb. 15, 1965. This application July 12, 1968, Ser. No. 752,436
Int. Cl. E04b *1/34, 12/18, 7/16*
U.S. Cl. 52—632 **5 Claims**



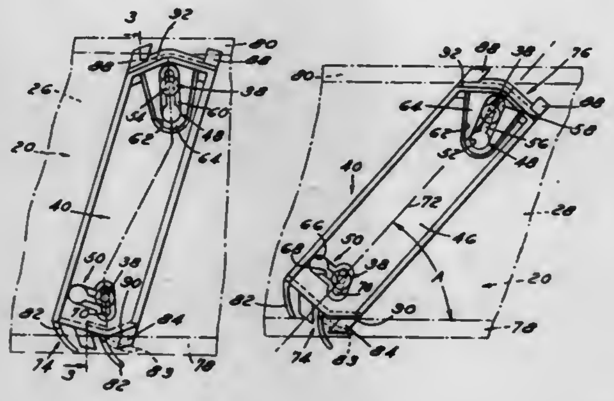
An erectable structure formed by one or more units having at least two connected support members. Each of the support members is in turn formed by a plurality of foldable panels. In the collapsed or folded condition the structure occupies a height equal substantially to the sum of the thicknesses of the total number of panels forming the support member on one side of the structure and each support member occupies an area substantially equal to the area of one of its folded panels. When unfolded or deployed, the panels of each support member are extended and lock together to form a structure which is substantially rigid along its longitudinal axis and in a direction transverse thereto. The erected structure also has a relatively large surface area which is substantially equal to the sum of the areas of the individual panels forming the support members.

3,606,720
ROOFING AND SIDING SHEETS AND THE LIKE AND FASTENING MEANS THEREFOR
William Cookson, Fareham, England, assignor to Cookson Sheet Metal Development Limited, Southampton, England
Filed Feb. 17, 1969, Ser. No. 800,835
Claims priority, application Great Britain, May 20, 1968, 24,021/68; Jan. 28, 1969, 4,768/69
U.S. Cl. 52—714 **10 Claims**



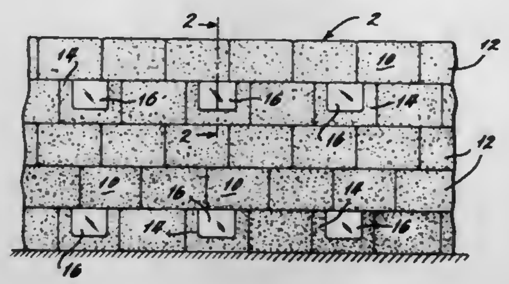
A roofing sheet having wide-based ribs, a lateral male rib having means for interlocking with an overlying lateral female rib of a neighbouring sheet, the male rib having a fixing channel for securing the rib to a structural member. There are also described clips to act as concealed fixings for intermediate widebased ribs, the clips having means to engage an internal pocket or pockets in the rib.

3,606,721
MOLDING ASSEMBLY AND ADAPTOR AND METHOD
Engelbert A. Meyer, Union Lake, Mich., assignor to
Warren Fastener Corporation, Mount Clemens, Mich.
Filed Nov. 5, 1969, Ser. No. 874,133
Int. Cl. B60r *13/04;* **E04f** *19/02*
U.S. Cl. 52—718 **5 Claims**



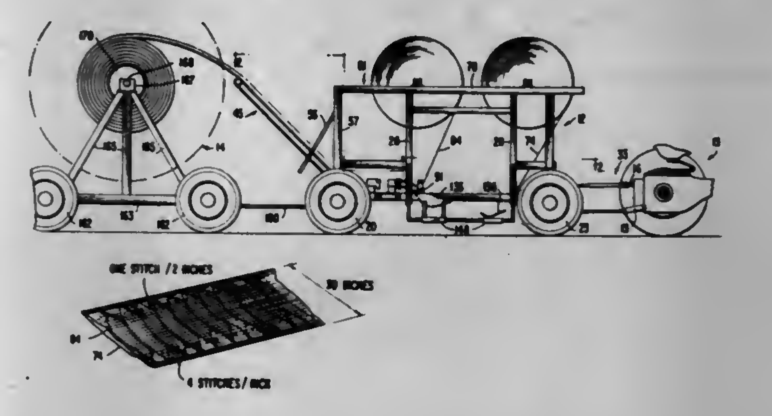
The molding assembly disclosed herein is adapted to securing tapered moldings to a support. The assembly includes a plurality of studs secured to the support in angularly related, substantially equally spaced pairs, with the angle proportional to the width of the molding. An adaptor is secured to the support by each pair of studs and is positioned at an acute angle by the studs with the greatest angle located at the widest portion of the molding. The disclosed embodiment of the adaptor includes a pair of generally perpendicular key hole slots, one of which is T-shaped, to permit vertical adjustment of the molding after securement. The method of assembly includes securing a plurality of studs to the support in a pattern of pairs, as described hereinabove, securing an adaptor to each pair of studs and receiving the molding over the adaptors and securing the molding in place.

3,606,722
REFRACTORY WALL
William D. Fitzpatrick, Mexico, Mo., assignor to
A. P. Green Refractories Co., Mexico, Mo.
Filed Apr. 23, 1969, Ser. No. 818,659
Int. Cl. E04b *1/76;* **E04g** *21/14*
U.S. Cl. 52—747 **3 Claims**



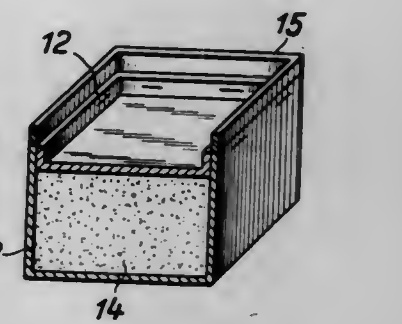
A refractory wall is constructed from a plurality of plastic blocks laid into multiple courses. Most of the blocks are formed entirely from a plastic refractory material, while the remaining blocks are formed from the same plastic material but have non-deformable anchor cores embedded in them. Each anchor core is created from a refractory material which does not impair the refractoriness of the plastic refractory material.

3,606,723
METHOD AND APPARATUS FOR HARVESTING AND HANDLING CROPS
Emmett T. Clark, Durham, N.C., assignor of a fractional part interest to James J. Shanley, Bethesda, Md.
Continuation-in-part of application Ser. No. 661,641, Aug. 8, 1967, now Patent No. 3,470,882, dated Oct. 7, 1969. This application Apr. 10, 1969, Ser. No. 814,963
Int. Cl. B65d *9/02, 63/04, 67/00*
U.S. Cl. 53—21FW **20 Claims**



A method and apparatus for harvesting leafy crops in which an elongated web means of flexible porous sheet material is moved along past a harvesting station at which harvesters lay harvested crop material on the web means, the harvested crop material is conveyed on the moving web means to a point where the harvested crop material and the web means may be connected together to integrate the two and thereafter the harvested crop material can be handled in conjunction with handling of the web means. The invention also envisages overlaying a second elongated web means of flexible porous sheet material on top of the harvested crop material deposited on the first web means, connecting marginal portions of the first and second web means to envelope the harvested crop material and if desired connecting the first and second web means at spaced points intermediate the longitudinal marginal portions to stabilize the harvested crop material relative to the enveloping web means to facilitate further handling of the harvested crop material. The invention further envisages treating the harvested material in any case by suspending or reeling the elongated web means and the enveloped harvested crop material.

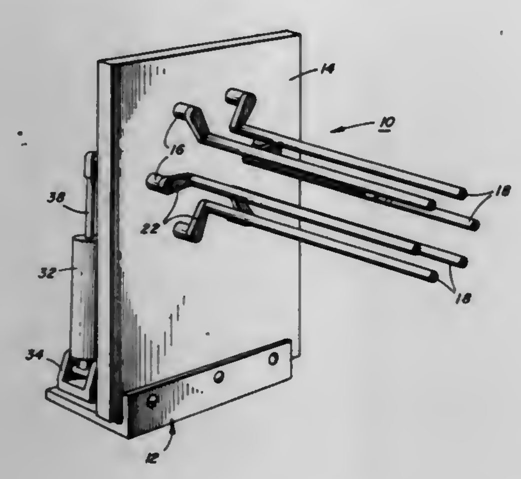
3,606,724
METHOD FOR FORMING A CLOSED CARDBOARD CONTAINER
Hans Otto, Hamburg-Grossflottbek,
Stockkamp 2, Germany
Filed Aug. 14, 1969, Ser. No. 850,173
Claims priority, application Germany, Aug. 16, 1968, P 17 86 091.2
Int. Cl. B65b *7/28*
U.S. Cl. 53—24 **3 Claims**



A method of joining a container, particularly one made of cardboard, to its lid, and apparatus therefor. The lid is turned upside down and inserted into the container with lid flanges engaging the inside container walls. Joining is preferably effected by fastening means. The apparatus includes a frame, a lifting table, locking devices and separating devices.

3,606,725
METHOD OF AND APPARATUS FOR COMPRESSING A VOLUME OF MATERIAL TO BE PACKAGED

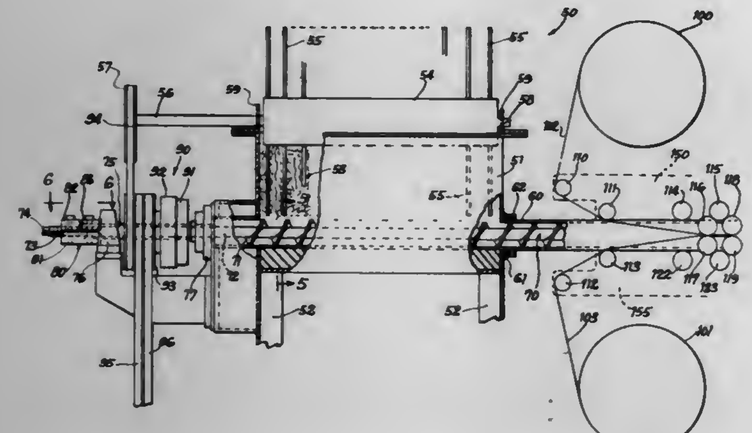
Hugh C. Dugan, Nutley, N.J. (Carlee Corporation, P.O. Box 26, Northvale, N.J. 07647)
Filed Oct. 22, 1969, Ser. No. 868,352
Int. Cl. B65b *1/24, 63/02*
U.S. Cl. 53—24 **8 Claims**



A volume of material to be packaged, e.g. high loft material of the type having a high volume per unit weight characteristic, is disclosed as being packaged by compressing the material through the exertion of compressive forces thereon by a plurality of revolving compression tubes, maintaining the material in compressed condition while passing a packaging device such as a bag therearound, and concurrently removing both the compressed material and the packaging device from the compressing means, the packaged material being of a volume less than the volume of the material prior to packaging.

3,606,726
METHOD AND MACHINE FOR MAKING DUNNAGE DEVICES

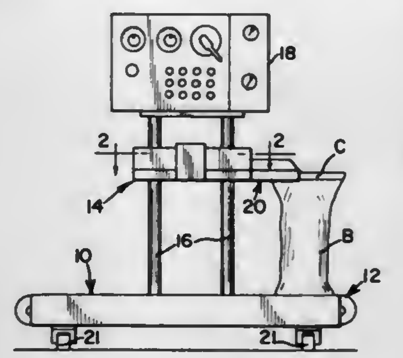
Maurice Spertus, Highland Park, and Charles K. Goldberg, Chicago, Ill., assignors to Intercraft Industries Corporation, Chicago, Ill.
Filed Aug. 7, 1969, Ser. No. 848,150
Int. Cl. B65b *9/12, 13/20*
U.S. Cl. 53—28 **15 Claims**



There is disclosed a machine and a method for utilizing waste paper products and the like by stuffing the same into a flexible tubing to form perforated dunnage links. The dunnage links are used separately or joined together to form a mat. The dunnage links are made, one after another, by transporting flexible tubing while encircling a hollow mandrel and simultaneously transporting the waste products through the mandrel and into the tubing. After a predetermined length of filled tubing is formed, it is sealed and severed.

3,606,727
PLASTIC BAG SEALER

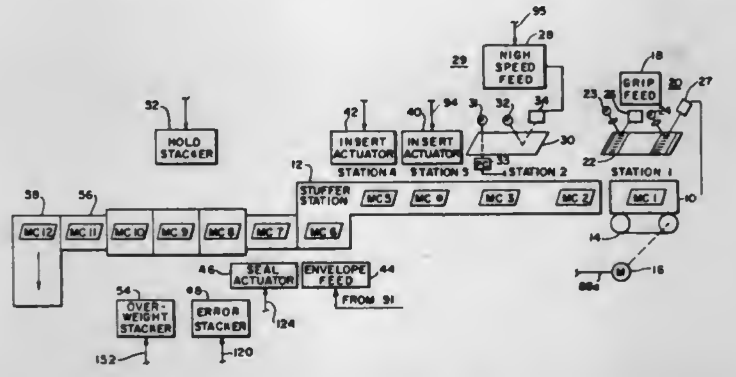
William Lourdes Davis, Davenport, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa
Filed July 7, 1969, Ser. No. 839,302
Int. Cl. B65b *57/00, 51/20*
U.S. Cl. 53—52 **10 Claims**



A machine for heat sealing the tops of plastic bags which are either plain, flat folded, or gusset-type, the machine being characterized by hot air sealing nozzles and associated electric heaters positioned at a seal forming station along the path traversed by co-operating runs of parallel, endless traveling conveyor belts which grip the folded or closed tops of the bags adjacent the seal forming area and advance with the same past the seal forming station to a seal cooling station where cold air nozzles set the seal, with the bags being carried on a supporting conveyor and with means for controlling the speed of the bag supporting and top gripping conveyors which is responsive to a thickness sensing means to automatically slow down the travel of the bag past the seal forming station when a thicker portion of the bag, such as a gusseted portion, reaches the seal forming station.

3,606,728
INSERTION MACHINE

Eugene Sather, Washington, and Lester H. Stocker, Phillipsburg, N.J., and Kenneth A. Hams, Easton, Pa., assignors to Bell and Howell Company, Phillipsburg, N.J.
Filed Sept. 8, 1969, Ser. No. 855,805
Int. Cl. B65b *57/04*
U.S. 53—54 **24 Claims**

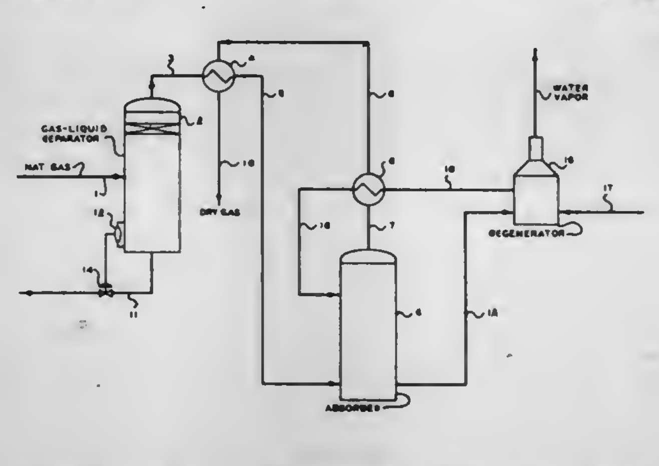


A selective insertion machine has a first document feeder for delivering main documents onto a first portion of an insertion track at the rate of at least one such main document for each machine cycle. A second document feeder contains sets of subordinate documents wherein each set is associated with a given main document. The second document feeder operates at a high speed so as to feed an entire set of subordinate documents during a given machine cycle and place that set on the insert track with the previously fed associated main document. The main documents contain count indicia representative of the number of associated subordinate documents that are to be subsequently fed by the high speed feeder. These indicia are sensed along with control indicia and representative count and control signals are generated. The associated subordinate documents are then counted as they are fed from the high speed feed and a comparator compares the two counts to generate an error signal if they differ.

A second portion of the insert track takes each group of main and associated documents past insertion stations which selectively insert additional material with each group in accordance with the control signals generated in response to the control indicia on the main documents. The insertion track then moves the thusly formed groups past both a device for selectively stuffing each group into envelopes and a sealing station where the envelopes are selectively sealed. Next, the second portion of the insert track moves the stuffed envelopes past an error stacking station, a hold stacking station, and an overweight stacking station. The error stacker is operative in response to an error signal from the comparator to remove stuffed envelopes from the insert track. The hold stacker is operative to remove selected envelopes from the insert track in response to control signals derived from that envelope's main document. The overweight stacker is operative to remove selected envelopes from the insert track when they weigh more than a predetermined amount. Those documents which successfully pass the stacking stations are delivered to a postage meter.

3,606,729
PREHEATING GAS FEED TO GLYCOL ABSORBER

Ivan A. Peterson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Apr. 11, 1969, Ser. No. 815,347
Int. Cl. B01d *53/14*
U.S. Cl. 55—32 **6 Claims**

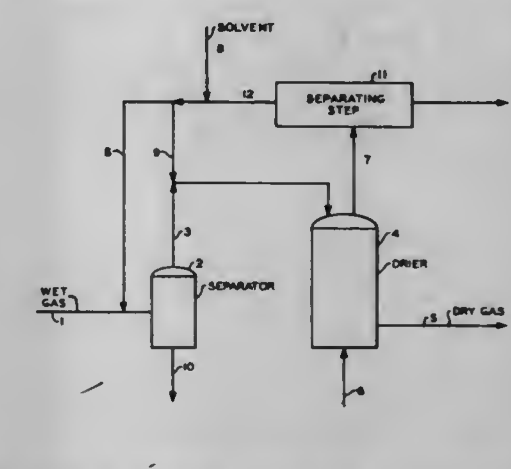


A method of cooling a hot regenerated moisture absorbent and of preheating a feedstream gas containing moisture ahead of the dehydrator without the need for external cooling and heating sources. The method maintains the absorbent effectively free of foam causing condensable components carried by the feedstream gas.

3,606,730
REMOVAL OF DEPOSITS FROM SOLID DESICCANT-CONTAINING DEHYDRATORS

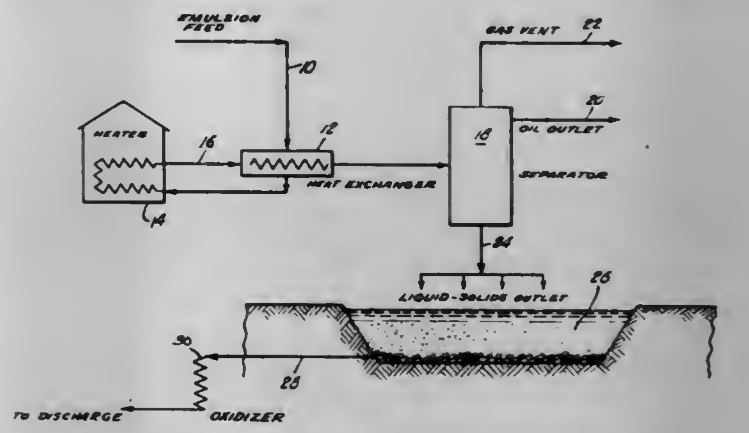
William C. Clark and Tommy R. Miller, Sweeny, Tex., assignors to Phillips Petroleum Company
Filed Oct. 29, 1969, Ser. No. 872,197
Int. Cl. B01d *53/02*
U.S. Cl. 55—33 **7 Claims**

Deposits which occur in desiccant beds used to dehydrate gases containing depositable material or polymerizable constituents are removed by adding with the gases passing to the desiccant bed a solvent for the depositable material so as to adsorb in the desiccant at least a portion of the solvent which upon regeneration of the desiccant bed leaves the bed together with the depositable material as when the bed is regenerated with hot regenerated gases. In one embodiment an unsaturated hydrocarbon-containing gas, e.g., an ethylene-containing gas, resulting from the pyrolytic conversion of a saturated hydrocarbon such as ethane or propane, is passed, at least for a portion of the time it is being dehydrated, together with an aromatic solvent, for example, benzene or toluene, into the desiccant bed. The flow of solvent need not be continuous. In another embodiment solvent is placed upon the desiccant bed before the gases are passed thereto so that solvent will be present as the depositable material coats onto the desiccant. In the case of polymerizable material which will polymerize and harden during the heated regeneration cycle, the solvent aids in the removal of the depositable material and the solvent can be recovered therefrom for reuse. In a modification at least a portion of the solvent is intermingled with the gas feed and the mixture passed to a separation zone for separation of liquid. This further prolongs the useful life and efficiency of the desiccant.



3,606,731
WATER TREATING PROCESS

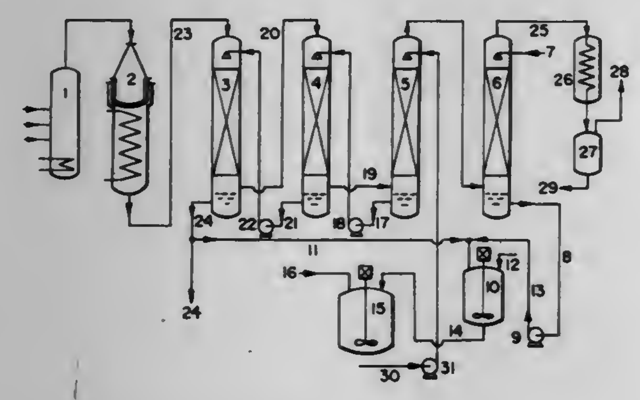
Edward Cole, Fishkill, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Nov. 20, 1969, Ser. No. 878,483
Int. Cl. B01d *19/00, 37/00;* **C02b** *1/02, 1/34*
U.S. Cl. 55—45 **5 Claims**



A water treatment process for breaking emulsions such as algae-oil-water emulsions into gas, oil, water and coke includes the steps of coking the emulsions under autogenous pressure at 450 to 700° F. for 0.5 minute to 120 minutes, cooling to form a separable, four phase system comprising gases, oil, water and coke; venting off the gases; removing the oil to thereby obtain a water-coke slurry, filtering off the coke and collecting an aqueous phase. The aqueous phase can be reduced in COD by treating with air at elevated temperature prior to final disposal. The oil is suitable for recycling to a crude still. The process can be carried out either batchwise or on a continuous basis and is particularly useful for breaking algae-oil-water emulsions occurring in API separators.

3,606,732
ABSORPTION OF FORMALDEHYDE FROM GASES CONTAINING IT

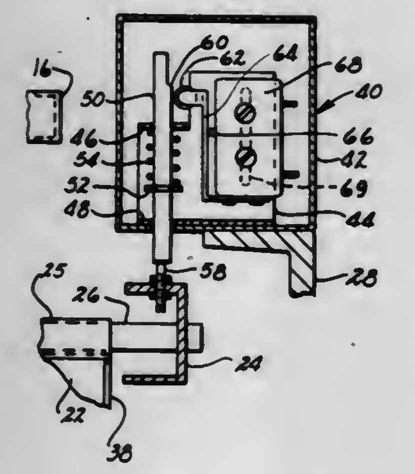
Alfred Woerner, Limburgerhof, Gerd Duembgen, Dannstadt, Heinrich Sperber and Hans Haas, Ludwigshafen, and Otto Grabowsky, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Nov. 4, 1968, Ser. No. 773,190
Claims priority, application Germany, Nov. 4, 1967, P 16 43 689.8; Dec. 2, 1967, P 16 43 705.1
Int. Cl. B01d *53/16*
U.S. Cl. 55—94 **3 Claims**



A process for the absorption of formaldehyde from gas containing formaldehyde (obtained in the dehydrogenating oxidation of methanol over silver catalysts) at elevated temperature in a plurality of stages, wherein the gas passes through at least three absorption stages at temperatures of from 60° to about 90° C., particularly from 70° to 85° C., and is contacted in each of the stages from the first stage to the penultimate stage with an aqueous solution of a urea-formaldehyde precondensate and in the final stage is contacted with an aqueous solution of urea.

3,606,733
CLEANING CONTROL FOR ELECTROSTATIC PRECIPITATOR

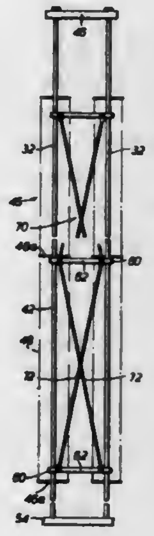
Arunas A. Arstikaitis, Dearborn Heights, Mich., assignor to American Standard Inc., New York, N.Y.
Filed July 17, 1969, Ser. No. 842,588
Int. Cl. B03c *3/76*
U.S. Cl. 55—112 **5 Claims**



An industrial electrostatic precipitator having a rapper control which initiates a rapper cycle in response to dust weight accumulations on the collector plates. The plates are deflected downwardly by the weight of the dust; after predetermined weight increase the deflection is sufficient to actuate a trigger for the rapper control.

3,606,734
ELECTRO-PRECIPITATION

John F. Dyla, Birmingham, England, assignor to Lodge-Cottrell Limited, Birmingham, England
Filed Apr. 17, 1969, Ser. No. 817,103
Claims priority, application Great Britain, May 4, 1968, 21,238/68
Int. Cl. B03c *3/04*
U.S. Cl. 55—148 **11 Claims**

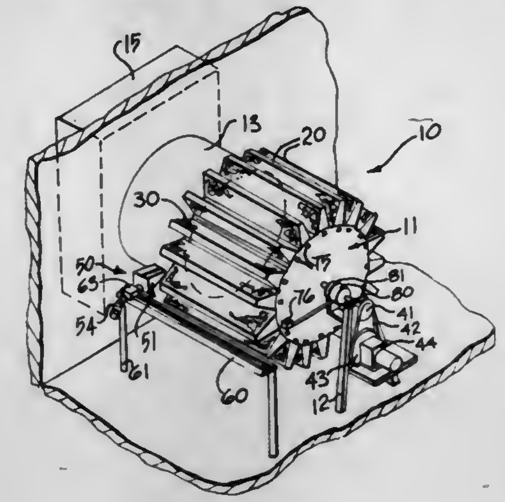


An electro-precipitator discharge electrode support structure comprises a first framework adapted to support upper end portions of discharge electrodes of an electro-precipitator electrode bank, a second framework adapted to support lower end portions of the discharge electrodes, and bracing means securing the first framework to the second framework and adapted to minimise relative movement of the frameworks transversely of the bracing means in directions along the bank and across the bank. The bracing means comprises at least one bracing assembly which comprises four parallel straight elongated members extending between the first framework and the second framework and secured to the frameworks; a plurality of aligned annular members are spaced along the straight elongated members and extend transversely thereto; the straight elongated members are secured to each annular member around the periphery thereof and adjacent annular members are interconnected by cross bracing.

3,606,735
AIR FILTER ASSEMBLY PROVIDING INCREASED FILTERING SURFACE AREA FOR A GIVEN VOLUMETRIC SIZE

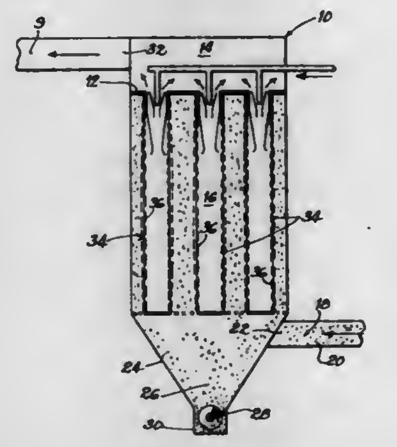
Joseph F. Baigas, Jr., Charlotte, N.C., assignor to Aeronca, Inc., Middletown, Ohio
Filed July 1, 1969, Ser. No. 838,146
Int. Cl. B01d *46/26*
U.S. Cl. 55—273 **25 Claims**

An air filter assembly specifically characterized by providing increased filtering surface area for a given volumetric size comprising a support cage having a generally cylindrical hollow base portion and a plurality of radially extending, hollow, perforate protuberance portions projecting outwardly from the base portion and extending longitudinally thereof, the number of protuberance portions being related to the diameter of the cylindrical base portion and being approximately between 3–6 protuberances per foot of diameter of the base portion, and flexible filter media disposed around and secure to the outside surface of the protuberance portions for filtering a stream of air passing therethrough. Preferably, the air filter assembly includes means for mounting the air filter for rotation in the stream of air, means for rotating the air filter in the stream of air, and improved means positioned in operative relationship with the air filter for cleaning the filter media.



3,606,736
APPARATUS FOR FILTERING SUSPENDED SOLIDS FROM GASEOUS MEDIUM AND FOR REMOVAL OF FILTER CAKE FROM FILTER ELEMENTS

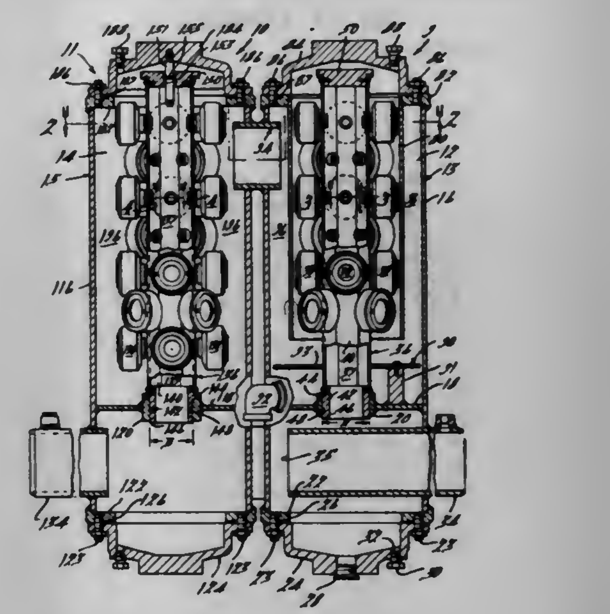
Raymond M. Leliaert, South Bend, and Clyde A. Snyder, Mishawaka, Ind., assignors to The Wheelabrator Corporation, Mishawaka, Ind.
Filed June 16, 1969, Ser. No. 833,531
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **8 Claims**



Apparatus for gaseous filtration to effect removal of suspended solids in which use is made of elongate filter elements having an open end and means for flowing gaseous medium containing the suspended solids through the walls of the filter element whereby separated solids collect on the outer wall of the filter element as a filter cake and in which use is made of a gas nozzle in endwise alignment and colinear alignment with one or more auxiliary nozzles followed by a venturi for releasing or generating a burst of gas of high pressure and increasing volume in the interior of the filter tube being cleaned, to effect removal of solids collected on the walls of the tube, without stopping total filter flow.

3,606,737
GAS DISPERSOID SEPARATOR

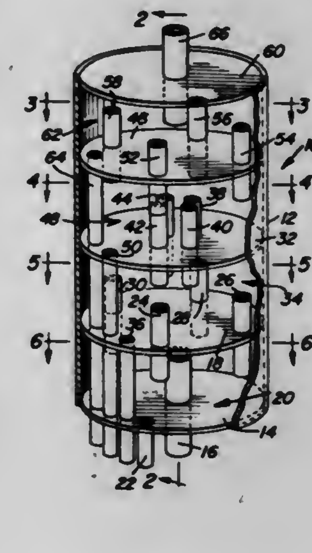
Harvard S. Lefevre, Ann Arbor, Mich., assignor to King Engineering Corporation, Ann Arbor, Mich.
Filed May 9, 1968, Ser. No. 727,969
Int. Cl. B01d *50/00*
U.S. Cl. 55—319 **23 Claims**



A gas dispersoid separator utilizing separate interconnected coalescing and filtering chambers and including disposable assemblies each having a plurality of dispersoid removal elements.

3,606,738
FLUID SEPARATOR

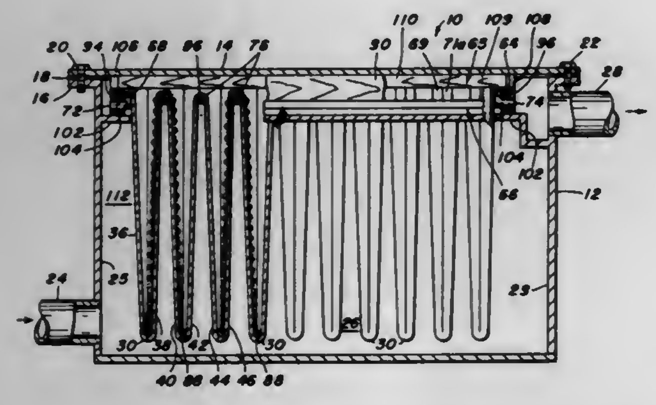
Ben Kraus, Jr., 3101 Washington Pike, Bridgeville, Pa. 15017
Filed Dec. 2, 1969, Ser. No. 881,447
Int. Cl. B01d *45/08*
U.S. Cl. 55—446 **2 Claims**



A number of axially spaced baffle plates are enclosed within a cylindrical housing having inlets at one end and an outlet at the other end. The spaced baffle plates define a plurality of adjacent chambers through which inlet fluid sequentially passes. Ports in each baffle plate are in offset relation to the ports in an adjacent baffle plate so that the fluid flowing into any given chamber is caused to impinge upon the baffle plate in that chamber thereby resulting in the separation of a heavier constituent from the composite fluid flowing through the chamber. As an end result of sequential impinging action against the spaced baffle plates, a relatively liquid free gas is emitted from the outlet end of the fluid separator.

3,606,739
AIR FILTER

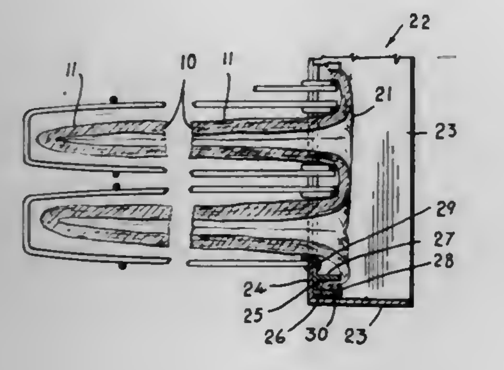
Donald A. Peterson, 5616 Koeffler Drive, Pittsburgh, Pa. 15236
Filed July 10, 1969, Ser. No. 840,733
Int. Cl. B01d *46/02*
U.S. Cl. 55—484 **8 Claims**



An air filter comprising a housing having a removable lid and an inlet opening and an outlet opening. A unitary filtering medium comprising a single length of material formed into a plurality of individual bags is supported within the housing of the filter between the inlet opening and the outlet opening. The unitary filtering medium is secured to and supported by an integral frame member which is, in turn, supported by portions of the housing and maintained in position within the housing by the cooperative arrangement of the lid of the housing and members disposed between the lid and peripheral portions of the frame member.

3,606,740
HIGH EFFICIENCY AIR FILTER

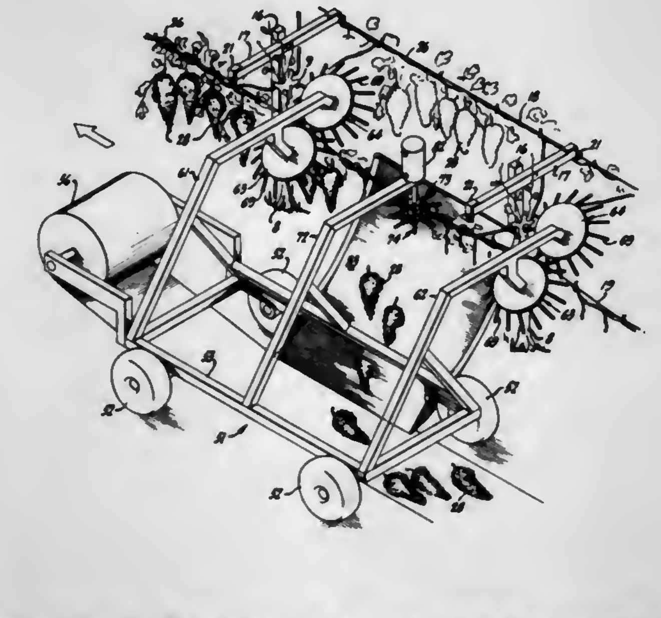
Peter Donald Ballennie, deceased, late of Toronto, Ontario, Canada, by Eileen Margaret Ballennie, executrix, Toronto, Ontario, Canada, assignor to Johnson & Johnson Limited, Montreal, Quebec, Canada
Filed June 5, 1969, Ser. No. 830,885
Claims priority, application Canada, Oct. 3, 1969, 31,541
Int. Cl. B01d *46/02*
U.S. Cl. 55—500 **1 Claim**



An air filter for an air filtering system in which the air filter medium of micro-fibres is covered on both sides with a continuous porous non-woven cover, the medium and cover being folded over upon itself to form a plurality of side-by-side socks which open outwardly in the same direction to form the air inlet, the longitudinal marginal edges of the medium and cover forming each sock being sewn together and placed adjacent the air inlet to form a continuous rectangular air frame allowance around said air inlet.

3,606,741
METHOD FOR HARVESTING GRAPES

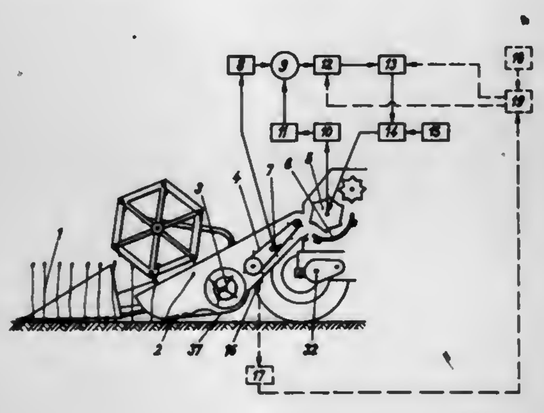
Harold P. Olmo and Henry E. Studer, Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Original application Dec. 15, 1965, Ser. No. 514,049, now Patent No. 3,490,217, dated Jan. 20, 1970. Divided and this application Mar. 19, 1969, Ser. No. 822,780
Int. Cl. A01g *19/00*
U.S. Cl. 56—1 **5 Claims**



A method of harvesting grapes includes training a last season shoot from the vine trunk to extend along a horizontal trellis wire to serve as a present season fruiting cane. The fruiting cane may be severed from the trunk prior to harvesting. The wire and fruiting cane are struck with a jerk in a substantially vertical direction to dislodge the grapes as berries and as bunches.

3,606,742
ARRANGEMENT FOR THE AUTOMATIC CONTROL OF THE THRESHING PROCESS ON COMBINE HARVESTERS

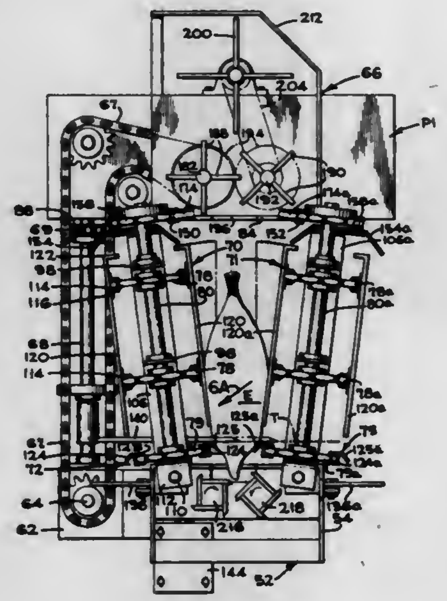
Franz Wieneke, 14 August-Lange-Strasse, Bovenden, Germany, and Manfred Eimer, 11 Finkenweg, Gottingen-Grone, Germany
Filed Mar. 26, 1970, Ser. No. 22,954
Claims priority, application Germany, Apr. 5, 1969, P 19 17 670.6
Int. Cl. A01d *41/02*
U.S. Cl. 56—10.2 **31 Claims**



An arrangement for the automatic control of the threshing process on combine harvesters of which the well known working tools include a control circuit for the automatic regulation of the threshing-cylinder speed, in which a reduction delayer is incorporated which is so constructed that an output value from a throughput measuring sensor connected in this first control circuit or a value derived from said output value which is released by a decrease in the crop throughput is only allowed to pass this reduction delayer after the expiry of a period of time which is substantially the same as that required for the conveyance of the crop from the moment when it is detected by the throughput measuring sensor to the time when that quantity of the crop which is determined by the last existing speed of the threshing cylinder has been threshed out in the threshing organs, whereas an output value or a value derived therefrom which is released by an increase in the crop throughput can pass this reduction delayer unhindered.

3,606,743
PICKING HEAD FOR CORN HARVESTING MACHINE

Robert A. Johnson, Rossville, Ill., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 11, 1969, Ser. No. 884,101
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.2 **13 Claims**

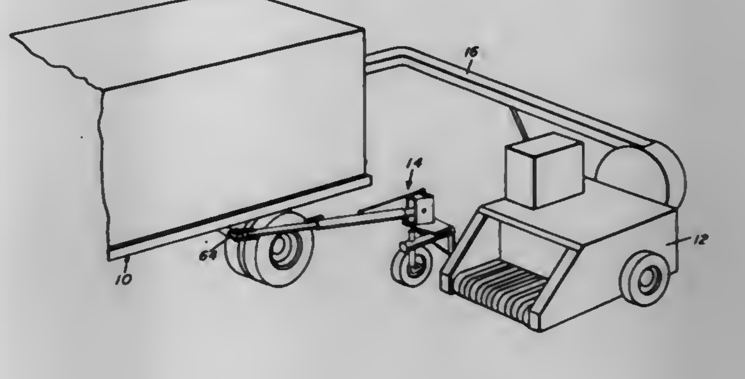


A pair of vertically spaced endless driven belts are provided at each side of the picking head of a corn harvesting machine. The upper or gathering belts have confronting flights of closely spaced slats which form walls straddling the cornstalks. The lower or butt stop belts are formed of bent slats that slope inward to cooperatively form a ledge or butt stop for arresting downward movement of the ears to be stripped from the stalk. A power driven cutter blade for trimming the butt ends of the ears is mounted between the upper and lower pairs of gathering and butt stop belts in the path of the lower ends of the upright ears. Downstream of the butt trimming blade, each ear strikes a fixed abutment which orients the trimmed ear to be discharged from the machine tassle-end first.

3,606,744
ADJUSTABLE TOWING HITCH

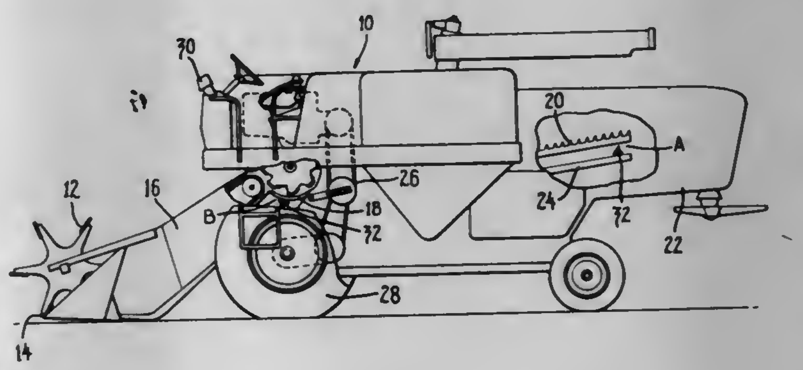
Terry W. Eubanks, Ashland, Kans., assignor of fractional part interest to Robert M. Baker, Ashland, Kans.
Filed Aug. 29, 1969, Ser. No. 854,237
Int. Cl. B60d *1/16;* **A01d** *43/06*
U.S. Cl. 56—14.4 **3 Claims**

Subject invention relates to an adjustable towing hitch for use with a field or ensilage cutter. The hitch is secured to the frame of the field cutter by a connection bracket. A telescoping draw bar secured to the connection bracket extends forward to engage a bracket mounted on the side of a tow vehicle, a suitable locking mechanism being provided to prevent the draw bar from telescoping outwardly when the cutter is being towed. The connection bracket permits the draw bar to be pivoted in a vertical plane while giving it lateral stability, thereby permitting the cutter to be towed at a position to the side of the path of the towing vehicle. A swivel wheel is provided on the cutter frame to steer the cutter so that it will follow the tow vehicle.



3,606,745
GRAIN FLOW RATE MONITOR

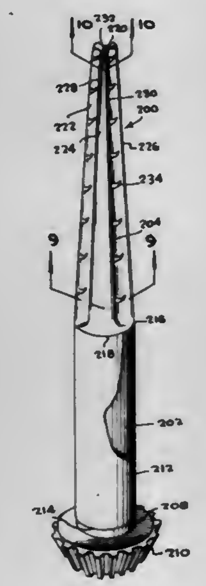
Joseph C. F. Girodat, Brampton, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Sept. 8, 1969, Ser. No. 855,909
Int. Cl. A01d *41/02*
U.S. Cl. 56—20 **7 Claims**



A combine harvester is provided with a circuit for detecting the flow rate of grain at any particular point in the combine. This circuit includes a high frequency piezoelectric transducer located at a convenient point in the path of flow of the grain. As grain and other crop materials impinge, the transducer develops voltage spikes, a particular frequency range of which is detected by a frequency detecting circuit which amplifies the detected spikes. Next the signal is fed to an amplitude detecting circuit to detect a range of amplitudes of voltage spikes above a predetermined amplitude which includes spikes produced by grain impingement on the transducer, but excludes the spikes produced by other threshed crop material. The detected voltage spikes are then converted by a monostable multivibrator into square wave form and sent to a meter circuit where they are average and visually displayed on a meter. In this manner the combine operator can instantaneously know the flow rate of grain at any specified point in the combine and can determine from this flow whether the combine is operating efficiently.

3,606,746
COTTON PICKING SPINDLES

Norman G. Hayward, Rte. 2, Box 119G,
Manassas, Va. 22110
Filed Dec. 16, 1969, Ser. No. 885,506
Int. Cl. A01d *45/18*
U.S. Cl. 56—50 **5 Claims**

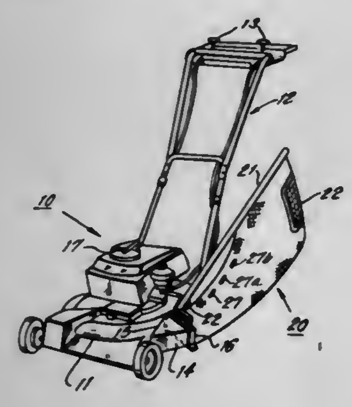


A spindle for cotton picking apparatus has at least its materials contact portion formed of hard plastic, the plastic portion having rows of hook-like teeth to engage the plant fibers.

A spindle for cotton picking machinery, the spindle comprising a metallic base with an outward portion, and a plastic sleeve for said outward portion, the sleeve having means for releasable engagement with the portion and having teeth therein.

3,606,747
INDICATING MEANS FOR GRASS CATCHING BAG AND THE LIKE

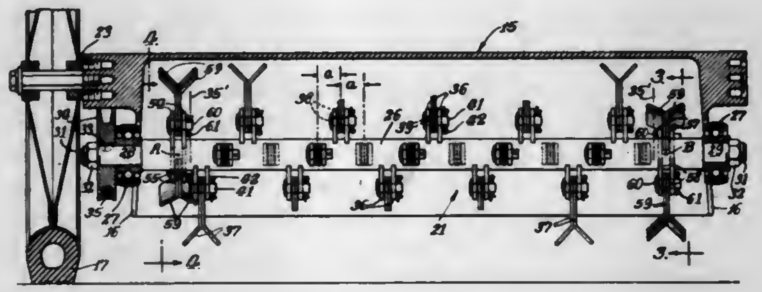
Joseph F. Bauman, 17 Great Woods Drive,
Trenton, N.J. 08618
Filed Mar. 5, 1970, Ser. No. 16,897
Int. Cl. A01d *53/06*
U.S. Cl. 56—202 **10 Claims**



A grass catching bag in which one or a plurality of slits or openings are provided near the inlet end of the bag so as to enable observation of grass clippings therethrough to permit the operator of the power mower to easily and readily determine the fact that the grass catching bag is nearly filled with grass clippings. The openings may be reinforced, may be provided with transparent windows of either a flexible or inflexible type, or may be provided with a movable "flag" or indicator which projects through the opening to indicate the fact that the bag is filled or nearly filled with grass clippings, or the like.

3,606,748
BALANCED CUTTING ASSEMBLY FOR A MOWER

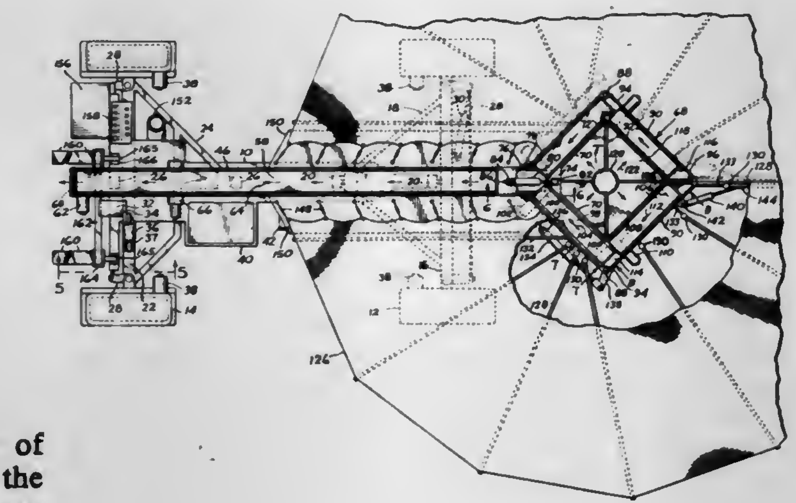
Tommy A. Middlesworth, Hinsdale, Ill., assignor to
Mott Corporation, La Grange, Ill.
Filed Sept. 8, 1969, Ser. No. 855,938
Int. Cl. A01d *55/22*
U.S. Cl. 56—294 **14 Claims**



This disclosure deals with a statically and dynamically balanced cutting assembly for use in a mower. The assembly includes a rotatable shaft, a plurality of radially extending cutting blade supports secured to said shaft, and one or more cutting blades attached to each of said supports. The supports are angularly and circumferentially spaced in a predetermined pattern along a central section of the shaft so that, upon rotation of the shaft, the blades cut a swath which is substantially continuous over the length of the central section. To balance the assembly, there is secured to each end section of the shaft at least one balance blade support, and one or more balance blades are fastened to each balance blade support. The balance blades and supports therefor are substantially identical with the first mentioned supports and blades, and they are axially and angularly located relative to the pattern such that they statically and dynamically balance the assembly.

3,606,749
MACHINE FOR HARVESTING TREE CROPS

Frank W. Morrison and Jerry E. Morrison, both of
2408 E. 14th St., Rte. 1, The Dalles, Oreg. 97338
Filed June 23, 1969, Ser. No. 835,605
Int. Cl. A01g *19/06*
U.S. Cl. 56—329 **10 Claims**

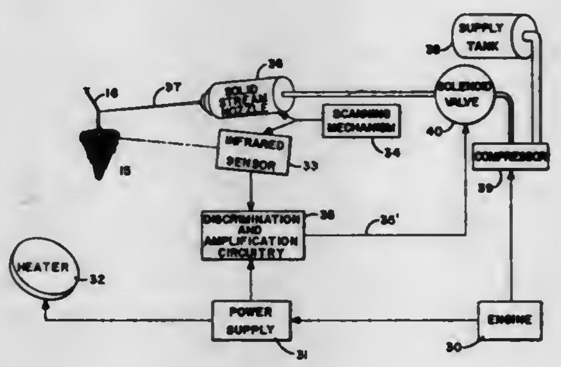


The machine of the invention has a wheeled frame supporting an elongated longitudinally and laterally tiltable conveyor. The forward end of the conveyor carries a collecting unit having a head comprising a pair of flared arms each pivotally supporting an extension capable of opening movement to receive a tree in the opening and capable of closing for encompassing the trunk of

the tree. The arms and extensions have conveyors therein which deposit fallen crop in the longitudinal conveyor. The head has pivotal outriggers thereon supporting a flexible collecting apron, and fluid operated cylinders are provided for moving the arm extensions and the apron between open and closed positions. Power driven adjustment means are provided at a pivot connection between the longitudinal conveyor and the head for varying the longitudinal angular tilt of the latter. Power driven adjustment means are also provided for varying the lateral tilt of the conveyor. The machine has blower means for separating dust and leaves from the harvested crop. Tiltable lifting forks are provided at the rearward end of the machine for supporting tote boxes or the like.

3,606,750
FRUIT HARVESTER

Larry B. Walker, 1322 Frances Ave., Fullerton, Calif. 92631, and Howard Lauck, 2240 James Downey Road, Independence, Mo. 64050
Filed Apr. 11, 1969, Ser. No. 815,380
Int. Cl. A01g *19/00*
U.S. Cl. 56—331 **26 Claims**



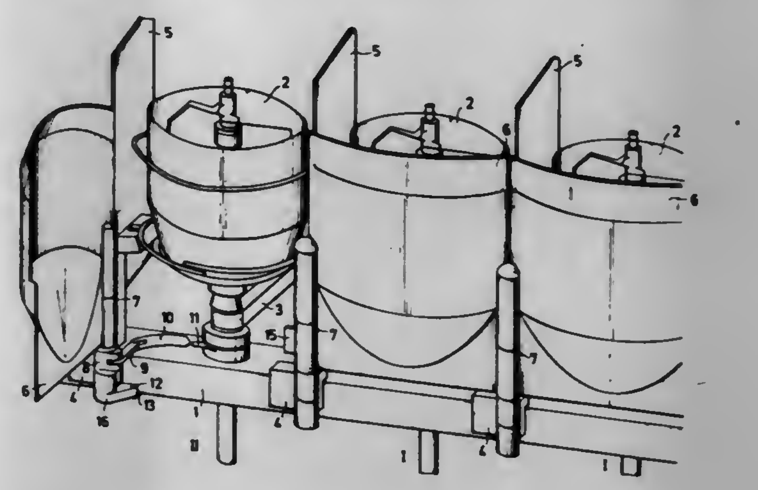
A harvester for vine or tree borne fruit. An infrared sensor scans the plant and locates the fruit by sensing the different thermal emissivity of the fruit compared with adjacent stem or leaves. A cutter, actuated by the sensor, selectively severs the stem in response to such thermal fruit detection. Preferably, the cutter comprises a fine, high intensity stream of air or water.

In a typical application as a grape harvester, a tractor mounted heater preheats the vines being picked. A thermal sensor and the cutter nozzle, situated on the tractor rearward of the heater, simultaneously are scanned across the preheated vine. When a cluster of grapes is located, as indicated by maximal thermal emissivity, high pressure water from a compressor is supplied to the nozzle via a solenoid valve actuated by the sensor. The resultant cutting stream selectively severs the grape cluster.

3,606,751
CASING FOR TWISTING SPINDLES

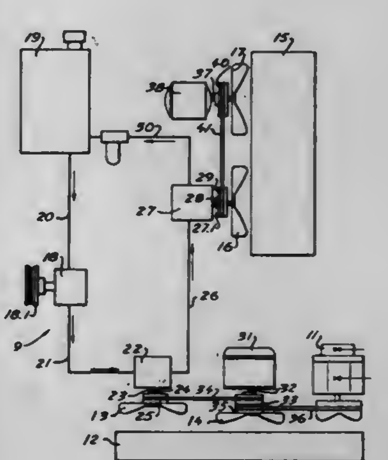
Heinrich Peter Weller, 63 Beethovenstrasse, 405 Monchen-Gladbach, Germany, and Josef Mehl, 18 Schillerstrasse, 5144 Wegberg, Germany
Filed Apr. 28, 1969, Ser. No. 819,711
Claims priority, application Germany, Apr. 26, 1968,
P 17 60 270.9
Int. Cl. D01h *1/24, 1/42, 7/18*
U.S. Cl. 57—88 **4 Claims**

Vertical side plates are arranged between adjacent pairs of twisting spindles to separate them, and extending across the front of each spindle between side plates is a door that is cylindrically curved, and also conically tapered at the bottom, to follow the contour of the thread balloon. The door is hinged at one edge for horizontal swinging movement, and an arm on the pivot shaft is connected to one end of a bowed spring that passes over-center to exert a force tending to hold the door either open or closed. Another arm on the pivot shaft is connected by linkage to a brake-actuating arm that brakes the spindle when the door is opened.



3,606,752
DRIVE FOR VEHICLE MOUNTED REFRIGERATION SYSTEMS

Lawrence Shaw, Vancouver, British Columbia, Canada, assignor to Fraser Valley Milk Producers Association, Burnaby, British Columbia, Canada
Filed Dec. 15, 1969, Ser. No. 885,019
Int. Cl. F01b *21/00;* **F25b** *27/00, 41/00*
U.S. Cl. 60—6 **2 Claims**

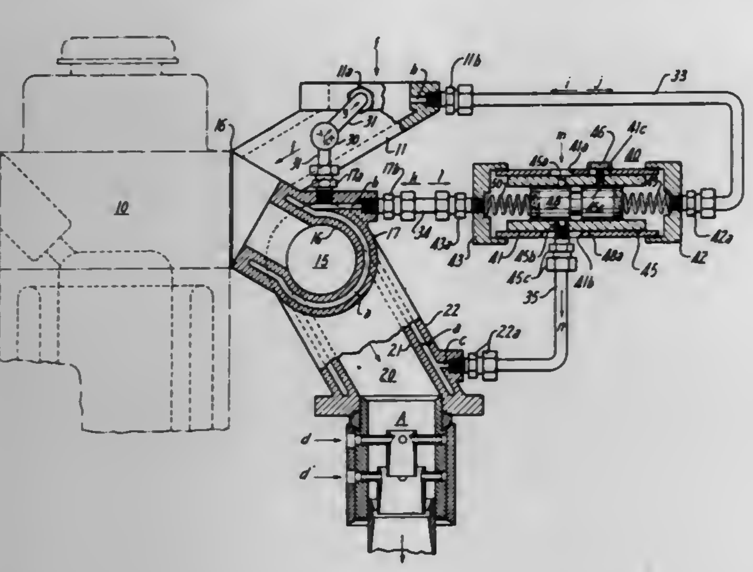


A drive arrangement for a vehicle mounted refrigeration system having electrically powered motors connectable to a source of electric power remote from the vehicle, and hydraulically powered motors operated from a vehicle mounted source of power, each arranged for independent operation of the refrigeration system, the hydraulic motors being connected to the electric motors through cam clutches arranged to permit overrunning of the hydraulic motors by the electric motors.

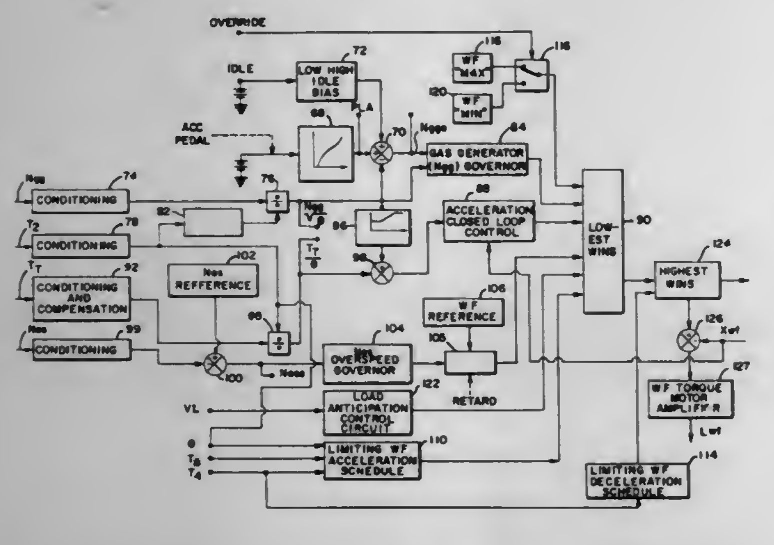
3,606,753
AIR POLLUTION SYSTEM TEMPERATURE CONTROL

Robert C. La Force, West View Drive, R.D. 1,
Beaver, Pa. 15009
Filed Sept. 8, 1969, Ser. No. 856,027
Int. Cl. F01n *3/10;* **F28f** *13/00*
U.S. Cl. 60—30 **10 Claims**

A method and apparatus are provided for maintaining the temperature of hot gases being exhausted from an internal combustion engine within a controlled range for assuring a maximized thermal reacting of hydrocarbons and carbon monoxide with a minimized production of nitrogen oxides before discharge into the atmosphere. The mtehod and apparatus employ fluid-jacketing of an exhaust manifold and a valve system operatively-connected between the jacketing and an intake manifold to supply air to the jacketing to reduce the temperature of the exhaust gases when the engine is operating under full or heavy load and to withdraw air and provide a maximized insulating effect when the engine is operating under a low load or is idling.

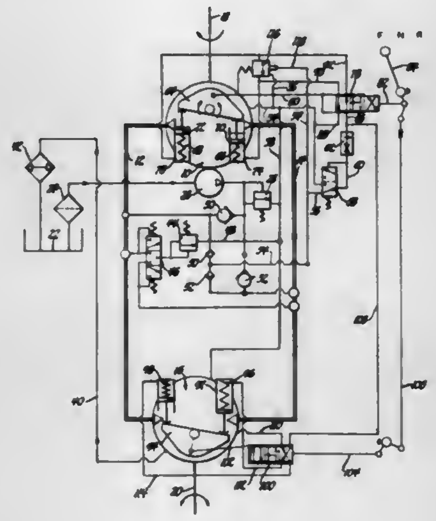


3,606,754
HYBRID FUEL CONTROL
Albert H. White, Wethersfield, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed May 19, 1969, Ser. No. 825,857
Int. Cl. F02c *9/08, 7/28, 3/10*
U.S. Cl. 60—39.28 **14 Claims**


OVERRIDE
IDLE
LOW HIGH IDLE BIAS
WF MAX
WF MIN
ACC PEDAL
GAS GENERATOR (Ngg) GOVERNOR
CONDITIONING
CONDITIONING
CONDITIONING AND COMPENSATION
CONDITIONING
Nos REFFERENCE
ACCELERATION CLOSED LOOP CONTROL
LOW-EST WINS
HIGHEST WINS
WF REFERENCE
Nos OVERSPEED GOVERNOR
LOAD ANTICIPATION CONTROL CIRCUIT
RETARD
LIMITING WF ACCELERATION SCHEDULE
LIMITING WF DECELERATION SCHEDULE
WF TORQUE MOTOR AMPLIFIER
VL

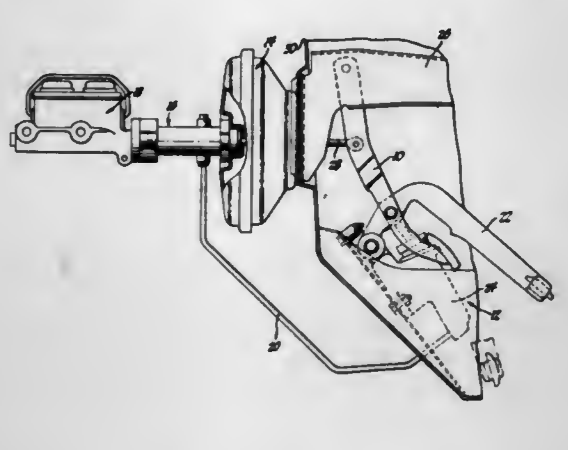
An electronic-hydromechanical control for a regenerative gas turbine engine wherein a fuel metering valve and power turbine inlet nozzles are positioned in response to control signals provided by a closed loop system wherein gas generator turbine inlet temperature is the principal control parameter. Engine operating parameters, including gas generator turbine inlet temperature, are sensed and electrical signals commensurate therewith are delivered as inputs to logic circuitry where, in combination with selected operational mode inputs provided by the operator, they are operated upon to provide control signals for the power turbine nozzle actuators and the gas generator fuel control metering valve.

3,606,755
POWER TRANSMISSION
Donald C. Connett, Huntington Beach, Calif., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Mar. 16, 1970, Ser. No. 19,575
Int. Cl. F16h *39/46*
U.S. Cl. 60—53A **7 Claims**



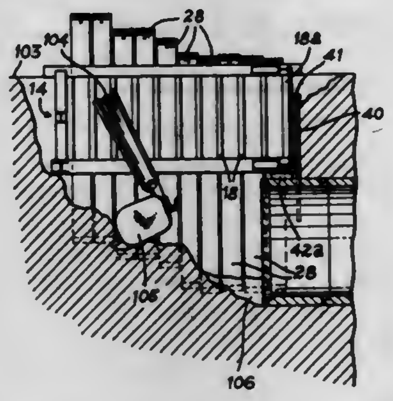
A variable displacement hydraulic pump or motor unit is biased toward neutral by centering springs in the case of the pump and toward maximum displacement in the case of the motor. Hydraulic servomotors are controlled by follow-up servovalves to oppose this bias for adjusting the displacement normally. A load responsive valve is connected in parallel with the servovalve or valves to dump the pressure applied to the servomotor and allow the biasing springs to reduce the displacement in the case of the pump or to increase it in the case of the motor. A hydraulic variable speed transmission utilizing such a pump and such a motor with a single load limiting valve is arranged to give priority to load limiting action at the motor before such action occurs at the pump.

3,606,756
BRAKE CONTROLS FOR DRIVER TRAINING CARS
Robert H. Hellmann, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 24, 1970, Ser. No. 31,692
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.5 **3 Claims**



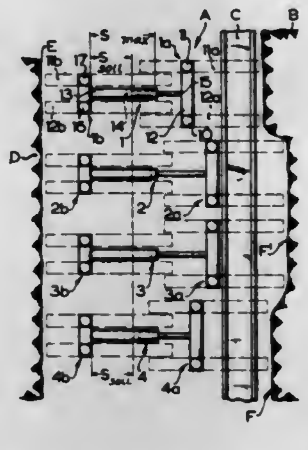
An auxiliary brake control for a driver training car which includes a slave cylinder unit installed between the usual master cylinder and the brake booster, or the master cylinder and the service pedal push rod in a manual brake system. An auxiliary brake pedal and hydraulic cylinder actuable by a passenger provides fluid pressure to the slave unit for brake actuation independently of the usual brake pedal.

3,606,757
METHOD FOR LAYING PIPE
Lloyd De Weese and Marilyn Langston De Weese, both of 6280 Garber Road, Dayton, Ohio 45415
Original application June 21, 1967, Ser. No. 647,692, now Patent No. 3,496,727, dated Feb. 24, 1970. Divided and this application Aug. 8, 1969, Ser. No. 848,618
Int. Cl. E02d *5/02, 5/06*
U.S. Cl. 61—41 **5 Claims**



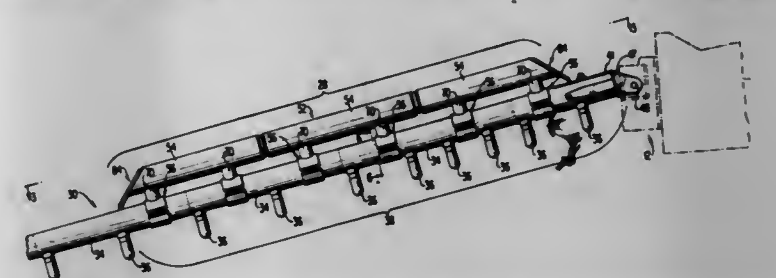
Method for laying large diameter concrete pipe in an excavation of minimum width with maximum safety provided for the personnel laying the pipe includes the steps of digging a partial trench, inserting an excavating cage therein, completing the ditch and lowering sliding individual cantilevered shear members to reinforce the side walls of the trench, laying the pipe and digging an adjacent partial trench, raising the shear members and advancing the cage into the adjacent partial trench and then repeating the cycle. The excavating cage is a rigid frame having a large unobstructed center to permit completion of the excavation therein with a back hoe. The vertically slidable shear members are rigidly supported in guide slots and are capable of withstanding the substantial pressures in their extended position without being cross braced, and a rear shield is provided to permit back filling of the excavation.

3,606,758
HYDRAULIC PIT PROP ARRANGEMENTS
Wilhelm Gotze, Essen, Germany, assignor to Bergwerksverband GmbH, Essen, Germany
Filed Feb. 12, 1969, Ser. No. 798,608
Claims priority, application Germany, Feb. 28, 1968, P 15 83 794.2
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 **4 Claims**



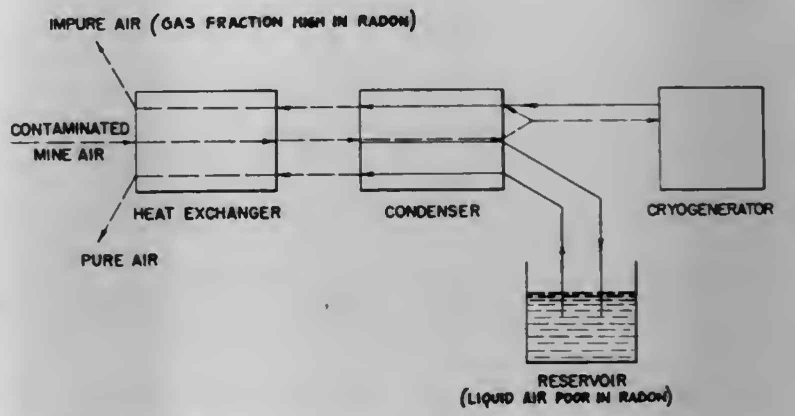
A hydraulic pit prop arrangement, the pit props of which make up units at the working face and at a stowing face, these units being automatically advanced by means of at least one thrust ram mechanism, wherein the pit prop units are combined into structures having units operative at the working face and at the stowing side, and these structures are associated in groups under the control of two control circuits, a main control circuit whereby the working face units within a group are automatically advanced in accordance with the changing contours of the working face and a subordinate control circuit whereby the stowing side units are successively advanced by the same predetermined distance.

3,606,759
PIPELAYING SYSTEM UTILIZING AUXILIARY RAMP MEANS
Joe C. Lochridge, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.
Filed July 16, 1970, Ser. No. 55,528
Int. Cl. B63b *35/04;* **F16l** *1/00*
U.S. Cl. 61—72.3 **17 Claims**



A method and apparatus for use in a pipelaying operation utilizing primary ramp means adapted to be pivotally attached to a floating vessel and including primary support means to buoyantly and slidably support a leading portion of pipeline depending from the floating vessel into a body of water. Auxiliary ramp means, including auxiliary support means for slidably supporting a trailing portion of the pipeline, is carried by the primary ramp means adjacent the end pivotally attached to the vessel. The primary and auxiliary support means are offset, with the auxiliary support means defining at the portion adjacent the primary support means an inflection point for the pipeline slidably moving from one support means to the other. Attachment of the auxiliary ramp means to the primary ramp means is accomplished through resilient mounting so as to permit relative lateral and vertical movement between the two and so as to isolate the load on the primary ramp means from the auxiliary ramp means. The auxiliary ramp means may include longitudinally separated, tubular sections independently carried by tubular sections of the primary ramp means and flange means may be provided to bridge space between each auxiliary section end and between those ends and the primary ramp means.

3,606,760
METHOD FOR PURIFICATION OF RADON-CONTAINING AIR
William P. Howell, 5941 Crestmont Ave., Livermore, Calif. 94550
Filed Feb. 29, 1968, Ser. [illegible],278
Int. Cl. F25j *1/02, 3/0[illegible]*
U.S. Cl. 62—11 **11 Claims**


IMPURE AIR (GAS FRACTION HIGH IN RADON)
CONTAMINATED MINE AIR
HEAT EXCHANGER
CONDENSER
CRYOGENERATOR
PURE AIR
RESERVOIR (LIQUID AIR POOR IN RADON)

Radon-containing mine air is purified by partially condensing impure air, discarding the uncondensed fraction as waste, and vaporizing the liquid fraction to form a purified air fraction.

3,606,761

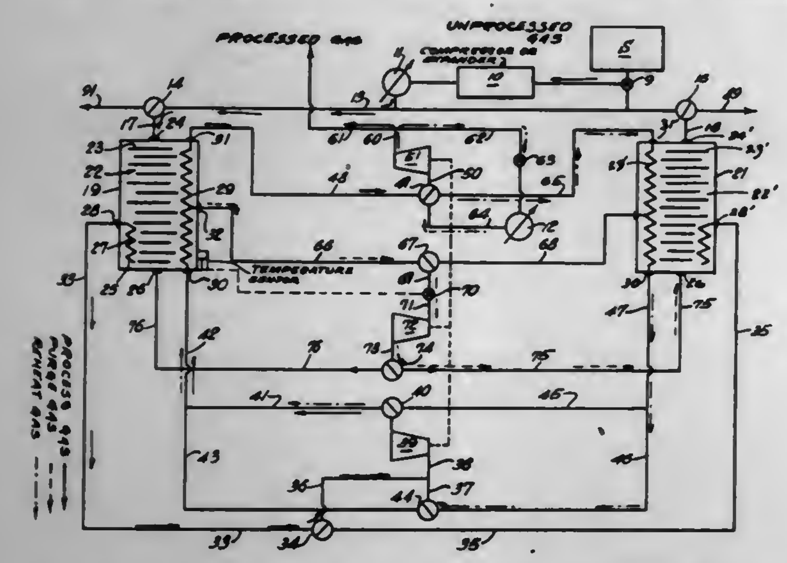
METHOD AND APPARATUS FOR CRYOGENIC GAS SEPARATION

James R. Muenger, Beacon, and David L. Alexander, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 28, 1968, Ser. No. 740,963

Int. Cl. F25j *1/00, 3/00, 3/08*

U.S. Cl. 62—12 **13 Claims**



The invention relates to a method and apparatus for the continuous removal of higher boiling point constituents from a process gas stream containing such constituents. It relates particularly to a process for the purification or enrichment of a gas by cryogenic condensation of the higher boiling point constituents from the gas stream, which condensate is transferred to a minor stream of the purified gas at substantially atmospheric pressure in a purging step. The refrigeration necessary to drive the cryogenic system is furnished by a moderate expansion of the purified gas and a further expansion of the purge gas. The refrigeration potential, represented by the latent heat of the condensate, is conserved by a recycle stream of the purified gas.

3,606,762

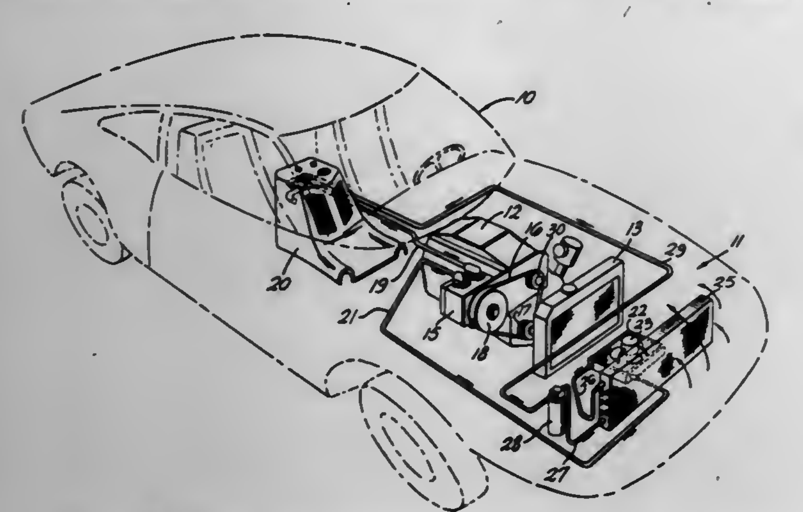
METHOD AND APPARATUS FOR AIR CONDITIONING AUTOMOBILES AND THE LIKE

Paul E. Anglin and William E. Anglin, Dallas, Tex., assignors to William E. Anglin, Paul E. Anglin, and Trammell Crow Investment Company, all of Dallas, Tex., fractional part interest to each

Filed Oct. 24, 1969, Ser. No. 869,114

Int. Cl. B60h *3/04*

U.S. Cl. 62—61 **7 Claims**



This automobile air conditioning system utilizes a refrigerant condenser system, preferably of the relatively flat interconnected compartment type, or if desired the conventional tubular type, mounted in front of the automobile radiator, preferably spaced a considerable distance forward of same, with an additional section for receiving the superheated refrigerant gas direct from the compressor. Independent means are provided for forcing cooling air through this additional section and generally out below the automobile radiator so as to not disturb the normal engine cooling operation of the latter. The thus precooled refrigerant then passes through said refrigerant condenser preferably well forward of and in front of the automobile radiator, with the refrigerant gas condensation being substantially completed in this condenser ready for delivery to and through the conventional refrigerant expansion valve and evaporation chamber of the air conditioning system.

3,606,763

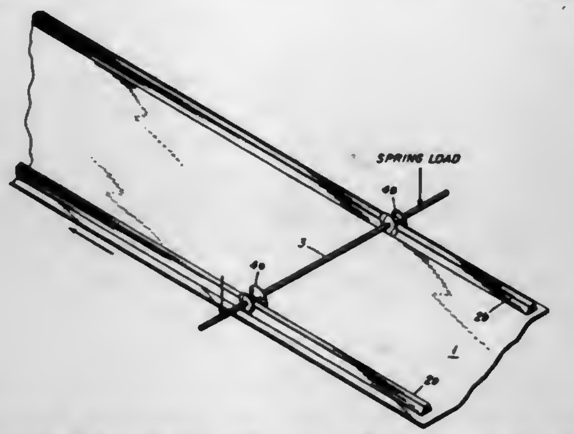
METHOD OF FREEZING LIQUID ON A BELT AND APPARATUS FOR ACCOMPLISHING SAME

Lyndon Gene Bevins, Houston, Tex., assignor to General Foods Corporation, White Plains, N.Y.

Filed May 28, 1969, Ser. No. 828,622

Int. Cl. F25c *1/12*

U.S. Cl. 62—72 **8 Claims**



It has been discovered that the efficiency of a process wherein extract is frozen on a continuous belt can be greatly increased by mechanically separating the extract from the side skirts used to contain the extract. The separation is performed when the extract is in a semisolid state. The process of this invention minimizes product loss and prevents costly shutdowns due to torn side skirts. A scraper wheel has been designed which effectively accomplishes the mechanical separation.

3,606,764

AUTOMATIC CLUTCH CONTROLLING SYSTEM FOR REFRIGERATING APPARATUS INSTALLED IN AUTOMOBILE

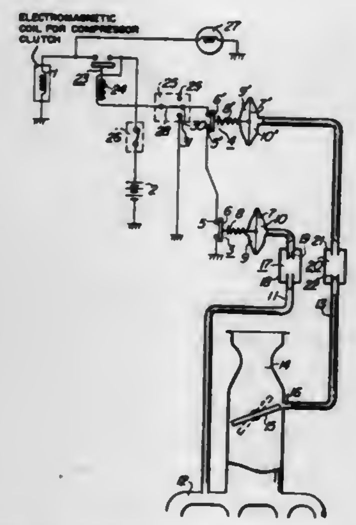
Naotadashi Yokouchi and Tosikatu Ito, Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1969, Ser. No. 817,113

Claims priority, application Japan, Apr. 24, 1968, 43/33,013; May 22, 1968, 43/34,628; Aug. 26, 1968, 43/72,805

Int. Cl. F25b *27/00*

U.S. Cl. 62—213 **5 Claims**



An automatic clutch controlling system for refrigerating apparatus installed in an automobile, including a first switch means adapted to be opened and closed in accordance with an eased change in a depression occurring in an intake manifold, and a second switch means adapted to be opened and closed in accordance with a change in a depression occurring in the neighborhood of a throttle valve of carbureter, said first and second switch means being inserted in an energization circuit associated with the coil of an electromagnetic clutch for connecting the compressor of the refrigerating apparatus installed in the vehicle with the engine to thereby disengage said electromagnetic valve for the purpose of stopping the driving of the refrigerating apparatus during the idling, quick-accelerating and high-power running operations.

3,606,765

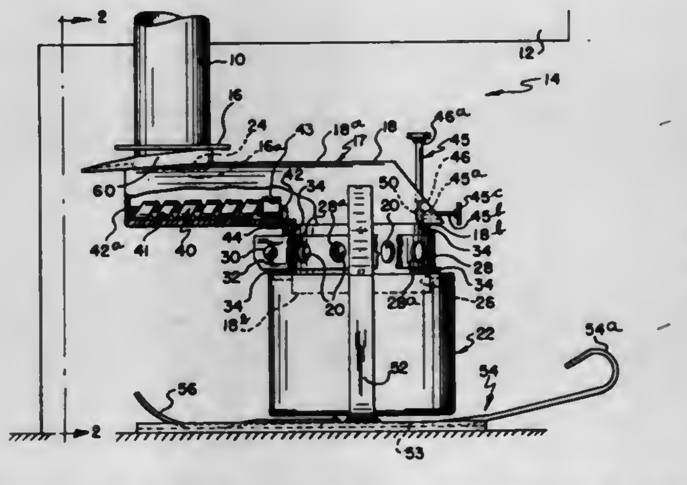
CANNED FUEL ADAPTER FOR ABSORPTION-TYPE REFRIGERATION UNIT

Carl F. Schmidt, 3999 Green St., Perry, Ohio 44081

Filed June 23, 1969, Ser. No. 835,448

Int. Cl. F25b *15/00;* **F24b** *5/00*

U.S. Cl. 62—476 **9 Claims**



A canned fuel adapter mechanism for mounting a container of canned liquid fuel thereto and providing for positioning of such canned fuel into heat transferring coaction with the generator of an absorption-type refrigeration unit, for operating the latter. The adapter comprises a combustion section and a duct section for transmittting the heat from a container of the burning fuel to the generator of the refrigeration unit, and includes means for quickly positioning the container of fuel in coacting relationship with the generator heat inlet pipe usually found underneath the refrigeration unit.

3,606,766

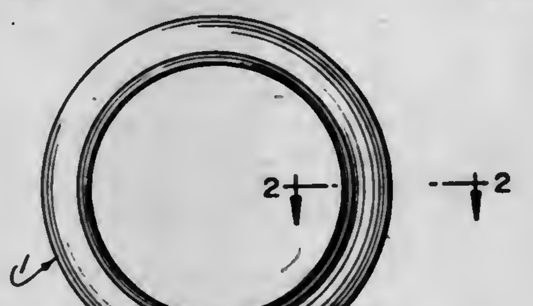
GOLD FINGER ARTICLE COMPOSED OF COMPRESSED AND SINTERED FINE GOLD POWDER AND A REFRACTORY OXIDE

James S. Hill, Cranford, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Filed June 26, 1969, Ser. No. 836,735

Int. Cl. A44c *9/00*

U.S. Cl. 63—15 **5 Claims**



A gold finger ring composed of compressed and sintered fine gold powder having uniformly dispersed therethrough from 0.03% to 0.2% of refractory oxide particles having a size between 0.5 and 5 microns.

3,606,767

WEDDING RING WITH DEFORMABLE MEANS FOR REDUCING OR INCREASING SIZE

Jean Edouard Victor Auchere, 11 Rue du Val, Provins, Seine-et-Marne, France, and Bernard Claude Henri Auchere, 2 Rue du General Delestraint, Rosny-sous-Bois, Seine Saint Denis, France

Filed Dec. 22, 1969, Ser. No. 887,123

Int. Cl. A44c *9/02*

U.S. Cl. 63—15.5 **2 Claims**

Wedding-ring set with brilliants and having an annular deformable portion at its inner periphery which can be reduced or increased in inner diameter with the help of a machine for enlarging rings.

3,606,768

PARALLEL SHAFT COUPLING

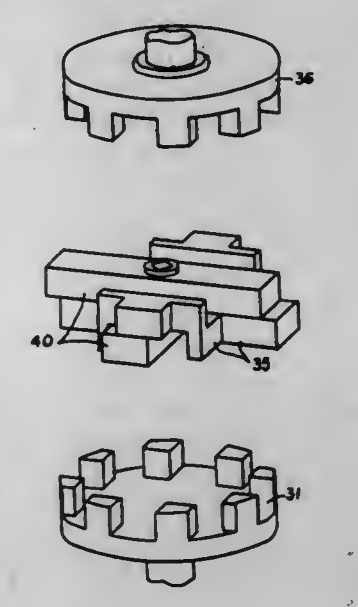
Ernest Wildhaber, Brighton, N.Y.

(124 Summit Drive, Rochester, N.Y. 14620)

Filed Nov. 26, 1969, Ser. No. 880,097

Int. Cl. F16d *3/24*

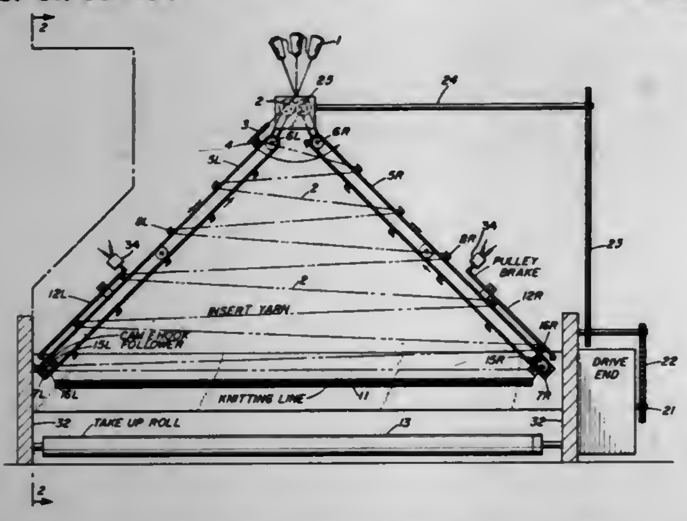
U.S. Cl. 64—31 **10 Claims**



This coupling for parallel shafts comprises two coupling members rigid with said shafts and intermediate means for connecting them. Straight radial guideways are provided either on the coupling members or on the intermediate means. A single intermediate part working through said guideways causes dynamic unbalance. The invention provides two intermediate parts movable at right angles to each other on each coupling member, achieving mass-balance and increased load capacity. Friction is minimized with cylindrical rollers adapted to contact both sides of the guideways engaged thereby.

3,606,769
CONTINUOUS WEFT FEED FOR WARP KNITTING MACHINES

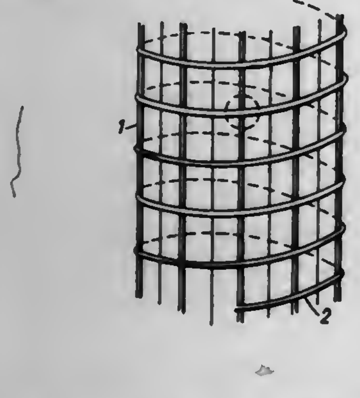
Richard L. Walford, Bloomfield, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed June 16, 1969, Ser. No. 833,402
Int. Cl. D04b *23/12*
U.S. Cl. 66—84 **14 Claims**



A continuous insert yarn feed for warp knitting machines is provided with two inclined chains leading to the ends of the knitting line, each chain carrying pulleys with tops or hats having a pointed extension. Insert yarn is fed from one or more packages to a reciprocating arm which carries the yarn around the pulleys on the outside of the chains in a zig-zag fashion. The yarn is around the pulley underneath the hat until it reaches a bottom sprocket in each chain, these sprockets being adjacent to the knitting line of the machine. As the pulleys on the chains turn around the bottom sprocket, the insert yarn is lifted onto the hat and on further turning slips off. The last motion around the right or left hand lower sprockets releases tension on the insert yarn as it is laid at the knitting line beside the warps. Knitting of the warps is by conventional means, including warp thread guides, needles, sinker bars, and the like. Brakes may be provided, for example a flat bar with a soft rubber lining which bears against the pulleys near the bottom of each chain. This prevents the pulleys from overrunning, particularly when a machine is slowing to a stop. With very fragile insert yarns or those which can stretch very easily, the brake can, if desired, be normally kept out of contact with the pulleys when the machine is operating and only engage them when it is slowing down.

3,606,770
SEAMLESS TUBULAR NET AND METHOD OF MAKING THE SAME

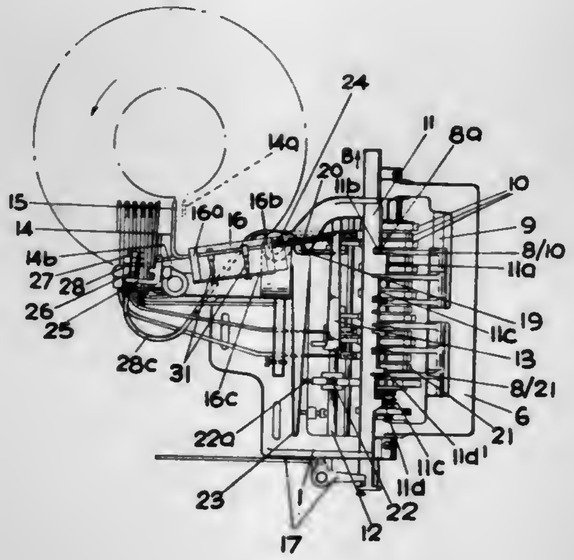
Karl Kohl, Offenbacher Landstr. 20, Hainstadt am Main, Germany
Filed Dec. 18, 1968, Ser. No. 784,835
Claims priority, application Germany, Dec. 20, 1967, P 16 35 875.1
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 **2 Claims**



A seamless tubular net is made on a wrap knitting machine having two needle beds and three guide bars, the yarns of two bars knitting warp chains, and the third guide bar laying-in a yarn to connect the chains in two layers. The laid-in yarn is shifted stepwise in a walewise direction so that it forms a helix in the finished net. The circumferentially consecutive portions of the laid-in yarn connect chain stitches in the same course so that the several turns of the helix are bound to stitches in the same chain which are separated by stitches free from laid-in yarn.

3,606,771
YARN FEEDER CONTROL MECHANISM FOR CIRCULAR KNITTING MACHINES

Roland Peberdy, Wigston Magna, Leicester, England, assignor to The Bentley Engineering Company Limited, Leicester, England
Filed Sept. 11, 1968, Ser. No. 759,151
Claims priority, application Great Britain, Sept. 27,1967, 43,894/67
Int. Cl. D04b *15/58, 15/60*
U.S. Cl. 66—133 **9 Claims**



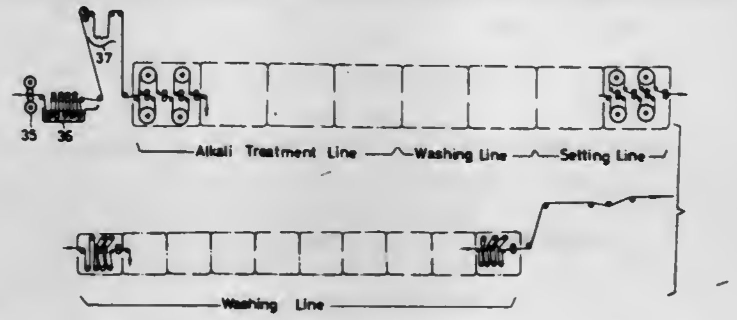
A yarn feeder control mechanism in a circular knitting machine comprising a swivelling holder supporting a plurality of yarn feeders and means for swivelling the holder during introduction and withdrawal of feeders so as to avoid fouling open needle latches, has provided in association with one of the feeders, means for moving that feeder individually out of the range of open needle latches during its introduction and means for simultaneously preventing operation of the holder swivelling means. Such provision enables a supplementary (e.g. elastic) yarn to be introduced when setting up fabric on the needles.

3,606,772
APPARATUS FOR TREATING CLOTH

Yoshikazu Sando and Hiroshi Ishidoshiro, Wakayama-ken, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama-ken, Japan
Original application May 16, 1967, Ser. No. 638,971. Divided and this application Dec. 11, 1968, Ser. No. 782,890
Int. Cl. D06f *15/00*
U.S. Cl. 68—9 **2 Claims**

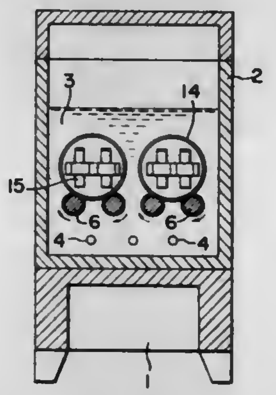
Apparatus for treating cloth is comprised of a pair of rollers, with at least one of the rollers having grooves formed in its circumferential periphery. The grooves may extend in parallel relationship with or transversely to the axis of the roller. Preferably, the grooved roller is formed of a hard substance and the other roller of a relatively softer substance whereby when the cloth is passed between the two, the grooves in the grooved roller exert a

lateral tensioning effect on the cloth. Further, the rollers may be arranged in combination with solution tanks for passing the cloth through the tanks and concurrently laterally and longitudinally tensioning the cloth.



3,606,773
TEST DYEING APPARATUS

Kunio Tabata, Fukui-ken, Japan, assignor to Fukui Seiren Kako Kabushiki Kaisha, Fukui-ken, Japan
Filed July 18, 1969, Ser. No. 842,930
Claims priority, application Japan, July 20, 1968, 43/62,328
Int. Cl. B05c *3/08*
U.S. Cl. 68—15 **4 Claims**

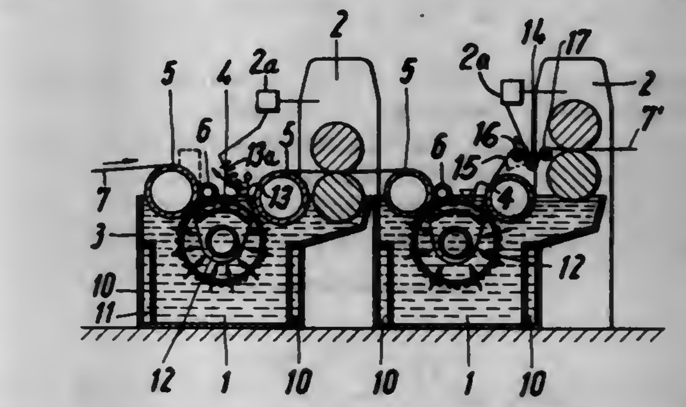


Test dyeing apparatus comprising a frame, at least two driving rolls rotatably supported on said frame in a horizontal plane in parallel relationship at suitable distances, means for driving said driving rolls, hollow drums each adapted to be put on a pair of said adjacent driving rolls and held in tangential contact therewith so as to be driven thereby and tubular dyeing tanks for containing dyeing solution and material to be dyed, each of said tubular dyeing tanks being adjustably supported in said hollow drum so that the former may be set at a desired angle relatively to the latter.

3,606,774
APPARATUS FOR THE CONTINUOUS WET-TREATMENT OF MATERIAL LENGTHS AND SILVER-TYPE MATERIALS

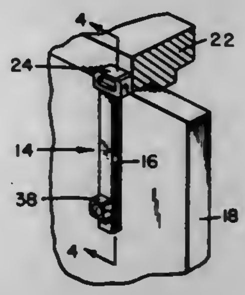
Heinz Fleissner, Egelsbach, near Frankfurt am Main, Germany, assignor to Fleissner GmbH
Filed Nov. 29, 1968, Ser. No. 786,006
Claims priority, application Germany, Nov. 29, 1967, P 16 35 111.4
Int. Cl. B05c *3/134, 3/136, 3/138*
U.S. Cl. 68—22 **18 Claims**

The present disclosure is directed to a process and apparatus for the continuous wet-treatment of textile materials which comprises introducing the material to be treated in radial loops onto the surface of a perforated conveying element, said conveying element being submerged in a treatment liquid, conveying the material being treated through the treatment liquid on the surface of said conveying element while simultaneously drawing the treatment liquid through the material from the outside of the conveying element to the inside thereof so that the material is penetrated by said treatment liquid and held to the conveying element, squeezing the material removed from the conveying element and controlling the speed of the conveying element and the speed of the squeezer. The speed of the conveying element and the squeezer is controlled by a measuring unit disposed between the conveying element and the squeezer, said measuring unit acting upon a regulating element.



3,606,775
SURFACE BOLT

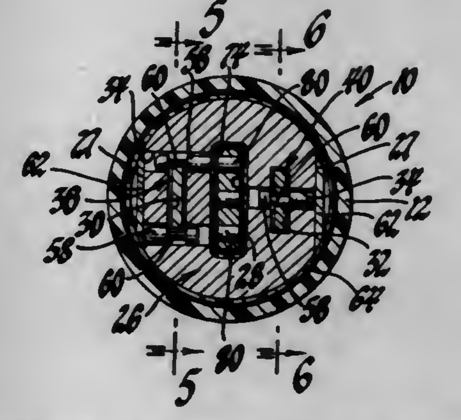
Norman C. Atkins, Franklin Park, Ill., assignor to Glenraven Corporation, Chicago, Ill.
Filed Aug. 17, 1970, Ser. No. 64,238
Int. Cl. E05b *65/06*
U.S. Cl. 70—129 **22 Claims**



The lock housing of the slidable bolt member of a surface bolt constitutes a handle by which the bolt is manually shiftable from extended, locked to retracted, unlocked positions, the lock housing containing a lock mechanism adapted to secure the bolt in either a fully locked or in a fully unlocked position only when the key to the locking mechanism has been removed from the lock.

3,606,776
LOCK ASSEMBLY

George Drach, Jr., Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 17, 1970, Ser. No. 29,533
Int. Cl. E05b *27/00, 47/00*
U.S. Cl. 70—276 **4 Claims**

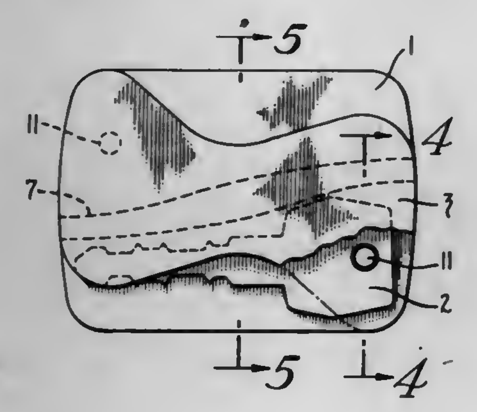


A lock assembly secure against unauthorized manipulation and against the intrusion of foreign matter and moisture, the assembly including a generally cylindrical non-magnetically sensitive core having a key slot therein and slidably carrying a pair of non-magnetically sensitive locking bars and a plurality of magnetic tumblers operable to impede bodily shiftable movement of the locking bars. The core is enclosed in a magnetically pervious jacket fabricated from a moisture resistant material such as Teflon which jacket lines the key slot. A magnetically coded key is operable to bodily shift the tumblers to release the locking bars and is subsequently operable to bodily shift the locking bars into coupling engagement with an operating member so that the core and the operating member are unitarily rotatable.

3,606,777

KEY HOLDER

Jack C. Watson. 626 N. President, Wheaton, Ill. 60187
Filed Aug. 12, 1970, Ser. No. 63,132
Int. Cl. A47g *29/10*
U.S. Cl 70—458 **7 Claims**

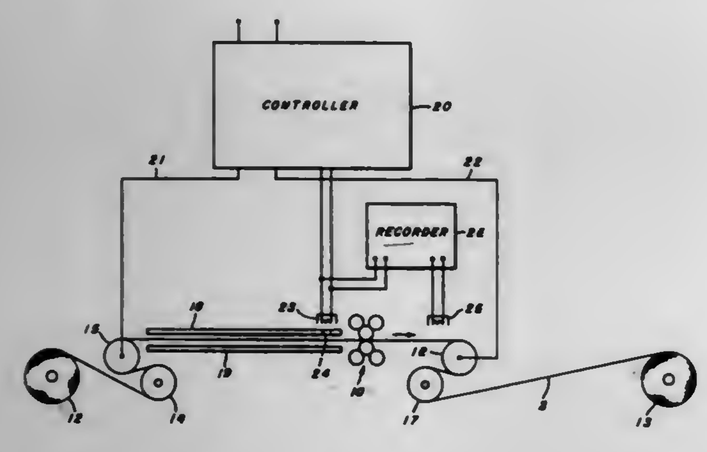


A key holder formed in a single plastic piece including a central flat rectangular portion connected to a pair of flat outer flexible key enclosing members by narrow web portions to form four key receiving compartments. Key pivot protrusions are formed each side of the central portion to locate and hold keys inserted into each compartment. The outer members are cut away to provide access to key in the compartment.

3,606,778

METHOD AND APPARATUS FOR WARM-ROLLING METAL STRIP

Howard B. Bomberger, Jr., Canfield, Ohio,
assignor to Reactive Metals Inc.
Filed June 17, 1968, Ser. No. 737,483
Int. Cl. B21b *37/00, 27/06*
U.S. Cl. 72—13 **10 Claims**

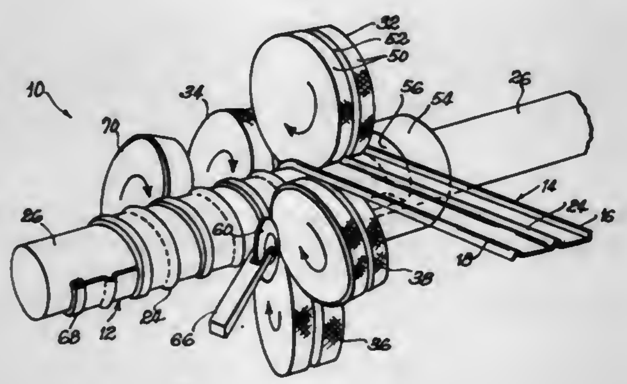


A method and apparatus for warm-rolling metal strip at an intermediate temperature of about 300 to 1400 F. The strip is contacted electrically at opposite sides of a roll stand, and thus heated by electric resistance. Temperature is sensed near the entry side of roll stand and used to control current input to strip to maintain the proper temperature.

3,606,779

MACHINE FOR MAKING METAL TUBES

Domenico Parma, Apartado Aereo 14600,
Bogota, Colombia
Filed Feb. 24, 1969, Ser. No. 801,551
Int. Cl. B21c *37/12*
U.S. Cl. 72—49 **2 Claims**

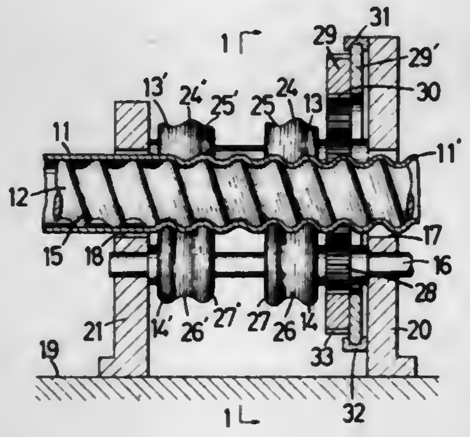


A series of drive rollers are provided to feed a metal strip along a helical path around a rotating mandrel. The strip has an upstanding longitudinal flange along one edge thereof and a U-shaped longitudinal flange along the other edge, adapted to interlock with the upstanding flange. The strip is also formed with an intermediate longitudinal convolution so that the tube will be flexible. The drive rollers are driven at a surface speed greater than that of the mandrel and are angled in accordance with the helical pitch angle of the strip. A stationary member with a helical surface is disposed around the mandrel to guide the edge of the strip. The flanges are interlocked and then bent inwardly at an angle between a thin conical roller and one of the drive rollers which has a frusto-conical surface. The bent flanges are flattened by a roller which is angled more sharply than the drive rollers.

3,606,780

METHOD FOR MANUFACTURING HELICAL PIPE FOR HEAT EXCHANGERS

Kichisaburo Nagahara, 28 Yamamoto-cho Kita, 1-chome,
Yao, Japan
Filed Nov. 18, 1968, Ser. No. 776,366
Claims priority, application Japan, Nov. 28, 1967,
42/76,626; June 28, 1968, 43/45,500
Int. Cl. B21d *13/04*
U.S. Cl. 72—77 **2 Claims**

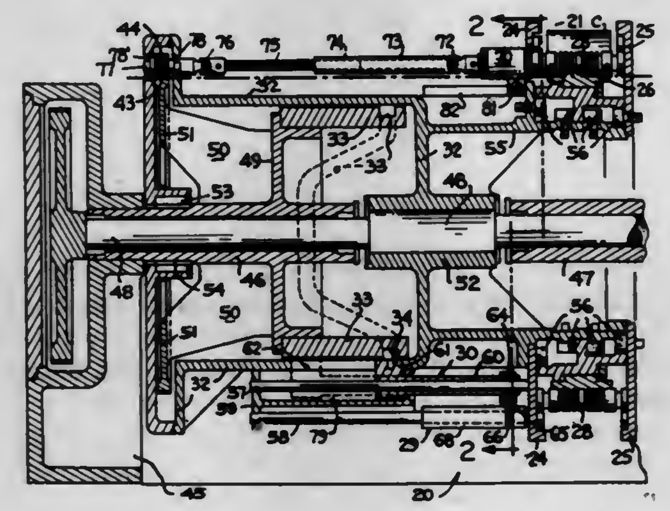


A method for forming helical corrugated pipe. A cylindrical pipe is moved along a line corresponding to the axis thereof over a metal core having a helical groove therein, and forming rollers are revolved around the pipe forming it against the core. The pipe can be revolved during the time it is fed along the core.

3,606,781

IDENTICAL PITCH-LINE VELOCITY TRANSMISSION MEANS FOR APPARATUS FOR FORMING BEADS ON CYLINDRICAL CAN BODIES

Dirk Vanderlaan, Alameda, Calif., assignor to
Borden, Inc., New York, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,197
Int. Cl. B21d *15/06, 19/00*
U.S. Cl. 72—94 **9 Claims**

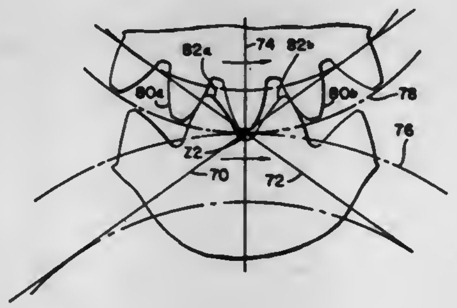


A non-slip, scratch proof medium for both the inner and outer surfaces of cylindrical can bodies as they are rolled between an internal beading die and a bead forming rail of a bead forming apparatus entailing disposing the can body at its point of tangent contact with the internal die and beading rail as close as possible to the pitch line of the main drive mechanism and enabling transmission of identical pitch-line velocity to the internal die despite its radial shifting due to the thickness of the can body material.

3,606,782

GEAR ROLLING METHOD AND APPARATUS

Warren C. McNabb, Detroit, and David W. Daniel, Birmingham, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Dec. 8, 1969, Ser. No. 883,037
Int. Cl. B21h *5/02*
U.S. Cl. 72—108 **15 Claims**

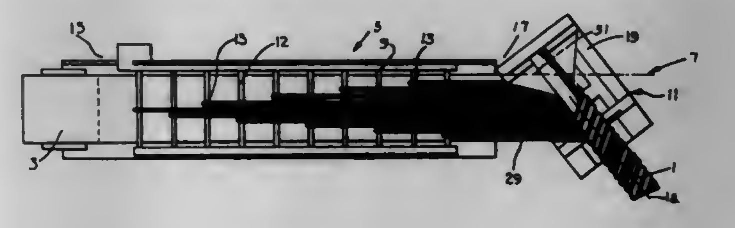


Gear rolling employing a gear-like die designed to operate with a work gear such that the operating pitch diameter lies outside or substantially outside the involute profile of the gear teeth, either radially outwardly beyond the involute profile or radially inwardly thereof.

3,606,783

SEGMENTED ROLL FOR FORMING HELICALLY CORRUGATED PIPE

Clarence P. Lewis, Carlisle, Ohio, assignor to Armco
Steel Corporation, Middletown, Ohio
Filed Apr. 1, 1969, Ser. No. 811,972
Int. Cl. B21c *37/12;* **B21f** *3/02;* **B23k** *31/00*
U.S. Cl. 72—135 **11 Claims**

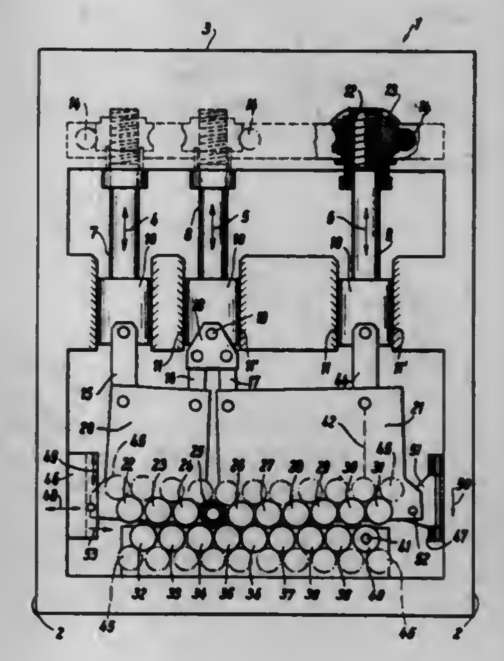


An improved segmented roll for forming helically corrugated pipe by curling an elongated strip of sheet metal having longitudinally extending, alternating ridges and valleys therein, into a helical convolution.

3,606,784

PANEL STRAIGHTENING MACHINE FOR THIN GAUGE SHEET METAL

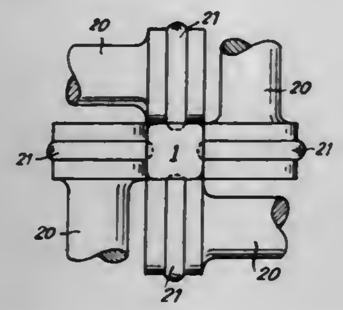
Walter Schlüter, Geesthacht, Germany, assignor to Wilhelmsburger Maschinenfabrik Hinrichs & Sohn, Geesthacht, Germany
Filed Apr. 16, 1969, Ser. No. 816,601
Claims priority, application Germany, Apr. 20, 1968,
P 17 52 211.1
Int. Cl. B21d *1/02*
U.S. Cl. 72—165 **7 Claims**



A panel straightening machine for thin gauge sheet metal is provided which comprises groups of upper straightening rolls mounted in two chocks tiltable about a common hinge at the bottom ends of their neighbouring sides, whereas the top of each chock is hingeably attached to two and preferably at least four press rods permitting the chocks to be adjusted by deflection about their common hinge.

3,606,785
APPARATUS AND METHOD FOR ELIMINATING OR REDUCING THE INTERNAL FLAWS OF SEMIFINISHED PRODUCTS, ESPECIALLY AT CAST INGOTS, BLOCKS, BLOOMS, SLABS, BILLETS OR THE LIKE

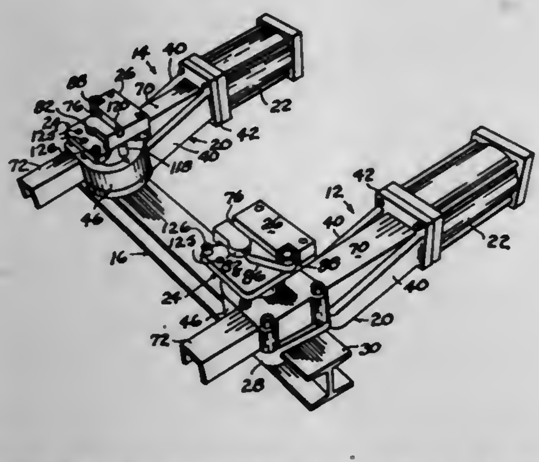
Erik A. Olsson, Kusnacht, Switzerland, assignor to Erik Olsson AG, Zurich, Switzerland
Filed Aug. 9, 1968, Ser. No. 751,484
Claims priority, application, Germany, Aug. 12, 1967, P 16 02 127.5
Int. Cl. B23p *17/00, 25/00*
U.S. Cl. 72—199 5 Claims



The invention discloses an apparatus and method for eliminating or at least reducing the internal flaws of semifinished products, especially at cast ingots, blocks, blooms, slabs, billets or the like. The inventive method comprises the steps of exerting a pressing force at only portion of at least one side surface of the semifinished product, and compressing the inner portions of the semifinished product by means of said pressing force, so that the portions of the semifinished product which have not been subjected to the pressing force provide resistance against a change in shape of the semifinished product, and therefore, at least partially prevent an elongation of such semifinished product. The inventive apparatus for the performance of the aforesaid method comprises means providing a pressing force-exerting edge which is smaller than the width of the surface of the semifinished product.

3,606,786
SINGLE BAR MODULE BENDER

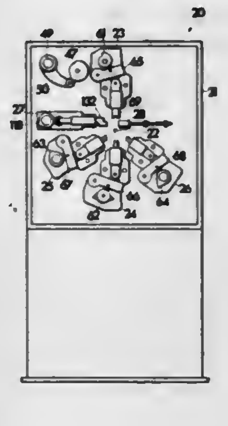
Julian S. Taylor, P.O. Box 152, Kingfisher, Okla. 73750
Filed Apr. 17, 1969, Ser. No. 817,043
Int. Cl. B21d *11/04*
U.S. Cl. 72—321 4 Claims



A bending machine including a rotatable shaft secured to one end of a pitman. Means on the bending machine loosely positions an end portion of a rod to be bent with the longitudinal axis of the rod extending diametrically across the axis of the shaft and forms an arcuate bending shoulder having its axis off-set laterally and toward the other end of the rod with respect to the free end of the pitman. Means on the free end of the pitman, on that side of the rod to be bent opposite the bending shoulder, force bends the rod around the bending shoulder in response to rotation of the shaft in one direction.

3,606,787
PROCESS FOR MANUFACTURE OF SPRING PINS HAVING A WAVE-SHAPED GROOVE AND APPARATUS THEREFOR

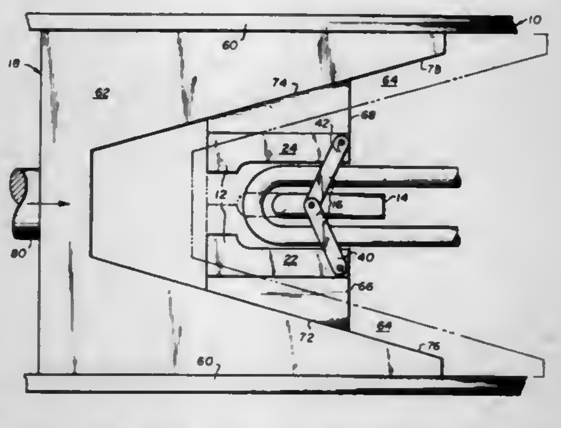
Yozaburo Umehara, 2–8–6 Skakujii, Nerima-ku, Tokyo, Japan
Filed Dec. 31, 1968, Ser. No. 788,128
Claims priority, application Japan, Nov. 28, 1968, 43/87,166
Int. Cl. B21d *39/02*
U.S. Cl. 72—337 1 Claim



A process and apparatus for producing spring pins by automatically cutting into a predetermined length a length of rectangular plate blank so as to have a wave-shaped cut edge and winding the blank into the pin shape. The apparatus includes a mandrel which serves as a core around which is wound the blank, four tool posts each having one movable die respectively disposed outwardly peripherally and radially of said mandrel, a control device disposed upon the front side of the machine frame upwardly and to the left of said mandrel having a movable controlling member and a guide stand disposed upon the front side of the machine frame upwardly and to the right of said mandrel for guiding said blank, whereby the leading edge of the blank transferred along the guide stand is abutted against the controlling member so as to control the length of cut, thereafter the blank is cut into a predetermined length so as to have a wave-shaped cut edge by a pair of mating corrugated cutters formed on the opposed surfaces of the guide and the die of the tool post, the cut blank is wound around the mandrel by the dies of the tool posts, so as to form a spring pin having a wave-shaped groove and finally the mandrel is retracted so as to automatically drop thus formed spring pin.

3,606,788
SHORT-RADIUS SQUEEZE BENDING APPARATUS

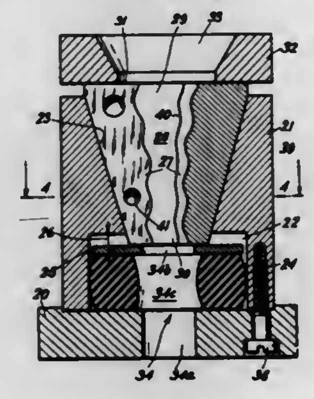
Raymond C. Whitman, Wayland, N.Y., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Oct. 14, 1969, Ser. No. 866,200
Int. Cl. B21d *7/04*
U.S. Cl. 72—389 3 Claims



A squeeze bending apparatus in which a tube blank, previously fabricated with a relatively wide bend, is formed with a short radius tube bend. An inner die is operatively connected between a pair of outer dies for conjointly bringing the dies together at a uniform rate of movement such that short radius bends can be uniformly fabricated.

3,606,789
APPARATUS FOR MANUFACTURING A PUMP SPINDLE

Karel Kozusnik, Olomouc, Czechoslovakia, assignor to Sigma Lutin, narodni podnik, Olomouc, Czechoslovakia
Filed Apr. 9, 1969, Ser. No. 814,715
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 5 Claims

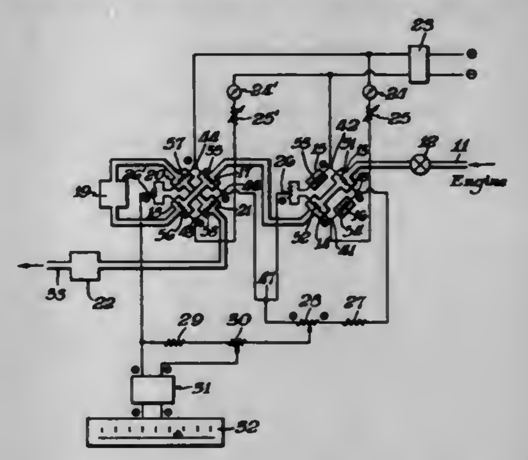


A pump spindle has a screw-shaped configuration and is in the form of an elongated hollow tube of small wall thickness, carrying at one end a means through which a drive is transmitted to the pump spindle. The tube is given its required configuration by means of pressing jaws which press inwardly against the tube and which are suitably shaped so as to achieve the desired helical configuration of the hollow pump spindle. These jaws are supported not only for axial movement but also for radial movement toward and away from a given axis along which the tube is advanced and around which the tube is rotated, so that by advancing the tube in steps synchronized with the movement of the shaping jaws there will issue from an apparatus for manufacturing the pump spindle a tube of required configuration from which a section of predetermined length can be cut. Thereafter, a connecting means is fastened to one end of the thus cut tube to be able to transmit a drive to the tube through the connecting means.

3,606,790
METHOD FOR MEASURING AIR-FUEL RATIO

Hiroshi Matsumoto and Kenji Goto, Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi Prefecture, Japan
Filed Jan. 21, 1969, Ser. No. 792,430
Claims priority, application Japan, Jan. 23, 1968, 43/3,485
Int. Cl. G01n *27/18*
U.S. Cl. 73—27 1 Claim

Method for measuring air-fuel ratio of combustible mixture by analyzing exhaust gas from engine supplied with mixture comprises steps of comparing thermal conductivity of standard gas with thermal conductivity of gas sample and thereafter obtaining from comparison a first voltage value representative of the H_2 and CO_2 content of the exhaust gas. Thermal conductivity of exhaust gas sample is then compared with exhaust gas sample having no CO_2 content and from comparison second voltage value representative of CO_2 content of exhaust gas sample is obtained. Second voltage value is subtracted from first voltage value to thereby obtain third voltage value representative of air-fuel ratio of combustible mixture. Ratio of second voltage value to first voltage value is constant somewhere between less than ten and more than one.



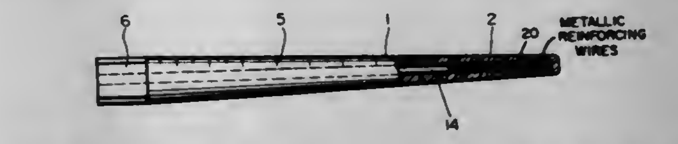
3,606,791
ULTRASONIC INSPECTIONS USING POLYSULFONE RESINS AS COUPLANTS

Richard P. Rathburn, Richmond, and Garth M. Stanton, San Anselmo, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of application Ser. No. 809,029, Mar. 20, 1969. This application Mar. 16, 1970, Ser. No. 20,069
Int. Cl. G01n *24/00*
U.S. Cl. 73—71.5 7 Claims

A process is disclosed for making ultrasonic inspections of high surface temperature objects by using a polysulfone resin as a couplant. Surface temperatures of the object at the point of inspection are 400°–1,100° F. or higher.

3,606,792
THERMOMETER FOR REFRIGERATOR

Tsuyoshi Yoshimoto, 727 Numame, Isehara-machi, Kanagawa, Japan
Filed Feb. 18, 1969, Ser. No. 800,131
Int. Cl. G01k *1/08, 7/04, 6/04*
U.S. Cl. 73—341 9 Claims

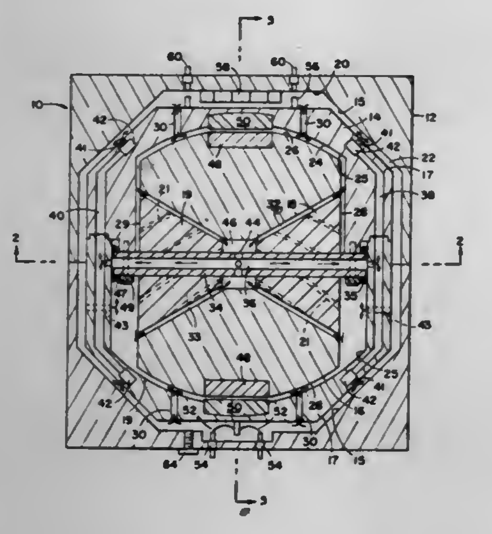


A thermometer for monitoring the temperature of both the inside and the outside of commodities, such as meat, fish, etc., being refrigerated. A hollow probe or a protection tube is made of a fluoro resin such as polytetrafluoroethylene and inserted into the commodities being refrigerated. A thermometer element, such as a thermocouple, a temperature sensitive mercury thermometer element, or a temperature sensitive alcohol thermometer element, is placed in the probe. Temperature indication can be made either at the outlet of the probe or at a centralized control room by feeding signals carrying information related to the output from the thermometer element to the control room.

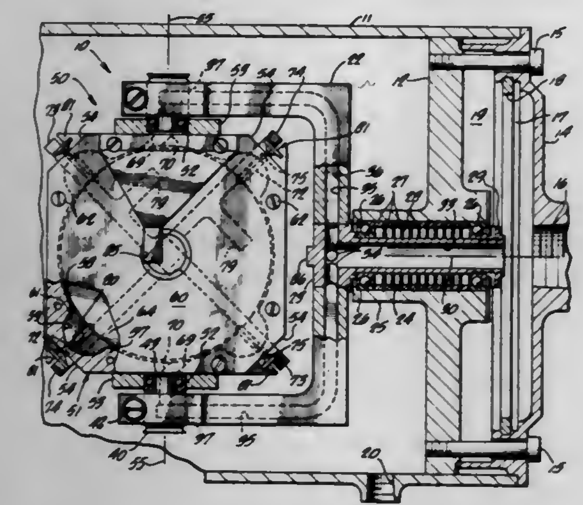
3,606,793
SELF-GENERATING HYDROSTATIC SUPPORT FOR GYROSCOPES

James V. Johnston, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army
Filed Oct. 3, 1969, Ser. No. 863,596
Int. Cl. G01c *19/20*
U.S. Cl. 74—5 7 Claims

A gyroscope having a hydrostatic support for its output axis without the need for externally pressurized systems. The gyro is completely hermetically sealed against all environments to provide an internal gas which will always be clean and can be selected for optimum efficiency of pumping and support. The rotor is provided with internal truncated cone shaped surfaces disposed in spaced relation with conical bearing surfaces of a support member. The bearing surfaces of the support member is provided with a plurality of spiral grooves disposed in communication with the passages (opening) between the rotor and support member. These passages communicate with a plurality of passages between the gyro outer housing and inner cylinder to receive the gas therefrom for support of the rotor. The inner cylinder is also supported on gas disposed in passages provided between the outer housing and inner cylinder.

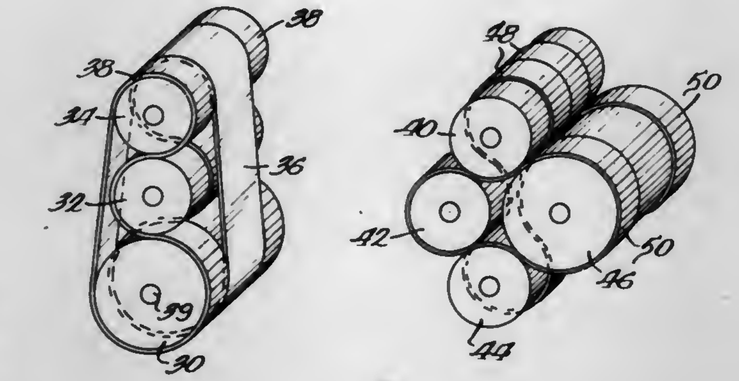


3,606,794
AIR-DRIVEN GYROSCOPE ERECTION SYSTEM WITH SEAL-FREE GIMBAL CONNECTIONS
Irven H. Culver, Playa Del Rey, Calif., assignor to Southwestern Industries, Inc., Los Angeles, Calif.
Filed Apr. 28, 1969, Ser. No. 819,765
Int. Cl. G01c *19/12*
U.S. Cl. 74—5.43 **10 Claims**



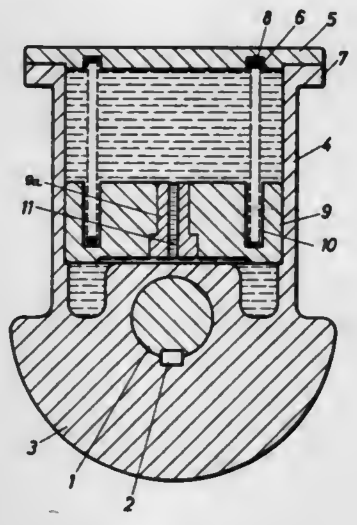
An erecting system for a vertical gyroscope useful in aircraft attitude-indicating instruments and the like. A gimbal-supported housing in the gyro encloses a gyro rotor, and is supplied with air which drives the rotor. Air is exhausted from the housing through four downwardly directed outlet ports at the corners of the housing undersurface. Control vanes are pendulously supported on the housing and extend beneath the outlet ports to intercept the exhaust air streams and thereby impart torques to the gyroscope tending to erect the rotor spin axis into a substantially vertical position. Air passages through outer and inner gimbals supply air to the housing, and the passages are configured so a pressure differential exists across a rotary connection between the inner and outer gimbals. A pressure drop occurs going from the outer gimbal to the inner gimbal or rotor housing, whereby air delivered to the rotor does not tend to leak outwardly through the rotary connection and the need for bulky and friction-producing seals is eliminated.

3,606,795
FRICTIONLESS MECHANICAL MOTION DEVICES
Leonard B. Simons, 516 S. Austin Blvd., Oak Park, Ill. 60304
Filed Sept. 29, 1969, Ser. No. 861,692
Int. Cl. F16h *21/16;* F16c *17/06*
U.S. Cl. 74—25 **3 Claims**



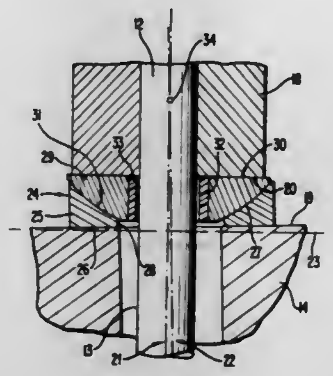
A frictionless mechanical motion device comprising at least two generally cylindrical rollers having their cylindrical axes parallel to each other and at least two flexible bands under tension and engaging portions of the peripheral surfaces of both of the rollers and trained thereabout in non-identical paths to confine the rollers for conjoint relatively frictionless movement.

3,606,796
VIBRATORY SOIL COMPACTING APPARATUS
Rudolf Pappers, Monchen-Gladbach, Germany, assignor to Bopparder Machinenbaugesellschaft m.b.H., am Guterbahnhof, Boppard am Rhine, Germany
Filed June 24, 1969, Ser. No. 836,092
Claims priority, application Germany, June 29, 1968, P 17 84 029.8
Int. Cl. F16h *33/10*
U.S. Cl. 74—87 **4 Claims**



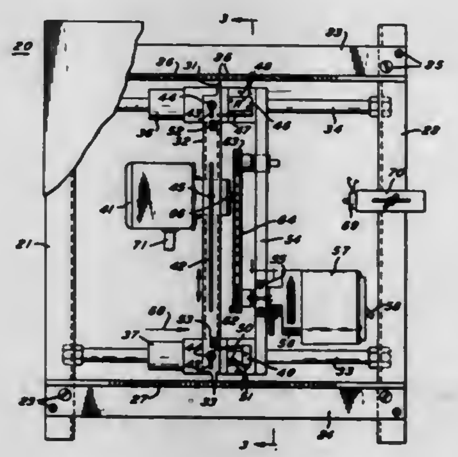
The invention is concerned with an unbalanced centrifugal force generator for a vibratory soil compacting apparatus, the generator comprising a rotary shaft, a first unbalanced eccentric mass mounted on said shaft at a fixed distance from said shaft, a second unbalanced eccentric mass, means mounting said second mass on said shaft for movement radially thereof whereby said second mass can move radially outwardly centrifugally upon rotation of said shaft, and spring means opposing said radial outward movement.

3,606,797
POLISHING ROD ALIGNMENT BEARING IN WELL PUMPING APPARATUS
George G. Browning, Jr., P.O. Box 5791, Longview, Tex. 75601
Filed Sept. 9, 1969, Ser. No. 856,309
Int. Cl. F16h *21/04*
U.S. Cl. 74—102 **8 Claims**



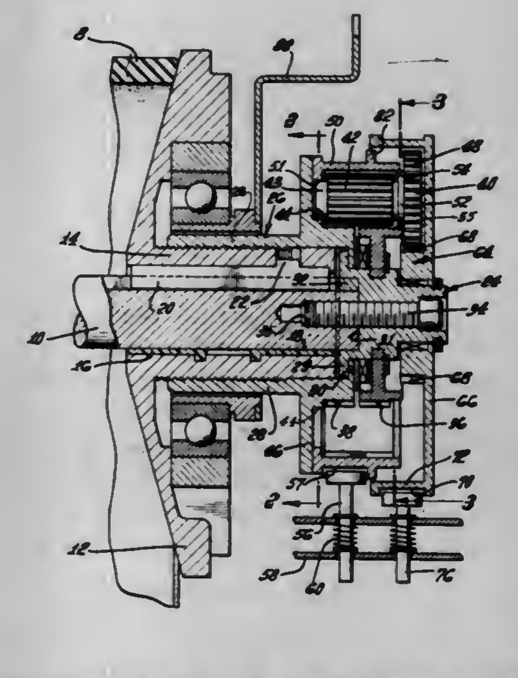
A two-part self-aligning thrust bearing is interposed between the top face of the carrier bar and the bottom face of the polished rod clamp in surrounding relationship to the polished rod. The arrangement relieves the polished rod of bending stresses which occur when there is misalignment of the bottom surface of the clamp or top surface of the carrier bar with respect to the axis of the polished rod.

3,606,798
CARRIAGE APPARATUS FOR SCANNING MEANS
Harry Leiter, Lower Merion Township, Montgomery County, Pa. (107 Henley Road, Philadelphia, Pa. 19151)
Original application Apr. 6, 1965, Ser. No. 445,959, now Patent No. 3,465,145, dated Sept. 2, 1969. Divided and this application June 20, 1968, Ser. No. 791,197
Int. Cl. F16h *27/02*
U.S. Cl. 74—112 **7 Claims**



Means for recording data corresponding to the distribution and concentration of radio active sources detected over a scanning region together with means for converting said recorded data into a visual display at any desired time and as often as may be required. A scintillation detector is mounted for linear movement in opposite directions along a carriage which is itself mounted for linear movement in opposite directions orthogonal to the directions of movement of the scintillation detector, the carriage being actuated to move the detector to the next adjacent scanning line during the reversal of scanning direction. Output signals from the detector are routed to signal processing means, and after processing, data is recorded on one track of a magnetic tape while control signals generated at the end of each scan are recorded on another track of the magnetic tape. The read out apparatus may include an intensity modulated light source secured on a carriage for rectilinear movement in opposite directions at a constant speed to cause the modulated light beam to traverse an underlying photographic film, while the carriage itself is also shiftable in a direction along a line orthogonal to the scanning motion of the light source so that movements of the light source may duplicate those of the radiation detector scanning device. The recorded signal may be adjusted to provide an output for producing the required exposure of the film avoiding a new scanning operation over the radiation source for obtaining adjustments in the exposure to provide the required information in a photographic record or in the display of the information on a cathode ray tube face.

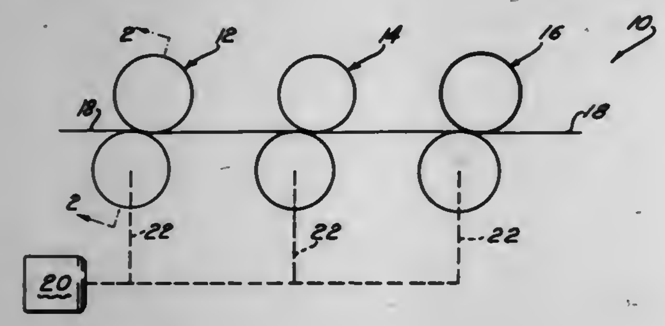
3,606,799
PLANETARY GEAR SYSTEM FOR SPEED CHANGING OF VARIABLE RATIO TRANSMISSIONS
Willard R. Detwiler, Lawndale, Calif., assignor to Emerson Electric Co., St. Louis, Mo.
Continuation-in-part of application Ser. No. 730,798, May 21, 1968. This application Feb. 4, 1970, Ser. No. 8,496
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **7 Claims**



A slidable pulley section of a variable ratio transmission is adjusted on its shaft to change the transmission ratio by the aid of an auxiliary reversible planetary gear drive. The auxiliary drive connects the shaft of the main transmission itself to the slidable pulley section. Parts operable manually or by remote control initiate operation of the normally idle planetary gear mechanism. The variable ratio transmission mechanism maintains its adjustment until the auxiliary planetary drive is operated. The auxiliary drive is mounted so that it can be removed in a unit in a very simple manner, thus to facilitate belt change of the main variable ratio transmission mechanism. By a unique arrangement of guiding tracks, no spider is necessary to maintain the planet gears in position.

3,606,800
PRINTING PRESS DRIVE

Ernest H. Treff, Groton, Conn., and Henry M. Clarke, Jr., Westerly, R.I., assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Apr. 20, 1970, Ser. No. 30,140
Int. Cl. F16d *11/10;* **F16h** *1/16, 57/00*
U.S. Cl. 74—405 **8 Claims**

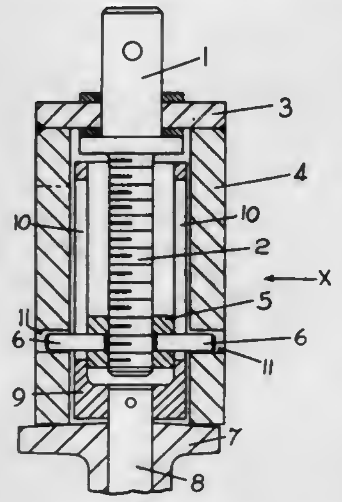


A printing press includes a pair of cylinders for simultaneously printing material. The cylinders have shaft ends thereon for support thereof. The press also includes a drive means for transmitting torque from a source of power to one of the cylinders. The drive means includes a worm drivingly connected to the source of power which transmits torque to another gear meshing therewith. The drive means also includes a clutch which has a body rotatably mounted about one of the shaft ends of the cylinders and has a circumferential surface portion thereabout. The body has a radial flange extending from the circumferential surface portion. The other gear, which meshes with the worm, has a centrally located aperture therein and receives the circumferential surface portion of the body. The other gear is mounted on the body such that its rotational axis is coextensive with the rotational axis of the shaft end upon which the clutch body is mounted. The other gear has first and second sides adjacent to the centrally located aperture. The other gear is positioned on the body such that the first side is adjacent to the radial flange and the second side is adjacent to a portion of a first member so that the flange engages the first side and the first member engages the second side of the other gear. When a clamping force is provided on the other gear between the radial flange of the body and the first member, torque is transmitted from the other gear to the body and first member. A second member is secured to the shaft end of the cylinder and a third member is nonrotatably secured to the body and first member. The third member is movable with respect thereto between a first or torque transmitting position in which a portion of the pin member is engaged with the third member and a second or disengaged position in which a portion of the pin member is no longer engaged with the third member.

3,606,801
ROTARY ACTUATOR

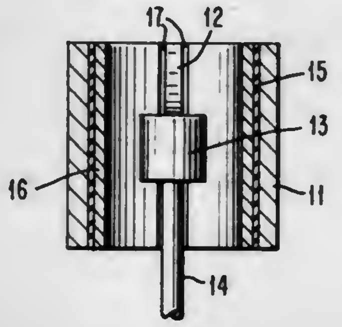
Bernard D. Williams, Trench, near Wellington, England, assignor to Serck Industries Limited, Birmingham, England
Filed Oct. 23, 1969, Ser. No. 868,819
Claims priority, application Great Britain, Nov. 18, 1968, 54,545/68
Int. Cl. F16h *1/18*
U.S. Cl. 74—424.8 **5 Claims**

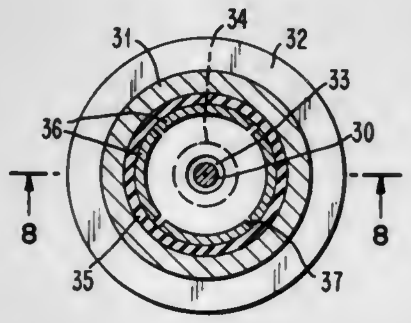
A rotary actuator for providing a slow-motion drive to the spindle of a fluid-controlling valve, from an axially aligned input shaft. The input shaft is threaded and carries a nut having two projections which pass through lengthwise slots in a surrounding sleeve and also engage helical slots in a stationary casing. The sleeve is secured to the valve spindle. Axial movement of the nut also causes the nut to be rotated slowly by the action of the helical slots upon the projections. The sleeve is rotated by the projections and drives the valve spindle. The axial extent of the slots in the sleeve is greater than the extent of the helical slots. No axial load is therefore transmitted to the valve spindle.



3,606,802
VIBRATION-DAMPED ROTATABLE CYLINDRICAL MEMBER

Kenneth Tsunoda, 625D Closter Dock Road, Closter, N.J. 07624
Filed Aug. 5, 1969, Ser. No. 847,683
Int. Cl. F16f *15/10*
U.S. Cl. 74—574 **12 Claims**



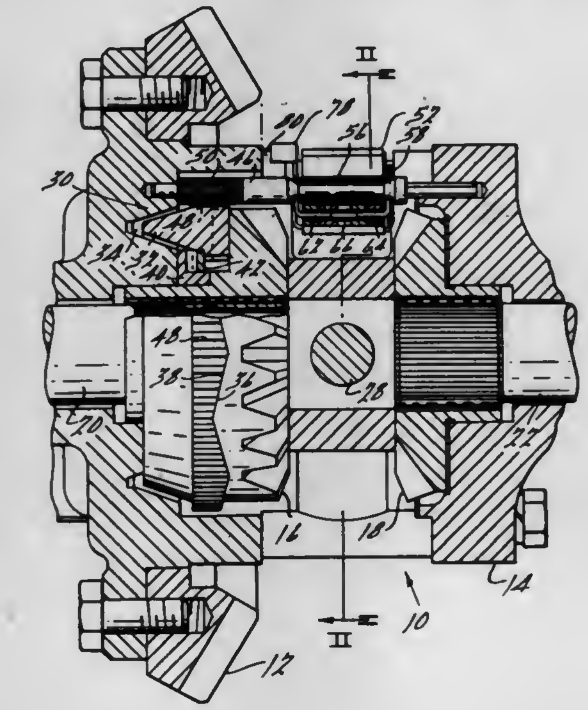


The noise generated in driving pulleys and like rotatable cylindrical members by contact with a moving belt is appreciably diminished by coating one surface of the cylindrical member with a viscoelastic material and adhering a rigid material to the exposed surface of the viscoelastic material.

3,606,803
CENTRIFUGAL ACTUATOR FOR LIMITED SLIP DIFFERENTIAL

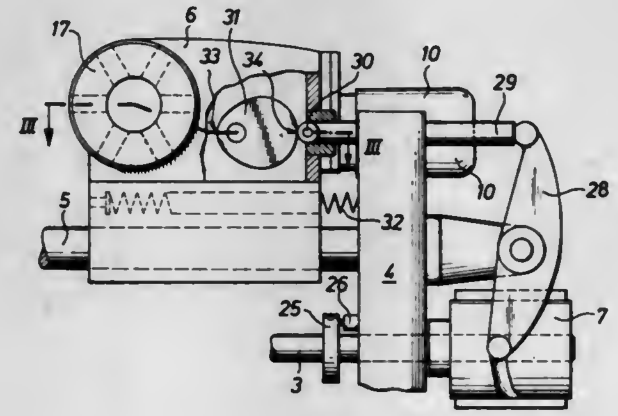
William C. Ottemann, Union Lake, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Sept. 17, 1969, Ser. No. 858,700
Int. Cl. F16h *1/44;* **F16d** *43/24*
U.S. Cl. 74—711 **31 Claims**

A limited slip differential mechanism having a normally disengaged main clutch producing lock-up when activated, which is operated by means of an actuator device in turn activated by a predetermined level of differential action which is varied with the rate of change of levels of differential action. The actuator includes an actuator member which is rotationally driven by differential action and upon which spring-biased centrifugal weights are pivotally mounted and arranged so that at a predetermined velocity and acceleration of the actuator member one of the weights moves outwardly and applies a braking force to the actuator member inhibiting its rotation. An arrangement is provided for actuation of the normally disengaged main clutch in response to this inhibited rotation, so that the differential action is uninhibited at low levels of differential action. A high road speed cut out of the actuator is also provided so that no lock-up will occur at relatively high road speeds.



3,606,804
DEVICE FOR THE APPLICATION OF A TURRET HEAD TO A WORKPIECE

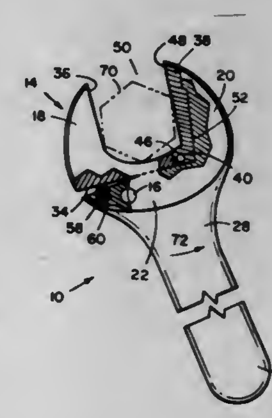
Max Gotz, 2 Monbachweg, 722 Schwenningen (Neckar), Germany, and Werner Sonnek, 76 Breslauerstrasse, 7313 Reichenbach (Fils), Germany
Filed July 1, 1969, Ser. No. 838,295
Claims priority, application Germany, July 10, 1968, G 67 50 293
Int. Cl. B23q *17/18*
U.S. Cl. 74—820 **5 Claims**



An apparatus for the application of a turret head to a workpiece wherein the feed or advancing movement of the turret head is derived from a first control cam mounted upon a main control shaft and wherein the displacement movement which occurs in connection with the indexing of the turret head is derived from a second control cam. The displaceable turret head is adapted to be held against the two control cams by means of a spring. According to important aspects of the invention, the second control cam is disposed between a transmission member cooperating with the first control cam and a shaft rotating with the switch gear of the turret head and mounted in the housing of the turret head.

3,606,805
RATCHET-ACTION OPEN-END WRENCHES

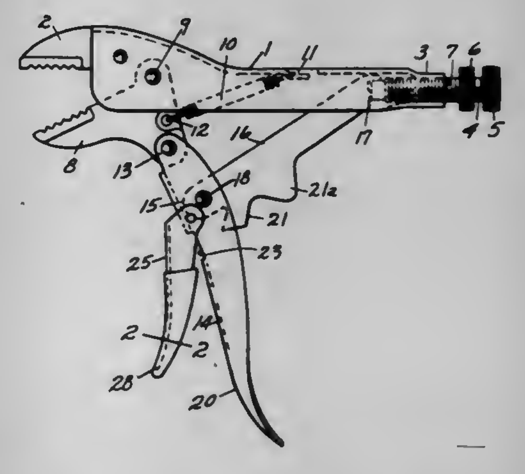
Lloyd R. Dyck, 20 Skipton Court, Downsview, Ontario, Canada
Filed July 1, 1969, Ser. No. 838,225
Int. Cl. B25b *13/28*
U.S. Cl. 81—91B **5 Claims**



A ratchet-action open-end wrench of simple and inexpensive but structurally strong construction has a first jaw pivotally mounted on a handle with a second jaw pivotally mounted on the first jaw so that, when the wrench is rotated in one direction, the jaws drivingly engage a nut or bolt disposed between the jaws. When the wrench is moved in the reverse direction, the pivoting of the first jaw with respect to the handle permits the second jaw to pivot with respect to the first jaw thereby increasing the transverse separation between the jaws and allowing the wrench to be moved about the nut in nondriving engagement therewith.

3,606,806
PLIERS

Frank Patrick, Meadville, Pa., assignor to Channellock, Inc., Meadville, Pa.
Original application May 9, 1968, Ser. No. 727,815, now Patent No. 3,545,315, dated Dec. 8, 1970. Divided and this application Mar. 16, 1970, Ser. No. 19,889
Int. Cl. B25b *7/12*
U.S. Cl. 81—368 **3 Claims**



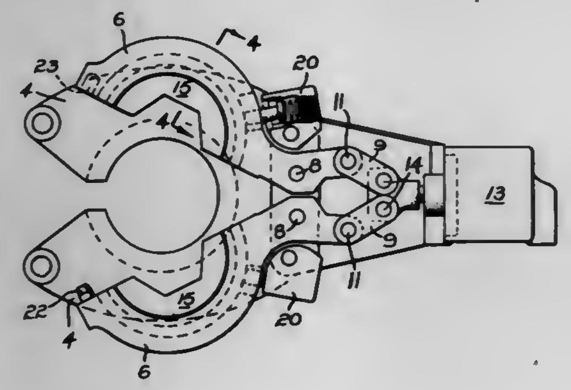
The release of toggle pliers having a toggle consisting of a toggle link and an actuating lever is effected by a release lever having its forward end pivoted on the actuating lever and having a rearwardly extending hand grip portion adjacent the hand grip portion of the actuating lever. In the pressure position, a projection on the toggle link to the rear of the pivot holds the release lever spaced from the actuating lever.

ERRATUM

For Class 81—91 see:
Patent No. 3,606,805

3,606,807
BAR FEED TUBES OF LATHES

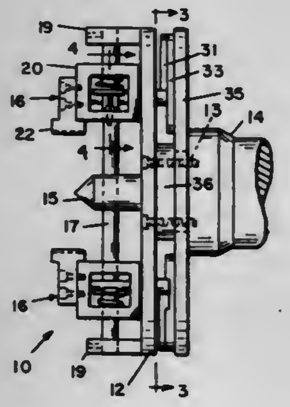
Wlodzimierz Rast, Eden Hills, South Australia, Australia, assignor to Rast Patents Pty. Ltd., Adelaide, South Australia, Commonwealth of Australia
Filed Apr. 7, 1969, Ser. No. 813,976
Claims priority, application Australia, Apr. 10, 1968, 36,286/68
Int. Cl. B23b *25/00*
U.S. Cl. 82—38R **5 Claims**



A bar feed for lathes wherein relatively long bars are fed through a tube by a push rod which is characterised by at least one bar steady in an opening in the feed bar tube comprising jaws coaxially arranged about the bar and guiding the bar when the bar is of a length to extend beyond the steady, but permitting the bar to slide through the steady when the jaws are opened as the push rod reaches the said steady.

3,606,808
QUICK-ACTING CHUCKS

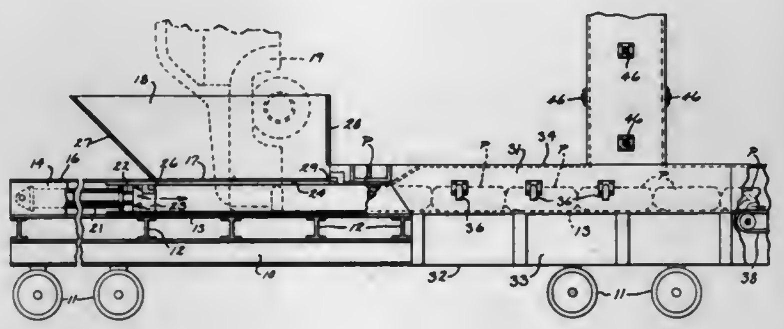
Jerry L. Bowden, R.R. Box 312, Crete, Ill. 60417
Filed Nov. 25, 1969, Ser. No. 879,692
Int. Cl. B23b *33/00*
U.S. Cl. 82—40 **8 Claims**



A rotatable carrier has a work supporting center and a shaft extending radially outwardly from the center. Coacting jaw units are freely slidable on the shaft toward and away from the center and are provided with cam-actuated locking plates. The plates when unlocked slide freely on the shaft, but are cantable by cam action to a locking grip with the shaft, whereupon further cam action brings the jaw units into clamping engagement with work on the center.

3,606,809
METHOD OF CONVERTING JUNKED VEHICLES TO REUSABLE SCRAP METAL

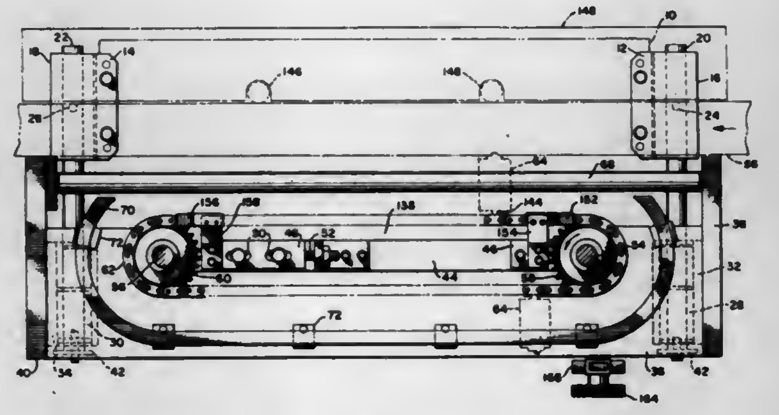
Julius L. Chazen, % SMC Industries, Inc., Chattanooga, Tenn. 37401
Original application Nov. 14, 1966, Ser. No. 594,203, now Patent No. 3,518,078, dated June 30, 1970. Divided and this application Sept. 22, 1969, Ser. No. 859,774
Int. Cl. B30b *9/00*
U.S. Cl. 83—23 **5 Claims**



A method in which junked items such as automobiles are supported endwise in upright position and in which a ram-type shear is moved back and forth transversely of the lower portion of the supported article to shear off similarly sized portions thereof, one after another, while advancing each portion out of the way during the shearing stroke and while causing the junked item to be fed in a downwardly direction to present successive lower portions to the shearing stroke.

3,606,810
CONTINUOUS STOCK FEEDER

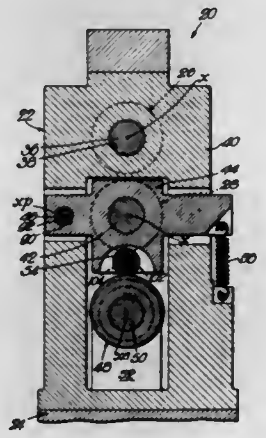
Eugene Kozij, Warwick, R.I., assignor to Rogers Corporation, Rogers, Conn.
Filed May 28, 1969, Ser. No. 828,500
Int. Cl. B26d *5/30*
U.S. Cl. 83—71 **13 Claims**



A continuous stock feeder is presented for feeding strip material from a coil to a machine such as a punch press. The continuous stock feeder has a plurality of chain driven gripper elements which are selectively caused to engage the strip material and advance the material in a programmed manner into the working machine. The grippers are jaw type elements spaced about a continuous chain, and the gripper elements are caused to be mounted on a guide bar when the jaws are in engagement with the material to be advanced. A programmed control such as a numerical punch tape may be employed to selectively advance the grippers and selectively actuate the working machine so that continuous advancement of the material and proper actuation of the working machine are coordinated.

3,606,811
ROTARY SHEAR

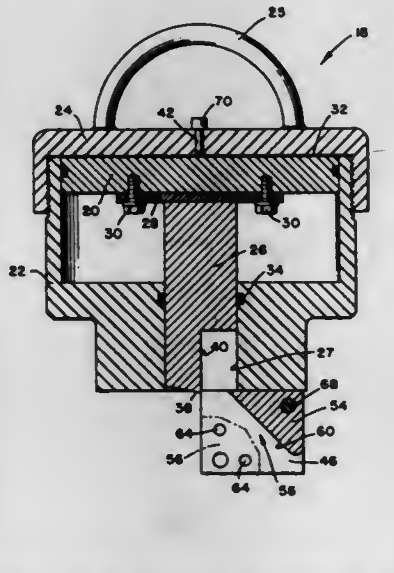
Karl W. Hallden, deceased, late of Thomaston, Conn., by The Colonial Bank and Trust Co., executor, Waterbury, Conn., assignor to The Hallden Machine Company, Thomaston, Conn.
Original application Nov. 25, 1968, Ser. No. 778,593. Divided and this application June 30, 1970, Ser. No. 51,274
Int. Cl. B23d *25/12;* **B26d** *1/40, 7/26*
U.S. Cl. 83—305 **7 Claims**



For cutting coordination of shear blades which are non-adjustably locked directly to the companion shear drums of a rotary shear, the opposite end bearings of one of the shear drums are mounted in the shear frame for individual adjustability in two transverse directions one of which is to and from the axis of the other shear drum.

3,606,812
UNDERWATER CABLE CUTTER

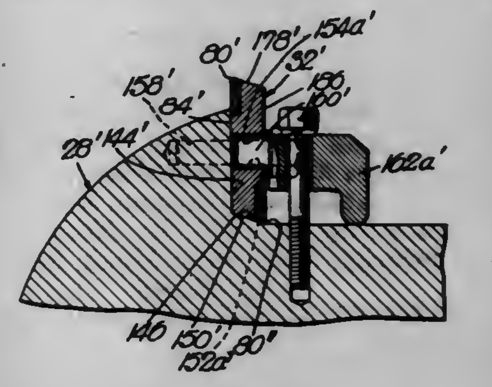
Raymon C. Riordan, Arcadia, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 16, 1970, Ser. No. 11,525
Int. Cl. B26d *5/12*
U.S. Cl. 83—453 **11 Claims**



An underwater cable cutter including: a piston and a cylinder, the cylinder being closed at a top end; the piston having a rod which slidably extends through the bottom end of the cylinder; the bottom end of the rod having a cutting edge which is capable of cutting a cable; means mounted on the cylinder for retaining a cable for cutting by said cutting edge; and an aperture in the cylinder for introducing sea pressure for actuating said piston.

3,606,813
ROTARY SHEAR

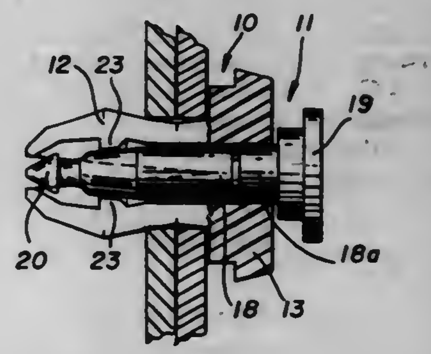
Karl W. Hallden, deceased, late of Thomaston, Conn., by The Colonial Bank and Trust Company, executor, Waterbury, Conn., assignor to The Hallden Machine Company, Thomaston, Conn.
Original application Nov. 25, 1968, Ser. No. 778,593. Divided and this application July 16, 1970, Ser. No. 55,371
Int. Cl. B26d *1/40*
U.S. Cl. 83—672 **6 Claims**



Companion drums of a rotary shear have machined shoulders and bottom rests slanting from the shoulders, and shear blades for the drums have each a front face and parallel slanting top and bottom surfaces and a cutting edge at the junction of the front face and top surface, with each blade resting with its bottom surface flush on the bottom rest of a drum when its front face is located on the shoulder of the same drum.

3,606,814
RELEASABLE REUSABLE EXPANDING FASTENER

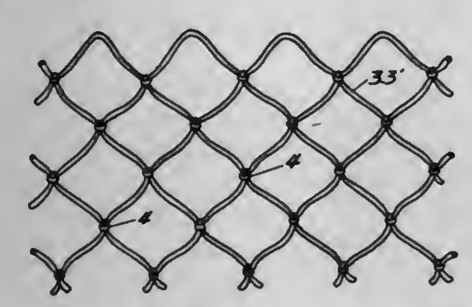
James A. MacKenzie, Apt. 601, 100 Bronson Ave., Ottawa, Ontario, Canada
Filed Feb. 17, 1969, Ser. No. 799,689
Claims priority, application Canada, Feb. 23, 1968, 13,256
Int. Cl. F16b *13/04*
U.S. Cl. 85—84 **2 Claims**



This invention is concerned with a releasable, reusable, expanding fastener particularly intended for adjustably securing together slotted metal construction elements. The fastener is formed from resilient material and consists of two parts, namely a sleeve and a sleeve expanding member. The sleeve comprises a plurality of finger members extending from a flange member shouldered at right angles to the major axis of the sleeve. The expanding member comprises a cylindrical shaft provided with a flange at one end, a tapered head at the opposite end, a locking recess just inwardly of the head and a gradually tapering camming surface extending rearwardly of the locking recess. The fingers have locking shoulders which are generally complementary in shape to the locking recess on the shaft of the expanding member. These shoulders are located on the inner surfaces of the fingers, substantially midway there-along. The head on the shaft and the locking shoulders co-operate with one another to retain the expanding member within the sleeve when the latter is in an unexpanded condition, and, when the sleeve and expanding member have been passed through a pair of aligned apertures with the sleeve in the unexpanded condition, the expanding member may then be driven forwardly within the sleeve towards the ends of the fingers whereupon the locking shoulders will co-operate with the camming surface on the sleeve to expand the fingers and securely fasten the sleeve and expanding members within the said apertures.

3,606,815
BRAIDED CORD NET

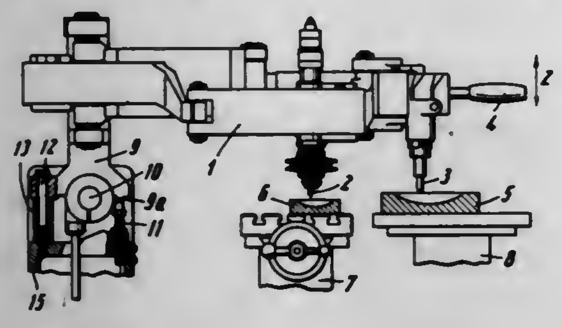
Shigeru Yamashita and Satoshi Kawafuchi, Wakegun, Japan, assignors to Morishita Fishing Net Manufacturing Co. Ltd., Wakegun, Okayama, Japan
Filed May 23, 1969, Ser. No. 827,225
Claims priority, application Japan, May 25, 1968, 43/43,195
Int. Cl. A01k *73/00;* **D04c** *1/06*
U.S. Cl. 87—12 **3 Claims**



A fish net made of braided cord with the meshes connected by knots. The cord is braided from a group of strands twisted in one direction, and another group of strands twisted in the other direction, and alternating with the strands of the first group. The lay of the cords may be in the same direction of the twist or, in another modification, the lay may be in a direction opposite to the twist.

3,606,816
AUTOMATIC STEP FEED DEVICE FOR DUPLICATING MILLING MACHINES

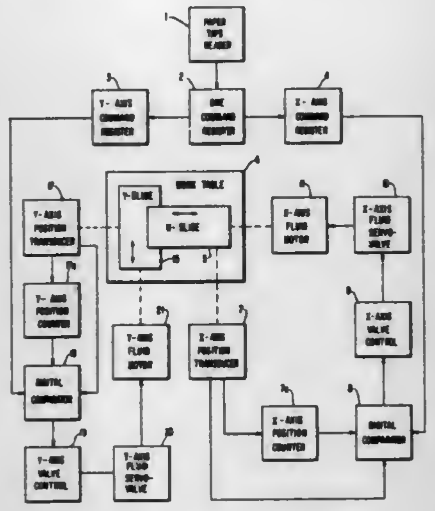
Albert Blottcher, Scharzfeld, Harz, and Hans Maass, Bad Lauterberg, Harz, Germany, assignors to Franz Kuhlmann KG, Prazisionsmechanik und Maschinenbau, Wilhelmshaven, Germany
Filed July 22, 1969, Ser. No. 843,327
Claims priority, application Germany, July 22, 1968, P 17 52 827.7
Int. Cl. B23c *1/16*
U.S. Cl. 90—13.1 **6 Claims**



A step feed device for duplicating milling machines equipped with a pantograph operated by an adjustable stop which is provided with a spindle screwed into a threaded sleeve and arranged for displacement in a casing. The sleeve is biased by a spring at one end thereof and during displacement of the sleeve in the casing a rotary control device engages the sleeve so that it can turn in only a single direction with respect to the spindle. To obtain a step feed, the pantograph need only be lifted so that the threaded sleeve can be shifted by the spring and then lowered again to thereby change the working plane or level of the pantograph.

3,606,817
FLUIDIC POSITIONING CONTROL SYSTEM

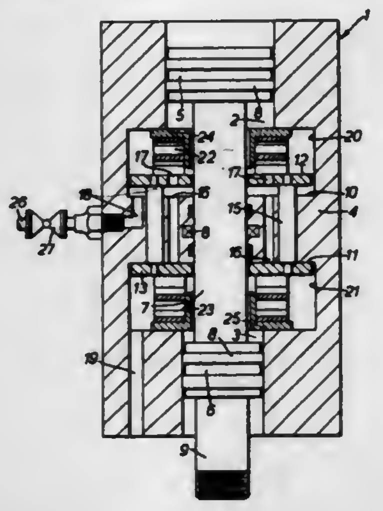
Lawrence W. Langley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 29, 1969, Ser. No. 820,166
Int. Cl. F15b *21/02*
U.S. Cl. 91—37 **4 Claims**



An all-fluidic positioning control system overcoming frequency limitations by decoding to determine least significant actual position indications, while counting to determine more significant indications. Actual position and desired position are fluidically compared to generate a position correction signal.

3,606,818
FLUID-OPERATED RECIPROCATING MOTORS

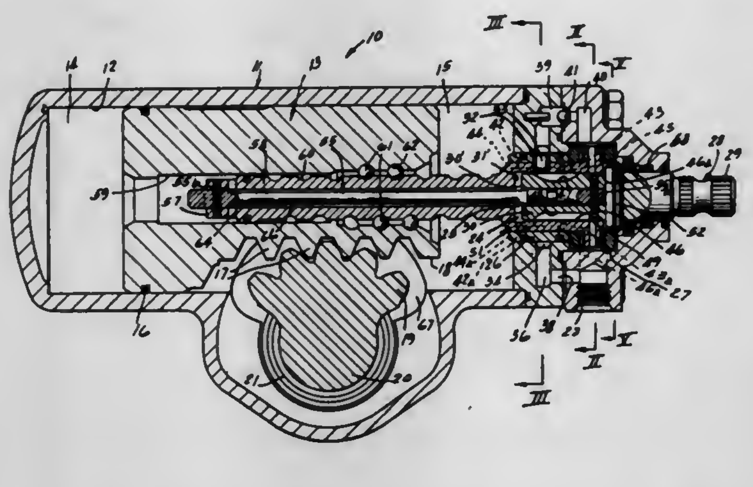
Helmut Hirn, Dusslingen, Germany, assignor to Rilco Maschinenfabrik G.m.b.H. & Co. K.G.
Filed June 27, 1969, Ser. No. 837,126
Claims priority, application Germany, July 3, 1968, P 17 03 726.2
Int. Cl. F01l *15/18, 31/00*
U.S. Cl. 91—329 **13 Claims**



A reciprocating fluid operated motor including two interconnected spaced co-axial pistons of different diameters lying in two corresponding spaced cylinders separated by an intermediate wall, means for introducing pressure fluid on one side of the wall and for exhausting fluid from the other side of the wall and automatic valve means controlling the flow of fluid through passages in the wall including two valve plates interconnected by spacers of greater effective length than the thickness of the wall. One valve plate is arranged to close the through passages and the other plate has aligned openings but is arranged to close the outlet duct. The motor may also include automatic valve mechanism to hold the reciprocating pistons stationary at one end of their travel.

3,606,819
POWER STEERING GEAR ASSEMBLY

Fredrick D. Venable and Raymon L. Goff, Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio
Filed June 4, 1969, Ser. No. 830,275
Int. Cl. F15b *9/10, 11/08, 13/04*
U.S. Cl. 91—375A **8 Claims**

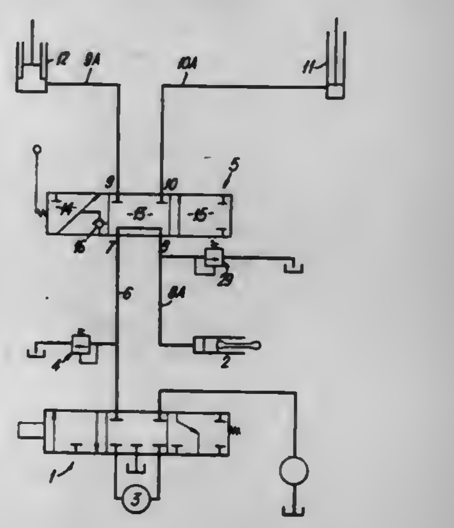


A power steering gear assembly including a centrally bored rack toothed piston dividing a power cylinder in a pair of fluid pressurized chambers, a sector gear meshing with the piston, a valve assembly communicating the pressure chambers with a source of pressurized fluid and including a pair of sleeve valves nested together in telescopic relation, a centrally bored worm connected to the outer sleeve valve for joint rotation and extending into the bore of and connected to the piston to cause rotation of the worm in response to axial movement of the piston, an operating shaft connected to the inner sleeve valve for joint rotation and a torsion rod providing follow-up movements between the sleeve valves, the torsion rod extending into the bore of the worm, which worm bore in turn communicates certain axial slots formed in the outer sleeve valve with the pressure chamber spaced farthest therefrom, other axial slots formed in the outer sleeve valve opening directly to the pressure chamber immediately adjacent the valve assembly and fluid inlet and outlet ports communicating with the axial slots through the inner sleeve valve.

3,606,820
SELECTOR VALVE FOR SIMULTANEOUS OPERATION OF MULTIPLE ACTUATORS

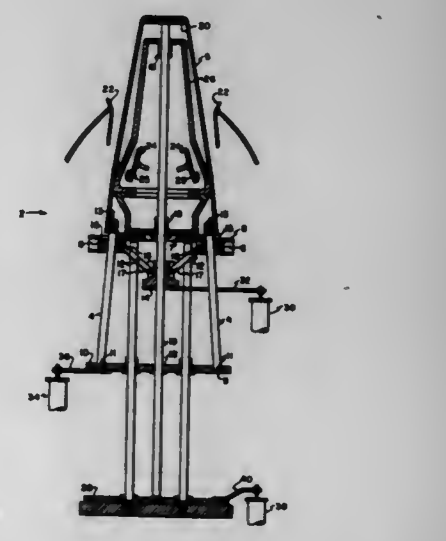
Alfred W. Thomas, Earl Shilton, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Nov. 10, 1969, Ser. No. 875,004
Claims priority, application Great Britain, Nov. 11, 1968, 53,282/68
Int. Cl. F15b *11/16*
U.S. Cl. 91—413 **6 Claims**

A hydraulic control system is provided for a motor vehicle having a plurality of hydraulically operated attachments and includes valve means for controlling hydraulic pressure so that a constant hydraulic pressure may be supplied to one of the said attachments while an intermittent hydraulic pressure is supplied, simultaneously, to another attachment.



3,606,821
APPARATUS FOR CUFFING NEST OF BAGS

Hsue C. Tsien, Livingston, N.J., assignor to Esso Research and Engineering Company
Filed May 28, 1969, Ser. No. 831,818
Int. Cl. B31b *1/00*
U.S. Cl. 93—8R **12 Claims**

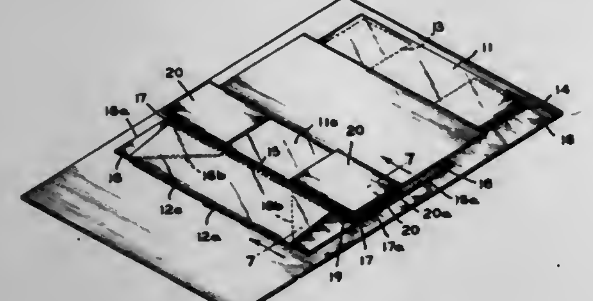


An apparatus for cuffing a plurality of nested bags. The bags are disposed on a bag supporting frame of the apparatus and held thereto by bag holding means. Means are provided for turning the ends of the nested bags over the bag holding means thus providing the bags with cuffs.

3,606,822
METHOD AND APPARATUS FOR PRODUCING A FLAT-BOTTOM PLASTIC BAG

Gerald M. Platz, Champaign, and James B. Honn, Arcola, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,020
Int. Cl. B31b *49/04*
U.S. Cl. 93—35SB **8 Claims**

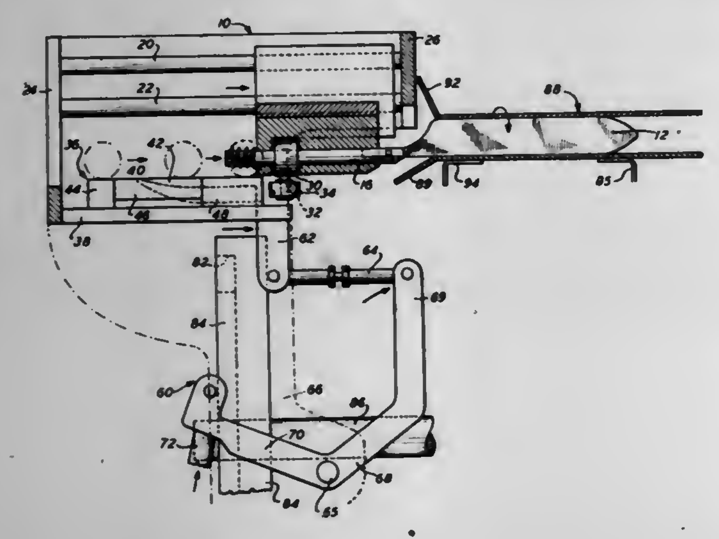
A flat-bottom plastic bag produced from an extruded length of gusseted thermoplastic material and a method for the production thereof including the steps of sealing and severing a length of such material to provide a closed bottom; retaining the major portion of said sealed tube including the open mouth against longitudinal movement; grasping opposed edges of the top wall of said tube adjacent the sealed bottom; lifting the grasped top wall to a plane immediately above that of the re-



tained portion of the tube; moving the grasped portion of the tube toward the open mouth of the bag a predetermined distance to also carry the bottom wall of the tube therewith; and folding the moved portion of the tube to create a finished bag having a sustaining flat-bottom portion when opened.

3,606,823
APPARATUS FOR OPENING AND PARTIALLY ERECTING FOLDED AND COLLAPSED CARTONS

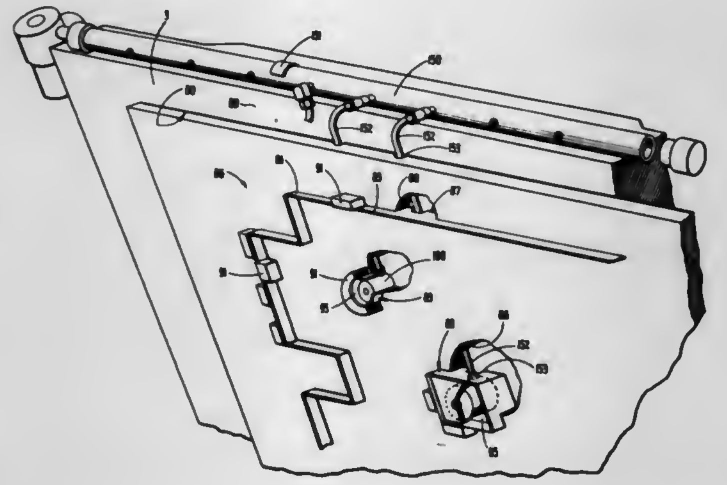
Russell W. Allen, Pompton Plains, N.J., assignor to Container Equipment Corporation, Bloomfield, N.J.
Filed Apr. 20, 1970, Ser. No. 29,939
Int. Cl. B31b *1/78*
U.S. Cl. 93—53R **9 Claims**



A flat blade element is reciprocated into and out of folded, collapsed cartons positioned endwise relative to the forward end of the blade element. The blade, in addition to reciprocation, is adapted to rotate selectively about a longitudinal axis under the influence of a torsional biasing force and a cam follower. The cam follower rides over a linear cam surface on the outward stroke of the blade to initially enter the interior of the carton with the flat blade in a horizontal attitude. The blade cam follower leaves the linear cam surface when the blade reaches the terminal end of its outward stroke. At this point the torsional biasing force is effective to rotate the blade about 90° which opens and partially erects the collapsed carton. On the inward stroke, the blade cam follower rides over a non-linear cam surface which is operative to rotate the blade in a direction opposite to the torsional biasing force. Near the inner end of the reciprocating stroke, the cam follower is repositioned on the linear cam surface with the blade again assuming a horizontal attitude and being withdrawn from the partially erected carton. The cycle is then repeated sequentially as each successive folded and collapsed carton is positioned adjacent the reciprocating blade.

3,606,824
PRESS AND CONVEYOR WITH SELF-STRIPPING DIE

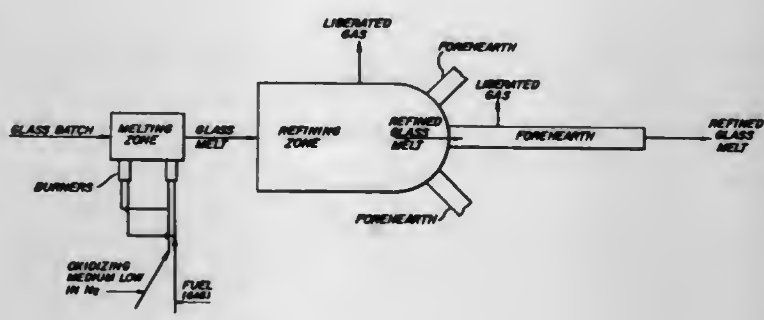
Leonard F. Remington, Franklin, Mass., assignor to Thomson National Press Company, Franklin, Mass.
Filed May 2, 1969, Ser. No. 822,858
Int. Cl. B31b *1/14*
U.S. Cl. 93—58R **32 Claims**



A cutting and creasing press having a frame supporting a cutting and creasing die and a platen for pressing a workpiece against the die. Means are provided for removing waste from the cutting and creasing die after the workpiece is removed from the cutting and creasing die to effectively separate waste from the workpiece. A conveyor system having a series of beaters provides a means for easily separating the die cut and creased workpieces from the waste material.

3,606,825
PROCESS OF MELTING GLASS

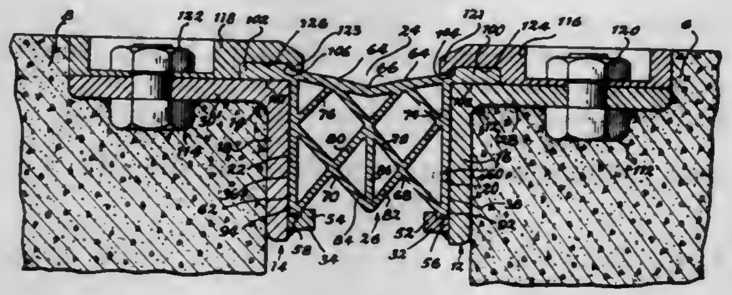
Andrew L. Johnson, New Castle, Pa., assignor to Glass Container Industry Research Corporation, New Castle, Pa.
Filed Dec. 24, 1969, Ser. No. 887,897
Int. Cl. C03b *5/16, 5/18*
U.S. Cl. 65—136 **5 Claims**



Melting of glass batch wherein the products of combustion of a gaseous fuel are introduced into the molten glass bath at a submerged level therein, with the gaseous fuel being combusted in an oxidizing medium low in nitrogen.

3,606,826
EXPANSION JOINT

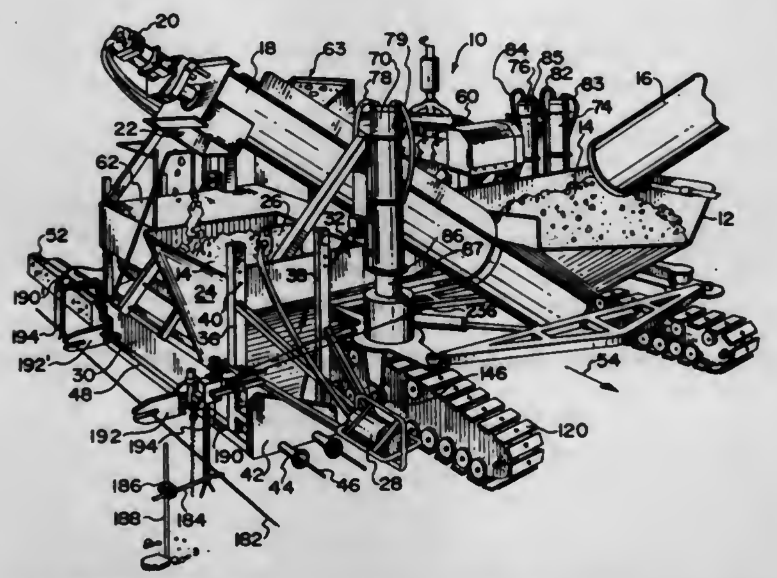
Thomas C. Bowman, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.
Filed July 1, 1969, Ser. No. 838,138
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **10 Claims**



An expansion joint comprising a pair of spaced-apart structural means supporting at least one resilient sealing member therebetween. In one form the sealing member has laterally extending projections forming locking lugs at the upper transverse corners thereof received within slots formed in removable clamping means to hold the side walls of the sealing member against opposed faces of the structural means. In a modular arrangement an intermediate structural member is disposed between adjacent sealing members and a wear tread member is secured to such intermediate member and overlies adjacent sealing members.

3,606,827
CONCRETE CURB LAYING MACHINE

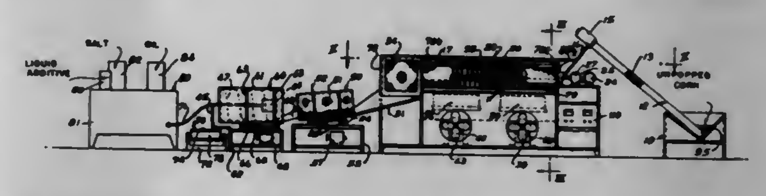
Charles P. Miller and Allen R. Miller, McHenry, and David J. Miller, Ringwood, Ill., assignors to Miller Formless Co., Inc., McHenry, Ill.
Filed Nov. 7, 1968, Ser. No. 774,014
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 **20 Claims**



A self-propelled, self-steering and self-leveling machine for laying concrete characterized by accurate, automatic or manual, adjustment and constant control of direction, grade and forward or reverse motion. In one embodiment the machine includes independently controlled front and rear propulsion saddle-mounted means on each side of the main frame, control means operating from a guide line adapted to provide integrated double-acting steering of opposite pairs of the propulsion means and a hydraulic system including a pair of double-acting rams on one side of the machine, one supporting the main frame directly upon each saddle mount, and a single double-acting ram connected to a walking beam supported at its ends on the other saddle mounts on the opposite side of the machine providing a three-point leveling in a five point suspension. In another embodiment the hydraulic system is characterized by electro-hydraulic means to individually power both sides of the machine to maintain constant curve radius and including automatic valve means to connect an auxiliary power source into the system to meet the higher demand of the outer propulsion means for shorter curve radii. Manual control over-ride and forward speed control are also provided as well as steering over-run compensation adapted to meet only the steering potential need of the system and steer by integrals rather than hunting. Means are provided to move the steering sensor in the direction of steer to reduce or eliminate hunting and oversteer. The propulsion means for delivery of the concrete to the mule is independent of the levelling and steering systems providing for extremely fine proportioning of forward speed and rate of feed of concrete to the mule.

3,606,828
POPPING APPARATUS

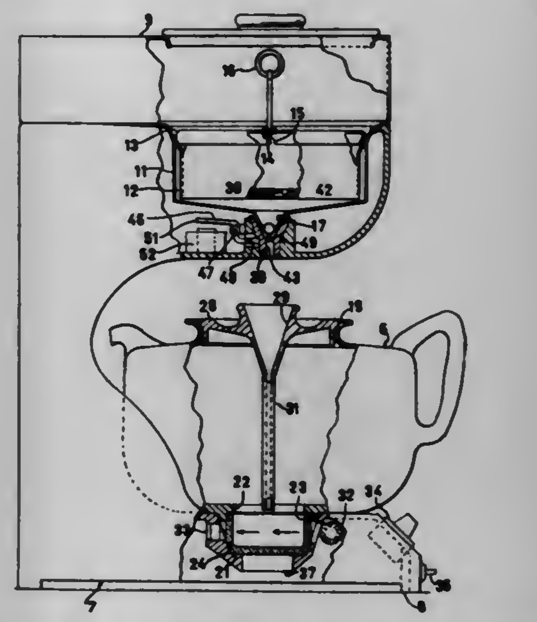
Donald P. Smith, 4530 Woodfin Drive, Dallas, Tex. 75220
Continuation-in-part of application Ser. No. 516,838, Dec. 28, 1965. This application May 14, 1970, Ser. No. 37,136
Int. Cl. A23l *1/18*
U.S. Cl. 99—238.5 **8 Claims**



Apparatus for continuously and positively conveying poppable material through a heating compartment wherein the material is popped and immediately removed from the heating compartment. A conveyor positively feeds the material through the heating compartment and baffles are employed in the heating compartment to regulate the temperature at specified locations throughout the length of the heating compartment. Air pressure is employed for immediately removing popped material from the popping apparatus.

3,606,829
DRIP COFFEE MAKER

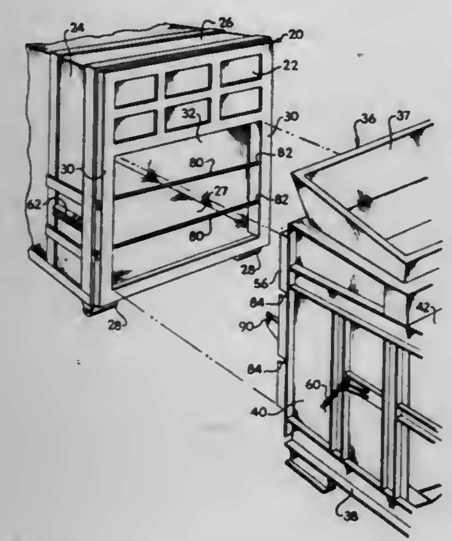
Melvin G. Alwood, 733 Butte St., Redding, Calif. 96001
Filed Apr. 10, 1969, Ser. No. 814,954
Int. Cl. A47j *31/10*
U.S. Cl. 99—280 **7 Claims**



A beam of light is passed through a representative portion of the coffee in the pot of drip coffee maker and onto a photo-electric device. When the strength of the coffee reaches a predetermined level, as determined by the intensity of the light beam transmitted thereby and falling on the photo-electric device, a valve is closed preventing the passage of water from the grounds into the pot, thereby terminating the brewing process.

3,606,830
STATIONARY REFUSE PACKER AND ASSOCIATED CONTAINER APPARATUS

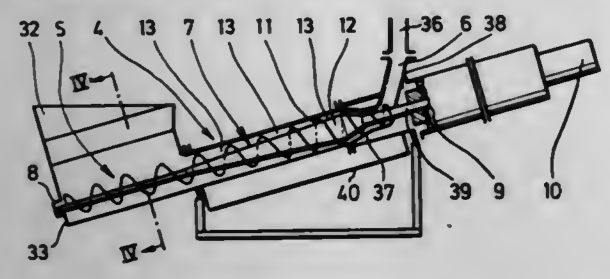
Donal W. Chaney, Galion, Ohio, assignor to
Harsco Corporation, Harrisburg, Pa.
Filed Feb. 19, 1969, Ser. No. 800,656
Int. Cl. B30b *15/16*
U.S. Cl. 100—52 10 Claims



A stationary refuse packer and associated portable refuse container apparatus that comprises a novel automatic control system adapted for sophisticated control of the packer ram that loads the container. Such control includes jog type cycling wherein portions of the packer ram cycle can be precisely individually controlled; single cycling wherein the machine will go through one complete cycle and then stop; automatic cycling wherein the machine will cycle continuously until stopped; and timer cycling wherein the machine will continue to cycle until automatically stopped after a predetermined period of time. In addition, other aspects of control can be uniquely accomplished.

3,606,831
APPARATUS FOR EXTRACTING LIQUID FROM AND FOR CONVEYING LIQUID-CONTAINING TANNERY WASTE MATERIALS

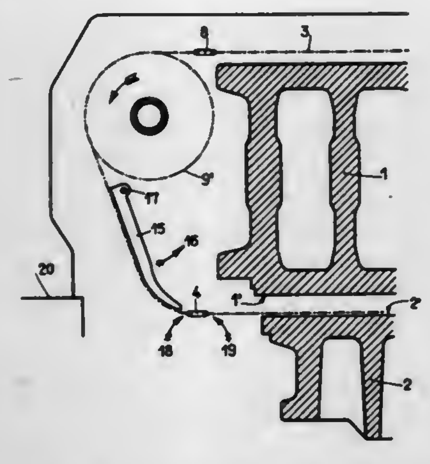
Kasimir Hoffmann, Forst, near Bruchsal, Germany, assignor to Badische Maschinenfabrik G.m.b.H., Karlsruhe-Durlach, Germany
Filed Sept. 10, 1969, Ser. No. 856,696
Claims priority, application Germany, Sept. 12, 1968, P 17 85 338.2
Int. Cl. B30b *9/16*
U.S. Cl. 100—145 2 Claims



Apparatus for extracting liquid from and for conveying liquid containing tannery waste materials, more especially so-called scrap leather which forms with the fleshing of animal skins. The apparatus has a housing, inlet and outlet openings for the housing, a conveyor pipe connected to the outlet, a worm for receiving waste material at the inlet. The worm has a free volume which decreases from the inlet to the outlet between flights on the worm.

3,606,832
PLATEN PRESS FOR PROCESSING SHEET MATERIAL

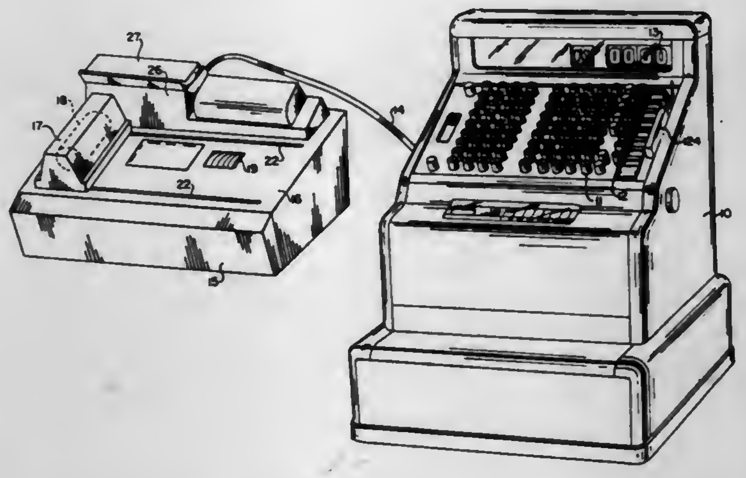
Frederic Laufer, Prilly, and Jean-Jacques Gouffon, deceased, late of Renens, Switzerland, by Yvette Gouffon, guardian, Lausanne, Switzerland, assignors to J. Bobst et Fils S.A., Prilly, near Lausanne, Switzerland
Filed July 5, 1968, Ser. No. 742,779
Claims priority, application Switzerland, July 18, 1967, 10,298/67
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 10 Claims



A platen press having beds with platen surfaces which are periodically opened and closed to operate on a sheet transported therebetween in a working position by gripping bars driven by an endless chain. The gripping bars engage the sheets at a gripping station and transport the sheets to the working position between the platen surfaces. A rail which holds the chain taut periodically moves in synchronism with the beds and slackens the chain when a bar reaches the gripping station whereupon the bar is engaged at both ends by positioning members which accurately constrain the bar to occupy a predetermined position at the gripping station.

3,606,833
COMMON SETTING MEANS AND INTERLOCK CASH REGISTER AND CREDIT CARD RECORDER

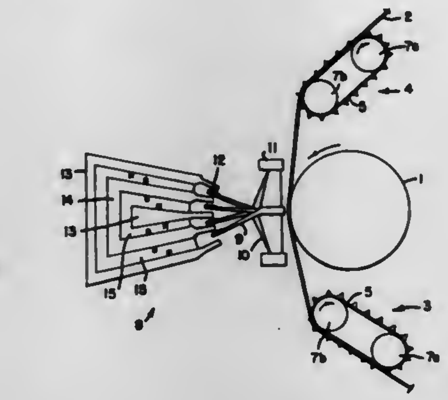
Jakob J. Deutsch, Zurich, Switzerland, assignor to The National Cash Register Company, Dayton, Ohio
Filed Mar. 17, 1970, Ser. No. 20,236
Claims priority, application Great Britain, Mar. 27, 1969, 16,082/69
Int. Cl. B41j *29/64;* **B41l** *39/12*
U.S. Cl. 101—45 5 Claims



A data-recording system in which an amount set up in a cash register is automatically set up on the type wheels of a credit card recorder for printing on sales slips together with an imprint from a credit card inserted in the recorder. The cash register is automatically disabled from further operation until a recording operation of the credit card recorder occurs and is completed.

3,606,834
PRINTER HAVING A PERMANENT MAGNET HAMMER MECHANISM

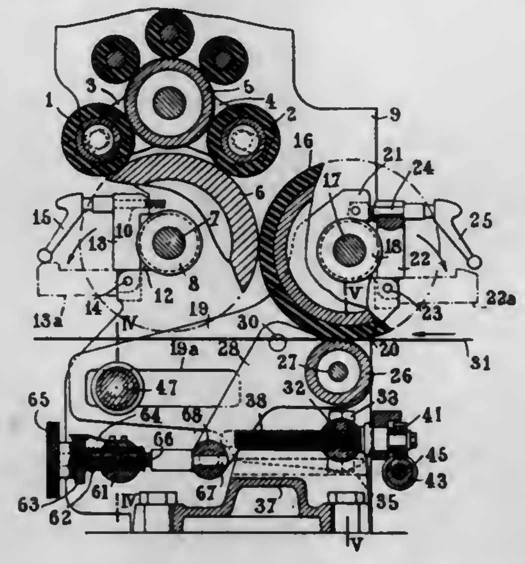
Alexander Nyman, Dover, and Robert H. Curtiss, Wayland, Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.
Filed June 24, 1969, Ser. No. 836,053
Int. Cl. B41j *5/00*
U.S. Cl. 101—93 9 Claims



A printer having a hammer mechanism containing hammers which are selectively and electrodynamically activated upon selective energization of activating coils attached to the hammers. Each activating coil is located between a pair of pole pieces of opposite polarities which abut the opposite poles of a thin peranent ceramic magnet magnetized through its thin dimension. The magnets are U-shaped as are those pole pieces abutting the outside surfaces of the magnets. Each hammer comprises an activating and a pellet portion disposed at an angle to each other and supported within the hammer mechanism by a U-shaped spring. Each leg of the U-shaped spring supports and is located perpendicular to one portion of the hammer.

3,606,835
OFFSET ROTARY PRINTING MACHINE

Louis Jean Chambon, Paris, France, assignor to Société d'Etudes de Machines Speciales, Paris, France
Filed July 10, 1969, Ser. No. 840,719
Int. Cl. B41f *13/34*
U.S. Cl. 101—218 9 Claims

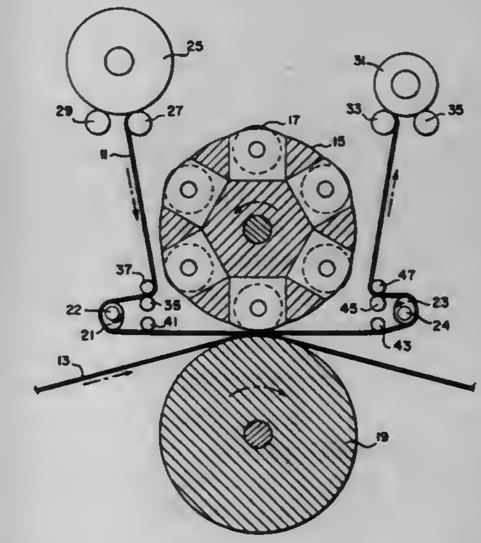


An offset rotary press wherein the printing and impression cylinders are carried by a pair of vertical flanges mounted for longitudinal and horizontal sliding movement on said frame structure, so as to bring said printing cylinder in contact with the plate cylinder by causing said pair of flanges to slide horizontally. Means are provided for converting the horizontal sliding movement of said pair of flanges into a vertical movement of said impression cylinder so to constantly bring said impression cylinder into engagement with the lower portion of said printing cylinder when said printing cylinder itself is in engagement with the plate cylinder.

The size change operation can be carried out very rapidly since putting said printing cylinder and plate cylinder in mutual contact by causing the horizontal sliding movement of said pair of flanges will automatically cause said impression cylinder to be properly set in position against said printing cylinder, irrespective of the size contemplated.

3,606,836
ROTARY RIBBON SHUTTLE

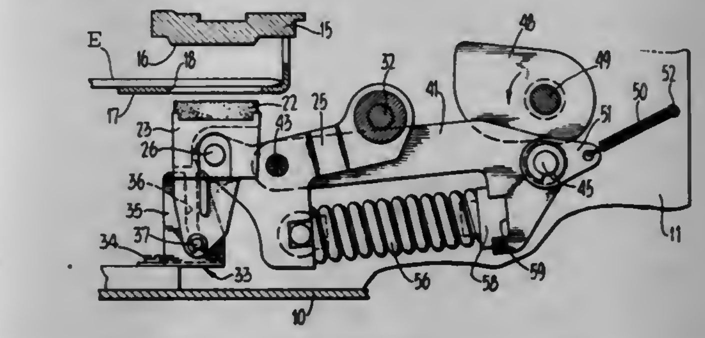
Richard Colwill, Victor, N.Y., assignor to
Burroughs Corporation, Detroit, Mich.
Filed Apr. 3, 1969, Ser. No. 813,101
Int. Cl. B41f *31/00*
U.S. Cl. 101—244 7 Claims



An ink transfer ribbon advancing mechanism for a high speed rotary printing press including a pair of eccentric rollers one on each side of the rolling bight of the press in frictional contact with the ribbon for alternately accelerating and decelerating the velocity of the ribbon through the bight.

3,606,837
BED AND PLATEN PRINTER WITH SPRING BIASED PLATEN CONTROL LEVER

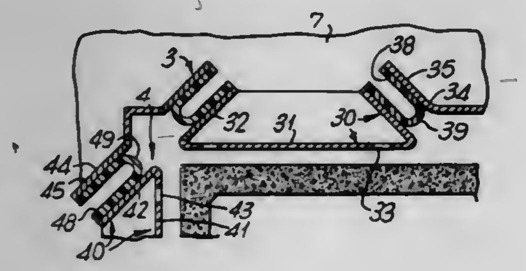
Helmut K. Waibel, Vista, N.Y., assignor to
The Singer Company, New York, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,241
Int. Cl. B41f *1/06*
U.S. Cl. 101—316 2 Claims



A device for controlling the operation of a planar platen in a printing machine and more particularly for reducing the operating load requirement for the pressure printing of a stuffed envelope, or the like, regardless of its thickness.

3,606,838
LOAD-SUPPORTING APPARATUS

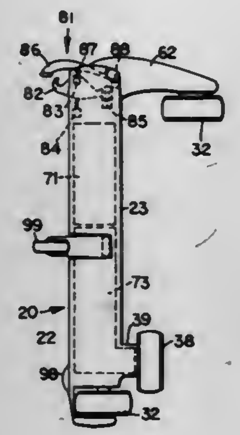
Kenneth Vincent Blanchard, Southampton, England, assignor to Hovercraft Development Limited, London, England
Filed Apr. 23, 1968, Ser. No. 723,425
Int. Cl. B60v *1/16*
U.S. Cl. 104—23FS **7 Claims**



A load supporting apparatus, providing a suspension for example for a tracked air cushion vehicle, consists of a rigid cushion member with wall portions inwardly inclined from a base. The base is supported from a cooperating surface on a cushion of gas which is contained by jets of gas from nozzles in the base. A membrane is connected to the inwardly inclined walls of the cushion member and also to parallel inwardly inclined walls in a load member. The inwardly inclined walls of the load member form a concavity into which the cushion member can withdraw. The load member, cushion member and membrane partially define a chamber for pressurized gas, and the membrane presents a concave surface towards the chamber.

3,606,839
TRANSPORTATION SYSTEM

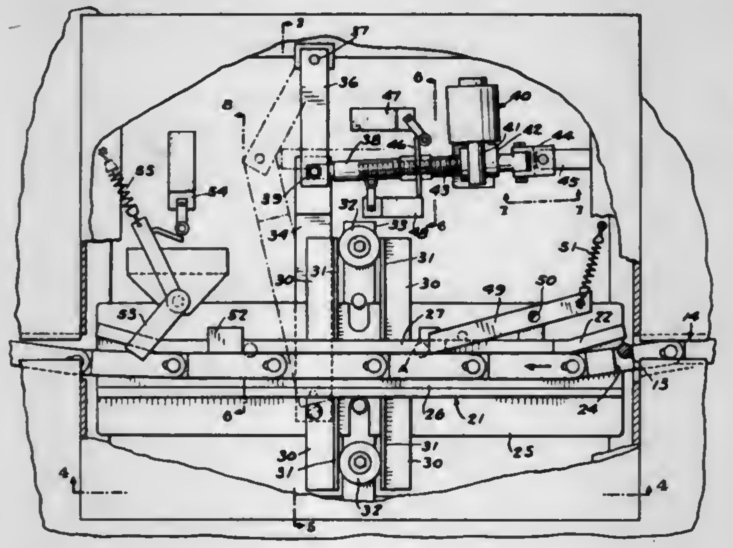
Neil S. Stafford, San Jose, and Justin M. Jacobs, Jr., San Francisco, Calif. (both of 1245 Jones St., San Francisco, Calif. 94109)
Filed July 23, 1968, Ser. No. 746,884
Int. Cl. B61b *3/00, 13/04*
U.S. Cl. 104—119 **10 Claims**



The disclosure is of a transportation system which includes an elongated rail support which carries three parallel spaced-apart rails which serve as running surfaces. Two of the rails have running surfaces to accommodate guide wheels and the third rail has a running surface to accommodate guide wheels and the third rail has a running surface to accommodate a main drive wheel of a powered rack member having wheels which move along the rails and which can carry various payloads. A switch section is provided for selectively directing rack members over a main route or for moving them onto an alternative route.

3,606,840
TOW TRUCK CONVEYOR SYSTEM

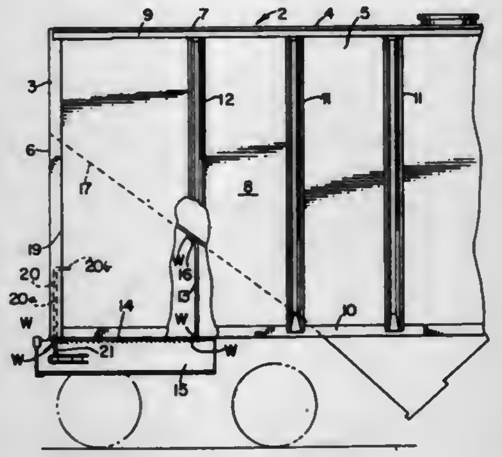
Karl R. M. Karlstrom, Roseville, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Filed Jan. 31, 1969, Ser. No. 795,589
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 **15 Claims**



A tow truck conveyor system comprising a plurality of tow trucks movable along a floor having a slot therein. A conveyor is driven within the floor beneath the slot and has driving means thereon for engaging a tow pin on the tow truck to move the tow truck along. A track is provided for the conveyor and a portion of the track is adapted to be moved laterally to cause the tow pin to engage a cam portion for camming the tow pin upwardly and out of engagement with the driving means on the conveyor.

3,606,841
COVERED HOPPER CAR END CONSTRUCTION

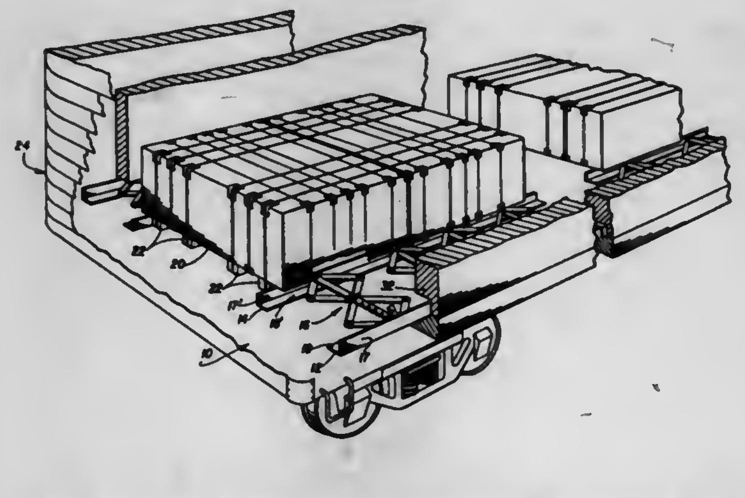
Kent N. Johnson, South Holland, John H. Spence, Chicago Heights, and William Van der Sluys, Homewood, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed Dec. 30, 1968, Ser. No. 787,924
Int. Cl. B61d *5/00, 7/00, 17/06*
U.S. Cl. 105—248 **24 Claims**



A hopper railroad car end construction comprising a stub center sill spaced away from and outwardly of the hopper slope sheet, a horizontal shear plate beam being mounted on the stub sill, a transversely extending upright bolster web beam welded on the shear plate beam and joining with the slope sheet, and a lower end beam structure welded in upright position on the outer end of the shear plate beam and with the side portions of the car.

3,606,842
ADJUSTABLE RETAINER

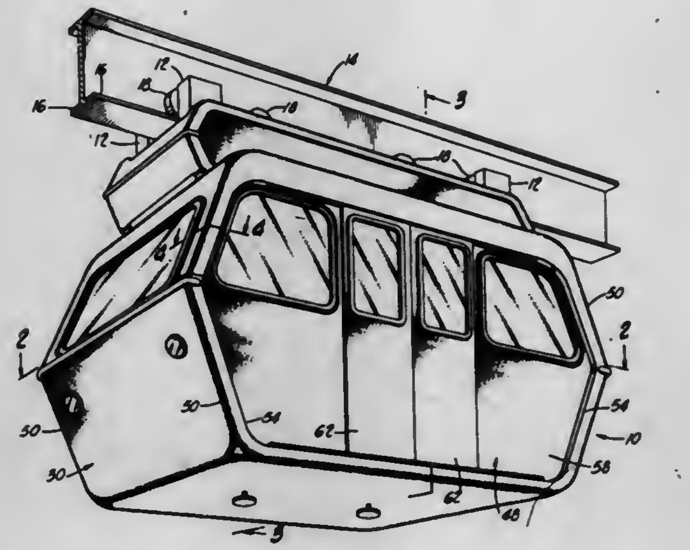
Basil George Verbick, 7121 Arizona Ave., Hammond, Ind. 46323
Filed May 5, 1969, Ser. No. 821,633
Int. Cl. B61d *45/00*
U.S. Cl. 105—369B **7 Claims**



An adjustable retainer for inhibiting the lateral movement of freight within a freight carrying vehicle which comprises a pair of bracing members having adjustable means interposed therebetween. The adjustable means comprises a plurality of linkages pivotally coupled together to form a pair of parallelograms. Fixing members having a plurality of notches are pivotally coupled to the linkages and are suitable for engaging a bolt about which each of said parallelograms is expandable and contractable. One of said pair of bracing members is affixed to the freight carrying vehicle while the other of said pair of bracing members is expandable to abut the outer leg of a skid carrying the load. An adjustable retainer on each side of the load is necessary to adequately restrain lateral movement of the load.

3,606,843
RAIL CAR BODY CONSTRUCTION

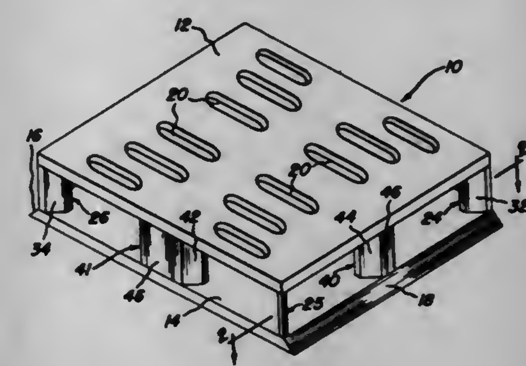
George J. Adams, Santa Monica, and Harry I. Warner, West Covina, Calif., assignors to Stanray Corporation, Chicago, Ill.
Filed July 30, 1969, Ser. No. 846,179
Int. Cl. B61d *17/00, 19/02*
U.S. Cl. 105—397 **3 Claims**



A rail car body having an outer shell formed to provide peripheral rims projecting laterally outwardly from the perimeters of the sides thereof so that the side walls of the car body are, in effect, recessed laterally inwardly relative to the peripheral rims. One of the side walls is provided with a central doorway therein, and two sliding doors, movable horizontally in the fore-and-aft direction between open and closed positions, are disposed within the lateral confines of the recess formed by the corresponding side wall and the peripheral rim encompassing it.

3,606,844
PALLET HAVING GUIDING MEANS IN ALL SIDES

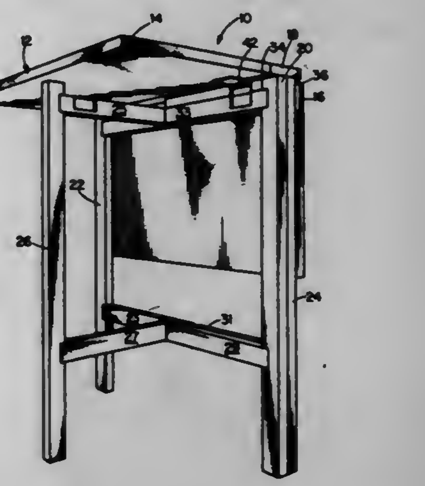
John William Lubker II, and Leo Earnest Owen, Seymour, Ind., assignors to Standard Oil Company, Chicago, Ill.
Filed Oct. 30, 1969, Ser. No. 872,510
Int. Cl. B65d *19/18*
U.S. Cl. 108—58 **9 Claims**



Disclosed is a pallet having top and bottom members connected together by means which space said members to accommodate between them lifting means. The connecting means include upright support elements, near the perimeter of the pallet, which are spaced from each other to define in all sides of the pallet entryways that admit the lifting means. These entryways are characterized by having sidewalls which intersect the perimeter of the pallet to define between each sidewall and the perimeter an acute angle ranging between about 30° and about 75°. The sidewalls guide the lifting means.

3,606,845
FOLDING TABLE

Franklin J. Hickman, 49 Offatt Road, Bedford, Mass. 01730
Filed Apr. 21, 1969, Ser. No. 817,631
Int. Cl. A47b *3/00*
U.S. Cl. 108—112 **2 Claims**



A folding table has a hinged table top and pivoted support legs. Two diagonally opposite support legs are pivotable to a stowed position adjacent the other support legs that are relatively fixed. The table top has two portions that pivot downwardly into a stowed position adjacent the support legs so as to complete a package that is no more than four times as thick as any one of the legs.

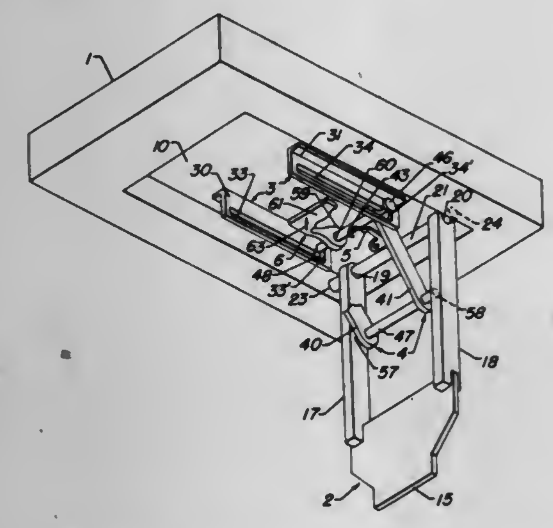
3,606,846
STOWABLE TABLE AND BASE

John Andrews, New Preston, and Lewis Edgar Clack, Torrington, Conn., assignors to Univeral Oil Products Company, Des Plaines, Ill.

Filed Dec. 11, 1969, Ser. No. 884,165

Int. Cl. A47b *3/08*

U.S. Cl. 108—132 **5 Claims**



A stowable table having a platform with a leg support member that rotates into a recessed region of the platform for storage purposes. When in use, the leg support member is maintained in an extended position by a brace which is rotatably connected to the support member and which is maintained in a guide located within the recessed region by a spring. A cam-type release mechanism may be activated to remove the brace from the bias of the spring and allow the brace to be moved within the guide, which in turn causes the leg support member to be rotated into the recessed region. A removable form of pedestal base is provided to support the stowable table and is adapted for mounting between a pair of seats. The base includes a support post having an upper end portion with receptacle means for receiving the leg support member of the table and, in addition, has projecting members from the support post that are sized to engage and clamp onto the under framing of the adjacent seats.

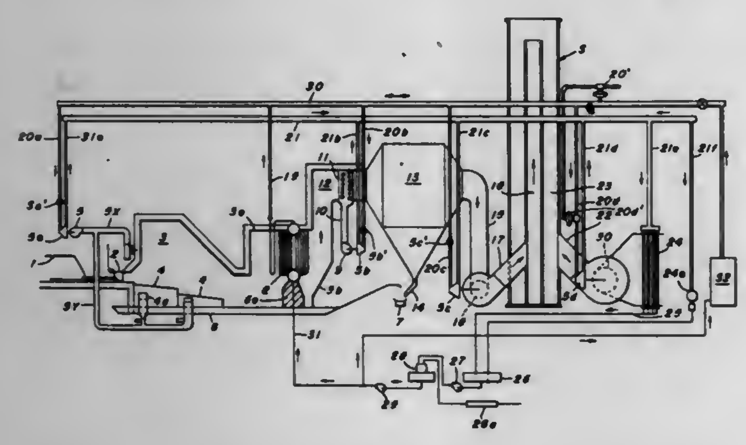
3,606,847
REFUSE INCINERATOR PLANT DESIGN AND METHOD OF OPERATING SUCH A PLANT

Bertram B. Reilly, 17 Briar Cliff Road, Pittsburgh, Pa. 15202

Filed Sept. 8, 1969, Ser. No. 855,926

Int. Cl. F23g *5/00*

U.S. Cl. 110—10 **8 Claims**



There is disclosed a municipal incinerator plant in which a high pressure steam boiler is so arranged that hot combustion gases from the incinerator are cooled by passage therethrough to a temperature compatible with the construction materials of dust collecting and blower equipment through which the combustion gases flow to a stack. Such gases are thereby cooled and cleaned without water sprays and the steam so generated is in part converted into mechanical energy for operation of some components of the incinerator system. The incinerator stack has concentric inner and outer flues, and the hot combustion gases are discharged into the inner flue. A blower, operated by the high pressure steam, circulates air through a condenser to condense the exhaust steam and heat the air. The air so heated is discharged into the outer concentric flue so that the combustion gases leave the stack surrounded by an envelope of rising clean air, resulting in the products of combustion being carried higher above the stack, especially in periods of calm air, before they diffuse into the atmosphere than would otherwise be the case. The blower above referred to is driven by a turbine which is operated as a pressure regulator for the high pressure steam generated by the boiler.

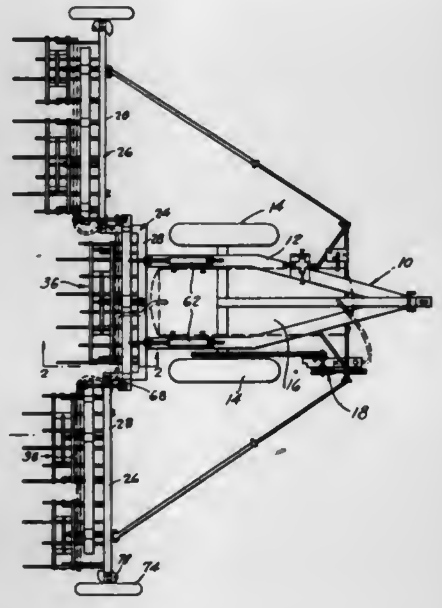
3,606,848
FERTILIZER RIG

Charley B. Dobbs, 515 E. Dayton Ave., and Arlie R. Fullerton, R.F.D. 3, Box 25, both of Dayton, Wash. 99328

Filed Dec. 20, 1968, Ser. No. 785,499

Int. Cl. A01b *49/00, 21/02;* **A01c** *23/02*

U.S. Cl. 111—7 **4 Claims**



A liquid-fertilizer-injecting rig having tubular, fertilizer-injecting tines for directly penetrating the soil. These tines are individually resiliently mounted for accommodating uneven terrain. The rig preferably comprises a trailer device having a plurality of sections including a middle section and two side sections, with one section directly behind the fertilizer tank and the side sections being disposed on either side thereof, so that the three sections can be pulled abreast of each other with means for disconnecting the side sections so they can be rotated 90 degrees and be disposed behind the central section when the rig is pulled along a narrow road.

3,606,849
THROW-OUT NEEDLE CARRIER

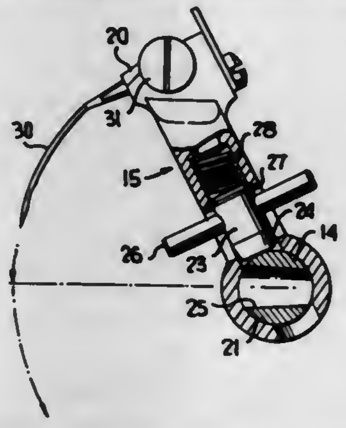
Anthony D. Forte, Chicago, and Roy W. Fletcher, Riverdale, Ill., assignors to Union Special Machine Company, Chicago, Ill.

Filed July 3, 1969, Ser. No. 838,803

Int. Cl. D05b *1/24*

U.S. Cl. 112—176 **10 Claims**

This disclosure relates to an improvement in a blindstitch sewing machine having a needle carrier mounted on an oscillatory shaft. The improvement comprises means whereby the needle carrier may be disengaged from the shaft and rotated relative thereto thereby permitting easy access to a needle carried by the needle carrier for threading purposes and also for needle maintenance.



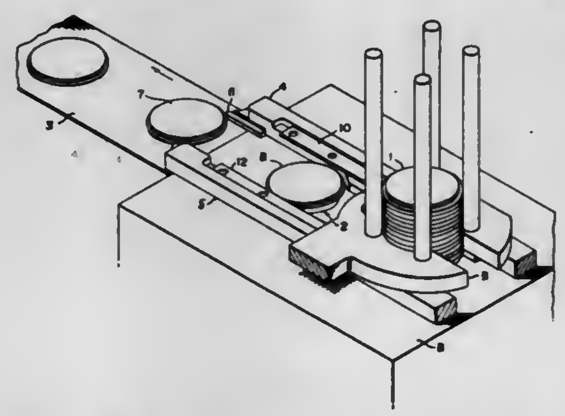
3,606,850
SELF-ADJUSTING CUTOFF KNIFE

Raymond E. Price, 64 Hoitt Road, Belmont, Mass. 02178; Clifford F. Tirrell, 2 MacDougall Court, South Weymouth, Mass. 02190; Richard C. Adams, 36 Woodchester Circle, Waltham, Mass. 02154; and Robert W. George, Strawberry Lane, Belle Mead, N.J. 08502

Filed Apr. 3, 1969, Ser. No. 813,039

Int. Cl. B21d *43/00;* **B65g** *59/06;* **B65h** *3/32*

U.S. Cl. 113—114BE **4 Claims**



A pair of cutoff knives for stripping the lower closure of a vertical stack of closures is floated on spring shims to be able to ride between the curl portions of closures one of whose curl is so oversized as to otherwise cause the knives to interfere with the curl portion.

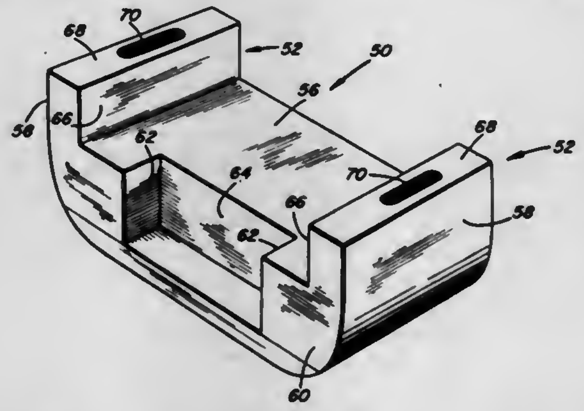
3,606,851
STABILIZER WITH UPRIGHT END TANKS

Frans V. A. Pangalila, Matawan Township, and John P. Martin, Upper Montclair, N.J., assignors to Flame Stabilization Systems, Inc., Hoboken, N.J.

Filed May 28, 1969, Ser. No. 828,609

Int. Cl. B63b *43/06*

U.S. Cl. 114—125 **6 Claims**



A tank for stabilizing a ship against roll, the tank comprising a main body portion with a pair of communicating upright end tanks appended thereto. The stabilizing tank is partially filled with a liquid so that the surface of the liquid, when the tank is level, lies below the top of the central region of the tank.

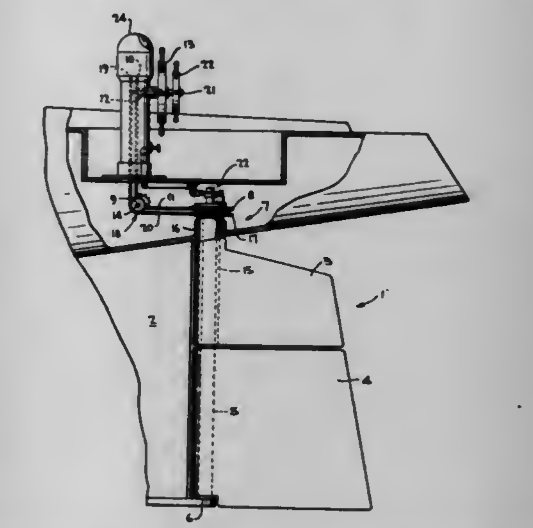
3,606,852
RUDDER

Thomas Cafiero, Stoneleigh Road, Scarsdale, N.Y. 10583

Filed Jan. 27, 1970, Ser. No. 6,142

Int. Cl. B63h *25/06*

U.S. Cl. 114—163 **2 Claims**



A rudder system is provided wherein the rudder is comprised of an upper and lower section each of which may be operated individually or in concert with each other.

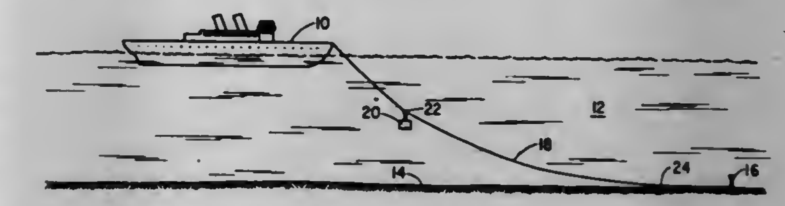
3,606,853
SYSTEM FOR REDUCING DYNAMIC TENSION IN ANCHOR LINE

Feng H. Hsu, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Apr. 1, 1969, Ser. No. 811,850

Int. Cl. B63b *21/24*

U.S. Cl. 114—206 **6 Claims**



This is a system for reducing the dynamic tension in an anchor line connecting a floating vessel to an anchor. A weight clump is connected to the anchor line. The clump must be (1) within critical weight limits and (2) located properly; otherwise dynamic tension can be increased instead of decreased. The weight of the clump should be between about 1½ and about three times the weight per unit length of anchor line times the depth of the body of water. The weight clump should be located from the ship a distance of about at least ⅓ (about not over about ½) of the free-hanging length of the anchor line.

3,606,854
APPARATUS FOR SYNCHRONIZING MOVEMENTS IN ANCHOR CABLE AND A LOAD CABLE

Peter Johan van Lunteren, Kinderdijk, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

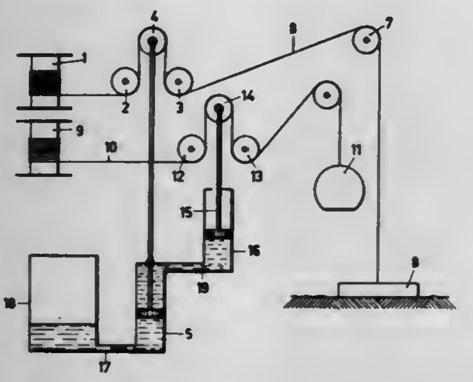
Filed Aug. 11, 1969, Ser. No. 848,793

Claims priority, application Netherlands, Aug. 12, 1968, 6811457

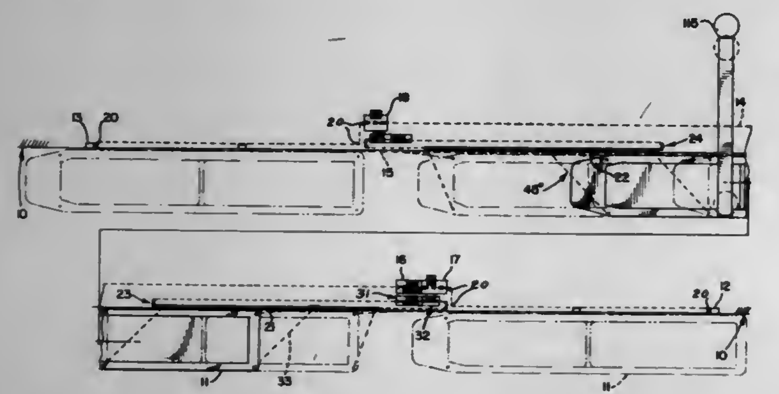
Int. Cl. B63b *21/24*

U.S. Cl. 114—206R **5 Claims**

Vessel with an anchor whose cable is driven by a first winch and another load such as a diving bell whose cable is driven by a second winch, has a swell compensator for each of the two cables, the compensators being interconnected to prevent movement of the load relative to the anchor. The two swell compensators are coupled hydraulically. That of the anchor cable can comprise a hydraulic cylinder connected to a pressure vessel on one side and to a hydraulic cylinder of the compensator for the load on the other side. Alternatively, the winches can be individually coupled to positive-displacement hydraulic motors with one side of the anchor motor connected to a pressure vessel and the other side of the anchor motor connected to one side of the load motor and with the other side of the load motor connected to a reservoir for hydraulic fluid.



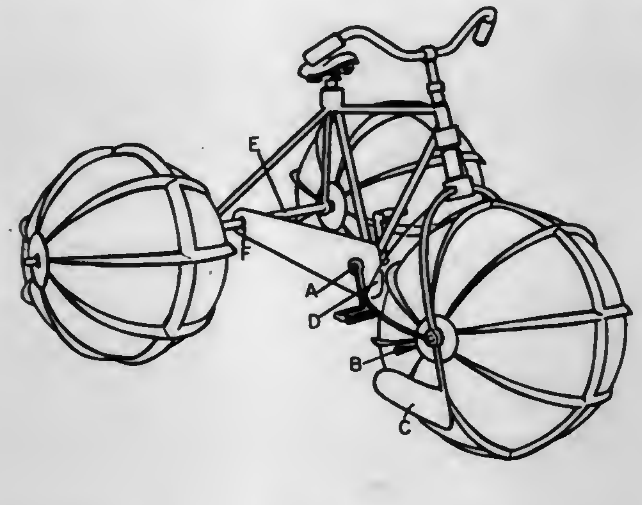
3,606,855
BARGE HANDLING SYSTEM
Wallace J. Saxonmeyer, Park Forest, Ill., assignor to Whiting Corporation
Filed July 22, 1969, Ser. No. 843,492
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 **6 Claims**



An automatic, remotely controlled barge handling system for installation on a barge loading dock which includes a main haul barge puller apparatus and barge snubber apparatus. The puller apparatus includes: a main haul rope; sheave means for supporting and guiding the rope so that one run thereof extends along the front edge of the dock; spaced hawsers clamped to the run with eyes on the outer ends thereof for attachment to a barge; and, a powered winch, preferably of the fluid drive reversible type, for driving the rope and pulling a barge connected thereto along the dock. The barge snubber apparatus has track means adapted to be installed along the front edge of the dock in the loading area thereof with fore and aft snubber carriages mounted on the track means for running therealong. A cable or rope is connected with each of the carriages and sheaves are provided for supporting and guiding each such cable. A reversible powered winch is provided for operating or moving each snubber carriage over which the cable connected to the associated carriage runs so that the same may be moved in opposite directions along the track. A hawser is attached to each of the snubber carriages for connection to a barge cleat or the like.

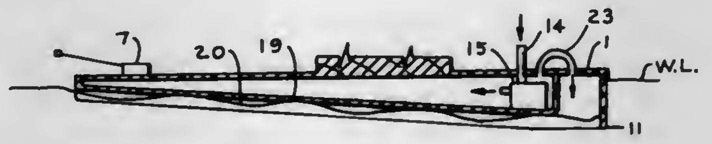
The main haul rope and each of the cables connected to the snubber carriages, each runs through a tension counterweight tower for maintaining predetermined tension on each rope or cable while providing pay-out and take-up movement for accommodating surge, storm, and tide conditions to which a barge may be subjected. The powered winches for operating the main haul rope and each of the snubber carriages may be remotely controlled from any suitable position including an overhead barge loading cab so that the operator has full and convenient control over the barge handling system.

3,606,856
CYCLO AMPHIBIOUS
Ernesto Octavio Moraga, Rincon 1239, Buenos Aires, Argentina
Filed Jan. 8, 1969, Ser. No. 797,318
Int. Cl. B63f *3/00;* **B63h** *1/38*
U.S. Cl. 115—1 **1 Claim**



An amphibious apparatus that includes floaters, and a supporting structure together with means for operating the same.

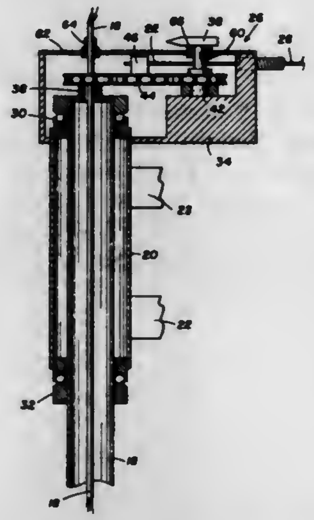
3,606,857
MARINE PROPULSION SYSTEMS
Charles T. Sundquist, 12566 SE. 53rd St., Bellevue, Wash. 98004
Filed June 17, 1968, Ser. No. 737,591
Int. Cl. B63h *11/00, 1/34*
U.S. Cl. 115—11 **1 Claim**



This invention is an improvement in marine propulsion. It consists of two floats separated by open water and joined by interconnecting structure. The floats are propelled by pressurized gases flowing expansively within inclined inverted troughing beneath the floats.

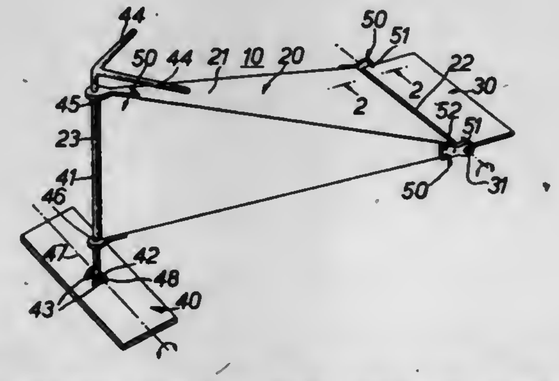
3,606,858
REMOTELY STEERABLE ELECTRIC OUTBOARD MOTOR
Neal B. Edwards, 130½ Rowland Place, Tyler, Tex. 75701, and Stanley B. Lucas, Sr., 115 Lucia Lane, and Chester C. Semon, Jr., 315 Pecan Drive, both of Shreveport, La. 71106
Filed Jan. 19, 1970, Ser. No. 3,772
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 **10 Claims**

A propulsion unit for a boat is disclosed which includes a submersible electric propulsion unit connected to a vertically disposed tubular shaft which is rotatably journaled in a support that is attachable to a boat. A first chain sprocket is connected to the end of the shaft and a second chain sporcket is journaled on the support.



A push-pull cable is attached to one reach of an endless chain that is coupled around the sprockets. The cable is reciprocated by a remotely located actuating unit.

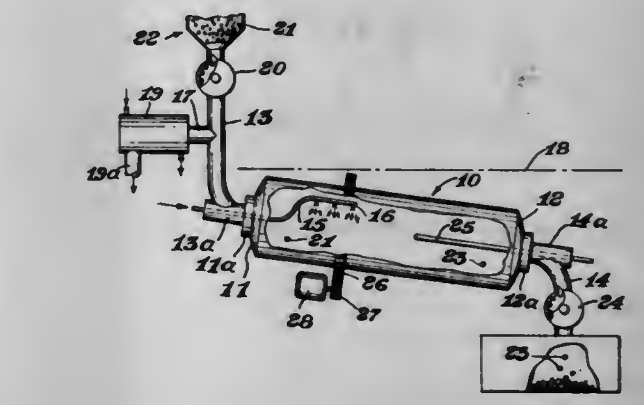
3,606,859
AQUATIC VEHICLE
Michael D. Skitsko, 9650 79th St., Edmonton 82, Alberta, Canada
Filed June 27, 1969, Ser. No. 837,011
Claims priority, application Canada, July 10, 1968, 24,755; Sept. 23, 1968, 30,661
Int. Cl. B63h *1/30*
U.S. Cl. 115—29 **6 Claims**



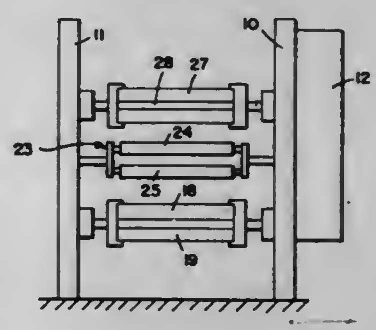
An amusement and exercising device including a body buoyant in water and so shaped as to propel itself forwardly upon rocking the body to and fro in the water. The body is preferably in the shape of an irregular tetrahedron having a narrow vertical edge providing a bow and a horizontal narrow edge at the opposite end providing a stern and with sculling devices consisting of flat board-like members pivotally attached to the body for limited arcuate movement. Directional control may be effected by a rudder pivotally mounted on the body and/or pivoting one of the sculling devices about a vertical axis. Toe grips are provided on the upper surface upon which an occupant may either sit or stand depending upon skill in manipulating the device.

3,606,860
CONTINUOUS TABLET COATING APPARATUS
James L. Dunn, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 6, 1969, Ser. No. 864,001
Int. Cl. B05c *5/00, 11/115*
U.S. Cl. 118—61 **4 Claims**

A continuous tablet coating apparatus being a generally kiln-like container rotatable about its longitudinal axis having one end elevated above the other, the elevated end being the inlet to the container and the depressed end being the outlet from the container, each inlet and outlet provided with a gas-tight seal and a valved tube or pipe to conduct solids into and away from the kiln-like container. The inlet tube or pipe has a side arm tube connected to a condenser which is preferably located at least above the plane of the elevated end of the kiln-like container. The kiln-like container has a means for heating the interior, particularly the solids which enter the container, and a liquid distribution means positioned to provide a uniform distribution of a liquid coating composition onto solids within the container. Associated with the container are means to rotate the container.



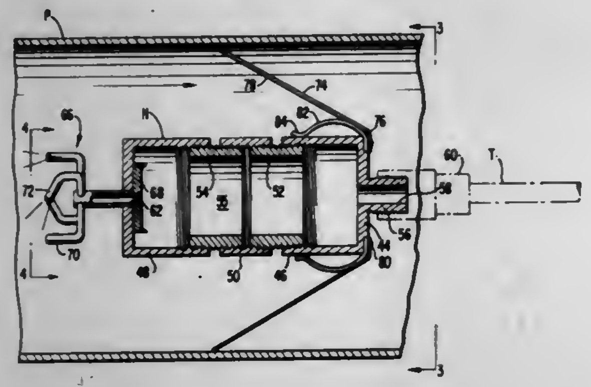
3,606,861
CONTINUOUS ROLL COATER
Edwin K. Schaeuble, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed June 19, 1969, Ser. No. 834,749
Int. Cl. B05c *1/00*
U.S. Cl. 118—224 **2 Claims**



A roll coater of the gravure or related fluid applying type which employs turret equipped with backing rolls to eliminate the machine stoppages usually required during normal operation.

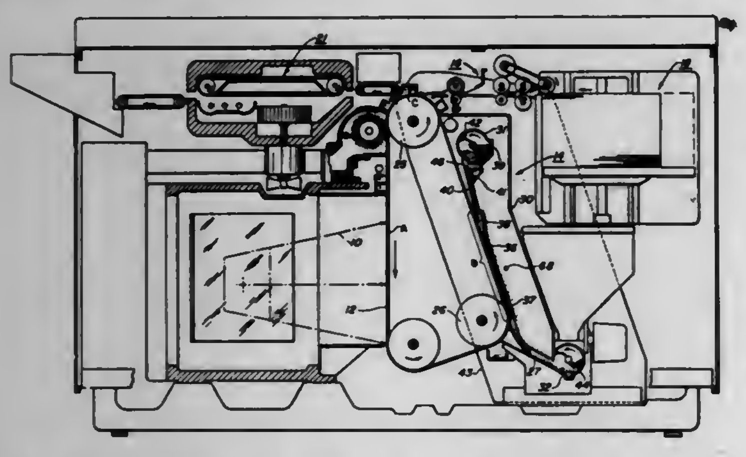
3,606,862
PIPE LINING APPARATUS
Milton P. Huff, P.O. Box 95, Deweyville, Tex. 77614; Sidney J. Sullivan, Jr., 439 1st St., Jennings, La. 70546; and Wayne E. Bailey, 155 Hullitt Drive, Vidor, Tex. 77662
Filed Apr. 22, 1969, Ser. No. 818,286
Int. Cl. B05c *7/02*
U.S. Cl. 118—306 **6 Claims**

Disclosed is a motor driven drum for drawing a supply hose and an applicator head through a pipe. The hose communicates through the drum with a reservoir containing coating material and supplies the latter to the applicator head for coating the wall of a pipe. The applicator head has a plurality of nozzles mounted for rotation under centrifugal force to provide a conical spray for applying the coating to the wall as the head is drawn through the pipe. A plurality of centering vanes are carried at circumferentially spaced positions about the head and are spring biased to engage the inner wall forwardly of the spray whereby the head is maintained in a coaxial position relative to the pipe as it is drawn through the latter.



3,606,863
DEVELOPMENT ELECTRODE

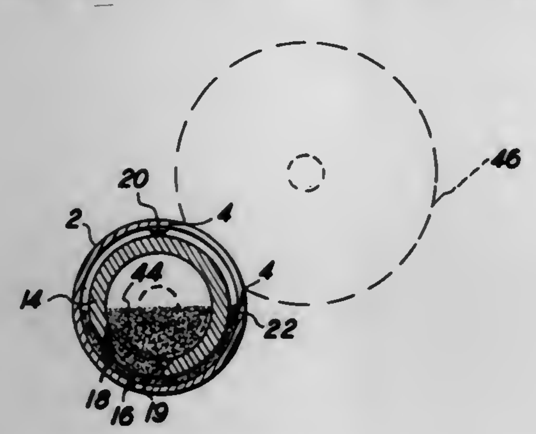
Salvatore Latone, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Feb. 12, 1969, Ser. No. 798,669
Int. Cl. B05b *5/00*
U.S. Cl. 118—637 3 Claims



A development electrode for use in cascade development of electrostatic latent images formed on flat photoreceptors such as flat runs of photoconductor belts or plates. The electrode is formed from a flat plate of glass coated with conductive material and mounted in position by means of a plurality of insulated adjustable devices.

3,606,864
DONOR ASSEMBLY

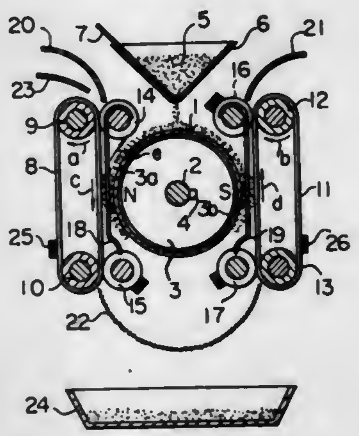
William D. Perun, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Mar. 10, 1969, Ser. No. 805,767
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 11 Claims



An electroscopic marking particle supply and donor assembly having a cylindrical housing with an opening therein to make accessible to another member a crescentic tubular member enclosing a supply of developer material and which reciprocates inside the housing and about the axis thereof.

3,606,865
DEVELOPING APPARATUS FOR ELECTROPHOTOGRAPHY

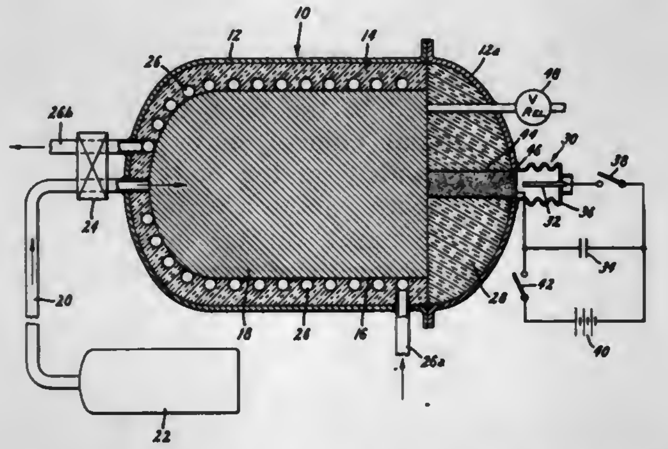
Yutaka Koizumi, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 28, 1969, Ser. No. 828,582
Claims priority, application Japan, June 8, 1968, 43/48,135, 43/48,136
Int. Cl. B05b *5/00*
U.S. Cl. 118—637 6 Claims



There is disclosed herein a developing apparatus, wherein magnetic brushes are formed on the outer surface of a rotating cylinder corresponding to the poles of a magnet installed within the rotating cylinder, the photosensitive surface of a sheet of photosensitive paper bearing an electrostatic latent image is brushed twice by the magnetic brushes, and the photosensitive paper is fed without using any support so that any size of photosensitive paper may be used and may be fed continuously, toner can be supplied and discharged easily, and a good quality image can be obtained quickly.

3,606,866
CONTROLLED OXIDATION HEAT SOURCE

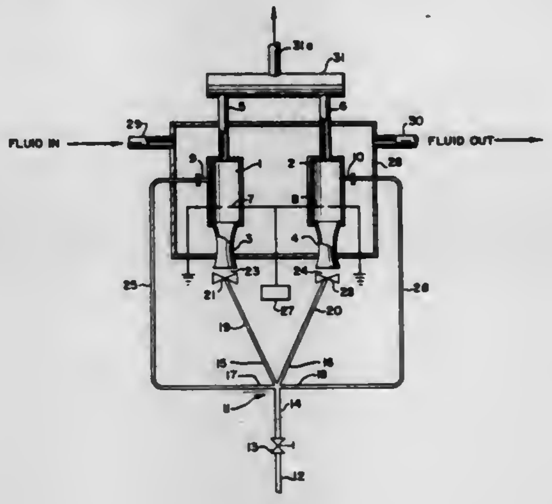
Rudolf R. Laessig, Sumneytown, and John J. Maley, Schwenksville, Pa., assignors to General Electric Company
Filed May 1, 1969, Ser. No. 820,871
Int. Cl. F22b *1/00;* F23b *7/00*
U.S. Cl. 122—4 11 Claims



Apparatus for generating heat by oxidation of a metal. The apparatus is comprised of a quantity of oxidizable metal located within a container, a supply of oxygen controllably ducted to the metal, means for initiating the oxidation of the metal and a heat exchanger for conducting the heat generated by the oxidation of the metal to the area to be heated.

3,606,867
PULSATING COMBUSTION SYSTEM

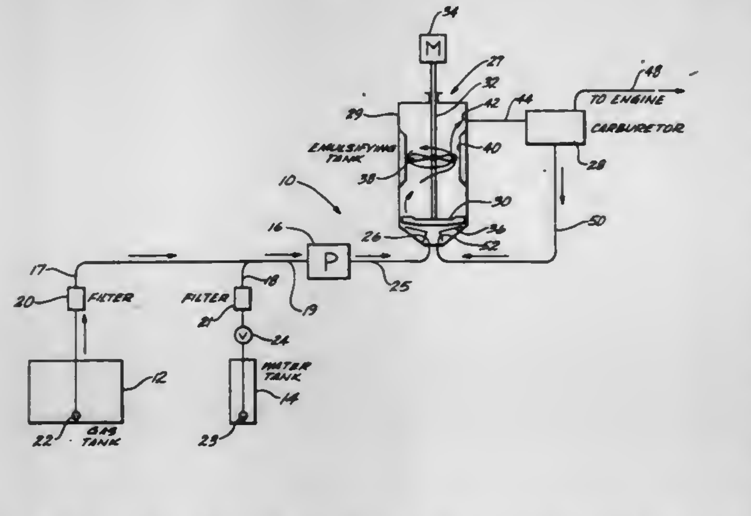
Francis E. J. Briffa, Sunningdale, England, assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 5, 1970, Ser. No. 16,799
Claims priority, application Great Britain, Feb. 17, 1969, 8,442/69
Int. Cl. F23r *1/12*
U.S. Cl. 122—24 3 Claims



A pulsating combustion system for producing a high temperature, high pressure gas stream including at least a pair of combustion chambers with each of the chambers having at least one inlet for introducing a mixture of gas and oxidant thereto and at least one combustion gas outlet. Ignition means are associated with the interior of each of the chambers for igniting the mixture of gas and oxidant present in the chambers and pulse take-off means are coupled to each of the chamber means for taking pressure pulses due to combustion in the chambers from each of the chambers. Finally, gas feed means are coupled to each of the inlets for selectively supplying gas thereto with switching means operatively engaging both the gas feed means and the pulse take-off means for supplying gas to the inlet of one of the chambers upon actuation of the pressure pulses received by the pulse take-off means from the other of the chambers.

3,606,868
SMOG CONTROL SYSTEM EMPLOYING AN EMULSION OF WATER IN GASOLINE

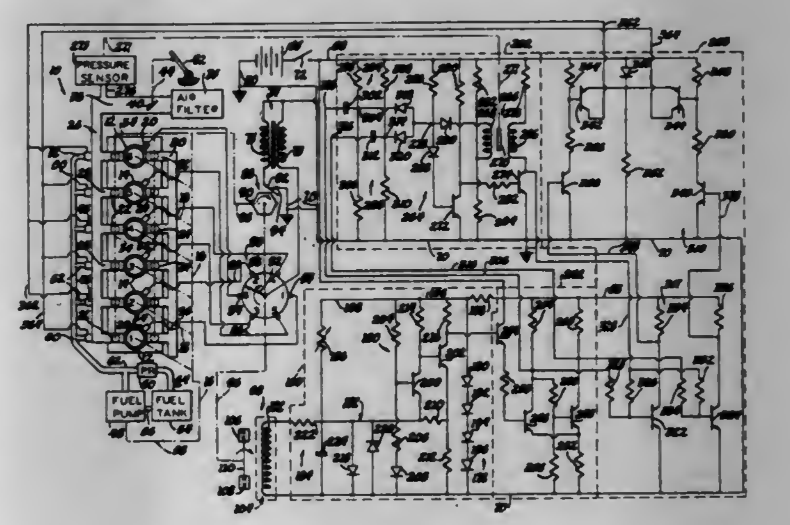
Maarten Voogd, 918 Palomar Road, Ojai, Calif. 93023
Filed May 14, 1970, Ser. No. 37,117
Int. Cl. F02d *19/00;* C10l *1/32;* F02m *25/02*
U.S. Cl. 123—25R 5 Claims



A fuel system for reducing nitrogen oxides and carbon monoxide in the exhaust gas emissions of an internal combustion engine includes a storage tank for gasoline and a dissolved emulsifying agent, a storage tank for deionized water, and means for pumping controlled volumes of the gasoline and emulsifying agent and the water to an emulsifying chamber and thence to the engine. In one form of the invention, rotary stirring means within the emulsifying chamber emulsify the water in gasoline, and the emulsion is then introduced into the engine carburetor. Means provides for continuous, uninterrupted recirculation of a portion of the emulsion accumulated in the carburetor fuel chamber to the emulsifying chamber. In another form of the invention, a centrifugal pump emulsifies the water in the gasoline. The emulsion is then pumped into the engine cylinders by direct fuel injection. The emulsion substantially reduces the reaction temperature of gasoline and air in the engine cylinders, and thereby reduces the formation of nitrogen oxides which are a major cause of air pollution.

3,606,869
APPARATUS FOR ELECTRICALLY SYNCHRONIZING FUEL INJECTION WITH FUEL IGNITION IN AN INTERNAL COMBUSTION ENGINE

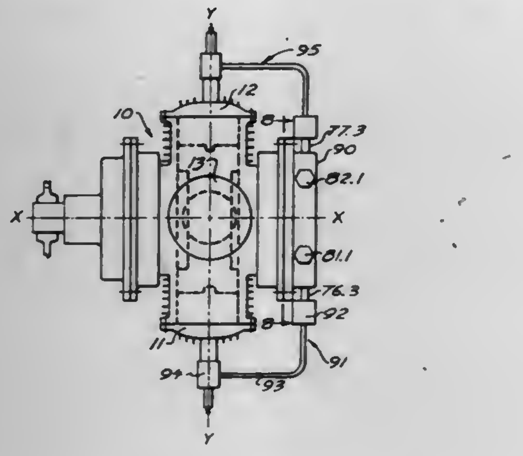
Gerald O. Huntzinger and Donald O. Ruff, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 36,055
Int. Cl. F02m *51/00*
U.S. Cl. 123—32EA 8 Claims



In an internal combustion engine having a plurality of cylinders arranged in first and second banks, an electronic fuel injection system includes a timing apparatus for synchronizing the injection order of the cylinders with the ignition order of the cylinders. The timing apparatus comprises a timing transducer and a timing circuit. The timing transducer includes a pair of rotatable permanent magnets oppositely poled with respect to a stationary winding for producing alternate first and second timing pulse pairs in synchronization with the operating cycles of the engine. The first and second timing pulse pairs exhibit opposite polarity transitions effectively dividing each engine operating cycle into first and second operating stages. The timing circuit includes a bistable multivibrator for producing a timing signal which alternately shifts between first and second levels in response to the opposite polarity transitions in the first and second timing pulse pairs. In a conventional manner, a fuel ignition system sequentially fires the first bank of cylinders during the first operating stage and sequentially fires the second bank of cylinders during the second operating stage. In a complementary manner, the fuel injection system is responsive to the first and second levels of the timing signal to simultaneously charge the first bank of cylinders during the first operating stage and to simultaneously charge the second bank of cylinders during the second operating stage. Thus, the injection order of the cylinders is time division synchronized with the ignition order of the cylinders.

3,606,870
INTERNAL COMBUSTION ENGINE FUEL INJECTION ACTIVATION MEANS

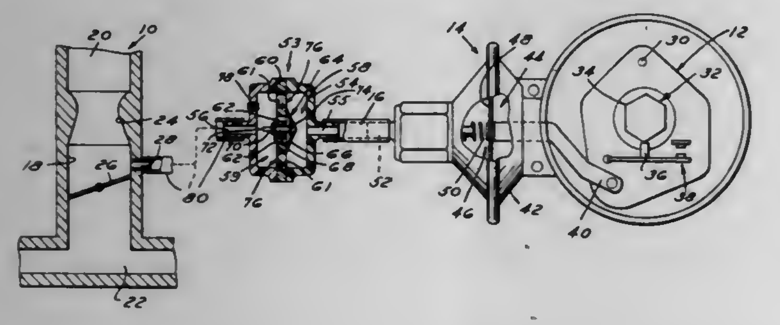
Leopold W. Llewellyn, 4740 Southlawn, Burnaby, British Columbia, Canada
Filed Oct. 21, 1969, Ser. No. 868,197
Claims priority, application Great Britain, Oct. 26, 1968, 50,904/68
Int. Cl. F02b *75/24*
U.S. Cl. 123—56B 9 Claims



An internal combustion engine according to U.S. Patent 3,329,132 has a crankshaft having an unusual motion. The engine has opposed aligned charge cylinders at right angles to opposed aligned power cylinders. Spaced aligned crank pins reciprocate along an axis concurrently rotating. This motion is utilized to activate common fuel injectors. A cylindrical cam secured co-axial with one aligned crank pin operates one lifter when moving in one direction, and operates a second lifter when moving in an opposite direction. Push rods of each lifter activate separate injectors delivering a fuel charge to each power cylinder near top dead centre of compression stroke. Adjustable timing of injection. Minimal impact reduces noise and wear of cam and lifters.

3,606,871
ENGINE SPARK TIMING CONTROL DEVICE

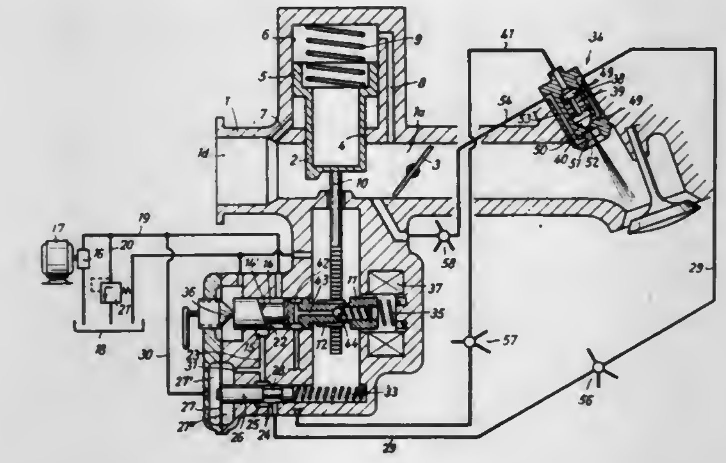
Karl H. Gropp, Grosse Pointe Woods, and John A. Lewis, Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed July 6, 1970, Ser. No. 52,325
Int. Cl. F02p *5/06*
U.S. Cl. 123—117A 4 Claims



An internal combustion engine has a vacuum servo connected to the distributor breaker plate for moving it as a function of the change in carburetor spark port vacuum as controlled by a mechanical device between the servo and spark port having sintered metal flow restriction and a one-way check valve in parallel flow circuits, the check valve unseating during rapid vehicle accelerations to quickly reduce the spark advance setting to a lower level, for better performance, the sintered metal flow restriction providing a delayed rate of return to an advanced spark timing setting during relatively slower accelerations, to minimize the emission of undesirable exhaust gas elements.

3,606,872
FUEL INJECTION SYSTEM FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES

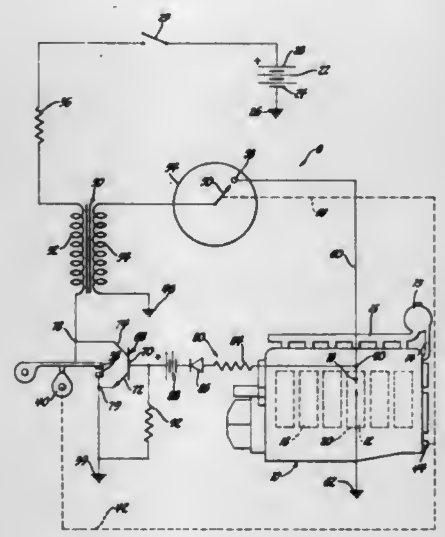
Konrad Eckert, Stuttgart-Bad Cannstatt, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed July 9, 1970, Ser. No. 53,344
Claims priority, application Germany, July 9, 1969, P 19 34 705.8
Int. Cl. F02b *33/00;* **F02m** *39/00*
U.S. Cl. 123—119R 5 Claims



In a fuel injection system, the fuel admitted to the fuel injection valve is metered by a plunger angularly displaceable by a throttle member responsive to the air pressure in the suction tube. Prior to the injection of fuel by the injection valve into the suction tube, the fuel is premixed in said injection valve by air taken from the suction tube downstream of said throttle member and upstream of an arbitrarily operable butterfly valve.

3,606,873
IGNITING SYSTEM FOR DIESEL ENGINE STARTING

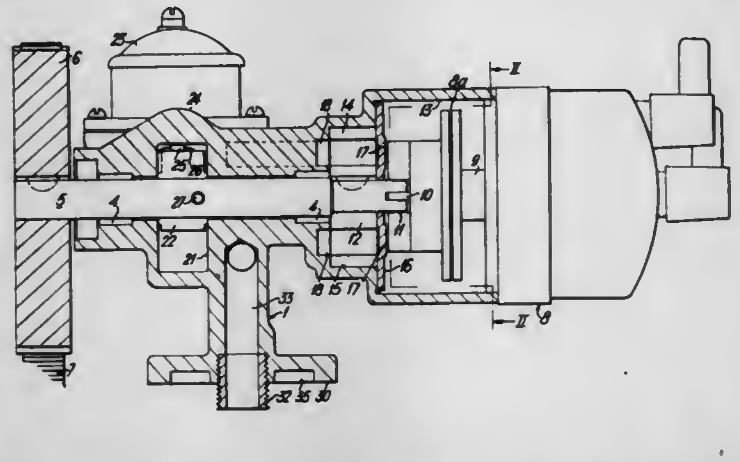
Gustav F. Rademacher and Donald R. Van Uum, Davison, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 1, 1970, Ser. No. 33,638
Int. Cl. F02b *3/00;* **F02n** *17/00;* **F02p** *1/00*
U.S. Cl. 123—179B6 2 Claims



An igniting system is provided in a diesel engine wherein a spark ignition circuit including a spark plug mounted in one of the engine combustion chambers assists starting by spark ignition. After normal compression ignition is established, the ignition circuit is deactivated by a semiconductor switch. The semiconductor switch is controlled in response to ionization of combustion chamber gases which normally occurs as the engine is running.

3,606,874
INTERNAL COMBUSTION ENGINE ACCESSORY UNITS ASSEMBLIES

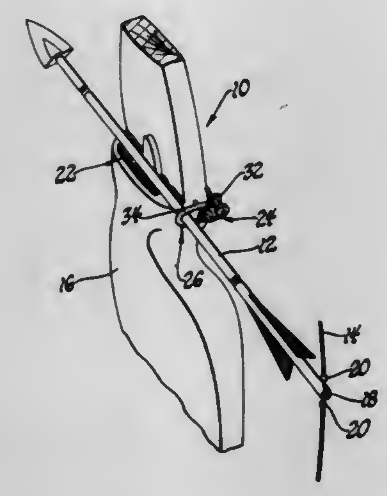
Donald Frederick Gregory, Leighton Buzzard, England, assignor to General Motors Corporation
Filed Apr. 30, 1970, Ser. No. 33,311
Claims priority, application Great Britain, May 10, 1969, 23,899/69
Int. Cl. F02b *77/14*
U.S. Cl. 123—195A 3 Claims

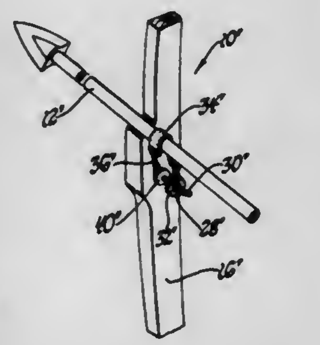


Accessory units for an internal combustion engine are mounted on a housing adapted to be detachably secured to the engine, the housing carrying a single drive shaft for the ignition distributor, an oil pump and a fuel pump, and the distributor and oil pump and a fuel pump actuator cam being arranged coaxially of the drive shaft which is adapted to be driven by a drive chain belt which drives the engine cam shaft.

3,606,875
ASSEMBLY FOR HOLDING AN ARROW IN A NOCKED OR FULLY DRAWN POSITION

Richard F. Carella, 35572 Strathcona, Mount Clemens, Mich. 48043
Filed Nov. 24, 1969, Ser. No. 879,494
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 15 Claims

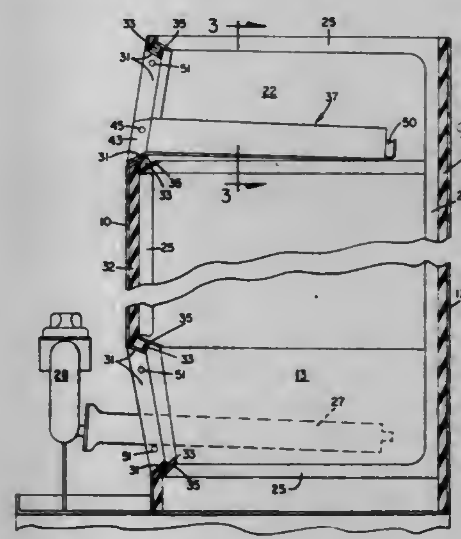




An archery assembly for holding an arrow in a fully drawn position or a nocked position on a bow string of a bow including a rod extending rearwardly from the bow and terminating in a shaft-like portion with a cantilevered upturned end. A first circular member is disposed about the rod and is retained thereon by a stop disposed about the rod to prevent the first circular member from being removed therefrom. Attached to the first circular member is a resilient element such as rubber band which is in turn attached to or covered by an elongated piece of material, if attached, a second resilient member connects the elongated piece to a second circular member. The assembly may be disposed about an arrow with the second circular member disposed on the shaft-like portion of the rod for retaining the arrow in the nocked position until the arrow is moved longitudinally of itself whereby the second circular member will be moved off the cantilevered end of the shaft-like portion. In one embodiment the arrow is released as it moves forwardly and in the other embodiment it is released as it is drawn rearwardly.

3,606,876
HEAT EXCHANGER CELL FOR GAS-FIRED FURNACE

Donald R. Smith, Diamond Bar, and Adrian V. Cavestany, Pasadena, Calif., assignors to Carrier Corporation, Syracuse, N.Y.
Filed May 7, 1970, Ser. No. 35,371
Int. Cl. F24c *3/00;* **F24h** *3/00*
U.S. Cl. 126—91R 6 Claims

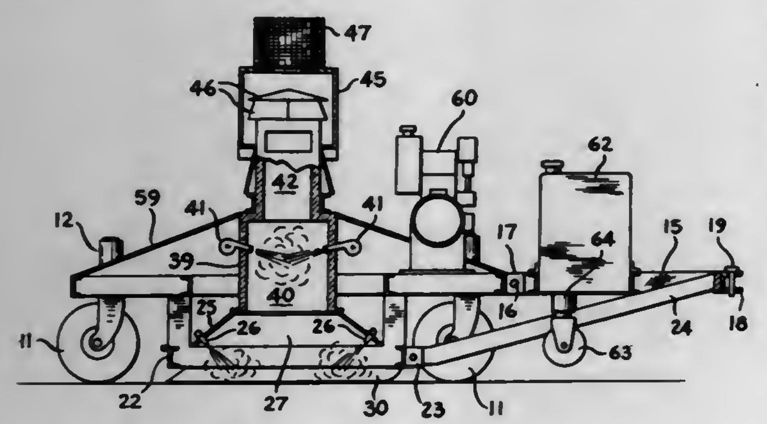


The discharge chamber of the heat exchanger cell has an inlet slot extending lengthwise of the chamber which has an open discharge end. A trough-shaped baffle extends above the slot with the apex of the baffle in proximity to the slot, the baffle being positioned medial of the side walls of the chamber. One end of the baffle is fixed at the open end of the chamber. The sides of the baffle at the opposite end thereof are provided with arcuate tabs which yieldingly engage the side walls of the chamber. Such frictional engagement maintains the baffle in proper position and permits expansion and contraction of the baffle relative to the discharge chamber of the cell.

3,606,877
SMOKELESS MOBILE FIELD BURNER INCINERATOR

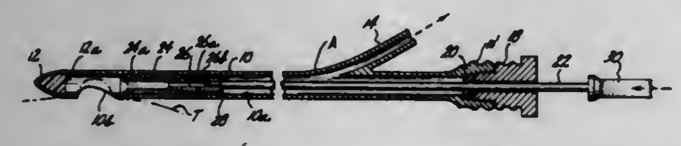
Bert E. Shipp, 2311 SW. Iron Mountain Blvd., Lake Oswego, Oreg. 97034
Filed Oct. 13, 1969, Ser. No. 865,606
Int. Cl. A01m *1/20, 15/00*
U.S. Cl. 126—271.2A 10 Claims

A vehicle on caster wheels has a hood a short distance above the ground equipped with oil burners forming a primary combustion chamber to consume all burnable material on the ground. A secondary combustion chamber burns and eliminates the smoke from the primary combustion chamber and a water spray scrubber removes cinders and fly ash so that only relatively clear combustion gases are discharged into the atmosphere. The vehicle is of a width appropriate for travel on a public road and is equipped with a drawbar which may be shifted to one side of the vehicle so that in use it is drawn sideways across a field to burn a wide swath equal to the length of the vehicle.



3,606,878
NEEDLE INSTRUMENT FOR EXTRACTING BIOPSY SECTIONS

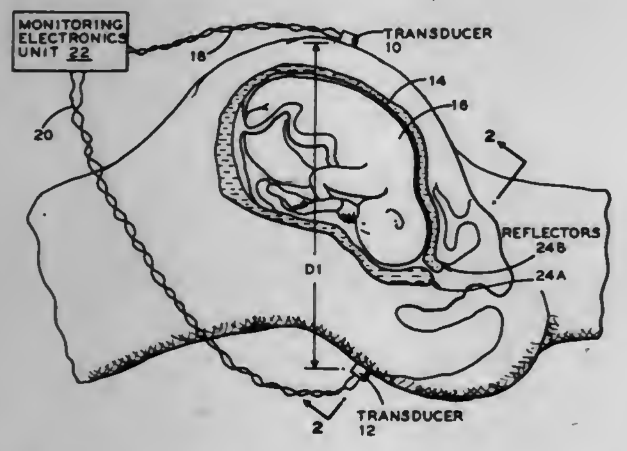
Howard B. Kellogg, Jr., 3843 92nd NE.,
Bellevue, Wash. 98004
Filed Oct. 4, 1968, Ser. No. 765,161
Int. Cl. A61b *10/00*
U.S. Cl. 128—2B 2 Claims



Specimen tissue drawn by suction into a specially formed side port adjacent the hollow penetrating needle tip is severed by forward motion of a tubular cutter slidable in the needle passage through prehensile application of thumb pressure on the outer end of an actuator rod. Suction is applied to the needle passage behind the cutter and reaches the port through passage in the cutter itself so as to help retain the specimen in the cutter cup. The cutter is removable to facilitate dislodging of the specimen and to sharpen and clean the cutter.

3,606,879
MONITORING THE PHYSIOLOGICAL PHENOMENA OF CHILDBIRTH WITH ULTRASOUND

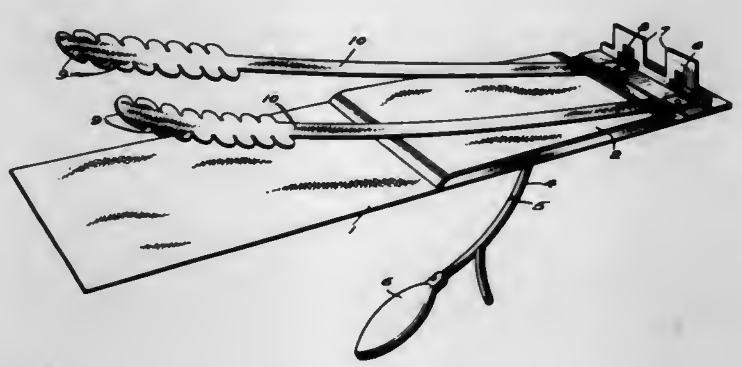
Jerry R. Estes, Boulder, Colo., assignor to Electro Medical Systems, Inc., Englewood, Colo.
Filed June 17, 1968, Ser. No. 737,608
Int. Cl. A61l *5/02*
U.S. Cl. 128—2.05R 11 Claims



An ultrasonic apparatus for monitoring, during childbirth, the physiological phenomena of fetal heartbeat, cervical dilatation and uterine contraction. Fetal heartbeat is monitored by indicating changes in the frequency of ultrasonic waves passing through the fetus due to the Doppler effect caused by movements of the fetal heart or blood. Uterine contraction is monitored by indicating changes in transit time of pulses of ultrasonic energy. To measure cervical dilatation, two reflectors are clipped to the mouth of the cervix and ultrasonic pulses from an external transducer are directed to the reflectors. The transit time difference between the reflected signals indicates the dilatation.

3,606,880
BLOOD PRESSURE CUFF

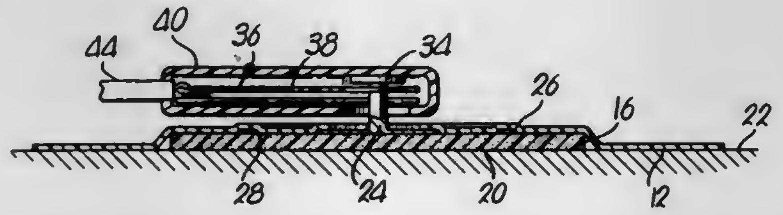
Benjamin C. Ogle, Jr., 2930 McClure St.,
Oakland, Calif. 94609
Filed Apr. 18, 1969, Ser. No. 817,343
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05C 6 Claims



A blood pressure cuff made to be disposable, having a cover sheet of relatively thin material provided with a closed envelope adjacent one end thereof containing an elastic or plastic bag adapted to be inflated and to be connected with a tube leading out of the envelope for attachment of a bulb and a manometer. Attached to the end of the sheet is means for anchoring the cuff about the limb after wrapping it therearound.

3,606,881
CONDUCTIVE RUBBER ELECTRODE

Riley D. Woodson, 2012 W. 50th Terrace,
Shawnee Mission, Kans. 66205
Continuation of abandoned application Ser. No. 640,028, May 22, 1967. This application Feb. 20, 1970, Ser. No. 12,904
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06E 2 Claims



A throwaway item for effecting an electrical connection with the skin comprises a skin-contacting electrode of flexible, conductive plastic material held against the skin by a pliant, adhesive member to which the electrode is adhered. A terminal is mounted on the electrode and extends therefrom to provide a connection point for external electrical apparatus, such as an electrocardiograph machine or a heart pacer. A connector clip is electrically connected with the apparatus by a lead and is attached to the terminal after the item is applied to the skin. The method of applying the item to the skin to effect an electrical connection therebetween is characterized by pressure responsive adhesive attachment and by both the skin and the face of the item in contact therewith being dry.

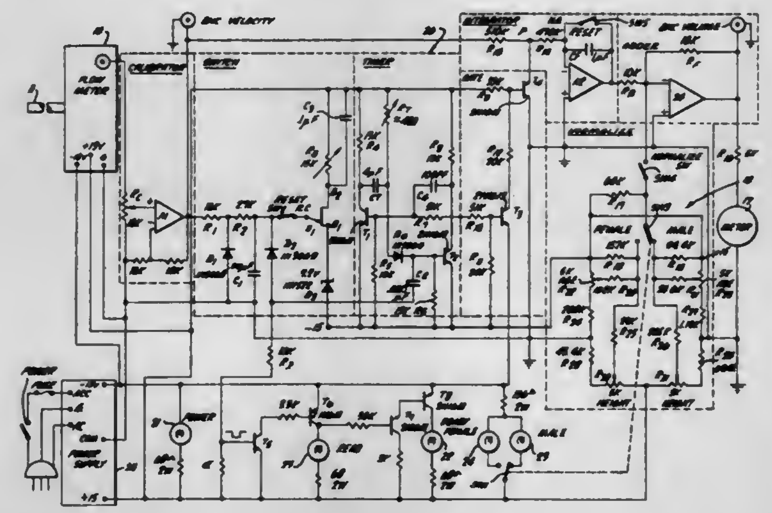
3,606,882
ECG PROCESSING SYSTEM FOR P- AND QRS-WAVE CHARACTERISTICS

Zenmon Abe, Takaji Suzuki, and Masayuki Tsuneoka, Kokubunji-shi, and Eiichi Kimura, Teizo Akazome, Kanji Obayashi, and Gengo Kasai, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 11, 1969, Ser. No. 815,305
Claims priority, application Japan, May 20, 1968, 43/33,601
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06A 16 Claims

A system for diagnosing heart diseases employs analog and digital circuitry which separates the P wave or the QRS wave from a waveform of cardiac potential. This waveform of cardiac potential includes the P wave, the QRS wave and the T wave. Through a plurality of storage and sampling elements, the width and amplitude of the QRS wave or the width, number of peaks and characteristics of the P wave are determined.

3,606,883
SPIROMETER WITH NORMALIZING MEANS

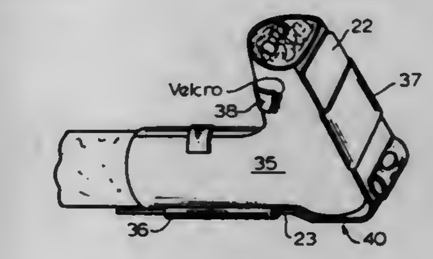
Kurt P. Poirier, Sacramento, and Paul A. Lux, South Gate, Calif., assignors to Sutter Hospitals Medical Research Foundation, Sacramento, Calif.
Filed Feb. 3, 1969, Ser. No. 796,055
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 6 Claims



A spirometer has a flowmeter for measuring the flow rate of air blown through a tube by a patient, and a calibrator for producing an electrical signal proportional to the volume per second of air expired. The electrical signal is detected by a switch which actuates a timer for holding a gate open for one second to apply the electrical signal to an integrator for one second to produce an output signal representing the volume of air expired by the patient in one second. A normalize circuit produces an output signal representing the volume of air expired in one second by a normal person having the same height, sex, and age as the patient. The output signals from the normalize circuit and the integrator are compared to produce a signal representing the patient's deviation from normal.

3,606,884
FOOT-BOOT APPARATUS

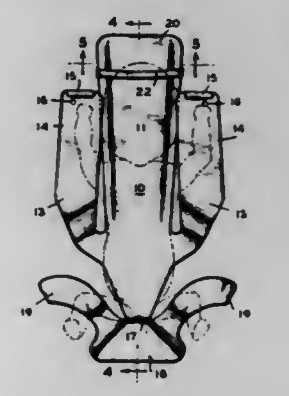
Mary A. Peter, 2710 McDowell St.,
Durham, N.C. 27705
Filed Mar. 17, 1969, Ser. No. 807,546
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 2 Claims



A medical apparatus for immobilizing and protecting the feet of bed patients incorporates a pair of padded boots which are removably secured to a pair of L-shaped brackets and the brackets are adjustably mounted on a spacer bar.

3,606,885
INFANT HOLDER

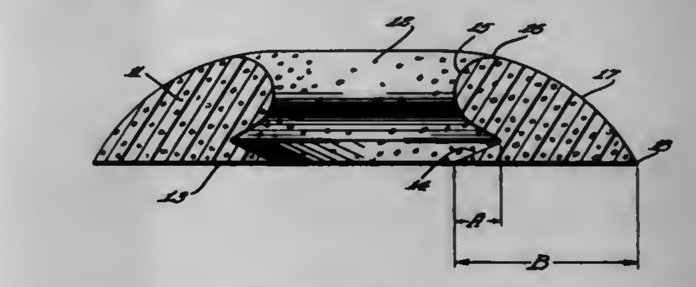
Douglas W. Lund, Sacramento, Calif.
(6837 Ridgeway Drive, Pollock Pines, Calif. 95726)
Filed May 2, 1969, Ser. No. 821,367
Int. Cl. A61f *5/37*
U.S. Cl. 128—134 4 Claims



An infant holder of a preformed unitary plastic body by which an infant can be supported either in a relatively fixed supine position or in a suspended upright position for the making of an X-ray or other treatment or operation, and which not only will not interfere with the X-ray but will stand sterilization.

3,606,886
PRESSURE RELIEF CUSHION

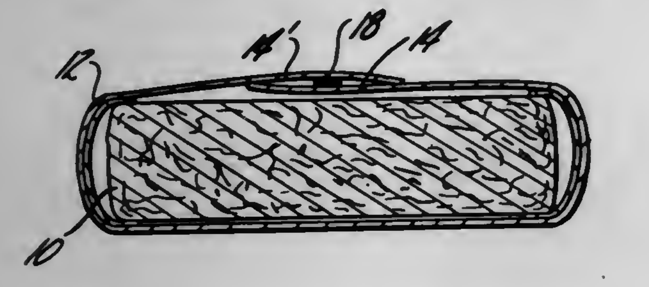
Ernst Bittner, Frankfurt am Main, Germany, assignor to The Scholl Mfg. Co., Inc., Chicago, Ill.
Filed Dec. 29, 1969, Ser. No. 888,573
Claims priority, application Germany, Aug. 29, 1969, P 19 43 892.7
Int. Cl. A61f *5/30*
U.S. Cl. 128—153 7 Claims



Pressure relief cushion, such as a corn ring, comprising a body of a flexible foam material having a central aperture therein, the wall of the body which defines the aperture having a groove extending radially outwardly from the wall toward the periphery of the body.

3,606,887
OVERLAP SEAL AND SUPPORT STRIP FOR A SANITARY NAPKIN WRAPPER

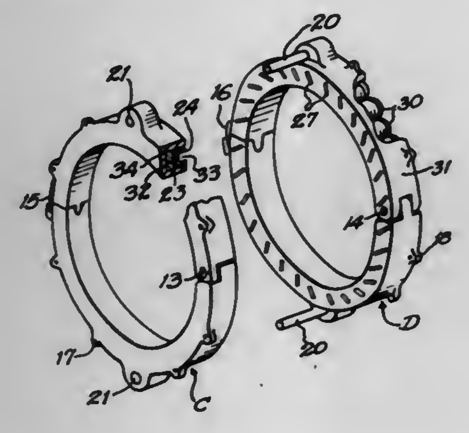
Robert J. Roeder, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 5, 1970, Ser. No. 8,832
Int. Cl. A61f *13/16*
U.S. Cl. 128—290R **8 Claims**



A sanitary napkin designed for disposal in conventional toilet systems includes a conventional pad enclosed in a fluid pervious wrapper which has longitudinally extending overlapping edges. A layer of hydroxylalkylated cellulose is positioned between the overlapping edges and bonded thereto so that sufficient strength to perform the support function will be available but which layer will readily disintegrate in an excess of water to provide flushability.

3,606,888
STAPLING APPARATUS FOR ANASTOMOSIS OF HOLLOW VISCERA

Jack E. Wilkinson, 2411 Divisadero St., Fresno, Calif. 93271
Filed June 30, 1969, Ser. No. 837,560
Int. Cl. A61b *17/11*
U.S. Cl. 128—334 **4 Claims**

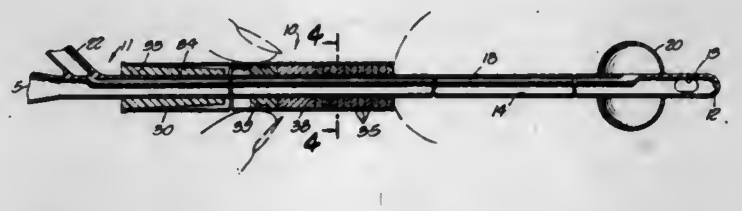


Anastomosis by simultaneous setting of a full 360° annular array of staples to join cut ends of a hollow viscus (i.e. intestinal tube or blood vessel) by everting the cut ends through and outwardly between a pair of opposed staple-setting split rings, operating the rings to staple the everted ends together, and opening the rings to remove them from the repaired viscus.

3,606,889
GUARD ACCESSORY FOR CATHETER

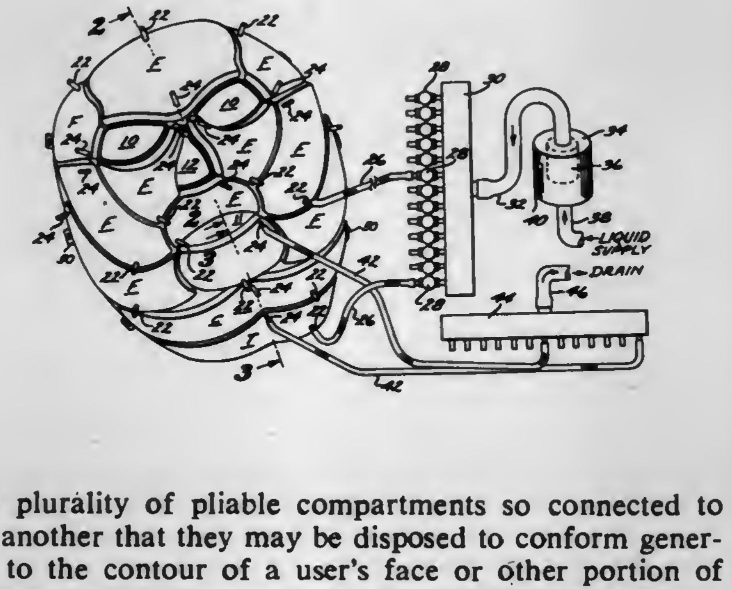
Dennis Arblaster, 34081 La Serena, Dana Point, Calif. 92629
Filed July 30, 1969, Ser. No. 846,059
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 **12 Claims**

A sterile guard accessory for assembly over the tip end of a retention type catheter to safeguard the sterile condition of the catheter exposed beyond the urethral orifice. The accessory includes a readily expandable and collapsible guard tube enclosing a stack of sterile cushions at its forward end and sized to have a snug fit with the catheter for retention in adjusted position thereon with the advance cushion seated comfortably against the urethral orifice. The cushions are weakened to facilitate detachment of a soiled cushion and exposure of the next sterile cushion. The accessory is equally effective for men and women.



3,606,890
BEAUTY TREATMENT APPARATUS

Walter Gilbert, 235 S. Occidental Blvd., Los Angeles, Calif. 90057
Filed July 9, 1969, Ser. No. 840,261
Int. Cl. A61f *7/00, 7/04*
U.S. Cl. 128—400 **10 Claims**

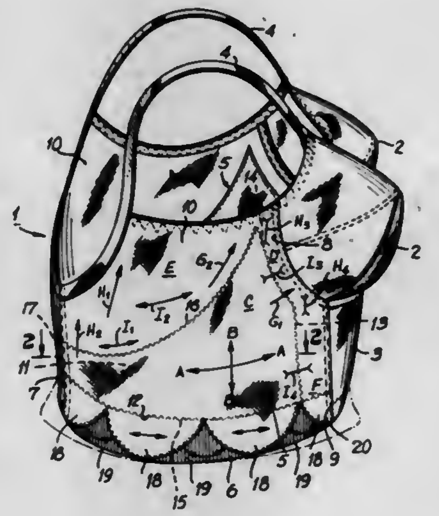


A plurality of pliable compartments so connected to one another that they may be disposed to conform generally to the contour of a user's face or other portion of the body, which compartments when so disposed are capable of having either a heated or cooled liquid selectively discharged to all or a portion thereof, whereby said heated or cooled liquid may raise or lower the temperature of that portion of the body covered by the compartments being treated for beauty or therapeutic purposes.

3,606,891
LONG LINE BRASSIERES

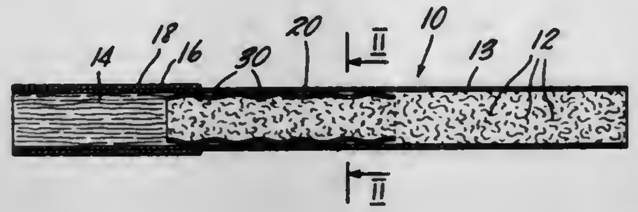
Joseph P. Marcario, Saddle Brook, and Jack J. Locascio, Bayonne, N.J., assignors to International Playtex Corporation, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,420
Int. Cl. A41c *3/00*
U.S. Cl. 128—427 **20 Claims**

The long line brassiere disclosed is so constructed so as to exert and absorb to desired degrees forces in selected anatomical areas thus allowing for the elimination of stays or other rigid supports. Such is accomplished by combining with the generally non-stretchable breast cups and center panel of the brassiere, stretchable dorsal panels having a plurality of zones of varying stretch characteristics with the zone having the greatest resistance to stretch in an area relatively closely spaced apart from the breast cups and extending along the lowermost edge of the dorsal panel for the major lateral extent of such dorsal panels. There is additionally disclosed a collar which underlies the dorsal panels having zonal stretch characteristic disparity with the zones so oriented with respect to each other so as to provide a predisposition for a controlled flare of the collar along the waistline of a wearer.



3,606,892
DELAYED VENTILATION CIGARETTE

Gerald M. Wilson, Howardsville, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 5, 1969, Ser. No. 882,601
Int. Cl. A24d *1/02*
U.S. Cl. 131—10A **8 Claims**

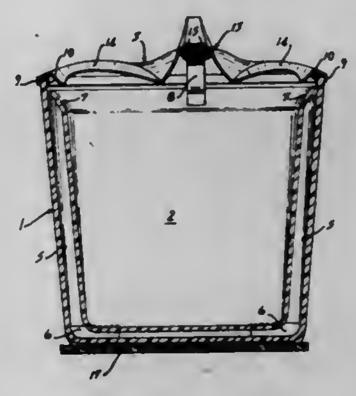


A delayed dilution or ventilation type cigarette in which the cigarette has an inner sleeve of a suitable material enclosing the tobacco filler along a length thereof from the butt end a distance in the direction of the other end. The inner sleeve in turn is enclosed by the conventional or outer paper wrapper of the tobacco cylinder, such sleeve including projections or openings in the surface thereof which cooperate with the inside surface of the outer wrapper to form a series of cigarette ventilation passages within the cigarette structure, the ventilation passages being placed in communication with atmosphere only after about half the length of the tobacco cylinder length has been smoked.

3,606,893
SAFETY ASH TRAY FOR VEHICLES

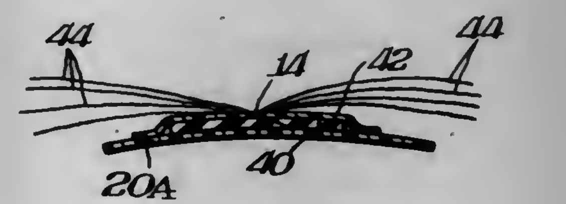
Milton W. Verberg, 3069 S. 36th St., Milwaukee, Wis. 53215
Filed Mar. 13, 1970, Ser. No. 19,208
Int. Cl. A24f *19/02*
U.S. Cl. 131—232 **10 Claims**

A bucket type container has an inner removable ash tray of substantial depth adapted to be partially filled with water. A removable cover for the container has a handle extending across the same between two large openings and providing holding means for cigarettes whereby the lighted end of the cigarette is always positioned above either opening so that the ashes will always drop into the water and become extinguished. The structure provides a guard which prevents ashes from falling into the space between the inner tray and the outer container. A strip of rubber-like material such as rubber backed carpeting is secured to the bottom of the container and is adapted to support and retain the container in an upright position on the floor of an automobile or on a boat deck or the like. The bottom of the container may be curved or crowned to apply to the drive shaft hump in an auto floor board. One or more bins may be hung on the sides of the container for storing smoking material or for use in retaining waste and the guard consists of an inclined wall portion on the upper end of the inner tray which is available for use as a pipe knocker.



3,606,894
HAIRPIECE, SCALP BASE THEREFOR AND METHOD OF MAKING THEM

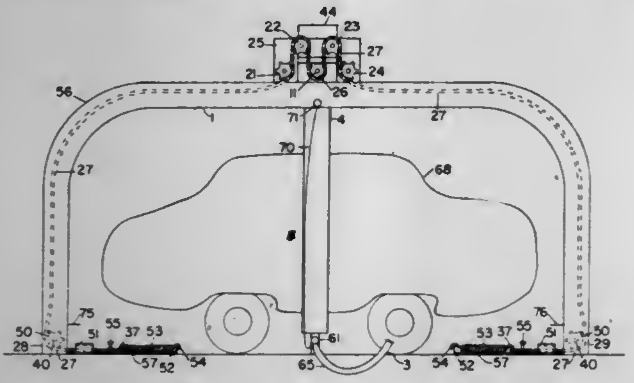
James J. Servino, New Castle, Del. (12 S. Union St., Wilmington, Del. 19805)
Filed Feb. 17, 1969, Ser. No. 799,654
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **8 Claims**



A piece of silk (blocked to head contour) is coated on its convex surface by a liquid neoprene solution to which a small amount of oil-base flesh-colored tint is added. One or two coats are applied and dried to provide a strong, resilient, natural, and waterproof scalp base. The neoprene coating provides a convenient means for making attachments to the scalp base. Hair is applied by any feasible method or by uniquely cementing neoprene tacked wefts of hair over the coated scalp base by application of additional neoprene solution. The coated and wefted scalp base is self-supporting. A coated scalp base having conventionally inserted hair has tape-supporting ribbons and a part-supporting strip secured over it under patches of the coated scalp base material cemented by the aforementioned coating solution. Part-forming hairs are inserted at a shallow angle into a neoprene part-supporting strip to form a permanent part. A number of short burned hairs extend from the front edge of the scalp base under longer overlying hairs to provide a natural hairline. The scalp base is perforated to pass scalp exudants through it either by inserted hairs or independent piercing.

3,606,895
VEHICLE WASHER AND DRIER

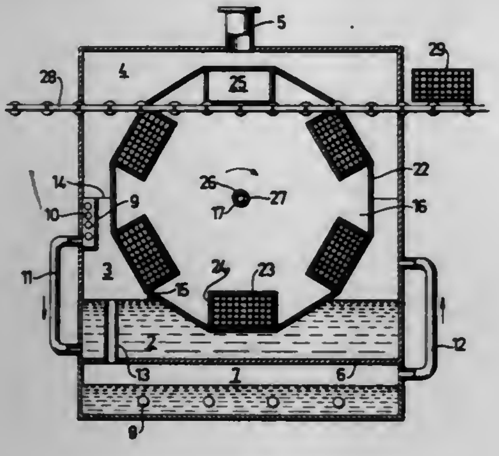
William Bithol Brown, Granby, Mo.
(522 W. 39th St., Topeka, Kans. 66609)
Filed Apr. 23, 1970, Ser. No. 31,263
Int. Cl. B60s *3/04*
U.S. Cl. 134—58R **6 Claims**



A pair of arcuate beams mounted on a surface are provided. The beams define a vehicle washing position. The beams substantially follow the top contour of the vehicle to be washed and dried. Without the drying mode, an inverted U-shaped spray unit is provided and movably mounted to the tops of the beams by rollers mounted to roll on top of the beams and rotatably mounted on a shaft that is rotatably mounted on the spray unit top. A pair of chains are mounted on the tops of the beams. A plurality of idler sprockets are rotatably mounted to the top sides of the spray unit. A pair of drive sprockets are mounted on the ends of the shaft. The chains are interwoven through the drive and idler sprockets so that when the drive sprockets are rotated by a reversible electric motor operatively connected to the shaft the spray unit is moved back and forth over the vehicle to be washed. The spray unit will substantially follow the contours of the vehicle to be washed. With the drying mode, an inverted U-shaped drier unit is provided. Air blowers are mounted to the bottoms of the drier unit air ducts. In this mode, spray pipes, idler sprockets, shaft and electric motor are mounted to the drier unit air ducts instead of the spray unit and the vehicle can be dried as well as washed.

3,606,896
APPARATUS FOR DEGREASING OBJECTS WITH VAPOR FROM A BOILING SOLVENT

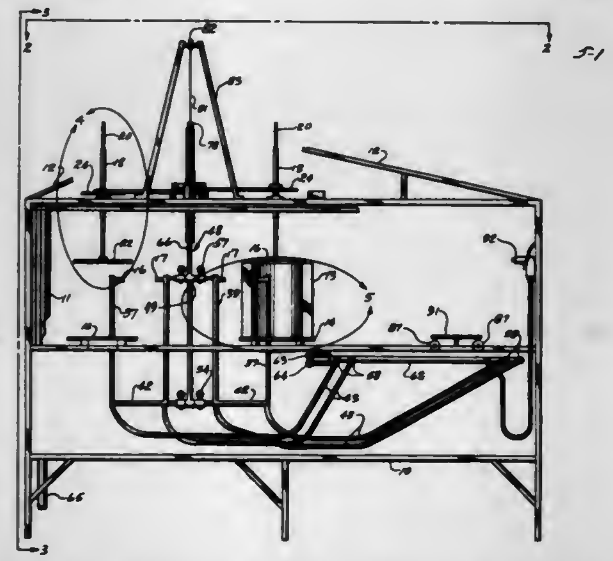
Kurt Anders Holm, Skoghall, Sweden, assignor to Uddeholms Aktiebolag, Uddeholm, Sweden
Filed June 27, 1969, Ser. No. 837,094
Claims priority, application Sweden, July 17, 1968, 9,821/68
Int. Cl. B08b *3/04*
U.S. Cl. 174—79 **8 Claims**



An apparatus for removing grease, oil and fat from articles consists of means for boiling a solvent so that the vapor fills a chamber in which the cool articles are placed. The articles are situated in a rotatable cylinder which moves the articles down into the vapor zone and up from the vapor zone. The cylinder is of such a size that it nearly fills the cross sectional area of the apparatus, thus reducing the loss of solvent from the vapor zone.

3,606,897
APPARATUS FOR CLEANING OF CANISTER TYPE AIR FILTERS

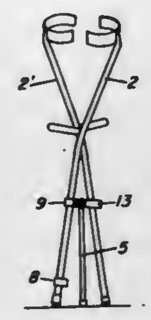
Benjamin F. Tobin III, 10545 W. Loyola Drive, Los Altos, Calif. 94022, and Milton J. Harris, 12414 E. Howard, Whittier, Calif. 90601
Filed Jan. 26, 1970, Ser. No. 5,546
Int. Cl. B08b *3/02, 9/00*
U.S. Cl. 134—86 **12 Claims**



Apparatus for washing hollow cylindrical engine air cleaners or filter elements on inside and outside surfaces simultaneously and while the filter is in a vertical orientation. A pair of washing stations are provided, each with a centrally apertured turntable on which the filter element is placed for rotation about a vertical axis. Spray nozzles inside and outside the filter element wash a portion of the length with a fan shaped spray of cleaning liquid, and as the filter rotates, the sprays progressively move downwardly together along the length of the filter for thoroughly and uniformly washing the entire length of the filter. The length of travel and the radial position of the spray nozzles relative to the turntable are variable for accommodating different lengths and diameters of filters. A pair of cleaning stations are provided in a preferred embodiment so that a balanced spray nozzle assembly can be translated along the length of the filters by a simple ratchet mechanism. A station may also be provided for manual inspection and cleaning of air filters.

3,606,898
CRUTCH SUPPORT

Marino N. Harocopo, Villa Casa Silva, Via Fontana Vecchia 5, Taormina, Sicilia, Italy
Filed May 23, 1969, Ser. No. 827,242
Int. Cl. A61h *3/02*
U.S. Cl. 135—49 **2 Claims**



Crutch support means in the form of a tripod wherein at least one of the tripod members is a crutch and the other two tripod members are supporting legs so that the crutch may be maintained in a generally upright position when not in use.

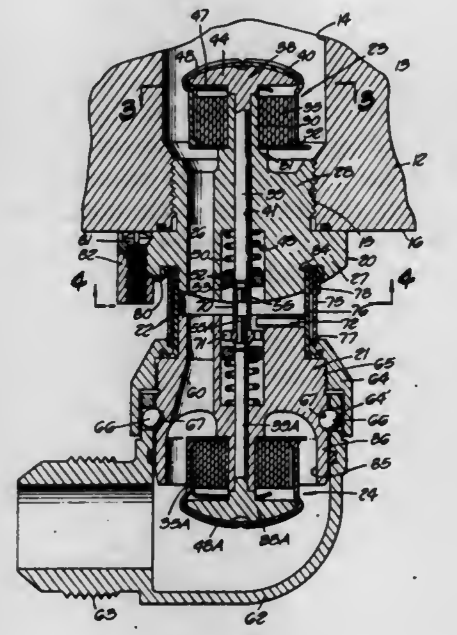
3,606,899
PIPELINE TRANSPORTATION OF HIGH VISCOSITY FLUIDS

J. O. Scott, Tulsa, Okla., assignor to Cities Service Oil Company
No Drawing. Filed June 29, 1970, Ser. No. 50,879
Int. Cl. F17d *1/18*
U.S. Cl. 137—13 **7 Claims**

Described is a method for lowering the viscosity of a fluid being transferred in a pipeline by the introduction of a pelletized radioactive material, for example uranium oxide and its fission products, into the fluid that is being transported. The fluid and entrained radioactive material is then pumped at a controlled rate so that sufficient heat is released from the pellets to lower the viscosity of the pipelined fluid. At the exit of the pipeline the pellets are separated from the fluid and reused or discarded.

3,606,900
SAFETY VALVE

Wolfgang Wunderlich, Saugus, Calif., assignor to The Rucker Company
Filed Sept. 22, 1969, Ser. No. 859,691
Int. Cl. F16k *7/00*
U.S. Cl. 137—68 **10 Claims**

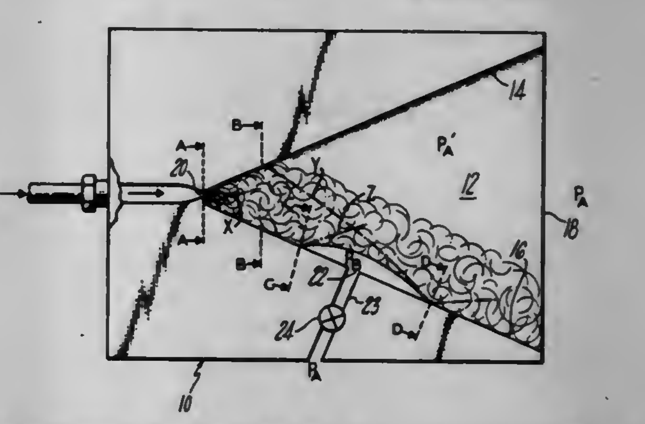


The application discloses a dual safety valve for the fuel systems of aircraft or the like in which a pair of wound clock spring actuators encased in boots and located in fuel passages are interconnected by means normally holding the springs wound but subject to releasing the springs and permitting them to unwind and expand their covering boots and thereby close the fluid passages in which they are located when the interconnecting means are subjected to undue external force.

3,606,901
MONOSTABLE FLUIDIC SWITCH

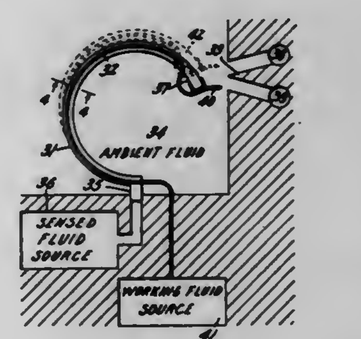
Raymond V. Thompson, Simsbury, Conn., assignor to Chandler Evans, Inc., West Hartford, Conn.
Filed Sept. 5, 1969, Ser. No. 855,672
Int. Cl. F15c *1/10*
U.S. Cl. 137—81.5 **12 Claims**

Monostable operation of a supersonic fluidic switch is disclosed. Fluid from a pressurized source is injected into a reaction chamber at supersonic velocity. Either by means of offsetting one wall only of the chamber at the throat of the injection nozzle and/or by the creation of an artificial ambient pressure within and at one side of the chamber. The fluid jet will be caused to normally attach to one wall of the chamber. Monostable switching action is achieved by increasing the pressure within the recirculation region produced along the wall to which the supersonic jet normally attaches thereby reversing the transverse pressure unbalance across the jet.



3,606,902
BOURDON TUBE FLUIDIC TRANSDUCER

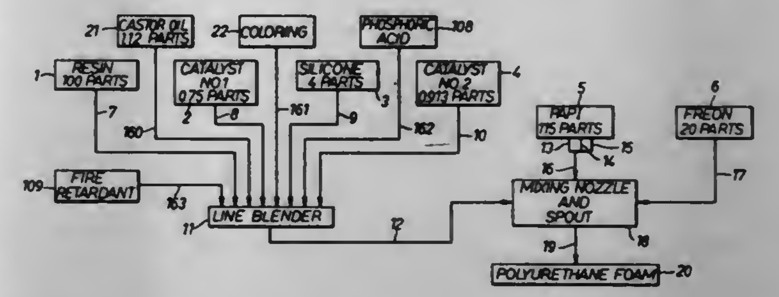
Jeffrey N. Shinn, Scotia, N.Y., and Carl W. Woodson, Lomita, Calif., assignors to General Electric Company
Filed May 15, 1969, Ser. No. 824,984
Int. Cl. F15b *5/00, 13/02;* **G05d** *16/00*
U.S. Cl. 137—83 **5 Claims**



A Bourdon tube which responds to pressure changes in a sensed fluid is used to selectively deflect the flow of a working fluid between various ports of a fluidic receiver.

3,606,903
METHOD AND APPARATUS FOR PRODUCING ISOTROPIC FOAMED STOCK

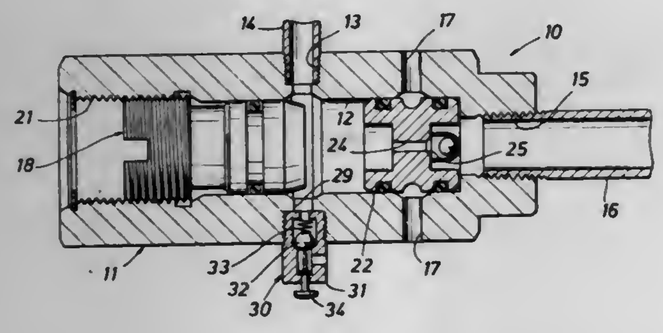
Lawrence C. Porter, Palos Verdes Peninsula, and Kenneth E. Graves, Saratoga, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Jan. 30, 1968, Ser. No. 701,596
Int. Cl. G05d *21/02*
U.S. Cl. 137—88 **33 Claims**



An improved one-shot system and process for producing polyurethane foam stock and the like, including measurement circuits for deriving digital measurements of parameters such as the mass transfer rates of the various constituents, and further including an automatic controller system responsive to such measurements for adjusting and controlling the parameters with respect to preselected values. A controller system is provided for continuously sampling the various incoming measurement signals sequentially, and for deriving error signals from a comparison of various functional relationships of the samples relative to pre-established optimums. Control circuits are also included for continually adjusting the operation of the system in response to the error signals.

3,606,904
VALVE

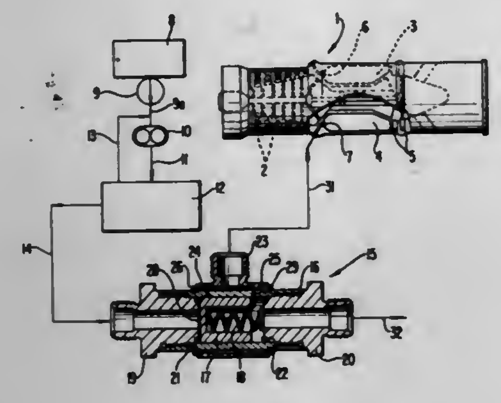
William M. Taylor, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Mar. 23, 1970, Ser. No. 21,595
Int. Cl. F16k *45/00*
U.S. Cl. 137—102 **9 Claims**



A valve for quickly and automatically shifting between alternate positions for admitting a source of fluid pressure to an operator and venting the operator, respectively, in response to the relative values of supply and operator pressure.

3,606,905
PRESSURE-MAINTAINING AND DRAINAGE VALVE OF A GAS TURBINE ENGINE

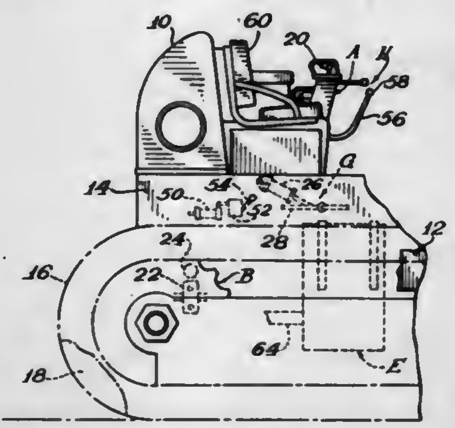
Adolf Fehler, Puchheim, Germany, assignor to Motoren- und Turbinen-Union Muenchen G.m.b.H., Munich, Germany
Filed Sept. 30, 1969, Ser. No. 862,317
Claims priority, application Germany, Oct. 10, 1968, P 18 02 275.8
Int. Cl. F16k *15/02*
U.S. Cl. 137—107 **10 Claims**



A pressure-maintaining and drainage valve for gas turbine engines in which a double-ended nipple is screwed into each end of the valve body cylinder accommodating a reciprocating spool-type control piston valving control openings in the cylinder; the spool-type control piston alternately abuts against seals provided at the mutually facing end faces of the nipple to seal off the communication through that nipple, against the seals of which it abuts.

3,606,906
FORWARD-REVERSE DRIVE CONTROL PROVIDING AUTOMATIC BRAKING

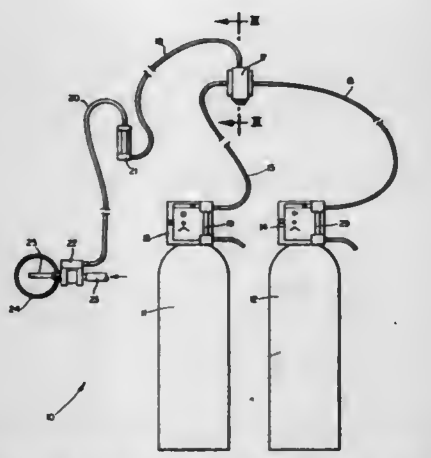
Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.
Original application Dec. 11, 1967, Ser. No. 689,549, now Patent No. 3,458,018, dated July 29, 1969. Divided and this application June 3, 1969, Ser. No. 830,035
Int. Cl. G05d *7/03*
U.S. Cl. 137—112 **6 Claims**



Tractor having dump valve and forward-reverse drive control employing same, effective to automatically brake the tractor when reversing the tractor's direction of motion. The tractor has brakes, a reversible transmission controlled by the dump valve, a range selector valve having a control portion, and a run detector pump to sense direction of rolling movement of the tractor and having a directionalized pump output. The dump valve generally receives against pressure movable end areas thereof an output from the range selector valve and directs control pressure to operate the brakes and transmission in alternation to one another and, specifically: receives against the pressure movable end areas the directionalized pump output so as to be hydraulically balanced in a centered position operating the tractor with transmision engaged and brakes disengaged; receives against the pressure movable end areas an unbalancing force from the range selector valve control portion causing the dump valve to shift off center and dump, neutralizing the transmission and setting the brakes; and having valve springs effective to mechanically rebalance the dump valve attendant with slow down of the run detector pump, causing the dump valve to recenter, releasing the brakes and engaging the transmission in an opposite drive setting.

3,606,907
SWITCHOVER CONTROL DEVICE FOR GAS SUPPLY SYSTEM

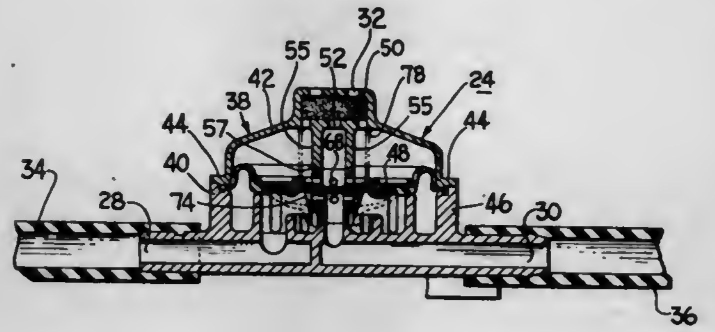
Nyyrikki K. Stenberg, Roslyn, Pa., assignor to Capital Controls Co., Inc., Colmar, Pa.
Filed Mar. 20, 1970, Ser. No. 21,245
Int. Cl. F16k *11/10*
U.S. Cl. 137—113 **12 Claims**



A switchover device is provided, for a gas supply system having a plurality of gas supplies therefor, for alternative use, and with the device being adapted for automatically switching from one supply to another, upon depletion of the one supply.

3,606,908
VENTILATION SYSTEM FOR VOLATILE FLUID

William C. Riester, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,207
Int. Cl. F16k *17/196*
U.S. Cl. 137—116 **8 Claims**

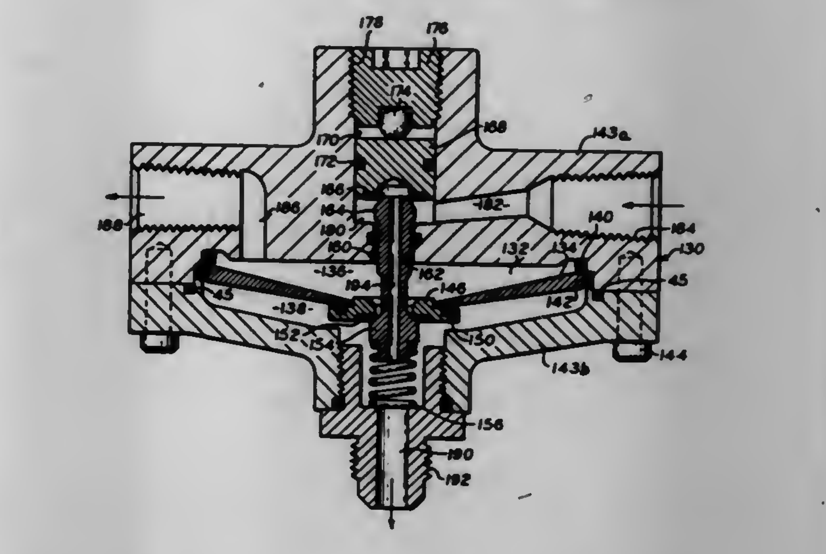


A system for storing volatile materials and disposing of excess vapors and overflow includes a reservoir which may be, for example, a gasoline tank for an automobile, and filtering apparatus connected to the reservoir through a multidirectional valve assembly employing a pressure differential actuated apertured diaphragm having a lip circumscribing the aperture which serves as a valve element slidable on a tubular valve seat. The valve is spring biased to a neutral position sealing the tank outlet and remains in that position when the pressure in the storage tank is such that the tank can contain the vapors. When ambient conditions are such as to cause expansion of the fluid and the vapor the diaphragm and valve move to an open position for permitting the vapor or overflow fluid to flow through filtering and disposable apparatus. If the filter or any of the lines leading thereto or therefrom become clogged, or if pressure increases in the tank at a rate which causes an increase of pressure on the diaphragm, a second aperture is opened to permit venting to atmosphere. If subatmospheric pressure conditions exist in the reservoir the diaphragm is drawn to a position overlying conduits on the external wall of the tubular valve seat to permit venting to the atmosphere for pressure equalization.

3,606,909
COMBINED PRESSURE REGULATOR AND RELIEF VALVE WITH SPRING WASHER

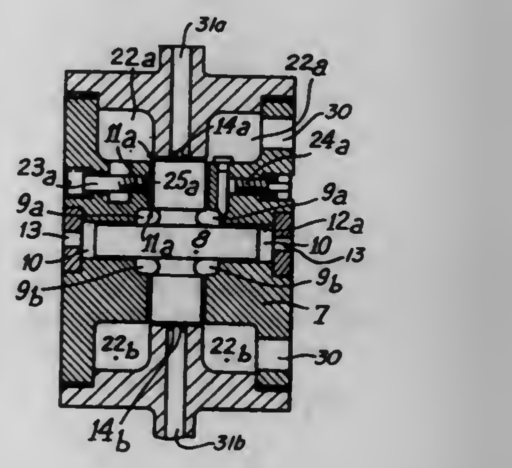
Slawomir Kowalski, Rockaway, Donald A. Worden, Pompton Plains, and Alfred Tillman, Mount Tabor, N.J., assignors to Marotta Valve Corporation, Boonton, N.J.
Original application Nov. 29, 1967, Ser. No. 686,644, now Patent No. 3,508,568. Divided and this application Apr. 8, 1970, Ser. No. 26,525
Int. Cl. G05d *11/02*
U.S. Cl. 137—116.3 **3 Claims**

This specification discloses a pressure regulator that employs a Belleville washer, in place of the usual flexible diaphragm or sliding piston, which responds to pressure changes. The washer serves the function of both a diaphragm and a spring. By tapering the washer to less thickness toward its center opening, a softer spring rate is obtained; and a center valve element is held against the washer without connection thereto so as not to interfere with free dishing movement of the washer. A second valve element connected with the first operates when the first valve element moves as a unit with the center portion of the washer. One valve element controls downstream pressure and the other operates as a vent to relieve excessive pressure in the regulator.



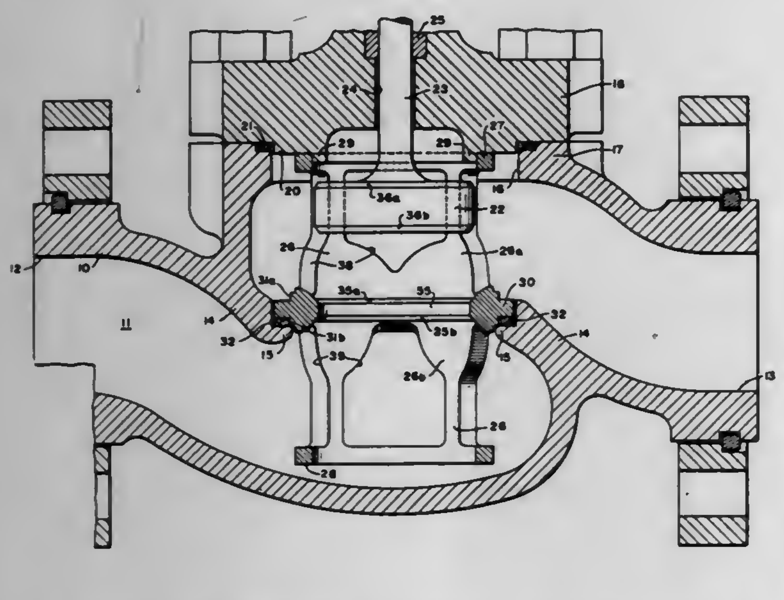
3,606,910
PRESSURE REGULATOR

Jean G. P. Lombard, Boulogne-sur-Seine, and Claude T. Charcosset, Paris, France, assignors to Centre d'Etudes et de Recherches de la Machine-Outil, Neuilly-sur-Seine, Hauts-de-Seine, France
Filed Sept. 26, 1969, Ser. No. 861,269
Claims priority, application France, Oct. 14, 1968, 169,814
Int. Cl. F16c *39/04*
U.S. Cl. 137—118 **14 Claims**



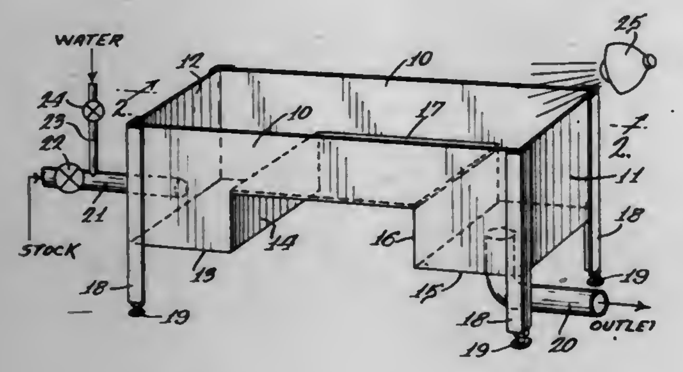
The pressure regulator for the supply of pressurised fluid to a hydrostatic support such as a stop, slide or bearing comprises a body having an internal cavity accommodating an element capable of restricted movement. In its basic form, the regulator has an inlet communicating via a restrictor in the body with a chamber opening into the cavity adjacent the element. The restrictor may be adjustable but is fixed during operation. The chamber communicates via a variable restrictor defined between the body and the element with a chamber opening into the internal cavity adjacent the element. This chamber communicates with the atmosphere either directly or via a restrictor which may be adjustable. This arrangement acts as a hydraulic spring biasing the element towards an outlet to the hydraulic support which outlet communicates with another inlet for pressurised fluid via a variable restrictor defined between the body and the element.

3,606,911
INVERTIBLE VALVE TRIM FOR CONTROL VALVES
Gareth Allan Keith, Needham, Mass., assignor to Masoneilan International, Inc., Norwood, Mass.
Filed Nov. 14, 1969, Ser. No. 876,687
Int. Cl. F16k *1/54*
U.S. Cl. 137—269 **15 Claims**



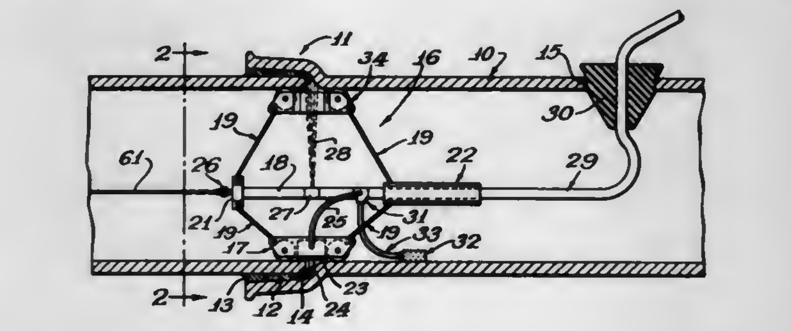
A valve trim cage with a tubular body provided with reversible ends and flow controlling port means differently characterized axially of the body. In a double embodiment the cage extends to either side of the valve body partition, and is provided with an intermediate double faced seat for the valve plug. In a single embodiment the cage engages a slip ring which seats also the valve plug. In the double embodiment the port means are differently characterized to either side of the valve seat, and in the single embodiment the port means are differently characterized at opposite axial end portions. The single embodiment provides for different flow controlling by inverting of the cage, and the double embodiment provides for different flow controlling both by said inverting and by repositioning of the plug from one to the other side of said partition.

3,606,912
APPARATUS FOR OBSERVING FLOWING AQUEOUS PAPER PULP STOCK
Leslie F. Fox, Stevens Point, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.
Filed Dec. 13, 1968, Ser. No. 783,491
Int. Cl. F17d *3/00*
U.S. Cl. 137—559 **6 Claims**



A device for observing the character of aqueous paper pulp stocks which comprises a receptacle, a dark colored transparent hyaline sheet supported substantially horizontally in said receptacle and means for continuously flowing aqueous paper pulp over said hyaline sheet for visual inspection.

3,606,913
APPARATUS FOR INTERNALLY SEALING PIPES
Gene G. Yie, Chicago, Ill., assignor to Institute of Gas Technology
Filed Dec. 13, 1968, Ser. No. 783,531
Int. Cl. F16l *55/18*
U.S. Cl. 138—97 **8 Claims**

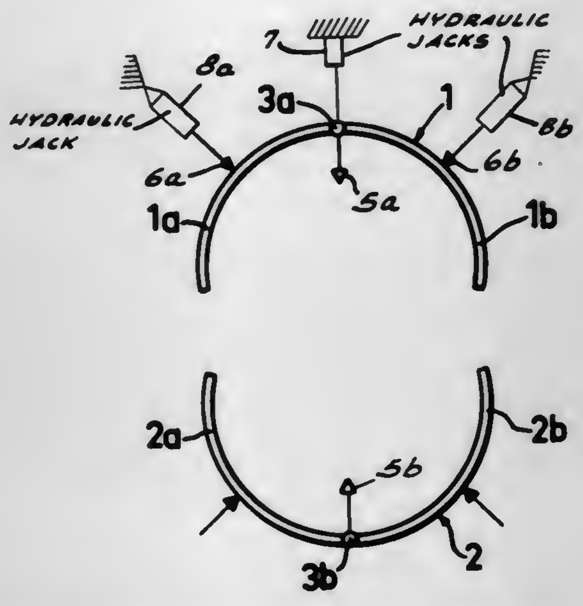


A novel apparatus and method for internally sealing leaking joints in pipelines which contemplates the use of a collapsible apparatus which can be inserted into, and travel within, the pipeline. The apparatus includes an electrical gas-locating means, locking means for locking the apparatus over a gap, and a sealing material-applying means for directly applying the sealing material to the located gap while the apparatus is in locked position over the gap.

3,606,914
WEBBING
Wolfgang Maiwald, Frankfurt am Main, and Helmut Rohser, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed May 2, 1969, Ser. No. 821,454
Claims priority, application Germany, May 8, 1968, P 17 60 360.0
Int. Cl. D03d *15/00*
U.S. Cl. 139—420 **8 Claims**

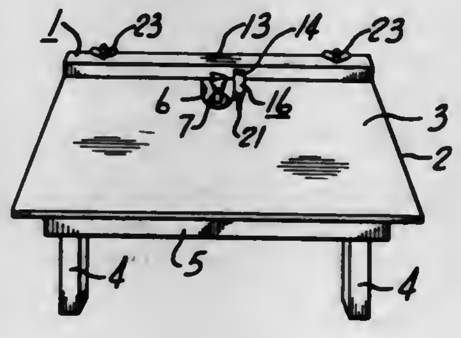
The present invention provides a webbing whose warp threads consist of multifilaments of synthetic materials and whose weft threads consist of monofilaments of synthetic linear polyester material.

3,606,915
DEVICE FOR TRIMMING FELLED TREES
Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabrika AB, Alfta, Sweden
Filed Sept. 2, 1969, Ser. No. 854,460
Int. Cl. A01a *3/00;* **B27l** *1/06;* **B27m** *1/00*
U.S. Cl. 144—2 **2 Claims**



A device for delimbing felled trees including a pair of shear knives which are axially displaced with respect to each other and are adapted to embrace a tree to be delimbed. The shear knives have an arc-shaped cross-section and operate in the axial direction, each knife comprising two portions connected by a central joint, which portions define a semi-circle in the rest portion of the device. The two portions are movable toward and away from each other in a vertical plane common to the joints and there are provided means for controlling the movements of the joints and the rotational movements of the knife portions.

3,606,916
GAUGE APPARATUS AND METHOD FOR CUTTING UNIFORMLY SPACED ROUTERED TENONS AND MORTISES
Walter T. Day, Houston, Pa.; Mildred M. Day, heir of the estate of said Walter T. Day, deceased
Filed Sept. 30, 1969, Ser. No. 862,232
Int. Cl. B27f *1/08*
U.S. Cl. 144—87 **6 Claims**

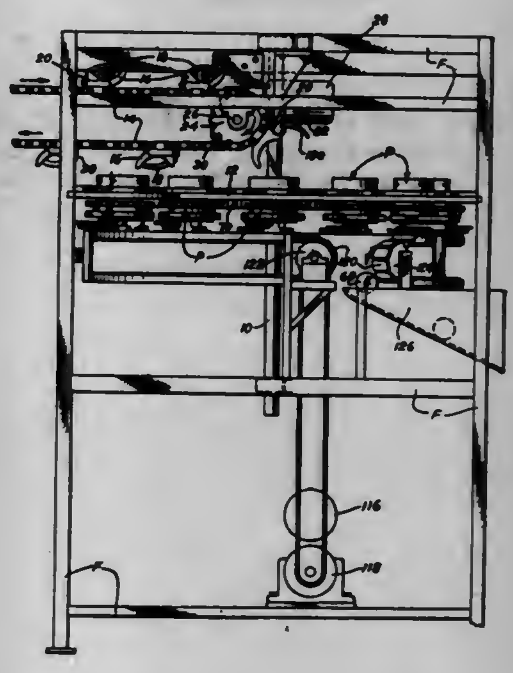


A router gauge for use in combination wtih a router table for cutting uniformly spaced routered mortises and tenons in the end of a workpiece. The gauge comprises an elongated guide bar having a slot in its bottom in a direction normal to the length of the guide bar to receive a guide key which is spring biased to be in a normally extended position from the guide bar. The guide bar is mounted on the router table relative to the router to adjust for the depth of cut to be made by the router in the workpiece. The mounting of the guide bar is done in a manner to properly position the guide key in a preselected distance from the router to guide the advancement of the workpiece during consecutive cutting of a series of uniformly spaced mortises in the workpiece.

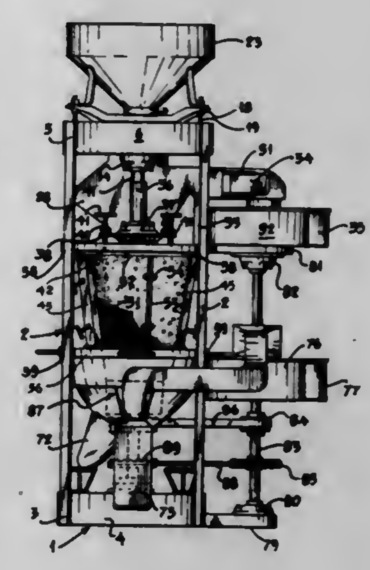
3,606,917
PEELING MACHINE
Gerald J. Orlowski, Chicago, Ill., assignor to Korlow Corporation
Filed May 26, 1969, Ser. No. 827,672
Int. Cl. A23n *7/00*
U.S. Cl. 146—43 **28 Claims**

A peeling machine particularly designed for peeling onions by first cutting through the peelings thereof whereupon the peelings may be removed by air jets, brushing, vacuum and/or flotation on water. Onions having the root and stem cut therefrom, with the resulting ends of the onions being in parallel planes are delivered one at a time to a pocket of the peeling machine. The pocket has a pair of paralell side elements which cooperate with the parallel onion ends and orient the onion so that it can be rotated about its root-stem axis. While being so rotated, a specially designed peeling cutting blade revolves around the onion to cut through only its peeling. The cut peelings are then removed whereupon the peeled onions are in condition for discharge from the peeling machine.

A plurality of the pockets may be mounted on a carrier such as rotating disc for increased production from the machine, and the onions may be delivered to the successive pockets at a reception station of the machine and discharged therefrom at a discharge station of the machine.



3,606,918
PORTABLE CONE TYPE RICE MILL
Sofronio M. Sian, 958 J. Rizal Ave., Makati, Rizal D–711, Philippines
Filed Mar. 13, 1969, Ser. No. 806,993
Int. Cl. B02b *3/00*
U.S. Cl. 146—266 **1 Claim**

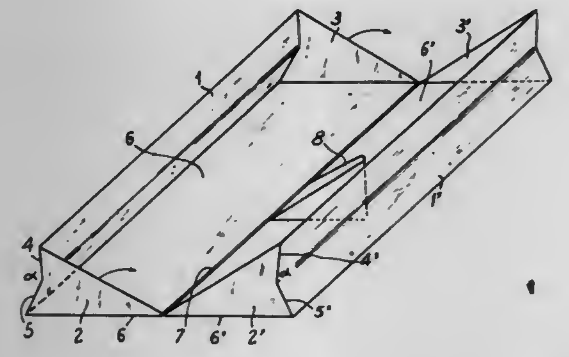


The portable cone-type rice mill embodied in this invention consists of an upstanding frame on which are arranged in a super-imposed manner starting from the top, a hopper, a huller, a conical grain polisher and a bran chute. Between the huller and the grain polisher is a husk aspirator connected to a suction blower to suck away the husk from the grain falling from the huller, through the aspirator down to the polisher. Connected to the bottom of the polisher is a grain chute at the end of which is connected a conduit communicating with a second suction blower. The second suction blower is adapted to suck the bran from the polished grain falling from the grain chute.

A suitable drive means mounted on said frame is in turn connected to the common shaft of the blowers which shaft is in turn connected to the shafts of the polisher and huller which are joined by a movable coupling.

3,606,919
CONTAINER

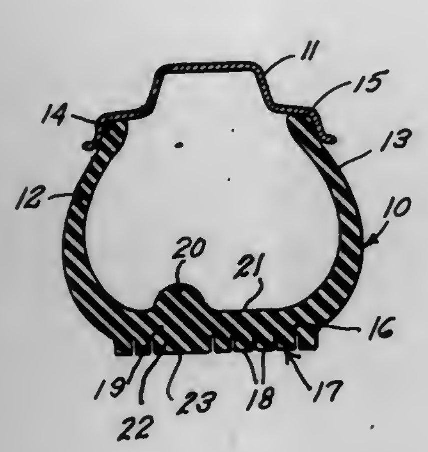
Roger Joerger and Jean-Claude Joerger, Paris, France, assignors to Joerger & Fils, Paris, France
Filed July 25, 1969, Ser. No. 844,804
Claims priority, application France, Aug. 9, 1968, 162,436
Int. Cl. B65d *1/26*
U.S. Cl. 150—.5 **3 Claims**



This invention relates to a container and more particularly, to a container having two hinged portions which can be held in closed condition by the interengagement of locking walls associated with the portions.

3,606,920
SPEED SENSITIVE DUAL TREAD TIRE

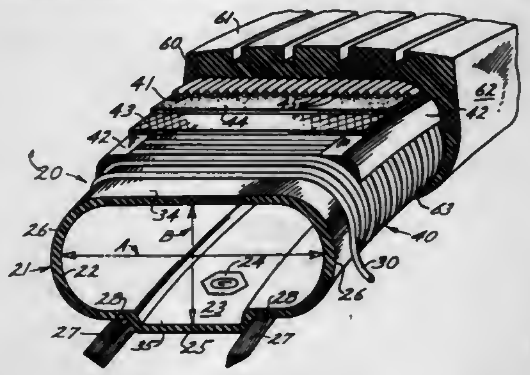
George J. Kole, 4049 N. Kolmar Ave., Chicago, Ill. 60641
Filed Apr. 1, 1969, Ser. No. 811,715
Int. Cl. B60c *19/00*
U.S. Cl. 152—352 **9 Claims**



A treaded tire of the pneumatic type which has a localized circumferential increased weight area adapted to increases the diameter of a localized portion of the tire tread due to centrifugal force at high speeds. The increased diameter portion of the tread reduces the contact area between the tire and the road at high speeds, thereby reducing the drag while at the same time reducing heat and friction and preventing hydroplaning of the tire. The increased diameter portion may be constructed of a longer-wearing material than the remainder of the tread. The invention does not interfere with full tread contact at slow speeds or while braking the vehicle.

3,606,921
BELTED OVAL PNEUMATIC TUBE-TIRE

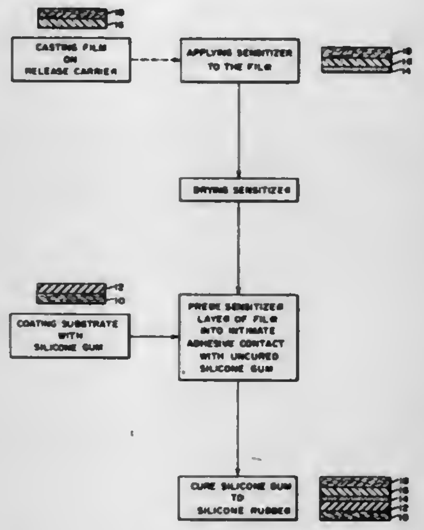
Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 23, 1969, Ser. No. 835,499
Int. Cl. B60c *9/02, 15/02*
U.S. Cl. 152—354 **27 Claims**



A pneumatic tube-tire is fabricated by applying inextensible reinforcing filaments on an oval torodial tube member which has its major axis parallel to the axis of revolution of the resulting tube-tire carcass and providing the resulting reinforced tube-tire carcass with an inextensible circumferential belt (i.e. one that is circumferentially inextensible) about its outer periphery to maintain the tube-tire carcass in its oval configuration when the tube-tire is pressurized. The inextensible circumferential belt may be associated with rubber stock forming the tread of the tube-tire and can be formed separately or integrally with the tube-tire carcass. Preferably, the circumferential belt will contain inextensible reinforcing filaments which are oriented generally parallel to the mid-circumferential plane of the tube-tire nad generally normal to the reinforcing filaments surrounding the tube-tire carcass. Spaced apart roll restraining hoops are placed within the reinforcing filaments surrounding the tube-tire carcass for lateral stability.

3,606,922
DRY PLANOGRAPHIC PLATE AND METHOD OF PREPARING SAME

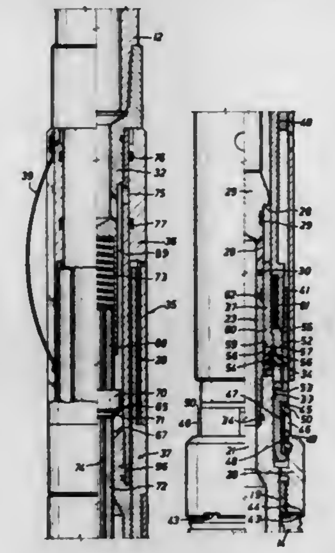
Towers Doggett, Westbrook, Maine, assignor to Scott Paper Company, Delaware County, Pa.
Filed Aug. 12, 1969, Ser. No. 849,800
Int. Cl. C09j
U.S. Cl. 156—329 **7 Claims**


CASTING FILM ON RELEASE CARRIER
APPLYING SENSITIZER TO THE FILM
DRYING SENSITIZER
COATING SUBSTRATE WITH SILICONE GUM
PRESS SENSITIZER LAYER OF FILM INTO INTIMATE ADHESIVE CONTACT WITH UNCURED SILICONE GUM
CURE SILICONE GUM TO SILICONE RUBBER

A new dry planographic plate having a non-ink receptive silicone rubber background area that does not require a fountain solution to repel printing ink and process of producing this new plate comprising applying the photo-responsive sensitizer to a polymeric support film and bringing the sensitizer layer into intimate adhesive contact with an uncured silicone gum and thereafter curing the silicone gum.

3,606,923
SUBSURFACE WELL APPARATUS

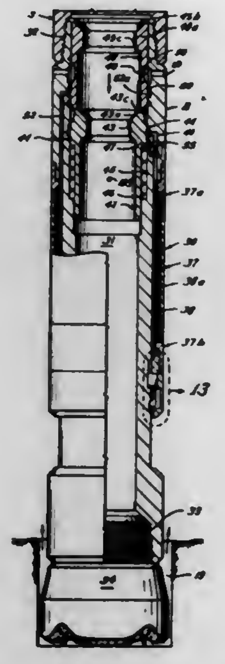
William O. Berryman, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Nov. 22, 1968, Ser. No. 778,156
Int. Cl. E21b *23/06, 33/128*
U.S. Cl. 166—125 **7 Claims**



A setting tool apparatus for use in setting well packers in well bores includes inner and outer body structures coupled to the well packer and having means responsive to manipulation of the pipe string for causing relative longitudinal movement to set the well packer, releasable latch means for preventing setting of the packer during lowering into the well bore, and valve means in said inner and outer body structures for enabling testing of the pipe string for leaks at any time after the packer is set and drainage of fluid from the pipe string during withdrawal of the apparatus from the well bore.

3,606,924
WELL TOOL FOR USE IN A TUBULAR STRING

Billy C. Malone, Houston, Tex., assignor to Lynes, Inc.
Filed Jan. 28, 1969, Ser. No. 794,682
Int. Cl. E21b *33/127*
U.S. Cl. 166—187 **42 Claims**



A well tool incorporating a reinforced inflatable element which is carried by the drill string in the well bore and remains deflated during rotary drilling operations, which can be inflated to seal off the well bore to enable various operations to be performed in the well bore and the element thereafter deflated and rotary drilling operations resumed. This operation may be repeated as often as desired.

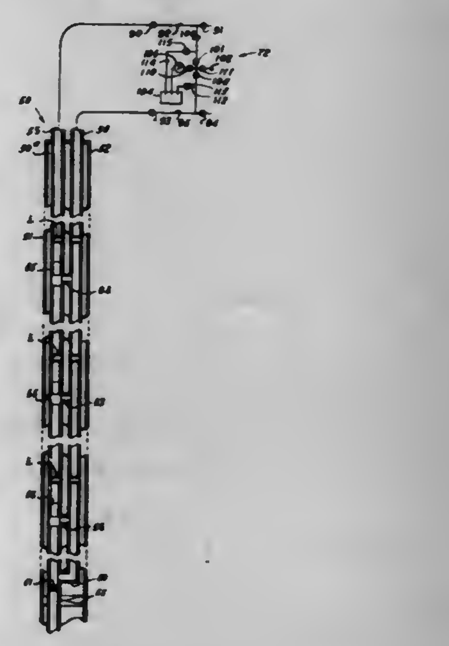
3,606,925
LIMITING CONTAMINATION OF WASTE DISPOSAL WELLS

Fred H. Poettmann, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,669
Int. Cl. B65g *5/00*
U.S. Cl. 166—305D **6 Claims**

Contamination of underground aquifers by waste materials injected through disposal wells is limited by injecting a mobility buffer ahead of the waste material. The mobility buffer can be water containing a mobility reducing agent, e.g. water-soluble polymer, a water-external emulsion, or any other fluid containing a mobility reducing agent. A more favorable mobility ratio can be achieved by injecting a series of consecutively mobility graded fluids into the aquifer.

3,606,926
APPARATUS AND METHOD FOR INSTALLING AND REMOVING WELL TOOLS IN A TUBING STRING

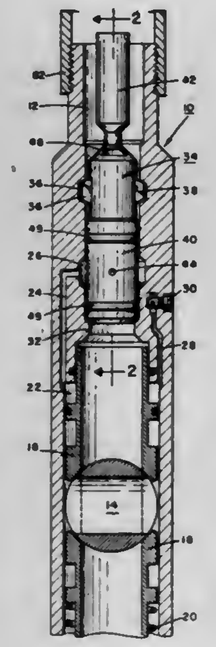
Harry E. Schwegman, Plano, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Apr. 17, 1969, Ser. No. 816,942
Int. Cl. E21b *23/02*
U.S. Cl. 166—315 **54 Claims**



A well tool system for installing and retrieving well tools, such as gas lift valves, in a tubing string. A tubular latch is provided for locking each well tool at a landing nipple in the tubing string. The latch has locking keys with operator members manipulated responsive to a supporting probe for locking and releasing each latch at a landing nipple. One or a plurality of the latches with connected well tools are supported on the probe in tandem. The probe and supported latches and well tools are connected in a tool train which may include wireline or pump-down handling tools with sleeve valve operators for opening and closing sliding sleeve valves at the landing nipples when installing and removing the latches and well tools. The tool train is run in a tubing string to a depth below the lowest landing nipple and is then returned to the surface sequentially releasing and locking the latches at the landing nipples spaced along the tubing string. The latches and tools are retrieved by running the tool train with a probe downwardly sequentially releasing the latches and engaging them on the probe in end-to-end array. When all of the latches and well tools are released and on the probe, the tool train is returned to the surface. During both installing and removing the latches and tools, the sleeve shifting units in the tool train open and close the sleeve valves as required.

3,606,927
RUNNING IN AND OPERATION OF VALVES AND THE LIKE IN A WELL

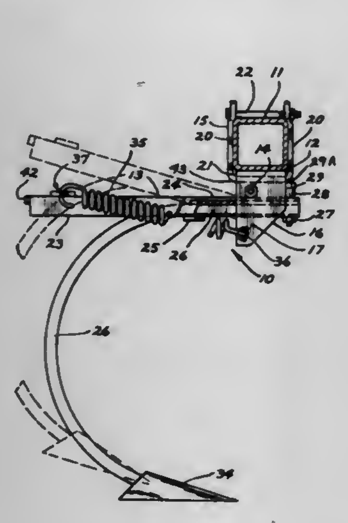
Martin E. True and William E. Kanady, Houston, Tex., assignors to Esso Production Research Company
Filed Aug. 14, 1969, Ser. No. 850,144
Int. Cl. E21b *23/04*
U.S. Cl. 166—315 **9 Claims**



Valves and the like in a well such as a submarine well are operated by running a tubular member into the well production pipe from a reel at the surface and locking the tubular member to said valve and the like apparatus followed by flowing fluid under pressure through the tubular member to operate the valve and the like, the tubular member also being locked by fluid pressure. Thus, a tubular member provided with a telescopic member is run into the well production pipe and locked in a tubular housing connected to the valve and the like.

3,606,928
RELEASABLE CHISEL PLOW, CLAMP AND SHANK HOLDER

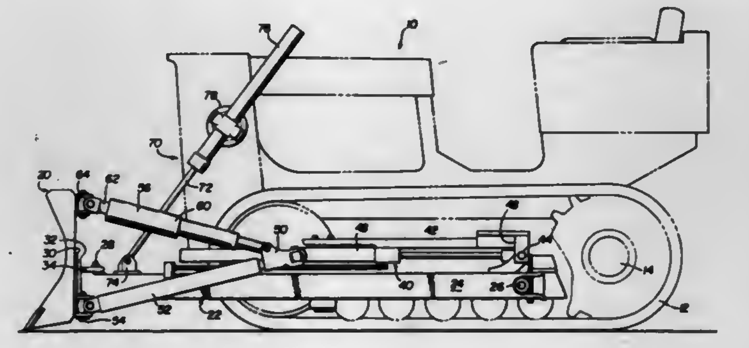
Sherman H. Quanbeck, Aneta, N. Dak. 58212
Filed Mar. 14, 1969, Ser. No. 807,347
Int. Cl. A01b *61/04*
U.S. Cl. 172—265 **7 Claims**



A chisel plow or cultivator clamp and shank holder utilizing two U-shaped brackets, one of which acts as a support for the shank, and the other of which acts as a clamp to clamp the shank holder onto a plow support beam. The shank holder includes resilient means for holding the shank in working position and letting it release when it strikes an obstruction.

3,606,929
HYDRAULIC CONTROL SYSTEM FOR EARTH MOVING IMPLEMENT

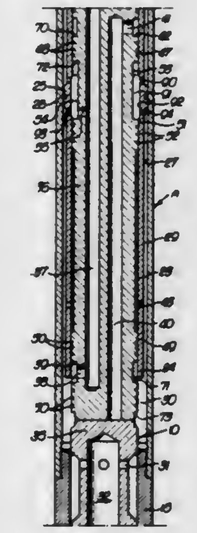
Claude M. Frisbee and Carl O. Pedersen, Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis. Original application Oct. 17, 1968, Ser. No. 768,435. Divided and this application May 20, 1970, Ser. No. 38,996
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 **13 Claims**



A hydraulic control system for an earth moving implement which has a blade adjustably supported on a U-shaped frame with the free ends of its legs pivotally connected to a vehicle and the hydraulic control system includes fluid rams for (1) raising and lowering the frame with respect to the vehicle, (2) angling the blade with respect to the U-shaped frame about a vertical axis, and (3) prevent tilting of the blade with respect to the frame about a transverse horizontal axis. The hydraulic control system incorporates an interconnection between the rod ends of the anti-tilt rams with means for supplying a constant charging pressure to the rod ends of the anti-tilt rams. The charging means may include (1) a connection from the angling rams through a regulator valve to the rod ends of the anti-tilt rams; (2) a connection between one end of the lift cylinders through a regulator valve to the rod end of the anti-tilt rams; (3) a connection between the anti-tilt rams and the conventional pump of the transmission hydraulic system of the vehicle, or (4) a separate pump connected to the rod ends of the anti-tilt rams, all alternates.

3,606,930
DOWN-HOLE DRILLING HAMMER

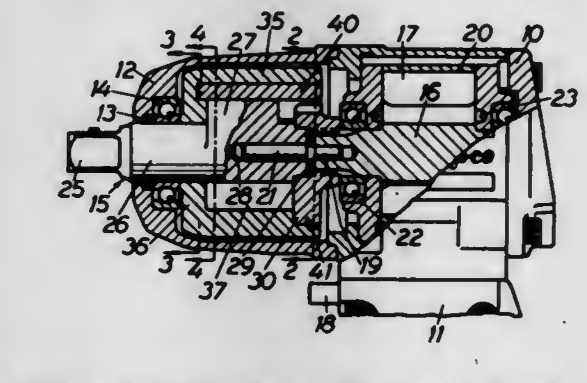
Alfred R. Curington, Houston, Tex., assignor to Baker Oil Tools, Inc., City of Commerce, Calif.
Filed Oct. 6, 1969, Ser. No. 863,988
Int. Cl. E21b *1/06*
U.S. Cl. 173—73 **22 Claims**



A down-hole drilling hammer embodying an outer housing structure connectible to a string of rotatable drill pipe through which compressed air is pumped. A cylinder sleeve within the housing structure defines a high pressure air annulus and a low air pressure annulus therewith. A hammer piston reciprocates in the cylinder sleeve, the piston and cylinder sleeve having ports and passages to alternately communicate the high pressure and low pressure annuli with the cylinder sleeve first above and below the piston and then below and above the piston to reciprocate the piston and cause it to impact repeatedly upon an anvil connected to or integral with a bit rotatable by the drill string, the low pressure air exhausting through the bit to convey the cuttings upwardly around the drilling hammer and drill pipe to the drilling rig.

3,606,931
ROTARY IMPACT MOTOR

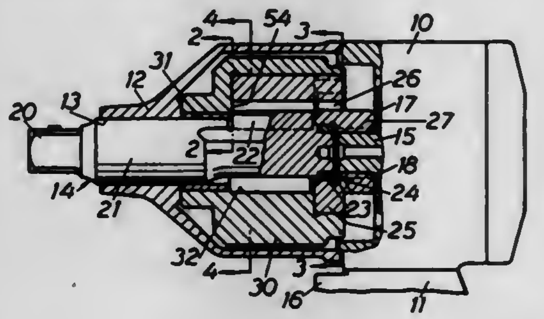
Karl Gosta Karden, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed June 9, 1970, Ser. No. 45,047
Claims priority, application Sweden, June 19, 1969, 8,807/69
Int. Cl. B25d *15/00*
U.S. Cl. 173—93.5 **5 Claims**



In a rotary impact motor for power driven fastener setting tools an impact dog is arranged in a hammer body pivotally about an axis spaced from but parallel with the axis of rotation of the hammer body. The impact dog takes respectively impact and release position with respect to a cam flank on an anvil which anvil is coaxial with the hammer body. The cam flank has the dual function of providing an impact surface for the impact dog and a cam surface cooperating with the portion of the impact dog leading in the rotational direction for pivoting the trailing portion thereof to impact position against that very same flank.

3,606,932
ROTARY IMPACT MOTOR

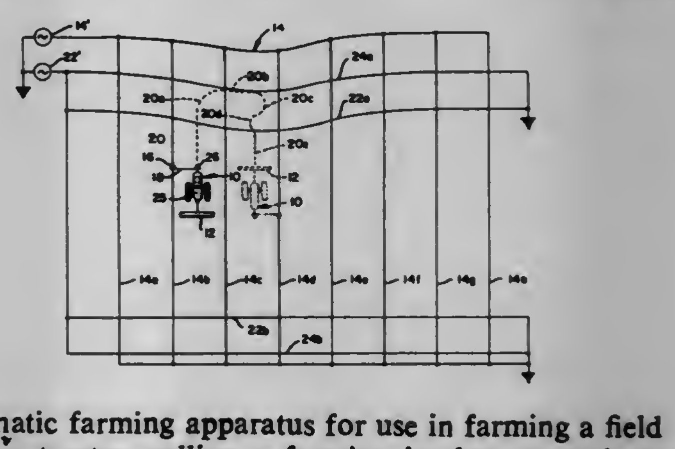
Knut Christian Schoeps, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed June 16, 1970, Ser. No. 46,765
Claims priority, application Sweden, June 19, 1969, 8,808/69
Int. Cl. B25d *15/00*
U.S. Cl. 173—93.5 **7 Claims**



In a rotary bidirectionally operable impact motor for power driven fastener setting tools a recessed impact dog is journalled by its cylindrical back portion extending over more than 180 degrees in a journalling recess of a hammer body pivotally about an axis spaced from but parallel with the axis of rotation of the hammer body for taking impact and release positions with respect to opposed impact surfaces on an anvil coaxial with the hammer body and surrounded by a rotation cavity therein. The journalling recess is of larger diameter than said rotation cavity. End surfaces on the impact dog cooperate with the anvil for pivoting the impact dog to impact position while a drive element for the hammer body engages the impact dog for pivoting it to the release position. The end surfaces are transverse to the back portion of the impact dog as well as the recess thereof.

3,606,933
AUTOMATIC FARMING APPARATUS

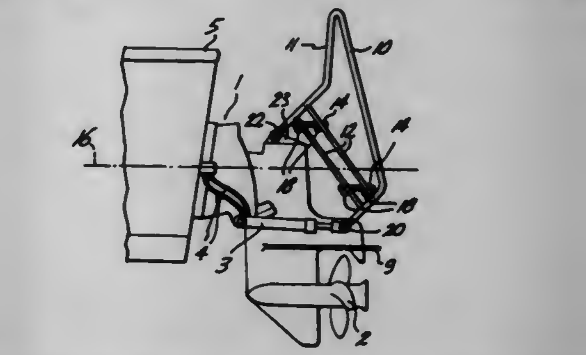
Karl Rushing, Indianola, Miss., and John Clarence Allen, Jr., P.O. Box 87, Indianola, Miss.; said Rushing assignor to said Allen and Roy Rodgers Brashier
Application Apr. 5, 1967, Ser. No. 628,616, now Patent No. 3,468,391, dated Sept. 23, 1969, which is a continuation-in-part of application Ser. No. 531,603, Mar. 3, 1966, now Patent No. 3,468,379. Divided and this application Oct. 31, 1968, Ser. No. 772,256
Int. Cl. B62d *5/04*
U.S. Cl. 180—98 **5 Claims**



Automatic farming apparatus for use in farming a field wherein a tractor pulling a farming implement such as a plow is adapted to trace a path defined by a plurality of main tracing lines. A pair of secondary tracing lines are buried outside the edges of the field, and means are provided for causing the tractor to leave a main tracing line at the end of each row, and automatically move over to the adjacent secondary tracing line which it traces until it is turned toward another main tracing line. The turning operation between the main and secondary tracing lines is controlled as a function of the distance travelled by the tractor. The main tracing lines comprise a plurality of parallel connected wires extending from edge to edge across the field. An additional pair of control lines are buried at respective edges of the field to control the overall sequence of the vehicle turn sequence.

3,606,934
BOAT LADDER

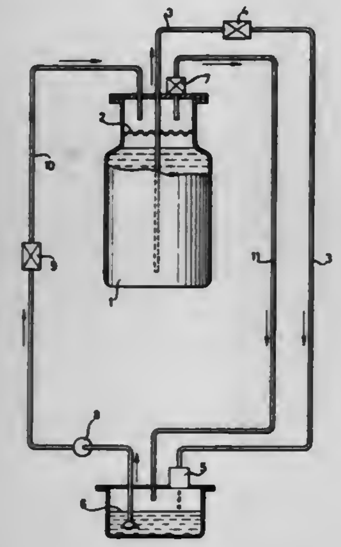
Erling Roderic Johansen, 3616 NW. 65th Court, Seattle, Wash. 98107
Filed May 16, 1969, Ser. No. 825,217
Int. Cl. E06c *1/34, 5/06*
U.S. Cl. 182—97 **14 Claims**



A simple, sturdy ladder for entering a boat equipped with an inboard-outboard drive system is provided. A frame having a plurality of rungs or steps attached thereto is affixed to the upper rear portion of the outdrive unit of the boat.

3,606,935
LUBRICATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

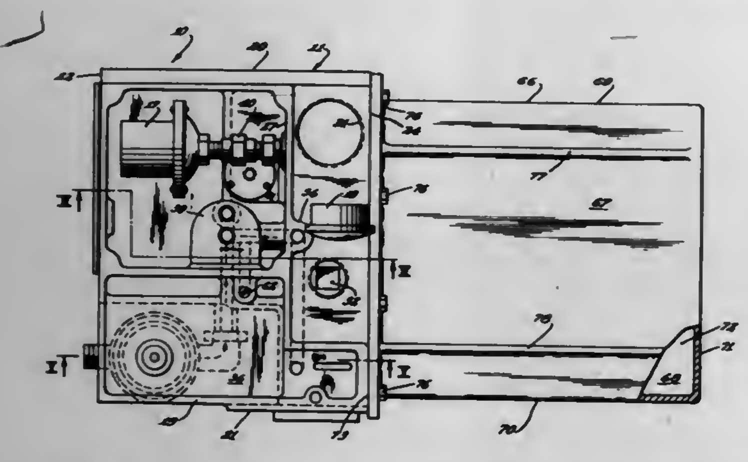
Veit John, Wiesbaden, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Mar. 11, 1969, Ser. No. 806,054
Claims priority, application Germany, Mar. 16, 1968, F 55,086
Int. Cl. F01m *1/18*
U.S. Cl. 184—6.1 **5 Claims**



The lubricating system for internal combustion engines, particularly of automobiles, consists of an interchangeable tank for the oil, a dry sump and a pump sucking therefrom. Under the pressure produced by the pump in the tank, the oil flows to the lubricating points. In order to prevent that the lubricating system is without pressure during the pauses of the pump a non-return valve is inserted between the pump and the tank and a stop valve between the tank and the lubricating points.

3,606,936
OIL MIST LUBRICATION SYSTEM

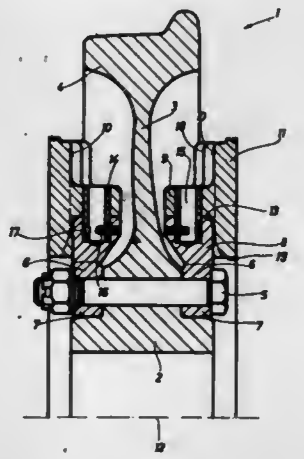
Ronald F. Obergefell, Richmond Heights, Edward E. Kish, Cleveland Heights, and Gerald C. McMillen, Chagrin Falls, Ohio, assignors to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,478
Int. Cl. F16n *7/32*
U.S. Cl. 184—6.26 **6 Claims**



An oil mist lubrication system for lubricating various points of use from a central location. The system includes a housing structure of one-piece metal cast construction so configured and arranged as to accommodate various components of the system including an air filter, an air solenoid valve and a mist generating head. An oil reservoir is provided by a chamber formed in the housing structure and is open along one vertical side. Various polymorphic closure structures are provided for closing the open side of the oil reservoir chamber. The closure structures may be individually removably mounted on the housing structure for effectively varying the volumetric capacity of the oil reservoir merely by changing from one closure structure to another.

3,606,937
BRAKE DISK ASSEMBLY FOR RAILWAY VEHICLE WHEELS

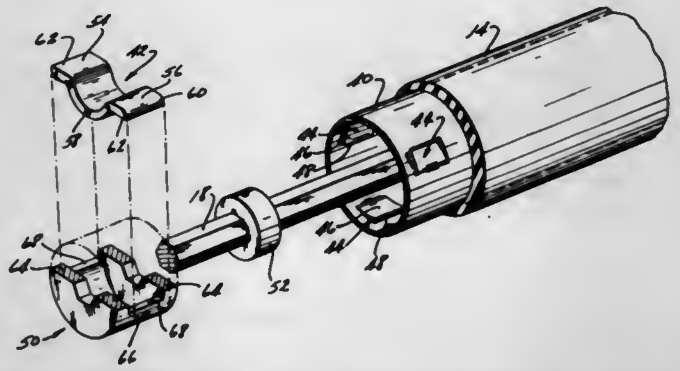
Eberhard Falch and Franz Prahl, Munich, Germany, assignors to Knorr-Bremse GmbH, Munich, Germany
Filed Aug. 19, 1969, Ser. No. 851,192
Claims priority, application Germany, Aug. 20, 1968, P 17 80 246.9
Int. Cl. F16d *65/12*
U.S. Cl. 188—218XL **4 Claims**



A brake disk is mounted upon a railway wheel by means of an intermediate ring which may be positioned upon either the hub or within the rim of the wheel. The intermediate ring has a plurality of radially extending arms the ends of which support lugs extending from the surface of the brake disk toward the wheel disk portion of the wheel. Tubular clamping sleeves pass radially through bores in the lugs into the arms and are retained in place by retainer pins extending parallel to the rotary axis of the wheel.

3,606,938
ROLLER ASSEMBLY WITH ONE-WAY BRAKING MEANS

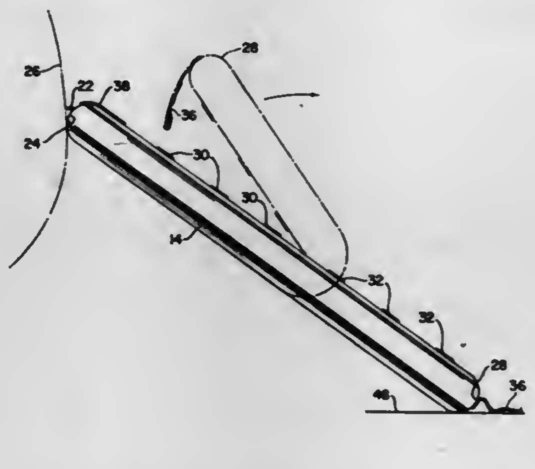
Clarence A. Heyne, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Original application Jan. 5, 1968, Ser. No. 695,951, now Patent No. 3,503,490, dated Mar. 31, 1970. Divided and this application July 30, 1969, Ser. No. 870,855
Int. Cl. F16d *63/00*
U.S. Cl. 188—82.1 **4 Claims**



An inclined power-driven conveyor of the type having a plurality of rotatable, article-transporting rollers positioned about chain-driven axles disposed transversely of the conveyor, wherein a longitudinally-oscillatable pawl member and a ratchet member are enclosed within the respective rollers for restraining downwardly-directed rotation of the load-bearing surfaces of said rollers, and for allowing upwardly-directed free rotation of such roller surfaces.

3,606,939
INFLATABLE ESCAPE SLIDE

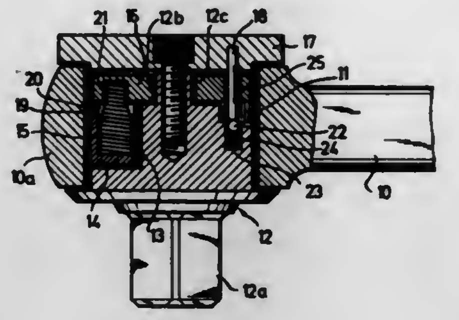
James R. Summer, Brielle, and Clarence S. Melander, Neptune, N.J., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Mar. 6, 1969, Ser. No. 804,867
Int. Cl. B65g *11/10*
U.S. Cl. 193—25 **7 Claims**



The lower half of the length of an inflatable escape slide is doubled back over and onto the top of the upper half and restrained thereat by hook and pile fasteners which are secured during an initial slide inflation stage until the beam members of the slide are nearly fully shaped, and which are then released to permit the lower half to swing upwardly, outwardly and then downwardly to rest, thus preventing tuck-under during inflation of the slide in a cross wind.

3,606,940
RATCHET SWITCHABLE INTO OPPOSITE DIRECTIONS OF OPERATION

Hans Joachim Finkeldei, Wuppertal-Nachstebreck, Germany, assignor to Firma Walter Finkeldei Werkzeugfabrik, Wuppertal-Wichlinghausen, Germany
Filed Jan. 5, 1970, Ser. No. 738
Claims priority, application Germany, Jan. 11, 1969, P 19 01 338.8
Int. Cl. F16d *11/06, 13/04, 23/00*
U.S. Cl. 192—43.1 **3 Claims**



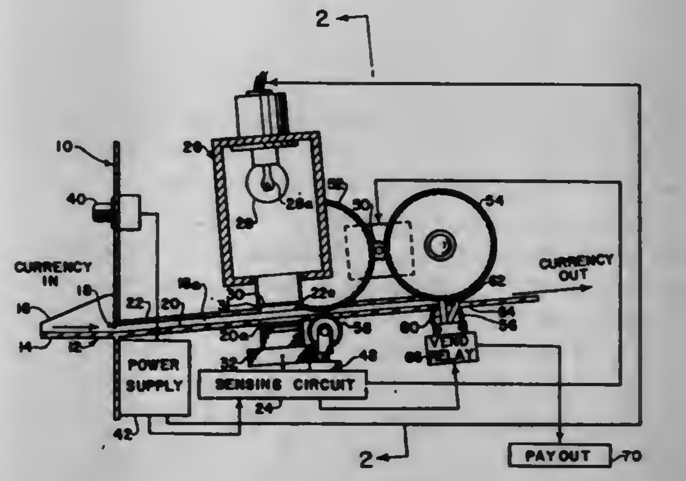
A ratchet switchable into opposite directions of operations for a screw operation of screws and nuts, which comprises a gripping part formed at its free end as a gripping handle, and forming at its other end a joint-bearing ring having inwardly extending teeth. A drive member is equipped with an axial coupling projection. A switching segment has outwardly extending teeth and is supported on a step-shaped secantial recess of the drive members which is provided as coupling member between the joint-bearing ring and the drive member. A switching cover, and a switch-over member are mounted on the drive member and operable by the switching cover by switching over in the sense of a change of operating direction. The switching-over member comprises a substantially annular sliding disc. A sliding block has oppositely disposed parallel guide edges and the sliding disc is linearly guided as an axial projection of the drive member in a direction crosswise to the longitudinal axis and full-faced supported outside of the sliding block on the drive member. The sliding block has on opposite points peripherally closed, axially directed receptacles for each coupling member connecting the switching cover with the sliding disc, as well as the latter with the switching segment, whereby the coupling member connecting the switching cover with the sliding disc is formed as an arresting pin passing through the sliding disc in an axially extending passing opening. The arresting pin is formed at its lower free end with a ball snapping device for the arresting of the working positions of the ratchet. The ball snapping device is received within a set step of a secantial recess of the drive body, while the coupling member connecting the sliding disc with the switching segment is formed as a switching joint having resilient rod characteristics self-elastic and return resilient crosswise to its longitudinal axis. The switching joint is received within an axial bearing receptacle on the side of the switching segment and in a recess provided in the sliding disc in axial direction of the bearing receptacle, respectively.

ERRATUM

For Class 193—25 see:
Patent No. 3,606,939

3,606,941
DOCUMENT VALIDATION APPARATUS

Jack E. Bayha, Chesterland, Ohio, assignor to Transmarine Corporation, Chesterland, Ohio
Filed July 11, 1969, Ser. No. 841,007
Int. Cl. G07f *1/06*
U.S. Cl. 194—4 **4 Claims**

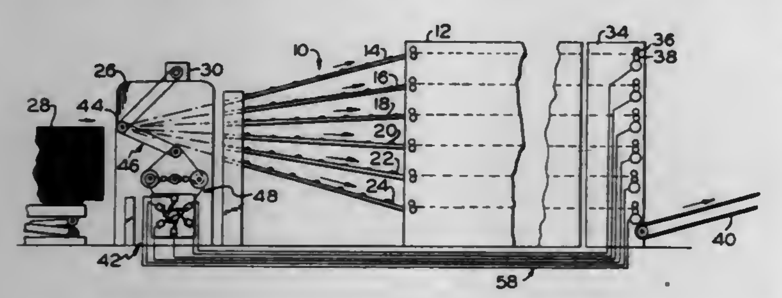


The invention relates to a slot-type document validation apparatus. The invention is characterized by having the document manually positioned into a testing area without the use of any trays, belts, or the like. Validation is accomplished by known techniques, and the document is then removed from the testing area upon proper validation with a positive removal system that eliminates the possibility of the document being removed from the testing area by any way other than the positive removal system, so that if the document is manually or otherwise restrained, the removal system will automatically reject the document and cancel the validation.

3,606,942

UNLOADER CONTROL FOR SHEET-CONVEYING APPARATUS

Curtice F. Daniels, 205 Pacific, Glendale, Oreg. 97442, and Curtice F. Daniels, Jr., 1311 NW. Hawthorne, Grants Pass, Oreg. 97526
Filed May 19, 1969, Ser. No. 825,627
Int. Cl. B65g *37/00*
U.S. Cl. 198—20 **12 Claims**

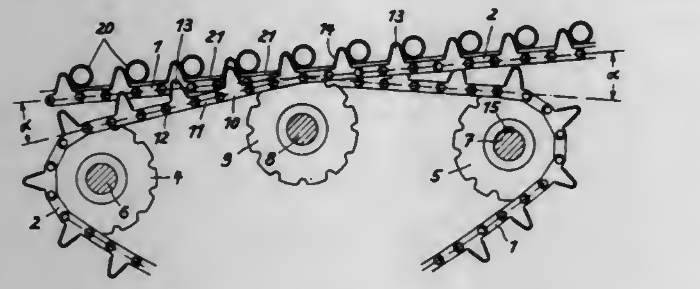


A multideck conveyor has a sequential deck feeder at one end and a sequential deck unloader at the other end. A variable speed drive between the feeder and the unloader varies the unloader timing speed in relation to the feeder timing speed so that the unloading end of the conveyor can discharge one length of material while the feeder feeds material of a different length to the conveyor decks.

3,606,943

CONVEYOR

Dietrich Grube, Ratingen-Tiefenbroich, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Sept. 8, 1969, Ser. No. 855,903
Claims priority, application Germany, Sept. 16, 1968, P 17 77 173.2
Int. Cl. B65g *37/00*
U.S. Cl. 198—102 **12 Claims**



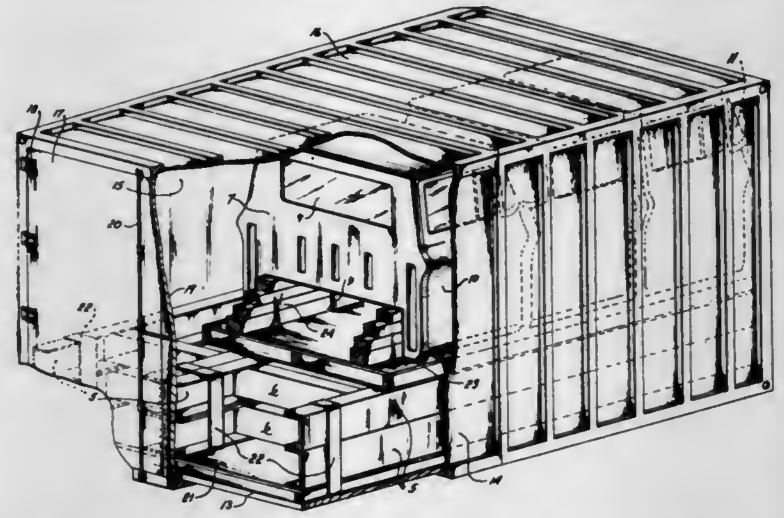
Wear and efficiency factors limit the length of an endless chain-type conveyor to about 20 yards, and for conveying hot metal tubes or bars for cooling up to 60 yards of cooling bed are required at modern speeds. Such a cooling bed has a number of sequentially arranged chain-type conveyors for conveying stock transverse to its axis, the conveyors being coupled for a smooth reliable transfer of stock. The ends of the conveyors to be coupled overlap with their chains interleaved with a set of coupling sprocket wheels mounted on a single shaft carrying the chains of both conveyors; and the end sprocket wheels of each conveyor are below the coupling sprocket wheels and more distant from the centre of the conveyor than the coupling sprocket wheels.

3,606,944

METHODS AND MEANS FOR PACKAGING VEHICLES IN LAND-SEA CONTAINERS

Robert T. Cadillac, 1110 E. 21st St., Brooklyn, N.Y. 11210
Filed June 9, 1969, Ser. No. 831,587
Int. Cl. B65d *85/68*
U.S. Cl. 206—65R **23 Claims**

A packaging system for the shipment of disassembled vehicles, such as buses and trucks, is provided in which a permanent, reuseable land-sea shipping container is utilized to package a plurality of disassembled vehicles. Provision is made for securing heavier components in load-supporting relationship to the deck of the container. In the case of flat-faced cowl and cowl-and-windshield type vehicles, there is secured to the deck of the container a stacked arrangement of vehicle frames of sufficient height to provide a protective area into which heavy components such as engines, transmissions, differentials and the like, can be completely inserted and secured. The remaining space within the container may be utilized to secure lighter components including stacked arrangements and cowls.



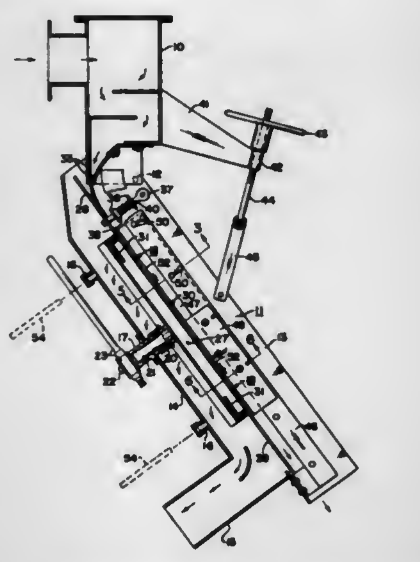
In the case of trucks with complete cabs, a preferred embodiment for packaging includes the packaging of four complete trucks by securing two pairs of superimposed frames in side-by-side relationship on the floor of the container. In this instance, at least some of the heavier components such as engines, transmissions, differentials and the like, are mounted within the vehicle cabs and the cabs, in turn, are mounted on and secured to the truck frames. Other parts of the disassembled vehicles such as tires, fenders and the like, are secured or nested between the side rails of the vehicle frames and in remaining areas of the container.

By utilizing the above arrangements, a number of complete vehicles can be packaged within a single land-sea container.

3,606,945

APPARATUS HAVING MOVABLE SIEVE FOR SEPARATING FLUENT MATERIAL

Orris L. Watson, Cleveland, and David L. Springston, Hudson, Ohio, assignors to Envirotech Corporation, Palo Alto, Calif.
Filed Oct. 23, 1968, Ser. No. 769,975
Int. Cl. B07b *1/28*
U.S. Cl. 209—251 **10 Claims**

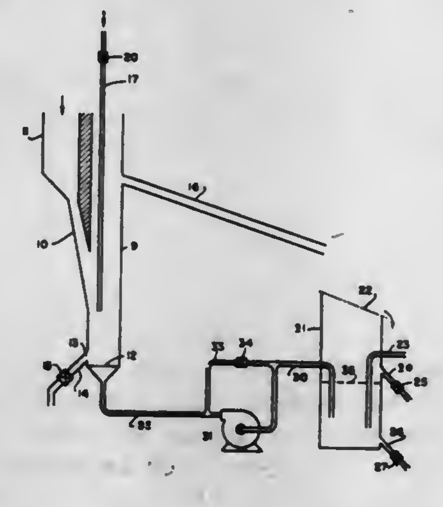


Apparatus for separating fluent particulate material into separate portions by a sieve, wherein the sieve is mounted for movement essentially in a plane so that, without disassembling the apparatus or even interrupting its operation it may be moved to present different portions of the sieve to the flow of material to equalize wear from abrasive fluent material and/or to make possible cleaning of the sieve if the fluent material tends to clog it.

3,606,946

METHOD FOR SEPARATING MACHINED COMPONENTS FROM SHAVINGS BY EBULLITION

Frederick A. Zenz and Fredric E. Zenz, both of Bryant Ave., Roslyn Harbor, N.Y. 11577
Filed Feb. 24, 1969, Ser. No. 801,399
Int. Cl. B03b *3/34*
U.S. Cl. 209—10 **2 Claims**

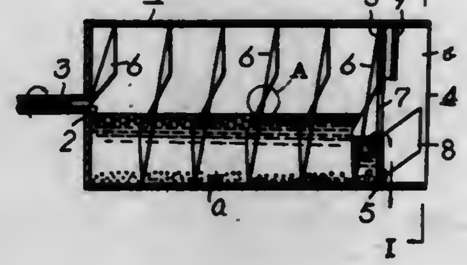


A method for separating manufactured components and pieces such as rivets, screws, and other precision components from shavings and chips produced in the machining operation by ebullition.

3,606,947

SUSPENSION CONCENTRATION-DEHYDRATING APPARATUS

Shigemasa Tanaka and Hidetomo Suzuki, Tokyo-to, Japan, assignors to Ebara Infilco Kabushiki Kaisha, Tokyo-to, Japan
Filed Sept. 5, 1969, Ser. No. 855,526
Claims priority, application Japan, Sept. 17, 1968, 43/80,594; Jan. 1, 1969, 44/3,265
Int. Cl. B01d *33/06*
U.S. Cl. 210—403 **3 Claims**

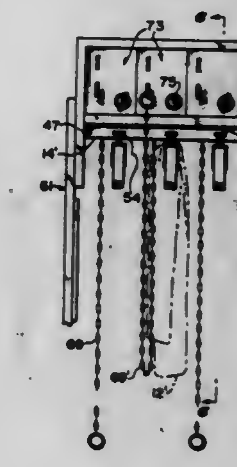


Proposed in the present invention is a concentration-dehydrator apparatus comprising means for precipitating the solids in the suspension, and means for separating and dehydrating the solids from the suspension and turning said solids into a cake-like mass by utlizing variation of properties of the suspended solids in a rotary cylindrical container and the difference of movements between the suspended solids and the liquid in said container, with no need of subjecting the precipitate to centrifugal separation, vacuum filtering or pressure filtering process.

3,606,948

GARMENT HANGER HARDWARE

Herman D. Strang, 308 Ridge St., Algonquin, Ill. 60102
Filed June 16, 1969, Ser. No. 833,271
Int. Cl. E05b *69/00*
U.S. Cl. 211—4 **4 Claims**

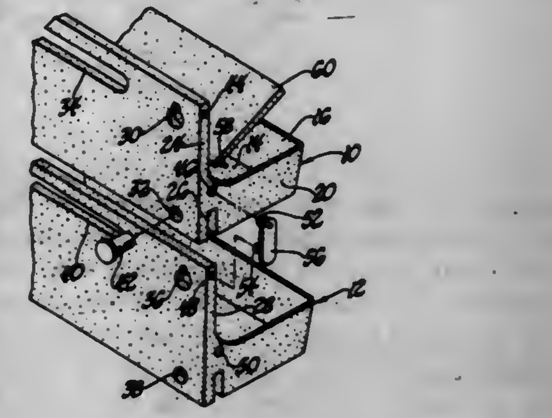


Metal saddle topped with a deep T for use with garment hangers is fabricated by joining identical halves in butting relationship. This hardware is particularly useful in maintaining position of a garment once hung, and prevents twisting of the hanger. In a preferred embodiment garment hangers improved in accordance with this invention are used in conjunction with an elongated flat bottomed channel having U-shaped cross section and having a T-shaped slot in a side wall of the elongated channel, with the bottom portion of the T slot extending across the bottom of the channel perpendicularly to the longitudinal axis of the channel to permit entry of the hardware into the U-shaped channel interior to reside on the bottom thereof.

3,606,949

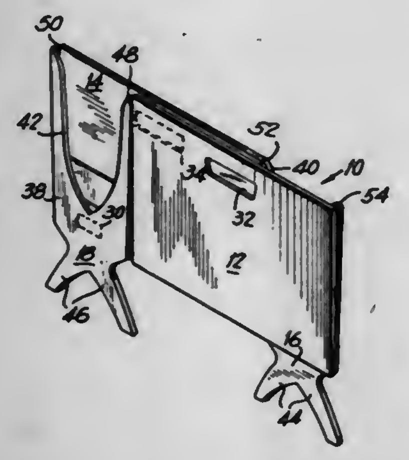
TRANSPORTABLE STORAGE BIN ASSEMBLY

James E. Joyce, 878 Darien Circle, Rochester, Mich. 48063
Filed Feb. 11, 1969, Ser. No. 798,305
Int. Cl. A47f *3/14;* **B65d** *21/02*
U.S. Cl. 211—126 **1 Claim**



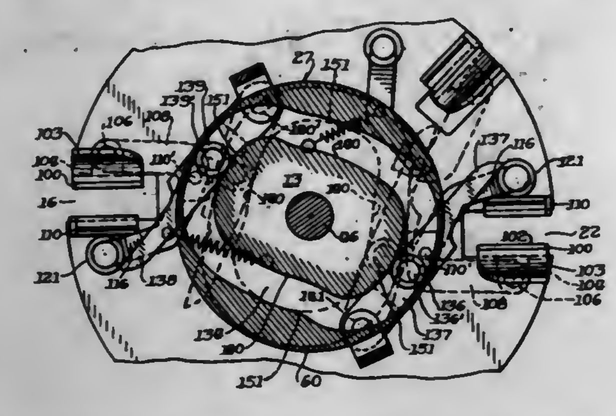
Storage bins or like articles, each having a storage compartment portion and an upstanding back member, are designed to be vertically stacked with the support member of one bin extending into a downwardly opening slot in another bin. To permit two or more such stacked bins to be carried as a unit means are provided for positively interconnecting the bins in the stacked array. Various embodiments are described in which the back member of one bin is positively connected to another bin in the stacked array.

3,606,950
SUPPORT STRUCTURE
Bela B. Nevai, Dobbs Ferry, N.Y., assignor to Nevco Wood Products Co., Inc.
Filed June 15, 1970, Ser. No. 46,143
Int. Cl. A47f *3/14*
U.S. Cl. 211—132 **7 Claims**



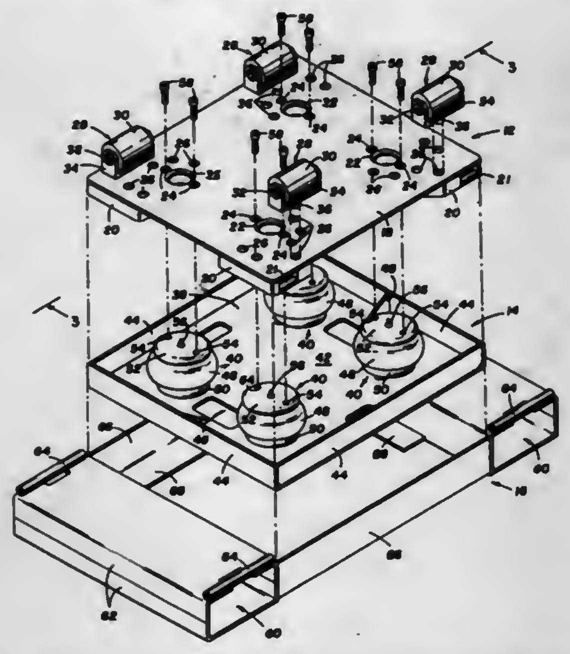
Support structure for magazines, and the like, which comprises side walls, end walls and a plurality of floor panels all hingedly interconnected so as to be foldable between a generally flat storage and/or shipping position and an open or erected position readily and easily whereat it will support magazines and the like in generally upright orientation.

3,606,951
ENVELOPE TURNOVER APPARATUS
Eugene Sather, Washington, and Lester H. Stocker, Phillipsburg, N.J., assignors to Bell & Howell Company, Chicago, Ill.
Filed Sept. 22, 1969, Ser. No. 859,830
Int. Cl. B65g *47/24*
U.S. Cl. 214—1Q **5 Claims**



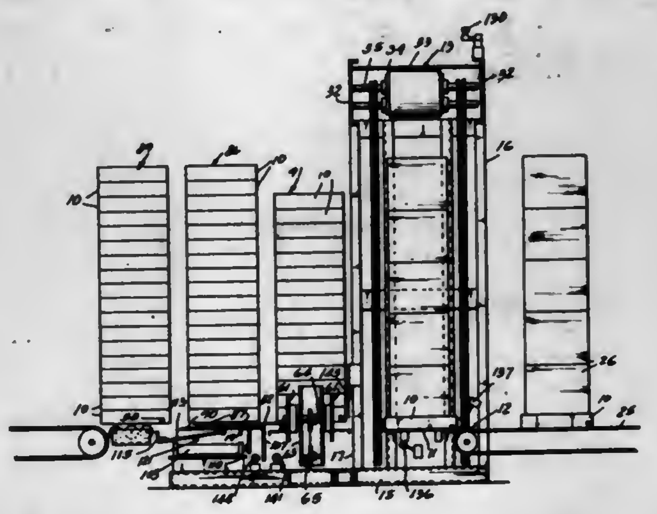
This invention is directed to rotary article turnover apparatus for use with mail handling or similar equipment for turning over articles such as envelopes from an address side down condition to an address side up condition. The turnover apparatus includes a drum shaped envelope carrier having a number of pockets equally spaced about its circumference and a clamping jaw at each pocket adapted for movement parallel to the envelope for holding the envelope without distortion while the carrier is successively cycled through an angle of 180°. The envelope carrier is supported for movement about a horizontal axis and is cycled and intermittently rotated through a given angle per operational cycle by a Geneva drive which is dimensioned so as not to interfere with movement of the envelope toward the carrier. Cam means including an integral cam track receiving a pair of cam followers is provided for opening and closing the clamping jaws during stationary portions of the operational cycle to release an envelope at a receiving station and for clamping and picking up an envelope at a supply station.

3,606,952
ORDNANCE LOADING SYSTEM
Harry S. Mankey, Dallas, Tex., assignor to Standard Manufacturing Co., Inc., Dallas, Tex.
Filed Mar. 24, 1969, Ser. No. 809,638
Int. Cl. B25j *3/00;* **B66f** *3/18*
U.S. Cl. 214—1D **10 Claims**



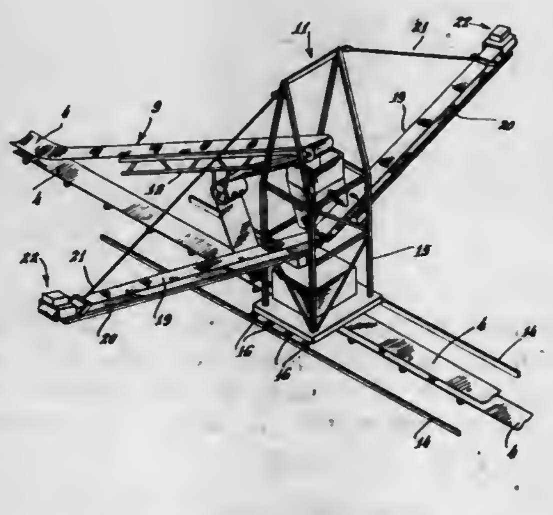
An ordnance loading system that permits manual final positioning of the ordnance. The ordnance is supported on the lift boom of a low profile lift truck by a plurality of flexible support members, such as pneumatic springs, rubber shear pads, etc. The lift truck is operated to vertically and horizontally position the ordnance after which the position of the ordnance is manually finally adjusted against the action of the flexible support members.

3,606,953
STACKER FOR BOX-LIKE ARTICLES AND PALLET SUPPLY MEANS THEREFOR
Robert L. Beninger, Sheboygan, and Grant Hill, Jr., Elkhart Lake, Wis., assignors to H. G. Weber and Company, Inc., Kiel, Wis.
Filed July 31, 1969, Ser. No. 846,353
Int. Cl. B65g *57/06*
U.S. Cl. 214—6P **10 Claims**



Apparatus for stacking box-like articles and supplying pallets for stacking. Pallets are supplied to a vertically movable platform by a carriage, guided for reciprocable movement beneath a stack of pallets. Sprocket holding devices hold the pallets above the carriage and release the pallets one by one to the carriage. A pallet reserve station is provided behind a pallet supply station. An in-line pallet infeed station is provided behind the pallet reserve station. The carriage moves the last pallet at the pallet supply station onto the platform as it ejects a pallet having a column of articles stacked thereon from the platform, and advances a stack of pallets to the pallet supply station, and a stack of pallets at the infeed station to the reserve station. Gripper arms at the reserve station hold the pallets above the carriage and accommodate reciprocable movement of the carriage and release the stack of pallets at the reserve station to the carriage for transfer to the pallet loading station. The carriage has puller arms engageable under a pallet at the infeed station, to pull a stack of pallets to the pallet reserve station as the pallets at the pallet reserve station are advanced to the pallet supply station.

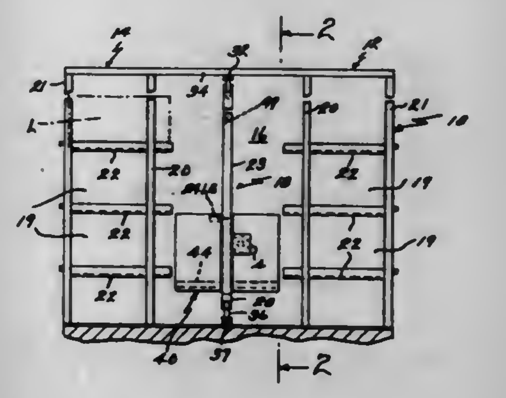
3,606,954
CONTROL SYSTEM FOR STACKING EQUIPMENT
Gerald C. Mayer, Wayne, N.J., assignor to Hewitt-Robins Incorporated, Wayne, N.J.
Filed Nov. 24, 1969, Ser. No. 879,501
Int. Cl. B65g *57/00*
U.S. Cl. 214—10 **4 Claims**



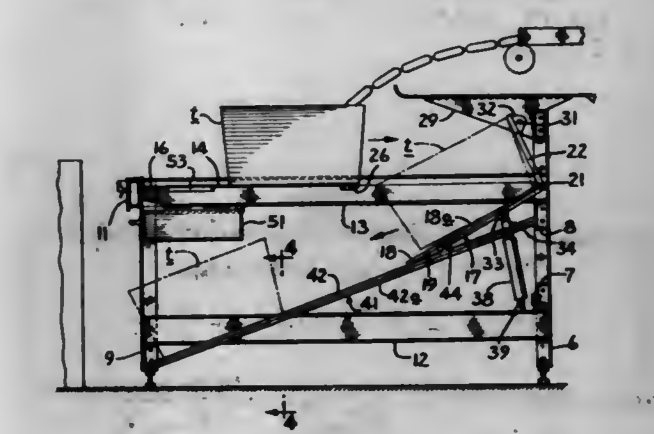
A novel bed blending system is disclosed which produces uniform thickness layers in the bed. A conveyor feeds a conventional traveling stacking boom which deposits material on the bed as it travels. The bed is formed, layer by layer, on successive passes of the stacker. The control system monitors the feed rate and controls the stacker speed to provide for controlled layer thickness in the bed as conveyor speed and mass feed vary. The control system is so designed that a layer of the bed is uniform along the bed but is capable of providing variations in bed layer thickness from one layer to the next.

3,606,955
AUTOMATIC WAREHOUSING SYSTEM WITH MEANS CONTROLLING ELEVATOR MOVEMENT AND/OR LOAD CARRIER HORIZONTAL SPEED FOR STABILIZING LOAD CARRIER
Sanford Saul, Cleveland, Ohio, assignor to The Triax Company, Cleveland, Ohio
Filed Apr. 9, 1970, Ser. No. 26,964
Int. Cl. B65g *1/00*
U.S. Cl. 214—16.4A **16 Claims**

A warehousing system which includes an arrangement for preventing or materially reducing substantial stress and instability of a vertically elongated load carrier of the system, during horizontal stopping and/or starting of the load carrier mechanism. The powered load carrier may comprise vertically elongated horizontally movable mast structure with an elevator movable vertically with respect to the mast structure, for depositing loads into and removing loads from a storage rack. The load carrier is power driven by electric motors and is provided with a control system for controlling the movement of the load carrier components, and in one embodiment means are provided in the control system for preventing vertical movement of the elevator above a predetermined level with respect to the mast structure during horizontal movement of the mast structure. Likewise, during positioning movement of the elevator with respect to the mast structure above the predetermined level, the load carrier is positioned at a selected load handling position and is prevented from horizontal movement until such time as the elevator drops down to or below the predetermined level. In another embodiment, if the elevator has moved above the aforementioned predetermined level, during positioning movement, the control system is such that the load carrier is prevented from being actuated into high speed horizontal travel but instead is maintained at a reduced horizontal speed until such time as the elevator drops down to or below said predetermined level.



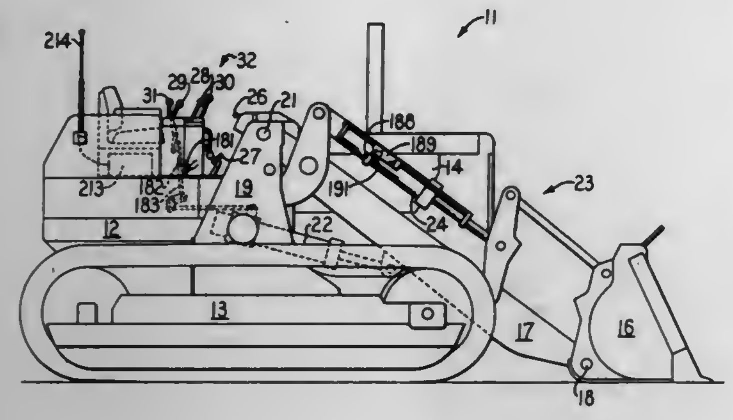
3,606,956
LOADING TABLE FOR USE WITH CONTINUOUS PRODUCTION OF WIENERS
William H. Neubeck, Jr., Justice, Ill., assignor to Bloomer-Fiske, Inc.
Filed July 29, 1969, Ser. No. 845,734
Int. Cl. B65b *69/00*
U.S. Cl. 214—300 **3 Claims**



In an apparatus for continuous production of wieners, a loading table supports tubs for delivering strands of uncooked wieners to the intake of the processor. The table has a top with a series of bays or sections each for supporting tubs containing strands of wieners, one of the tubs of each bay being supported on a trap door portion of the top and serving to supply the processor. The strands in the tubs are joined so that when the tub on the trap door portion of each bay has emptied, the delivery to the processor proceeds from the adjacent tub. However, the trap door portion in each bay can be operated to lower the empty tub thereon to a slide below the table that returns the empty tub to the front of the table for reuse. When the trap door is returned, it provides a support for receiving the aforesaid adjacent tub.

3,606,957
REMOTE CONTROL SYSTEM FOR LOAD MANIPULATING VEHICLES

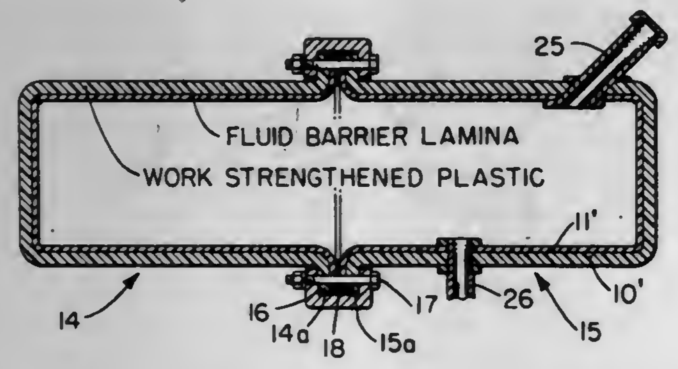
Joe E. Fuzzell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 7, 1969, Ser. No. 822,368
Int. Cl. E02f *3/00*
U.S. Cl. 214—776 **7 Claims**



A crawler loader vehicle has remote control means capable of effecting intermediate settings of the operator's control linkages as well as extreme positions and provides for remotely initiating movement of the lift arms and bucket with automatic stopping at the intermediate position if desired. Hydraulic jacks, actuatable through radio controlled solenoid valves, are substituted for existing links in control lever linkages. The jacks perform as a conventional rigid link when the operator is situated on the vehicle and provide for the remote control if the operator's control levers are locked in fixed position.

3,606,958
LAMINATED FLUID-BARRIER CONTAINER AND METHOD OF MAKING IT

Paul M. Coffman, Cherry Hill, N.J., assignor to Shell Oil Company, New York, N.Y.
Filed May 17, 1968, Ser. No. 729,977
Int. Cl. B65d *85/72, 89/16;* **B64d** *37/02*
U.S. Cl. 220—63 **8 Claims**

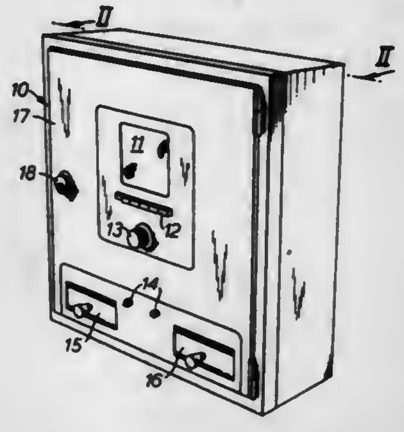


This application discloses a laminated fluid-barrier container and method of making it, particularly a container having a cold-work-strengthened fiber-oriented load-carrying plastic lamina or layer and another lamina or layer which forms a highly effective barrier against the passage of fluids, especially such fluids as oxygen and aromatic vapors. Such containers are especially suitable for foods, where oxygen entry causes spoilage, for gas tanks where vapor passage causes fuel loss and air pollution, and for similar uses.

The container body is formed by stretch-forming a laminated blank or workpiece in the solid-phase condition to cause cold-work-strengthening and fiber-orientation of the load-carrying lamina of the container and to stretch the fluid-barrier lamina along with the load-carrying lamina. Contact between laminae is assured by excluding air and using bonding material between laminae if desired.

3,606,959
DISPENSING MACHINE WITH REMOTE CONDITION INDICATOR

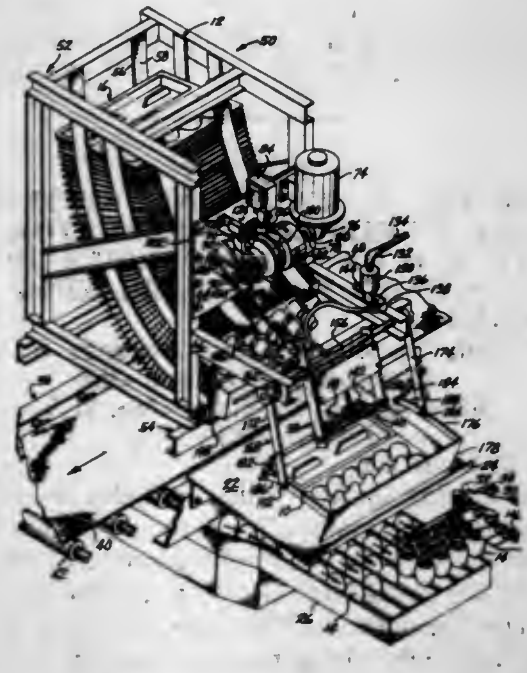
Charles Richard Paul Stonor, Haywards Heath, England, assignor to Sound Diffusion (Sales) Limited, Sussex, England
Filed Dec. 12, 1968, Ser. No. 783,217
Claims priority, application Great Britain, Dec. 21, 1967, 58,117/67
Int. Cl. G07f *11/00*
U.S. Cl. 221—2 **16 Claims**



A centralised system for automatic goods-dispensing machines for use in hotel rooms etc. with means including a sliding switch for reading off the contents of each machine on a central meter and means for locking any machine from a central location.

3,606,960
EGG CARTON DISPENSING MACHINE

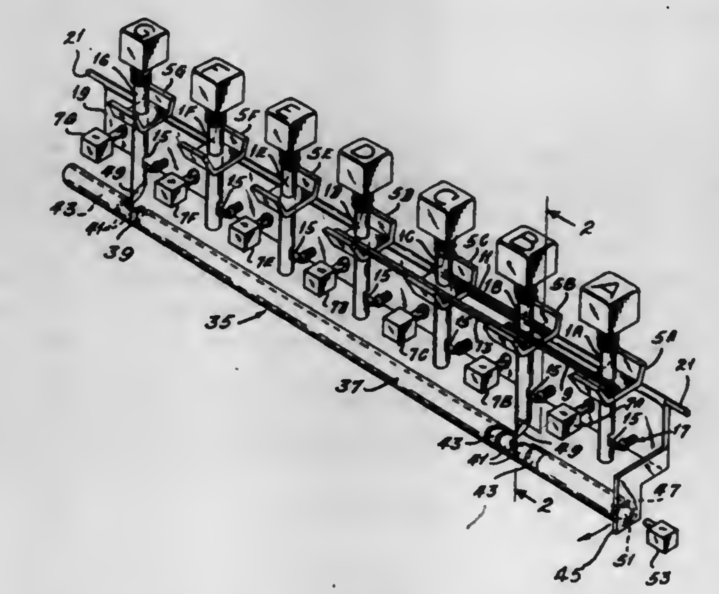
Lyle J. Butterworth, Tacoma, Wash., assignor to National Poultry Equipment Company, Benton, Wash., a division of Dawson & Co., Inc., Tacoma, Wash.
Filed Mar. 3, 1969, Ser. No. 803,777
Int. Cl. B65h *3/08*
U.S. Cl. 221—211 **6 Claims**



For chicken flock owners and operators and others marketing eggs, who have a need for many automatic egg processing and handling products and accessories, an egg container dispenser and dispensing method are provided to rapidly position a carton, flat or other egg package on a tray or counter to be quickly filled with clean graded eggs. Egg containers, generally purchased and delivered in nestled stacks, are so placed in a dispenser and guided to a distribution location where they are stopped. When needed, the egg containers are conveniently released and pulled away from the nestled stack into their loading position, one at a time, by utilizing a cam operated indexing stack holding means and a cam timed vacuum container gripping means that is incorporated into a powered cam sequenced linkage means. Additional optional cam operated linkage moves a filled egg container to a distribution conveyor as another egg container is being released and separated from the nestled stack. At all times the vacuum gripping means and method are particularly suited to handling cartons made from plastic materials.

3,606,961
VENDING MACHINE SELECTION AND CONTROL

Alan M. King, 4746 The Boulevard, Westmount, Quebec, Canada
Filed Sept. 10, 1969, Ser. No. 856,585
Int. Cl. B67d *5/06*
U.S. Cl. 222—76 **13 Claims**

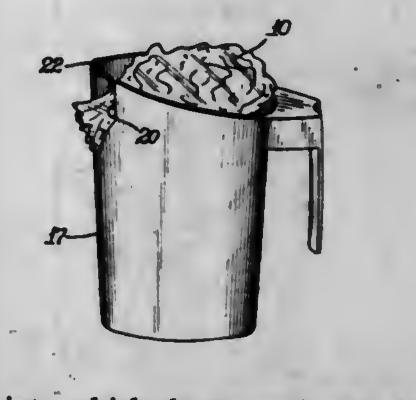


A selection and control mechanism for a vending machine in which a primary liquid is dispensed as well as various additives selected by the customer. The mechanism includes a primary selector which is normally blocked from shifting by a release device controlled by a latching device. When the latching device moves to its latching position, it also moves the release device such that the selector can be depressed, and it further holds the selector in its depressed position. As the selector moves to its depressed position, it actuates a primary switch. Secondary selectors are also provided and they operate secondary switches when depressed. The latching means also holds the secondary selectors in their depressed positions. The primary selector can be depressed independently of the secondary selectors. Each secondary selector when depressed carries the primary selector along with it and may, likewise, carry another secondary selector along with it.

3,606,962
DISPENSING AND SEALING RECEPTACLE

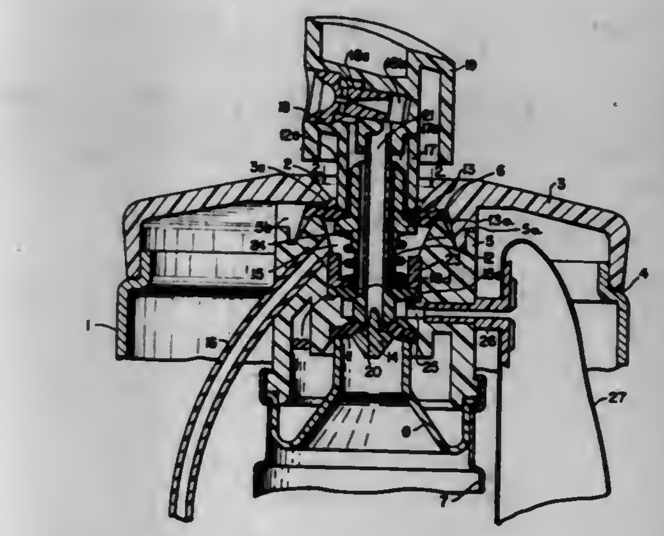
William R. Scholle, Long Beach, Calif., assignor to Scholle Container Corporation, Northlake, Ill.
Filed Sept. 5, 1969, Ser. No. 855,592
Int. Cl. B65d *35/56*
U.S. Cl. 222—105 **3 Claims**

A pouring pitcher for supporting and dispensing fluent contents of a bag of film material and for closing the bag after it has been opened and part of the contents dispensed, comprising a slot in the wall of the pitcher opening to its upper edge into which the opened end of the bag can be wedged to effect a closure.



3,606,963
AEROSOL DISPENSER FOR DISPENSING A MULTICOMPONENT PRODUCT

Jean Marand, Norwalk, Conn., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.
Filed July 3, 1969, Ser. No. 839,009
Int. Cl. B65d *83/06;* **B67d** *5/52*
U.S. Cl. 222—132 **14 Claims**

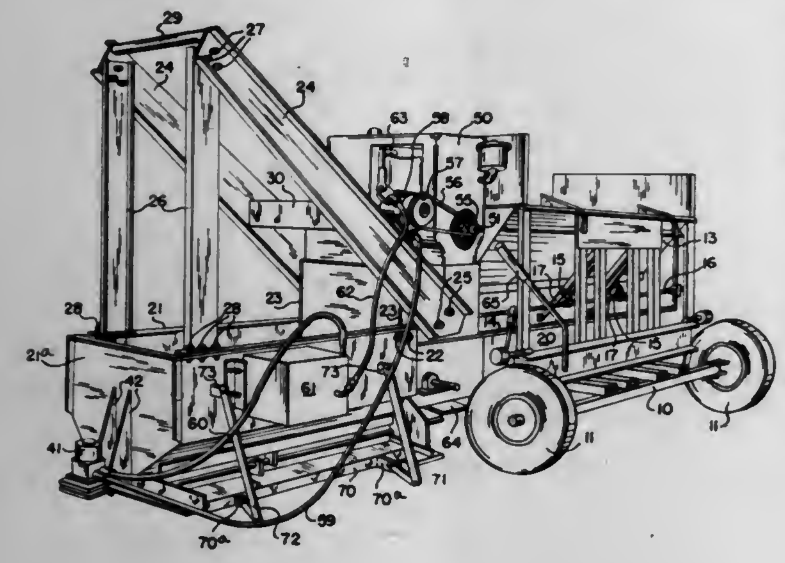


An aerosol dispenser of the type in which the propellant and a plurality of components of the product to be dispensed are kept separate until dispensed. The dispenser has an outer container with a valve means on said outer container. A propellant cartridge is provided in said outer container and is coupled to said valve means. At least one fluid tight flexible sac is provided in said outer container and contains one component of the product to be dispensed in a fluid condition. A second component can be contained in either the outer container or a second flexible sac. Means is provided coupling said outer container and sac or sacs to said valve means for aspirating the components when the valve means is opened to allow propellant to flow from said propellant cartridge.

3,606,964
GRAVEL SPREADER

Earl H. Ensinger, 833 E. 139th St., Cleveland, Ohio 44110
Filed Aug. 28, 1969, Ser. No. 853,789
Int. Cl. B65g *65/70*
U.S. Cl. 222—161 **6 Claims**

A hopper and conveyor unit adapted to receive gravel or the like from a hauling truck has an endless conveyor extending crosswise of the roadway and effective to deliver gravel from the hopper to a box extending crosswise over the shoulder of the roadway, this box having a perforated bottom with means for reciprocating the perforated bottom whereby the gravel is evenly shaken out upon the shoulder, together with a control gate for varying the number of perforations in the bottom free to discharge gravel.



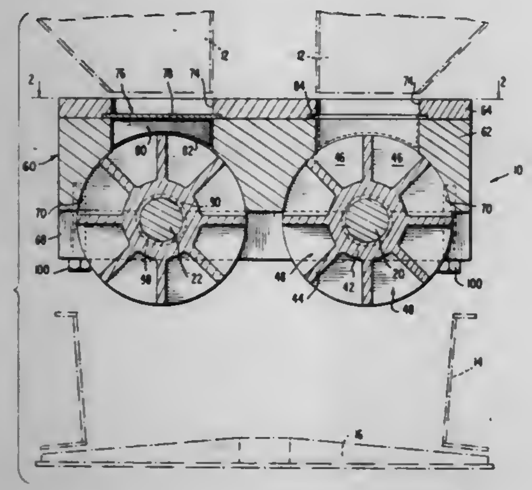
3,606,965
DISPENSER FOR PARTICULATE AND PULVERULENT MATERIAL

Charles E. Cortelyou, Litttle Silver, Michael Scaduto, North Arlington, and Pacquale C. La Rosa, North Brunswick, N.J., assignors to Turf-O-Matic, Inc., Oceanport, N.J.

Filed Dec. 23, 1968, Ser. No. 786,052

Int. Cl. G01f *11/06*

U.S. Cl. 222—312 **5 Claims**



A dispenser particularly for use with lawn combines, which dispenses seeds and fertilizers by means of rotating, compartmented, cylindrical drums. The amount of material to be dispensed by the device can be accurately controlled by the number of compartments on the cylindrical drum that is exposed to the reservoir of materials.

3,606,966
AEROSOL DISPENSER

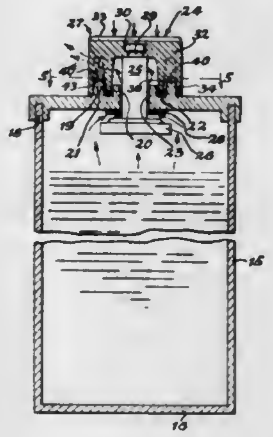
Joseph M. Rait, Buffalo, N.Y., assignor to Pelorex Corp., Buffalo, N.Y.

Filed June 6, 1969, Ser. No. 831,115

Int. Cl. B65d *83/06*

U.S. Cl. 222—402.11 **7 Claims**

A dispenser for aerosol containers comprising a container end wall member having a bore therethrough and a pair of upstanding annular radially spaced rims at the outer surface of the end wall member concentric with the bore. An auxiliary resilient sealing member is disposed in the annular groove between the rims. A shank extends through the bore and is provided with an operating member at its outer end having an annular portion in sealing contact with the sealing member. The inner end of the shank is provided with a valve which seats against a primary resilient sealing member interposed between the valve and the inner surface of the end wall member. The operating member has a pair of depending locking posts which normally engage the top surface of the outer rim of the end wall member to prevent actuation of the valve. The operating member is rotatable to bring the locking posts into registry with corresponding recesses in the outer rim to permit depression of the operating member against the resilient resistance of the auxiliary sealing member and thereby unseat the valve to effect dispensing of the aerosol contents around the shank and through a discharge opening in the operating member.



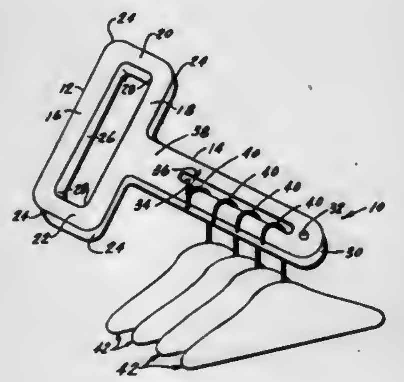
3,606,967
HANGER HANDLE

Toulman V. Roberts, 8909 Lakehurst, Oklahoma City, Okla. 73120

Filed Mar. 28, 1969, Ser. No. 811,373

Int. Cl. A47g *25/06*

U.S. Cl. 224—45T **10 Claims**



A hanger handle to carry a plurality of clothes-hangers in an over-the-shoulder manner wherein the garments are oriented to optimally distribute the weight thereof, and wherein the hanger handle is constructed to permit the individual using the device to have his arm and hand in the maximum comfort and strength position.

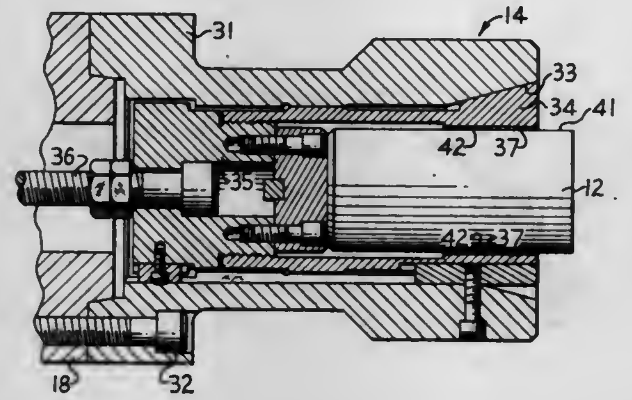
3,606,968
FRICTION WELDING CHUCK ASSEMBLY

Calvin D. Loyd, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 1, 1969, Ser. No. 821,053

Int. Cl. B23k *27/00*

U.S. Cl. 228—2 **15 Claims**



A chuck assembly within a friction welding machine for securing one of a pair of weld pieces which are relatively rotated and urged into axial engagement to bond them together at a common interface. With at least one of the weld pieces having a relatively high-finished surface subject to marring, a chuck assembly for securing the one weld piece includes a chucking member generally conforming with the surface of the weld piece. Elastomeric material of selected thickness is arranged upon the chucking member to engage the weld piece to prevent contact between the weld piece and chucking member, while precisely controlling axial, radial and rotational alignment of the weld piece within the chucking member.

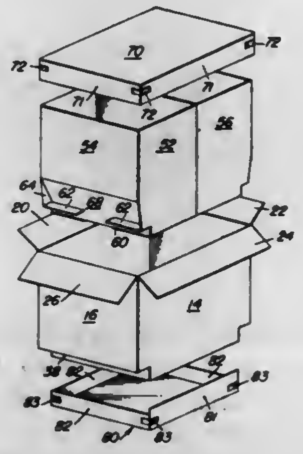
3,606,969
SHIPPING AND DISPENSING CONTAINER

Joseph Voytko, Lakewood, Ohio, assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,588

Int. Cl. B65d *19/20*

U.S. Cl. 229—37E **21 Claims**



A composite shipping and dispensing package is disclosed which includes an outer container having a novel, integral lower end configuration for accommodating industrial truck handling devices without the need for auxiliary pallet structures. The package also includes a novel inner container construction to insure complete and unrestricted unloading through an instant dispensing bottom closure.

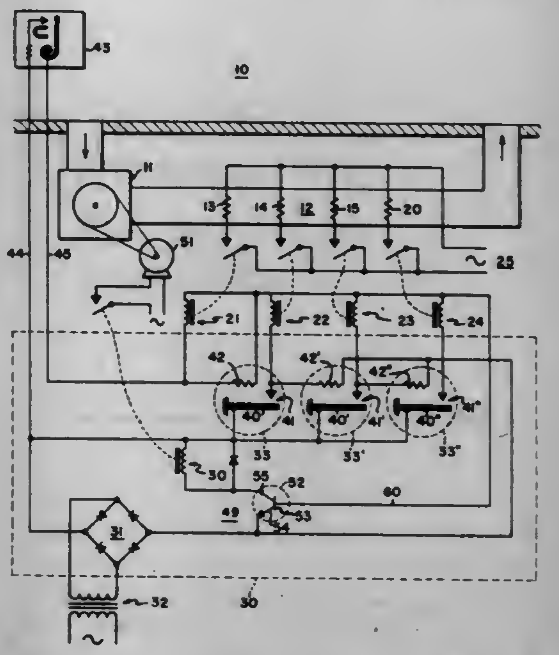
3,606,970
CONTROL DEVICE FOR A PLURALITY OF STAGES OF ELECTRIC HEAT WITH CURRENT RESPONSIVE MEANS FOR CONTROLLING A FAN

Arlon D. Kompelien, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 3, 1969, Ser. No. 854,978

Int. Cl. H05b *1/02*

U.S. Cl. 236—11 **8 Claims**



A control apparatus for controlling a plurality of stages of electric heat in sequence in response to a space thermostat and for controlling a fan for delivering heated air to the space when any one of the electric heaters is energized. The control of the fan is accomplished by a current responsive device responsive to the flow of current to any one of a plurality of actuators for energizing the electric heating stages.

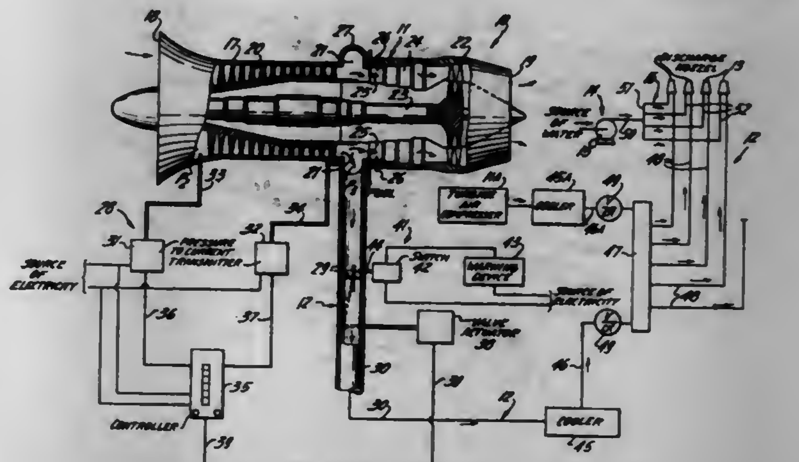
3,606,971
GAS TURBINE AIR COMPRESSOR AND CONTROL THEREFOR

Emmett S. Harrison, Corona, N.Y., and August H. Zoll, Cedar Grove, and Chapman J. Walker, Saddle River, N.J., assignors to Curtiss-Wright Corporation

Filed May 28, 1970, Ser. No. 41,509

Int. Cl. A01g *15/00;* **E01h** *13/00*

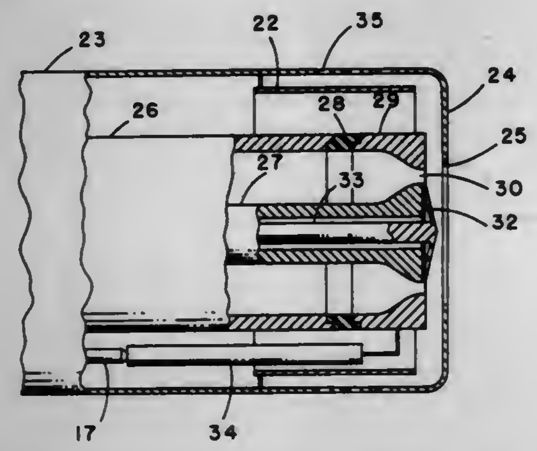
U.S. Cl. 239—14 **14 Claims**



An artificial snow producing system employing a novel gas turbine air compressor which has an air by-pass connected to discharge nozzles to deliver compressed air to the latter for co-mingling with water to generate snow-like water particles. The gas turbine compressor is provided with an overload prevention system to avoid excess by-pass of compressed air and the consequent overheating and failure of the combustor and turbine components of the gas turbine compressor.

3,606,972
SPRAY COATING APPARATUS

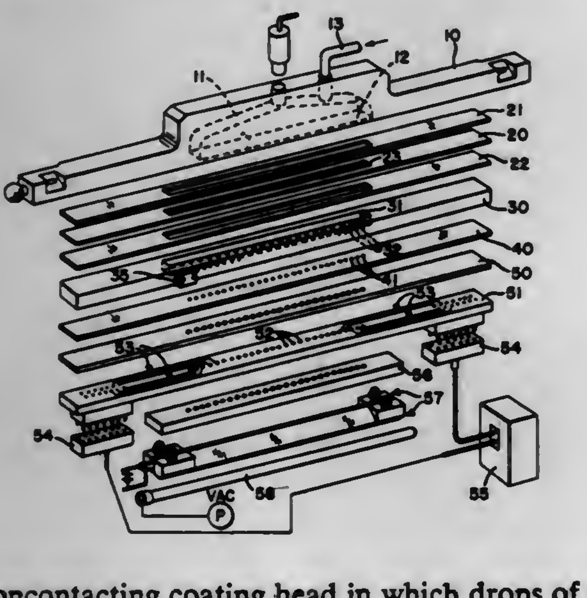
Wolfgang Ferrant, Bozen, Italy, assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Continuation of application Ser. No. 632,583, Apr. 21, 1967. This application May 12, 1969, Ser. No. 826,071
Claims priority, application Germany, Apr. 28, 1966, F 49,044
Int. Cl. B05b *5/00;* **F23d** *11/28*
U.S. Cl. 239—15 **15 Claims**



An electrostatic, compressed-air spray gun wherein the liquid to be atomized is formed on a conductive support into a film having an extended edge coincident with one edge of a narrow opening through which a high-velocity stream of atomizing air is discharged. The opposite edge of such opening is defined by an electrode between which and the film-support there is maintained an electrical potential difference. The gun may be provided with an insulated spray-surrounding electrode which is maintained at an effective spray-repelling potential by the transmission of ion-borne charges to or from it.

3,606,973
FILTER PLATE FOR A COATING HEAD

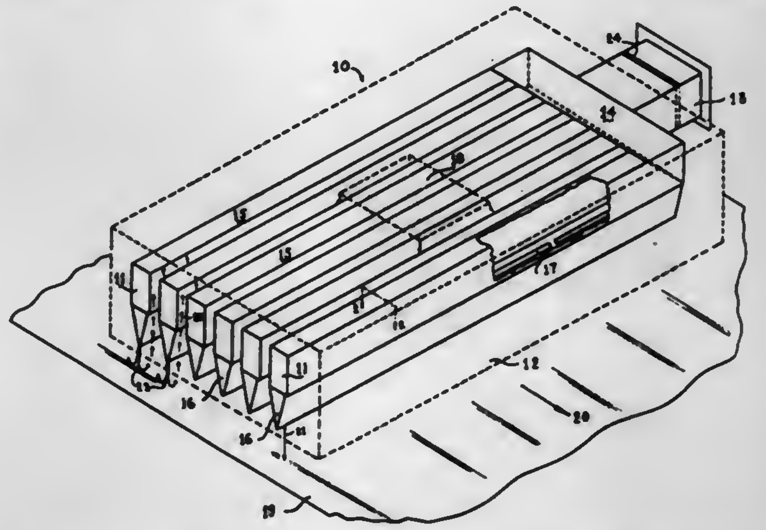
Gerald T. Davis, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Nov. 17, 1969, Ser. No. 877,251
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **8 Claims**



In a noncontacting coating head in which drops of coating are ejected from very small orifices in an orifice plate toward a web or other article being coated, a filter plate having perforations therein no larger than the orifices is mounted directly in the coating head just upstream of the orifice plate to remove from the coating material any particles of a size sufficient to clog the orifices. The total open area of the perforations is greater than the total open area of the orifices so that an appreciable number of perforations can be blocked by foreign particles without seriously affecting operation of the coating head.

3,606,974
MATERIAL TREATING APPARATUS

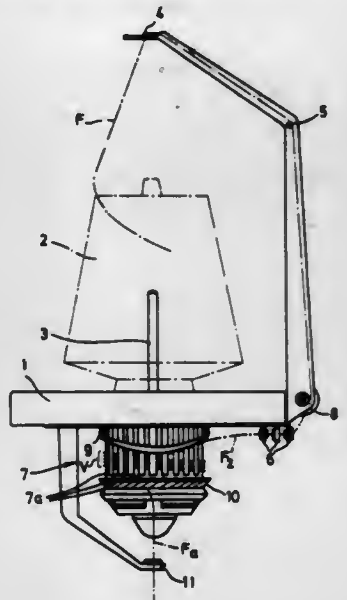
Nelson M. Steele, 1762 Townline Ave., Beloit, Wis. 53511
Filed Apr. 4, 1969, Ser. No. 813,635
Int. Cl. A62c *31/10*
U.S. Cl. 239—568 **5 Claims**



A nozzle assembly for treating materials by impingement of a high velocity gaseous medium comprising a plenum chamber and a generally triangularly shaped nozzle attached to said plenum chamber and communicating therewith.

3,606,975
METHOD OF FEEDING YARN TO A KNITTING PLACE ON A TEXTILE MACHINE

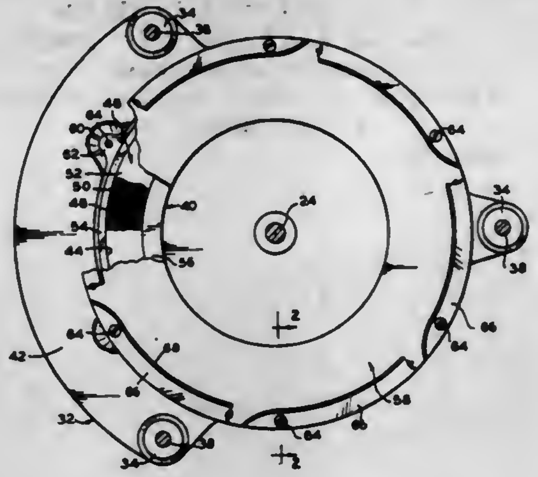
Karl Isac Joel Rosen, Villa Haga, Ulricehamn, Sweden
Filed Jan. 9, 1970, Ser. No. 1,635
Claims priority, application Germany, Jan. 22, 1969, P 19 03 133.5
Int. Cl. B65h *51/20*
U.S. Cl. 242—47.12 **1 Claim**



A method of feeding yarn to a knitting place on a textile machine, such as a knitting, weaving or winding machine, wherein the yarn is drawn off a bobbin and tangentially wound under tension onto a storing drum in the form of a plurality of windings. The yarn at the winding-on stage bears against a free surface section of the storing drum being moved in the axial direction of the storing drum by pressure at least on the last formed winding by means of a sliding element which is movable in the longitudinal direction of the surface of the drum and/or forms an acute angle between itself and the outer face of the said drum at least over part of the drum periphery and finally being withdrawn from the storing drum in an axial direction. An irregular ball of yarn having one or more layers at least in parts is formed by reducing the winding tension of the yarn relative to the winding tension to be maintained in a one-layered winding as a result of the pressure which is effective in an axial direction.

3,606,976
BRAKE FOR TAPE REEL

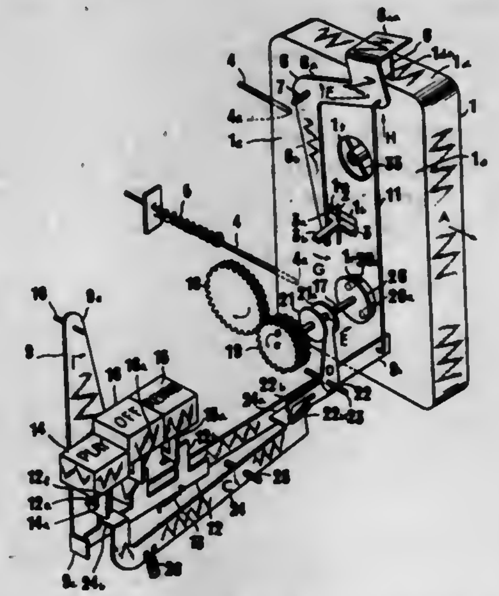
Clarence T. Lewis, Portland, Oreg., assignor to Data Pacific Corporation, Portland, Oreg.
Filed July 10, 1969, Ser. No. 840,802
Int. Cl. B65h *59/38, 63/02;* **G11b** *15/32*
U.S. Cl. 242—190 **10 Claims**



A brake for a tape reel includes a stationary brake shoe disc adjacent the tape reel wherein the brake shoe disc is provided with spring-mounted tabs for normally urging the brake shoe disc against the reel. An annular electromagnet is mounted in juxtaposition with the tape reel on the opposite side of the brake shoe disc therefrom and is employed for moving the brake shoe disc away from the reel.

3,606,977
DEVICE FOR WINDING AND REWINDING FILM IN A CARTRIDGE TYPE PROJECTOR

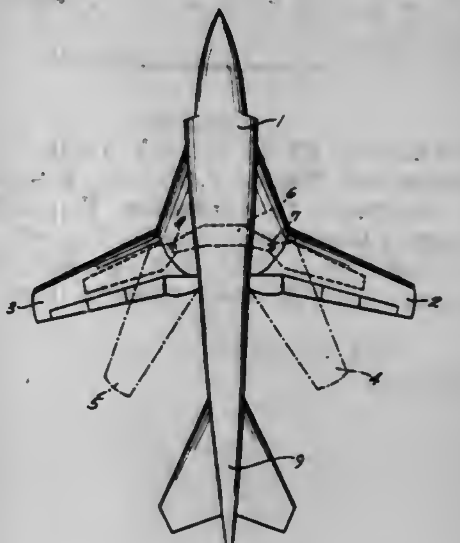
Tokusaburo Kakiuchi and Hideaki Akiyama, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 15, 1969, Ser. No. 841,798
Claims priority, application Japan, July 17, 1968, 43/50,348
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—200 **2 Claims**



A cartridge type movie projector having a cartridge movable between projection and rewinding positions. Depression of a projection button energizes the film drive and upon termination a signal lever releases the cartridge to move it to rewind position. Depression of the stop button during projection disengages the projection button, deenergizes the film drive and also provides for the cartridge to move to rewind position where the projection button cannot be engaged for actuation.

3,606,978
WING SWEEP PIVOT-BEARING ARRANGEMENT

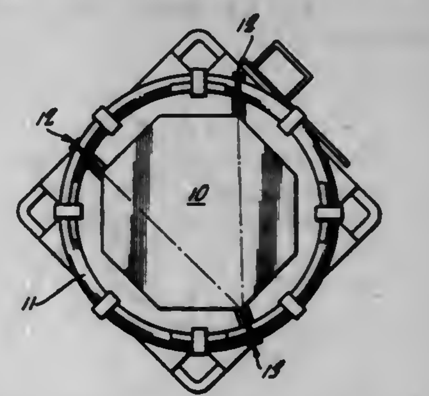
Philip C. Whitener, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Oct. 16, 1969, Ser. No. 866,867
Int. Cl. B64c *3/40*
U.S. Cl. 244—46 **13 Claims**



An aircraft having movable wings with a wing pivot apparatus which eliminates major axial forces on the bearings is described. Two spherical bearings are utilized for each wing with the spherical bearings having their center on the pivot axis of the wing. The bearings are oriented with their norminal axes noncoincident with the pivot axis of the wing so that a plane passing through the center of the upper bearing perpendicular to the nominal axis thereof will intersect a plane passing through the center of the lower bearing perpendicular to its nominal axis at the approximate center of lift of the wing. The pivot bearing design reduces axial forces and present essentially only radial shear forces upon the individual bearing elements. The wing pivot apparatus is preloaded to prevent loosening of the bearing apparatus during normal operational use of the aircraft. The bearings permit any necessary thermal expansion of the wing pivot apparatus and are covered with a low-friction polymeric material to improve bearing life and decrease friction.

3,606,979
EXPANSIBLE SUPPORT MEANS

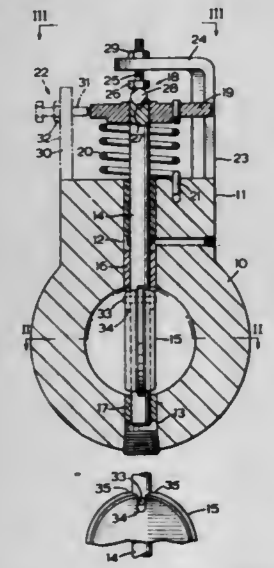
T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Robert M. Norman, Glendale, and Gerrit Steenhagen, Montrose, Calif.
Filed Oct. 6, 1969, Ser. No. 864,020
Int. Cl. F16m *1/00*
U.S. Cl. 248—14 **5 Claims**



A base support for providing an expansible and contractible coupling between two members is disclosed, having a pair of laterally movable mounts and a rigid mount circumferentially spaced about a support ring comprising the first member. Each movable mount includes a four bar linkage arrangement in which the top horizontal bar is connected to the supported second member. The rigid mount is also connected to the supported second member, with the four bar linkage arrangements being oriented in such a manner that the axes of their respective lateral movements intersect the rigid mount. As a result, the movable mounts compensate for the thermal contraction and expansion of either of the members while still permitting the second member to be rigidly secured to the support ring.

3,606,980
MODIFIED BUTTERFLY TRIP VALVE

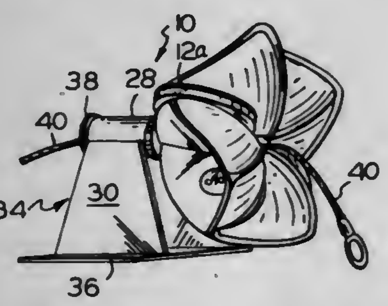
James Simpson and Wesley F. Reeder, Hamilton, Ontario, Canada, assignors to Canadian Westinghouse Company Limited, Hamilton, Ontario, Canada
Filed Dec. 1, 1969, Ser. No. 881,245
Claims priority, application Canada, Dec. 11, 1968, 37,482
Int. Cl. F16k *31/44, 1/22*
U.S. Cl. 251—66 **3 Claims**



The invention is a butterfly valve for use in turbine emergency shutdown. Conventional butterfly valves would jam at the temperatures and pressures involved. This valve is arranged to remain partially open in the shut-off position, the valve disc is slidable on the valve shaft to prevent galling with the valve passage and the disc is relieved adjacent the shaft bushings. These features, combined with an anti-thrust bearing for the shaft ensure reliable operation.

3,606,981
FAIRLEAD ASSEMBLY

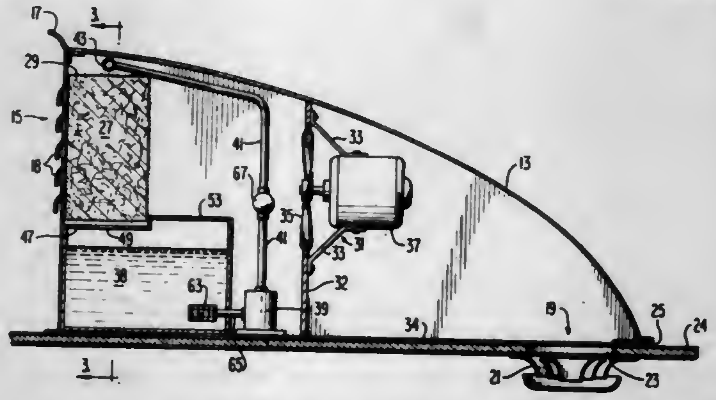
Curtice F. Daniels, 305 Pacific, Glendale, Oreg. 97442, and Curtice F. Daniels, Jr., 1311 NW. Hawthorne, Grants Pass, Oreg. 97526
Filed July 22, 1969, Ser. No. 843,668
Int. Cl. B66d *1/36*
U.S. Cl. 254—190 **9 Claims**



A fairlead assembly includes a guide sleeve and plural sheaves mounted for revolving movement about the axis of the sleeve. The sheaves are symmetrically arranged about a projection of the longitudinal axis of the sleeve with their rotational axes extending normal to the axis of the sleeve so that they converge to define a small central opening through which a cable leads towards a load. The invention includes crowned lines guides which extend between adjacent sheaves and have convexly curved outer surfaces. When a cable under tension extends across one of such surfaces, it tends to force the cable toward the closest sheave and revolve the sheave assembly to seat the cable in such sheave.

3,606,982
EVAPORATIVE COOLER

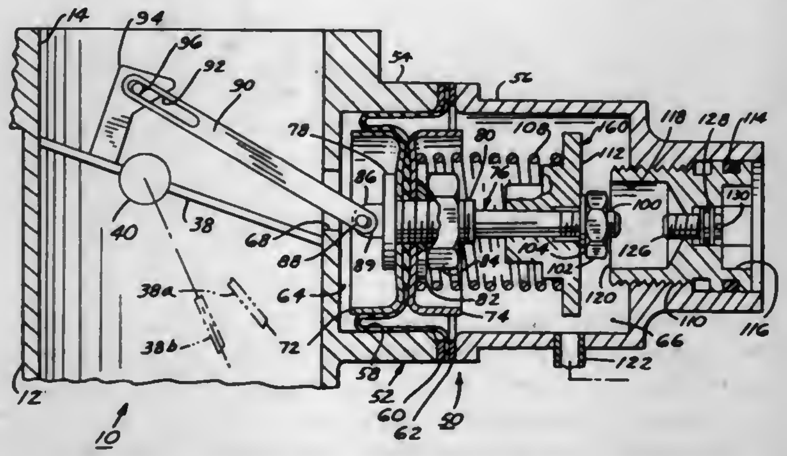
Les Anderson, Las Vegas, Nev., assignor to Everkool, Inc., Las Vegas, Nev.
Filed Nov. 10, 1969, Ser. No. 875,084
Int. Cl. B01f *3/04*
U.S. Cl. 261—29 **13 Claims**



This disclosure relates to a roof top evaporative cooler for cooling the interior of vehicles such as campers and trailers, whether the vehicle is moving or stationary. The unit includes a rear facing streamlined housing disposed over a roof top register, with a wind deflector such as a spoiler for directing the air stream passing over the unit into a louvered entrance port. A suction fan is disposed within the housing between the entrance port and the register for pulling air into the housing, through an evaporative pad and for expelling the cooled air, guided by the configuration of the housing, through the register and into the vehicle. The cooling medium is pumped from a supply tank to a distributor over the pad and collected after it passes through the pad for recirculation. The supply tank may be either incorporated within the cooler housing or externally disposed thereto and mounted on the vehicle body. The pad is constructed from a suitable porous material and the cooling medium is typically water.

3,606,983
CARBURETOR HAVING AN AUTOMATIC CHOKE

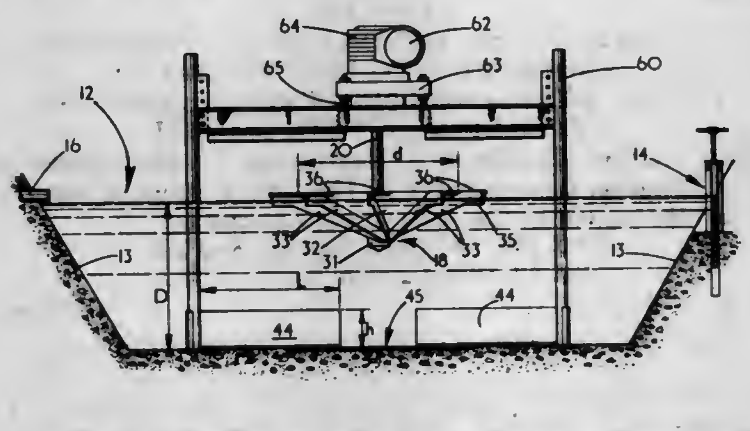
Robert D. Mitchell, Madison Heights, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Filed Apr. 21, 1969, Ser. No. 817,636
Int. Cl. F02m *1/08*
U.S. Cl. 261—39 **12 Claims**



A carburetor, having a choke valve with thermostatic means adapted to urge the choke valve in the closing direction when cold, is provided with pressure responsive means which communicates with a source of engine vacuum for moving the choke valve in a direction opposite to that of the thermostatic means upon engine starting; the degree of effective communication between the pressure responsive means and the source of engine vacuum is controlled in accordance with the position of the carburetor throttle valve in order that the pressure responsive means will be effective for moving the choke valve to a first partly opened position when the throttle valve is in its nominally closed position and to a variable second more fully opened position when the throttle valve is moved to a part throttle position.

3,606,984
AERATION

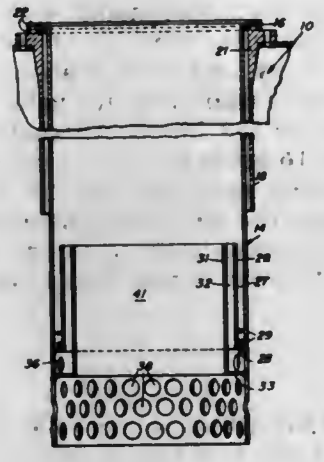
William Swan Robertson, Manchester, England, assignor to Simon-Carves Limited, Cheadle Heath, Stockport, England
Filed May 9, 1968, Ser. No. 727,802
Claims priority, application Great Britain, May 17, 1967, 22,936/67
Int. Cl. C02c *1/10*
U.S. Cl. 261—91 **11 Claims**



Surface aeration apparatus for treating effluent liquid in which baffle plates are mounted below a rotatable surface aerator and are arranged to oppose any tendency for the effluent liquid to be rotated as a body with the aerator.

3,606,985
APPARATUS FOR CONTROLLING THE FLOW OF GASES

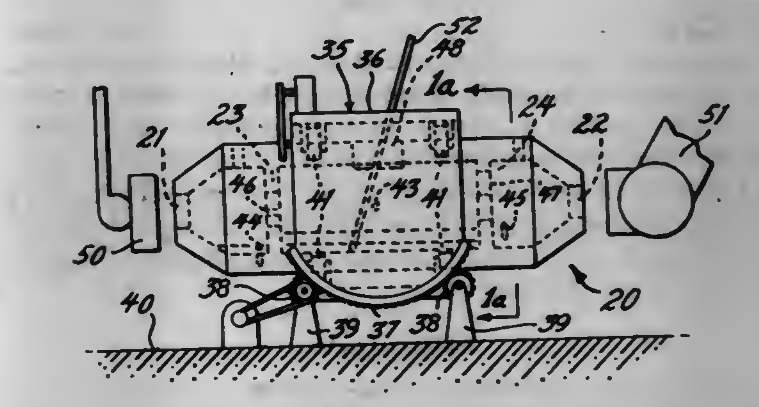
Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.
Filed Apr. 30, 1969, Ser. No. 820,446
Int. Cl. B01d *47/02*
U.S. Cl. 261—124 **4 Claims**



Apparatus for controlling the flow of a gaseous medium wherein baffles within a tubular member form separate chambers for receiving the gaseous medium each having its own exit ports which are at different locations below the level of a quantity of liquid and provide for the progressive release of the gaseous medium from the respective chambers for bubbling through the liquid without significantly disturbing the liquid below the level where the gas is flowing through the exit ports.

3,606,986
COPPER-REFINING APPARATUS AND THE LIKE

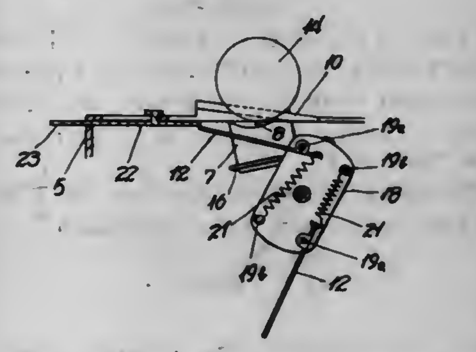
William B. Greenberg, 1510 Brinton Park Drive, Wynnewood, Pa. 19096
Original application Feb. 5, 1968, Ser. No. 702,973, now Patent No. 3,561,952, dated Feb. 9, 1971. Divided and this application Aug. 7, 1970, Ser. No. 61,986
Int. Cl. C22b *15/06*
U.S. Cl. 266—36H **7 Claims**



This invention is especially concerned with apparatus for the production of refined copper from scrap and/or other impure copper having high lead and/or tin content wherein slag formers may be selected from compounds of borates, silicates, phosphates and alkali oxides.

3,606,987
TABLE TENNIS TRAINING DEVICE

Yoshiro Nomura, 17–5, 2-chome, Kuramae, Taito-ku, Tokyo, Japan
Filed Aug. 10, 1970, Ser. No. 62,289
Claims priority, application Japan, Apr. 22, 1970, 45/34,529
Int. Cl. A63b *39/00*
U.S. Cl. 273—30 **5 Claims**



A table tennis training device comprises a table tennis board which inclines moderately down toward the place behind the center of said board, a shooting means installed at the center of said board so as to shoot intermittently table tennis balls one by one to the front of said board, and a backnet or a backsheet standing up on the rear brim of said board so as to ward balls which are struck back by a racket of a trainee. Said balls fall on said board, roll down toward the place behind the center of said board and are led into the shooting means. The shooting means comprises a motor-driven rotatable member which pivotally supports a pair of 180°-spaced and spring-biased ball striking plates. As the member rotates, the tip of a plate will be temporarily restrained to tension its spring and then released to strike a ball. The balls are automatically lifted one at a time from a supply source into position to be struck by a released plate. Therefore, the trainee may alone train on the table tennis without an opponent by employing this device.

CHEMICAL

3,606,988

PROCESS FOR DYEING NITROGEN-CONTAINING FIBRE MATERIALS

Klaus Walz, Leverkusen-Wiesdorf; Mathieu Quaedvlieg, Opladen, and Manfred Baecker, Blecher, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed July 30, 1968, Ser. No. 748,647
Claims priority, application Germany, Apr. 8, 1967, F 53172 IVc/8m
Int. Cl. D06p *3/14*
U.S. Cl. 8—54 **11 Claims**

Process for dyeing nitrogen-containing fiber materials, e.g., wool, with acid dyestuffs or metal complex dyestuffs wherein the dyeing process is carried out in the presence of, as a dyeing auxiliary, the reaction product of (1) an alkylene oxide and (2) the condensation product of (a) formaldehyde, (b) a phenolic compound, and (c) an amine containing at least two —NH groups; or the quaternization or esterification products of said reaction product (2).

ERRATUM

For Class 431—2 see:
Patent No. 3,607,791

3,606,989

FABRIC-TREATING COMPOSITION AND METHOD

William J. Park, Hacienda Heights, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Oct. 19, 1967, Ser. No. 676,634
Int. Cl. D06l *3/08, 3/12*
U.S. Cl. 8—108 **3 Claims**

Fabrics are increased in brightness by deposition thereon of particulate synthetic organic polymer of a size to be suspendible in dilute aqueous solution of sodium hypochlorite, conveniently during an otherwise conventional fabric washing operation.

3,606,990

PROCESS FOR WASHING LAUNDRY AND DETERGENT COMPOSITION FOR WORKING OF THIS PROCESS

Michel Rene Roger Gobert, Courbevoie, and Gerard Mouret, Paris, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of application Ser. No. 579,491, Sept. 15, 1966, now abandoned. This application Feb. 12, 1970, Ser. No. 11,028
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 **24 Claims**

A process for bleaching and washing which comprises treating a stained cloth or the like with an aqueous solution containing a water-soluble peroxide bleaching agent said treatment being carried out in the presence of a compound capable of inhibiting enzyme-induced decomposition of said bleaching agent.

3,606,991

PROCESS FOR PREPARING WASH-WEAR AND DURABLE PRESS COTTONS WHICH WILL ABSORB OPTICAL BRIGHTENERS FROM LAUNDRY DETERGENTS UNDER HOME LAUNDRY CONDITIONS

Robert J. Harper, Jr., Metairie; Gloria A. Gautreaux, New Orleans; Eugene J. Blanchard, New Orleans, and Joseph S. Bruno, Chalmette, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Dec. 18, 1968, Ser. No. 784,939
Int. Cl. D06m *9/00*
U.S. Cl. 8—115.6 **4 Claims**

Process for preparing a cross-linked cellulosic fabric capable of repeatedly absorbing optical brighteners from wash solution, comprising contacting the said fabric with an aqueous solution comprising a cross-linking agent, about 5–15 weight percent of an alkylpolyethylene oxide alcohol or glycol and thereafter curing the fabric.

3,606,992

ABRASION AND WRINKLE RESISTANT COTTON CONTAINING FABRIC AND METHOD OF MANUFACTURE

William E. Aldrich, Cranston, R.I., assignor to Warnaco Inc.
Filed Aug. 28, 1967, Ser. No. 663,553
Int. Cl. D06m *13/34*
U.S. Cl. 8—115.6 **7 Claims**

A method for treating cotton containing fabric for obtaining improved wrinkle-resistance and improved abrasion resistance whereby the fabric is padded through a resin finishing bath containing a mixture of a thermosetting resin and a latex emulsion, is partially dried, and is cured at elevated temperature.

3,606,993

DURABLE PRESS COTTON TEXTILE PRODUCTS PRODUCED CONDUCTING GRAFT COPOLYMERIZATION PROCESS FOLLOWING BY CROSS-LINKING WITH DMDHEU

Jett C. Arthur, Jr.; James A. Harris, and Trinidad Mares, all of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed July 18, 1969, Ser. No. 843,237
Int. Cl. D06m *15/36, 15/72, 13/42*
U.S. Cl. 8—116 **2 Claims**

This invention relates to a process for the preparation of durable-press cellulosic products. More particularly, this invention relates to a multistep process for the preparation of durable-press cellulosic products by a free radical initiated graft copolymerization process followed by a normal cross-linking process to yield products with high wash-wear ratings and high wrinkle recovery angles.

3,606,994

PROCESS FOR FINISHING COTTON WITH CARBAMATE CROSSLINKING AGENTS FORMED IN SITU IN THE FIBERS

Norton A. Cashen, Metairie; Robert M. Reinhardt, New Orleans, and John D. Reid, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed July 23, 1969, Ser. No. 844,166
Int. Cl. D06m *13/14, 13/40*
U.S. Cl. 8—116.3 **3 Claims**

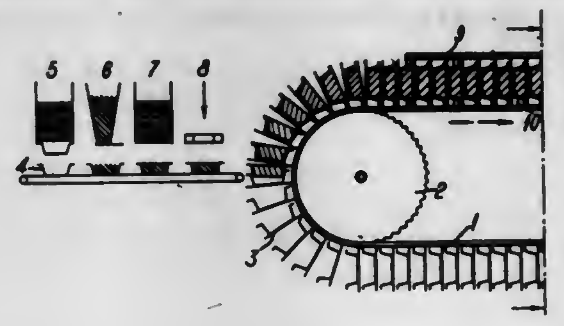
Cotton fabrics are impregnated with aqueous formaldehyde-methyl carbamate mixtures at molar ratios of about 2:1 to 4:1 respectively, and a pH of about 10, then heated in a package without evaporation to yield dimethylol methyl carbamate in situ in the fibers. Alternatively, the package, could be held for 16 hours at room temperature. The adduct is produced in yield equivalent to 2.5 to 10% dimethylol methyl carbamate. The wet impregnated fabric is removed from the package, dried, then acidified, and catalyst is applied. It is cured to yield a cross-linked fabric having durable press properties.

3,606,995

PROCESS AND APPARATUS FOR THERMALLY TREATING FLEXIBLE CONTAINERS

Nico Jacobus August van den Hemel, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.
Filed Dec. 6, 1968, Ser. No. 781,740
Claims priority, application Netherlands, Dec. 13, 1967, 6716919
Int. Cl. A61l *3/00*
U.S. Cl. 21—2 **5 Claims**

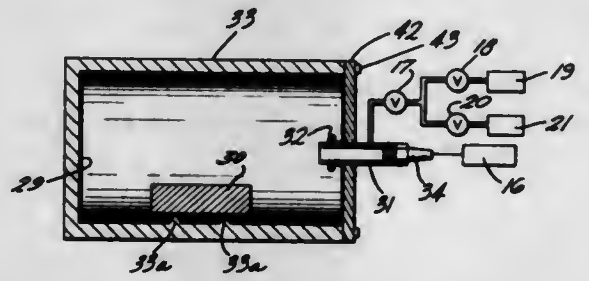
A process and apparatus for the sterilization or other thermal treatment of hermetically sealed containers, the process being carried out continuously and in a manner which compensates for increased pressure within the containers.



3,606,996

METHOD FOR STERILIZATION

James M. Wolf, Ann Arbor, Mich., assignor to Chemotronics, Inc., Ann Arbor, Mich.
Filed May 2, 1969, Ser. No. 821,276
Int. Cl. A61l *1/00*
U.S. Cl. 21—2 **11 Claims**

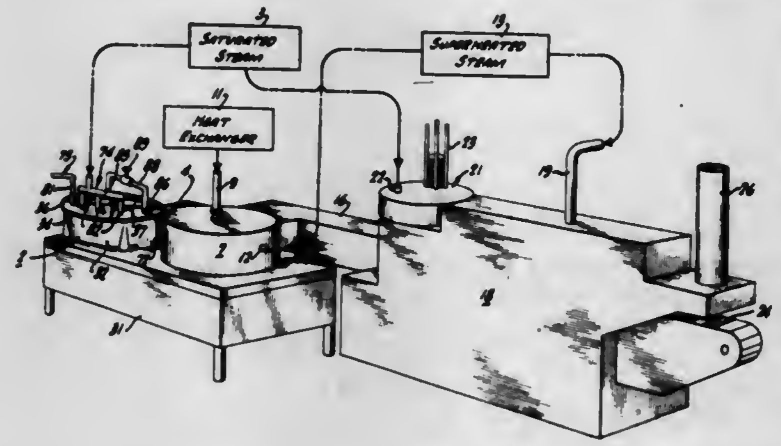


A method for the sterilization utilizing essentially instantaneous and transient thermal pulses generated in a gaseous medium in contact with the surfaces. The thermal pulses kill the micro-organisms and have a duration of less than about 1 second so that the surface is not damaged. The surface to be treated is substantially free of liquid material so that the thermal pulse acts directly upon the micro-organisms. The sterilization is particularly useful for medical and industrial purposes.

3,606,997

PRESERVING PRODUCTS IN SEALED CONTAINERS

Gerhart A. Guckel, Los Altos, Calif., assignor to James Dole Engineering Co., San Francisco, Calif.
Filed July 1, 1968, Ser. No. 741,393
Int. Cl. A61l *3/00, 3/02*
U.S. Cl. 21—56 **24 Claims**



A horizontally positioned rotor 82% aseptic 99.9% system, particularly 2for 3 jar 0.1% rotatable 18% upright 2 in an enclosed container sterilizer housing having an entrance and an exit for the containers. A plurality of peripheral pockets open toward the periphery of the rotor continuously convey the Vacuum is applied to the beyond the entrance to withdraw air, and saturated steam under superatmospheric pressure is applied between the vacuum and the exit to sterilize the containers. Pressure is relieved by a bleed connection between the steam application and the exit, which leads to a location adjacent but ahead of the entrance to thus provide a pressure seal against entrance of outside air into the sterile portion of such container sterilizer.

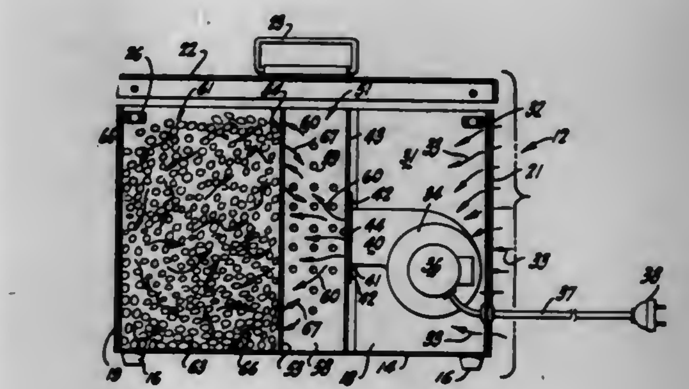
The rotor has a floating support on a bearing ring on the bottom of the housing, which also serves as a seal. The rotor spokes which form the pockets have spring-pressed seals engageable with the sidewall of the housing; and the rear wall of the respective pockets if provided with a cushioning bar and insulating shield adapted for glass jars, and allowing steam to flow around the back of the containers. The top of the rotor spokes are notched to expand the steam, and thus reduce its velocity, thereby minimizing bouncing of the containers in the pockets. Also, the respective cushioning bars have retaining lips engageable over upper portions of the jars for the same purpose.

To effect discharge of the respective containers through the housing exit, a well allows them to drop by gravity and expose their bottom portions below the rotor; and a stripper member engages such exposed bottom portions to direct the containers to the exit.

3,606,998

ROOM FRESHENER AND DEODORIZER

George H. La Porte, and Cherie A. La Porte, both of P.O. Box 12, Steamboat, Nev.
Filed Feb. 20, 1970, Ser. No. 13,024
Int. Cl. A61l *9/00*
U.S. Cl. 21—74 **4 Claims**



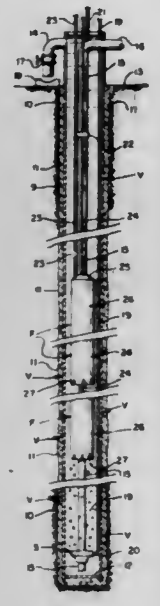
A box has three compartments. The first is an air intake compartment with a blower to drive stale polluted atmospheric air into an adjacent air transfer compartment. Separating the second, air-transfer compartment from the third compartment is a perforated wall with openings large enough for the passage of air but small enough to confine granular diatomaceous earth in the third compartment. The air-transfer compartment is intermediate the first and third compartments and is bounded by lateral sidewalls having holes therein so that stale, polluted air emerging from the blower, passing through the second compartment into the diatomaceous earth-containing compartment for the absorption of odors and returning into the second compartment is free to discharge through the holes in freshened and deodorized condition.

3,606,999

METHOD OF AND APPARATUS FOR CARRYING OUT A CHEMICAL OR PHYSICAL PROCESS

Harold L. Lawless, 103 E. Indiana St., Rapid City, S. Dak.
Filed Aug. 4, 1967, Ser. No. 658,511
Int. Cl. C01g *1/00*
U.S. Cl. 23—1 **15 Claims**

This invention is essentially an improved means for contacting solids, liquids, and gases at elevated pressures and at desired temperatures, for providing inherently stable pressures, for conserving the heat of chemical reactions, and for minimizing the power requirements for pumping liquids continuously through a high-pressure zone. The invention is particularly useful for processes utilizing physical, chemical, and/or thermal treatment, under elevated pressures, of continuously flowing streams of large volume which may contain suspended solids.



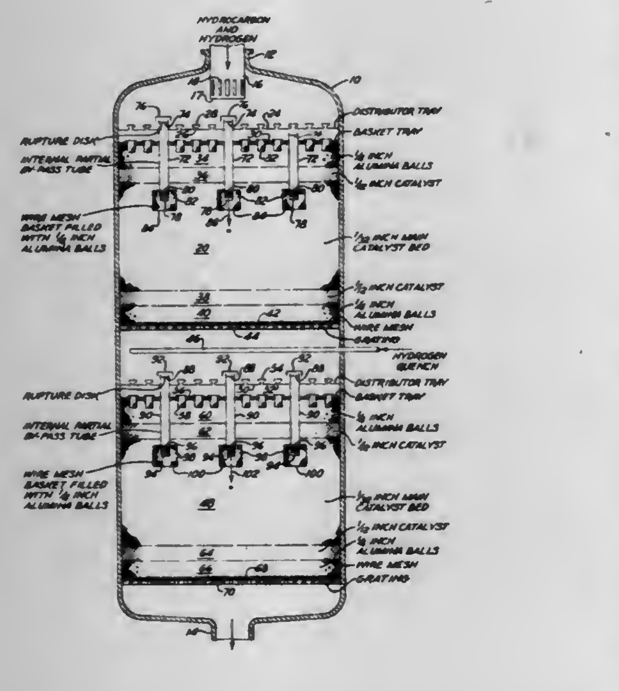
3,607,000
INTERNAL BYPASS FOR A CHEMICAL REACTOR

Thomas J. Beal, Sewickley, Pa.; Robert E. Donaldson, Tokyo, Japan; William R. Lehrian, Verona, Pa., and Elwood E. Nelson, Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 17, 1969, Ser. No. 817,124

Int. Cl. C10g *23/02*

U.S. Cl. 23—1 **13 Claims**



In a reactor containing a fixed bed of catalyst an internal bypass for reactants is provided to bypass the portion of the bed which is contaminated and offers the greatest pressure drop without changing the direction of flow of the reactants. The internal bypass is of particular advantage in a hydrodesulfurization process utilizing very small catalyst particles wherein pressure drop is critical and wherein an external bypass which changes flow direction might impart a greater pressure drop than it conserves by avoiding a contaminated section of catalyst.

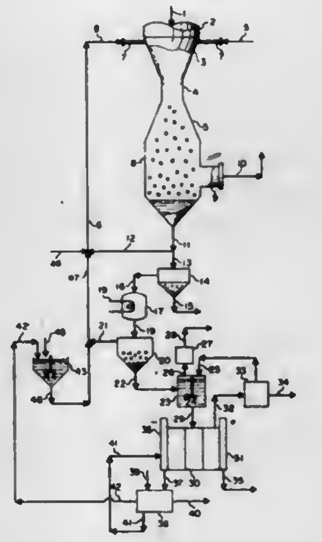
3,607,001
REMOVAL OF SULFUR OXIDES FROM WASTE GASES

Edward Z. Finfer, and Michael H. Maurer, both of New York, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Dec. 26, 1967, Ser. No. 693,230

Int. Cl. B01d *53/34;* **C01b** *17/56*

U.S. Cl. 23—2 R **12 Claims**



Sulfur oxides are removed and recovered from waste gas streams such as flue gas, by scrubbing the gas stream with an aqueous alkali solution. The solution absorbs the sulfur oxides, which react with alkali to form alkali sulfite and sulfate in solution. The resulting solution is cooled to precipitate solid alkali sulfite and sulfate, which are separated from the residual solution and dissolved in an aqueous anolyte solution containing sulfuric acid and alkali sulfate. The alkali sulfite reacts with the sulfuric acid to form further alkali sulfate in solution and liberates a concentrated sulfur dioxide gas stream, which is withdrawn as a product of the process. The aqueous alkali sulfate solution is electrolyzed in a mercury cathode electrolytic cell, to produce a mercury-alkali metal amalgam at the cathode which is withdrawn and reacted with water to produce product hydrogen gas, aqueous alkali hydroxide solution and regenerated mercury. The aqueous alkali hydroxide solution is added to the residual solution from alkali-sulfite-sulfate precipitation, and the combined solution is recycled for further gas scrubbing. The anode of the cell produces product oxygen gas and an aqueous sulfuric acid-alkali sulfate anolyte solution, which may be processed to remove excess sulfuric acid. The anolyte solution is then employed to produce gaseous sulfur dioxide.

3,607,002
PROCESS FOR REMOVING SULFUR OXIDES FROM GASEOUS MIXTURES

Robert A. Meyers, Encino, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 2, 1968, Ser. No. 749,588

Int. Cl. B01d *53/16, 53/34*

U.S. Cl. 23—25 **2 Claims**

This invention relates to a process for removing sulfur oxides, e.g., sulfur dioxide and sulfur trioxide, from hot gaseous mixtures by using a solid organic absorbent characterized as having high thermal stability and selected from the group consisting of aniline blacks, e.g., migrosine copper phthalocyanine, pyrolyzed polyacrylonitrile, and pyrolyzed polyvinylchloride.

3,607,003
METHOD OF REMOVING ACETONE AND ACIDIC GASES FROM GASEOUS MIXTURES

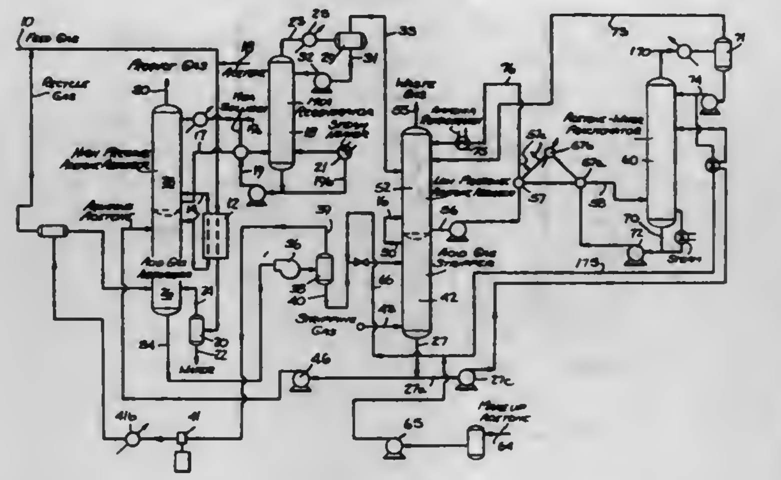
Harold H. Stotler, Westfield, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 13, 1968, Ser. No. 783,490

Int. Cl. B01d *53/16*

U.S. Cl. 23—21 R **3 Claims**

A process for removal of acetone vapors and acidic gas contaminants from a purified hydrogen stream by contacting the stream with an aqueous solution of monoethanolamine when the partial pressure of the acidic gas contaminants is low such that the acidic gas carrying capacity of the monoethanolamine solution exceeds that of acetone.



3,607,004
PROCESS FOR REMOVING TRACES OF HYDROGEN SULFIDE CONTAINED IN GASES

Andre Deschamps, Chatou, and Philippe Renault, Neuilly sur Seine, both of France, assignors to Institute Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison (Hauts de Seine), France

Filed Oct. 21, 1968, Ser. No. 769,402

Int. Cl. B01d *53/16*

U.S. Cl. 23—2 R **6 Claims**

The present invention relates to the elimination of traces of hydrogen sulfide from gases containing same by passing the contaminated gas through a liquid phase containing iodine dissolved in an organic solvent selected from the group consisting of sulfoxides, alkylene glycols, polyalkylene glycols, ethers of alkylene glycols and polyalkylene glycols, esters of alkylene glycols, esters of polyalkylene glycols and liquid aromatic hydrocarbons, said liquid phase containing not substantially more than 10 percent, by weight, of water.

3,607,005
PROCESS OF EXTRACTING VANADIUM

Gordon H. Chambers, 8400 St. Martins Lane, Philadelphia, Pa.

Filed July 15, 1968, Ser. No. 744,809

Int. Cl. C22b *59/00;* **C01g** *31/00*

U.S. Cl. 23—16 **6 Claims**

To separate vanadium from vanadium-bearing material such as slag heated to a temperature at least 600° C. by forming a volatile hydroxide in contact with water vapor and air, and to separate vanadium oxide by cooling the vanadium-containing gas thus formed.

3,607,006
PROCESS FOR RECOVERY OF COLUMBIUM

Edgel P. Stambaugh, Worthington, Ohio, assignor to Molybdenum Corporation of America, New York, N.Y.

Filed Jan. 5, 1970, Ser. No. 848

Int. Cl. C22b *59/00*

U.S. Cl. 23—18 **19 Claims**

An improved process for the recovery of columbium values from concentrates, such as beneficiated ores, comprises the steps of (a) roasting a sulfuric-acid-baked leached concentrate, in which the columbium values have been fixed by treatment with alkali metal hydroxide or ammonia, with excess alkali metal hydroxide; and then (b) leaching the roasted concentrate to provide an aqueous concentrate of the water-soluble columbium values, and (c) recovering the columbium values from the concentrate by precipitation by cooling, pressure precipitation with carbon dioxide or precipitation by addition of alkali metal hydroxide or mineral acid. In a preferred embodiment, step (a) is carried out by roasting a sulfuric-acid-baked, leached concentrate with excess alkali metal hydroxide to simultaneously fix the columbium values.

3,607,007
SEPARATION OF MOLYBDENUM VALUES FROM TUNGSTEN VALUES BY SOLVENT EXTRACTION

Vincent Chiola, Towanda; Phyllis R. Dodds, Wysox, and Tai K. Kim, Towanda, all of Pa., assignors to Sylvania Electric Products Inc.

Filed June 30, 1969, Ser. No. 837,925

Int. Cl. C22b *59/00;* **C01g** *39/00*

U.S. Cl. 23—22 **6 Claims**

A process for the recovery of molybdenum values from a concentrated mineral acid solution that also contains tungsten as a contaminant is disclosed. The process comprises contacting an acid solution that has a mineral acid concentration of at least one normal acid solution with an organic extractant phase consisting essentially of monohexadecyl phosphoric acid and a water-insoluble hydrocarbon, as a solvent, to extract at least a portion of the molybdenum from the acid, separating the molybdenum-pregnant organic phase and the spent acid solution, thereafter contacting the molybdenum-pregnant organic solution with an aqueous strip solution containing a source of ammonium ions to remove at least a portion of the molybdenum from the organic phase, separating the resulting ammonium-molybdate strip solution from the molybdenum-barren organic phase and recovering said strip solution as a solution of ammonium molybdate that is essentially free of tungsten.

3,607,008
SEPARATION OF MOLYBDENUM VALUES FROM TUNGSTEN VALUES BY SOLVENT EXTRACTION

Vincent Chiola, Towanda; Phyllis R. Dodds, Wysox; Tai K. Kim, Towanda, and John A. Powers, New Albany, all of Pa., assignors to Sylvania Electric Products Inc.

Filed June 30, 1969, Ser. No. 837,894

Int. Cl. C22b *59/00;* **C01g** *39/00*

U.S. Cl. 23—22 **10 Claims**

A process for separating molybdate values from tungstate values using solvent extraction is disclosed. The process comprises forming an acidic aqueous feed solution, having a controlled pH, from an impure molybdenum source material containing molybdate and tungstate values by dissolving said source material in an aqueous solution of a mineral acid, contacting said feed solution with a water-insoluble three component organic extractant phase consisting essentially of di-2-ethylhexyl phosphoric acid as an extractant, tributyl phosphate as a solubilizer and a water-insoluble hydrocarbon solvent, the volumetric ratio of the extractant to the solubilizer being from about 5:6 to about 17:1, the volumetric ratio of the extractant to the solvent being from about 1:1 to about 1:8, the volumetric ratio of the solubilizer to the solvent being from about 1:1 to about 1:17 to extract at least a portion of the molybdate values from said feed solution, separating the resultant aqueous molybdenum-barren phase from the resultant organic molybdenum-pregnant phase, contacting the organic molybdenum-pregnant phase with an aqueous strip solution g ammonium ions, separating the resultant molybdenum-pregnant aqueous strip solution from the resultant molybdenum-barren organic solution and recovering the molybdenum-pregnant, tungsten-free aqueous strip solution.

3,607,009
PROCESS FOR THE PREPARATION OF COPPER CYANIDE

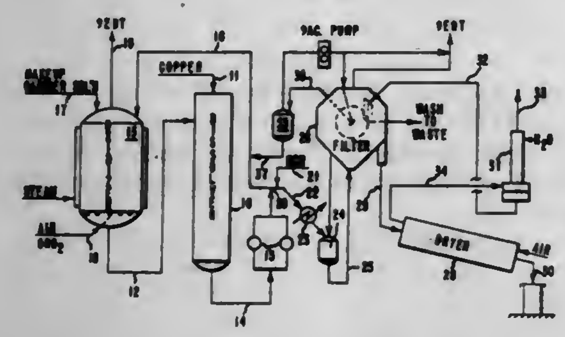
Wayne Thomas Hess, Memphis, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 767,063, Oct. 10, 1968, now abandoned. This application July 7, 1969, Ser. No. 864,237

Int. Cl. C01c *3/08;* **C01g** *3/04;* **B01j** *1/00*

U.S. Cl. 23—79 **10 Claims**

Copper cyanide (CuCN) is produced from copper metal and hydrogen cyanide wherein the copper is reacted with



cupric chloride to form cuprous chloride in an aqueous solution containing an alkali metal or alkaline earth metal chloride and hydrochloric acid. The cuprous chloride is reacted with hydrogen cyanide to form cuprous cyanide and hydrochloric acid. The insoluble cuprous cyanide is separated from the solution. The cuprous chloride in the remaining portion of solution is oxidized to cupric chloride by the action of air or oxygen, and the hydrochloric acid which is then reacted with more copper.

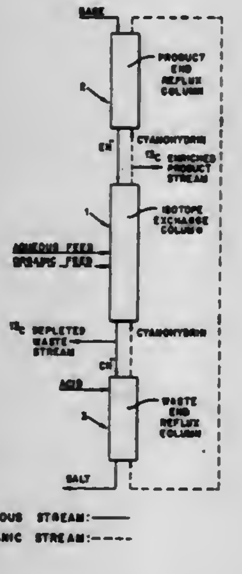
3,607,010
CHEMICAL EXCHANGE METHOD OF CONCENTRATING CARBON ISOTOPES

Lloyd L. Brown, Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 702,648, Feb. 2, 1968, now abandoned. This application Feb. 17, 1969, Ser. No. 812,515

Int. Cl. C01c *3/08;* **C07c** *121/34;* **C09b** *3/00*

U.S. Cl. 23—84 **8 Claims**



A method of altering the relative concentrations of carbon-12 and carbon-13 in carbon-containing compounds comprises contacting a liquid organic phase containing a cyanohydrin with an aqueous phase containing a cyanide, thereby enriching the cyanohydrin in carbon-13 and the cyanide in carbon-12.

3,607,011
ELECTROLYTE PURIFICATION

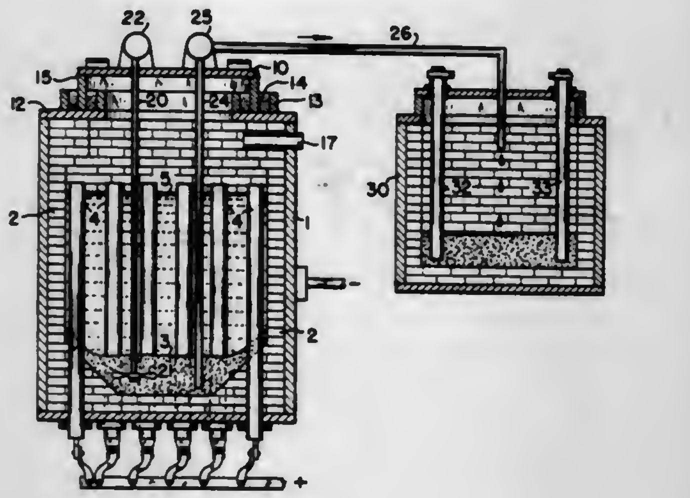
John C. Priscu, and Eldon R. Poulsen, both of Las Vegas, Nev., assignors to Titanium Metals Corporation of America, West Caldwell, N.J.

Filed Jan. 24, 1969, Ser. No. 793,718

Int. Cl. C01g *23/02*

U.S. Cl. 23—87 R **4 Claims**

Method of stripping accumulated titanium fines from the electrolyte of an electrolytic titanium cell consisting in adding chlorine gas to the electrolyte to react with the said titanium fines and produce titanium tetrachloride and removing the titanium tetrachloride with the off gases. Said method being carried out either in said cell wherein the chlorine gas is added adjacent to the cell bottom or in an auxiliary vessel. When said method is carried out in the auxiliary vessel, the titanium fines are mixed throughout the electrolyte in said cell and the mixture is pumped into the auxiliary vessel wherein the titanium is chlorinated from the electrolyte.



3,607,012
PROCESS FOR THE PRODUCTION OF TITANIUM AND IRON MATERIAL

Frederick V. Schossberger, deceased, late of Hinsdale, Ill.; Paul A. Teschner, 316 E. 6th St., Hinsdale, Ill. (executor); Frank Anthony Ticulka, 10934 S. Esmond St., Chicago, Ill.; James Cooperman, U.S. Agency for International Development American Embassy, West Building, Chanakyapuri, New Delhi, India, and Klaus F. Guenther, Unterliedersbach, Loreleistrosse 7, 6230 Frankfurt am Main, Germany

Filed Aug. 18, 1967, Ser. No. 661,719

Int. Cl. C01g *23/00, 23/02*

U.S. Cl. 23—87 **11 Claims**

A process for the recovery of titanium tetrachloride and iron from ore materials containing a mixture thereof in combination with other diverse materials by subjecting the ore materials to a leaching solution to remove the iron and titanium from the ore materials and separately removing the iron and titanium from the leaching solution, with a recovery and recycling of the processing materials. The iron is removed from the leaching solution by saturating the solution with hydrogen chloride gas to precipitate ferrous chloride, which is decomposed by oxidation to iron oxide. Iron oxide is utilized for steel manufacture and free iron powder production. The titanium is recovered from the iron-free leaching solution by the addition of alkali chloride with the application of pressure to precipitate alkali chlorotitanate which is decomposed to titanium tetrachloride, which is utilized as a raw material for the production of titanium metal, titanium dioxide and other titanium compounds. Titanium metal is used in the manufacture of aircraft components as well as other corrosive-resistant equipment. Titanium dioxide is used as white pigment in paints, enamels, plastics and other products.

3,607,013
PRODUCTION OF NICKEL FLUORIDE

Jerome Saldick, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 798,130

Int. Cl. C01b *9/08;* **C01g** *53/08*

U.S. Cl. 23—88 **5 Claims**

A highly active, anhydrous nickel fluoride which is resistant to pickup of atmospheric water and is superior as a battery element in high energy lithium-nickel fluoride batteries, is produced by passing anhydrous gaseous hydrogen fluoride over amorphous basic nickel carbonate at a temperature of between 150°–300° C. and preferably 225°–250° C.

3,607,014
METHOD FOR PREPARING ALUMINUM NITRIDE AND METAL FLUORIDE SINGLE CRYSTALS

James O. Huml, and Gilbert S. Layne, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 634,112, Apr. 27, 1967, Pat. No. 3,477,812. Filed Dec. 9, 1968, Ser. No. 803,501

Int. Cl. C01b *9/08;* **C01f** *5/28;* **C01d** *7/00*

U.S. Cl. 23—88 **5 Claims**

A process for producing aluminum nitride and metal fluoride single crystals either separately or simultaneously. The process comprises contacting a subvalent aluminum compound, i.e. where Al exhibits a valence of less than 3, in a gaseous state with a nitriding agent in a gaseous state while providing an inert surface on which the crystals can form. To prepare metal fluoride crystals, a subvalent aluminum fluoride compound in a gaseous state is contacted with a metal in a gaseous state under an inert atmosphere and providing an inert surface on which the metal fluoride crystals can form. To form the two crystals simultaneously the latter procedure is modified by carrying out the reaction in a nitriding atmosphere.

3,607,015
PREPARATION OF HIGH PURITY COPPER FLUORIDE

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration in respect to an invention of; Jerry R. Lundquist, Richland, Wash., and Robert B. King, Westlake, Ohio

Filed Apr. 30, 1970, Ser. No. 33,535

Int. Cl. C01g *3/04*

U.S. Cl. 23—88 **9 Claims**

Copper hydroxyfluoride (CuOHF) powder is heated in a chamber and subjected while hot to flowing fluorine (F_2) gas to produce high purity copper fluoride (CuF_2).

3,607,016
PROCESS FOR RECOVERING SODIUM FLUOSILICATE IN THE PRODUCTION OF PHOSPHORIC ACID

Filippo Barilli; Giorgio Cozza; Giancarlo Aglietti, and Ferdinando Ligorati, all of Milan, Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed Nov. 25, 1968, Ser. No. 778,765

Claims priority, application Italy, Nov. 29, 1967, 23262-A/67

Int. Cl. C01b *25/22, 33/00*

U.S. Cl. 23—88 **13 Claims**

A process for preparing sodium fluosilicate comprising treating mineral phosphates with an excess amount of aqueous sulfuric acid, removing excess sulfate from the resulting solution by precipitating the excess sulfate in the form of calcium sulfate by adding to the solution a stoichiometric quantity to said sulfate of phosphorites at a temperature of from 50° to 80° C., and then curing the precipitate at a temperature of from 20° to 40° C. for a period of time of from 1 to 5 hours, and then precipitating fluorine and silica from the solution in the form of sodium fluosilicate, after separating calcium sulfate therefrom, by adding monosodium phosphate, bisodium phosphate or a mixture thereof to the solution in a quantity such that the atomic ratio of the sodium contained in the mono- or bisodium phosphate to the fluorine contained in the solution is within the range of from 1:1 to 2.5:1, the precipitation being carried out at a temperature of from 40° to 100° C.

3,607,017
METHOD OF PRODUCING ANHYDROUS MAGNESIUM CHLORIDE

Rex R. Lloyd, Las Vegas, Nev., assignor to Titanium Metals Corporation of America, West Caldwell, N.J.

No Drawing. Filed Aug. 25, 1969, Ser. No. 852,889

Int. Cl. C01f *5/34, 5/30*

U.S. Cl. 23—91 **4 Claims**

Process for treating hydrated magnesium chloride comprising drying the magnesium chloride, melting the dried magnesium chloride to produce a mixture of a liquid and a slurry, superheating the mixture at a temperature of at least 912° C. and decanting the liquid from the slurry. Alternatively, the liquid may be decanted from the slurry prior to superheating and only the liquid superheated.

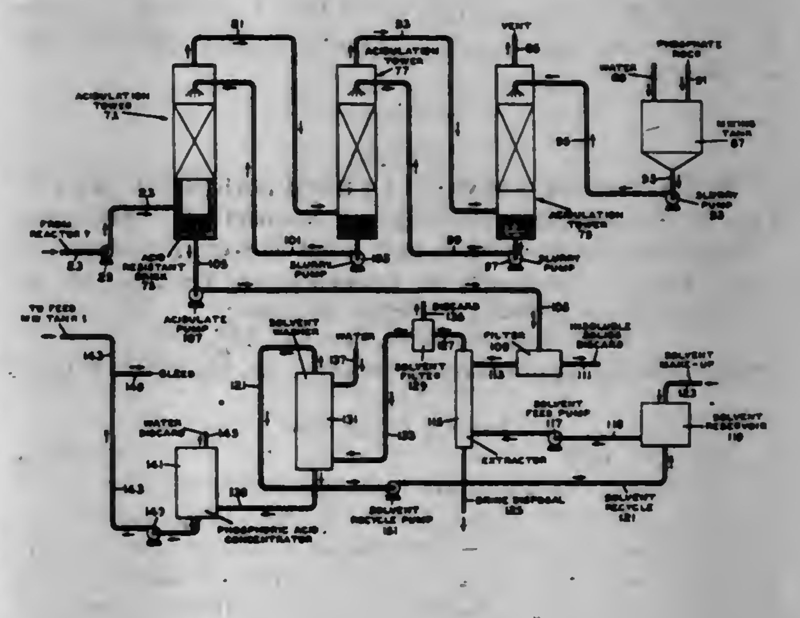
3,607,018
WATER-SOLUBLE POLYPHOSPHATES

William P. Moore, Chester, and William C. Sierichs, Hopewell, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 2, 1968, Ser. No. 742,096

Int. Cl. C01b *25/30*

U.S. Cl. 23—106 **2 Claims**



A mixture of alkali metal chloride and a reactive excess of phosphoric acid is heated in finely divided form at a temperature of about 250 to 400° C. for a period of time of about 1 to 100 seconds. The resulting alkali metal polyphosphates are separated from byproduct hydrogen chloride and quickly cooled to a temperature of less than about 80° C. The alkali metal polyphosphates are water-soluble and free of chloride ion and alkali metal metaphosphates.

3,607,019
PROCESS FOR PRODUCING A SODIUM POLYPHOSPHATE FROM AN AQUEOUS ORTHOPHOSPHATE SOLUTION

John F. Herink, Rock Springs, Wyo., assignor to FMC Corporation, New York, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,540

Int. Cl. C01b *25/30, 25/38*

U.S. Cl. 23—107 **1 Claim**

A spray-drying process for producing a sodium polyphosphate from an aqueous sodium orthophosphate solution by spraying the orthophosphate feed solution through a plurality of atomizing spray nozzles downward through a zone containing a truncated cone-shaped flame in such manner that a minimum of the atomized orthophosphate solution passes directly through the cone flame, drying the orthophosphate feed solution to a dried orthophosphate and by continued drying, converting the dry orthophosphate to a sodium polyphosphate and separating the polyphosphate from the drying gas.

3,607,020
PREPARATION OF LITHIUM HEXAFLUOROPHOSPHATE

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.

Filed Mar. 19, 1970, Ser. No. 21,214

Int. Cl. C01b *25/28*

U.S. Cl. 23—107 **18 Claims**

Lithium hexafluorophosphate is prepared by reacting lithium fluoride with phosphorus pentafluoride in an inert organic solvent.

3,607,021

PROCESS FOR CONTROLLING DENSITY OF TRISODIUM PHOSPHATE

Joel B. Jacobs, Lakewood, and Steve Taborosi, Woodbridge, both of N.J., assignors to FMC Corporation, New York, N.Y.

Filed Nov. 22, 1968, Ser. No. 778,304
Int. Cl. C01b *25/30*
U.S. Cl. 23—107 **6 Claims**

The density of trisodium phosphate in anhydrous form and trisodium phosphate monohydrate is controlled by alkalizing a solution of phosphoric acid, monosodium phosphate, or disodium phosphate, and crystallizing it in the presence of carbon dioxide to alter the crystallization pattern of the salt from the liquor in the dryer, thereby to develop a product of improved uniform high density, subject to close regulation, related to the carbon dioxide in the liquor and flow of carbon dioxide to the liquor as the evaporation and crystallization are carried out.

3,607,022

REMOVAL OF AMMONIA FROM GAS MIXTURES

Arnold Hausweiler, Dormagen; Norbert K. Mischung, Dormagen-Hackenbroich, and Adolf Mayer, Dormagen, all of Germany, assignors to Erdoelchemie Gesellschaft mit beschraenkter Haftung, Cologne, Germany

Filed Apr. 14, 1969, Ser. No. 815,593
Claims priority, application Germany, Apr. 16, 1968, P 17 68 216.5
Int. Cl. C01c *1/24*
U.S. Cl. 23—119 **8 Claims**

The removal of ammonia from gas mixtures, such as the reaction gas formed during the production of acrylonitrile by the catalytic oxidation of propylene in the presence of ammonia, by washing the gas mixture with a solution of ammonium sulfate and sulfuric acid to neutralize the ammonia, converting the same to ammonium sulfate while maintaining the ammonium sulfate concentration below the value sufficient to allow substantial crystallization, thereafter admixing the washing solution containing the ammonium sulfate with a second ammonium sulfate solution in which crystal development is occuring, thereby forming well defined ammonium sulfate crystals. The second ammonium sulfate solution is preferably an ammonium sulfate, sulfuric acid solution in an immersion washer, through which a portion of the gas mixture is initially passed. Preferably prior to dividing the gas mixture into the two streams, passing one to the initial washing and the other to the immersion washing, the same is subject to a prewashing with water to remove organic polymers and catalyst dust.

3,607,023

PROCESS FOR PRODUCING COPPER OXIDE

John A. Palm, Jonesville, N.Y., assignor to General Electric Company

Filed Sept. 3, 1968, Ser. No. 757,134
Int. Cl. C01q *3/02;* **C22b** *15/10*
U.S. Cl. 23—147 **7 Claims**

A process which comprises passing an aqueous solution of copper ammonium carbonate complex into a spray dryer to decompose the complex directly to copper oxide powder.

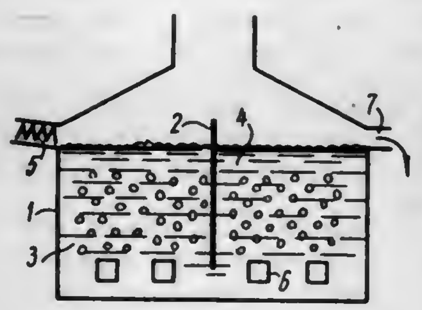
3,607,024

HYDROTHERMAL METHOD OF PRODUCING DEFLUORINATED PHOSPHATES

Gennady Ivanovich Vilesov, Kiev; Pavel Ivanovich Gorbik, Sumy; Leonard Stanislavovich Pioro, Kiev; Ivan Andreevich Makarov, Kiev; Mark Efimovich Giller, Sumy; Anatoly Mitrofanovich Osnach, Kiev; Mikhail Samoilovich Golderbiter, Sumy; Boris Semenovich Chechik, Sumy, and Ivan Mikhailovich Kilochitsky, Sumy, all of U.S.S.R., assignors to Institut Gaza, ul. Parkhomenko, Kiev, U.S.S.R.

Filed June 19, 1968, Ser. No. 738,346
Int. Cl. C01b *25/32*
U.S. Cl. 23—108 **5 Claims**

Defluorinated phosphates are produced by melting a natural phosphate in a melting zone and burning a fuel within the melt of the natural phosphate.



3,607,025

SILICA-DEFICIENT MULLITE FIBER AND A PROCESS FOR ITS PRODUCTION

Howard W. Jacobson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 25, 1968, Ser. No. 724,178
Int. Cl. C01b *33/26*
U.S. Cl. 23—110 **5 Claims**

Silica-deficient mullite fibers of 82% to 99.9% Al_2O_3 and 0.1% to 18% SiO_2 are produced by intimately contacting an alkali metal halide and aluminum trichloride with a silica source in the presence of a moist oxidizing gas at a temperature of from about 1,000° C. to 1,350° C. for at least 10 minutes. The silica-deficient mullite fibers are single crystals exhibiting the X-ray pattern of mullite.

3,607,026

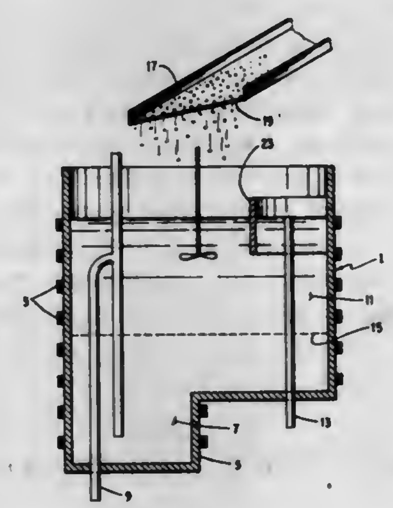
CONTINUOUS CHROMIC ACID PROCESS AND APPARATUS

Thomas S. Perrin, Mentor; Robert G. Banner, Painesville, and John O. Brandstaetter, Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 18, 1969, Ser. No. 817,426
Int. Cl. C01j *37/12;* **C01d** *5/02;* **B01d** *43/00*
U.S. Cl. 23—145 **3 Claims**

A process and apparatus for continuously purifying bisulfate-containing crude chromic acid crystals is described in which a molten heel of bisulfate is established in a combination melter-decanter unit. Into this molten heel is introduced crude chromic acid crystals, with agitation of the heel, sufficient heat being applied to the heel to maintain same in a molten condition and accomplish conversion of the introduced crystals to the molten state. Owing to its higher density, pure molten chromic acid settles to the bottom of the unit from which it is continuously withdrawn. Excess

bisulfate is likewise continuously removed from the heel. Retention times of both bisulfate and chromic acid within the melter-decanter unit are determined by the difference in height between chromic acid and bisulfate withdrawal means.

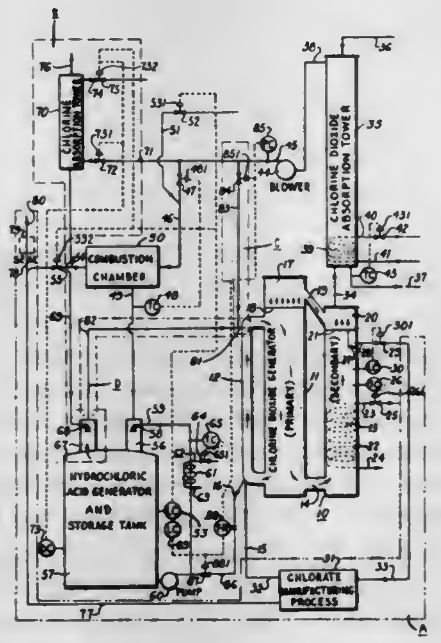


3,607,027

PROCESS FOR PREPARING CHLORINE DIOXIDE

Gothe Oscar Westerlund, Vancouver, British Columbia, Canada, assignor to Chemech Engineering Ltd., Vancouver, British Columbia, Canada

Continuation-in-part of application Ser. No. 657,803, Aug. 2, 1967, now abandoned. This application Apr. 27, 1970, Ser. No. 32,280
Int. Cl. C01b *11/02, 7/02*
U.S. Cl. 23—152 **9 Claims**


CHLORINE ABSORPTION TOWER
COMBUSTION CHAMBER
BLOWER
CHLORINE DIOXIDE ABSORPTION TOWER
CHLORINE DIOXIDE GENERATOR (PRIMARY)
(SECONDARY)
HYDROCHLORIC ACID GENERATOR AND STORAGE TANK
PUMP
CHLORATE MANUFACTURING PROCESS
A

An improved process for preparing chlorine dioxide is provided wherein the bulk of the reactants are internally produced.

The reactants include an aqueous solution of an inorganic chlorate and aqueous hydrochloric acid. The aqueous solution of the inorganic chlorate is produced by electrolyzing an aqueous solution of an inorganic chloride.

The aqueous hydrochloric acid is produced from hydrogen gas, which is a byproduct of the electrolysis reaction by which the inorganic chloride is converted to the inorganic chlorate, and chlorine gas. The chlorine gas is produced as follows:

In reacting the aqueous inorganic chlorate with the aqueous hydrochloric acid, both gaseous chlorine dioxide and chlorine are formed. The gaseous chlorine is separated from the gaseous chlorine dioxide.

A portion of the so-separated gaseous chlorine is reacted with the heretofore produced hydrogen to form gaseous hydrogen chloride. The gaseous hydrogen chloride is used as a reactant, either by dissolving it in a stoichiometrically insufficient quantity of water, thereby to provide an aqueous solution of hydrochloric acid and free hydrogen chloride gas, or by dissolving it in water containing absorbed chlorine gas.

3,607,028

PROCESS FOR THE PRODUCTION OF THE DINITROGEN TETROXIDE

Alfred Schmidt; Ferdinand Weinrotter; Walter Muller, and Walter Bohler, all of Linz/Danube, Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz/Donau, Austria

Filed Dec. 18, 1968, Ser. No. 784,797
Claims priority, application Austria, Dec. 27, 1967, A11659/67
Int. Cl. C01b *21/36*
U.S. Cl. 23—157 **4 Claims**

Dinitrogen tetroxide is produced by a catalytic oxidation of ammonia with air at atmospheric pressure followed by oxidation of the resultant nitrogen oxides by 50 to 70 percent HNO_3. This increases the concentration of NO_2 and results in formation of dilute HNO_3. The NO_2 is cooled and condensed by compression to at least four atmospheres at temperatures not below 8° C. to produce dinitrogen tetroxide in liquid phase and nitrogen dioxide in vapor phase. The latter is reacted with an excess of oxygen in the presence of the dilute nitric acid in the preceding step to produce nitric acid of 50 to 70 percent concentration which may be recycled to the step wherein the nitric oxide is oxidized by nitric acid. By the present process, the use of expensive and difficult-to-operate nitric acid concentrators is avoided.

3,607,029

CONTINUOUS PROCESS FOR SOLVENT PURIFICATION OF PHOSPHORIC ACID

Jean R. Goret, Antony, and Louis M. Winand, Ris Orangis, both of France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Paris, France and Union Chimique-Chemische, Bedrijuen, Brussels, Belgium, part interest to each

Filed May 9, 1968, Ser. No. 727,950
Claims priority, application France, May 11, 1967, 106037
Int. Cl. C01b *25/18*
U.S. Cl. 23—165 **7 Claims**

The process for extraction and purification of phosphoric acid from impure solutions of phosphoric acid derived by acid attack of phosphate rock wherein the impure solution is first passed in countercurrent flow with an alkyl derivative of phosphoric acid for removal of phosphoric acid from the impure solution and then passing the alkyl phosphoric acid derivative containing the removed phosphoric acid in countercurrent flow with an aqueous medium whereby the latter removes purified phosphoric acid from the solution.

3,607,030

PROCESS FOR THE DIRECT PRODUCTION OF CONCENTRATED WET-PROCESS PHOSPHORIC ACID

Robert M. Lattig, Pocatello, Idaho, assignor to Leprechaun Mining and Chemical, Inc., Las Vegas, Nev.

Filed June 20, 1968, Ser. No. 738,566
Int. Cl. C01b *25/22*
U.S. Cl. 23—165 **7 Claims**

A process of producing concentrated phosphoric acid of approximately 50%–56% P_2O_5 utilizing relatively dilute sulfuric acid as an acidulent for phosphate rock, conditioning the initially formed acidulate by admixture with recycled dried indurated gypsum granules, curing and drying the admixture to form a readily filterable acidulate, leaching and washing the acidulate to directly produce concentrated phosphoric acid of low fluorine content.

3,607,031
PROCESS FOR PURIFYING AND CONCENTRATING AQUEOUS SOLUTIONS OF PHOSPHORIC ACID

Filippo Barilli; Giorgio Cozza, and Luigi Lugo, all of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,162
Claims priority, application Italy, Jan. 27, 1968, 12065A/68
Int. Cl. C01b *25/22*
U.S. Cl. 23—165 **2 Claims**

A process tor purifying and concentrating aqueous solutions of phosphoric acid which comprises:

(a) mixing an aqueous solution having a P_2O_5 content lower than 25 percent by weight and a calcium sulfate content, expressed as $CaSO_4 \cdot 2H_2O$ of from 1.4–1.8 percent by weight with an aqueous solution having a P_2O_5 content of from 52 to 54 percent by weight and a sulfate ion content lower than 0.5 percent by weight, such that the resulting solution has a P_2O_5 content ranging between 25 percent and 40 percent by weight,

(b) bringing the temperature of said resulting solution to within a range of from 30° to 40° C., in order to effect precipitation of the calcium sulfate as the dihydrate,

(c) separating said calcium sulfate dihydrate from the solution,

(d) concentrating said solution by evaporating water at a pressure of from 100 to 150 mm. Hg and a temperature ranging from 80° to 90° C., to a P_2O_5 content of 50 to 54 percent by weight, and

(e) recycling a fraction of the solution obtained from step (d) to step (a), said solution having a final sulfate ion content of below 0.5 percent.

3,607,032
PROCESS FOR THE PRODUCTION OF HYDROXYLAMINE-O-SULPHONIC ACID

Dietmar Kalz, Leverkusen, and Gerhard Wolfrum, Opladen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

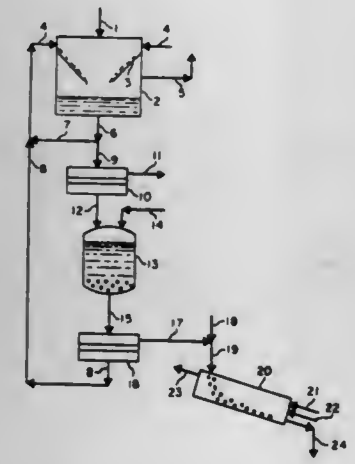
Filed Dec. 3, 1968, Ser. No. 780,883
Claims priority, application Germany, Dec. 20, 1967, P 16 67 513.1
Int. Cl. C01b *21/54, 21/00*
U.S. Cl. 23—166 **6 Claims**

Process for the production of hydroxylamine-O-sulphonic acid from hydroxylamine or its salts and chlorosulphonic acid or oleum, wherein the reaction is performed in an inert organic diluent preferably, a halogenated aliphatic and/or aromatic hydrocarbon at a temperature of from 0° C. to 80° C.

3,607,033
RECOVERY OF SULFUR DIOXIDE FROM WASTE GAS STREAMS

Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,169
Int. Cl. C01b *17/56, 17/72*
U.S. Cl. 23—167 **11 Claims**

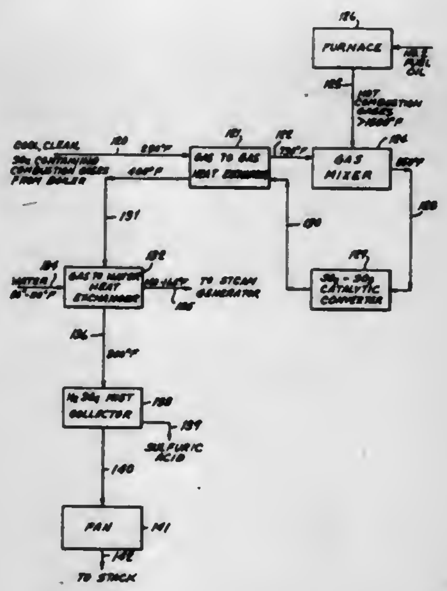


Sulfur dioxide is scrubbed from a waste gas stream using an aqueous sodium sulfite solution. The resulting solution containing sodium bisulfite and residual sodium sulfite is divided into two portions. Sodium carbonate is added to the first solution portion to convert sodium bisulfite to sodium sulfite, and the resulting solution is recycled for further gas scrubbing. The second portion is reacted with a solid carbonate reactant such as dolomite, magnesite or limestone, to form sodium carbonate in solution and precipitate solid crystals containing magnesium sulfite and/or calcium sulfite. The sodium carbonate is added to the first solution portion for the conversion of bisulfite to sulfite. The solid crystals are processed at elevated temperature to produce a sulfur-containing product and a mixture of solid magnesium oxide and calcium oxide, or either pure magnesium oxide or calcium oxide, depending on the solid reactant selected in the prior processing.

3,607,034
REMOVAL OF SULFUR DIOXIDE FROM BOILER FLUE GASES

Joseph W. Henry, Johnstown, and Edward S. Loane, Reading, both of Pa., assignors to Pennsylvania Electric Company, Johnstown, Pa.

Filed Apr. 5, 1967, Ser. No. 628,705
Int. Cl. C01b *17/74, 17/60*
U.S. Cl. 23—168 **1 Claim**



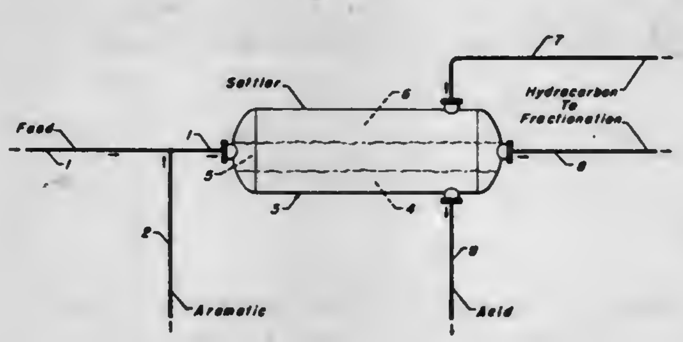
A process for the removal of sulfur dioxide from boiler flue gases produced by the combustion of a sulfur-containing fuel, such as a sulfur-containing coal, wherein the sulfur-dioxide-containing boiler flue gases after cooling and removal of solid ash constituents are subjected to catalytic oxidation to convert the sulfur dioxide to sulfur trioxide. In carrying out the catalytic oxidation operation the relatively cool sulfur-dioxide-containing flue gases are brought up to an elevated temperature upwards of 750° F. at which the catalytic oxidation operation is carried out, by passing the sulfur-dioxide-containing flue gases in indirect countercurrent heat-exchange relationship with the sulfur trioxide-containing gases issuing from the catalytic oxidation operation. The sulfur-dioxide-containing flue gases are then further heated, such as by admixing therewith a high-temperature flue gas, just prior to subjecting the thus-heated sulfur-dioxide-containing flue gases to catalytic oxidation.

3,607,035
PROCESS FOR TREATING A SULFURIC ACID-OLEFINIC HYDROCARBON MIXTURE

Edwin K. Jones, Kenilworth, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 24, 1969, Ser. No. 801,406
Int. Cl. C01b *17/90*
U.S. Cl. 23—172 **4 Claims**

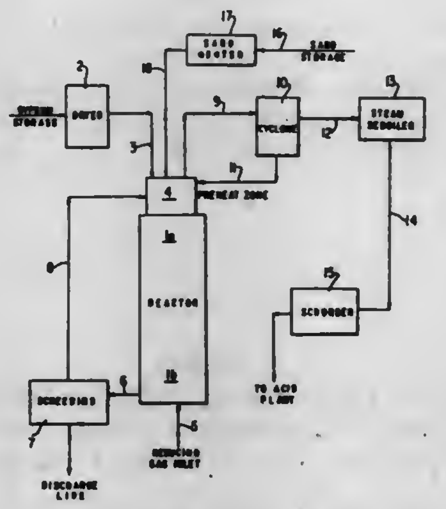
A sulfuric acid-olefinic hydrocarbon mixture is treated by contacting the mixture with an aromatic compound, at temperatures below about 72° F. so that the aromatic compound selectively reacts with at least a portion of the olefinic hydrocarbon portion of the mixture.



3,607,036
RECOVERY OF SULFUR FROM GYPSUM

Ralph M. Foecking, Tampa, and Robert D. Austin, Lutz, both of Fla., assignors to Cities Service Company

Filed Feb. 9, 1968, Ser. No. 704,358
Int. Cl. C01b *17/48, 17/16*
U.S. Cl. 23—177 **5 Claims**



The sulfur values are recovered from calcium sulfate principally in the form of sulfur dioxide by a two-stage reduction process. The calcium sulfate to be decomposed and the reducing gases pass countercurrently through the two-stage system in which the solids are maintained in a fluidized state. Temperatures within the range of from about 600° C. to about 900° C. may be employed. Steam may be condensed out of the product gas stream to provide a product gas containing a major proportion of sulfur dioxide and a minor proportion of carbon dioxide. The calcium sulfate is first reduced to calcium sulfide and is then further reduced in the second stage to calcium oxide. Sand may be mixed with the calcium sulfate being decomposed in order to minimize agglomeration of the solids.

3,607,037
SEPARATION OF SULFUR DIOXIDE FROM GASES

Jack D. Terrana, Tampa; Leo A. Miller, Lakeland, and James A. Taylor, Lakeland, all of Fla., assignors to Wellman-Lord, Inc.

Continuation-in-part of application Ser. No. 681,833, Nov. 9, 1967, now abandoned. This application Dec. 20, 1968, Ser. No. 785,724
Int. Cl. C01b *17/56*
U.S. Cl. 23—178 **28 Claims**

Sulfur dioxide is recovered from waste gases by contacting the gas with aqueous sodium, lithium or beryllium sulfite to produce sodium, lithium or beryllium bisulfite and subsequently separating the sulfite to lower the SO_2— partial pressure in the bisulfite which can be decomposed to release sulfur dioxide.

3,607,038
PROCESS FOR RECOVERING SULFUR DIOXIDE

James A. Taylor, Lakeland, Fla., assignor to Wellman-Lord, Inc.

Filed Dec. 24, 1968, Ser. No. 786,754
Int. Cl. C01b *17/60*
U.S. Cl. 23—178 **10 Claims**

In a process for recovering SO_2 from an SO_2-containing gas, e.g., flue gas, by contacting the gas with an aqueous solution of a metal sulfite such as potassium, cesium, and rubidium sulfite to produce an aqueous solution of the corresponding metal bisulfite which is a precursor of SO_2, recovering the metal bisulfite therefrom as the corresponding metal pyrosulfite, and treating the metal pyrosulfite to produce SO_2, the improvement wherein the metal bisulfite is recovered by crystallizing it out of solution in the form of the corresponding metal pyrosulfite by adding to the solution methanol or ethanol, or mixtures of the two, while maintaining the resultant mixture at about 120° to 150° F.

3,607,039
PROCESS FOR RECOVERING SULFUR DIOXIDE FROM AN SULFUR DIOXIDE-CONTAINING GAS

Leo A. Miller, and James A. Taylor, both of Lakeland, Fla., assignors to Wellman-Lord, Inc.

Filed Dec. 24, 1968, Ser. No. 786,755
Int. Cl. C01b *17/60*
U.S. Cl. 23—178 **11 Claims**

In a process for recovering SO_2 from an SO_2-containing gas, e.g. flue gas, by contacting the gas with an aqueous solution of a metal sulfite such as potassium, cesium, and rubidium sulfite to produce an aqueous solution of the corresponding metal bisulfite which is a precursor of SO_2, recovering the metal bisulfite therefrom and transforming it into the corresponding metal pyrosulfite, and treating the metal pyrosulfite to produce SO_2, the improvement wherein the metal bisulfite is recovered and transformed into the corresponding metal pyrosulfite by contacting the precursor-containing solution with an organic carbonyl compound to form a metastable adduct of the metal bisulfite and the carbonyl compound, which adduct is insoluble in the aqueous solution and therefore precipitates out, separating the precipitate from the aqueous mother liquor, and heating the separated precipitate to a temperature sufficient to decompose the adduct to the metal pyrosulfite but below the temperature at which the pyrosulfite decomposes.

3,607,040
PREPARATION OF ALKALI METAL HYDROXIDE PELLETS

George L. Hervert, Woodstock, and Michael G. Gaydos, Mt. Prospect, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 28, 1969, Ser. No. 822,854
Int. Cl. C01d *1/04;* **B01j** *11/06*
U.S. Cl. 23—184 **6 Claims**

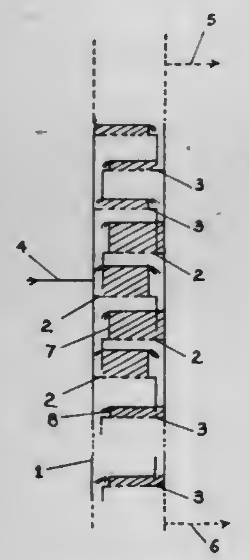
Alkali metal hydroxides are treated with a lubricant and thereafter activated at an elevated temperature which is sufficient to reduce the size of the lubricant thereby altering the surface area of the hydroxide. The thus treated hydroxides will possess an unusually high degree of absorbency.

3,607,041
HYDRAZINE

Stephen Robert Mercer Ellis, Selly Park, and Brian John Needham, Loughborough, both of England, assignors to Fisons Industrial Chemicals Limited, Laughborough, England

Filed Oct. 7, 1968, Ser. No. 765,598
Claims priority, application Great Britain, Oct. 12, 1967, 46564/67
Int. Cl. C01e *1/00;* **B01d** *3/14;* **C07c** *49/10*
U.S. Cl. 23—190 R **17 Claims**

Hydrazine is prepared from ketazines by feeding a ketazine and water to a fractionating column wherein the ketazine is miscible with water to only a limited extent. The column is operated at elevated temperature and at superatmospheric pressure and has a zone in the vicinity of the point of introduction of the materials wherein the residence time is relatively large in this zone as compared with the remainder of the column. An aqueous solution of hydrazine is removed as bottoms.



3,607,042
PREPARATION OF BORON NITRIDE

Scott Gordon Arber, Chessington, and Oswald William John Young, Surbiton, both of England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.
Filed Jan. 29, 1969, Ser. No. 795,083
Int. Cl. C01b *21/06*
U.S. Cl. 23—191 **14 Claims**

Boron nitride is produced by nitriding boric acid or boric oxide in the presence of a support phase which is a chemically reducible metal compound such as zinc borate or cadmium borate. The reaction mass is viscosity. heated to about glass C. to 3603 1,800° C. in a reducing atmosphere to convert the metal compound to the elemental metal which is evaporated off to leave substantially pure boron nitride.

3,607,043
CATION AND THERMAL STABILIZATION OF A FAUJASITE-TYPE ZEOLITE

Carl Vance McDaniel, Laurel; Richard William Baker, Ellicott City, and Clark Ace Rundell, Wheaton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 796,215, Feb. 3, 1969. This application Nov. 19, 1969, Ser. No. 878,249
Int. Cl. C01b *33/28*
U.S. Cl. 23—111 **8 Claims**

A process for preparing a faujasite-type zeolite having a silica to alumina ratio of at least 3.2 by treating the faujasite with a combination of ammonium ion exchange and metal cation exchange, including rare earths, to reduce the Na_20 level in the product to below 3 percent followed by thermal stabilization. The final step in the process is replacement of at least part of the cations with aluminum ions by exchange with an aluminum salt solution. The resulting zeolite is characterized by high surface area, exceptional catalytic activity and a favorable catalytic selectivity. The zeolite has exceptionally high activity and selectivity when used as a component in a hydrocarbon-cracking catalyst.

3,607,044
PROCESS OF IMPROVING FORMED SILICA GELS

Ferdinand List, and Helmut Alfs, both of Marl, Germany, assignors to Chemische Werke Huls Akliengesellschaft, Marl, Germany
Filed Sept. 27, 1968, Ser. No. 763,362
Claims priority, application Germany, Oct. 14, 1967, C 43573 IVa/12i
Int. Cl. C01b *33/16*
U.S. Cl. 23—182 **3 Claims**

Formed bodies of silica gel are hardened, without adversely influencing activity, by treating the bodies with vapor of a low molecular weight alcohol (e.g. methanol) containing up to 3 volume percent of water vapor, at a temperature gradually rising from 100° to 350° C., during a period of 20–120 minutes, and thereafter slowly cooling the so-treated bodies.

3,607,045
PROCESS FOR HIGH TEMPERATURE GASEOUS REDUCTION OF CALCIUM SULFATE

Thomas D. Wheelock, and David R. Boyland, both of Ames, Iowa, assignors to Iowa State University Research Foundation Inc., Ames, Iowa
Filed Oct. 29, 1969, Ser. No. 872,120
Int. Cl. C04b *1/04;* **C01b** *17/48*
U.S. Cl. 23—186 **11 Claims**

Calcium sulfate is subjected to gaseous reduction at a high temperature to obtain an SO_2 containing gas product and a CaO solid product. The reduction is carried out in a fluidized reaction bed by flowing proportioned air and natural gas into and through the bed to fluidize the finely divided calcium sulfate and to heat to reaction temperatures. The natural gas is only partially burned within the bed, thereby also producing reducing quantities of CO and H_2. In a preferred embodiment, the calcium sulfate feed is preheated by direct contact with the gas product to recover part of the heat therefrom, and the gas product of reduced heat content is then subjected to indirect countercurrent heat exchange with the air being supplied to the reaction bed.

3,607,046
PREPARATION OF ALUMINUM NITRIDE

Charles M. Little, and Richard A. Murie, both of Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 3, 1968, Ser. No. 757,110
Int. Cl. C01b *21/06*
U.S. Cl. 23—192 **3 Claims**

Aluminum nitride is formed in a reaction conducted at about normal atmospheric pressure by bringing together pure aluminum and a small amount of lithium under dry conditions and heating these two metals in the presence of nitrogen. In a preferred embodiment the reaction system is heated to a temperature of about 400° C. to 1,100° C. whereby nitrogen reacts with lithium to form lithium nitride which, in turn, readily reacts with aluminum to form lithium and the desired aluminum nitride. Since under suitable reaction conditions lithium is regenerated so long as unreacted aluminum is present, only a substantially catalytic amount of lithium is employed.

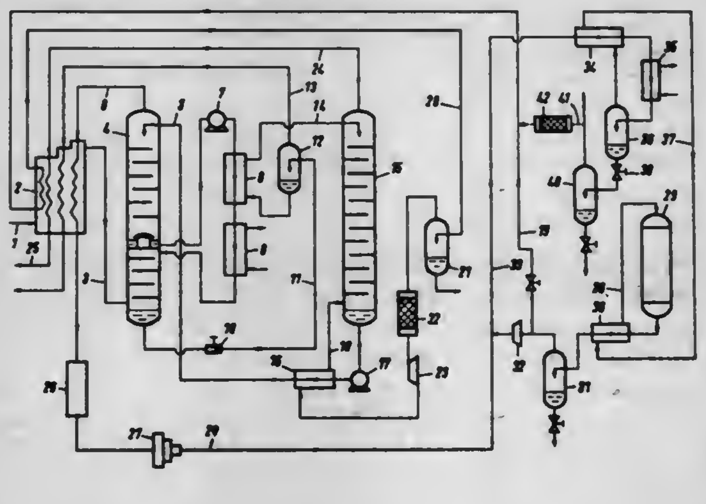
3,607,047
AMMONIA SEPARATION PROCESS

Henry T. Broom; James O. McWhorter, and Michael R. Basila, both of Tyler, Tex.
Filed June 25, 1969, Ser. No. 836,595
Int. Cl. C01c *1/12*
U.S. Cl. 23—196 **10 Claims**

Ammonia is separated from a mixture containing ammonia and at least one of hydrogen sulfide and carbon dioxide, e.g., a coal gas, by a process comprising contacting the mixture with a phenolic liquid, e.g., cresols, for a time sufficient to provide a ratio of total moles of ammonia absorbed by the liquid to moles of phenolic in the liquid between 0.5 and 1.0, and thereafter separating the resulting mixture from the resulting phenolic liquid.

3,607,048
REGENERATION OF LIQUIDS USED TO ABSORB CARBON DIOXIDE FROM GASES INTENDED FOR THE PRODUCTION OF AMMONIA SYNTHESIS GAS

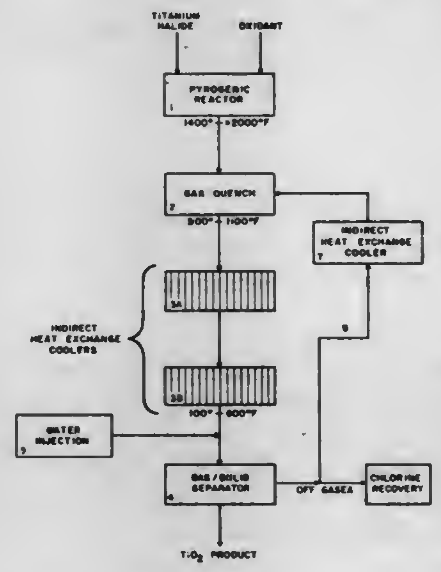
Heinz Karwat, Pullach, Germany, assignor to Linde Aktiengesellschaft, Hoellriegelskreuth, Germany
Filed Jan. 18, 1968, Ser. No. 698,907
Claims priority, application Germany, Jan. 30, 1967, L 55620 IVa/12k
Int. Cl. C01c *1/04;* **C01b** *2/30;* **B01d** *19/00*
U.S. Cl. 23—199 **6 Claims**



In the production of ammonia from synthesis gas which has had its CO_2 absorbed by cold liquid, e.g. by cold methanol, the improvement of regenerating CO_2-loaded liquid with purged (waste) gas from the ammonia synthesis cycle, said purged gas being conventionally withdrawn to maintain a low level of inert gases in the recycle synthesis gas.

3,607,049
COOLING OF PYROGENIC TITANIUM DIOXIDE PIGMENT CONTAINING GAS STREAMS

Howard Weaver, Jr., and Robert B. Roaper, II, Ashtabula, Ohio, assignors to Cabot Corporation, Boston, Mass.
Continuation-in-part of application Ser. No. 705,979, Feb. 16, 1968, now Patent No. 3,493,342. This application Jan. 22, 1970, Ser. No. 004,979
Int. Cl. C01g *23/04*
U.S. Cl. 23—202 V **7 Claims**



The present invention relates to an improved method for the cooling of pyrogenic titanium dioxide pigment suspended in reaction product gas streams. Broadly, the process involves a gas quench of said suspension followed by indirect heat exchange cooling thereof and treatment of the cooled process gases with water. The pigment is collected from the process gases of the suspension and at least a portion of said process gases are recycled as the gas quench.

3,607,050
PROCESS FOR THE PREPARATION OF THE TRIMER OF RUTHENIUM TETRACARBONYL

Pierre Chabardes, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Apr. 30, 1968, Ser. No. 725,479
Claims priority, applicationFrance, May 24, 1967, 107,665
Int. Cl. C01g *1/04, 55/00*
U.S. Cl. 23—203 C **4 Claims**

The trimer of ruthenium tetracarbonyl, a catalyst of proved utility, is made by heating carbon monoxide at atmospheric pressure with a tris-(β-dionato)ruthenium or carbonyl derivative thereof in an alcohol boiling at 100° to 250° C.

3,607,051
PREPARATION OF A FORMED BODY OF SODIUM HYDROXIDE AND SODIUM HYDRIDE

Jaromir Plesek, Prague; Stanislav Hermanek, Prague; Jaroslav Vit, Prague; Jaroslav Lohnisky, Usti nad labem, and Karel Vrba, Usti nad labem, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia
Continuation of application Ser. No. 433,168, Feb. 16, 1965, now abandoned. This application Nov. 7, 1969, Ser. No. 871,524
Int. Cl. C01b *6/04*
U.S. Cl. 23—204 **5 Claims**

A shape-retaining solid body consisting essentially of an intimate heterogeneous mixture of between about 10 percent and 90 percent by weight of subdivided solid sodium hydride and between 90 percent and 10 percent by weight of subdivided solid sodium hydroxide is produced by forming an intimate mixture, preferably at a temperature of between −10° and 50° C. of between about 10 percent and 90 percent by weight of subdivided solid sodium hydride and between about 90 percent and 10 percent by weight of subdivided solid sodium hydroxide, and compressing the thus-formed mixture at a sufficiently high pressure, preferably between about 100 and 250 kg./cm² so as to convert the mixture into a shape-retaining body.

3,607,052
TETRAPHOSPHORUS HEXAFLUORIDE AND METHOD FOR PRODUCTION AND STABILIZATION THEREOF

David Solan, Berkeley, Calif., assignor to The United States of America as repres ented by the Secretary of the Army
Filed June 16, 1969, Ser. No. 833,727
Int. Cl. C01b *9/08*
U.S. Cl. 23—205 **6 Claims**

The novel compound tetraphosphorus hexafluoride (P_4F_6) is prepared by subjecting P_2F_4 gas to a high temperature and low pressure and collecting the resultant products on an adjacent surface which is maintained at liquid nitrogen temperature. The collected deposit is then warmed to room temperature to volatilize the various components therein, and the P_4F_6 is separated and collected by low-temperature fractional distillation. P_4F_6 dissolved in carbon disulfide is stabilized at room temperature.

3,607,053
STANNATE STABILIZER COMPOSITIONS CONTAINING ORTHOPHOSPHORIC ACID, THEIR PREPARATION, AND HYDROGEN PEROXIDE SOLUTIONS STABILIZED THEREWITH

Victor J. Reilly, Memphis, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 24, 1968, Ser. No. 747,112
Int. Cl. C01b *15/02;* **B01j** *1/16*
U.S. Cl. 23—207.5 **12 Claims**

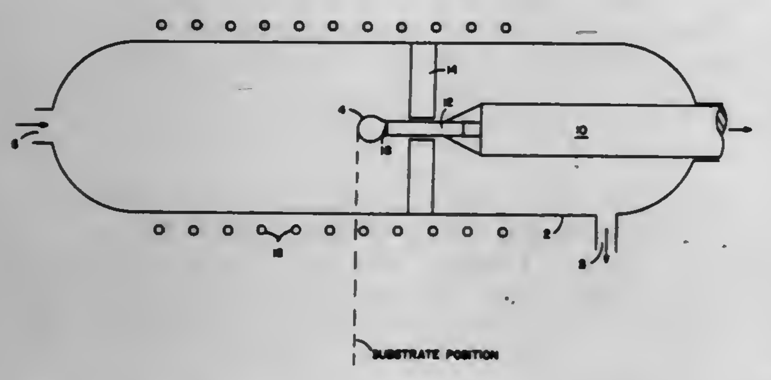
Aqueous stannate stabilizer compositions containing an alkali metal or ammonium stannate and orthophosphoric acid in an amount sufficient to adjust the pH of the composition to 6–11, a method for their preparation, and hydrogen peroxide solutions stabilized therewith. The stabilizer compositions are especially useful for stabilizing hydrogen peroxide solutions containing at least 30 percent H_2O_2 to provide stable products which remain exceptionally stable when diluted to strengths of 2–10 percent without further addition of any stabilizer.

3,607,054

METHOD FOR EXTENDING THE GROWTH OF VAPOR-LIQUID-SOLID GROWN CRYSTALS

Raymond W. Conrad, Fayetteville, Tenn., assignor to the United States of America as represented by the Secretary of the Army

Filed May 5, 1969, Ser. No. 821,729
Int. Cl. C01b *31/36, 33/02;* **B01j** *17/00*
U.S. Cl. 23—208 R **9 Claims**



By maintaining the desired temperature gradient in the molten solvent as the crystal grows and by replenishing the solvent lost by segregation into the growing crystal, a continuous filament crystal is formed. As the crystal is formed it is pulled from the formation area at its speed of growth. A vaporous compound containing the solvent element furnishes a vapor containing the solvent. The solvent vapor condenses on the molten solvent to replenish the solvent lost by segregation into the growing crystal.

3,607,055

PRODUCTION OF DIVANADIUM CARBIDE BY SOLID-STATE REDUCTION OF VANADIUM OXIDES

Walter S. Case, Jr., Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corp.

Continuation-in-part of application Ser. No. 633,422, Apr. 25, 1967. This application Oct. 21, 1969, Ser. No. 868,202
Int. Cl. C01b *31/36, 31/30;* **C22c** *29/00*
U.S. Cl. 23—208 **15 Claims**

A process for the solid-state reduction of vanadium oxides to vanadium carbide (V_2C). The material is processed in a compacted form, such as a tablet, containing stoichiometric amounts of vanadium oxide and carbon bound with a suitable binder. The charge initially is heated at a rate and an absolute pressure such that gas evolution beginning at about 650° C. is not so rapid as to cause compacted material to disintegrate and then to a temperature above 1,450° C. at final pressures below 10^{12} atmospheres. Specifically, this process is suitable for reduction of vanadium pentoxide to vanadium carbide in a single furnacing operation according to the reaction $10V_2O_5+53C$ $10V_2C+7CO_2+36CO$. Other oxides of vanadium may be used in place of part of the V_2O_5.

3,607,056

PREPARATION OF A SUPERCONDUCTING SCANDIUM-CARBON PHASE

Nerses H. Krikorian; Angelo L. Giorgi; Eugene G. Szklarz, and Milton C. Krupka, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 7, 1969, Ser. No. 864,557
Int. Cl. C01f *17/00*
U.S. Cl. 23—208A **3 Claims**

A method of preparing a superconducting body-centered cubic scandium carbide phase having the approximate composition $Sc_{13}C_{10}$ which comprises arc-melting scandium and carbon in the presence of small quantities of germanium and then annealing at temperatures above 1,000° and below 1,600° C.

ERRATUM

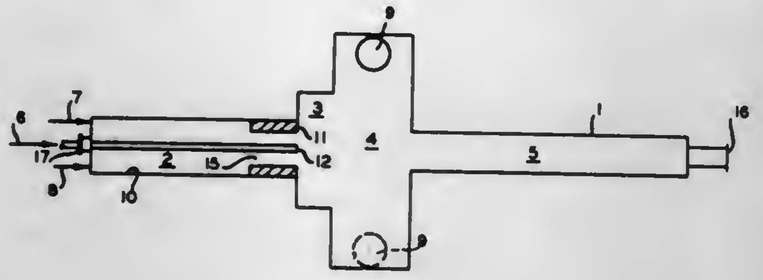
For Class 23—209.1 see:
Patent No. 3,607,672

3,607,057

CARBON BLACK PROCESS AND REACTOR

Eulas W. Henderson, Borger, and Robert E. Dollinger, Phillips, both of Tex., assignors to Phillips Petroleum Company

Filed May 23, 1968, Ser. No. 731,522
Int. Cl. C09c *1/50*
U.S. Cl. 23—209.4 **9 Claims**



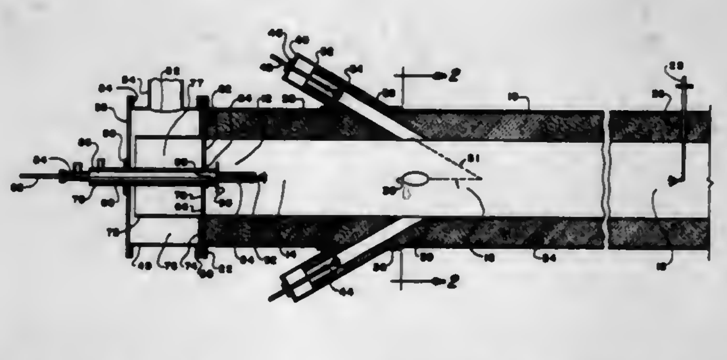
Process and apparatus for the production of carbon black wherein an oxygen-containing gas, with or without fuel, is introduced into an axial zone of a reactor and passed through a diametrally restricted section of said zone wherein it is commingled with hydrocarbon feed, the mixture passed into at least one stepped zone having a cross-sectional area greater than the cross-sectional area of said axial zone wherein it is expanded, the expanded mixture passed into a combustion zone and contacted therein with combustion gases, and the resulting mass passed into a reaction zone wherein the hydrocarbon feed is pyrolytically decomposed into carbon black.

3,607,058

APPARATUS AND PROCESS FOR PRODUCING CARBON BLACK

Jesse R. West, and Ollie Middlebrooks, both of Houston, Tex., assignors to Continental Carbon Company, Houston, Tex.

Filed Nov. 15, 1968, Ser. No. 776,037
Int. Cl. C01b *31/00*
U.S. Cl. 23—209.4 **7 Claims**



Apparatus and process for producing oil furnace carbon black of increased particle size by the thermal decomposition of select carbon-black-forming hydrocarbon feedstocks in an enclosed reactor having a refractory lined reaction tube with primary and secondary reaction zones. The upstream end of the reactor is a housing member with air inlet and being enclosed by an end plate, including a cylindrical baffle forming a plenum chamber communicating with perforated air diffusion plate having a central aperture mounted in flush alignment with the reaction tube. An axial burner and injection assembly extends through the end plate into the reaction tube. Air is introduced into the plenum chamber, through the diffusion plate to mix with hydrocarbon fuel for combustion and contact with the axially introduced oil feedstock in a primary reaction zone. A secondary reaction zone is established downstream by introducing preheated oxygen-containing gas from at least three tunnel burners extending through ports in the reactor housing and tube, said burners having axes focused at an angle 15° to 75° greater than and intersecting the reactor axis at the same point. The additional preheated oxygen-containing gas and combustion products introduced into the secondary reaction zone further oxidize the reaction products and surface condition the resulting carbon black.

The total combustion products containing the suspended carbon black are quenched and recovered from the reactor for separation of the carbon black from said products.

3,607,059

PROCESS FOR THE MANUFACTURE OF FILAMENTARY CARBON PRODUCTS

Louis A. Joo, and Frank E. Snodgrass, both of Johnson City, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,680
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.1 **6 Claims**

Process for the manufacture of carbon and graphite filamentary products from polyacrylonitrile filamentary material wherein said filamentary material is subjected to a preliminary tension-free noncombustive partial oxidation and thereafter stretched to introduce or restore orientation in the polymer strands prior to being oxidized under tension followed by carbonization in a nonoxidizing atmosphere at a temperature of at least 700° C.

3,607,060

METHOD OF MANUFACTURING DIAMOND CRYSTALS

Tatsuo Kuratomi, 2-18, 4-chome, Hamatake Chigasaki-shi, Kanagawa-ken, Japan

Filed Mar. 4, 1969, Ser. No. 804,312
Claims priority, application Japan, Mar. 11, 1968, 43/15,414
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 **5 Claims**

Diamond crystals are produced by subjecting to elevated temperatures and pressures a mixture of a nondiamond form of carbon together with a mixture or alloy of cobalt and phosphorus, which serves as the solvent and catalyst for the conversion to diamond form. Use of cobalt and phosphorus for solvent and catalyst allows conversion of nondiamond carbon to diamond at lower pressures than previously utilized, i.e., from about 42,200 to about 49,000 atmospheres.

3,607,061

MANUFACTURE OF SYNTHETIC DIAMONDS

John C. Angus, Cleveland Heights, Ohio, assignor to Case Western Reserve University

Filed June 26, 1968, Ser. No. 740,226
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 **9 Claims**

There is provided an improvement on a low-pressure process for the growth of synthetic diamonds from diamond seed crystals by contacting them with a monocarbon atom gas which also contains a "doping agent" such as a compound of boron or aluminum or lithium vapor in the gas phase at a pressure of from 760 (Torr.) to 1×10^1 (Torr.) and at a temperature in the range of from 900° C. to 1450° C. and for deposition-cleaning cycle periods in the range of from 4 to 28 hours.

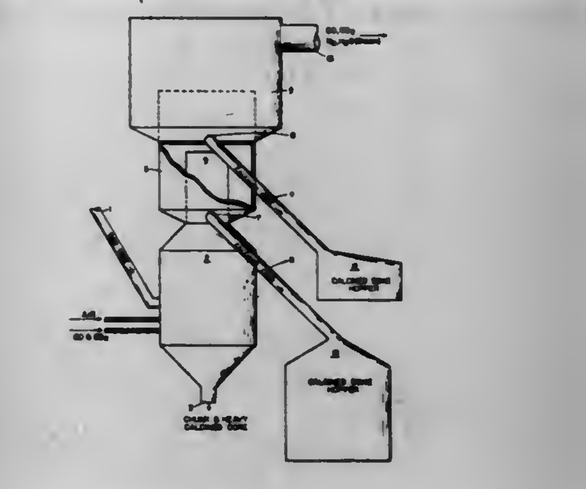
3,607,062

PROCESS AND APPARATUS FOR THE FLUIDIZED CALCINING OF COKE

Richard D. Sudduth, Cleveland Heights, Ohio, assignor to Marathon Oil Company, Findlay, Ohio

Filed June 18, 1969, Ser. No. 834,359
Int. Cl. C01b *31/02;* **C10b** *57/00*
U.S. Cl. 23—209.9 **5 Claims**

Controlled calcination of coke is accomplished by feeding raw coke, together with controlled amounts of oxygen and carbon monoxide, to maintain a calcining temperature in the range of from about 1,600° to about 3,200° F., and thereafter reducing the velocity of the gases which have fluidized the coke so as to separate the coke from said gases, preferably in a manner which permits the separation of various particle size fractions of the calcined coke.

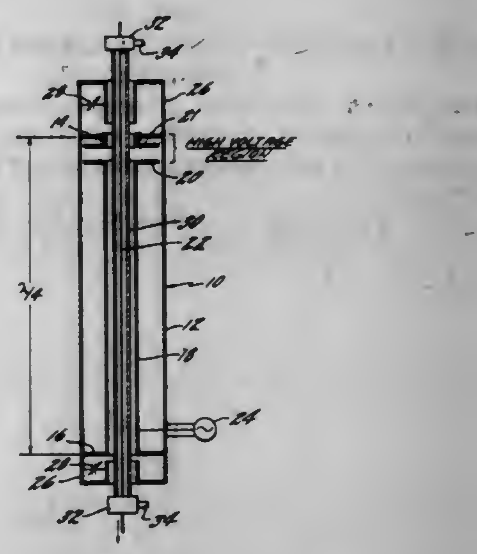


3,607,063

MANUFACTURE OF CARBON FILAMENTS OF HIGH STRENGTH AND MODULUS

Frank C. Douglas, Granby; Thomas K. Gregory, East Granby, and Robert W. Stielau, Portland, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 9, 1969, Ser. No. 865,119
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.3 **4 Claims**



A method for continuously producing carbon strand of high tensile strength and modulus comprising passing carbonized filament through an electrically conductive enclosure, generating a current of radiofrequency in an oscillatory circuit connected to the enclosure and establishing an electric field axially oscillating at the radiofrequency within the enclosure of sufficient density to heat the carbon filament to graphitization temperature.

3,607,064

CARBON BLACK PRODUCTION

Robert E. Dollinger, and Glenn J. Forseth, both of Borger, Tex., assignors to Phillips Petroleum Company

Filed Jan. 31, 1969, Ser. No. 795,679
Int. Cl. C09c *1/50*
U.S. Cl. 23—209.4 **8 Claims**

A method of controlling the property of a furnace produced carbon black by introducing with the preheated make-oil a property-affecting mixture having a melting point less than that temperature to which the make-oil is preheated.

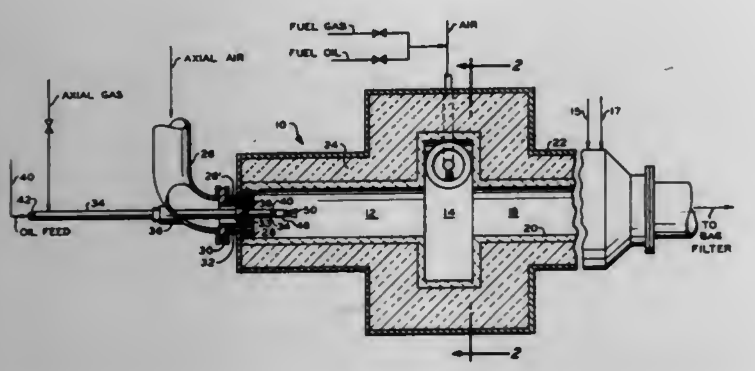
3,607,065
PRODUCTION OF CARBON BLACK

Glenn J. Forseth, and Archie G. Smith, both of Borger, Tex., assignors to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 515,139, Dec. 20, 1965, now abandoned. This application Sept. 30, 1968, Ser. No. 767,052

Int. Cl. C09c *1/50*

U.S. Cl. 23—209.4 **6 Claims**



Process and apparatus for the production of carbon black by the pyrolytic decomposition of a hydrocarbon feed wherein the hydrocarbon feed is dispersed by impingement on a screen spaced apart from the feed nozzle in an oxygen-containing gas and the resulting mixture commingled with hot combustion gases whereby the hydrocarbon feed is pyrolytically decomposed to carbon black. Vaporous fuel is preferably introduced into admixture with the oxygen-containing gas.

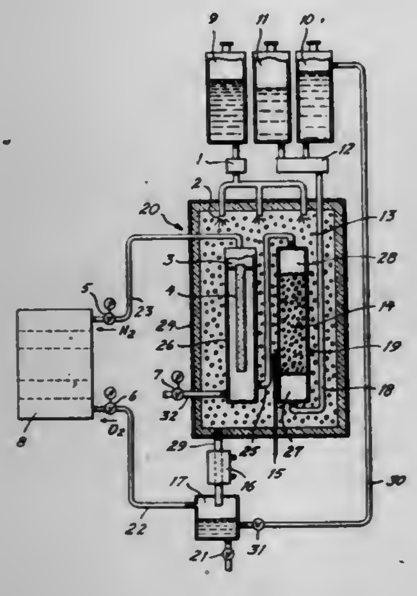
3,607,066
PROCESS FOR THE PRODUCTION OF HYDROGEN AND OXYGEN GASES

Andreas Basch, Frankfurt, Niedereschbach, and Hans Hermann von Dohren, Frankfurt am Main, both of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 30, 1966, Ser. No. 576,008

Int. Cl. C01b *1/02, 1/27, 13/02*

U.S. Cl. 23—212 **14 Claims**



A process and apparatus for the simultaneous production of hydrogen and oxygen gases in which an oxygen generating compound is catalytically decomposed, the oxygen is separated and concurrently therewith a hydrogen generating compound is catalytically decomposed by means of the heat generated by the decomposition of the oxygen generating compound.

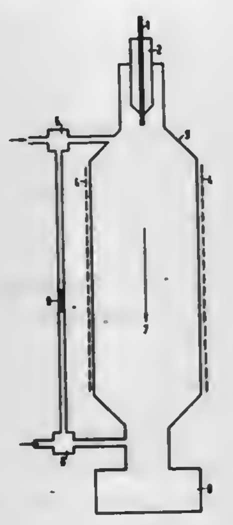
3,607,067
METHOD OF PRODUCING FILAMENTARY MONOCRYSTALS

Julius Nickl, Neukeferloh near Munich, Germany, assignor to Siemens Aktiengesellschaft

Continuation of application Ser. No. 548,014, May 5, 1966, now abandoned. This application Feb. 9, 1970, Ser. No. 009,114

Int. Cl. C01b *33/02*

U.S. Cl. 23—223.5 **6 Claims**



Described is an improvement in the method of producing filamentary monocrystals by precipitation of crystal substance from a vaporous compound in a reaction vessel at elevated temperature, which comprises supplying the reaction space in the vessel with a mist of droplets formed of seed material for the monocrystals to be produced, said droplet material having a melting point 50° to 500° C. below that of the monocrystals to be produced; maintaining said reaction space at a temperature between the respective melting points of said droplet material and said monocrystals; and contacting the vaporous compound in said reaction space with said mist of droplets, whereby filamentary monocrystals grow onto the droplets. Also described is apparatus for performing the method.

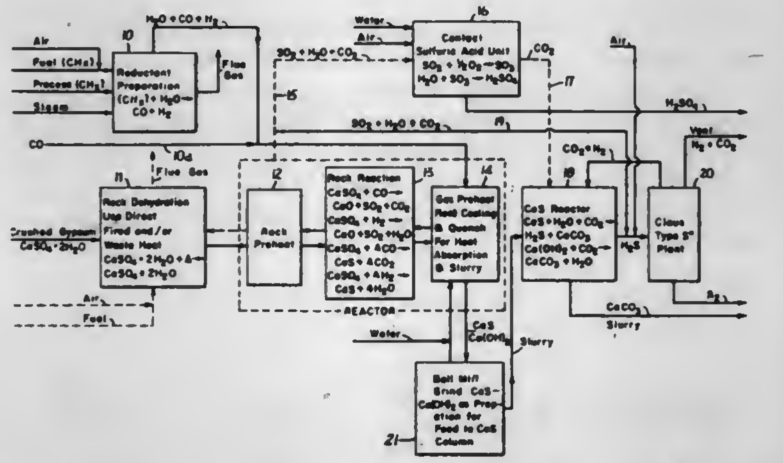
3,607,068
SULFUR RECOVERY PROCESS

Roy Edwin Campbell, and Edwin Eddie Fisher, both of Midland, Mich., assignors to Elcor Chemical Corporation, Midland, Tex.

Filed July 22, 1968, Ser. No. 746,643

Int. Cl. C01b *17/44, 17/50*

U.S. Cl. 23—224 **9 Claims**


Air
Fuel (CH4)
Process (CH4)
Steam
Reductant Preparation
Flue Gas
Contact Sulfuric Acid Unit
Water
CO
Flue Gas
Crushed Gypsum
Rock Dehydration Use Direct Fired and/or Waste Heat
Rock Preheat
Rock Reaction
Gas Preheat Rock Cooling & Quench For Heat Absorption & Slurry
CaS Reactor
Claus Type S° Plant
REACTOR
Ball Mill Grind CaS-Ca(OH)2 as Preparation for Feed to CaS Column
Slurry
Vent

A method of recovering sulfur from a metal sulfate whereby a substantial part of the sulfur content is recovered as sulfur dioxide and the balance as hydrogen sulfide. The sulfate is contacted with reducing gases at high temperatures to produce a metal sulfide and a metal oxide under conditions favoring an off-gas stream rich in sulfur dioxide; the metal sulfide may be subsequently be converted to hydrogen sulfide and sulfur and sulfur compounds are recovered.

3,607,069
PROCESS FOR RECOVERING SULFUR AND METAL VALUES FROM SULFUR-BEARING MINERALS

Charles Patrick Bruen, Fayetteville, N.Y.; Donald Hoyt Kelly, Gladstone, N.J.; Christian Albert Wamser, Camillus, and Bhaskar Bandyopadhyan, Liverpool, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,651

Int. Cl. C01b *17/06*

U.S. Cl. 23—225 **15 Claims**

A process for recovering sulfur values and concentrating other metal values from pyrrhotite (FeS) by complexing ferrous sulfide in aqueous medium with an insoluble alkylamino polycarboxylic acid chelating agent to form a water-soluble ferrous chelate, hydrogen sulfide and a concentrate of insoluble sulfides of nonferrous metals. The hydrogen sulfide is reacted Claus sulfur dioxide under conventional Clause reaction conditions to yield sulfur. The ferrous chelate, in solution, is treated with an oxygen-free sulfur dioxide whereby the water-insoluble chelating agent is regenerated for recycle. The solution of ferrous bisulfite which forms is processed to yield additional quantities of sulfur dioxide from which sulfur is recovered.

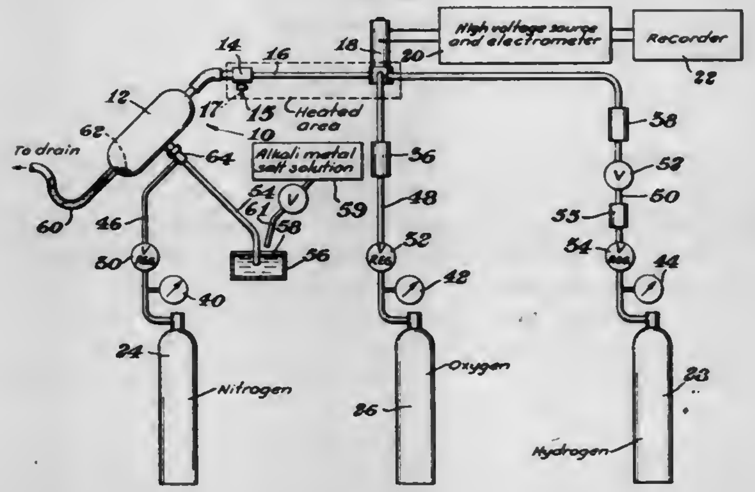
3,607,070
METHOD AND APPARATUS FOR THE DETERMINATION OF PHOSPHORUS IN AQUEOUS SOLUTIONS

Vernon A. Stenger, and David N. Armentrout, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1970, Ser. No. 8,545

Int. Cl. G01n *31/12*

U.S. Cl. 23—230 R **17 Claims**


High voltage source and electrometer
Recorder
Heated area
Alkali metal salt solution
To drain
Nitrogen
Oxygen
Hydrogen

A method and apparatus for directly determining inorganic phosphorus in water samples, comprising adding a very small amount of an alkali metal salt to the water solution containing the phosphorus compound, atomizing the water solution pneumatically, injecting the atomized particles into a flame ionization detector where interaction between the alkali metal and the phosphorus produces in the flame an enhanced ionization that is proportional to the phosphorus concentration.

3,607,071
CONTINUOUS TOTAL ORGANIC CARBON ANALYZER AND METHOD

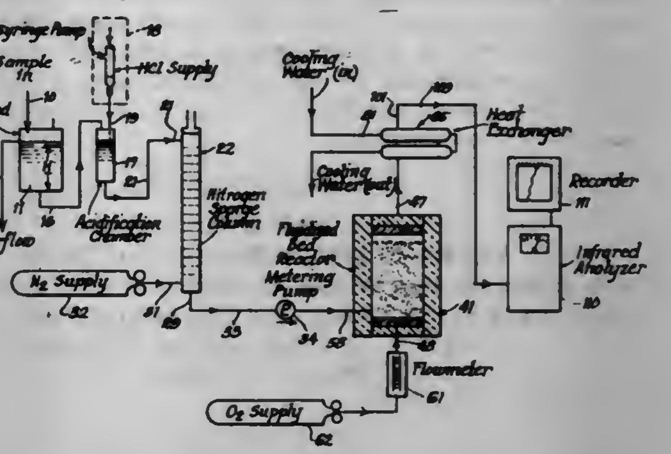
Herbert Kenneth Staffin, Colonia, and Roy J. Ricci, Red Bank, both of N.J., assignors to Procedyne Corporation, New Brunswick, N.J.

Filed Mar. 23, 1970, Ser. No. 21,884

Int. Cl. G01n *31/12*

U.S. Cl. 23—230 PC **14 Claims**

Apparatus and method for receiving and analyzing a continuous stream constituting a sample of water or other fluid containing carbon-based organic and inorganic pollutants to determine the total content of pollutants in terms of carbon, and providing an instantaneous record of such content.



3,607,072
NOVEL CYSTEINE DERIVATIVE

Mendel Friedman, and James F. Cavins, both of Peoria, Ill.

Division of Ser. No. 758,151, Sept. 6, 1968, Pat. No. 3,607,072. Filed Jan. 21, 1970, Ser. No. 8,112

Int. Cl. C07d *31/48;* **G01n** *31/08*

U.S. Cl. 23—230 R **1 Claim**

S-B-(4-pyridylethyl)-*L*-cysteine, a novel amino acid produced by reacting *L*-cysteine and 4-vinylpyridine in the presence of triethylamine, is ninhydrin-positive and very highly resistant to acid hydrolysis. It is particularly useful as an internal standard for chromotographic analyses of basic amino acids.

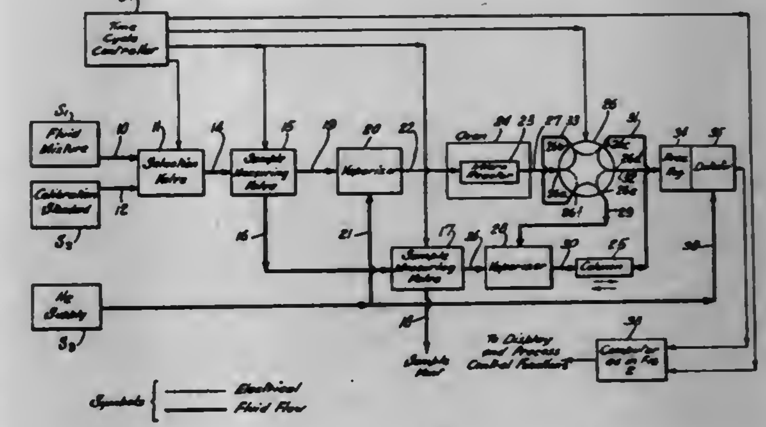
3,607,073
METHOD AND APPARATUS FOR ANALYSIS OF FLUID MIXTURES

Ralph E. Stamm, Port Arthur, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 22, 1968, Ser. No. 746,487

Int. Cl. G01n *31/08, 31/10*

U.S. Cl. 23—230 R **15 Claims**



A method and apparatus for continually monitoring a component of a fluid mixture, such as the naphthene content of a hydrocarbon mixture. The apparatus includes a microreactor for subjecting the fluid mixture to a chemical reaction converting, at least in part, a fluid component of the mixture so as to render the fluid component of interest separable from the mixture, and detection means for detecting the fluid component of interest. In a further embodiment a unique computer is provided coupled with the detector for computing the concentration of the fluid component of interest in the fluid mixture. The method of the invention includes reacting the fluid mixture in the aforementioned chemical reaction, and detecting the fluid component of interest. In another version of the method in which the reaction affects more than one component of the mixture converting the affected components to still another component of the mixture, the method includes the further steps of detecting said other component in an unreacted sample of the fluid mixture and generating a signal representative of the concentration in the mixture of the fluid component of interest in accordance with a predetermined relationship between the detected components of the unreacted sample, the reacted sample, and the concentration of the fluid component of interest in the fluid mixture.

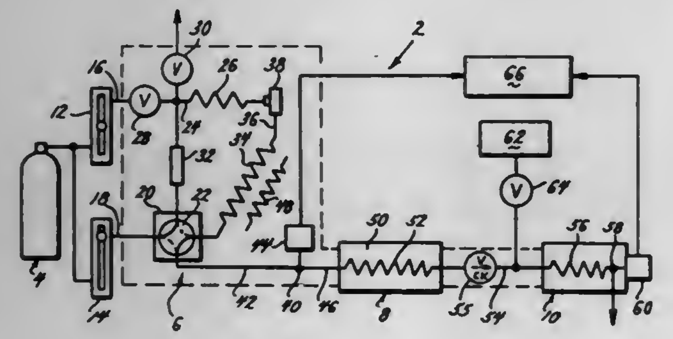
3,607,074
SEEPAGE GASOLINE DETECTION

Ralph A. Brown, and Walter A. Dietz, both of Westfield, N.J., assignors to Esso Research and Engineering Company
Filed Oct. 21, 1968, Ser. No. 769,398
Int. Cl. G01m *3/20;* **G01n** *33/22*
U.S. Cl. 23—230 EP **1 Claim**

Thiophane is added to gasoline in an amount insufficient to change the odor of the gasoline, but sufficient to be detected when a sample of seepage gasoline containing the thiophane is subjected to a physical separation process, such as gas chromatography. Preferably, the amount of thiophane added to the gasoline is about 0.1 percent by volume of the fuel.

3,607,075
INSTRUMENT AND METHOD FOR ANALYZING COMPLEX SUBSTANCES

Clarence J. Wolf, St. Louis County, Mo., and John Q. Walker, Madison County, Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Aug. 9, 1968, Ser. No. 751,563
Int. Cl. G01n *31/08*
U.S. Cl. 23—230 **11 Claims**

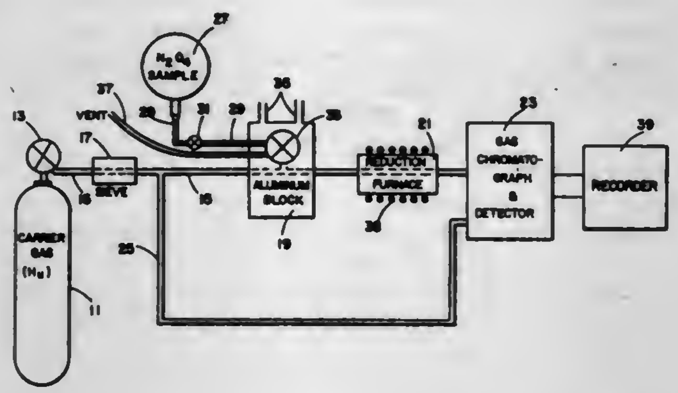


A chromatographic apparatus including a chromatographic column through which a fluid carrier medium flows. A complex mixture is introduced into the carrier gas medium prior to the column and is resolved into individual compounds which elute at separate times with the continuing passage of the carrier medium. These compounds are introduced separately into a pyrolyzer which reduces them to pyrolytic fragments. The carrier medium with the pyrolytic fragments in it is introduced into another chromatographic column and eluted therefrom at separate times by the continuing flow of the carrier medium. These fragments are detected and cause a chromatogram unique to the compound to be traced. Once a compound has been eluted from the first column, the flow of carrier medium through that column is halted and that column is isolated from the pyrolyzer and second column so that other compounds will not elute and interfere with the pyrolytic fragments from the prior compounds.

3,607,076
PROCEDURE AND APPARATUS FOR DETERMINATION OF WATER IN NITROGEN TETROXIDE

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Raffaele F. Muraca, Los Altos Hill, Calif.
Filed Feb. 18, 1969, Ser. No. 800,204
Int. Cl. G01n *31/08, 31/12*
U.S. Cl. 23—230 R **7 Claims**

Nitrogen tetroxide is analyzed for water content by passing it through hot copper contained in a column wherein all nitrogen and hydrogen containing compounds are converted quantitatively to nitrogen and water. The resultant material from the column is then passed into a gas chromatograph whereupon the amount of water initially contained in the nitrogen tetroxide can be determined.



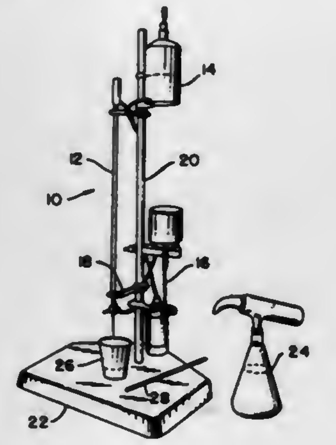
3,607,077
COMPOSITIONS OF AGREEABLE ODOR FOR THE DETERMINATION OF ALDOSES

Arnold Hartel; Roland Helger, and Hermann Lang, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
Filed Apr. 29, 1969, Ser. No. 820,289
Claims priority, application Germany, May 2, 1968, P 17 73 330.1
Int. Cl. G01n *21/06*
U.S. Cl. 23—230 B **22 Claims**

To eliminate the obnoxious odor associated with the *o*-toluidine-glacial acetic method of conducting aldose, especially blood glucose determinations, the color reagent is modified to include at least one hydroxycarboxylic acid, e.g. glycolic acid and little or no glacial acetic acid, there being no sacrifice in the reaction rate or in the yield of the resultant colored compound.

3,607,078
METHOD OF DETERMINING THE LIVE CLAY CONTENT OF FOUNDRY SAND

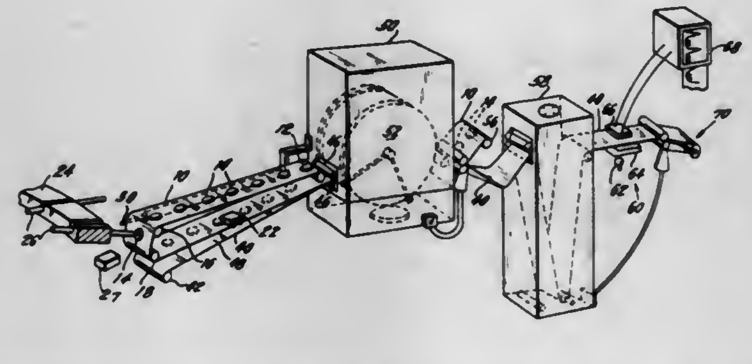
Harry W. Dietert, Kerrville, Tex.; Alexander L. Graham, Livonia, and Harold V. Gervais, Dearborn, Mich., assignors to Harry W. Dietert Co., Detroit, Mich.
Filed Sept. 19, 1969, Ser. No. 859,276
Int. Cl. G01n *1/04, 31/22, 33/24*
U.S. Cl. 23—230 R **8 Claims**



A 2 percent preliminary solution of tetrasodium pyrophosphate is added to foundry sand containing a blend of bentonites and the clay-bearing sand sample and preliminary solution are stirred lightly. The mixed sand sample and tetrasodium pyrophosphate are then titrated with methylene blue until a blue-green halo is left around a spot on a filter paper on which a drop of the titrated solution is placed. The quantity of methylene blue necessary for the titration is an accurate indication of the effective live clay content of the sand without regard to different base exchange capacities of different bentonites in the blend.

3,607,079
ANALYSIS ARRANGEMENT FOR CHEMICAL ANALYZING APPARATUS

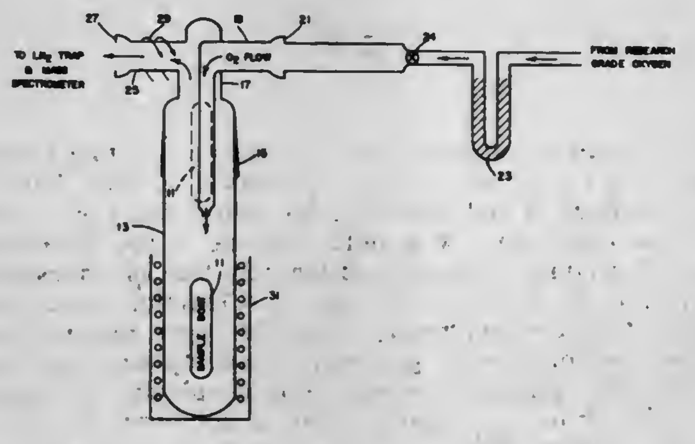
Theodore Maxon, Elmhurst, and Lowell A. Kleiman, Roslyn, both of N.Y., assignors to Scientific Industries, Inc., Hempstead, N.Y.
Filed June 2, 1969, Ser. No. 829,562
Int. Cl. G01n *1/00, 1/28, 21/00*
U.S. Cl. 23—230 R **23 Claims**



For use in a chemical-analyzing apparatus, a liquid sample analysis arrangement, comprising a liquid sample receiving, holding and transferring strip medium comprising an elongated tape having a plurality of spaced, uniformly dimensioned, liquid sample absorbing locations on one face thereof; and an analyzing strip medium comprising an elongated tape to which sample from the absorbent locations is transferred, and which analyzing medium has reagent applied to it to react with the transferred liquid sample; the analyzing apparatus comprising means for feeding and taking up the above noted strip mediums, means for dispensing liquid sample to the receiving medium, means for causing the transfer of liquid sample from the receiving to the analyzing medium and means for cooperating with the analyzing medium for analyzing the reaction between the reagent and the liquid sample. Alternatively, reagent can be caused to travel to the strip medium which has previously received liquid sample, instead of in the reverse direction and reaction on and analysis of this sample receiving medium will be performed.

3,607,080
METHOD FOR DETERMINING PRESENCE OF OH IN MAGNESIUM OXIDE

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Ellsworth R. Blosser; Robert B. Iden, Columbus, and Elton H. Hall, Worthington, all of Ohio
Filed Aug. 11, 1969, Ser. No. 848,805
Int. Cl. C01f *5/06;* **G01n** *25/56, 33/00*
U.S. Cl. 23—230 **7 Claims**



A method for determining the amount and type of OH present in MgO, comprising heating the MgO in a series of steps of successively higher temperatures, with a final step utilizing an oxygen atmosphere and a temperature above the decomposition temperature of the compound $Mg(OH)_2$ and measuring the amount of water vapor evolved in each step.

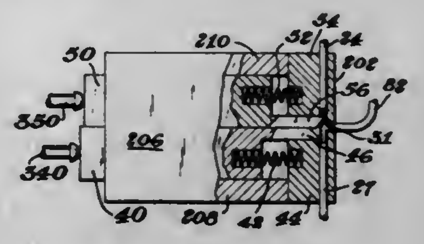
3,607,081
REAGENT FOR DETERMINATION OF GLOBULIN

Harry Goldenberg, Santa Monica, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Aug. 11, 1969, Ser. No. 849,202
Int. Cl. C09k *3/00;* **G01n** *21/02*
U.S. Cl. 23—230 B **10 Claims**

A stable reagent for the determination of globulins in biological fluids comprises a solution of glyoxylic acid and a cupric salt such as cupric sulfate pentahydrate in a mixture of acetic acid and sulfuric acid. The reagent has improved stability, sensitivity and specificity properties and can be employed for rapid determination of globulin. Methods of preparing the reagent and using it in the determination of globulins are disclosed.

3,607,082
FLUID-PROCESSING SYSTEM

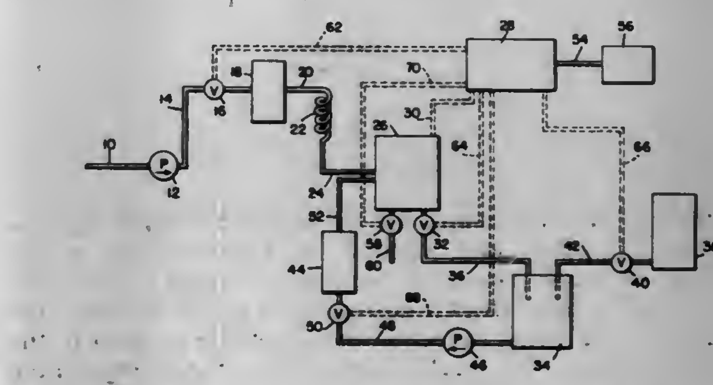
Ralph E. Thiers, Woodland Hills, Calif., assignor to Bio-Science Laboratories, Van Nuys, Calif.
Continuation-in-part of application Ser. No. 541,306, Apr. 8, 1966, now Patent No. 3,475,128, dated Oct. 28, 1969. This application Sept. 24, 1969, Ser. No. 860,775
Int. Cl. B01l *3/02;* **G01n** *1/14, 31/00*
U.S. Cl. 23—230 **29 Claims**



A fluid-processing apparatus and a method for its use comprises metering and valving means for charging a plurality of separate liquids into separate pipet chambers and charging the liquids from the pipet chambers so that each succeeding liquid passes through the pipet chamber employed to receive the preceding liquid, a fluid receiving and transporting conduit having tractable wall portions adapted to receive the metered liquids from the pipets, means for forming movable seals in the conduit thereby to isolate a metered quantity of liquid in a hydraulically isolated chamber, means for mixing the fluids in the chamber by compressing and releasing portions of the wall thereof, processing means for performing various unit processes on the fluid mixture in a given chamber, and discharge means for removing fluid mixture from said conduit. A branched-arm valve, fitted with means for selectively closing arms thereof is preferably employed as a valving means in charging and dispensing fluids into and from the pipet chambers. The system can be employed in carrying out various processes of chemistry, microbiology or the like.

3,607,083
ANALYSIS OF KRAFT LIQUORS

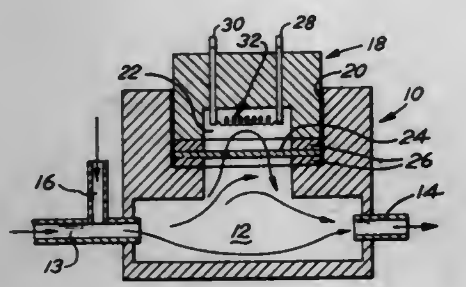
Anirudh K. Chowdhry, Flushing, N.Y., assignor to Westvaco Corporation, New York, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,745
Int. Cl. G01n *27/26*
U.S. Cl. 23—230 R **5 Claims**



Kraft cooking liquors used in the pulping of wood are analyzed for apparent causticity by utilizing conductivity measurements taken before and after precipitation of the soluble carbonates in the liquors. The differential conductivity determined correlates directly with the apparent causticity of the cooking liquor.

3,607,084
COMBUSTIBLE GAS MEASUREMENT

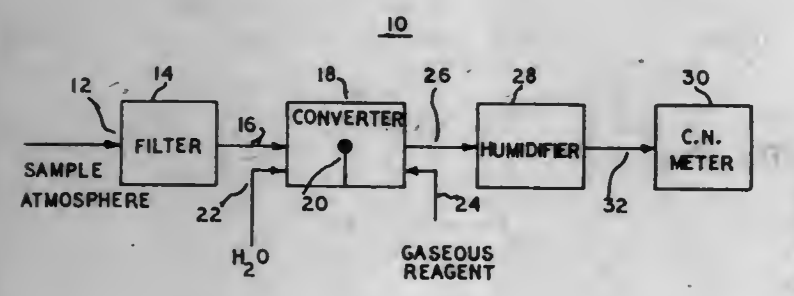
Robert J. Mackey, Morton Grove, and Ihor B. Karpowycz, Chicago, both of Ill., assignors to Sun Electric Corporation
Filed Dec. 2, 1968, Ser. No. 780,476
Int. Cl. B01j *11/12;* **G01n** *31/10, 31/12*
U.S. Cl. 23—232 **21 Claims**



The measurement of combustible gases comprises passing a stream of gas containing the combustible gases over a conductive metal wire coated with a thin catalytic coating of a mixture of thorium oxide and black palladium powder and/or black platinum powder. Electrical current is passed through the conductor wire to raise the temperature of the wire to a first temperature at which the oxidation of the combustible gases is initiated in the presence of the catalytic effect produced by the coating. The oxidation of the combustible gases substantially elevates the temperature of the conductor wire, changing its electrical resistance, the amount of heat generated during oxidation being directly proportional to the quantity of combustible gases in the gas stream. The metal conductor wire is preferably formed of a base metal in which the change in resistivity between the first and elevated temperatures is substantially equal to or greater than the change in resistivity of platinum between those temperatures.

3,607,085
METHOD AND APPARATUS FOR DETECTING GASES OR VAPORS

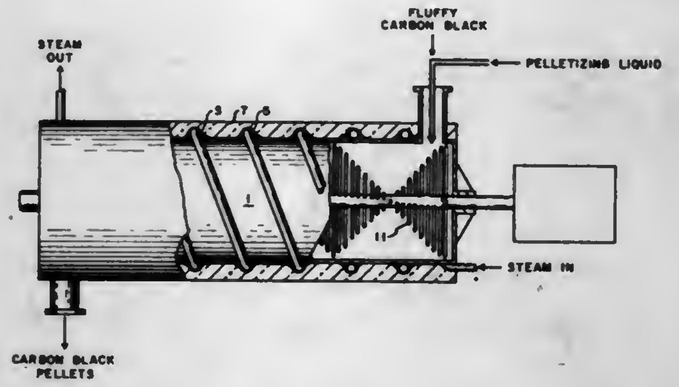
Serafino J. Fusco, Pittsfield, Mass., assignor to General Electric Company
Filed Aug. 29, 1969, Ser. No. 854,194
Int. Cl. G01n *31/00, 33/00*
U.S. Cl. 23—232 R **9 Claims**



A method and apparatus for detecting extremely minute quantities of gases and vapors. A condensation nuclei technique of measurement is employed, having a converter that forms a nucleus from a gas-phase reaction between the gaseous material being detected and a volatile reagent in the presence of water. The nuclei forming reaction is augmented by providing a corona discharge in the converter. The reacting materials can be introduced separately or in combination to the converter.

3,607,086
APPARATUS FOR WET-PELLETIZING CARBON BLACK

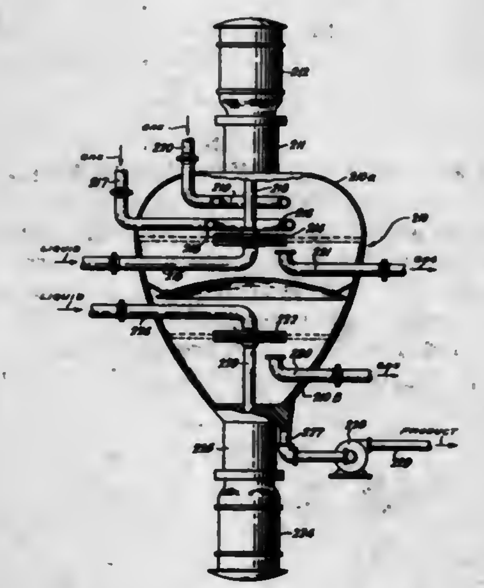
George W. Dingus, 1821 Mary Ellen St., Pampa, Tex.
Continuation-in-part of application Ser. No. 796,146, Feb. 3, 1969, now Patent No. 3,528,785. This application Feb. 24, 1970, Ser. No. 13,332
Int. Cl. B01f *7/04;* **C01b** *31/14;* **B01j** *2/00*
U.S. Cl. 23—252 **2 Claims**



A wet pelletizer apparatus suitable for the preparation of carbon black pellets wherein heating of the pelletizer during agitation of the carbon black is accomplished by external heating means.

3,607,087
GAS-LIQUID CHEMICAL REACTION APPARATUS

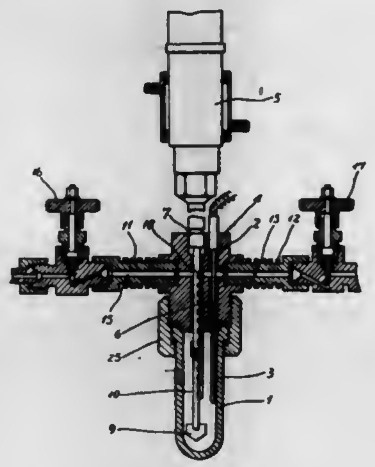
Ward A. Graham, Kansas City, Mo., assignor to Stratford Engineering Corporation, Kansas City, Mo.
Division of Ser. No. 363,758, Apr. 30, 1964, abandoned. Filed Oct. 15, 1969, Ser. No. 866,583
No. 866,583
Int. Cl. B01 ; B01j ; B01d *1/16*
U.S. Cl. 23—252 **7 Claims**



Methods of and apparatus of intimately contacting a liquid phase with a gas phase to effect a chemical reaction. Particularly, methods of and apparatus for sulfonating organic sulfonatable compounds with sulfur trioxide as the sulfonating agent to produce products substantially free of undesirable byproducts of the sulfonating agents. A reaction vessel comprising a closed vessel having within the upper, reaction zone portion thereof reactive gas inlet means, optional gas blast means, and a first liquid atomizing rotor operable to disperse liquid therefrom in a lightly atomized condition thereby to provide a substantially continuous screen of dispersed liquid across the full section of the vessel. A vapor withdrawal line is positioned beneath the first liquid atomizing vapor. The vessel also optionally includes a second liquid atomizing rotor beneath the first liquid atomizing rotor to provide a second gas-liquid contacting or liquid-liquid contacting operation. A bottom product line permits withdrawal of the products from the reaction vessel.

3,607,088
APPARATUS FOR SIMULTANEOUSLY MEASURING TEMPERATURE OF REACTION AND PRESSURE IN VAPOR AND LIQUID PHASES OF VERY SMALL AMOUNT OF SAMPLE UNDER PRESSURE

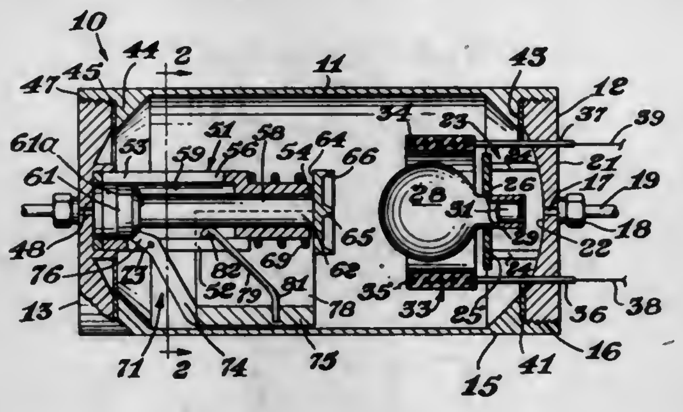
Teruji Ishii, Tokyo, Japan, assignor to Cobble Company Limited, Tokyo, Japan
Filed Sept. 10, 1968, Ser. No. 758,758
Claims priority, application Japan, Mar. 22, 1968, 43/18705
Int. Cl. G01n *25/22, 25/30, 31/00*
U.S. Cl. 23—253 **14 Claims**



Disclosure is made of a method for simultaneously measuring and recording very slight changes in temperature and pressure of a very small mass or volume of a test sample under pressure, and of an apparatus therefor provided with a microautoclave applicable to both vapor and liquid phases, an electric furnace in which said microautoclave is adapted to fit and an automatic recorder containing an electric circuit necessary for achievement of the above-mentioned measurement.

3,607,089
MINIATURE REACTION VESSEL

Paul Richard Stoesser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Sept. 30, 1969, Ser. No. 862,435
Int. Cl. G01n *25/20, 31/20*
U.S. Cl. 23—253 R **6 Claims**

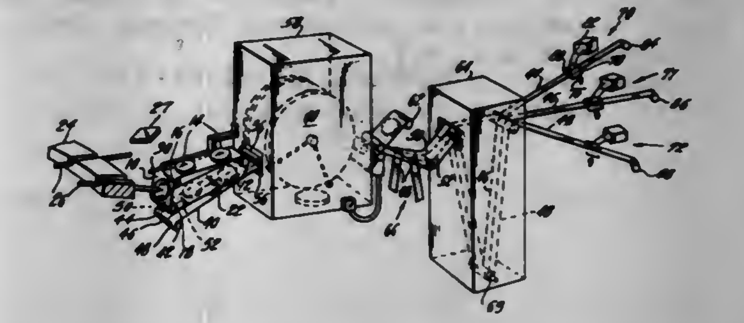


A miniature reaction vessel is described which is particularly suitable for use in a microcalorimeter wherein reactions may be carried out with minimal vapor space in the vessel. One of the reactants is contained in a frangible vessel which is broken by a gravity-operated trigger mechanism.

3,607,090
ANALYSIS ARRANGMENT FOR MULTIPLE ANALYSES OF A SINGLE SAMPLE

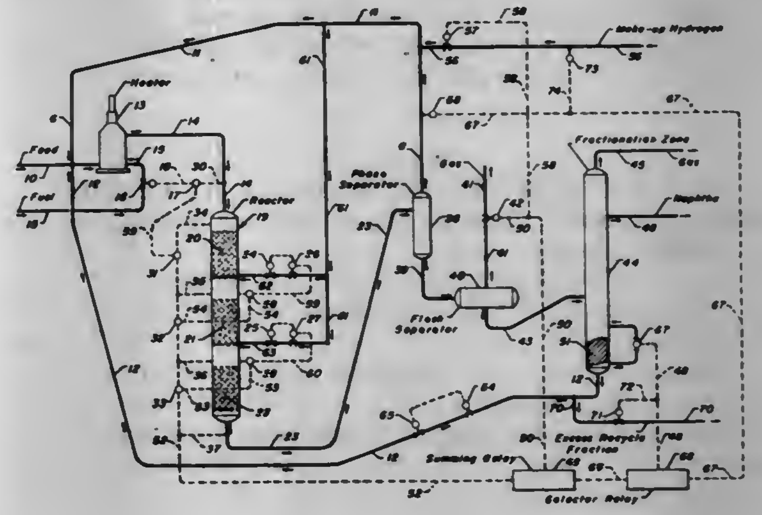
Theodore Maxon, Elmhurst, N.Y., assignor to Scientific Industries, Inc., Hempstead, N.Y.
Filed Oct. 6, 1969, Ser. No. 863,943
Int. Cl. G01n *1/00, 1/28, 21/00*
U.S. Cl. 23—253 R **25 Claims**

A liquid sample analysis arrangement comprising a liquid sample receiving, holding and transferring strip medium made from an elongated tape having a plurality of spaced liquid sample absorbing locations on one face thereof, and an analyzing strip medium comprising an elongated tape which is divided into a plurality of discrete analyzing portions; said arrangement may be used in conjunction with an analyzing apparatus comprising means for dispensing liquid sample to the receiving medium and means for causing transfer of the dispensed liquid sample to a plurality of the discrete portions of the analyzing medium, whereby a separate analysis of a single liquid sample may be performed on each of the discrete portions of the analyzing medium; an alternate embodiment of analysis arrangement has sample dispensed to the receiving medium and has a reagent on each discrete portion of the other strip medium, with the reagent from each portion of the latter medium being transferred by the analyzing apparatus to the former medium so that discrete analyses are performed on the former medium; in a still further embodiment, the sample-receiving medium is also divided into a plurality of discrete portions, so that back transfer of each reagent, as in the alternate embodiment, is only to one discrete portion of the receiving medium.



3,607,091
TEMPERATURE CONTROL SYSTEM FOR HYDROCARBON CONVERSION PROCESS

David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 759,104, Sept. 11, 1968. This application Nov. 28, 1969, Ser. No. 880,654
Int. Cl. B01j *9/04;* **C10g** *13/00, 37/02*
U.S. Cl. 23—253 **14 Claims**



In a hydrocarbon conversion process wherein a gaseous reactant and hydrocarbon to be converted, are reacted under conversion conditions, a control system for maintaining the level of conversion of the feed mixture at a level responsive to the availability of the gaseous reactant. Conversion severity is adjusted by temperature control on the feed mixture, reset by differential temperature control across the reaction zone. Unconverted product is recycled to the reaction zone from a lower section of a fractionation column, and a level control signal is sent therefrom to a selector relay which also receives a signal indicative of the pressure within the reaction zone. The selector relay develops an output signal which is a function of the pressure signal when the pressure is below a measurements taken before and after precipitation of the soluble carbonates in the liquors. The differential conductivity determined correlates directly with the apparent causticity of the cooking liquor.

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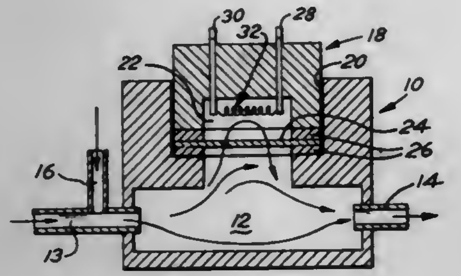

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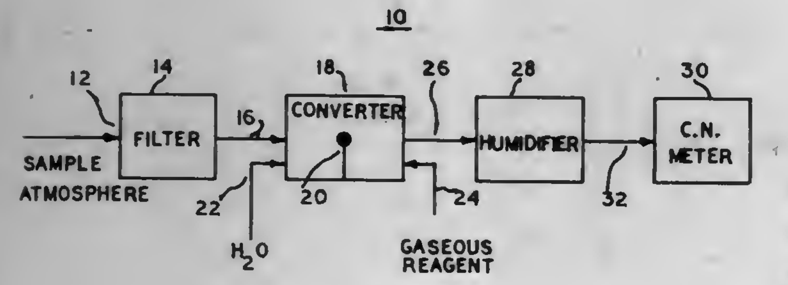

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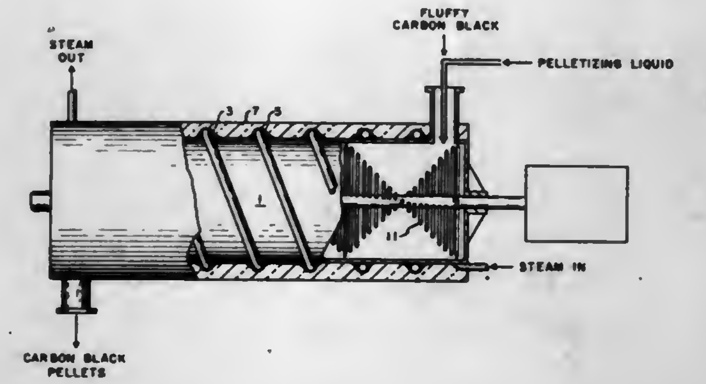
Int. Cl. B01f *7/04;* **C01b** *31/14;* **B01j** *2/00*
U.S. Cl. 23—252 **2 Claims**



A wet pelletizer apparatus suitable for the preparation of carbon black pellets wherein heating of the pelletizer during agitation of the carbon black is accomplished by external heating means.

3,607,087

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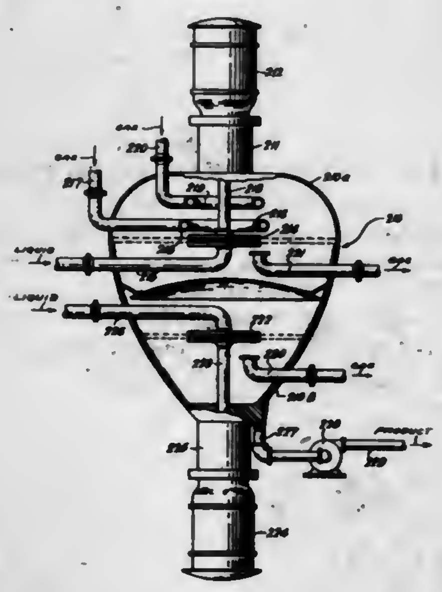
Int. Cl. B01 ; B01j ; B01d *1/16*
U.S. Cl. 23—252 **7 Claims**



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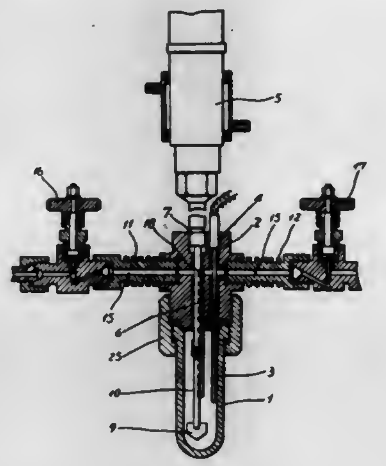
Claims priority, application Japan, Mar. 22, 1968, 43/18705
Int. Cl. G01n *25/22, 25/30, 31/00*
U.S. Cl. 23—253 **14 Claims**



Disclosure is made of a method for simultaneously measuring and recording very slight changes in temperature and pressure of a very small mass or volume of a test sample under pressure, and of an apparatus therefor provided with a microautoclave applicable to both vapor and liquid phases, an electric furnace in which said microautoclave is adapted to fit and an automatic recorder containing an electric circuit necessary for achievement of the above-mentioned measurement.

3,607,089

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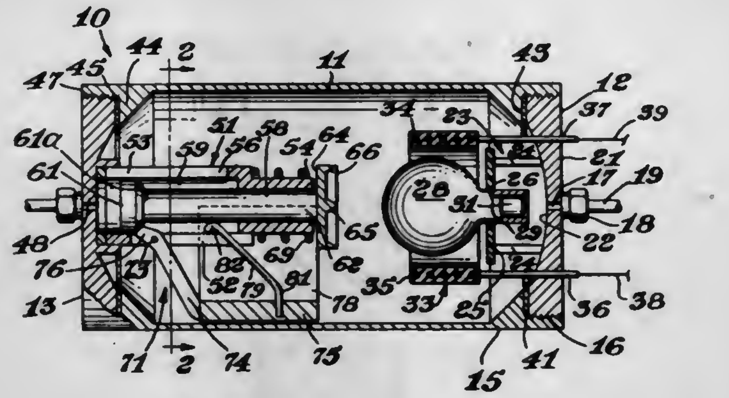
Filed Sept. 30, 1969, Ser. No. 862,435
Int. Cl. G01n *25/20, 31/20*
U.S. Cl. 23—253 R **6 Claims**



A miniature reaction vessel is described which is particularly suitable for use in a microcalorimeter wherein reactions may be carried out with minimal vapor space in the vessel. One of the reactants is contained in a frangible vessel which is broken by a gravity-operated trigger mechanism.

3,607,090

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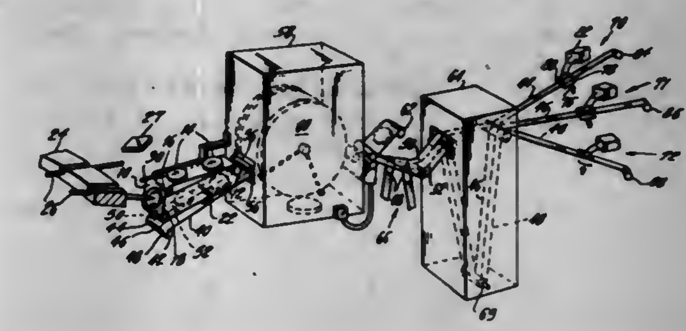
Filed Oct. 6, 1969, Ser. No. 863,943
Int. Cl. G01n *1/00, 1/28, 21/00*
U.S. Cl. 23—253 R **25 Claims**

A liquid sample analysis arrangement comprising a liquid sample receiving, holding and transferring strip medium made from an elongated tape having a plurality of spaced liquid sample absorbing locations on one face thereof, and an analyzing strip medium comprising an elongated tape which is divided into a plurality of discrete analyzing portions; said arrangement may be used in conjunction with an analyzing apparatus comprising means for dispensing liquid sample to the receiving medium and means for causing transfer of the dispensed liquid sample to a plurality of the discrete portions of the analyzing medium, whereby a separate analysis of a single liquid sample may be performed on each of the discrete portions of the analyzing medium; an alternate embodiment of analysis arrangement has sample dispensed to the receiving medium and has a reagent on each discrete portion of the other strip medium, with the reagent from each portion of the latter medium being transferred by the analyzing apparatus to the former medium so that discrete analyses are performed on the former medium; in a still further embodiment, the sample-receiving medium is also divided into a plurality of discrete portions, so that back transfer of each reagent, as in the alternate embodiment, is only to one discrete portion of the receiving medium.



3,607,091

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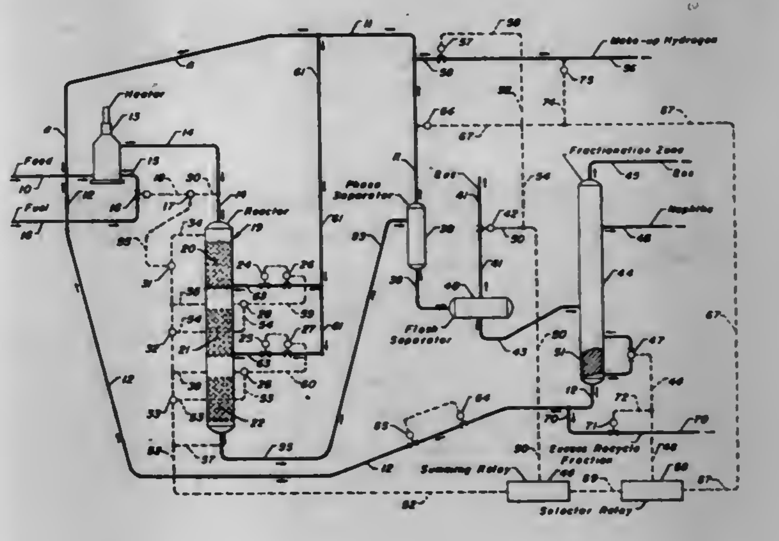
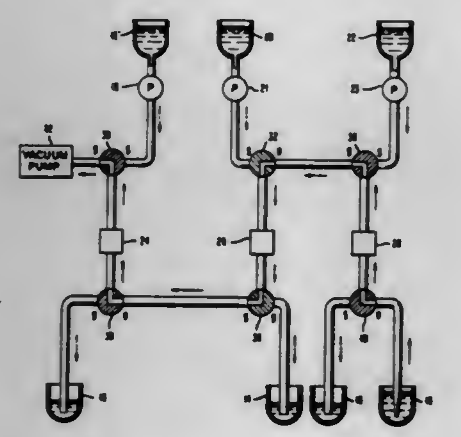
Continuation-in-part of application Ser. No. 759,104, Sept. 11, 1968. This application Nov. 28, 1969, Ser. No. 880,654
Int. Cl. B01j *9/04;* **C10g** *13/00, 37/02*
U.S. Cl. 23—253 **14 Claims**



In a hydrocarbon conversion process wherein a gaseous reactant and hydrocarbon to be converted, are reacted under conversion conditions, a control system for maintaining the level of conversion of the feed mixture at a level responsive to the availability of the gaseous reactant. Conversion severity is adjusted by temperature control on the feed mixture, reset by differential temperature control across the reaction zone. Unconverted product is recycled to the reaction zone from a lower section of a fractionation column, and a level control signal is sent therefrom to a selector relay which also receives a signal indicative of the pressure within the reaction zone. The selector relay develops an output signal which is a function of the pressure signal when the pressure is below a predetermined level, and which is a function of the level signal when the pressure is at or above the predetermined level. The selector output signal is sent to a summing relay which also receives a flow signal indicative of the flow of makeup reactant gas to the process of net gas product leaving the process. The summing relay then resets the differential temperature controller which in turn resets the temperature controller.

3,607,092
AUTOMATIC FLUID SAMPLE APPARATUS

Gordon W. Neff, Mahopac, N.Y., and John E. Tomko, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of application Ser. No. 653,141, July 13, 1967, now abandoned. This application Mar. 23, 1970, Ser. No. 21,561
Int. Cl. G01n *33/16*
U.S. Cl. 23—253 **6 Claims**



An automatic fluid sample apparatus for the chemical analysis of fluids is described. In the apparatus, a plurality of samples are substantially simultaneously precisely measured out and diluted or mixed with the proper quantity of diluent and/or reagent. A series of tubing valves, preferably of the T-type, in one position permit sample containers having the desired sample volume to be filled with samples of fluid to be analyzed from a fluid source through the action of a vacuum pump. The valves are then placed in a second position whereby the samples flow from the sample containers to recipient containers and respective proper quantities of diluent or reagent are caused to flow through the valves and the sample containers into the recipient containers.

3,607,093
DEVICES FOR TESTING BIOLOGICAL LIQUIDS

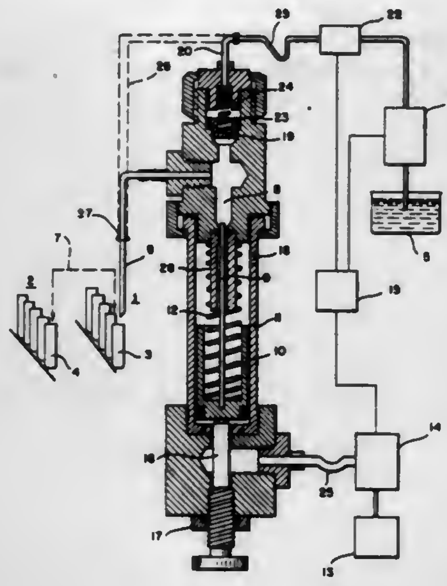
Ellery W. Stone, Cohassett, Mass., assignor to Schering Corporation, Bloomfield, N.J.
Filed Feb. 15, 1968, Ser. No. 705,603
Int. Cl. C12k *1/04;* **G01n** *31/14, 33/16*
U.S. Cl. 23—253 **7 Claims**

Testing devices for biological liquids comprise liquid permeable membranes of uniform chemical composition having a solid diagnostic reagent composition incorporated in at least a portion thereof and having at least one surface portion impenetrable by particles of the order of size of red blood corpuscles. The membranes may be of substantially uniform porosity throughout or they may have a thin skin portion of low effective porosity and a thicker body portion having pores of substantially large effective diameters.

3,607,094
APPARATUS FOR PIPETTING AND ADDING A LIQUID

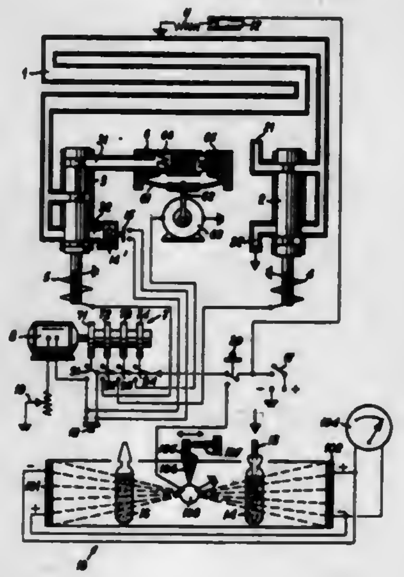
Palle-Finn Beer, Lidingo, Sweden, assignor to AB Autokemi, Stockholm, Sweden
Filed Jan. 27, 1969, Ser. No. 793,990
Claims priority, application Sweden, June 25, 1968, 1020/68
Int. Cl. B01l *11/00;* **G01n** *1/14, 31/00*
U.S. Cl. 23—253 **3 Claims**

An apparatus for pipetting a liquid sample and supplying a liquid reagent which comprises a pump cylinder, a pump piston insertable in said pump cylinder, actuating means for said pump piston, a tubular cannula connected to said pump cylinder for drawing up a liquid sample, a conduit for supplying liquid reagent to said pump cylinder, said conduit having provided therein a valve means adapted to be actuated to its open position when the pump piston reaches a position corresponding to an emptying of the pump cylinder.



3,607,095
APPARATUS FOR DOSING A LIQUID OR GASEOUS FLUID BY COMPARISON

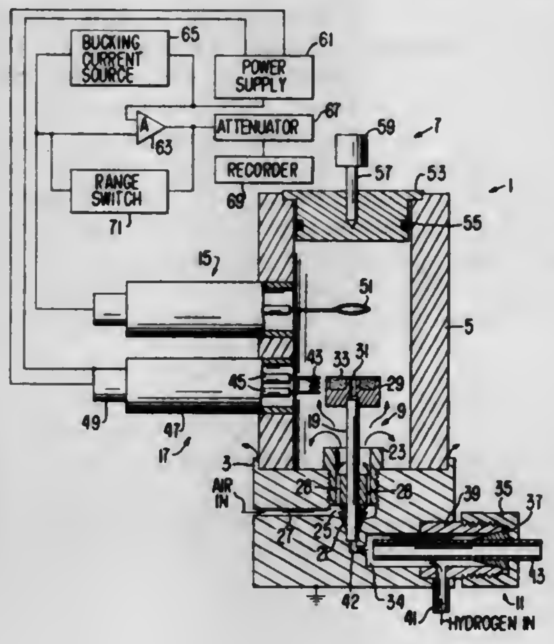
Lucien Etzlinger, 12 rue de Hesse, 1204 Geneva, Switzerland
Filed Oct. 7, 1968, Ser. No. 765,456
Claims priority, application Switzerland, Oct. 9, 1967, 14062/67
Int. Cl. F17d *3/00;* **G01n** *1/22, 21/24*
U.S. Cl. 23—254 R **6 Claims**



Apparatus for measuring a liquid or gaseous fluid by comparison, comprising a duct, means for effecting the automatic rinsing out of the duct by means of a neutral fluid, the filling of the duct with the fluid to be analyzed, and the automatic emptying of the duct into an analyzing receiver, means for checking the filling comprising a valve device automatically put into service during the filling and ensuring that the cycle proceeds or is stopped according to whether the filling is effected or not, and automatically put out of service after a predetermined time interval chosen in such a way that the duct contains none but the fluid to be analyzed, and a device for measuring the fluid contained in the said receiver by comparison.

3,607,096
ALKALI FLAME IONIZATION DETECTOR HAVING CAP MEANS FOR CHANGING THE GAS FLOW PATTERN

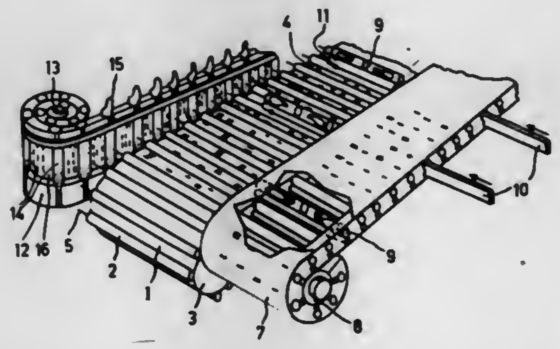
Charles H. Hartmann, 1048 Sanders Drive, Moraga, Calif.
Filed June 25, 1969, Ser. No. 836,350
Int. Cl. G01n *31/12*
U.S. Cl. 23—254 E **5 Claims**



A hollow flame jet is supported on a base member and surrounded by a cylindrical chimney. The outlet end of a chromatographic column extends into a mixing chamber in the base member where the effluent vapors from the column are mixed with hydrogen. This mixture issues from the flame jet and is burned in the presence of an alkali salt contained in a cup surrounding the tip of the jet. Air to support this combustion enters the chimney at the base of the flame jet. A pair of electrodes positioned near the jet are connected to a fixed voltage power supply and electrometer circuit in order to cause a current to flow in the interelectrode space and to measure this current. The magnitude of this current is proportional to the density of ions in the interelectrode space. Since nitrogen phosphorus-, sulfur-, and chlorine-containing hydrocarbon compounds produce relatively high currents compared with other hydrocarbon compounds, they can be reliably detected and quantified in the effluent stream.

3,607,097
ANALYZER FOR LIQUID SAMPLES

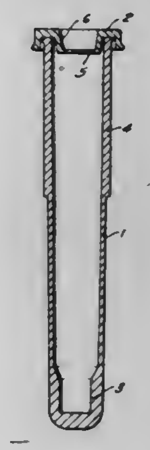
Michel Auphan, d'Orleans-Neuilly, and Jean Perilhou, Arnoux-Bourg la Reine, both of France, assignors to U.S. Phillips Corporation, New York, N.Y.
Filed Aug. 6, 1968, Ser. No. 750,654
Claims priority, application France, Aug. 9, 1967, 117,367
Int. Cl. G01n *1/14; 33/16*
U.S. Cl. 23—259 **10 Claims**



An apparatus for automatically transporting a plurality of liquid samples, such as blood through a series of programmed steps for colorimetric analysis of the samples. A first conveyor belt carries the samples to be analyzed, an adjacent belt carries working tubes in which the tests occur, and a third belt carries substances to be added to the samples during the tests. Needles and tubes are provided between the containers of substances on the three belts for piercing container walls and then transferring liquids between the containers.

3,607,098
CONTAINERS FOR LABORATORY USE

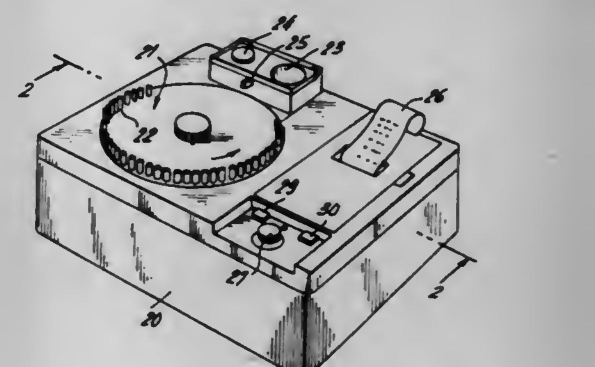
Carl Sloth Strande, Aurikeluej 9, DK-2500 Valby, Denmark
Filed Oct. 17, 1968, Ser. No. 768,229
Claims priority, application Denmark, Oct. 23, 1967, 5259/67
Int. Cl. B01l *3/14;* **B65d** *41/20*
U.S. Cl. 23—259 **6 Claims**



A container having an upper open end through which the container can be filled with liquid, such as a specimen of blood, and a closure fluid-tightly closing the open end of the container. The closure has a portion within the opening which is pierceable by a sedimentation tube or the like and the portion of the closure within the opening is constructed to close fluid-tightly about the outer surface of the tube when the latter is pushed through the closure.

3,607,099
PROTHROMBIN TIME MEASURING APPARATUS

Emil A. Scordato, Bronxville; John J. Hartnett, Bronx, N.Y., and Robert J. Varca, Palisade, N.J., assignors to Medical Laboratory Automation, Inc.
Filed Mar. 11, 1969, Ser. No. 806,120
Int. Cl. G01n *33/16*
U.S. Cl. 23—259 **10 Claims**



A prothrombin time measuring apparatus having a turntable that moves a plurality of plasma-containing test tubes successively to a testing station where a photosensitive device responds to a change in optical density of the plasma and a reagent mixed therewith at the testing station. Refrigerating means keep the plasma at a low temperature until the plasma is to be tested whereupon heating means increase the temperature to normal blood temperature.

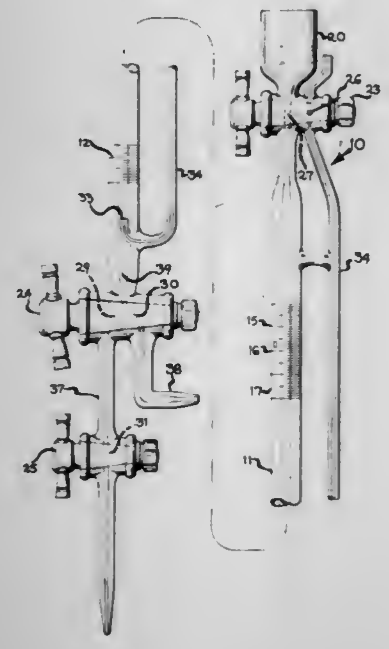
3,607,100
CONSTANT FLOW RATE BURETTE

Hardy C. Croom, Valdosta, Ga., assignor to Owens-Illinois, Inc.

Filed July 2, 1969, Ser. No. 838,385

Int. Cl. G01f *1/00*

U.S. Cl. 23—259 **5 Claims**



A burette assembly for discharging liquids at a constant flow rate regardless of the height of solution in the burette. This result is accomplished by attaching a capillary tube to the wall of a conventional burette. The tube is vented to the atmosphere at one end and terminates at the other end at a point on the inside of the bottom portion of the barrel of the burette.

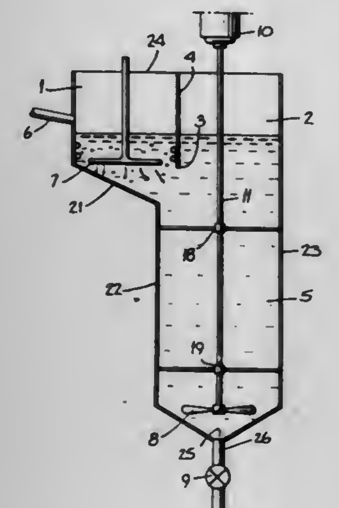
3,607,101
COMBINED TANK REACTOR ASSEMBLY

Linden Wayne Cochran, Basking Ridge, N.J., assignor to Multi-Minerals Limited, Toronto, Ontario, Canada

Filed Dec. 31, 1968, Ser. No. 788,289

Int. Cl. B01d *9/02*

U.S. Cl. 23—260 **2 Claims**



A combined tank reactor and crystallizer assembly which comprises a small reactor section and a large crystallizer section. The reactor section has means to heat and agitate the reaction medium to provide optimum conditions for the reaction to proceed. Underflow passage means between the two sections enables products from the reactor section to flow into the crystallizer section.

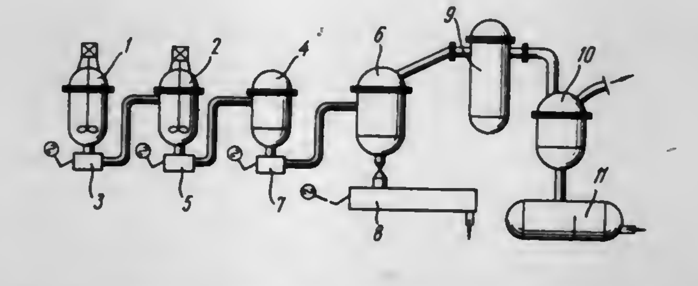
3,607,102
APPARATUS FOR THE CONTINUOUS PRODUCTION OF POLYCAPROAMIDE

Boris Afanasievich Kharkov, poselok Khiminstituta, 4, kv. 22, Kalinin;·Iosif Zalmanovich Kunin, poselok, Khiminstituta, 2, kv. 5, Kalinin; Vladimir Nikolaevich Skufiin, prospekt Pobedy, 25, kv. 7, Kalinin; Gleb Konstantinovich Moiseev, poselok Khiminstituta, 10, kv. 4, Kalinin; Vladimir Nikolaevich Vysotsky, poselok Khiminstituta, 3, kv. 1, Kalinin; Vladimir Kuzmich Muraviev, poselok Khiminstituta, 6, kv. 27, Kalinin; Avgust Alexandrovich Dubynin, Moskovskoi oblasti, Borodinsky proezd, 30, kv. 59, Klin; Vladimir Mikhailovich Kharitonov, poselok Khiminstituta, 10, kv. 6, Kalinin; Alexandr Anatolievich Speransky, poselok Khiminstituta, 3, kv. 20, Kalinin; Vsevolod Pavlovich Junitsky, ulitsa Pravdy, 37, kv. 17, Kalinin; Evgeny Mikhailovich Kozlov, poselok Khiminstituta, 9, kv. 16, Kalinin; Evgeny Anatolievich Gryaznov, poselok Khiminstituta, 2, kv. 34, Kalinin; Valery Tikhonovich Bykov, poselok Khiminstituta, 3, kv. 43, Kalinin; Erick Georgievich Podushkin, poselok Khiminstituta, 9, kv. 24, Kalinin; Vladimir Yakovlevich Streitses, poselok Khiminstituta, 3, kv. 28, Klin; Sergei Alexandrovich Kudryashov, Moskovskoi oblasti, ulitsa, Mira, 16, kv. 33, Kalinin, and Stanislav Semenovich Rybin, poselok Khiminstituta, 3, kv. 18, Kalinin, all of U.S.S.R.

Filed Apr. 17, 1968, Ser. No. 722,123

Int. Cl. B01d *3/00*

U.S. Cl. 23—263 **1 Claim**



An installation for the continuous production of polycaproamide comprises the following units connected in series in the order given: a unit for melting caprolactam; a unit for mixing the molten caprolactam with an activator and a stabilizer; a unit for continuous polymerization of caprolactam; a unit for distilling off low-molecular compounds; a unit for catalytic decomposition of cyclic oligomers of caprolactam; and a unit for condensation of low-molecular compounds.

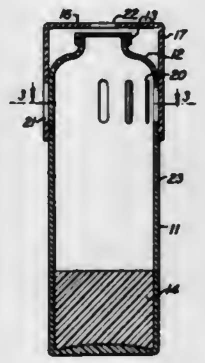
3,607,103
CHEMICAL DISPENSER FOR SWIMMING POOLS

Adolph Kiefer, 2051 Railroad Ave., Northfield, Ill.

Filed Jan. 23, 1970, Ser. No. 5,223

Int. Cl. B01d *11/00*

U.S. Cl. 23—267 A **16 Claims**



A buoyant container for dispensing a solid chemical composition while floating on the surface of a liquid has a compartment for confining the chemical composition arranged with respect to the center of buoyancy so that the attitude of the container when empty is substantially different than the attitude of the container when the compartment is filled.

3,607,104
APPARATUS FOR INTENSIFIED CONTACTING OF PLURAL FLUIDS

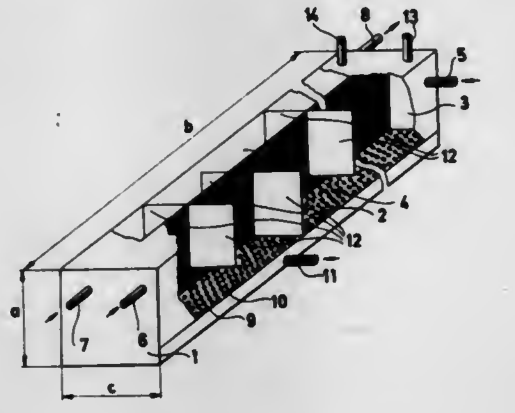
Tibor Blickle, Budapest; Laszlo Balla, Veszprem, and Laszlo Bacs, Budapest, all of Hungary, assignors to Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezete, Veszprem, Hungary

Filed July 29, 1968, Ser. No. 748,404

Claims priority, application Hungary, Aug. 1, 1967, MA-1745

Int. Cl. B01d *11/02, 13/00;* **B01f** *3/04*

U.S. Cl. 23—267 **6 Claims**



Different fluids are fed to equipment having at least two chambers separated by a wall having fine perforations, further preferably also separated spaces. The operation is effected by contacting these streams of different components through the partition wall. Liquids are preferably transformed into foams and solids fluidized during the process.

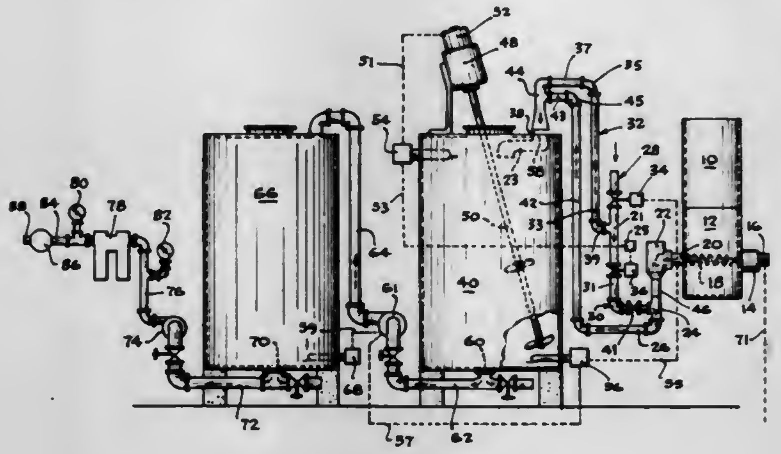
3,607,105
AUTOMATIC SOLVENT ASPIRATED POWDER FEEDER-DISSOLVER

George Reid, Olympia Fields, and William R. Watson, Oak Lawn, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Aug. 22, 1969, Ser. No. 852,358

Int. Cl. B01f *1/00, 5/04*

U.S. Cl. 23—267 R **4 Claims**



A method for dissolving chemical powders in water to make lump-free solutions is afforded by this invention. The invention provides a method and an apparatus whereby water solutions of chemical powders can be easily formed. The method used to accomplish these results consists of the following:

1. Supplying a quantity of water to water supply port.

2. Feeding chemical powders through an outlet and into the water supply port, said water supply port having a supply assembly and a suction assembly fitted with aspirators to prevent backsplash and to draw the chemical powder into the water through the water supply port.

3. Mixing the chemical powders in the water in the water supply port to form a premixed slurry.

4. Discharging the premixed slurry into a mixing tank.

5. Filling a mixing tank and actuating a mixing means and a timer when the tank is filled to form a chemical solution.

6. Transferring the mixed solution to a storage tank by means of a transfer pump.

7. Pumping the chemical solution from the storage tank through a discharge.

The apparatus used to accomplish the above method comprises:

1. A feeding chamber having an outlet.

2. A water supply port, comprising:

A. a suction assembly having ends,

B. a supply assembly having ends,

C. two aspirators adapted to fit said ends of said suction assembly and the supply assembly,

D. an automatic valve positioned in the supply assembly, and

E. a delayed actuated automatic valve positioned between the suction assembly and the supply assembly.

3. A mixing tank capable of holding a chemical solution, comprising:

A. a mixing means for the tank,

B. an upper liquid level sensing means to close the automatic valve and the delayed actuated automatic valve,

C. a lower liquid level sensing means to open said automatic valve and said delayed actuated automatic valve,

D. an inlet adapted to receive said aspirator of said supply assembly of said water supply port, and

E. an outlet.

4. A transfer pump adapted to remove said chemical solution from said mixing tank through the outlet and deenergized by said lower liquid level sensing means of the mixing tank.

5. A storage tank adapted to receive the chemical solution from the transfer pump having a lower liquid level sensing means to actuate said transfer pump and having an outlet.

6. A metering pump being deenergized manually, and having an outlet for discharge of the chemical solution.

3,607,106
APPARATUS FOR CARRYING OUT CONTINUOUS PROCESS HAVING A FIXED PROCESS DURATION WITH INDIVIDUAL REACTANTS AS WELL AS HOMOGENOUS CONCENTRATION CHANGE OF THE REACTION MASS

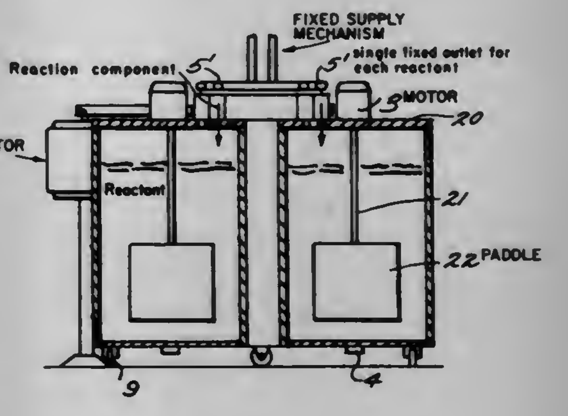
Hartmut Rainier Hetzel, Eichenweg 7, 4047 Dormagen-Horrem, Germany

Filed July 28, 1969, Ser. No. 848,137

Claims priority, application Germany, Aug. 29, 1968, P 17 92 404.8

Int. Cl. C01f *110/2*

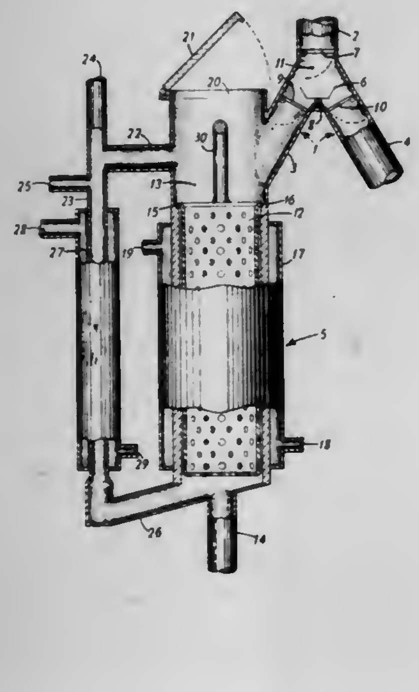
U.S. Cl. 23—269 **4 Claims**



An apparatus is provided for carrying out a reaction process of fixed duration which also requires a homogeneous concentration change of the reaction mass. The apparatus includes a rotatably mounted, vertical, cylindrical container separated into a plurality of cells by radial walls. Stirring means are provided in each cell. Fixed supply means are mounted over the container for continuously supplying reactants during a portion of the rotation to the individual cells. Each cell has an outlet for emptying its contents when reaction is complete.

3,607,107
PLURAL SPENT-REACTOR-FUEL DISSOLVERS HAVING SELECTIVE FEED MEANS

Arnold L. Ayers, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Sept. 4, 1968, Ser. No. 777,933
Int. Cl. B01d *11/02*
U.S. Cl. 23—272.5 **10 Claims**

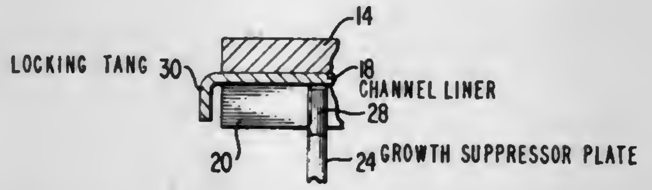


A novel process for the dissolution of spent nuclear reactor fuel, while simultaneously controlling the amount of volatile off-gases evolved during the dissolution, comprises the steps of (a) passing spent nuclear reactor fuel, in regulated amounts, through a dissolvent solution, (b) continuously withdrawing the volatile off-gases which are evolved, (c) withdrawing a portion of the solution of spent nuclear reactor fuel when a predetermined maximum concentration of fuel values is reached in the solution, (d) adding a compensating volume of dissolvent solution while step (c) is being carried out, (e) continuously recirculating the remaining portion of the solution of spent nuclear reactor fuel to the dissolution step, (f) discontinuing steps (c) and (d) when a predetermined minimum concentration of fuel values is reached in the solution, and (g) repeating steps (c)–(f) as the predetermined maximum and minimum fuel values are repeatedly obtained in the solution. In a preferred mode of operation two dissolver systems are employed and fuel to be dissolved is fed to one dissolver system while the other dissolver system is being washed, discharged and readied for another dissolution cycle.

Novel apparatus for carrying out the above-described process comprises one or more dissolving units equipped with means for feeding spent nuclear reactor fuel, in a controlled manner, to a particular member or members of the dissolving units. Each of the dissolving units comprises (a) a fluid-retaining main housing member open at one end and having a fluid inlet means at the opposite end, (b) a fluid-retaining recycle housing member open at one end which open end is connected to the open end of the fluid-retaining main housing member, the opposite end of the fluid-retaining recycle housing member being connected to the opposite end of the fluid-retaining main housing member, (c) means for circulating a dissolvent solution through the fluid-retaining main housing member to the fluid-retaining recycle housing and (d) means for withdrawing a portion of the dissolved fuel solution from the fluid-retaining recycle housing member. A removable perforated basketlike member is inserted in the fluid-retaining main housing member to receive and position the fuel for contact with the dissolvent solution. After dissolution is complete the basketlike member containing the leached hulls may be removed and replaced with an empty basket for another dissolution cycle. In a preferred embodiment, two dissolution units are employed.

3,607,108
SEED HOLDER AND GROWTH SUPPRESSOR ASSEMBLY FOR THE HYDROTHERMAL SYNTHESIS OF QUARTZ

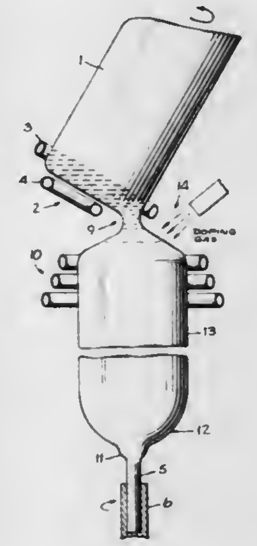
David Wayne Gehres, Carlisle, Pa., assignor to Aiken Industries, Inc., c/o P. R. Hoffman Company, Division of Aiken Industries, Inc., Carlisle, Pa.
Filed Oct. 26, 1967, Ser. No. 678,443
Int. Cl. B01j *17/22*
U.S. Cl. 23—273 R **6 Claims**



An assembly used for holding quartz seed plates and suppressing growth used in a hydrothermal process of synthetically growing quartz includes a pair of spaced and facing channels for holding flat ends of seed plates and a number of slidable growth suppressor plates held in the channels by tips thereon and extending transverse to the plane of the seed plates. The channels may have removable liners and may be double channels when there are multiple vertical tiers of seeds in an autoclave. A tang on the channel linear prevents the growth suppressor and seed plates from falling out of the channel.

3,607,109
METHOD AND MEANS OF PRODUCING A LARGE DIAMETER SINGLE-CRYSTAL ROD FROM A POLYCRYSTAL BAR

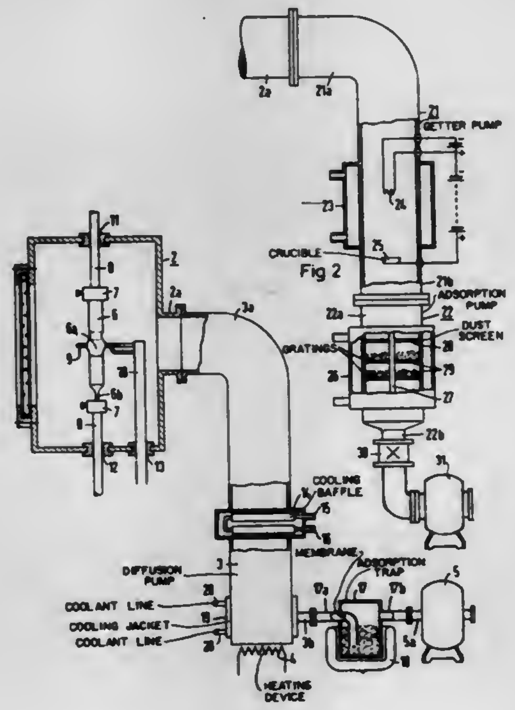
Emil R. Capita, 7020 Kennedy Blvd., North Bergen, N.J.
Filed Jan. 9, 1968, Ser. No. 696,560
Int. Cl. B01j *17/10*
U.S. Cl. 23—273 SP **2 Claims**



A method and means for producing a large diameter monocrystalline or single-crystal rod of semiconducting material from a polycrystalline bar comprising the supporting of the bar at an angle with the vertical and the heating of the lower end to a molten state by means of a high-frequency induction coil disposed thereabout. The rod may be formed by passing a monocrystalline seed through a space in the induction coil to contact the molten end of the bar forming a fused junction and retracting the seed downwardly while rotating it to draw the molten bar material between the coils out of the heated area to form a recrystallized rod. An additional heating coil may be positioned beneath the angularly disposed bar and heating coil to provide a slow and controlled heat recession during the solidification of the rod and the rod may be gas-doped by introducing the gas into the area of the molten zone.

3,607,110
VACUUM APPARATUS FOR EXCLUDING CARBON IMPURITIES FROM A SILICON BODY

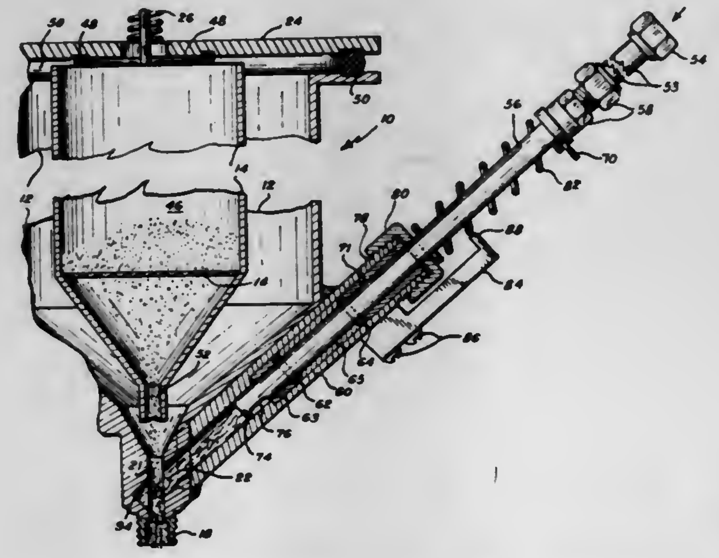
Ernst Haas, Erlangen; Joachim Martin, Erlangen; Konrad Reuschel, Pretzfeld; Norbert Schink, Erlangen, and Carl-Heinz Vogel, Belecke-Mohne, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed Mar. 11, 1968, Ser. No. 712,074
Claims priority, application Germany, Mar. 11, 1967, S 108776
Int. Cl. B01j *17/10*
U.S. Cl. 23—273 SP **13 Claims**



Apparatus comprising means for capturing carbon-containing vapor emanating from carbon-containing substances in the high vacuum environment and in the equipment for producing the high vacuum in the environment, and adsorbent means for adsorbing the carbon-containing vapor.

3,607,111
VERNEUIL CRYSTALLIZER WITH POWDER BY-PASS MEANS

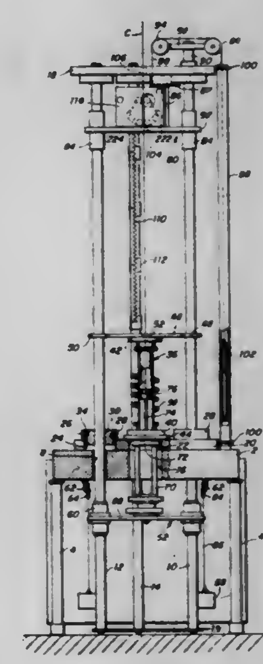
Joseph A. Adamski, Framingham; Walter B. Jackson, Waltham, and Robert D. Maher, Dorchester, all of Mass.
Filed Mar. 18, 1969, Ser. No. 808,124
Int. Cl. B01j *17/24*
U.S. Cl. 23—273 V **3 Claims**



A powder-dispensing assembly for use in combination with a fusion-type crystal-growing furnace in which a carrier gas is used for entraining the powder feed constituents for transportation to the crystal-growing zone thereof. The assembly includes a funnel-shaped powder container positioned an outer container and a means selectively movable for feeding the carrier gas to either the powder container to affect powder fall or to the crystal-growing furnace while simultaneously sealing the powder container to prevent powder fall.

3,607,112
ENDLESS BELT SEED CRYSTAL GRIPPING AND PULLING MEANS

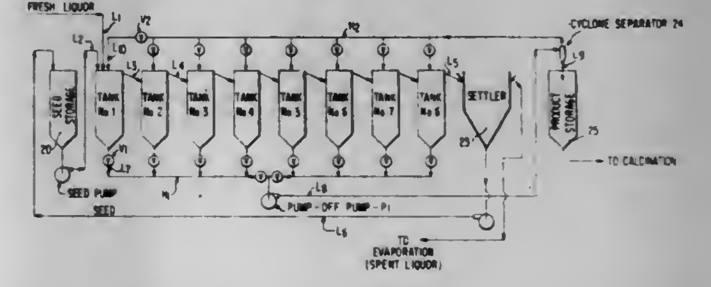
Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.
Filed Mar. 24, 1969, Ser. No. 809,731
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP **27 Claims**



Crystal-growing apparatus comprising a crystal-pulling mechanism in the form of a carriage mounted for vertical movement relative to a melt-containing crucible, a pair of endless belts carried by the carriage and arranged to grip an elongate crystalline body issuing from the melt, and means for moving either the carriage or the endless belts to effect pulling of the crystalline body.

3,607,113
CONTINUOUS PRECIPITATION OF ALUMINA HYDRATE

Richard Henry Featherston, Benton, Ark., assignor to Reynolds Metals Company, Richmond, Va.
Division of Ser. No. 513,518, Dec. 13, 1965, abandoned. Filed Feb. 24, 1969, Ser. No. 816,456
Int. Cl. B01d *9/02*
U.S. Cl. 23—273 **4 Claims**



This invention relates to a process for the continuous precipitation of alumina hydrate from aluminate liquors. More particularly, the invention relates to an improved process for continuously precipitating and separating from aluminate liquors, alumina hydrate particles characterized by spherical shape, high density and such coarseness that not less than 85 percent by weight of the product is plus 200 mesh size.

3,607,114

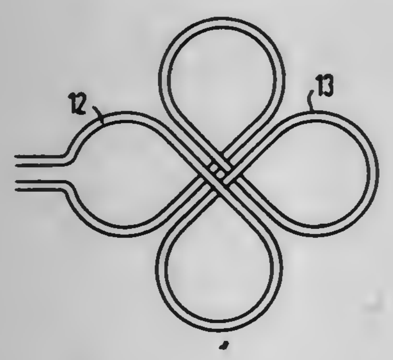
APPARATUS FOR PRODUCING A MONOCRYSTALLINE ROD, PARTICULARLY OF SEMICONDUCTOR MATERIAL

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 713,705, Mar. 18, 1968, Pat. No. 3,498,847. Filed Oct. 13, 1969, Ser. No. 870,879

Int. Cl. B01j *17/18;* **H05b** *9/02*

U.S. Cl. 23—273 SP **2 Claims**



Induction heating coils in the configuration of three-and-four-leaf clovers useful in the method of producing a rod of monocrystalline material includes melting an end of a crystalline supply rod the material that is brought in contact with one end of a substantially vertically disposed crystalline rod-shaped starting body of the material supported at the other end thereof, rotating the starting body about the axis thereof and thickening the one end thereof with material melted from the supply rod into a platform surmounted by a melt of the material, dipping a monocrystalline seed crystal of the material into the melt and pulling therewith a rod of monocrystalline material crystallizing from the melt substantially vertically out of the melt while gradually melting the supply rod further to replenish the melt on the platform.

3,607,115

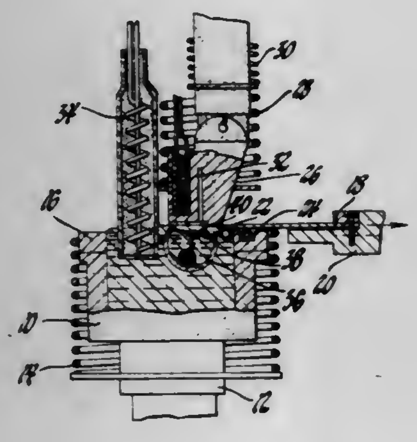
CRYSTAL PULLING FROM MOLTEN MELTS INCLUDING SOLUTE INTRODUCTION MEANS BELOW THE SEED-MELT INTERFACE

Carl E. Bleil, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1969, Ser. No. 872,042

Int. Cl. B01j *17/00*

U.S. Cl. 23—273 SP **6 Claims**



An apparatus and method are disclosed for growing crystals from a melt of a molten solvent metal that is saturated with a solute. Heat is withdrawn through a seed contacting the surface of the melt to precipitate the solute onto said seed at the seed-melt interface. The seed is pulled away from the melt at a rate commensurate with the precipitation rates. Simultaneously, more solute is dissolved into the melt from a solute source in the melt beneath the growth interface while maintaining a close source-growth interface spacing substantially constant.

3,607,116

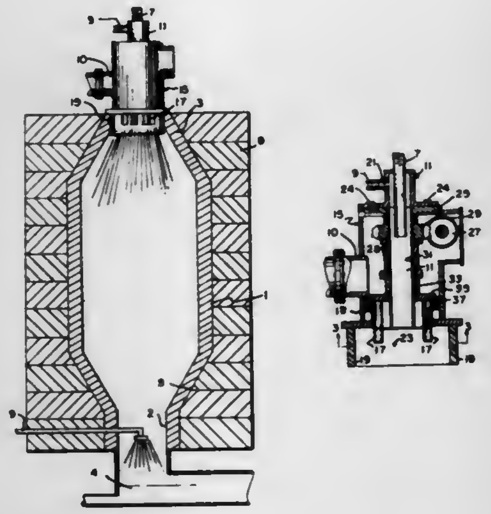
FURNACE FOR CONTINUOUS FIRING OF PHOSPHORS

Martha J. B. Thomas, Winchester; Ernest A. Dale, Hamilton, and William A. Finch, Marblehead, all of Mass., assignors to Sylvania Electric Products Inc.

Filed Jan. 2, 1970, Ser. No. 258

Int. Cl. F27b *15/10;* **C09k** *1/04;* **F23m** *9/04*

U.S. Cl. 23—277 R **4 Claims**



A furnace for continuous firing and recovery of fluorescent material including a rotating burner which generates a flame into which the fluorescent material is introduced. The fluorescent material is transported by gaseous stream into a chamber where it is mixed with a fuel, and the mixture is then forced through rotating nozzles, located at the top of the furnace, where the fuel burns and fires the fluorescent material.

3,607,117

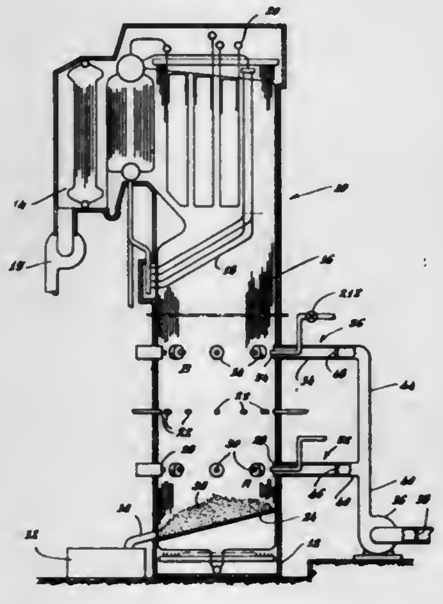
BLACK LIQUOR RECOVERY BOILER COMBUSTION AND SAFETY CONTROL SYSTEM

James Marlin Shaw, Gardendale; Roy Roger Herbst, Birmingham, and Fred Endsley Fuller, Birmingham, all of Ala., assignors to Rust Engineering Company, Birmingham, Ala.

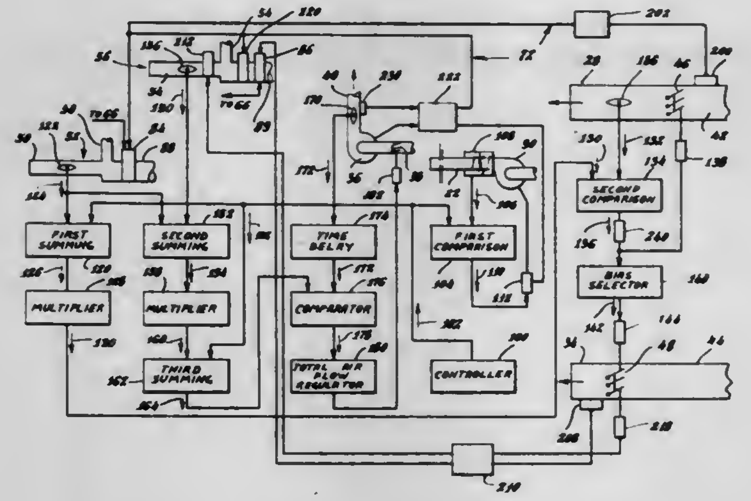
Filed July 28, 1969, Ser. No. 845,353

Int. Cl. B01j *6/00;* **C01b** *17/22*

U.S. Cl. 23—277 **13 Claims**



Recovery boiler operation is initiated by a control system responsive to selected preliminary conditions in the boiler. Once the boiler is in operation, a combustion system controls the total amount of air, black liquor, primary fuel and secondary fuel supplied to the recovery boiler to reduce explosion hazards. Actual primary and secondary fuel flow rates are added and a fuel-air demand signal is generated in proportion to the amount of air required to fully combust both fuels. A black liquor demand signal is added to the fuel-air demand signal to produce a total air demand signal which is compared to the actual rate of flow of combustion air to the boiler. A forced draft controller signal indicative of any difference between the total air demand and the actual airflow is applied to a circuit for controlling a forced draft fan to adjust the total airflow delivered to the boiler, which air is divided into primary air supplied to the reduction zone of the boiler and secondary air supplied to the oxidation zone. The flow of primary air to the reduction zone is automatically controlled in response to black liquor and primary fuel flow rates. The flow of secondary air to the combustion zone is selected automatically in response to the rate of flow of primary air. In the event certain boiler operation safety limits are exceeded, safety circuitry overrides the combustion system to initiate safety procedures which return the boiler operation to normal or shut down the boiler.



3,607,118

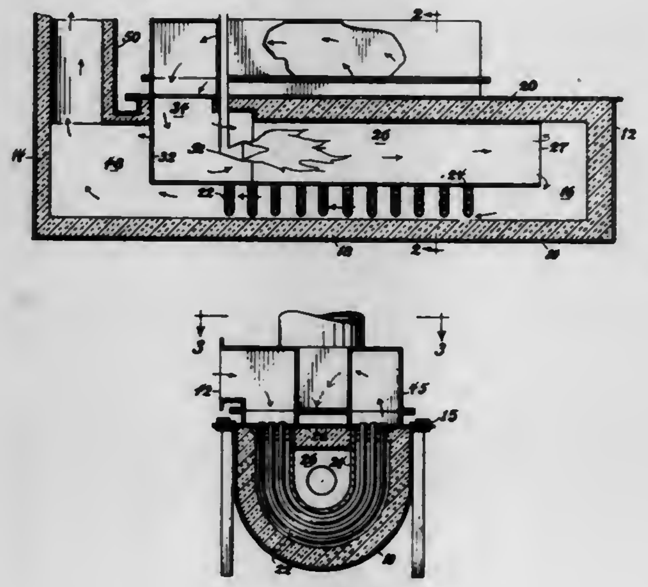
FUME INCINERATOR

Philip C. Johnson, Cuba, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed July 3, 1969, Ser. No. 838,859

Int. Cl. F23g *7/06*

U.S. Cl. 23—277 C **2 Claims**



A fume incinerator in which gases containing harmful or obnoxious fumes are preheated before being directed into a combustion chamber. The preheated gases containing air for combustion are then thoroughly mixed with fuel and burned. Upon combustion of the fuel and gas mixture the fumes are subjected to heat therefrom and completely eliminated from the effluent gases.

3,607,119

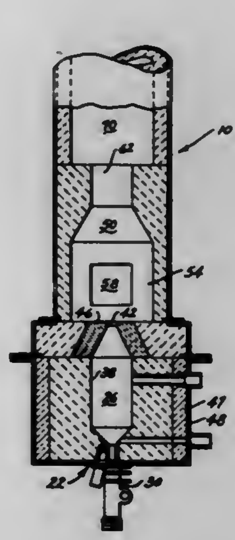
APPARATUS FOR TREATING GASES

John D. Nesbitt, Toledo, and Klaus H. Hemsath, Sylvania, both of Ohio, assignors to Midland-Ross Corporation, Toledo, Ohio

Filed Sept. 30, 1969, Ser. No. 862,249

Int. Cl. F23g *7/06*

U.S. Cl. 23—277 C **9 Claims**



A combustion apparatus for thermally treating gases which are difficult to handle by mechanical compressors or pumps. The apparatus comprises an internal combustion burner capable of producing a high-temperature and high-velocity jet stream of gases which is directed into an adjacent coaxially aligned chamber where it entrains, mixes with and propels a low-velocity stream of gases to be treated which enters the chamber through an opening in the enlarged inlet end of the chamber. The resultant gas stream is propelled through a constricting outlet section of the chamber having a cylindrical throat coaxially aligned with the jet stream. The relative location and size of the throat section are established so that the natural dispersion angle of the jet stream intersects the chamber walls adjacent the inlet end of the throat section or between the inlet and outlet ends of the throat section. A treating chamber is provided adjacent the outlet of the throat section.

3,607,120

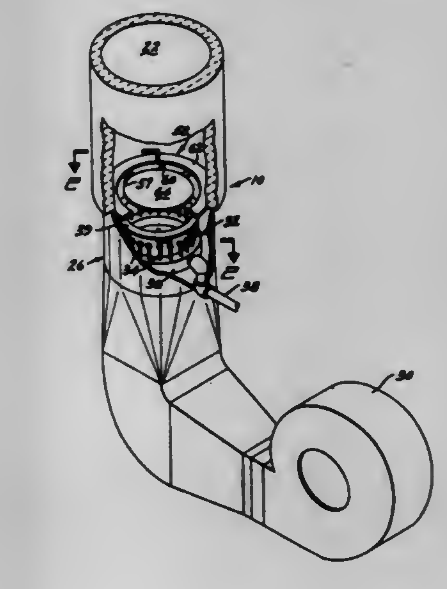
GAS-TREATING APPARATUS

John D. Nesbitt, Toledo, and Klaus H. Hemsath, Sylvania, both of Ohio, assignors to Midland-Ross Corporation, Toledo, Ohio

Filed Sept. 29, 1969, Ser. No. 861,714

Int. Cl. F23g *7/06*

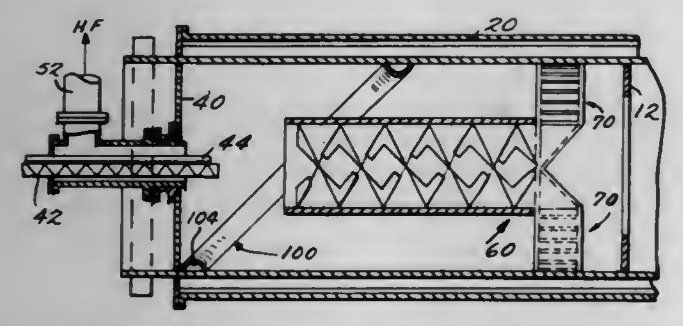
U.S. Cl. 23—277 C **22 Claims**



A gas-treating apparatus for causing a nonhomogeneous stream of gases to flow through a casing and to become homogeneously mixed in a relatively short span of time and space. A baffle extends laterally from the inner surface of the casing partially across the casing so that the outside streamlines of the forward flow do not attach readily to the inner surface of the casing. The inner edge of the baffle defines an opening which has an area and shape that correspond with the cross-sectional area and shape of the casing.

3,607,121
ROTARY FURNACE HAVING RECYCLE PROVISION

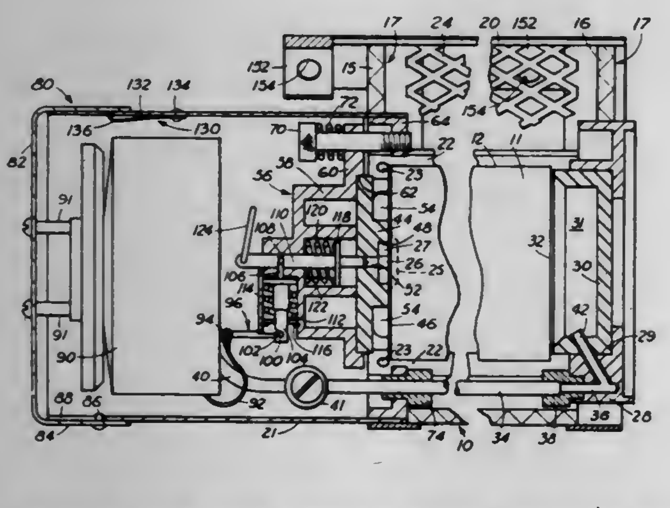
William E. Watson, Mount Tabor, and Richard P. Troeger, Chatham, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Dec. 19, 1969, Ser. No. 886,613
Int. Cl. B01j *6/00;* **F27b** *7/16*
U.S. Cl. 23—279 **18 Claims**



A rotary furnace apparatus, especially useful for carrying out a reaction of fluorspar and sulfuric acid, is provided with a mechanical recycling means within the furnace itself. The recycling means is fixed to an inner shell portion of the furnace so that it rotates with rotational movements applied to the furnace shell by a single driving means. In one embodiment, the recycling means is in the form of a screw conveying device having a cylindrical tube mounted coaxially within the furnace shell, and with two spiral paths defined within the cylindrical tube for receiving and conveying residue material from a downstream area within the furnace shell to an upstream area near the inlet end of the furnace. The screw conveyor is provided with a pair of scoops to pick up residue material and to deposit the material in controlled quantities into the two spiral paths defined in the conveyor. In another embodiment, the recycling means is in the form of an open-ended helical passageway which follows the inner cylindrical wall of the furnace shell from an area of residue pick up to the inlet end of the furnace.

3,607,122
GAS GENERATOR HOUSING

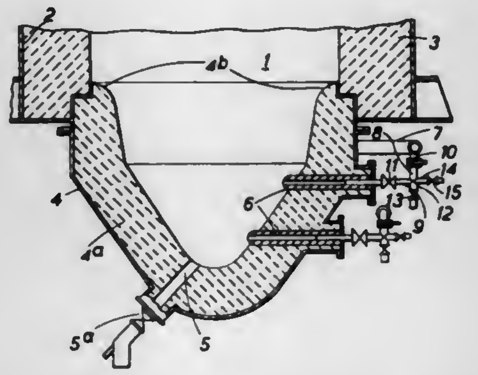
Vladimir Hwoschinsky, Buffalo, N.Y., assignor to A-T-O Inc., Cleveland, Ohio
Filed Jan. 14, 1969, Ser. No. 791,113
Int. Cl. B01j *7/00;* **A62b** *21/00*
U.S. Cl. 23—281 **10 Claims**



A housing for encasing a gas generator comprising a body formed of a metallic mesh having interconnected crossbars providing heat vent passages therebetween. Bearing support members of high-temperature plastic material are interposed between opposite ends of the generator and the housing. A mounting shield is spaced above the housing to deflect rising heat and direct it outwardly through the vent passages in the housing body.

3,607,123
BASEPLATE ARRANGEMENT

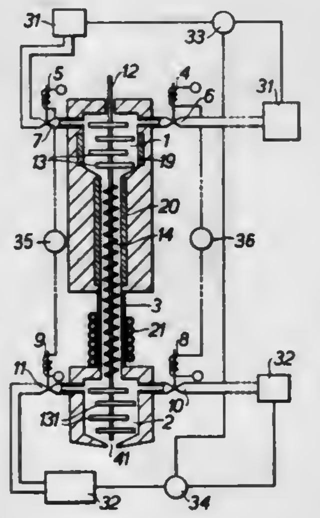
John Edward Russell, Low Worsall, Yarm, and Henry Garth Hudson, Stockton-on-Tees, both of England, assignors to British Titan Products Company Limited, Billingham, England
Filed Jan. 11, 1968, Ser. No. 697,185
Claims priority, application Great Britain, Jan. 16, 1967, 2319/67
Int. Cl. B01j *1/00;* **F27b** *15/10;* **C01g** *23/02*
U.S. Cl. 23—284 **7 Claims**



The invention relates to a baseplate for a fluidized bed reactor the baseplate being perforated to hold inlet pipes for admitting gas into the reactor, the inlet pipe being provided with special means to enable loose obstructions to be removed therefrom. Specifically, the inlet pipe may be connected to a gas supply system having a valve located in the axial line of the inlet pipe, the valve being adapted to open to admit a rod therethrough and into the inlet pipe. The inlet pipe may be in the form of an elongated based plug having an outer surface tapered towards the end from which the gas is to issue, the inlet pipe being inserted through a correspondingly tapered perforation in the baseplate. The invention also relates to the use of such a baseplate in a fluidized bed reactor.

3,607,124
MULTISTAGE MIXING DEVICES WITH TIME STAGGERED INPUTS

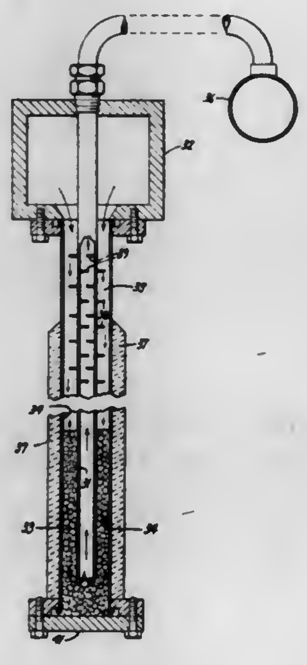
Richard Zippel, 12-17, Bremer Strasse, 344 Eschwege, Germany
Claims priority, application Germany, Feb. 2, 1968, P 17 29 539.5
Filed Jan. 21, 1969, Ser. No. 792,287
Int. Cl. B01j *4/02*
U.S. Cl. 23—285 **1 Claim**



A device for mixing multicomponent plastic materials prepared from fast-reacting prepolymers comprises at least two mixing chambers with stirring devices, the chambers communicating with each other for material to flow through the chambers in succession, components of the material and, if desired, additives being fed to the chambers through valves, of which those of the second chamber are operable with a delay relatively to those of the first chamber.

3,607,125
REFORMER TUBE CONSTRUCTION

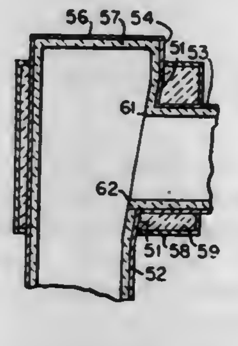
Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company
Filed Dec. 30, 1968, Ser. No. 787,971
Int. Cl. B01j *9/04;* **F28d** *7/12;* **F28f** *1/00*
U.S. Cl. 23—288 M **5 Claims**



Reformer tube construction is described within which both the desired endothermic catalyzed chemical reaction and heat transfer from the reaction products to the incoming reactants are accomplished. This reformer tube construction eliminates the need for a hot manifold and comprises (in a coaxial tube arrangement) a centrally located product tube and an outer composite wall spaced therefrom with catalyst occupying the annular space therebetween. The composite outer wall combines an inner impermeable metal tube with an outer protective refractory casing.

3,607,126
FLOW-DIRECTING DEVICE

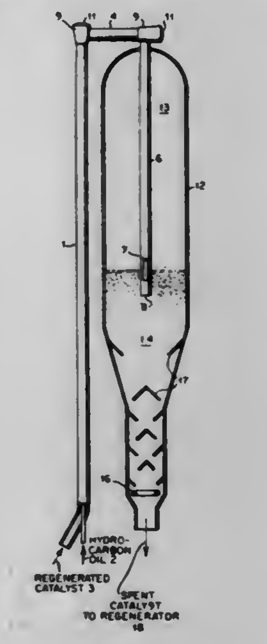
Robert W. Pfeiffer, Bronxville, N.Y., assignor to Pullman Incorporated, Chicago, Ill.
Continuation-in-part of application Ser. No. 719,052, Apr. 5, 1968, now Patent No. 3,492,221. This application Jan. 23, 1970, Ser. No. 5,169
Int. Cl. B01j *9/16;* **F16l** *55/00, 59/16*
U.S. Cl. 23—288 E **7 Claims**



A hollow, truncated cone-shaped device, having an inlet in the smaller diameter area of the cone and one or more outlets in the conical surface.

3,607,127
APPARATUS FOR CONVERSION OF HYDROCARBONS

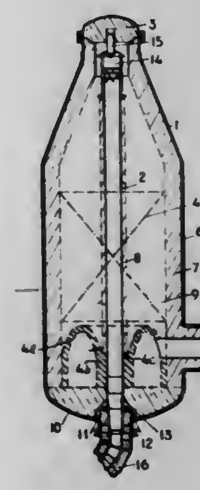
Robert W. Pfeiffer, Bronxville, N.Y., assignor to Pullman Incorporated, Chicago, Ill.
Continuation-in-part of application Ser. No. 719,052, Apr. 5, 1968, now Patent No. 3,492,221, dated Jan. 27, 1970. This application Jan. 23, 1970, Ser. No. 5,170
Int. Cl. B01j *9/16;* **F16l** *55/00, 59/16*
U.S. Cl. 23—288 E **9 Claims**



An apparatus for the catalytic conversion of hydrocarbons at short contact times, the apparatus including a transfer line reactor having a vertical riser portion, a crossover portion and a downcomer portion.

3,607,128
AXIAL FLOW REACTION TOWER

Paul Mevenkamp, Lichtendorf; Hans-Dieter Marsch, Dortmund, and Herbert Biskup, Dortmund-Aplerbeck, all of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany
Continuation-in-part of application Ser. No. 677,667, Oct. 24, 1967, now abandoned. This application Apr. 2, 1970, Ser. No. 25,027
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 **2 Claims**



An axial flow delayed combustion furnace or reaction tower for synthesis gas production for pressures greater than 10 atm., and temperatures greater than 700° C., is provided with an inner thermal lining, an arch for supporting the catalyst, the arch being of ring shape and such that a stack is disposed at the center thereof through which the gas-conducting pipe extends. The lower end of the gas pipe is mounted in a reinforced collar on the floor of the reaction tower, and is connected to the tower floor through a sleeve-shaped expansion part.

3,607,129

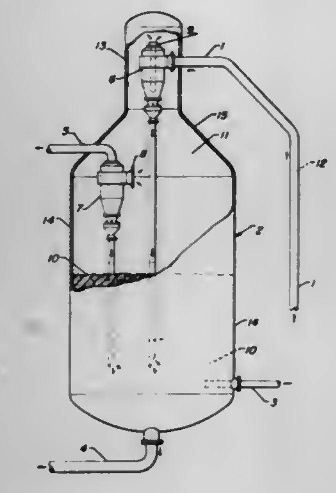
APPARATUS FOR CATALYTIC CRACKING

Don B. Carson, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 13, 1970, Ser. No. 27,784

Int. Cl. B01j *9/20*

U.S. Cl. 23—288 S **4 Claims**



Apparatus comprising a riser cracking reaction zone and a reaction zone vessel, said vessel having disposed therein a first and second particle separation means, said second particle separation means is connected to said riser reaction zone and said first particle separation means is connected to an outlet stream contained in said reaction zone vessel.

3,607,130

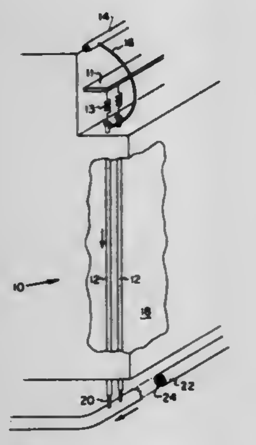
REFORMER FURNACE

Arthur C. Worley, Morristown, and Frank A. Devine, Westfield, both of N.J., assignors to Esso Research and Engineering Company

Filed Sept. 24, 1969, Ser. No. 860,611

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 M **9 Claims**



A tubular reformer furnace is provided with refractory lined outlet headers, (inlet headers may be lined) said headers being external to the furnace box in order to eliminate excessive thermal growth of the headers, and relatively small diameter unlined tubing is provided for connecting the inlet header with the tubes in order to absorb the differential thermal expansion between the tubes and headers, the small diameter tubing having more than one bend which exceeds 180°.

3,607,131

CATALYTIC AIR PURIFIER

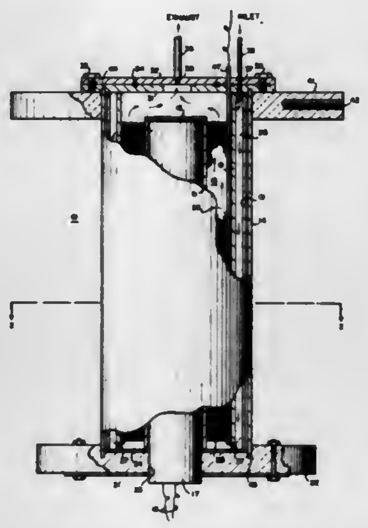
Frederick W. Williams, Oxon Hill, Md., and John E. Johnson, Annandale, Va., assignor to the United States of America as represented by the Secretary of the Navy.

Filed Feb. 5, 1969, Ser. No. 796,694

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 R **2 Claims**

A catalytic air purifier which makes use of a heater positioned along the axis of the device coaxially arranged within surrounding chambers through which the gaseous medium passes. The surrounding chambers are assembled without any screw-threaded joints which prevents galling due to the heat and contact with the gaseous medium or the surrounding atmosphere.



3,607,132

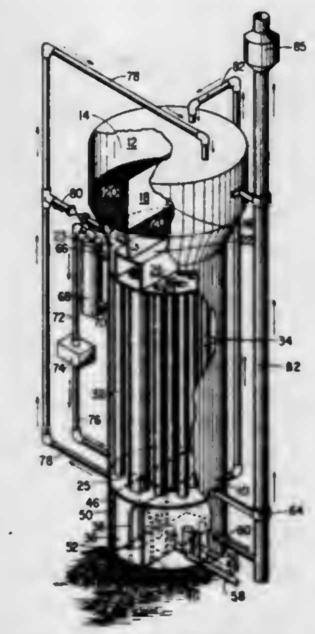
VERTICAL SULFUR RECOVERY PLANT

Lamar F. Sudduth, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Sept. 5, 1969, Ser. No. 855,473

Int. Cl. B01j *9/04;* **C01b** *17/04*

U.S. Cl. 23—288 K **4 Claims**



Apparatus for recovery of sulfur from hydrogen sulfide is described in which the catalyst chambers, condensing and boiler sections, and liquid-gas separator compartments are serially arranged. A separate condensing section is provided for each of the catalyst chambers while sulfur produced in the boiler is condensed in the second pass tubes comprising the boiler section, and flows into a separator compartment. Liquid sulfur seals connect the separator compartments, and liquid sulfur is discharged from one of them.

3,607,133

APPARATUS FOR REMOVING CARBON MONOXIDE FROM ROOM AIR AND EXHAUST GAS

Osamu Hirao, Tokyo, and Tsutomu Kato, Hamamatsu-shi, both of Japan, assignors to Kachita Co., Ltd., Hamamatsu-shi, Shizuoka-ken, Japan

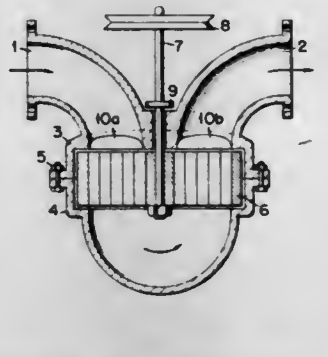
Filed Oct. 20, 1969, Ser. No. 867,494

Claims priority, application Japan, Oct. 23, 1968, 43/76805

Int. Cl. B01j *9/06;* **F01n** *3/16*

U.S. Cl. 23—288 F **10 Claims**

Apparatus for removing carbon monoxide continuously and efficiently from room air or automobile exhaust using an oxidizing catalyst containing a desiccative substance such as natural zeolite, active silica or active alumina includes a casing having a gas inlet and outlet on its lid section, and a slowly rotatable catalyst containing vessel of flat cylindrical shape closely disposed on the inner periphery of the casing. The air or gas to be purified passes over the catalyst twice, in opposite directions.



3,607,134

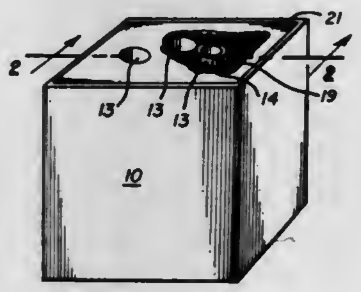
SAMPLE HOLDER FOR MAINTAINING BLOOD SAMPLES AT A PRESELECTED TEMPERATURE

Delbert D. McIntyre, 1461 South Valentine Way, Lakewood, Colo.

Filed Oct. 2, 1968, Ser. No. 764,432

Int. Cl. B01l *3/00*

U.S. Cl. 23—292 **9 Claims**



A portable thermal holder for maintaining articles at preselected temperatures is particularly suitable for maintaining blood samples near body temperatures for blood coagulation tests. The holder includes a thermally insulated heat-absorbent body portion having article support means into which articles are placed. In forming the holder a curable material is mixed with a quantity of low heat-conductive granules and poured into a low heat-conductive container. In the container, the lighter granules rise to the top and form a layer of insulation, the curable material hardening to form the heat-absorbent body portion. An external heat source or a self-contained heating unit establishes the desired temperature of the heat-absorbent body portion.

3,607,135

FLASH EVAPORATING GALLIUM ARSENIDE

Reinhard K. Gereth, Heilbronn, Germany; Edward M. Hull, Lagrangeville, and Thomas B. Light, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

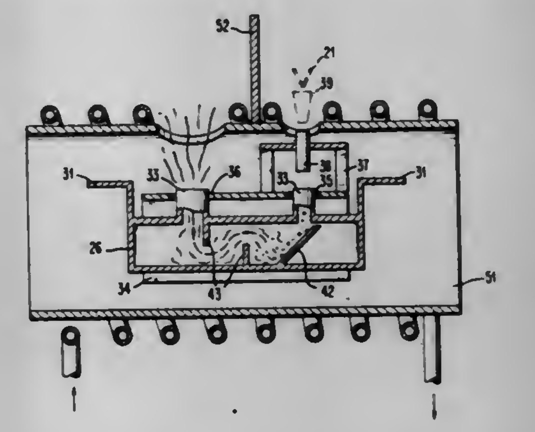
Filed Oct. 12, 1967, Ser. No. 674,867

Int. Cl. B01d *7/00;* **C01b** *29/00*

U.S. Cl. 23—294 **2 Claims**

A process and apparatus for producing thick films of a material, containing a number of constituents such as compounds, physical mixtures and alloys of material, by flash evaporation is described. Specifically, high feed rates of the material, gallium arsenide, for example, to be flash evaporated are required for depositing uniform, thick films on a substrate and such high feed rates are made possible by preventing clogging of the feed apparatus by the feed materials.

Clogging is prevented by the use of a guide funnel and guide tube arrangement which are disposed one above the other in coaxial vertical alignment with an aperture in a box source heater, the lower extremity of the guide tube is vertically displaced from the aperture a distance sufficient to maintain the temperature of the guide tube below the decomposition or melting temperature of the material but at a temperature in excess of the condensation temperature of the more volatile constituent of the material being evaporated; arsenic in the instance where gallium arsenide is being evaporated.



3,607,136

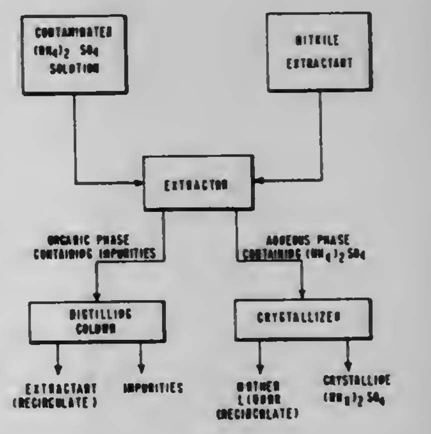
RECOVERY OF AMMONIUM SULFATE

Robert A. Smiley, Wilmington, Del., and John A. Vernon, Haddonfield, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 15, 1969, Ser. No. 850,435

Int. Cl. B01d *11/04, 9/02;* **C01c** *1/24*

U.S. Cl. 23—299 **5 Claims**


CONTAMINATED $(NH_4)_2SO_4$ SOLUTION
NITRILE EXTRACTANT
EXTRACTOR
ORGANIC PHASE CONTAINING IMPURITIES
AQUEOUS PHASE CONTAINING $(NH_4)_2SO_4$
DISTILLING COLUMN
CRYSTALLIZER
EXTRACTANT (RECIRCULATE)
IMPURITIES
MOTHER LIQUOR (RECIRCULATE)
CRYSTALLINE $(NH_4)_2SO_4$

Contacting an aqueous solution of ammonium sulfate contaminated with organic solvent-soluble impurities with a liquid organic nitrile in order to extract impurities from the aqueous solution, and recovering crystalline ammonium sulfate.

3,607,137

METHOD OF AVOIDING STRAIN IN PHASE TRANSITIONS OF SINGLE CRYSTALS

Toshio Inoguchi; Ichihiko Niwa, and Katsuro Nakazawa, all of Osaka, Japan, assignors to Hayakawa Denki Kogyo Kabushiki Kaisha, Osaka, Japan

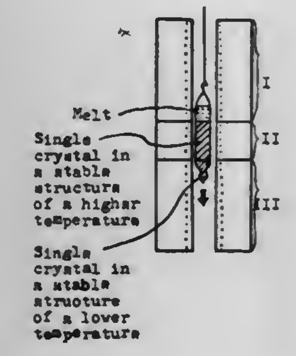
Filed Nov. 17, 1967, Ser. No. 683,896

Claims priority, application Japan, Nov. 18, 1966, 41/75878

Int. Cl. B01j *17/04;* **C01g** *3/04*

U.S. Cl. 23—296 **7 Claims**

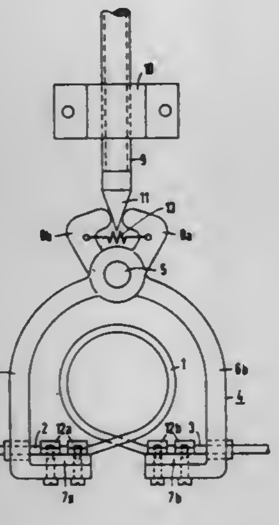
Method for growing crystals of inorganic metal salts from a melt which comprises cooling a single crystal of an inorganic metal salt having at least one solid-solid transition point in a stable structure of a higher temperature in such a manner that the crystal passes through the transition point from an end of the crystal to another end of the same to obtain the corresponding single crystal in a stable structure of a lower temperature, the transition interface being at such a distance from the solid-liquid interface that the strain caused by the solid-solid transition does not exert any influence on the solid-liquid interface.


Melt
Single crystal in a stable structure of a higher temperature
Single crystal in a stable structure of a lower temperature
I
II
III

3,607,138

METHOD AND DEVICE FOR CRUCIBLE-FREE FLOATING-ZONE MELTING USING A VARIABLE-DIAMETER HEATING COIL

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Apr. 19, 1968, Ser. No. 722,600
Claims priority, application Germany, Apr. 21, 1967, S 109450
Int. Cl. H05b ***9/02;*** **B01j** ***17/18***
U.S. Cl. 23—301 SP **6 Claims**



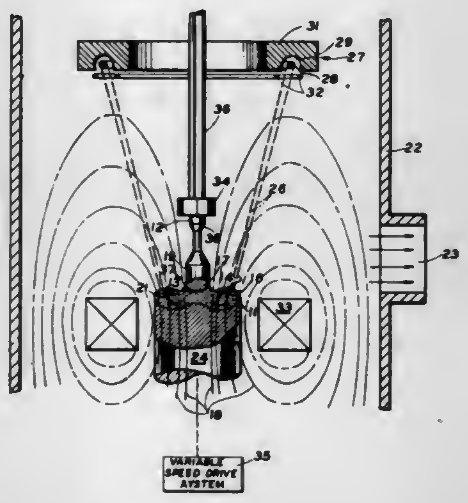
Method of floating-zone melting includes surrounding a crystalline rod with an annular induction coil of given diameter at an end of the rod having a transition portion tapering outwardly from a seed crystal of considerably smaller thickness than that of the rod, energizing the coil to inductively heat the rod end to molten temperature, and relatively displacing rod and coil along the transition portion and simultaneously gradually increasing the coil diameter. Device for carrying out the foregoing method includes an induction coil of flexible material and a mechanical adjusting device actuable for varying the diameter of the coil.

3,607,139

SINGLE CRYSTAL GROWTH AND DIAMETER CONTROL BY MAGNETIC MELT AGITATION

Charles W. Hanks, Orinda, Calif., assignor to Air Reduction Company, Incorporated, New York, N.Y.
Filed May 2, 1968, Ser. No. 726,018
Int. Cl. B01j ***17/18***
U.S. Cl. 23—301 SP **9 Claims**

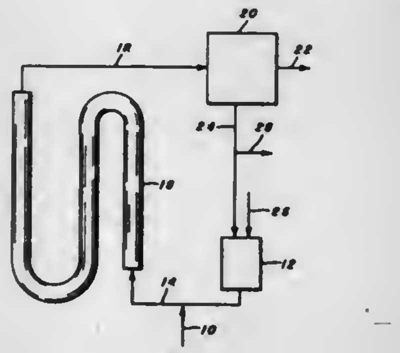
A method and apparatus are described for growing a single crystal from a molten pool formed of crystalline material, such as silicon and super alloy metals. Growth of the single crystal is controlled by controlling the thermal pattern, in the molten pool from which the product is grown, through variation in the relative rotation between the molten pool and a magnetic field.



3,607,140

PREPARATION OF ALUMINA OF IMPROVED PURITY BY IRON REMOVAL

Frank E. Miller, Caseyville, Ill., and James L. Martine, Dalkeith, Australia, assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Nov. 19, 1968, Ser. No. 777,113
Int. Cl. B01d ***9/02;*** **C01f** ***7/14***
U.S. Cl. 23—301 R **15 Claims**



Continuous seeding of a flowing stream of sodium aluminate and with alumina hydrate to precipitate a limited amount of alumina hydrate which carries with it most of any iron and other impurities contained in said stream. The process results in an alumina of improved purity subsequently precipitated from said stream.

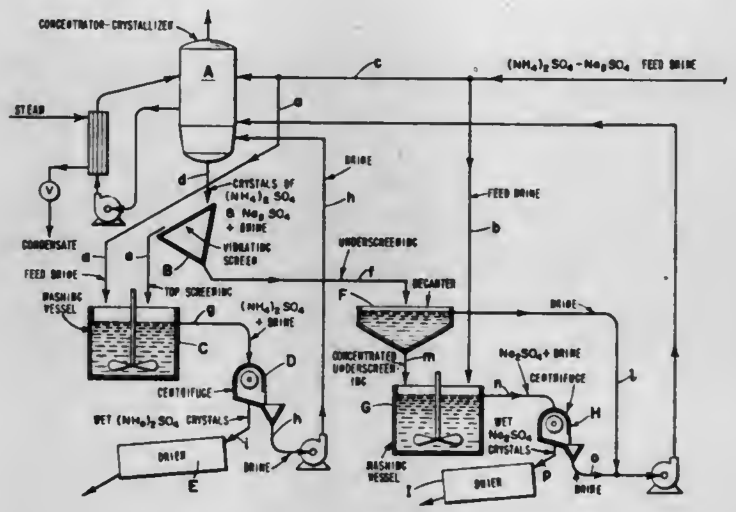
3,607,141

PROCESS FOR THE RECOVERY AND FOR THE SEPARATION OF PURE SODIUM SULFATE AND PURE AMMONIUM SULFATE FROM AQUEOUS SOLUTIONS THEREOF

Antonio Montagna, Mestre, Venezia, and Alberto Scarfi, Siracusa, both of Italy, assignors to Societa' Edison, Milan, Italy
Continuation of application Ser. No. 493,100, Oct. 5, 1965, now abandoned. This application Apr. 29, 1969, Ser. No. 824,729. Claims priority, application Italy, Oct. 6, 1964, 21642/64
Int. Cl. C01c ***1/24;*** **C01d** ***5/00***
U.S. Cl. 23—301 **8 Claims**

Finely ground Na_2SO_4 seed crystals are introduced to an aqueous solution which is concentrated at a temperature greater than 60° C. to produce a first fraction consisting of

ammonium sulfate with a minor amount of sodium sulfate, and a second fraction consisting of a predominant amount of sodium sulfate with a minor amount of ammonium sulfate. The respective fractions are then washed to reduce the sulfate in minor amount.

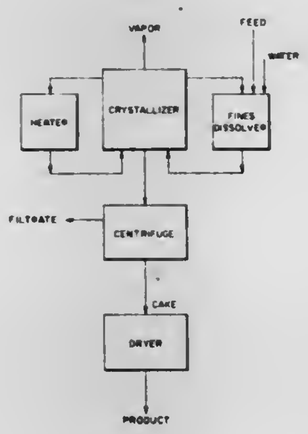


3,607,142

MANUFACTURE OF CRYSTALLINE POTASSIUM PEROXYDIPHOSPHATE

Paul R. Mucenieks, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 688,525, Dec. 6, 1967. This application Dec. 4, 1969, Ser. No. 870,479
Int. Cl. B01j ***17/04;*** **C01b** ***15/16***
U.S. Cl. 23—302 **6 Claims**

FLOW DIAGRAM OF THE CRYSTALLIZATION PROCESS



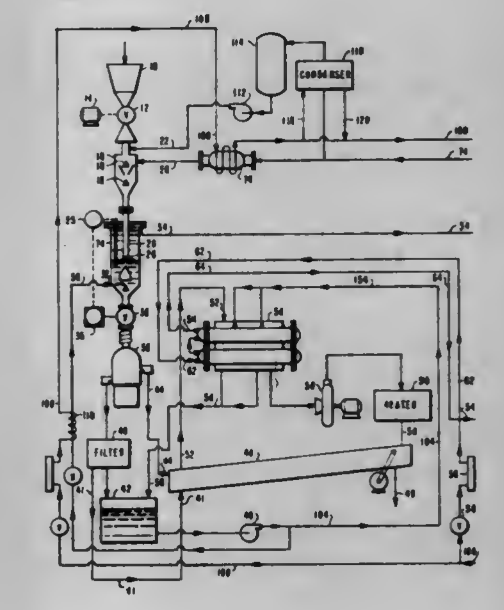
Potassium peroxydiphosphate ($K_4P_2O_8$) is prepared in non-hygroscopic, crystalline form, by evaporating water from the aqueous solution of product, potassium orthophosphate, and potassium fluoride which is obtained in the electrolytic production of the product, while maintaining the solution at a temperature between 50° C. and the solution boiling point, and its pH at between 11.0 and 13.5.

3,607,143

SULFUR EXTRACTION BY SEQUENTIAL CONTACT WITH VAPOR AND WITH LIQUID PERCHLOROETHYLENE

Raymond Wierman, Glendale, and William M. Haire, Manhattan Beach, both of Calif., assignors to Alscoke Limited, Passaic, N.J.
Filed June 24, 1968, Ser. No. 739,230
Int. Cl. B01d ***11/02;*** **C01d** ***17/08***
U.S. Cl. 23—312 S **6 Claims**

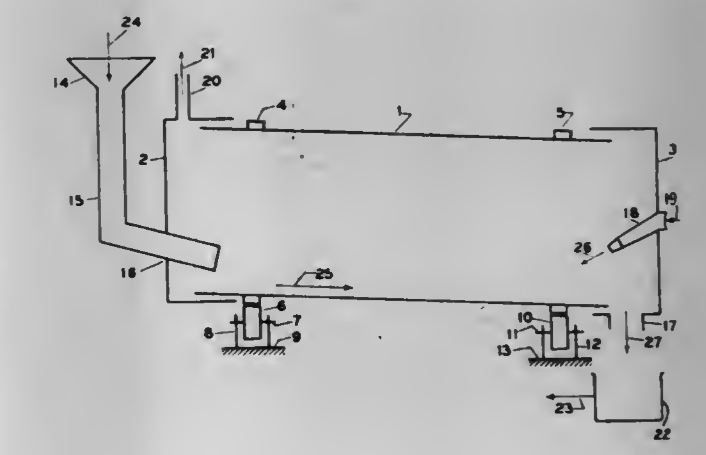
This patent describes a process for the recovery and purification of sulfur which comprises contacting a sulfur-bearing ore with hot perchloroethylene vapor, permitting at least some of said vapor to condense on said ore particles, contact said ore with liquid perchloroethylene in an extraction zone whereby a substantial portion of the elemental sulfur in said ore is extracted into said perchloroethylene phase, and thereafter recovering said elemental sulfur from said perchloroethylene phase. Preferably the perchloroethylene used in the practice of the process is combined with a perchloroethylene stabilizer which retards the decomposition of the perchloroethylene.



3,607,144

PROCESS OF NODULIZING PHOSPHATE ROCK

Roy E. Paul, Columbia, Tenn., assignor to Stauffer Chemical Company, New York, N.Y.
Filed Apr. 29, 1968, Ser. No. 724,817
Int. Cl. C05b ***19/00;*** **C01b** ***25/00***
U.S. Cl. 23—313 **5 Claims**



An improved process for manufacturing phosphate nodules from phosphate rock which consists of charging the aggregate phosphate rock into a rotating kiln. The phosphate rock is then heated by a flame that impinges upon the nodules formed at the exit end of the kiln. The improvement consists of using a higher temperature flame at the point of impingement of the flame upon the nodules. This is preferably brought about by adding pure oxygen to the combustionable air mixture.

3,607,145

PLUTONIUM SEPARATION FROM URANIUM

Donald A. Wenz, Downers Grove, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 6, 1969, Ser. No. 789,359

Int. Cl. C01g *56/00, 57/00;* **C22b** *61/04*

U.S. Cl. 23—325 **6 Claims**

Plutonium dioxide is more soluble in molten magnesium chloride than is uranium dioxide. Separation of plutonium from a mixture of plutonium dioxide and uranium oxides is accomplished by dissolving the plutonium dioxide from the mixture with magnesium chloride and separating the undissolved uranium oxides.

3,607,146

PREPARATION OF CHEMICALLY REACTIVE URANIUM TRIOXIDE

Roger K. Ballard, Salt Lake City, Utah, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 19, 1970, Ser. No. 4,022

Int. Cl. C01g *43/00, 43/02*

U.S. Cl. 23—347 **6 Claims**

The chemical reactivity of uranium trioxide produced by the fluidized bed process is increased by adding a small amount of aluminum nitrate and a slight excess of nitric acid to the aqueous uranyl solution prior to denitration in a fluidized bed at a temperature of at least 400° C.

3,607,147

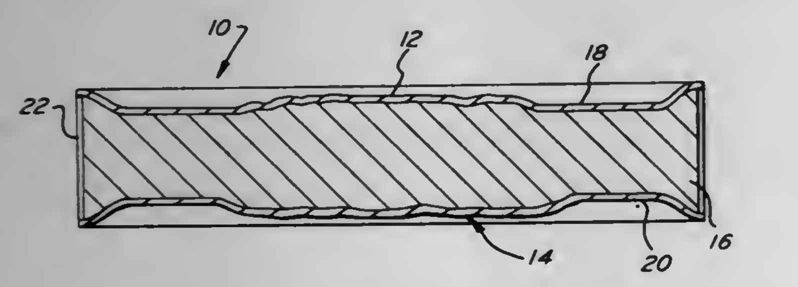
BIMETALLIC COIN

Brian G. Harrison, Drexel Hill, Pa., assignor to The Franklin Mint, Inc., Yeadon, Pa.

Filed Sept. 17, 1969, Ser. No. 858,689

Int. Cl. A44c *21/00*

U.S. Cl. 29—191 **3 Claims**



A coin is disclosed having a middle layer of aluminum clad on its opposite major faces with stainless steel. The aluminum layer has a thickness corresponding to 80 to 95 percent of the combined thickness of the three layers. The color differential between the layers is minimal since all layers have substantially the same light reflective properties.

3,607,148

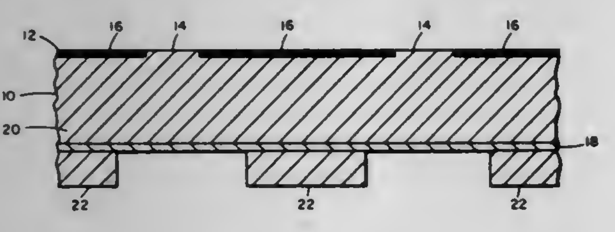
SOLDER PREFORMS ON A SEMICONDUCTOR WAFER

Robert S. Foote, Phoenix, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed July 23, 1969, Ser. No. 844,120

Int. Cl. B32b *15/04*

U.S. Cl. 29—195 **5 Claims**



A semiconductor wafer having a plurality of gold solder preforms attached to one surface thereof. The gold solder preforms are attached to an area of the wafer which is in registration with and wholly within the area defined by the scribe lines areas located on the opposite surface.

3,607,149

HIGH-TEMPERATURE MAGNETIC RECORDING TAPE

James M. Rice, and Irving J. Hutkin, both of San Diego, Calif., assignors to Dynasciences Corporation, Blue Bell, Pa., by said Rice

Filed Nov. 10, 1965, Ser. No. 513,637

Int. Cl. B32b *15/00*

U.S. Cl. 29—196 **4 Claims**

This application filed under rule 47

This patent describes a high-temperature magnetic recording tape comprising a nonmagnetic substrate, adhered to said substrate an intermediate barrier layer for resisting the diffusion of foreign elements from the substrate, and adhered to said intermediate barrier layer a magnetic coating layer adapted to receive and retain recorded information, said magnetic coating layer being at least 10μ inches thicker than the total thickness of all other layers on said substrate.

3,607,150

GOLD-FILLED METAL FOR JEWELRY MANUFACTURE

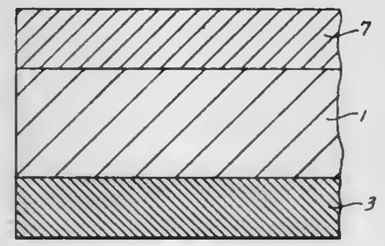
Thomas E. McGinn, deceased, late of Rehoboth, Mass., by Robert P. Beekman, c/o Metals & Controls Inc., 34 Forest St., Attleboro, Mass. (Assistant Treasurer of Metals and Controls, Inc.)

Filed Dec. 30, 1968, Ser. No. 812,941

Int. Cl. B32b *15/00*

U.S. Cl. 29—199 **6 Claims**

This application filed under rule 47



A nickel alloy base layer, consisting substantially of copper 65 percent, nickel in the range of 10 to 18 percent and the balance zinc, has a thin, substantially pure nickel backing bonded on one side. On the other side is carried a layer of gold of suitable karat, with or without the interposition of another thinner layer of substantially pure nickel bonded between the base and to the gold to form an interliner. The interliner is used when the nickel alloy consists of nickel substantially in the range of 10 to 14 percent. The interliner is omitted when the nickel alloy consists of nickel substantially in the range of 15 to 18 percent. Bonding is performed in the solid phase by rolling.

3,607,151

COMPOSITE CABLE SHEATHING HAVING AN ALUMINUM-SILICON LAYER

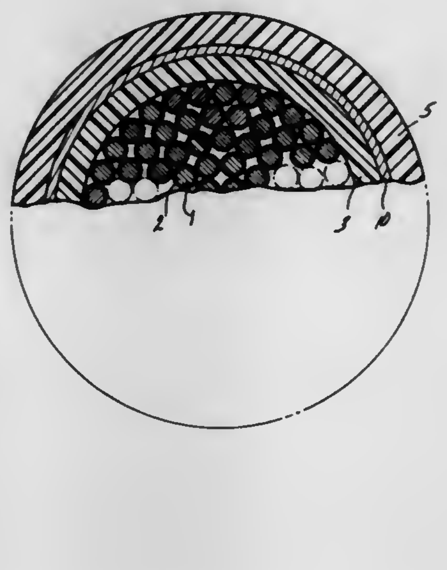
Michael J. Pryor, Woodbridge, and William H. Anthony, Guilford, both of Conn., assignors to Olin Mathieson Chemical Corporation

Continuation-in-part of application Ser. No. 677,955, Oct. 25, 1967. This application Sept. 11, 1968, Ser. No. 759,117

Int. Cl. B32b *15/00*

U.S. Cl. 29—196.2 **15 Claims**

This invention relates to a high strength aluminum alloy containing Zn, B, Mg and Si metallurgically bonded to a thin layer of an aluminum alloy containing at least 0.050% Si, which thin layer is also bonded to steel for use in both aerial and underground cable sheathing.



3,607,152

SILVER BRAZED TITANIUM COMPOSITE

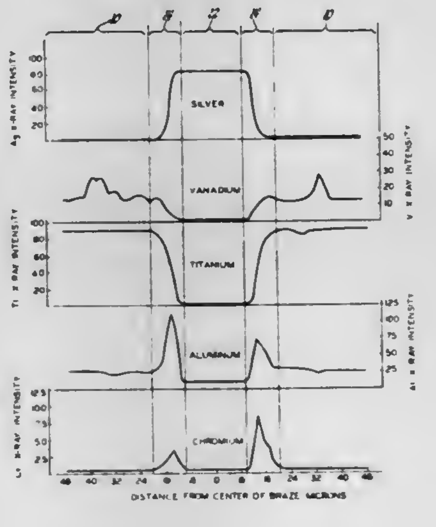
Dean K. Hanink, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 550,994, May 18, 1966, Pat. No. 3,466,737.

Filed Mar. 10, 1969, Ser. No. 805,536

Int. Cl. B32b *15/00*

U.S. Cl. 29—198 **3 Claims**



A method is disclosed for the silver brazing of titanium workpieces to avoid the formation of the brittle silver-titanium intermetallic compound. In a preferred embodiment a thin film of chromium is vapor deposited on titanium surfaces to be brazed. Silver brazing is then accomplished by conventional methods, the chromium layer permitting the interdiffusion of silver and titanium but preventing the formation of a brittle intermetallic compound. The brazed product has a ductile alloy bond between the titanium sections comprising titanium, chromium and silver.

3,607,153

QUENCH ARRANGEMENT

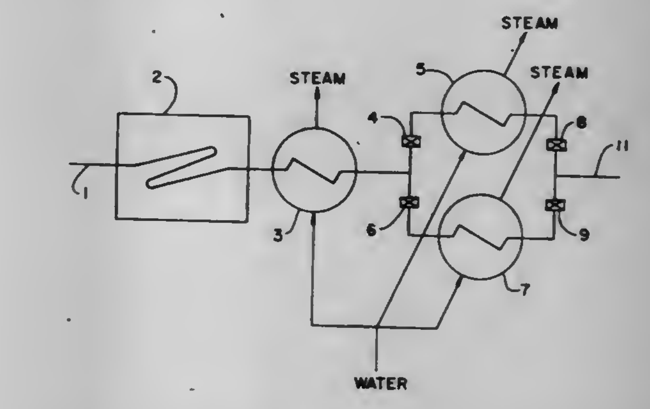
Hartoch J. Cijfer, The Hague, Netherlands, assignor to Selas Corporation of America

Filed Jan. 23, 1969, Ser. No. 793,523

Claims priority, application Netherlands, Sept. 20, 1968, 6813467

Int. Cl. C10g *9/04;* **F28f** *27/02*

U.S. Cl. 48—102 R **6 Claims**



Quench arrangement for use in the cracking of hydrocarbons, which arrangement includes a precooler followed by a pair of aftercoolers connected in parallel.

3,607,154

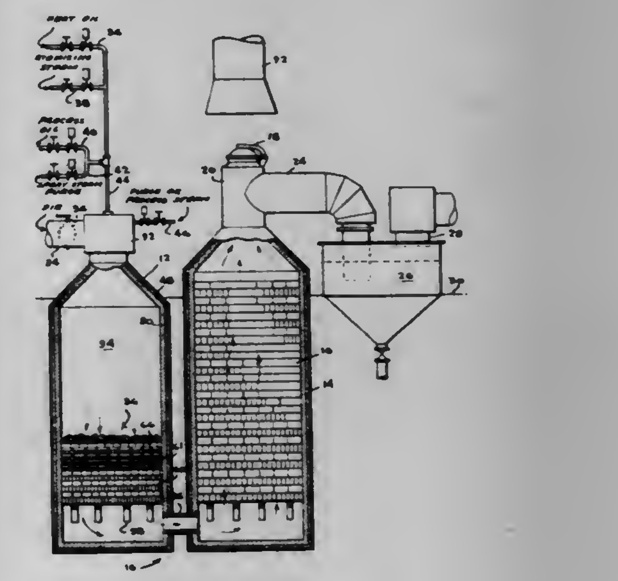
REFRACTORY BED FOR GAS MACHINE AND PROCESS FOR PRODUCING OIL GAS

Donald L. White, Bethesda; Ernest B. Donaldson, Suitland, Md., and Arthur J. Middleton, Cleveland, Ohio, assignors to Washington Gas Light Company, Washington, D.C.

Filed Nov. 6, 1969, Ser. No. 874,471

Int. Cl. C10g *11/28*

U.S. Cl. 48—102 R **6 Claims**

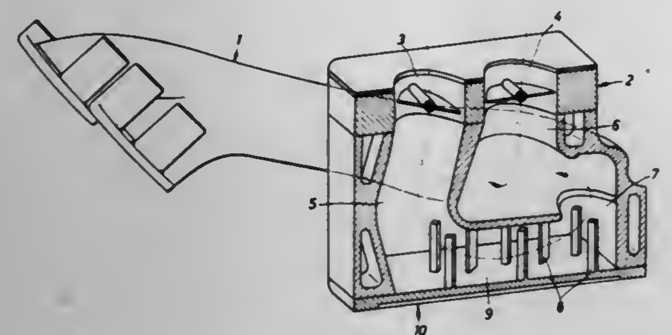


An apparatus and process for producing a combustible oil gas as a supplement to heating gas from a gas generator comprising a bed of curved elongated refractory bodies composed of silicon carbide material having a high thermal conductivity superimposed upon a layer of refractory grid tile capable of withstanding over 3,000° F., the bed being of a thickness of 0.05–0.5 times the diameter of the shell of the gas generator containing the refractory bed, each body having a curved surface with a diameter between 0.5 to 0.08 times the bed thickness and a length approximately 0.2 to 1.0 times the bed thickness, the bed being directly exposed to form the bottom of a combustion chamber within the gas machine so as to absorb thermal shock and to preserve the conventional refractory brick tile from fusing and spalling and restricting the flow of gas through the refractory bed as well as to maintain a rapid heating oil ignition to avoid explosions within the refractory bed.

3,607,155

SUCTION PIPE FOR AN INTERNAL COMBUSTION ENGINE WITH A SPRAY CARBURETOR

Georg Faltermeier, Wolnzach, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Danube, Germany
Filed Nov. 20, 1969, Ser. No. 878,399
Claims priority, application Germany, Dec. 10, 1968, P 18 14 129.2
Int. Cl. B01f *3/02*; **F02m** *17/00*
U.S. Cl. 48—180 R **5 Claims**



A suction pipe for an internal combustion engine with a spray carburetor having two parallel mixing chambers each of which has a conduit for the mixture. The suction pipe is particularly characterized by a channel joining the mixing chamber of the first stage and extending below a widened conduit connected to the second stage. The channel is provided with inserts which produce eddies and its projection upon an imaginary horizontal plane is perpendicular to the projection of the widened portions of the conduit.

3,607,156

HYDROGEN AND CARBON MONOXIDE FROM SLURRIES OF SOLID CARBONIFEROUS FUELS

Warren G. Schlinger, Pasadena; William L. Slater, La Habra; Roger M. Dille, La Habra, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 26, 1968, Ser. No. 787,191
Int. Cl. C01b *2/14*; **C10j** *3/06, 3/16*
U.S. Cl. 48—206 **7 Claims**

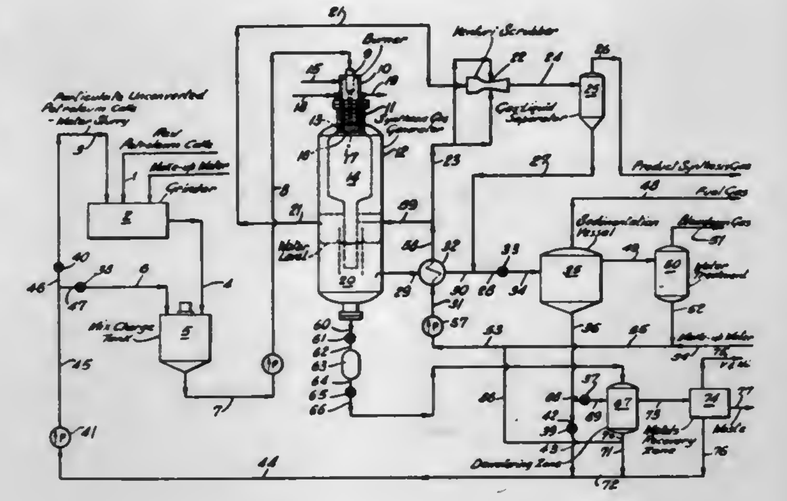
Production of synthesis gas from a slurry of particulate solid carboniferous fuel e.g., petroleum coke, coke from bituminous coal, coal, oil shale, tar sands, pitch, or mixtures of said solid fuels in water or in a hydrocarbon liquid fuel. Pumpable slurries containing 1–60 weight percent of ground solid carboniferous fuel in petroleum oil and 25–55 weight percent of ground solid carboniferous fuel in water at a relatively low velocity in the range of 5 to 50 feet per second is mixed with a stream of oxidizing gas at a relatively high velocity in the range of 200 feet per second to sonic velocity at the burner tip to form an atomized dispersion of water, hydrocarbon liquid fuel, oxidizing gas and particulate solid carboniferous fuel. Under synthesis gas generating conditions the atomized dispersion is reacted to produce a gaseous mixture of hydrogen and carbon monoxide. By this process, slurry feeds of low cost solid carboniferous fuels may be gasified without being preheated.

3,607,157

SYNTHESIS GAS FROM PETROLEUM COKE

Warren G. Schlinger, Pasadena; William L. Slater, La Habra; Roger M. Dille, La Habra, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 787,191, Dec. 26, 1968. This application July 23, 1969, Ser. No. 844,112
Int. Cl. C01b *2/14*; **C10j** *3/16*; **C22b** *59/00*
U.S. Cl. 48—206 **9 Claims**

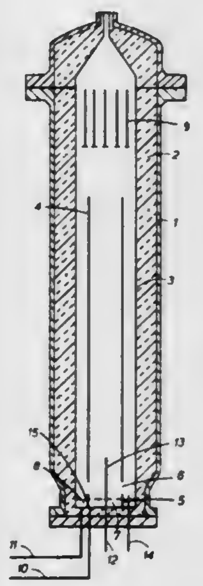
Production of synthesis gas (mixtures of hydrogen and carbon monoxide) in a refractory lined reaction zone of a partial oxidation free-flow synthesis gas generator by feeding to said reaction zone a stream of particulate petroleum coke containing heavy metal constituents dispersed in H_2O. Attack of said refractory lining by the metals and metal compounds present in said petroleum coke, or their reaction products, is substantially prevented by controlling the feedstreams to the reaction so that entrained in the product gas leaving the reaction zone is an amount of unconverted petroleum coke containing unreacted about 8 weight percent or more of the quantity of carbon originally present in the petroleum coke feedstream.



3,607,158

PROCESS FOR THE HYDROGENATION OF COAL

Frederick James Dent; Brian Hoyle Thompson, and Henry Lawrence Conway, all of Solihull, England, assignors to The Gas Council, London, England
Filed Mar. 12, 1969, Ser. No. 806,552
Int. Cl. C10j *3/00*
U.S. Cl. 48—210 **9 Claims**



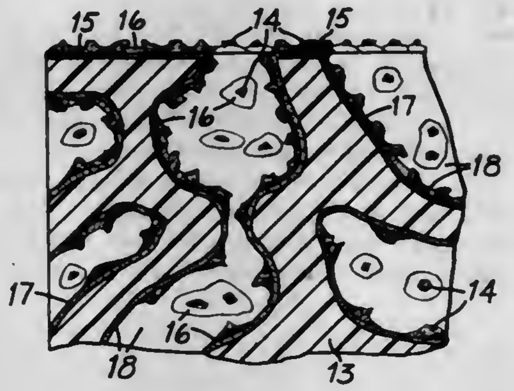
A process for the hydrogenation of coal to produce a methane-containing gas is described. Powdered raw coal is introduced into a recycling fluidized bed of noncaking material. The coal is rapidly heated and at least partly hydrogenated, and converted into a noncaking powdered char. The process is generally operated at temperatures of 600° to 1,000° C. and pressures of 10 to 200 atmospheres.

3,607,159

A SATURATED, RESILIENT, FLEXIBLE AND POROUS ABRASIVE LAMINATED

George L. Haywood, Latham, N.Y., assignor to Norton Company, Troy, N.Y.
Filed May 12, 1967, Ser. No. 638,042
Int. Cl. B24b *1/00*; **C08g** *51/12*
U.S. Cl. 51—295 **5 Claims**

A resilient, controlled density, porous structure is laminated to a flexible backing and contains fine abrasive particles adhesively bonded to the surface opposite such backing and distributed within said resilient structure with the abrasive density ranging inversely to the distance from the flexible backing. A protective abrasion-resistant layer is interposed between the abrasive grain and the surfaces of the resilient structure.



3,607,160

LIGROIN CONTAINING PUMICING COMPOSITION

Katsuo Makino, and Iwao Sawato, both of Kanagawa-ken, Japan, assignors to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 540,177, Jan. 13, 1970, Pat. No. 3,488,896. Filed Oct. 2, 1968, Ser. No. 788,974
Int. Cl. B24b *1/00*
U.S. Cl. 51—304 **1 Claim**

A pumicing composition consisting essentially of cerium oxide and zinc stearate particles dispersed in ligroin, a fourth fraction petroleum distillation product.

3,607,161

QUICK-DRYING SCOURING COMPOSITION

John Alexander Monick, Teaneck, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 3, 1968, Ser. No. 718,342
Int. Cl. B24d *3/02*
U.S. Cl. 51—307 **5 Claims**

A scouring composition comprising a cationic surface active compound and a water-soluble abrasive which leaves a surface which has been cleaned dry, shiny and free from a gritty residue film.

3,607,162

PROCESS FOR THE MANUFACTURE OF A ZIRCONIUM OXIDE AND ALUMINUM OXIDE ABRASIVE OF HIGH GRIT TOUGHNESS

Gerd Edzard Bockstiegel, and Peter Hack, both of Ranzel, Germany, assignors to Dynamit Nobel AG, Troisdorf Bez. Cologne, Germany
Filed Nov. 28, 1967, Ser. No. 686,280
Claims priority, application Germany, Dec. 2, 1966, D 51688
Int. Cl. B24d *3/02*
U.S. Cl. 51—309 **4 Claims**

Substantially pore-free abrasive grit comprising zirconium oxide mixed with alumina or bauxite made by mixing the components together in molten form in the substantial absence of nitrogen.

3,607,163

METHOD FOR MAKING GLASS TUBES

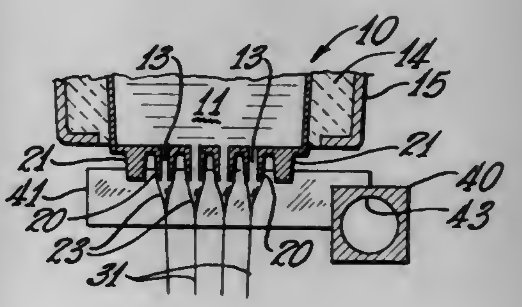
Howard Cameron Smith, and William Bell Allan, both of Glasgow, Scotland, assignors to Barr and Stroud Limited, Anniesland, Glasgow, Scotland
Filed June 12, 1968, Ser. No. 740,428
Claims priority, application Great Britain, July 14, 1967, 32411/67
Int. Cl. C03b *19/04, 37/02*
U.S. Cl. 65—1 **4 Claims**

This invention relates to a method of producing a tube from a glass that gives off undesirable vapors when heated in which glass cullet is placed into a horizontally disposed forming tube that is made of a material which is not wetted by the glass and has a lower coefficient of expansion (for instance the forming tube may be made of a borosilicate glass). The cullet is heated to melt the cullet while the forming tube rotates so that it coats the tube. The forming tube is cooled until the glass from the cullet has solidified as a tube. This tube may be used for making fibers in which a rod is subsequently inserted into this tube.

3,607,164

APPARATUS FOR PRODUCING GLASS FILAMENTS

Craig L. Thom, and Charles L. McKinnis, both of Granville, Ohio, assignors to Owens-Corning Fiberglass Corporation
Filed Aug. 18, 1969, Ser. No. 850,792
Int. Cl. C03b *37/00*
U.S. Cl. 65—1 **8 Claims**

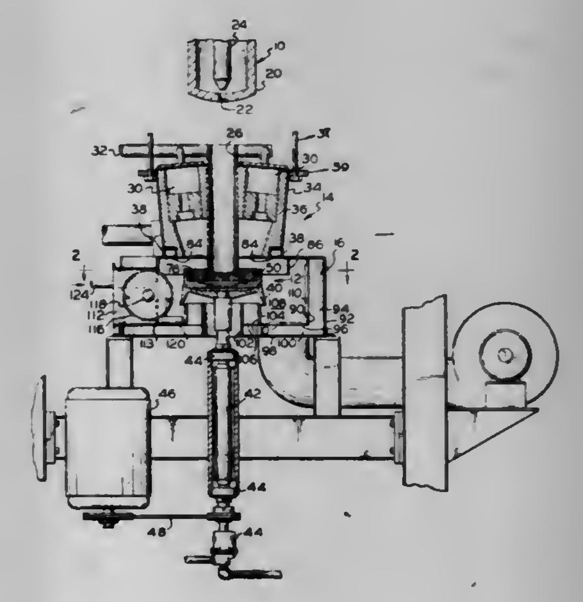


An apparatus for producing glass filaments has an array of orificed tips through which streams of molten glass are flowed and then attenuated into filaments. A uniform filament-forming environment is attained by employment of solid heat-radiating tips to thermally shield certain active array boundary tips from the influences of a cooler ambient atmosphere.

3,607,165

GLASS FIBER FORMING APPARATUS

Bernard M. Guthrie, P. O. Box 434, Corvallis, Oreg.
Filed Jan. 31, 1969, Ser. No. 806,334
Int. Cl. C03b *37/04*
U.S. Cl. 65—14 **13 Claims**



A glass fiber forming apparatus comprises a cup-shaped spinner rotated about a vertical axis. Glass is fed to the spinner near the center and evenly distributed by spinning action. Spinner rim is serrated to divide glass into separate streams. Spinner is surrounded by heating means and glass fibers are blown downwardly into pneumatic conveyor for collection and removal.

3,607,166

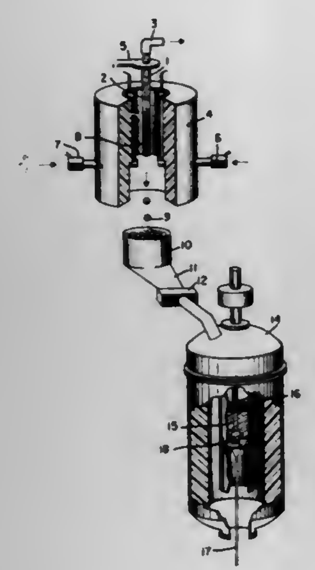
MANUFACTURE OF STRIATION-FREE QUARTZ TUBING

Frederick A. Loughridge, Manchester, and Richard J. Ziebell, Ipswich, both of Mass., assignors to Sylvania Electric Products Inc.

Continuation of application Ser. No. 726,889, May 6, 1968, now abandoned. This application June 26, 1968, Ser. No. 749,554

Int. Cl. C03b *23/20, 19/06, 3/00*

U.S. Cl. 65—18 **9 Claims**



Striation-free, refractory-type glass tubing can be manufactured by placing particulate, crystalline, refractory materials in a tube of refractory glass having a sealed end. The tube is evacuated to withdraw gases and the vacuum is maintained. The sealed end of the tube is heated to its softening point and the particulate materials contained therein will melt, thereby converting these materials into a vitreous condition. Softened pieces are then broken off and substantially gas-free bodies of vitreous, refractory glasses having substantially no reentrant portions are formed. The majority of the surfaces are smooth and rounded. These bodies are then fed into a melter of conventional design at atmospheric pressure and substantially striation-free, refractory-type tubing is drawn.

3,607,167

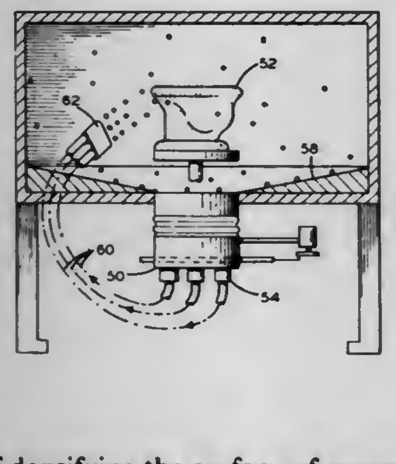
SURFACE TREATMENT OF POROUS BODIES

John M. Robertson, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Dec. 31, 1968, Ser. No. 789,036

Int. Cl. C03b *23/20;* **C03c** *19/00*

U.S. Cl. 65—18 **10 Claims**



A method of densifying the surface of porous bodies which comprises impacting the surface of the porous bodies with a plurality of spheres sufficient to cause compressive forces in the surface during subsequent firing and vitrification of the porous body.

3,607,168

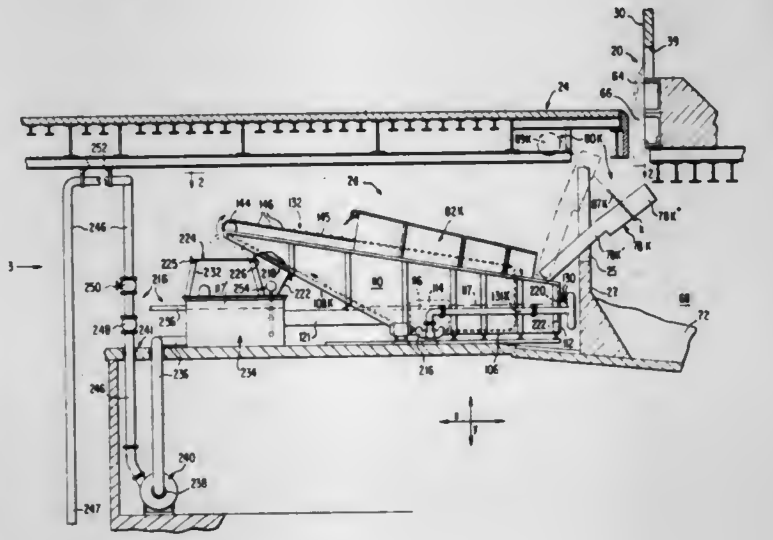
STEEL SLAG HANDLING SYSTEM AND METHOD FOR USING SAME

John J. Grady, New Florence, Pa., assignor to International Steel Slag Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 535,143, Mar. 17, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 126,792, June 28, 1961, now abandoned , which is a continuation-in-part of application Ser. No. 428,519, Jan. 27, 1965, now Patent No. 3,316,075, dated Apr. 25, 1967, which is a continuation of application Ser. No. 485,037, Sept. 3, 1965, now abandoned , which is a continuation-in-part of application Ser. No. 304,932, Aug. 27, 1963, now abandoned. This application May 6, 1969, Ser. No. 826,779

Int. Cl. C03b *19/08*

U.S. Cl. 65—19 **26 Claims**



There is disclosed herein apparatus and method for handling molten steel slag produced in a steelmaking furnace by cooling and granulating the slag on a continuous basis through interception of a stream of molten slag with a jet stream of water having particularly specified characteristics of shape, velocity and flow, and transportation of the granulated slag to a remote location as a slag/water slurry.

3,607,169

METHOD FOR PRODUCING EVACUATED GLASS MICROSPHERES

Edwin F. Coxe, Marietta, Ga., assignor to Esso Research and Engineering Company

Filed Nov. 7, 1968, Ser. No. 774,181

Int. Cl. C03b *19/08, 19/10*

U.S. Cl. 65—21 **3 Claims**

A method is provided for the production of low density, internally coated, evacuated microspheres wherein the sphere density is uniform and the sphere diameter and wall thickness can be controlled accurately. In a preferred embodiment of the instant method, molten glass (or other suitable nonmetallic material) is used to encapsulate zinc or another suitable metal in either the solid or liquid state. After the metal has been encapsulated the temperature of the particle is increased until the encapsulated metal vaporizes and blows the particles into thin-walled, hollow spheres which are then quenched so that the encapsulating walls become rigid before the condensing metal vapor on the inside of the walls causes the spheres to collapse.

3,607,170

METHOD AND APPARATUS FOR CONTINUOUSLY MANUFACTURING FOAM GLASS

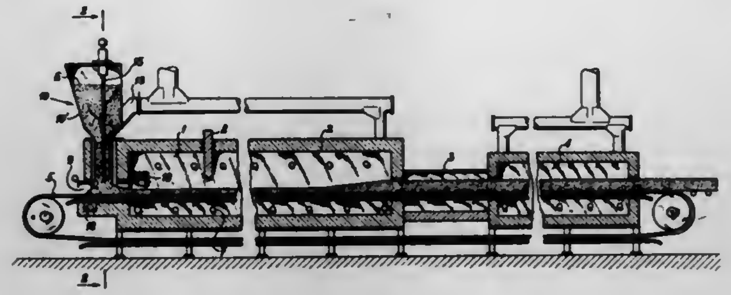
Jaromir Malesak, Prague, Czechoslovakia, assignor to Statni Vyzkummy ustav sklarske techniky, Prague, Czechoslovakia

Filed May 8, 1968, Ser. No. 727,458

Claims priority, application Czechoslovakia, May 20, 1967, PV 3678-67

Int. Cl. C03b *19/08*

U.S. Cl. 65—22 **6 Claims**



A method and apparatus for manufacturing foam glass from a mixture of glass powder and a foaming agent. The mixture is initially preheated in a nonoxidizing atmosphere while being advanced in a given direction through a preheating zone of a tunnel kiln. The nonoxidizing atmosphere in the preheating zone of the tunnel kiln is withdrawn from the latter in countercurrent to the direction of movement of the mixture therethrough, and nonoxidizing burning takes place through burners capable of carrying out nonoxidizing burning in the immediate vicinity of the region where the mixture of glass powder and foaming agent is initially delivered to a conveyor band which conveys the mixture through the preheating zone to be received thereafter in a foaming zone. The kiln preferably includes a partition means situated between the preheating and foaming zones and at the inlet of the kiln there is a discharge outlet through which the atmosphere of the preheating zone is withdrawn. A supply means extends downwardly through the discharge outlet to supply the mixture to the conveyor band.

3,607,171

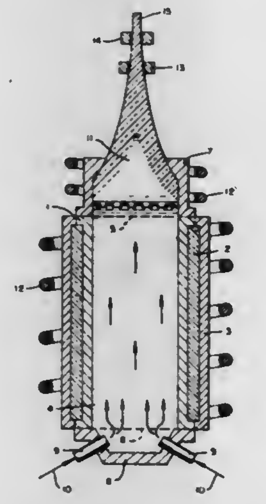
METHOD FOR HEATING MELTING OR SOFTENING GLASS IN DISPERSED FORM

Peter Hirsch, Oberland, Germany, assignor to VVB Technisches Glas, Ilmenau, Langewiesener, Germany

Filed Nov. 29, 1968, Ser. No. 780,148

Int. Cl. C03b *19/08*

U.S. Cl. 65—22 **4 Claims**



A method of continuously heating, melting or softening a material, comprising in a preferred embodiment disposing in an upright elongated heating zone a fusible substance, heating the substance to maintain the substance in a hot fused condition, introducing into the fused substance near an end of the zone the material being treated, the material and the fused substance being so selected that they are immiscible and are of different specific gravities, the introduction being near the lower end of the zone when fused substance is of higher specific gravity than the material being treated and the introduction being near the upper end of the zone when the fused substance is of lower specific gravity than the material being treated, whereby the material being treated migrates to the end of the zone opposite from the end near which it is introduced and accumulates as a body above or below, depending upon the direction of migration, the fused substance, the material in the course of the migration being heated by the fused substance to the desired heated, softened or molten state.

3,607,172

TRIPOTASSIUM PHOSPHATE TREATMENT FOR STRENGTHENING GLASS

James P. Poole; Herbert C. Snyder, and Mark A. Boschini, all of Brockway, Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Filed Nov. 1, 1968, Ser. No. 772,835

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 **6 Claims**

Strengthening glass articles by spraying the same with a water solution of tripotassium phosphate (K_3PO_4) at a temperature slightly below the strain point of the glass, then holding the glass at such temperature for a time period sufficient to provide exchange of potassium ions for sodium ions of the glass surface, the potassium ions being of larger atomic diameter than the sodium ions whereby a surface compressive stress is created.

3,607,173

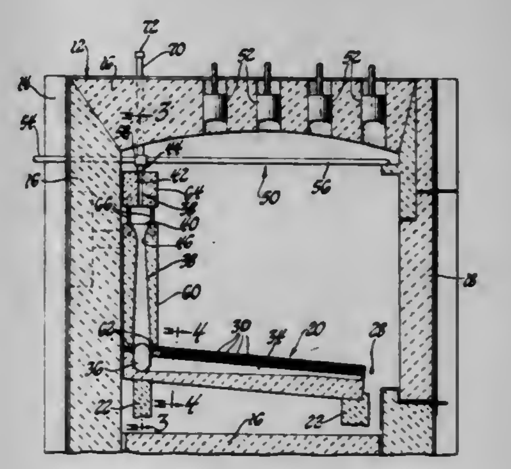
METHOD AND APPARATUS FOR HEAT TREATING SHEETS OF GLASS

Robert G. McMaster, Torrance, Calif., and Stanley W. Joehlin, Curtice, Ohio, assignors to Permaglass, Inc., Millbury, Ohio

Filed Mar. 14, 1969, Ser. No. 807,328

Int. Cl. C03b *25/04, 29/04*

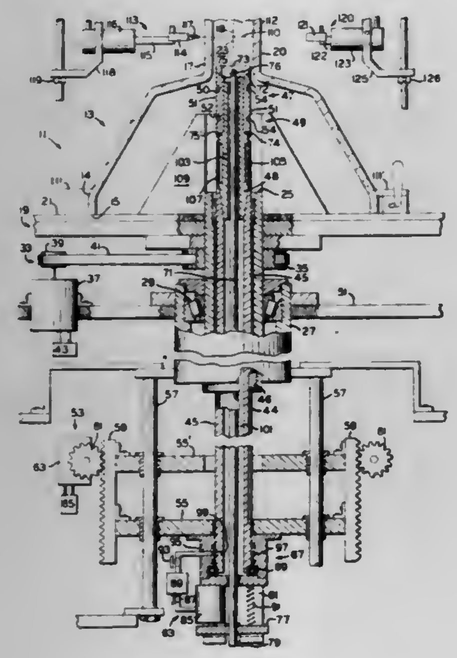
U.S. Cl. 65—25 A **27 Claims**



A method and apparatus for treating sheets of glass. The apparatus illustrated for carrying out the invention includes an elongated furnace with an elongated support bed disposed in the furnace and having gas inlets to emit gases against the sheet to effect a heat transfer between the sheet and the gases and gas outlets for gases to pass through after contacting the sheet. A plurality of inspirators are spaced along the bed and each inspirator has an opening to draw ambient gases within the furnace thereinto and an exit for directing the gases to the inlets in the bed. A source of pressurized gases is connected through various conduits to the inspirators. The conduits supplying the pressurized gases are disposed in coils in the furnace for heating the pressurized gases prior to the injection thereof into the inspirators.

3,607,174
METHOD AND APPARATUS FOR APPLYING A GLASS COLLET TO A CATHODE-RAY TUBE

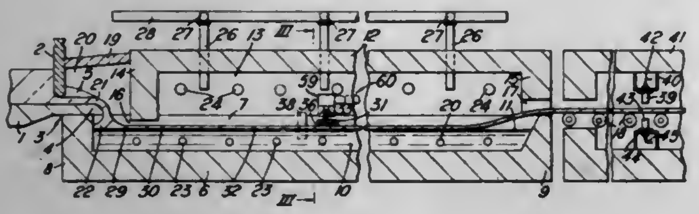
Gordon S. Patrick, Leipsic, Ohio, assignor to Sylvania Electric Products Inc.
Continuation of application Ser. No. 691,365, Dec. 18, 1967, now abandoned. This application Mar. 9, 1970, Ser. No. 17,819
Int. Cl. C03c *27/00*
U.S. Cl. 65—28 **4 Claims**



A method and apparatus for attaching a neck collet to the neck stub of a cathode-ray tube funnel utilizing a single axial reference in a manner that the axis of the collet coincides with the axis of the funnel perpendicular to the sealing edge. The sealing edge of the open funnel is positioned on a rotatable funnel support means which has a hollow axial spindle shaft oriented perpendicular to the support means and affixed thereto. Slidably oriented within the spindle shaft is a center shaft formed to extend through the funnel and protrude beyond the neck stub thereof. Collet holding means, associated with the terminal portion of the center shaft, insures positive concentric alignment of the collet with the neck stub since the axes are coincident.

3,607,175
CONTROL SYSTEM FOR MODIFYING THE SURFACE OF FLOAT GLASS

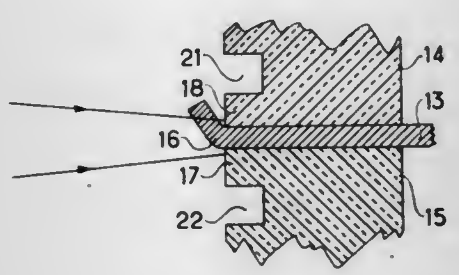
Albert Sidney Robinson, Southport, England, assignor to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed Sept. 12, 1968, Ser. No. 759,455
Claims priority, application Great Britain, Nov. 9, 1967, 51050/67
Int. Cl. C03b *18/02*
U.S. Cl. 65—29 **13 Claims**



Desired characteristics are imparted to float glass by maintaining a body of molten material in contact with the upper surface of the floating glass ribbon to migrate ions from the molten material into the surface of the glass, photoelectrically, sensing any change in the rate of modification of the glass surface, and employing an indication of that change to restore a desired rate of modification.

3,607,176
METHOD OF SEALING METAL IN A VITREOUS ENCLOSURE

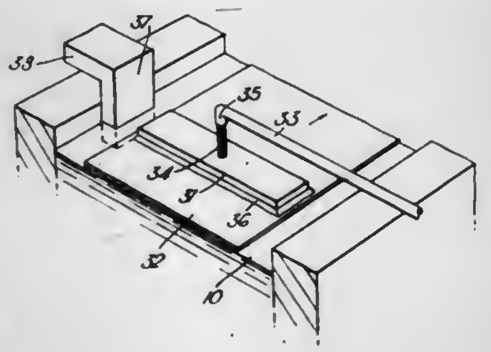
Alexandre Milochevitch, Saint Michel sur Orge, and Maurice Roulot, Orsay, both of France, assignors to Compagnie Generale D'Electricite, Paris, France
Filed Aug. 22, 1968, Ser. No. 754,553
Claims priority, application France, Sept. 1, 1967, Sept. 18, 1967, 119,720;121,387
Int. Cl. C03c *27/02*
U.S. Cl. 65—32 **9 Claims**



A method of sealing a metallic wire between two vitreous parts. The wire is positioned so that its ends extend outwardly from opposite sides of the enclosure formed by the parts. The adjacent side edges of the parts are formed with protuberent lips which surround the portion of the wire adjacent one end thereof. The parts are preheated, in a controlled atmosphere. A laser beam is then focused on the one end of the wire to fuse it and thereby also fuse, by contact heat transfer, the side portions of the vitreous parts which are adjacent the wire. The wire is thus welded in the enclosure with the fused protuberent lips forming an outwardly extending enclosure portion which reinforces the seal in the area adjacent to the fused wire.

3,607,177
PROCESS AND APPARATUS FOR SURFACE MODIFICATION OF GLASS

Albert Sidney Robinson, Birkdale, Southport; David Gordon Loukes, Eccleston Park, Prescot, and Jack Lawrenson, Windle, St. Helens, all of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed May 29, 1968, Ser. No. 733,109
Claims priority, application Great Britain, June 19, 1967, 28273/68
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 **17 Claims**



A body of molten electrically conductive material is maintained against hot glass by causing the molten body to cling to a locating member adjacent the glass, and electric current is passed between the molten body and the glass to cause controlled migration of an element from the molten body into the glass surface.

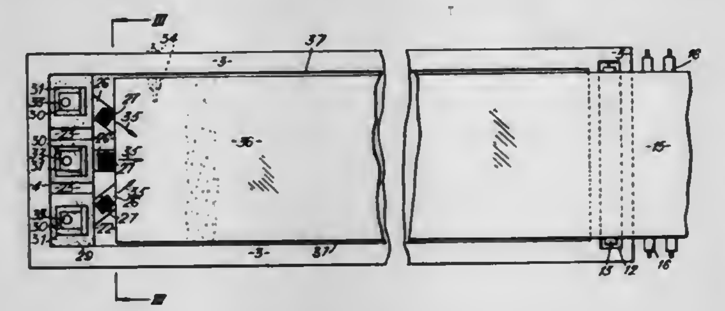
3,607,178
TREATING GLASS SHEETS USED IN LAMINATED SAFETY GLASS WINDSHIELDS

Brook J. Dennison, Pittsburgh, and Albert A. Doutt, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sept. 19, 1968, Ser. No. 760,982
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 **9 Claims**

Rinsing glass sheets prior to their lamination in water having a hardness in a controlled range, preferably between about 200 and about 400 parts by weight of calcium and/or magnesium expressed in terms of calcium carbonate per million parts by weight of water and preferably containing a mixture containing more calcium ions than magnesium ions.

3,607,179
METHOD AND APPARATUS FOR PRODUCING FLOAT GLASS BY OXIDIZING GLASS-FORMING ELEMENTS

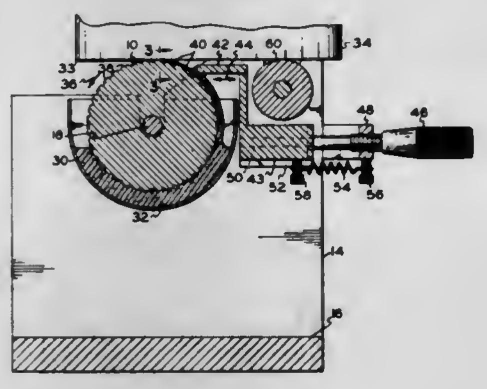
David Gordon Loukes, Prescot, and Alan Edward Hay, Ormskirk, both of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Continuation-in-part of application Ser. No. 585,889, Oct. 11, 1966, now abandoned. This application Mar. 21, 1969, Ser. No. 809,119
Int. Cl. C03b *18/00*
U.S. Cl. 65—32 **22 Claims**



Glass-forming elements are fed into a body of molten metal which is maintained under controlled oxidizing and thermal conditions to produce glass-forming oxides therein in relative proportions to synthesize a particular glass which collects as a layer on the surface of the molten metal and is removed as a layer from the metal surface.

3,607,180
BONDING WITH A GLASS FRIT COATING APPLIED BY A KNURLED ROLLER

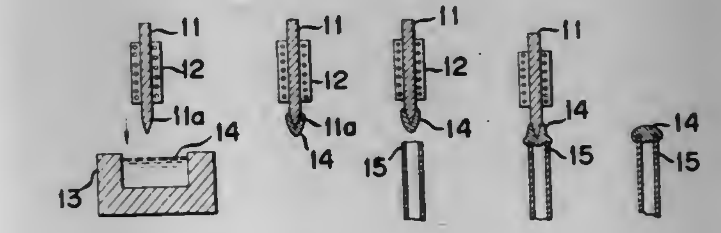
Joseph P. Merz, Portland; Yeng P. Wong, Beaverton, and Wayne A. Fetters, Canby, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed June 25, 1968, Ser. No. 739,808
Int. Cl. C03c *23/00, 27/00*
U.S. Cl. 65—33 **10 Claims**



A coating apparatus and method are described in which a knurled applicator roller is employed to apply a slurry of suspended particles to the surfaces of articles of different shape. The applicator roller is motor driven and partially immersed in the slurry solution so that it agitates such slurry as it is rotated to prevent settling of the particles. The articles are fed onto the applicator roller from an idler roller. An adjustable scraper blade is supported adjacent the applicator roller to control the thickness of the slurry layer provided on such roller. The present apparatus and method is employed to apply a coating of a slurry of glass frit particles suspended in a solution of organic binder and solvent, to the end of the funnel portion of a cathode-ray tube envelope in order to enable such glass frit to form a seal between such funnel portion and the faceplate of such envelope.

3,607,181
GLASS BRAZING METHOD

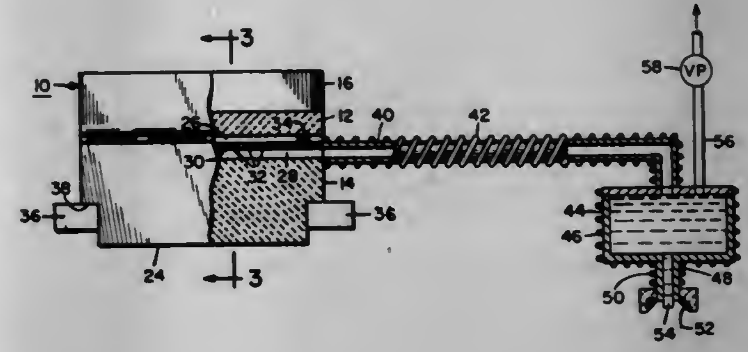
Eizo Goto, Chigasaki-shi, Japan, assignor to Tokyo Shibaura Electria Co., Ltd., Kawasaki-shi, Japan
Filed Dec. 24, 1968, Ser. No. 786,656
Claims priority, application Japan, Dec. 25, 1967, Jan. 10, 1968, Feb. 19, 1968, 42/82695, 43/1020, 43/10074
Int. Cl. C03c *27/00*
U.S. Cl. 65—40 **5 Claims**



A glass brazing method for sealing a seal portion of a workpiece wherein the brazing glass is applied to the tip of a soldering iron by the step of dipping the tip of the iron heated to a first temperature, into a bath of molten glass so that some of the glass adheres to the tip. The tip is then positioned above the seal portion and is heated to a temperature higher than the first temperature so that the glass on the tip melts and pours down onto the seal portion to close it. In another embodiment the brazing glass adhering to the tip is brought into contact with the seal portion and an electric current is conducted through the brazing glass across the seal portion and the tip to thus melt the glass to pour it down onto the seal portion.

3,607,182
METHOD AND APPARATUS FOR REMOVAL OF BUBBLES FROM SHEET GLASS OVERFLOW FORMING SURFACES

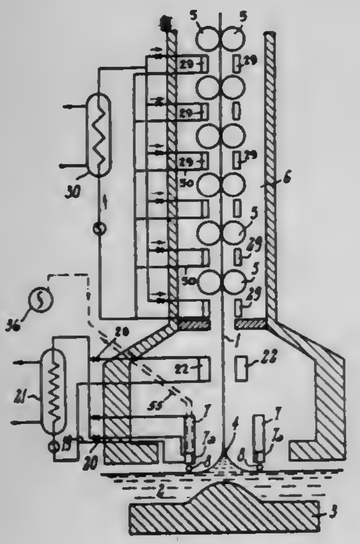
Howard A. Leibowitz, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 29, 1970, Ser. No. 58,900
Int. Cl. C03b *17/00*
U.S. Cl. 65—53 **10 Claims**



A heated evacuation system is applied to the junction between upper and lower blocks forming a two-part overflow sheet-drawing apparatus, to remove seed and bubbles which may be trapped at outer edge portions of such junction where they tend to cause streaks or other optical distortions in the sheet glass produced by such apparatus. A vacuum is applied to a heated accumulator which is connected to a slot formed at the junction between the upper and lower blocks by a heated conduit, to withdraw molten glass containing seed or bubbles into such slot and through the heated conduit into the accumulator where it is maintained in a molten condition for either continuous or periodic removal therefrom.

3,607,183
METHOD AND APPARATUS FOR DRAWING SHEET GLASS

Jean Francois Flori, Chalon-sur-Saone, France, assignor to Compagnie de Saint-Gobain, Neuilly sur Seine, France
Filed Apr. 6, 1966, Ser. No. 540,696
Claims priority, application France, Apr. 12, 1965, 12,829
Int. Cl. C03b *15/02*
U.S. Cl. 65—83 **15 Claims**

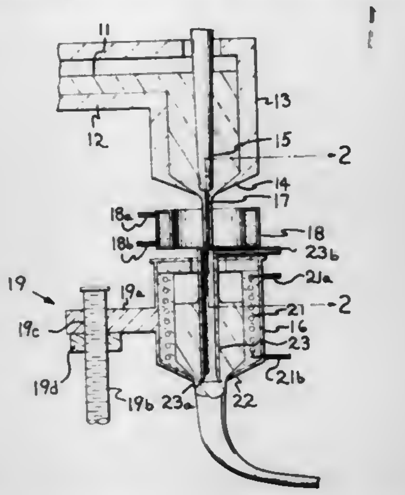


Method and apparatus for drawing sheet glass, wherein the temperature of the incipient sheet from the line of draw to the drawing rollers is controlled at and along the width of the sheet to effect uniformity of thickness of the sheet throughout its width. Control is effected by establishment of a plurality of series of individual compartments in contiguous side-by-side relation and extending along lines which are generally parallel with the sheet and extend transversely of its length direction, closely adjacent the line of draw. Each series of compartments is allochirally positioned on a respective side of the sheet or line of draw; and each compartment is individually supplied with coolant at an individually controlled rate. By such individual control of the rate of flow of coolant it is assured that the temperature of each section of the sheet, consisting of an increment of length thereof, extending transversely from one side edge of the sheet to the other, is uniform and the temperature differences between one such increment and the next adjacent one are maintained at proper predetermined values. Control of rate of circulation of coolant through the several compartments may be automatic.

3,607,184
METHOD AND APPARATUS FOR DRAWING A DEVITRIFIABLE GLASS AT A TEMPERATURE BELOW THE LIQUIDUS TEMPERATURE

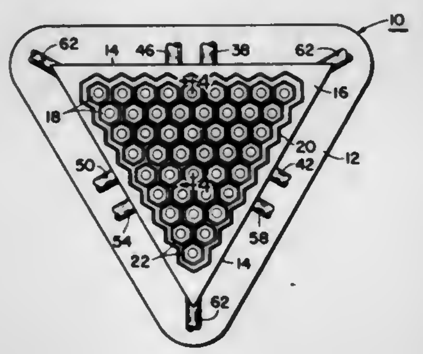
George F. Williams, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Apr. 12, 1968, Ser. No. 720,855
Int. Cl. C03b *9/38*
U.S. Cl. 65—83 **7 Claims**

This application discloses method and apparatus for producing, without appreciable surface devitrification, glass tubing from a glass composition which has a liquidus temperature close to the temperature at which the glass is at its preferred working viscosity. According to the invention, glass is delivered in a thin stream from a feeder of a glass-melting furnace to a relatively small receiving vessel and is rapidly and evenly cooled to a temperature below the liquidus temperature en route. The glass is maintained in the receiving vessel in a body without reheating above the liquidus temperature and a glass product of predetermined shape is downwardly drawn from the body of glass in an otherwise conventional fashion.



3,607,185
METHOD FOR FORMING MULTIBORE TUBING

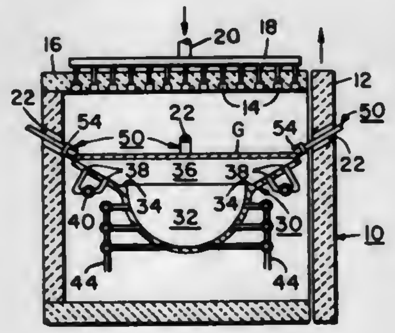
Carl D. Andrysiak, Painted Post, and Richmond W. Wilson, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Oct. 7, 1968, Ser. No. 765,494
Int. Cl. C03b *15/14;* **C03c** *23/20*
U.S. Cl. 65—86 **5 Claims**



Thin-walled multibore tubing have from about 10 to over 300 individual longitudinal bores is unitarily formed by drawing molten glass downwardly through a multiple bell orifice structure so as to provide a multiplicity of small diameter holes or bores having thin-walled partitions therebetween which produce an open frontal area of up to about 80 percent of the cross-sectional area of such tubing with a hole density of over 200 holes per square inch.

3,607,186
METHOD AND APPARATUS FOR FORMING HOLLOW ARTICLES FROM SHEET GLASS

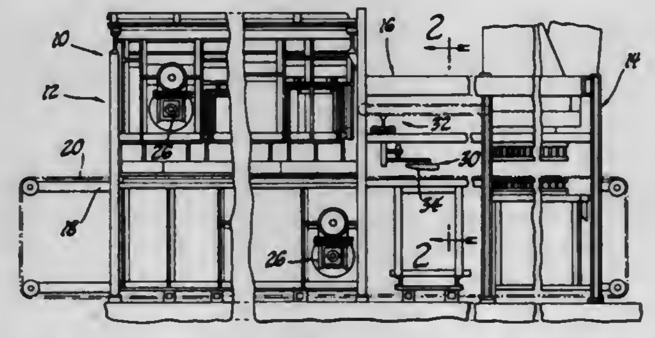
Lewis L. Bognar, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,523
Int. Cl. C03b *23/02*
U.S. Cl. 65—104 **9 Claims**



Sheet glass positioned upon a preheated forming mold is rapidly heated to approximately its softening point whereupon, as the sheet begins to sag, it is controllably fed into the forming cavity of the mold by the simultaneous application of vacuum to such cavity and pressure to a feeding surface surrounding such cavity, so as to form a hollow article of substantially the same uniform thickness as the glass sheet.

3,607,187
METHOD AND APPARATUS FOR RESHAPING GLASS SHEETS

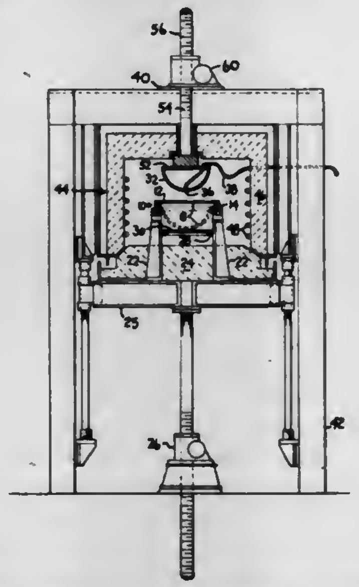
Harold A. McMaster, Woodville, Ohio, assignor to Permaglass, Inc., Millbury, Ohio
Filed Jan. 8, 1969, Ser. No. 789,795
Int. Cl. C03b *23/02*
U.S. Cl. 65—106 **25 Claims**



A method and apparatus for curving a sheet of glass wherein a substantially flat sheet of glass is conveyed through a heating means and removed from the conveyor by a mold means having a curved surface with a vacuum supplied thereto for pulling the sheet thereagainst to curve the sheet. The mold means is then moved through the apparatus to move the sheet to a cooler medium where it is replaced on conveyor means. There is also included a cooling means. In one embodiment the conveying means comprises an endless loop conveyor extending through the heating means and through the cooling means, and the mold means moves into the cooling means and replaces the curved sheet onto the conveyor in the cooling means. In a second embodiment the conveying means includes an endless loop conveyor in the heating means only and an endless frame or ring is disposed exteriorly of a cooling means so that the mold means lifts the sheet of glass from the loop conveyor with the vacuum and then moves to place the curved sheet of glass on the frame which in turn moves into the cooling means for cooling the sheet of glass.

3,607,188
METHOD AND APPARATUS FOR BENDING GLASS SHEETS

George W. Stilley, Freeport, and Herbert W. Ellenfeld, Brackenridge, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Aug. 6, 1969, Ser. No. 847,883
Int. Cl. C03b *23/02*
U.S. Cl. 65—106 **10 Claims**



Apparatus and method for shaping glass into spherical shapes by extrusion using a ring support, a plunger movable from above to below said ring support and means other than a mold shaping surface for receiving the shaped glass disposed below the ring support.

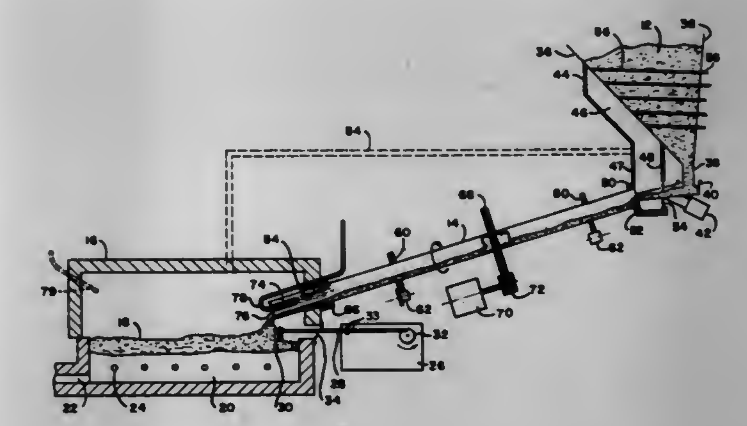
3,607,189
MELTING PARTICULATE GLASS BATCH

William Manring, Hamilton, Ohio, assignor to FMC Corporation, New York, N.Y.
Filed Dec. 23, 1968, Ser. No. 786,353
Int. Cl. C03b *5/16*
U.S. Cl. 65—134 **5 Claims**

An improved process for producing glass designed for television tubes is described comprising adding either barium carbonate or strontium carbonate to a glass batch in the form of hard, prefused particles made by fusing a mixture of said barium carbonate (or strontium carbonate) with at least 20 percent by weight of sodium carbonate and/or potassium carbonate.

3,607,190
METHOD AND APPARATUS FOR PREHEATING GLASS BATCH

Harvey Larry Penberthy, 5624 S. W. Admiral Way, Seattle, Wash.
Filed Sept. 14, 1967, Ser. No. 667,773
Int. Cl. C03b *5/16*
U.S. Cl. 65—134 **13 Claims**



A rotary inclined preheated kiln receives batch from a hopper and preheats the batch within a temperature range, preferably between about 1200° F. to 1500° F. by a gas burner located at the discharge end of the kiln. Effluent gas from the furnace may also be fed into the kiln for preheating purposes and the combustion and/or effluent gases may then be discharged into pipes disposed in the supply hopper in heat exchange relation with the batch therein. The gases exiting from the kiln are maintained above the dew point. Another form provides a second hopper supplying refining agents to the preheated batch prior to charging in the furnace. A third form adds sulfate and amber glass to the batch whereby the iron sulfide in the amber glass is sealed in a glass matrix and is preserved for reaction with the sulfate to release sulfur dioxide for the refining process.

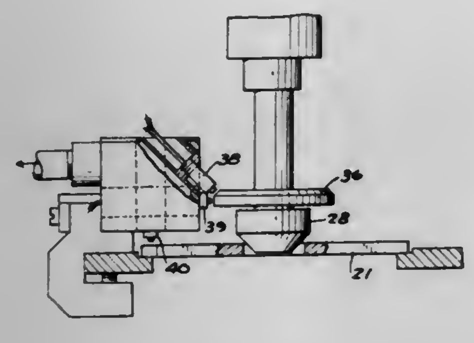
ERRATUM

For Class 65—136 see:
Patent No. 3,606,825

3,607,191
GLASS-FORMING MACHINE WITH POSITION SENSING MEANS

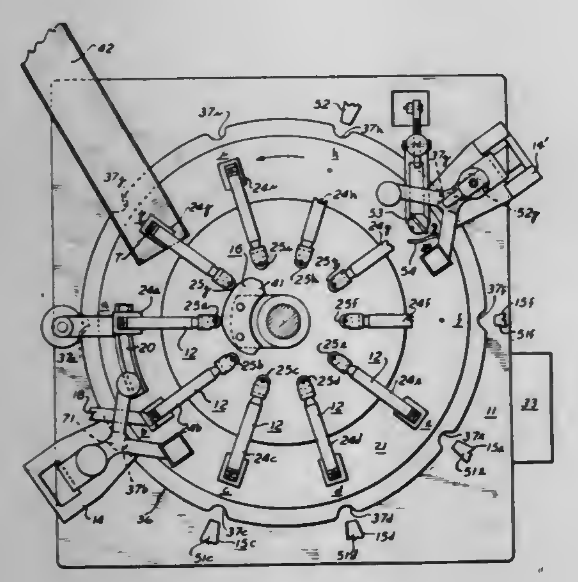
Richard A. Birner, and Arthur C. Einfalt, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed June 15, 1970, Ser. No. 46,432
Int. Cl. C03b *21/04*
U.S. Cl. 65—158 **7 Claims**

A glass-forming machine comprising a first articulated conveyor that has a plurality of orifice plates onto which a ribbon of glass is delivered and a second articulated conveyor having a plurality of plungers moving along in synchronism with the orifice plates and movable radially toward and away from the glass ribbon on the orifice plate. Means are provided along a portion of the path of each of the conveyors for sensing the positions of the orifice plates and the plungers as they pass a sensing station. The resultant sensing pulses are analyzed to determine the relative synchronization of the orifice plates and plungers.



3,607,192
MULTIPLE STATION AUTOMATED CONTROL DEVICE FOR GLASS THERMOMETERS

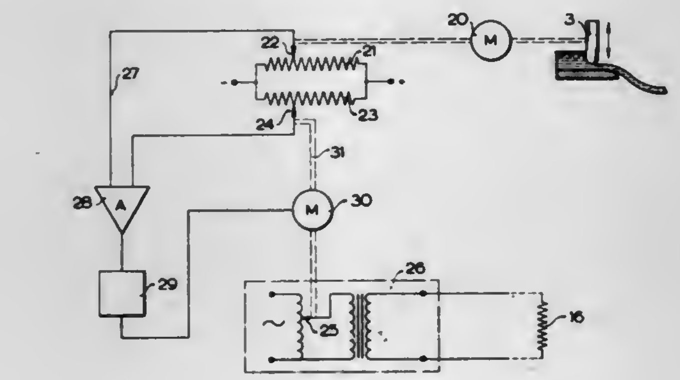
Charles Eisler, Jr., Short Hills, N.J., assignor to Eisler Engineerig Co., Newark, N.J.
Filed Oct. 22, 1968, Ser. No. 769,552
Int. Cl. C03b *23/10*
U.S. Cl. 65—158 **7 Claims**



The disclosed invention is directed to an automatic, multiple-station turntable apparatus for automatic control of blister collapse in the production of thermometers. The turntable comprises a plurality of holders members for gripping the thermometer, equipment to move the turntable, a first projection and viewing station positioned beyond a loading station, and a heating station positioned beyond the first projection and viewing station to apply heat for collapsing the blister in the thermometer. A second projection and viewing station which includes a manual heat application means which is located beyond the first-mentioned heating station. An annealing station and a dispensing station are located on the last part of the turntable.

3,607,193
FLOAT GLASS APPARATUS WITH HEAT EXCHANGE CONTROL

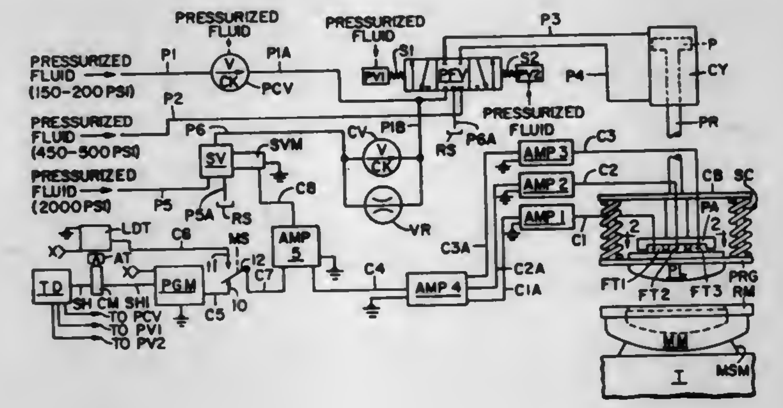
Robert Bourggraff, Cologne, and Franz Classen, Porz-Grengel, both of Germany, assignors to Erste Deutsche Floatglas GmbH & Co., Cologne, Germany
Filed May 16, 1968, Ser. No. 729,635
Claims priority, application Germany, May 16, 1967, E 33991
Int. Cl. C03b *18/02*
U.S. Cl. 65—160 **3 Claims**



The specification describes a float glass production plant in which, in order to prevent breakages, variations in the rate of feed of molten glass onto a metal bath are arranged to bring about variations in heating of the glass near the position at which it leaves the bath.

3,607,194
PRESSURE CONTROL SYSTEM FOR GLASSWARE PRESS MOLDING

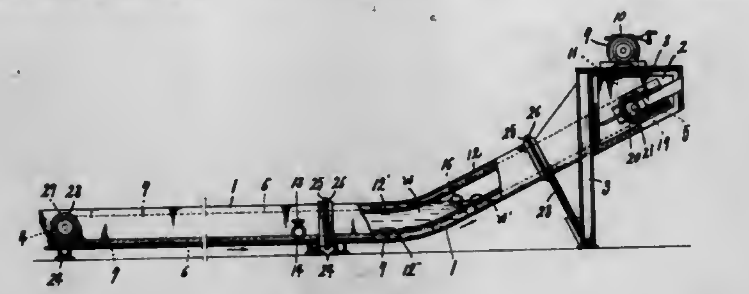
Daniel R. Ayers, Shelburne, Vt., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 20, 1970, Ser. No. 29,188
Int. Cl. C03b *11/16*
U.S. Cl. 65—160 **6 Claims**



A system for controlling the pressing forces exerted by complemental mold members against a charge of molten thermoplastic material during a press forming stage of a cycle of press forming of the charge into an article having desired dimensions and shape. Means are employed for providing a first varying signal or sequence of signals representative of a program for said pressing forces, a second varying signal or sequence of signals representative of the actual pressing forces exerted during said press forming stage, and comparing said signals to produce third signals representative of any differences in the first and second signals or sequences thereof. The third signals control the pressing forces by selective adjustment of pressurized fluid supplied for actuation of at least one of the mold members toward the other during the press forming stage of the cycle of press forming the charge of molten material.

3,607,195
APPARATUS FOR FRACTURING HOT GOBS OF GLASS

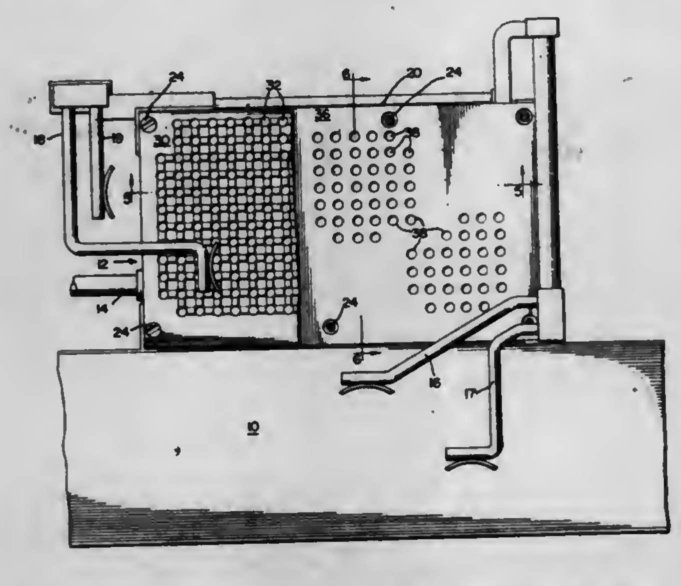
Yasuo Horio, Yao-shi, Japan, assignor to Yamabishi Industry Co., Ltd., Yao-shi, Osaka, Japan
Filed May 19, 1969, Ser. No. 825,914
Claims priority, application Japan, May 25, 1968, 43/35653
Int. Cl. C03b *37/00*
U.S. Cl. 65—165 **4 Claims**



Apparatus for fracturing hot glass lumps or gobs by dropping them from the heating furnace supply into cold water being circulated in a conveyor through where the sudden temperature change fractures the lumps or cracks them ready for fracturing into small pieces; and improved bath and conveyor apparatus in which the initially unsuitable molten gobs or lumps of glass are fractured and collected for reprocessing for ultimate productive use.

3,607,196
DEAD PLATE ASSEMBLY FOR FRESHLY FORMED GLASSWARE

Francis J. Garvey, Newfield, N.J., assignor to Garvey Products Corporation, Blue Anchor and Hammonton, N.J.
Filed Mar. 25, 1968, Ser. No. 715,819
Int. Cl. C03b *27/00*
U.S. Cl. 65—167 **9 Claims**

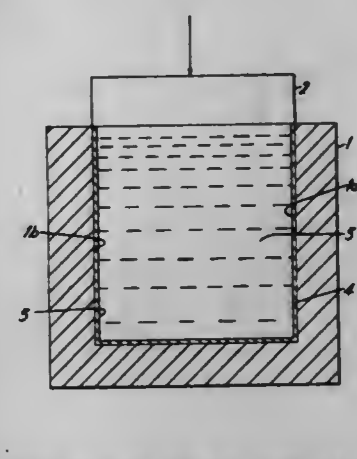


A dead plate is provided in three mutually superposed layers: (1) a strong flat bottom layer fully perforated all over and permanently covering the air box, (2) a similarly perforated readily removable top layer formed with spaced depressions and elevated points for making minimal contact with the hot newly molded glassware, and (3) an intervening flat plate interchangeably selected from a series each of which is provided with perforations in a limited area of special pattern for conforming desirably closely to a particular size and shape of ware intended to traverse the dead plate.

3,607,197
MANUFACTURE OF FIBER OPTIC STACKS

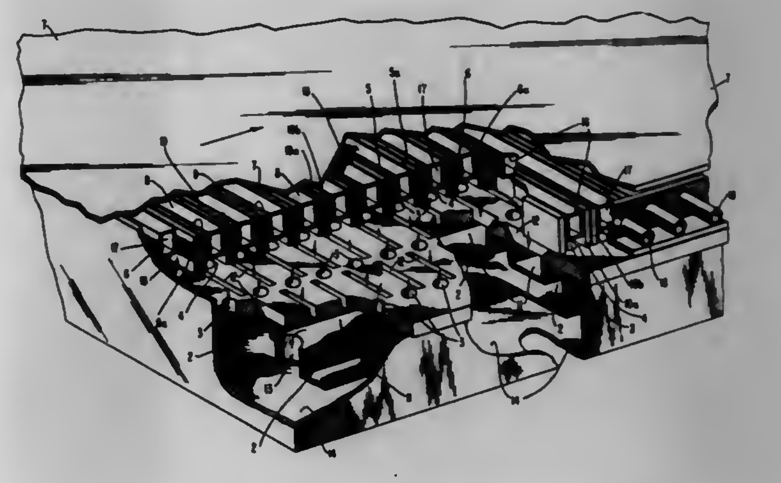
John M. Ballantine, Glasgow, Scotland, assignor to Barr & Stroud Limited
Filed Nov. 6, 1968, Ser. No. 773,883
Claims priority, application Great Britain, Nov. 10, 1967, 51168/67
Int. Cl. C03c *23/20, 39/00;* **C03b** *39/00*
U.S. Cl. 65—169 **6 Claims**

A process for manufacturing fiber optic stacks from an array of fibers subjected to heat and pressure in a fusion vessel, the array being separated from the vessel by a metal foil. The fusion vessel may be of graphite. A high-temperature lubricant, preferably boron nitride, may be used between the foil and the vessel.



3,607,198
APPARATUS FOR PNEUMATICALLY SUPPORTING FLEXIBLE RIBBONS AND SHEETS OUT OF CONTACT WITH SOLIDS

George Meunier, Saint-Maur; Hubert Michaud, Paris, and Roland Souchet, Asnieres, all of France, assignors to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France
Filed Mar. 4, 1968, Ser. No. 710,016
Claims priority, application France, Mar. 31, 1967, 101,018
Int. Cl. C03b *25/04*
U.S. Cl. 65—182 A **23 Claims**

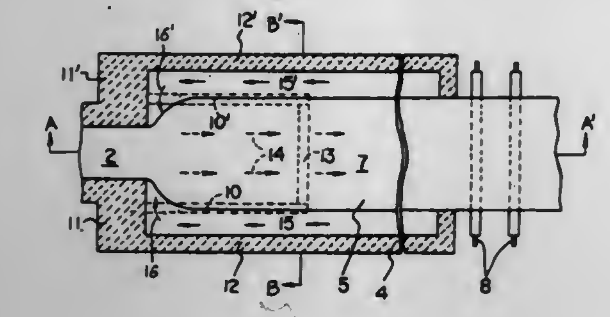


Moving hot glass sheet and similar ribbons of material are supported pneumatically out of contact with solid surfaces by establishing alternate zones of static and kinetic gas pressure along the passage of sheet. Each zone extends substantially across the full width of the sheet. Apparatus for controlling the temperature and pressure of the zones so as to perfect the sheet are described.

3,607,199
FLOAT GLASS APPARATUS WITH FLOW CONTROL DAMS

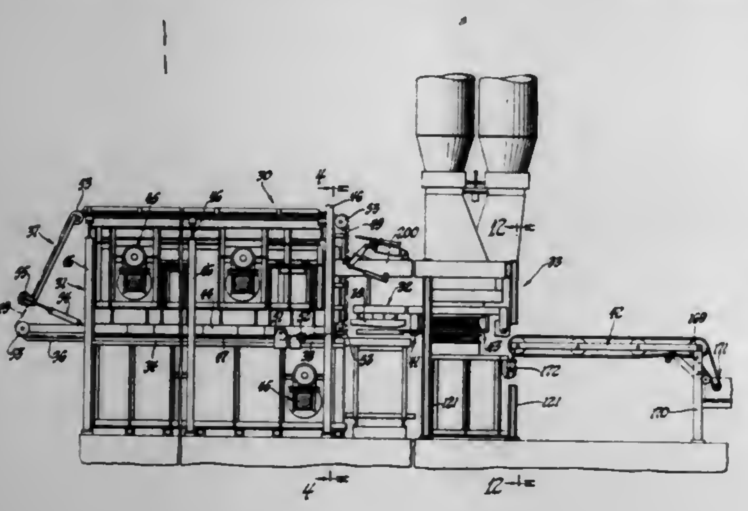
Kiyoshi Itakura, Nishinomiya-shi, and Seizo, Noguchi, Amagasaki-shi, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Sept. 20, 1968, Ser. No. 761,030
Claims priority, application Japan, Sept. 29, 1967, 42/62729
Int. Cl. C03b *18/02*
U.S. Cl. 65—182 R **6 Claims**

In a float process for the manufacture of float glass on a molten metal bath, physical dam barriers are disposed longitudinally and laterally in the bath in a U-shape form in plan view, so as to form predetermined and separated backflow currents at laterally opposite sides of the glass ribbon being formed, which backflow currents flow from the downstream and progressively cooled end of the molten bath back toward the hottest or upstream end thereof flowing around or through the longitudinal barrier ends, as spaced from the upstream end walls of the bath tank, to reenter and rejoin the bath flow beneath the glass ribbon at the upstream or glass-entering end to thereby become gradually and sufficiently reheated, thereby together serving to remove a potential cause for effecting irregularities in the flatness of the glass.



3,607,200
APPARATUS FOR CONVEYING GLASS SHEETS THROUGH ADJACENT BENDING AND TEMPERING STATIONS

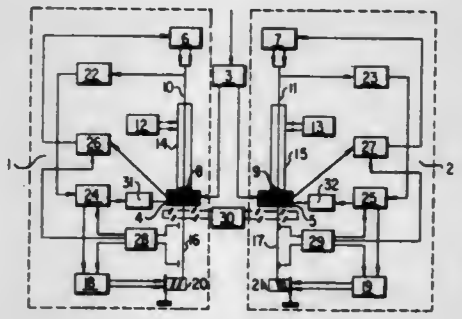
Harold A. McMaster, Woodville, Ohio, assignor to Permaglass, Inc., Millbury, Ohio
Filed Dec. 18, 1967, Ser. No. 691,326
Int. Cl. C03b *23/02, 27/00*
U.S. Cl. 65—182 A **59 Claims**



An apparatus for curving a sheet of glass including a furnace having an elongated gas support bed for supporting sheets of glass thereover, conveying means for moving a sheet from the first end to the second end of the bed, a bending station disposed adjacent the second end of the bed and including a sheet supporting surface for supporting a sheet of glass on gases thereover, a shuttle means for moving a sheet of glass from the second end of the bed to the gas supporting surface in the bending station, a blasthead adjacent the bending station for impinging fluid against opposite sides of the sheet for cooling thereof, oscillating means in the blasthead for oscillating a sheet therein, and unitary frame means for lifting a sheet from the gas supporting surface in the bending station for bending the sheet and for thereafter moving the sheet into the blasthead while at the same time removing a sheet from the oscillating means in the blasthead to remove the sheet from the blasthead. The independently novel features of the conveying assembly are the shuttle means and its specific structure for moving a sheet of glass from the furnace to the bending station, the single unitary frame means for supporting a sheet in the bending station and moving it into the blasthead while simultaneously removing a sheet from the blasthead, the unique support of the forming surface means in the bending station against which a sheet is pressed for curving thereof, and an oscillating means in the blasthead for removing a sheet from the frame means and oscillating the sheet in the blasthead while it is being cooled.

3,607,201
INSTALLATION FOR CASTING A MICROWIRE IN GLASS INSULATION

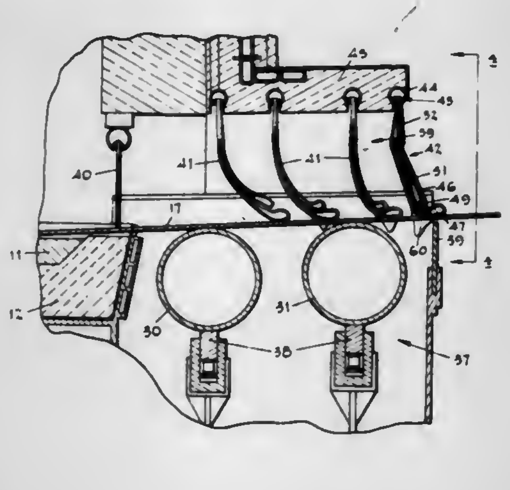
Vitaly Ippolitovich Zaborovsky, ul. Kalinina, 2/16; Oleg Alexeevich Ivanov, Demokraticheskaya ul. 10/3, kv. 53, and Anatoly Nikolaevich Savenkov, ul. Dimo, 17/1, kv. 46, all of Kishinev, U.S.S.R.
Continuation of application Ser. No. 547,308, May 3, 1966, now abandoned. This application Nov. 28, 1969, Ser. No. 876,193
Int. Cl. C03b , *25/02, 29/00*
U.S. Cl. 65—162 **3 Claims**



An installation is provided for casting microwire in glass insulation, in which the charge metal and glass supplied into the microbath are melted with by means of a high-frequency generator inductor and the resultant microwire is wound on a receiving bobbin. The installation also comprises a device for controlling the linear resistance of the microwire adapted for use as a transmitter for correcting the operating conditions of microwire casting, such as the microwire reception speed and the microbath temperature.

3,607,202
FLOAT GLASS PLENUM CHAMBER CLOSURES

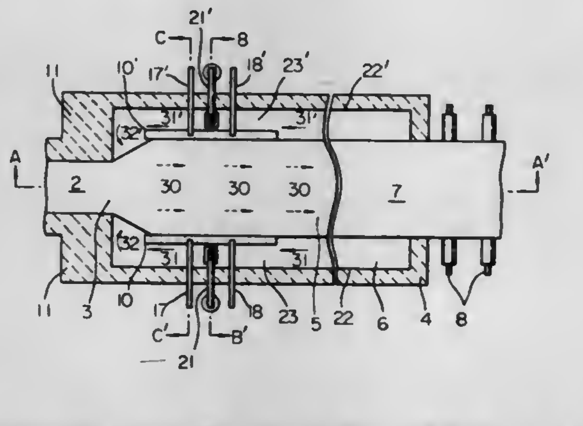
Francis L. Swillinger, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Glass Company, Toledo, Ohio
Filed Feb. 27, 1968, Ser. No. 708,542
Int. Cl. C03b *18/00*
U.S. Cl. 65—182 R **6 Claims**



This application discloses a plenum chamber for enclosing the atmosphere above the float bath in a float glass forming apparatus, with a closure drape at its exit end that is made up of a doubled or looped sheet of asbestos supported from its free ends to hang with its loop end adjacent the glass ribbon moving over the float bath, a metal rod hung inside and acting to maintain the looped sheet in a generally vertical plane, and a looped sheet of a different refractory material hung adjacent and similar to the asbestos sheet but enough longer to permit its loop end to lie on the moving ribbon of glass and to be carried thereby beneath the metal rod.

3,607,203
FLOAT GLASS APPARATUS WITH LONGITUDINAL DAMS AND METAL FLOW CONTROL MEANS

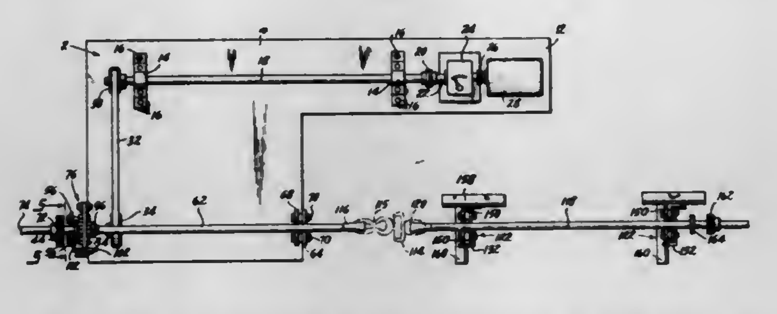
Yukiya Fujimoto, and Masanari Matsushita, both of Kyoto-fu, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed July 1, 1968, Ser. No. 741,361
Claims priority, application Japan, July 7, 1967, 42/43712
Int. Cl. C03b *18/02*
U.S. Cl. 65—182 R **10 Claims**



Apparatus for manufacturing glass ribbon on a bath of molten metal, comprising a tank for holding the bath and a pair of dams disposed in the bath for constituting a path for the floating glass ribbon therebetween, characterized in that between each side wall of the tank and the dam facing it there is provided means for controlling the flow of the molten metal, including apparatus to set up a forced flow of variable rate and longitudinal direction.

3,607,204
APPARATUS FOR USE IN HANDWORKING GLASS

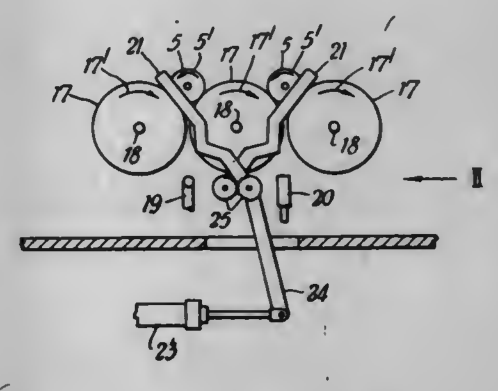
Dudley F. Gilbertson, Jr., Box 202 Joppa Road, Warner, N.H.
Filed Jan. 30, 1969, Ser. No. 795,250
Int. Cl. C03b *9/00*
U.S. Cl. 65—228 **15 Claims**



Apparatus for enabling a lone craftsman to handwork hot glass without any assistants, comprising a bench having two spaced supports each carrying a pair of parallel rollers for centering a glassworking implement thereon. One of the supports carries a driven shaft with a drive gear at one end and a pulley at the other. A blowpipe is provided with a pinion gear that can be placed in mesh with the drive gear while the blowpipe is resting on the rollers. The support also carries a clamp for locking the pinion in mesh with the drive gear. Power is transmitted to the pulley on the driven shaft through a main shaft, a drive pulley, and a belt. The main shaft is driven by a conventional, variable speed transmission powered by an electric motor. The blowpipe carries a collar that is cooperable with the rollers and abutment means on the one support for preventing the blowpipe from shifting lengthwise when its pinion is in mesh with the drive gear. The clamp is releasable so that the blowpipe can be manually shifted to take its pinion out of mesh with the drive gear. The blowpipe is then free to be hand-manipulated on the roller supports. A punty is provided with a similar pinion and collar and can be engaged with or disengaged from the drive gear in the same manner as the blowpipe. A pair of stands, each having an adjustable member carrying self-centering roller supports for the punty, are positioned in axial alignment with the blowpipe to aid in supporting or working an object on the blowpipe.

3,607,205
APPARATUS FOR HEAT-TREATING ELONGATED TUBULAR MATERIAL

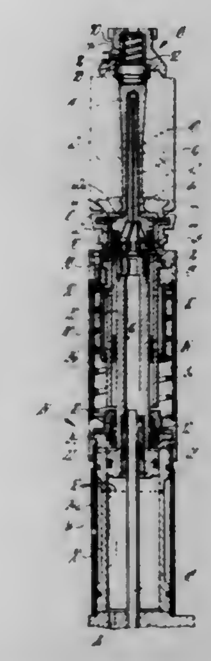
Michael Latham, and Alexander Bryan Haswell, both of Durham County, England, assignors to James A. Jobling & Company, Limited, Sunderland, England
Filed Apr. 28, 1969, Ser. No. 819,629
Claims priority, application Great Britain, Apr. 30, 1968, 20519/68
Int. Cl. C03b *29/00*
U.S. Cl. 65—271 **9 Claims**



Apparatus for treating elongated tubular material comprising heating the material, prior to a further working thereof, first by subjecting the material to a stationary heat source while rotating the material, and then by oscillating a source of heat substantially in the direction of length of the material while rotating the material.

3,607,206
PARISON FORMING UNIT FOR GLASSWARE FORMING MACHINE

Thomas V. Foster, Oberengstringen, and Hermann H. Nebelung, Binz-Maur, both of Switzerland, assignors to Emhart Corporation, Bloomfield, Conn.
Filed Aug. 19, 1969, Ser. No. 851,422
Int. Cl. C03b *11/10*
U.S. Cl. 65—307 **10 Claims**



At the blank mold or parison forming station of a glassware forming machine a neck ring mold mates with a blank mold to form an inverted parison cavity with a top opening into which a molten glass charge is dropped. A vertically reciprocable plunger is arranged to close the bottom of the cavity and a baffle subsequently closes the top opening. A plunger operating mechanism then raises the plunger to force the molten glass charge outwardly against the walls of the cavity, and especially into the neck ring mold, after which the plunger is withdrawn, and the blank mold and baffle are removed. The neck ring then swings the inverted glass parison over to a blow mold station for further forming. The plunger is free to float laterally in its holder to accommodate variations in alignment therebetween, and the baffle floats vertically to accommodate variations in the size of the molten glass charge.

3,607,207

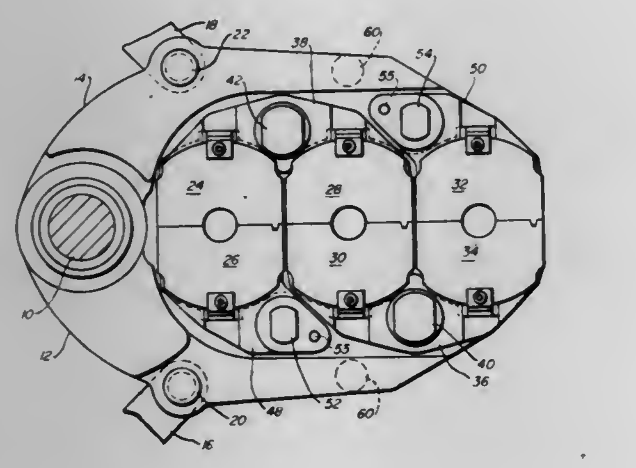
TRIPLE GOB MOLD HOLDER ARM CONSTRUCTION

Francis A. Dahms, Tariffville, Conn., and Thomas V. Foster, Witikon, Switzerland, assignors to Emhart Corporation, Bloomfield, Conn.

Filed Feb. 18, 1969, Ser. No. 800,165

Int. Cl. C03b *11/16*

U.S. Cl. 65—307 **1 Claim**



A Hartford I. S. type glassware-forming machine has a triple-gob section with a blow mold site having three individual split mold sections mounted on one primary mold holder arm and adapted to mate with three corresponding split mold sections on another primary arm to define three in-line mold cavities. One of the three split mold sections associated with each primary arm is mounted directly thereto, whereas the remaining two are mounted to a secondary arm which can float slightly in order to align all three of the cavity defining mold sections during closing movement of the primary mold holder arms.

3,607,208

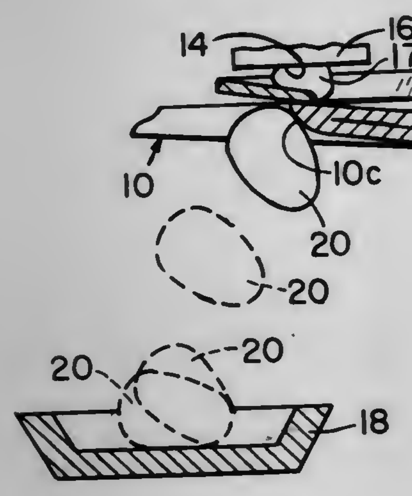
MOLTEN GLASS SHEARS

George A. Kapral, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,490

Int. Cl. C03b *5/38*

U.S. Cl. 65—334 **2 Claims**



Modification of one blade of a pair of shears used for cutting off elongated mold charges from columns or streams of molten glass issuing from a discharge orifice in the bottom of a forehearth. Modification comprises increasing the thickness of the lower blade of the shears in selected regions thereof so that each mold charge, immediately following its sheared separation from a column of molten glass, is contacted and pushed by the lower surface of the lower blade and thereby turned so that it lands on its side in its forming mold cavity. Heretofore, glass-charge contact members or so-called "bumpers" were used to turn the glass charges but such devices often caused objectional "bumper marks" in the articles subsequently formed from the glass charges. Such marks are eliminated by the use of shears of the present disclosure.

3,607,209

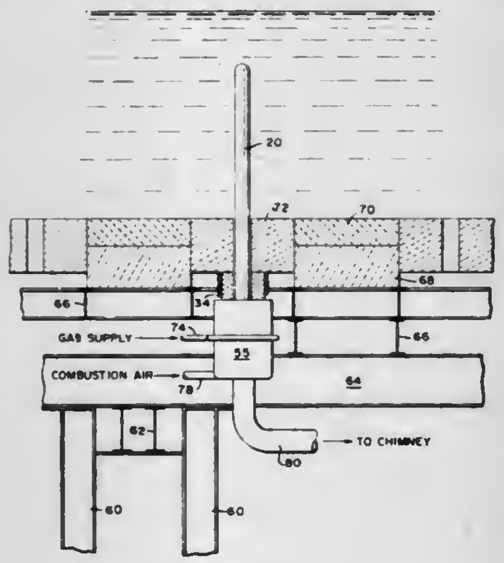
GLASS FURNACE WITH HEAT PIPE MELTING

Lazaros J. Lazaridis, Lincoln, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed May 26, 1969, Ser. No. 827,589

Int. Cl. C03b *5/04*

U.S. Cl. 65—337 **8 Claims**



An industrial furnace for the melting of glass which includes a tank of refractory material capable of containing molten glass. Heat pipes penetrate that part of the refractory wall which is wetted by glass and are immersed in the molten glass in such a manner as to heat the glass uniformly. The heat pipes are energized from burners disposed outside the tank. Molten glass may be permitted to flow between the heat pipes and the ports in the wall of the tank through which they protrude. This glass protects the heat pipes from exposure to air and burner flames. Also, when this glass freezes as it contacts the much cooler ambient air and accessory cooling collars, it forms seals to prevent the escape of additional molten glass from the tank.

3,607,210

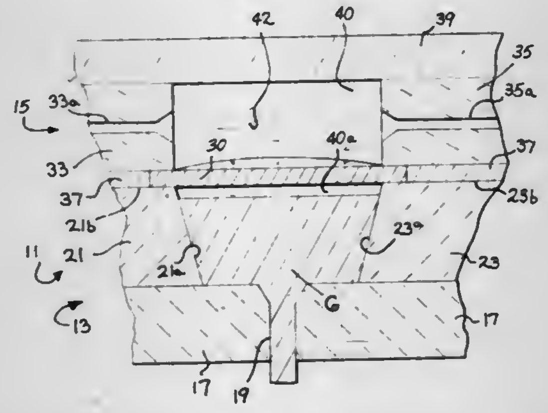
APPARATUS FOR CONVEYING GLASS IN A FOREHEARTH

Magnus L. Froberg, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed Feb. 23, 1968, Ser. No. 707,818

Int. Cl. C03b *5/16*

U.S. Cl. 65—346 **12 Claims**



A forehearth construction which comprises a channellike lower segment formed of refractory for conveying molten glass, an upper segment defining a generally coextensive, generally closed chamber for confinement and circulation of burning gases to control and regulate the temperature of said molten glass in said lower segment and a barrier or shield member located between said segments, said shield being a heat conductor resistant to deformation in the temperature range 1,800° F. to 2,400° F. and resistant to refractory attacking volatiles emanating from said glass.

3,607,211

SOIL MICRONUTRIENT PRODUCT

Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,339

Int. Cl. C05f *11/02*

U.S. Cl. 71—1 **15 Claims**

A soil micronutrient product prepared from petroleum coke by oxidizing said coke with oxygen in the presence of water followed by contacting with a metal or ammonium containing cation solution to produce a family of cation exchanged derivatives of oxidized coke. The products of the invention may be used as a plant mulch, a soil conditioner, a source of carbon and trace elements for soil micro-organisms, petroleum catalyst and as a low cost ion-exchange resin.

3,607,212

A BROWN COAL FERTILIZER PRODUCT AND PROCESS FOR PREPARING SAME

Gottfried Nettesheim, Wesseling; Ernst Petzold, Grosskonigsdorf, and Hermann Pruckner, Wesseling, all of Germany, assignors to Union Rheimische Braunkohlen Kraflstoff Aktiengesellschaft, Cologne, Germany

Filed Jan. 7, 1969, Ser. No. 789,622

Claims priority, application Germany, Feb. 2, 1968, P 16 67 799.9

Int. Cl. C05f *7/00, 11/02*

U.S. Cl. 71—12 **3 Claims**

Agents for improving the fertility of soil consisting of a mixture of brown coal and a material which is capable of being decomposed by bacteria such as α-cellulose-containing waste residues, sugar-containing residues, sawdust and sewage sludge.

3,607,213

PROCESS OF PRODUCING CONCENTRATED POTASSIUM-CALCIUM PHOSPHATIC FERTILIZER

Schroeder Jerzy, Wroclaw; Zielinski Stefan, Wroclaw; Dziadur Janusz, Kwaczala; Luty Stanislaw, Kwaczala; Czunko Adam, Chrzanow, and Synowiec Jerzy, Gliwice, all of Poland, assignors to Zaklady Chemiczne, Alwernia, Poland

Filed Oct. 29, 1968, Ser. No. 771,606

Claims priority, application Poland, Nov. 2, 1967, P123361

Int. Cl. C05b *11/10, 7/00*

U.S. Cl. 71—33 **1 Claim**

Process of producing potassiumphosphatic fertilizer comprising reacting potassium chloride with phosphoric acid in amount of about 35–55 percent by weight of excess over a stoichiometric amount at 120°–350° C. and neutralizing the excess phosphoric acid with calcium oxide at the same temperature. The neutralization product is melted at 750°–1000° C. and fast cooled to ambient temperature. The fertilizer obtained is fully water-soluble and nonhygroscopic.

3,607,214

FLUID BED PROCESSING

Warren Jack Seiffe, Warren, Pa., assignor to Struthers Wells Corporation

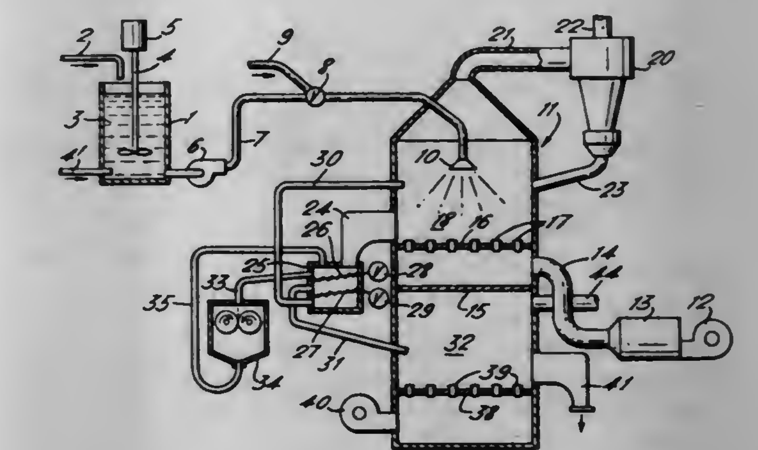
Filed Apr. 5, 1968, Ser. No. 719,046

Claims priority, application Great Britain, Apr. 18, 1967, 17761/67

Int. Cl. C05b *11/10*

U.S. Cl. 71—34 **7 Claims**

Phosphate fertilizers, diammonium phosphate and triple superphosphate, are produced in a fluid bed dryer in which a sprayed slurry forms granules which are then dried and classifed.



3,607,215

METHOD FOR THE CONTROL OF UNDESIRED VEGETATION OF PERENNIAL GRASSES WITH FLUOROPROPIONIC ACIDS AND THEIR DERIVATIVES

Shiro Watanabe, Osaka-shi; Keiichi Maruo, Sulta-shi, and Hiroshi Ono, Koga-gun, all of Japan, assignors to Daikin Kogyo Co., Ltd.

Filed Feb. 17, 1969, Ser. No. 799,922

Claims priority, application Japan, Feb. 19, 1968, 43/10646

Int. Cl. A01n *9/24*

U.S. Cl. 71—113 **13 Claims**

A method for the control of undesired vegetation of perennial grasses of Cyperaceae and Gramineae which comprises applying one or more times at least one of the acids of the formula:

wherein X is chlorine or fluorine and their salts, amides and esters to the area where the herbicidal effect is desired in a total amount, which exerts no herbicidal action in an applied season, from about 5 g. to about 50 g. per area during the growing period of the grasses up to the three-leaf stage, the floral bud formation stage or the dormant tissue formation stage, or beyond so as to exert the herbicidal effect which controls the germination and growth of the grasses in the subsequent seasons by the accumulative phytotoxicity.

3,607,216

PROCESS FOR THE RECOVERY OF TIN FROM TIN ORES AND OTHER TIN-BEARING MATERIALS

Antonie C. van Elst, Velp, Netherlands, assignor to N. V. Billiton Maatschappy, The Hague, Netherlands

Filed Nov. 4, 1968, Ser. No. 773,323

Claims priority, application Netherlands, Nov. 3, 1967, 6714949

Int. Cl. C21b *1/00*

U.S. Cl. 75—1 **11 Claims**

This invention relates to a process for the recovery of tin from tin ores and other tin-bearing materials by volatilization of the tin constituents in the form of tin sulfide, and possible further processing of the tin-containing flue dust on metal, alloys or compounds, comprising carrying out the volatilization with a starting material to which an amount of phosphorus-containing material has been added in such a proportion that there is at least 0.1 gram-atom P per gram-atom Fe present in the starting mixture.

3,607,217

AGGLOMERATION OF PARTICULATE METALS

William J. Metrailer, East Baton Rouge, La., assignor to Esso Research and Engineering Company

Filed Dec. 11, 1968, Ser. No. 782,912

Int. Cl. C21b *1/28;* C22b *7/02, 1/10*

U.S. Cl. 75—4 **10 Claims**

Very finely divided metal particles are agglomerated in a fluidized bed to useful larger sizes by coking heavy hydrocarbons in the bed at 850° to 1,100° F.

3,607,218

PROCESS FOR THE PRODUCTION OF MAGNETIC SUBSTANCES

Goro Akashi, and Masaaki Fujiyama, both of Odawara-shi, Japan, assignors to Fuji Photo Film Co., Ltd, Ashigara-Kamigum, Kanagawa, Japan
Filed Aug. 28, 1969, Ser. No. 853,970
Claims priority, application Japan, Aug. 29, 1968, 43/61974
Int. Cl. B22f *9/00;* **H01f** *1/02, 1/20*
U.S. Cl. 75—0.5 AA **7 Claims**

Producing ferromagnetic metal powders by the reduction of a ferromagnetic metal salt using hypophosphite ions can be improved by adding a viscosity increasing material to the aqueous reaction system.

3,607,219

METHOD OF PREPARING A METAL POWDER CONSISTING AT LEAST SUBSTANTIALLY OF IRON FOR MAGNETIC RECORDING

Aart Antonie Van Der Giessen, and Freerk Huizinga, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 26, 1969, Ser. No. 802,679
Claims priority, application Netherlands, Mar. 5, 1968, 6803123
Int. Cl. H01f *1/06;* **B22f** *9/00*
U.S. Cl. 75—0.5 BA **2 Claims**

Iron powders (which may contain, in addition, nickel and/or cobalt) to be used for magnetic recording are prepared according to the invention by reducing the metal oxidic or metal hydroxidic starting material in a finely divided state with a gaseous reduction agent (preferably hydrogen) at a pressure of at least 10 atm. The advantage hereof is that the reduction is effected at an acceptable rate at comparatively low temperatures at which sintering of the formed metal particles does not yet occur. Actually, such a sintering unfavorably affects the properties of the powders in question with a view to their usability for magnetic recording.

3,607,220

METHOD OF PREPARING A MAGNETICALLY STABLE POWDER CONSISTING MAINLY OF IRON FOR MAGNETIC RECORDING

Aart Antonie vanderGiessen, and Cornelis Johannes Klomp, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 26, 1969, Ser. No. 802,680
Claims priority, application Netherlands, Mar. 5, 1968, 6803122
Int. Cl. B22f *9/00*
U.S. Cl. 75—0.5 AA **3 Claims**

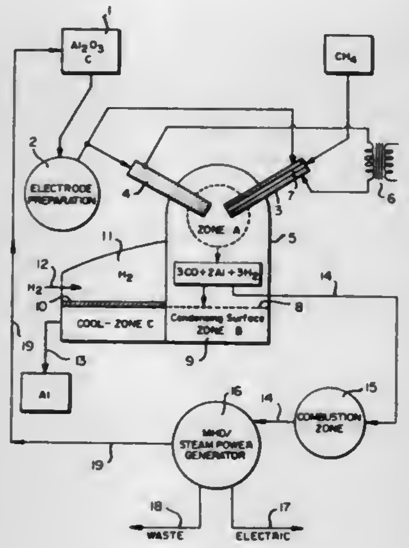
Iron powder suitable for use as a magnetic recording medium is prepared by first subjecting a finely divided iron oxide or oxyhydrate such as α-Fe_20_3, γ-Fe_20_3, α-Fe00H, γ-Fe00H or Fe_30_4 to the action of a 0.002 to 1 molar solution in water of stannous chloride and thereafter reducing the iron oxide or oxyhydrate, preferably in hydrogen, followed by stabilizing the iron powder thus obtained.

3,607,221

CARBOTHERMIC PRODUCTION OF ALUMINUM

Robert M. Kibby, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.
Filed Feb. 17, 1969, Ser. No. 799,672
Int. Cl. C22d *7/02;* **C22b** *21/02*
U.S. Cl. 75—10 **17 Claims**

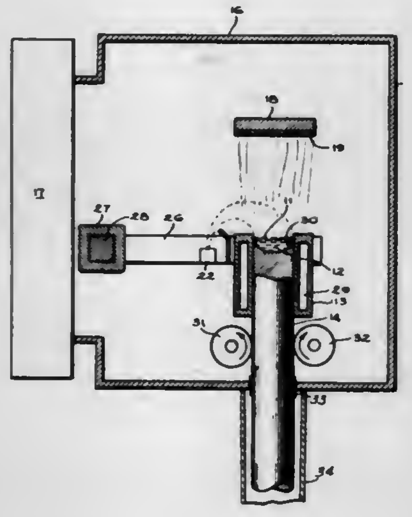
A carbothermic process for the production of substantially pure aluminum metal comprising (a) introducing a feed comprising an aluminum oxide and aluminum carbide and/or carbon into a heating zone; (b) maintaining the heating zone at an elevated temperature sufficient to quickly vaporize all products to essentially only gaseous aluminum and carbon monoxide; (c) containing the vaporous mixture in the absence of a reactive environment with a layer of liquid aluminum at a temperature sufficiently low that the vapor pressure of the liquid aluminum is less than the partial pressure of the aluminum vapor in contact with it and sufficiently high to prevent the reaction of carbon monoxide and aluminum; and (d) recovering the substantially pure aluminum.



3,607,222

METHOD FOR EVAPORATING ALLOY

Kurt D. Kennedy, Berkeley, Calif., assignor to Air Reduction Company Incorporated, New York, N.Y.
Filed Nov. 26, 1968, Ser. No. 780,613
Int. Cl. C23c *13/02;* **B01d** *3/10*
U.S. Cl. 75—10 V **5 Claims**



A method is described for evaporating an alloy from a single crucible in a vacuum enclosure. A solid bar of alloy is fed upwardly into the crucible from the bottom thereof. The alloy is heated to form a covering pool and to produce evaporation. The feed rate of the solid bar is regulated to maintain a substantially constant level of molten alloy relative to the crucible.

3,607,223

PRODUCTION OF LOW-DENSITY MATERIALS

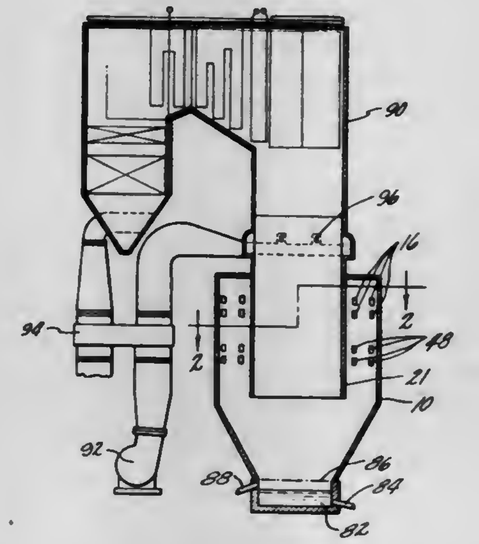
John Massey Trihey, 13 Walsh St., Balwyn, Victoria, Australia
Filed June 17, 1969, Ser. No. 834,136
Claims priority, application Australia, June 19, 1968, 39,404/68
Int. Cl. C21b *5/02*
U.S. Cl. 75—20 F **4 Claims**

Low-density materials are formed by forming a molten mixture of two or more materials, one of which has a lower boiling point than the other and causing the volatilization of the lower boiling point material so as to form a foam of the higher boiling point material.

3,607,224

DIRECT REDUCTION OF IRON ORE

Henry J. Blaskowski, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Mar. 20, 1968, Ser. No. 714,726
Int. Cl. C21b *1/02, 13/02*
U.S. Cl. 75—26 **18 Claims**

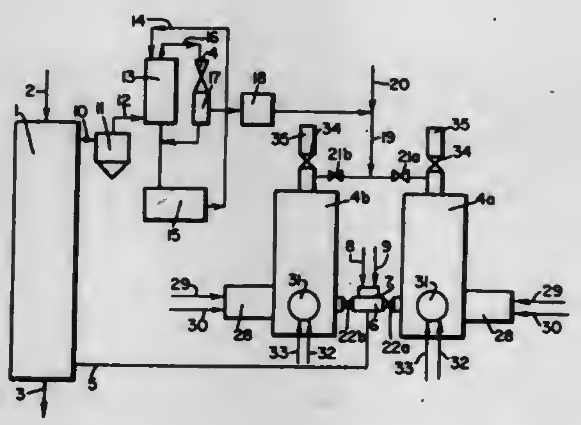


An apparatus and process for the direct reduction of iron ore to steel or high grade iron and the recovery of heat therefrom wherein pulverized coal or other carbonaceous material and oxygen or air are introduced into the upper annular portion of a reactor in a direction tangential to an imaginary circle in the annular portion so as to create a reducing atmosphere of the proper composition and temperature. Pulverized iron ore, fluxing materials and any required additional coal and oxygen are then added, also tangentially, to the reactor at a lower elevation so as to be intimately mixed. The iron ore is reduced in suspension and the molten iron or steel is tapped from the bottom of the reactor. The gaseous products of the reduction reaction are withdrawn from the reactor up through a duct which extends down through the center of the reactor and then passed to a waste heat boiler in which sensible and chemical heat are recovered.

3,607,225

PROCESS AND APPARATUS FOR THE DIRECT REDUCTION OF IRON ORES

Ovidiu Hatares cu; Iosif Tripsa, and Gheorghe Atanasiu, all of Bucharest, Romania, assignors to Institutul De Cercetari Metalurgice, Bucharest, Romania
Filed Jan. 28, 1969, Ser. No. 797,366
Claims priority, application Romania, June 22, 1965, 49,907
Int. Cl. C21b *13/02*
U.S. Cl. 75—35 **3 Claims**



Apparatus and process for reducing iron ore and making sponge iron therefrom wherein a reduction column is formed by charging a vertical shaft furnace with iron-oxide ore and about 5 percent coke in lump form. The iron ore of the column is reduced at a temperature of 800°–850° C. by a reducing gas mixture consisting essentially of 40 to 50 percent by volume hydrogen, 35 to 45 percent by volume carbon monoxide, 2 to 10 percent by volume nitrogen, 3 to 5 percent by volume methane, 2 to 5 percent by volume carbon dioxide and 2 to 4 percent by volume H_2O. Thereafter the hot outlet gas is recovered, combined with a quantity of methane such that the methane in the resulting gas mixture is stoichiometrically equal to the quantity necessary to convert all of the carbon dioxide and H_2O of said outlet gas into carbon monoxide and hydrogen, and reformed by passing it successively through a previously heated regenerator zone thereof to 700 to 900° C, through a nickel-catalyst zone adapted to convert substantially all but a maximum of 4 percent by volume methane of said gas mixture into carbon monoxide and hydrogen by reaction with the carbon dioxide and H_2O of the gas mixture, and through a preheated regenerator zone to raise the temperature of the reformed gas mixture to 800 to 850° C. The sponge iron is recovered along with the major part of the coke added to said column with said charge.

3,607,226

FERROUS MELTING STOCK CONTAINING A CARBON ADDITIVE AND METHOD

Richard D. Burlingame, Cleveland, Ohio, assignor to Luria Brothers & Company, Inc., New York, N.Y.
Filed Aug. 2, 1968, Ser. No. 749,612
Int. Cl. C21b *1/08, 11/00;* **C21c** *5/56*
U.S. Cl. 75—44 R **2 Claims**

Ferrous material having a high surface to mass ratio is coated with a liquid composition comprising sodium silicate and finely divided carbon, and the coating is dried. The coated ferrous material is a suitable partial or total replacement for pig iron, or cast iron scrap in the production of cast iron or steel.

3,607,227

PRODUCTION OF SPHEROIDAL GRAPHITE IRONS

Stephen David Stephenson, and John Holt, both of Sheffield, England, assignors to National Research Development Corporation
Filed Jan. 16, 1969, Ser. No. 791,792
Claims priority, application Great Britain, Feb. 2, 1968, 5408/68
Int. Cl. C21c *1/04, 7/00*
U.S. Cl. 75—48 **17 Claims**

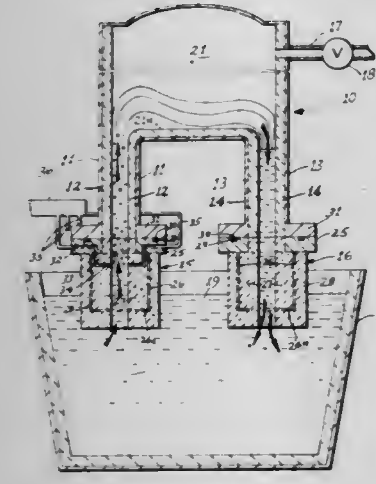
A method of producing spheroidal graphite irons from starting materials consisting predominantly or entirely or unselected ferrous scrap is provided. In the method, a ferrous bath is subjected to oxidation to remove or reduce to very low levels any elements inimical to spheroidization. The oxidation also reduces the carbon content of the bath to a relatively low level. Therefore, the method also includes the step of injecting powdered graphite by a carrier gas into the metal to restore the required carbon content of the iron. This method eliminates the necessity for selecting special starting materials and allows unselected ferrous scrap to predominantly or entirely comprise the ferrous charge.

3,607,228

METHOD OF OPERATING A VACUUM DEGASSER TO EQUALIZE EROSION OF REFRACTORY LEG LINERS

David E. Todd, Butler, Pa., assignor to Armco Steel Corporation, Middletown, Ohio
Filed Jan. 13, 1969, Ser. No. 790,795
Int. Cl. C21c *7/10*
U.S. Cl. 75—49 **2 Claims**

A detachable end tube for the up-leg of a vacuum degassing unit having a plurality of supply ports entering adjacent the point of attachment of the end tube and terminating in the interior channel of the tube at a point remote from the point of attachment and remote from the lower end of the tube. A method of equalizing the erosion rate of the non-detachable sections of the up-leg and down-leg of a degasser is provided which comprises removing the detachable end tube from the up-leg, attaching it to the down-leg whereby the down-leg functions as the up-leg and vice versa, and repeating said steps at approximately equal time intervals.



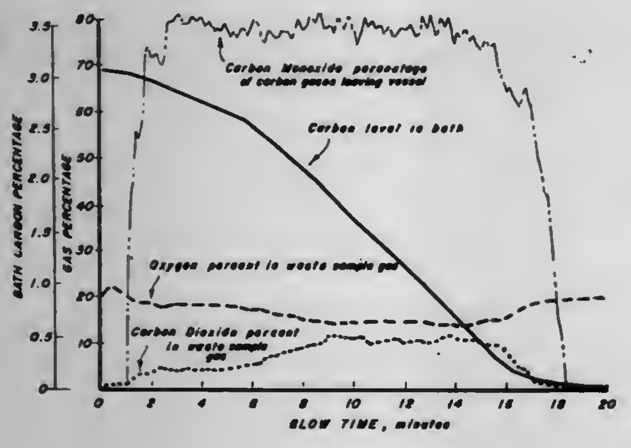
3,607,229
PROCESS FOR THE PRODUCTION OF LOW CARBON STEEL

Helmut Knuppel, Sulzbach-Rosenberg Hutte, and Karl Brotzmann, Sulzbach-Rosenberg, both of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte m.b.H.
Filed Feb. 13, 1968, Ser. No. 705,018
Claims priority, application Germany, Feb. 14, 1967, E33385 VIa/18b
Int. Cl. C21c *7/10*
U.S. Cl. 75—49 **2 Claims**

A process for the production of low carbon steel from steel melts having a carbon content of about 0.04 percent and an oxygen content of between about 0.06 percent and 0.08 percent comprises vacuum degassing the melt in a vacuum chamber, preferably in portions, in the presence of granulated lime or limestone having a grain size of between 2 mm. and 1 cm., preferably between 2 mm. and 4 mm. and continuing the vacuum degassing treatment until a final carbon content in the melt of about 0.005 percent is reached.

3,607,230
PROCESS FOR CONTROLLING THE CARBON CONTENT OF A MOLTEN METAL BATH

Reginald Wintrell, Gibsonia, Pa., assignor to Koppers Company, Inc.
Filed Jan. 21, 1969, Ser. No. 792,588
Int. Cl. C21c *5/32;* **G01n** *33/20*
U.S. Cl. 75—60 **8 Claims**



In a top blown oxygen converter the carbon content of a molten metal bath is determined by measuring the amount of both carbon dioxide and unreacted oxygen in the waste gas. A phase change in the carbon-oxygen reaction process, believed to be an equilibrium phase change, occurs during the latter stages of the oxygen-blowing process and is indicated by a simultaneous rapid decrease in the amount of carbon dioxide and a rapid and continuous increase in the amount of unreacted oxygen in the waste gas. The carbon content of the molten metal bath when this phase change occurs is substantially the same for all of the heats in a given converter or furnace that is supplied with oxygen at substantially the same rate. The carbon content of the molten-metal bath when the phase change occurs is determined for several different heats and a constant is established for a particular furnace. This constant is the carbon content of a molten-metal bath at the time the carbon reaction process phase change occurs. In subsequent heats the amount of carbon dioxide and unreacted oxygen in the waste gas is continually measured, preferably during the later part of the conversion process, and the time at which the phase change occurs is noted. Thereafter, the carbon evolved from the converter as a gas is continuously measured, summated and subtracted from the carbon known to be present in the molten metal bath when the phase change occurred. When the carbon remaining in the molten metal bath reaches the desired carbon level for a particular grade of steel, the furnace is turned down and the conversion process terminated.

3,607,231
METHOD FOR PURIFICATION OF COPPER

Thomas Gordon Hart, Cranbury, N.J., assignor to Phelps Dodge Corporation, New York, N.Y.
Continuation of application Ser. No. 478,612, Aug. 10, 1965, now abandoned. This application Dec. 10, 1969, Ser. No. 884,026
Int. Cl. C22b *15/14*
U.S. Cl. 75—72 **5 Claims**

Copper is refined by dissolving into the copper substantial amounts of hydrogen to aid in the removal of oxygen impurities. The molten copper is subjected to vacuum treatment to remove the excess hydrogen, thereby causing agitation of the molten copper to improve the removal of volatile impurities.

3,607,232
REFINING LEAD

Yurii E. Lebedeff, Edison, N.J., and William C. Klein, deceased, late of Menlo Park, N.J., assignors to American Smelting and Refining Company, New York, N.Y.
Filed June 9, 1969, Ser. No. 831,698
Int. Cl. C22b *13/06*
U.S. Cl. 75—78 **9 Claims**

Softened lead, prior to desilverizing, is detellurized (i.e. tellurium is removed from the lead) by adding sodium or potassium to a pool of the molten softened lead, agitating the molten pool while maintaining the temperature of the molten lead below 1,200° F. to remove tellurium from the lead and incorporate the removed tellurium into a layer of slag overlying the pool, discontinuing the agitation before an undesired amount of the removed tellurium is reincorporated into the molten lead from the overlying slag and removing the slag from the molten lead pool.

3,607,233
PURIFICATION OF ZINC

Helmut Maczek, Duisburg-Buchholz, and Peter Manthey, Duisburg-serm, both of Germany, assignors to Metallurgical Processes Limited, Nassau, Bahamas and Imperial Smelting Corporation (N.S.C.) Limited, London, England
Filed Nov. 8, 1968, Ser. No. 774,503
Claims priority, application Great Britain, Dec. 1, 1967, 54758
Int. Cl. C22b *9/00, 9/10*
U.S. Cl. 75—86 **6 Claims**

A method of purifying zinc by removal of arsenic consists of treating the arsenic-containing molten zinc with sodium metal and ammonium chloride and removing the dross formed from the surface of the molten zinc. Preferably a dross-conditioning agent such as sawdust or coke breeze is added before removing the dross. Aluminum may be used in addition to the sodium and ammonium chloride in the purification process.

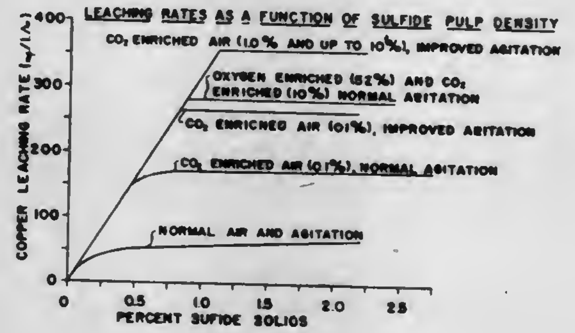
3,607,234
STEEL-REFINING COMPOSITION CONTAINING PORTLAND CEMENT AND FLUORSPAR

Takaho Kawawa; Noburo Shimada; Masaji Kogi, and Hidetaro Nemoto, all of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Japan
Filed June 4, 1969, Ser. No. 830,341
Claims priority, application Japan, June 8, 1968, 39086
Int. Cl. C22b *9/10*
U.S. Cl. 75—96 **6 Claims**

A steel-refining agent which is composed of 35% to 65% of Portland cement, 5% to 20% of fluorspar, 20% to 40% of Chamotte powder, 2% to 15% of soda ash, 2% to 15% of a carbon source, which is coke breeze or graphite powder, and further 2% to 15% of borax, wherein more than 50% of mixing particles have a diameter of less than 0.044 mm.

3,607,235
RAPID BACTERIOLOGICAL METAL EXTRACTION METHOD

Douglas W. Duncan, West Vancouver, British Colombia, and Cecile J. M. McGoran, Vancouver, British Colombia, both of Canada, assignors to British Columbia Research Council, Vancouver, British Columbia, Canada
Filed Feb. 23, 1968, Ser. No. 707,501
Int. Cl. C22b *3/00*
U.S. Cl. 75—101 **18 Claims**



Method of rapid bacteriological extraction of metals from materials containing sulfides by subjecting to agitation a pulp comprising particles of said materials and an aqueous acid leaching medium including sulfide-oxidizing bacteria, while simultaneously aerating the pulp with air enriched with carbon dioxide.

3,607,236
RECLAIMING OF SUPERALLOY SCRAP

Parkman T. Brooks, and Dale A. Martin, both of Salt Lake City, Utah
Filed Sept. 22, 1969, Ser. No. 859,939
Int. Cl. C22b *7/00*
U.S. Cl. 75—101 R **22 Claims**

Valuable metals are recovered from superalloy scrap by a series of process steps comprising (1) dissolution of the scrap in chlorinated acidic aqueous solution, (2) removal of tungsten and silica by adsorption on activated carbon, (3) extraction of molybdenum with a water-immiscible organic phosphate or phosphonate, (4) extraction of iron with a water-immiscible secondary amine, (5) extraction of cobalt with a water-immiscible tertiary amine, (6) precipitation of chromium as a hydrous basic sulfate, and nickel recovery.

3,607,237
FERRITIC STAINLESS STEEL

Wesley Kalita, New Kensington, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Feb. 26, 1969, Ser. No. 802,632
Int. Cl. C22c *37/10, 39/02*
U.S. Cl. 75—124 **5 Claims**

A ferritic-type stainless steel suitable for manufacture into sheet and strip form that can be used for production operations involving stamping, punching, piercing, blanking and drawing by high-speed press production.

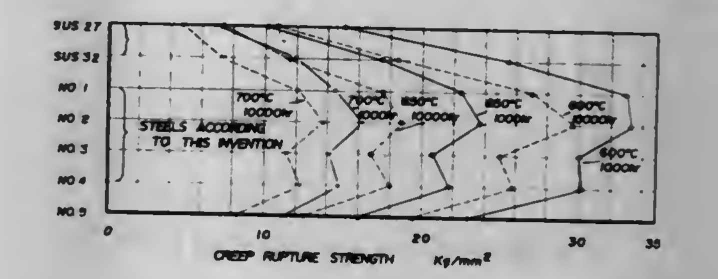
3,607,238
HEAT-RESISTANT TO LOW CHROMIUM-NICKEL ALLOY STEEL FOR LARGE FORGINGS

Kenneth Arnold Ridal, and John McCann, both of Yorkshire, England, assignors to English Steel Corporation Limited, Sheffield, England
Filed June 19, 1968, Ser. No. 738,102
Claims priority, application Great Britain, June 29, 1967, 30166/67
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 **4 Claims**

A heat-resistant alloy steel which is basically a 1 percent chromium-molybdenum-vanadium steel with the addition of from 0.03 to 0.15 percent by weight niobium and from 0.002 to 0.010 percent by weight boron. High hardenability and good high temperature ductility and creep properties are developed by austenitising the steel in the range 950° C. to 980° C., hardening by cooling to obtain a mainly bainitic structure, and tempering in the range 650° C. to 720° C. for at least 12 hours.

3,607,239
AUSTENITIC HEAT RESISTING STEEL

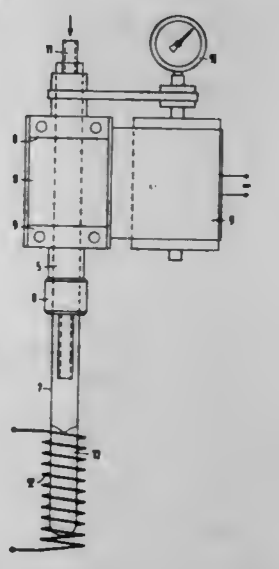
Tohru Mimino; Kazuhisa Kinoshita; Takayuki Shinoda, and Isao Minegishi, all of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha
Filed Nov. 6, 1968, Ser. No. 773,788
Claims priority, application Japan, Nov. 10, 1967, 42/71953
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 G **1 Claim**



Cr-Ni type austenitic heat resisting steel having about twice the heat resistibility of common stainless steel by the addition of 0.001% to 0.30% by weight Ti, 0.001% to 0.30% by weight Nb + Ta and 0.05% to 2.50% by weight V to a well-known Cr-Ni type steel composition for elevated temperature service.

3,607,240
SOLDER FOR CONTACTING A SEMICONDUCTOR BODY AND METHOD FOR ITS PRODUCTION

Alfred Kunert, and Gerhard Oesterhelt, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed July 23, 1969, Ser. No. 843,976
Claims priority, application Germany, July 24, 1968, P 17 58 701.8
Int. Cl. C22c *5/00;* **B23k** *1/04;* **H01v** *1/00*
U.S. Cl. 75—134 N **16 Claims**



A solder for contacting a semiconductor body with a contact piece, whereby silicon constitutes an alloying component of the semiconductor body. The solder composition is:

$$Pd_x((Me'_y Me''_{1-y})_z Si_{1-z})_{1-x}$$

with

$$0.25 \leq x \leq 0.60$$

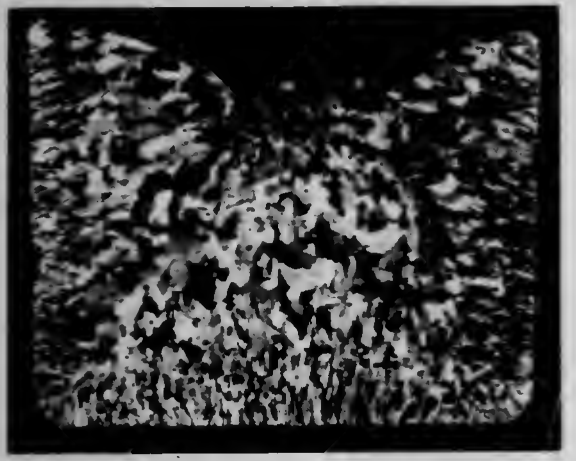
$$0.20 \leq y \leq 0.90$$

$$0.05 \leq z \leq 0.35$$

wherein Me' is molybdenum or tungsten and Me'' is iron, nickel, or cobalt.

3,607,241
ALUMINUM-CASTING GRAIN REFINEMENT

Gustaf F. Bolling, Dearborn; Jean Cisse, Dearborn Heights, and Gerald S. Cole, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed July 7, 1969, Ser. No. 839,474
Int. Cl. C22c *1/10*
U.S. Cl. 75—138 **1 Claim**



This invention teaches a method of controlling the size of the grain structure in aluminum and aluminum-based alloys employing as the novel grain-refining addition silver oxide. The added silver oxide promptly reacts with the molten aluminum to produce silver which dissolves in the aluminum and freshly precipitated and very active aluminum oxide which acts as a potent grain-refining agent.

3,607,242
ELECTRICAL RESISTANCE ALLOY

Arnold J. Gottlieb, Colonia, and Teh Po Wang, Cedar Grove, both of N.J., assignors to Wilbur B. Driver Co.
Filed May 22, 1969, Ser. No. 827,027
Int. Cl. C22c *9/06*
U.S. Cl. 75—159 **4 Claims**

An electrical alloy which is essentially free of cobalt and carbon and comprising, as expressed in percent by weight:

nickel: 40–46%;

manganese: 2.5–3.5%;

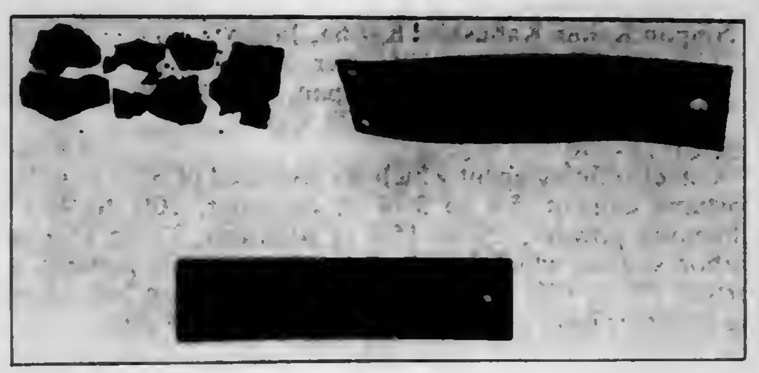
iron: 0.5–0.6%

copper—balance

3,607,243
CORROSION RESISTANT NICKEL-CHROMIUM-IRON ALLOY

Herbert L. Eiselstein, and James C. Hosier, both of Huntington, W. Va., assignors to The International Nickel Company Inc., New York, N.Y.
Filed Jan. 26, 1970, Ser. No. 5,691
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **2 Claims**

Directed to an alloy having improved oxidation resistance and particularly improved resistance to the effects of cyclic oxidation at high temperatures, e.g., 2,000° F., wherein the alloy contains about 21 to 25% chromium, about 58% to 63% nickel, about 1% to 1.7% aluminum and the balance essentially iron.



3,607,244
ELECTRIC CONTACT MATERIAL AND METHOD OF MAKING THE SAME

Sukeaki Kabayama, Suita-shi, and Eiji Kamijyo, Takatsukishi, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Mar. 6, 1968, Ser. No. 710,767
Claims priority, application Japan, Mar. 11, 1967, 42-15522
Int. Cl. C22c *1/10, 5/00*
U.S. Cl. 75—173 R **6 Claims**

Electric contact material of the Ag-CdO type produced by forming AglCdO by an internal oxidation process including the addition of Fe or Sn or mixtures in specified amounts simultaneously with the melting of the Ag-Cd alloy.

3,607,245
ELECTRICAL RESISTANCE ALLOY

Arnold J. Gottlieb, Colonia, and C. Dean Starr, Whippany, both of N.J., assignors to Wilbur B. Driver Company
Filed May 28, 1968, Ser. No. 732,518
Int. Cl. C22c *19/00, 27/00*
U.S. Cl. 75—122 **4 Claims**

An alloy primarily adapted for use as an electrical heating element which utilizes iron, nickel, chromium and silicon as major constituents together with aluminum, calcium, zirconium and one or more rare earth metals as minor constituents.

3,607,246
FERRITIC STAINLESS STEEL

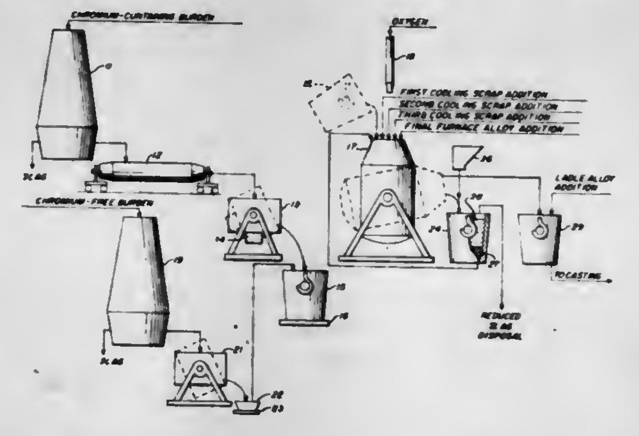
Wesley Kalita, New Kensington, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
Filed Feb. 26, 1969, Ser. No. 802,631
Int. Cl. C22c *37/10, 39/14*
U.S. Cl. 75—124 **5 Claims**

A ferritic-type stainless steel suitable for manufacture into sheet and strip form that can be used for production operations involving stamping, punching, piercing, blanking and drawing by high-speed press production.

3,607,247
PROCESSES FOR THE OXYGEN CONVERTER PRODUCTION OF STAINLESS STEELS

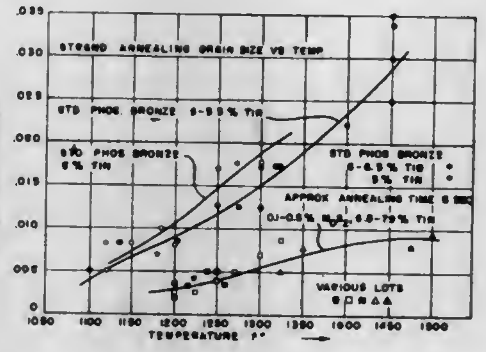
Clifford W. McCoy, Oakdale; Eugene L. Kern, Beaver, and George A. Smith, Beaver, all of Pa., assignors to Crucible Inc., Pittsburgh, Pa., by said McCoy and Smith
Continuation-in-part of application Ser. No. 545,480, Apr. 26, 1966, now abandoned. This application Nov. 12, 1968, Ser. No. 805,915
Int. Cl. C21c *5/32;* **C22c** *39/14*
U.S. Cl. 75—46 **2 Claims**

A channel furnace is used to mix chromium-containing and chromium-free hot metals, producing a converter feed metal of desired temperature and chemical composition. Weighed charges of such feed metal are blown in the converter. This makes practical the production of stainless steel from ore without use of an electric furnace. The time and the electricity saved yield cost savings.


CHROMIUM-CONTAINING BURDEN
OXYGEN
FIRST COOLING SCRAP ADDITION
SECOND COOLING SCRAP ADDITION
THIRD COOLING SCRAP ADDITION
FINAL FURNACE ALLOY ADDITION
LADLE ALLOY ADDITION
CHROMIUM-FREE BURDEN
SLAG
SLAG
REDUCED SLAG DISPOSAL
TO CASTING

3,607,248
STRENGTHENING MECHANISM FOR COPPER BASE ALLOYS

Edgar C. Wallace, Cleveland, Ohio, assignor to W. S. Tyler Inc., Cleveland, Ohio
Filed Dec. 4, 1968, Ser. No. 781,208
Int. Cl. C22c *9/02*
U.S. Cl. 75—154 **14 Claims**

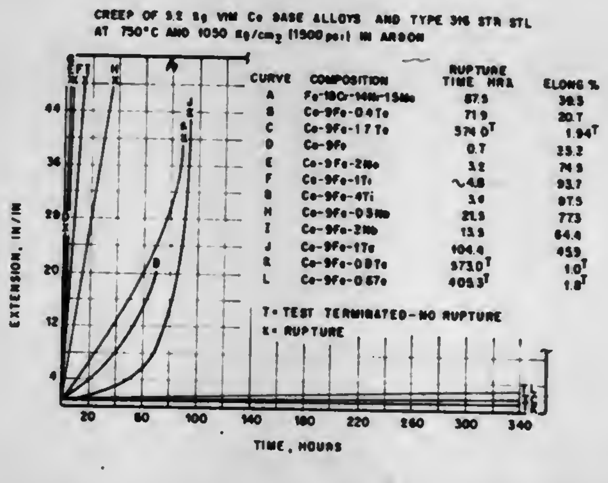


A copper base alloy including about 0.25 percent–11 percent tin and about 0.1 percent–0.5 percent molybdenum disulfide.

A method of producing a copper base alloy of improved antifriction characteristics, strength, modulus of elasticity, hardness and resistance to corrosion by adding about 0.1 percent–0.5 percent molybdenum disulfide.

3,607,249
COBALT-IRON-TANTALUM HIGH-TEMPERATURE-STRENGTH ALLOY

Fred C. Robertshaw, Cincinnati, and Jon L. Bartos, Loveland, both of Ohio
Filed Jan. 20, 1970, Ser. No. 4,375
Int. Cl. C22c *19/00*
U.S. Cl. 75—170 **1 Claim**



This invention covers a cobalt-base alloy consisting essentially of, in atom percent, 8–12 percent iron, 0.4 to 1.7 percent tantalum, and the remainder cobalt.

3,607,250
HIGH-TEMPERATURE ALLOYS AND ARTICLES

Ray H. English, McCandless Township, Allegheny County, and Martin N. Ornitz, Pittsburgh, both of Pa., assignors to Blaw-Knox
Continuation-in-part of application Ser. No. 623,746, Mar. 16, 1967, now abandoned. This application Jan. 12, 1970, Ser. No. 2,432
Int. Cl. C22c *19/00, 19/04*
U.S. Cl. 75—171 **3 Claims**

A new high-temperature alloy having high creep resistance and improved load fracture properties at temperatures of 2,000° F. and above comprising about 0.35% to 0.75% carbon, at least about 0.2% manganese, up to about 2% silicon, about 40% to 55% nickel, about 22% to 33% chromium, about 4% to 6% tungsten, about 1% to 4.5% cobalt and the balance iron with usual impurities in ordinary amounts.

3,607,251
MOLYBDENUM IN CARBON CONTAINING NIOBIUM-BASE ALLOYS

Friedrick G. Ostermann, Yellow Springs, Ohio
Filed Apr. 18, 1969, Ser. No. 817,559
Int. Cl. C22c *27/00*
U.S. Cl. 75—174 **2 Claims**

Niobium-base alloys containing at least 20 weight percent molybdenum, small amounts of carbon, and small amounts of zirconium, hafnium, titanium, or mixtures thereof. Molybdenum prevents the formation of undesirable Nb_3C_2 and greatly inhibits the formation of undesirable Nb_2C during cooling of the alloy after its initial heat treatment (solution annealing). The alloy must contain at least 20 weight percent molybdenum in order for the final product to be substantially free of the undesirable niobium carbides. By preventing the formation of the niobium carbides, the molybdenum causes carbon to be free to react with zirconium, hafnium, titanium, or mixtures thereof and form desirable carbides with those elements during a second heat treatment. The alloys of this invention are useful where strong, lightweight materials are needed such as in the manufacture of jet engine turbines.

3,607,252
SOLDER ALLOY COMPOSITION

Robert E. North, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed June 2, 1969, Ser. No. 829,791
Int. Cl. C22c *13/00*
U.S. Cl. 75—175 A **1 Claim**

A composition of matter used in the assembly of products requiring both electrical and mechanical connections. The composition is of a solder alloy of tin, antimony, copper and lead having improved creep strength for mechanical connections with a sufficiently low melt temperature to permit the dip-soldering of electrical connections on electronic assemblies.

3,607,253
TIN BASE SOLDER ALLOY

John F. Cain, Endicott, and Octavio I. Chirino, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1969, Ser. No. 888,049
Int. Cl. C22c *13/00*
U.S. Cl. 75—175 A **2 Claims**

A tin base solder alloy containing 1-5 percent by weight bismuth.

This invention pertains to solder alloys useful in electrical applications and in particular to a high creep strength tin base solder containing bismuth.

3,607,254

DISPERSION STRENGTHENING OF ALUMINUM ALLOYS BY REACTION OF UNSTABLE OXIDE DISPERSIONS

Joseph P. Hammond, Knoxville, Tenn.

Filed Oct. 18, 1968, Ser. No. 768,638

Int. Cl. B22f *9/00*

U.S. Cl. 75—214 **2 Claims**

A method for preparing dispersion-strengthened metal consisting predominantly of aluminum metal as the metal matrix is provided comprising ball milling said metal as a powder with an unstable oxygen compound whose free energy of formation per gram-atom of oxygen at 500° C. is less than that of the oxide of said metal matrix and which undergoes reaction with said metal matrix at said temperature to form a stable oxide dispersant in a hermetically sealed mill under an inert atmosphere in the presence of a grinding liquid. The resulting flake metal having homogeneous dispersions of the included oxide is then reacted in a nonoxidizing environment at a temperature of about 500° C., pressed, and hot extruded to form the dispersion strengthened product. Extruded bar material containing only 4 weight percent oxide dispersant exhibited super elevated temperature strength when compared to conventional sintered aluminum product containing up to 15 weight percent oxide dispersant. Another alloy showed improved low strain rate fracture ductility with good strength at high temperature when compared to sintered aluminum products.

3,607,255

SURFACING NONIMAGE AREAS OF LITHOGRAPHIC MASTER WITH HYDROPHILIC DESENSITIZING COMPOSITION

Sangho E. Back, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jan. 22, 1968, Ser. No. 699,341

Int. Cl. G03g *5/00;* **B41n** *1/00*

U.S. Cl. 96—1 **7 Claims**

A convertible plate adapted for conversion into a lithographic offset master comprising a paper web, and a dielectric film extending over the paper web with finely divided silica distributed therein. In preparing an offset master, an image-defining electrostatic charge is laid down on the film and developed with toner to form an image, and nonimage areas are rendered hydrophilic to prepare the plate for lithographic printing by coating the nonimage areas with a desensitizing composition comprising an aqueous solution of polyvinyl alcohol which mechanically fixed to the dielectric film through adhesion promoted by the divided silica.

3,607,256

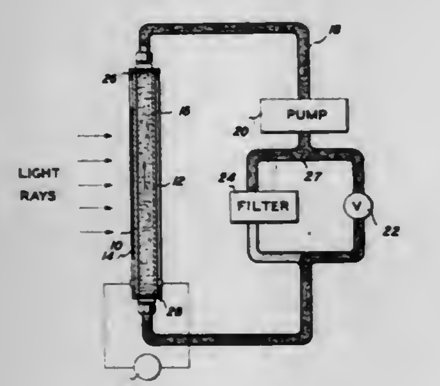
FULLY ENCLOSED ELECTROPHORETIC-IMAGING SYSTEM

Morton Silverberg, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed July 19, 1968, Ser. No. 746,177

Int. Cl. G03g *13/00*

U.S. Cl. 96—13 **5 Claims**



A display system which responds to a light image to form a viewable image. The system is sealed and is filled with a fluid carrying a dilute suspension of electrically photosensitive particles between two conductive plates. If an image is focused onto the space between the plates and a voltage established therebetween, the particles in contact with the inner surface of the conductive plates will migrate from light-struck areas of the plates. After the fluid has been circulated for an appropriate time after imaging, the fluid circulation is directed through a filter, which replaces the fluid between the plates with fluid having the undeposited particles removed. Various provisions for viewing the images formed within the display system are described.

3,607,257

PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS

Arthur L. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1968, Ser. No. 755,711

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.6 **33 Claims**

Photoconductive compositions and elements containing as photoconductors organometallic compounds derived from Group III*a* metals are described.

3,607,258

ELECTROPHOTOGRAPHIC PLATE AND PROCESS

Helmut Hoegl, Grand-Lancy/Geneve, and Giacomo Barchietto, Petit-Lancy/Geneve, both of Switzerland, assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 6, 1966, Ser. No. 519,081

Int. Cl. G03g *5/04, 13/22*

U.S. Cl. 96—1.5 **5 Claims**

A photoconductive plate comprising a photoconductive charge transfer complex composition overcoated with a thin layer of an insulating material, preferably less than one micron thick, is disclosed. The use of this photoconductive plate in an electrostatic imaging capacity is further disclosed.

3,607,259

PHOTOCONDUCTIVE RECORDING ELEMENTS FOR ELECTROPHOTOGRAPHY RECORDING ELEMENTS

Robert J. Wright, Tranmere, Australia, assignor to Research Laboratories of Australia Pty. Limited, North Adelaide, Australia

Filed Dec. 27, 1967, Ser. No. 693,729

Claims priority, application Australia, Jan. 6, 1967, 16193

Int. Cl. G03g *5/06, 13/02*

U.S. Cl. 96—1.5 **1 Claim**

An electrophotographic recording element which is precharged and held in charged condition for subsequent reuse, utilizing a backing member of a resistivity sufficient to prevent leakage away of the applied charge which can be rendered at least temporarily conductive prior to exposure to permit the charge to leak away at image areas.

3,607,260

MIXED-RESIN BINDERS FOR ELECTROPHOTOGRAPHIC PLATES

Karel Eugeen Verhille, Mortsel-Antwerpen, and Andre Jan Conix, Antwerpen, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Continuation of application Ser. No. 560,791, June 27, 1966, now abandoned. This application Oct. 29, 1969, Ser. No. 872,425

Int. Cl. G03g *5/06, 5/08*

U.S. Cl. 96—1.8 **7 Claims**

Electrophotographic recording material having a layer of finely divided photoconductor, preferably photoconductive zinc oxide dispersed in an insulating binder medium which is the cured reaction product of a mixture of a melamine-formaldehyde resin and a salt of a volatile base and an alkyd resin which contains free acid groups and is insoluble in water in acidic form, both the melamine-formaldehyde resin and the salt being water soluble prior to curing. The layer is preferably applied from an aqueous alkaline coating composition. A preferred range of proportions is 90–40 percent of the melamine resin and 10–40 percent of the salt.

3,607,261

INORGANIC CRYSTALLINE BINDERS FOR ELECTROPHOTOGRAPHIC PLATES

Alan B. Amidon; Joseph Mammino, and Richard Radier, all of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 546, 844, May 2, 1966.

Filed Apr. 4, 1969, Ser. No. 829,835

Int. Cl. G03g *13/22, 5/04*

U.S. Cl. 96—1.8 **7 Claims**

An electrophotographic material is disclosed comprising a support substrate and an inorganic crystalline photoconductive insulating layer. The photoconductive coating comprises a photoconductive material and an inorganic crystalline binder.

3,607,262

ZINC OXIDE BINDER PLATE FOR CHARGELESS ELECTROPHOTOGRAPHY

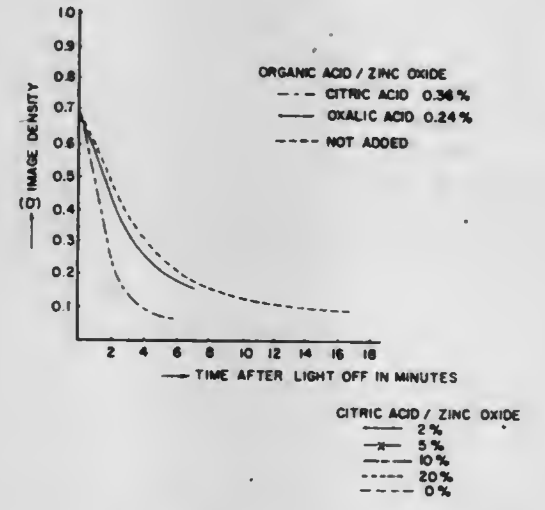
Yasuo Ueda, # 3-32, Kitano-cho, Ikuta-ku, Kobe-Hyogo; Akira Takatsu, #3-5-16, Kusatsu-cho, Kusatsu-Siga, and Tatsuo Aizawa, # 6-34, Kuwazu-cho, Higashisumiyoshi-ku, Osaka, all of Japan

Filed Nov. 13, 1967, Ser. No. 682,079

Claims priority, application Japan, Nov. 26, 1966, 41/77666

Int. Cl. G03g *13/22, 5/08*

U.S. Cl. 96—1.8 **2 Claims**



An electrophotographic plate for chargeless electrostatic printing and the method of making the same using a photoconductive material such as microcrystalline zinc oxide and a binder of suitable type with an organic acid such as citric, oxalic or malic and mixing the ingredients and applying them to a baseplate in the desired proportions to control the sensitivity of the electrophotographic plate to light and to control the recovery of memory effect so that the electrophotographic plate can be subject to ordinary light and still be usable for reproduction by being placed in the dark for a short period of time so that the recovery of the memory effect takes place and the electrophotographic plate can then be used for reproduction thereby greatly simplifying the storage of the electrophotographic plates and also greatly simplifying the manufacture thereof. The electrophotographic plate having a smooth glossy surface thereby preventing adherence of the toner to the nonimage areas.

3,607,263

PHOTOGRAPHIC REVERSAL COLOR PROCESS

Julius Battaglini, Fairport; John H. Goselin, Rochester, and Walter P. Horylev, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 24, 1969, Ser. No. 862,158

Int. Cl. G03c *5/50*

U.S. Cl. 96—22 **7 Claims**

A reversal color development process in photography is carried out at elevated temperatures using a first black-and-white silver halide developing solution at pH of about 9.1 to 9.6 and containing hydroquinone and an amount of 3-pyrazolidone silver halide developing agent sufficient to inhibit fog on development of aged emulsion layers. This minimizes the density losses obtained with aged color films compared to fresh color films.

3,607,264

IMAGE REPRODUCTION PROCESS INVOLVING PHOTOHARDENING AND DELAMINATION

Jack Richard Celeste, Westfield, and Victor Fu-Hua Chu, East Brunswick, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1967, Ser. No. 684,945

Int. Cl. G03c *11/12, 5/00*

U.S. Cl. 96—28 **14 Claims**

An image reproduction process in which an element having a support, a photohardenable layer, and an integral, laminated, adherent receptor sheet is (1) exposed, imagewise, to actinic radiation to harden the layer in exposed areas without hardening in the underexposed areas, and (2) delaminated at a temperature above 45° C., causing the unhardened areas of the layer to fail cohesively, whereby a stratum of the unhardened material adheres to the receptor sheet.

3,607,265

METHOD OF PREPARING A COLOR SUBTRACTIVE MASK

Ramon Bergero, Inglewood, Calif., assignor to Gordon Baskin, Hollywood, Calif.; Jason Tarser, Hollywood, Calif. and Attel, Inc., Los Angeles, Calif.

Filed Aug. 25, 1969, Ser. No. 852,890

Int. Cl. G03c *5/04;* **G03f** *7/00*

U.S. Cl. 96—27 **9 Claims**

A method of preparing a color subtractive mask for a color matrix to be used for the reproduction of images appearing on a color print, the matrix defining a pattern of identical red, blue and green spot groups similar to that utilized in color television interlace scanning, wherein spot areas of the color print in a pattern corresponding to the matrix spot group pattern are selectively photographed on black and white film through appropriate color filters so that the light exposures of the film spots corresponding to the respective matrix red, blue and green spots are in accordance with the intensities of the respective red, blue and green color components at the corresponding areas of the color print, the relative light intensity information from a resulting matrix size negative being transferred onto a matrix sheet mask to form mask apertures, the size of each aperture being determined by the intensity of the light recorded on the corresponding negative pattern spot.

3,607,266

IMAGE INTENSIFICATION PROCESS FOR SENSITIZED FILM

Yoshikazu Yamada, Sierra Madre, and Thomas H. Garland, El Monte, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 523,705, Jan. 28, 1966, now Patent No. 3,503,745, which is a continuation-in-part of application Ser. No. 481,759, Aug. 23, 1965, now Patent No. 3,476,562, which is a continuation-in-part of application Ser. No. 352,625, Mar. 17, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 278,050, May 6, 1963, now abandoned. This application Apr. 17, 1967, Ser. No. 631,502

Int. Cl. G03c *5/04, 5/24*

U.S. Cl. 96—27 **15 Claims**

Methods for increasing the effective speed of photosensitive compositions and compositions modified to be sensitive to light levels lower than ordinarily useful for inducing a developable latent image. Such image is induced and is intensified upon exposure to radiation in a spectral region to which the unmodified composition has comparably low sensitivity.

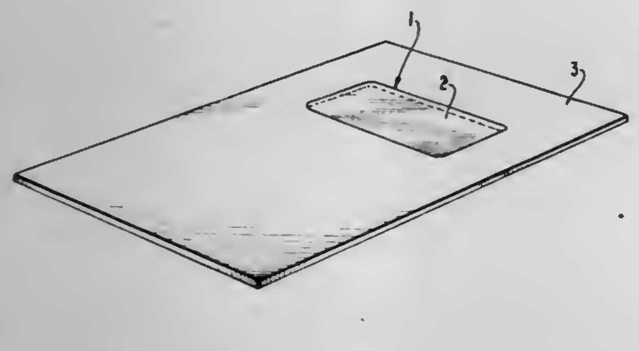
3,607,267
PRECISION ALIGNMENT OF PHOTOGRAPHIC MASKS

Betty Margaret Garrels, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 9, 1967, Ser. No. 673,704
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 **15 Claims**

A photographic mask comprising an array of transparent patterns on an opaque background is provided with a plurality of opaque key images on transparent backgrounds to facilitate precision alignment of the mask within a tolerance limit down to ±0.1 mil or better, limited only by the photographic equipment used for producing the master plate. The opaque key images occupy positions of the same array as said transparent patterns, and also have the same size and shape as the transparent patterns.

3,607,268
PROCESS FOR PROVIDING APERTURE-TYPE FILM RECORD CARDS

Eugene R. Skarvinko, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed July 31, 1968, Ser. No. 749,184
Int. Cl. G03c *15/04*
U.S. Cl. 96—27 R **9 Claims**



A method for providing film record cards whereby a film-forming solution, emulsion or latex is poured into the aperture of a card structure while said card structure is supported on a base which is nonadherent to said film, and is dried so as to form a strongly adherent film to the peripheral edges of said aperture. Film record cards prepared by the foregoing method.

3,607,269
IMAGE-RECEIVING ELEMENTS AND PHOTOGRAPHIC PROCESSES EMPLOYING SAME

Richard W. Young, Wellesley, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 1, 1968, Ser. No. 717,683
Int. Cl. G03c *1/48, 5/54*
U.S. Cl. 96—29 **25 Claims**

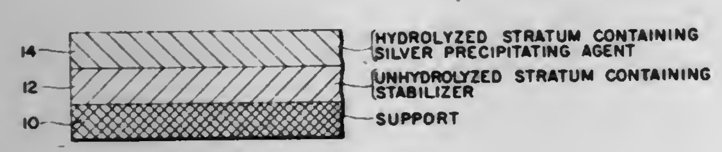

14
12
10
HYDROLYZED STRATUM CONTAINING SILVER PRECIPITATING AGENT
UNHYDROLYZED STRATUM CONTAINING STABILIZER
SUPPORT

Image receiving elements and diffusion processes employing such elements are disclosed, wherein the element comprises a support carrying a layer composed of at least two strata, including a first stratum which comprises regenerated cellulose containing a silver precipitating agent and a mercapto substituted compound, and a second stratum comprising a alkali hydrolyzable cellulose ester. Reagents initially located in a stratum of unhydrolyzed polymer are extracted from the unhydrolyzed polymer in a controlled manner during processing.

3,607,270
UNITARY, PERMANENTLY COMPOSITE, PHOTOGRAPHIC LIGHT-SENSITIVE SHEET MATERIAL FOR USE IN THE SILVER COMPLEX DIFFUSION TRANSFER PROCESS FOR PRODUCING IMAGES

Louis de Haes, Edegem; Emiel Alexander Hofman, Mortsel, and Hugo Karel Gevers, Edegem, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed June 10, 1968, Ser. No. 735,577
Claims priority, application Great Britain, June 8, 1967, 26,580/67
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **15 Claims**

A good quality reproduction can be obtained by the silver complex diffusion transfer process in a unitary permanently composite sheet material comprising of a nontransparent flexible sheet support, a light-sensitive silver halide emulsion layer and a layer containing an opaque white or colored pigment and a hydrophilic colloid binder, provided the pigment is present in amounts from 9–25 g. per sq.m. and the binder therefore in 0.5–3 g. per sq.m. and at least one photographic developing agent for the silver halide is contained in the material. Development nuclei for the complex silver halide can be supplied in an outer stratum of the pigmented layer or in a thin colloid layer superimposed thereon or can be incorporated in situ by means of a treatment bath containing the same which can be the alkaline processing liquid for forming the diffusion transfer image. Light-sensitive unitary composite materials useful for this purpose are also described.

3,607,271
PHLOROGLUCINOL DEVELOPER FOR LINGT-SENSITIVE PLANOGRAPHIC PLATES

Aloysius Henricus Jacobus Hilhorst, Helden, and Paul Joseph Hubert Tummers, Velden, both of Netherlands, assignors to Van Der Grinten N. V., Venlo, Netherlands
Filed Jan. 9, 1969, Ser. No. 790,175
Claims priority, application Netherlands, Jan. 12, 1968, 6800538
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 **6 Claims**

Planographic printing plates sensitized with a benzene diazonium salt are converted into offset printing forms by imagewise exposure and subsequent development with an aqueous phloroglucinol solution buffered to a pH between 4 and 8 and containing 1–10 percent by volume of water-miscible organic solvent having a molecular weight greater than 50. The organic solvent avoids or greatly reduces a problem of initial prints being blemished by ink held on blank (background) areas of the printing forms. Especially effective solvents, such as propyl glycol, acetonyl acetone, diacetone alcohol, and N-methylpyrrolidone-2, having boiling points above 90° C. A high salt content in the developing solution inhibits any bleeding of the azo-dyestuff during development.

3,607,272
PHOTOGRAPHIC POLYMERIZATION PROCESS AND PRODUCT

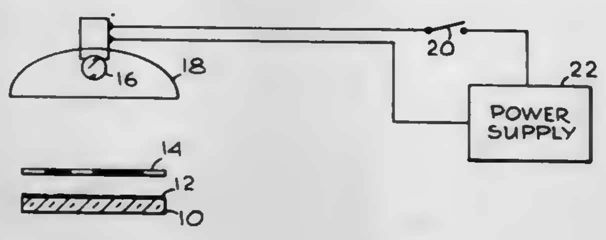
John B. Rust, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 16, 1967, Ser. No. 616,587
Int. Cl. G03c *1/68*
U.S. Cl. 96—35.1 **20 Claims**

Photopolymerizable monomer medium and method of light exposure to effect exposure and development by multiple stages of polymerization and desensitizing photopolymerization with different light intensities, and the products produced therewith and thereby.

3,607,273
IMAGE FORMATION BY SELECTIVE FOAM GENERATION

Layton C. Kinney, Chicago, Ill., assignor to American Screen Process Equipment Company, Chicago, Ill.
Filed Mar. 8, 1967, Ser. No. 621,581
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **6 Claims**

A substrate having a color such that it absorbs a substantial amount of the visible spectrum is covered over with a thin layer of material which foams or expands in response to heat. An image-forming member such as a positive transparency is positioned over the foaming layer and a light source is flashed therethrough to the foaming layer. The foaming layer expands under the light-transmitting regions of the transparency and remains substantially unaffected over the other regions. Where the material is foamed, when light is applied it scatters the light. Where is is not foamed, it does not. Accordingly, an image is formed on the surface of the substrate by this technique.



3,607,274
METHOD FOR OBTAINING PRINTING MEDIA HAVING RELIEF EFFECT

Marcel Pelletier, and Irving V. Nissman, both of Brooklyn, N.Y., assignors to Marvic Advertising Corporation, Brooklyn, N.Y.
Filed Sept. 5, 1968, Ser. No. 757,691
Int. Cl. G03c *5/06*
U.S. Cl. 96—44 **2 Claims**

A method for obtaining printing media having relief effect including the removal of the background and the natural shadow of an object by exposing a film in succession to a screen positive and to a positive mask to obtain a screened negative of the object with its shadows and background removed. The positive mask is mechanically used with a negative mask to photographically obtain a screened negative shadow of the object. Then, another film is exposed to the screened negative and to the screened negative shadow of the object to form a screened positive of the object provided with an added shadow, wherein the background and original shadows have been removed to obtain the desired relief effect for the printed media.

3,607,275
DIAZO-TYPE MATERIAL

Oskar Sus, and Georg Werner, both of Wiesbaden-biebrich, Germany, assignors to Keuffel & Esser Company, Hoboken, N.J.
Filed Nov. 27, 1968, Ser. No. 779,639
Claims priority, application Germany, Nov. 29, 1967, P 15 97 629.1
Int. Cl. G03c *1/58, 1/60*
U.S. Cl. 96—49 **5 Claims**

Diazo-type images obtained from copying material comprising p-amino benzene diazonium compounds and 2,3-dihydroxypyridine are shifted from red to blue color shades by including a water-soluble zinc salt with the diazonium compound in a ratio of at least about 2 to 1.

3,607,276
PROCESS FOR MAKING METAL-GLOSSY IMAGES AND PROJECTION USING THE SAME

Shingo Ooue, Saitama; Hiroyuki Ueda, Saitama, and Yoshihide Hayakawa, Kanagawa, all of Japan, assignors to Fuji Photofilm Co., Ltd., Kanagawa, Japan
Filed Feb. 14, 1968, Ser. No. 705,457
Claims priority, application Japan, Feb. 14, 1967, 42/9420
Int. Cl. G03c *5/26, 5/24*
U.S. Cl. 96—50 **5 Claims**

A process for making a metal-glossy image which comprises treating a silver halide image with a solution containing physical developing nuclei and then treating the silver halide image thus treated with a solution containing a solvent for silver halide. A projection process which comprises treating a silver halide image with a solution containing a solvent for silver halide to provide a metal-glossy image, applying to the surface of the metal-glossy image an illuminating light beam for transmission and an illuminating light beam for reflection, combining the penetrating light beam and the reflected light beam, and projecting on a screen the combined light beam to provide a projected image having various contrasts.

3,607,277
PHOTOGRAPHIC VISCOUS PROCESSING

Karl-Wilhelm Schranz, Opladen, and Erwin Schon, Leverkusen, both of Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 1, 1968, Ser. No. 764,305
Claims priority, application Germany, Oct. 14, 1967, P 15 97 489.7
Int. Cl. G03c *5/38*
U.S. Cl. 96—55 **4 Claims**

The processing of color photographic films is accelerated and viscous pastes are used for bleaching and fixing by color developing color-photographic images first coating a viscous fixing paste on the developed material and coating on thereafter a viscous bleaching paste. Thereafter the layers of the fixing and bleaching pastes are sprayed off with water and finally the color photographic material is rinsed in water.

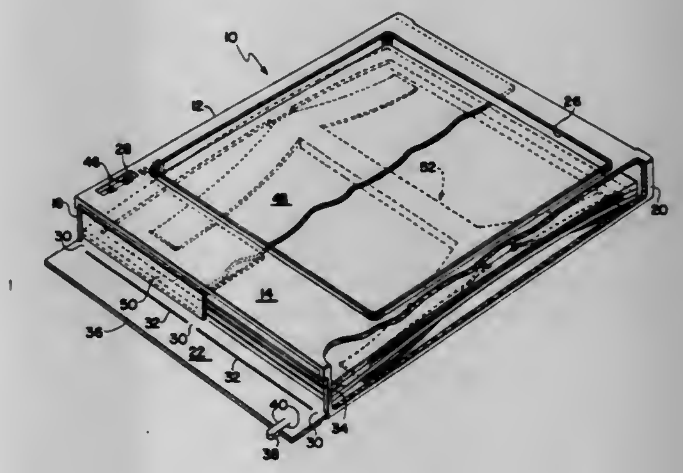
3,607,278
PHOTOGRAPHIC ELEMENTS CONTAINING FOGGED AND UNFOGGED SILVER HALIDE GRAINS AND A SLOW SILVER HALIDE EMULSION LAYER

Joseph R. Ditzer, Jr., Kingsport, Tenn., and Fred W. Spangler, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 18, 1968, Ser. No. 722,223
Int. Cl. G03c *1/76, 3/00*
U.S. Cl. 96—67 **11 Claims**

Improved photographic elements comprising fogged and unfogged silver halide grains and a slow speed sliver halide emulsion layer exhibiting improved antifoggant properties in developer solutions are disclosed.

3,607,279
PHOTOGRAPHIC FILM ASSEMBLAGE

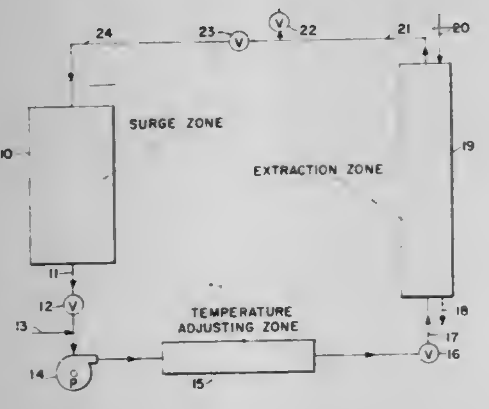
Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 16, 1968, Ser. No. 784,159
Int. Cl. G03b *17/26;* **G03c** *3/00*
U.S. Cl. 96—76 **8 Claims**



A photographic film assemblage including a container having a forward wall with a light-transmitting section therein and an end wall which cooperates with the forward wall to define a withdrawal opening. A plurality of film units are stacked within the container with their photosensitive surfaces facing the light-transmitting section and with one of their ends positioned adjacent the end wall. A dark slide, movable through the withdrawal opening and comprised of a rigid member and a flexible skirt, is provided to prevent the admission of actinic light through the light-transmitting section and the withdrawal opening, respectively.

3,607,280
SINGLE COLUMN CIRCULATORY COFFEE EXTRACTION PROCESS

Richard F. Durchholz, Loveland, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 1, 1969, Ser. No. 862,822
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **6 Claims**



A novel process for producing instant coffee extract utilizing apparatus which comprises a surge tank connected in a circulatory system with a single extraction column. Extract product is produced by manipulating the extract surge by circulating it through the extraction column and varying the extract and water temperatures previous to extraction and hydrolysis.

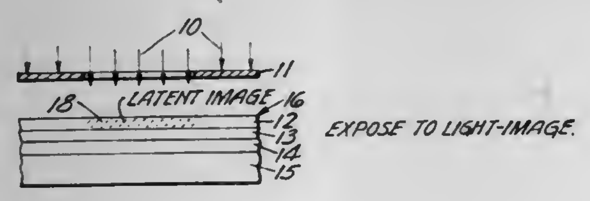
3,607,281
GELATIN RELIEF IMAGE

John Peter Stonham, Ilford, Essex, England, assignor to Ilford Limited, Ilford, Essex, England
Filed June 10, 1969, Ser. No. 832,020
Claims priority, application Great Britain, June 12, 1968, 27947/68
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 **8 Claims**

Photographic material comprising a support coated, in order, with a nonlight-sensitive gelatin layer partially cross-linked with disulfide linkages (e.g. thiolated gelatin) and an unhardened gelatin silver halide layer. After imagewise exposure, development of the silver halide layer and treatment with an alkaline mercaptan solution, the material is hot water-washed to form a relief image. Either a positive or a negative image may be obtained.

3,607,282
SENSITIVE SHEET AND PROCESS FOR MAKING POSITIVES

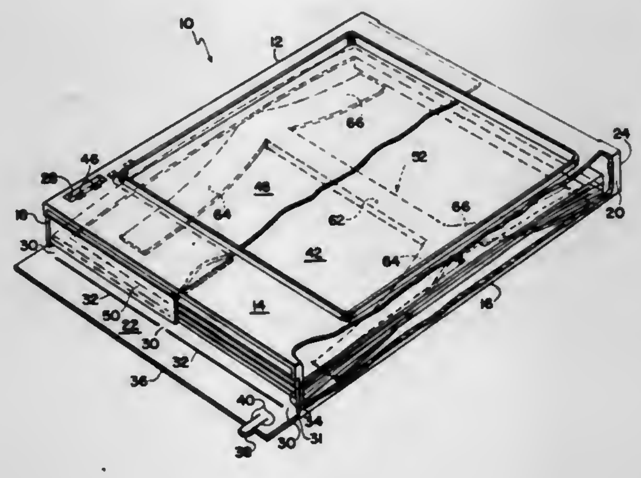
Edwin A. Grant, Jr., Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 31, 1966, Ser. No. 576,278
Int. Cl. G03c *1/76, 1/02*
U.S. Cl. 96—69 **7 Claims**



Sheet material having an upper heat-developable layer sensitive to visible light and a lower heat-developable layer sensitive to ultraviolet radiation forms a positive image of an original by a process involving only exposing and heating.

3,607,283
PHOTOGRAPHIC FILM ASSEMBLAGE

Nicholas Gold, Arlington, Mass., assignor to Polaroid, Cambridge, Mass.
Filed Dec. 16, 1968, Ser. No. 784,160
Int. Cl. G03b *17/26;* **G03c** *3/00*
U.S. Cl. 96—76 **8 Claims**



A photographic film assemblage including a container for holding film units, having a forward wall with a light-transmitting section therein and an end wall cooperating with the forward wall to define a withdrawal opening; a plurality of film units stacked within the container with one of the film units located in alignment with the withdrawal opening; and a stop in the form of an integral extension of the end wall extending part way across the withdrawal opening to prevent the movement of more than one film unit at a time from the container through the withdrawal opening.

3,607,284
RIGID FRAME SENSITIVE UNIT SUITABLE FOR EXPOSURE AND PROCESSING IN AN EXPOSING DEVICE

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 4, 1968, Ser. No. 695,768
Int. Cl. G03c *5/54*
U.S. Cl. 96—76 **12 Claims**

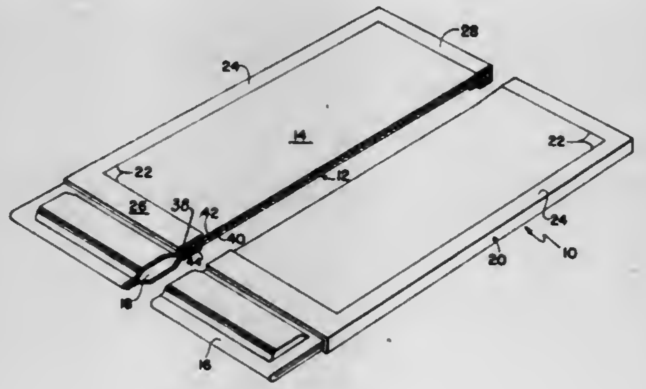
A radiation-sensitive unit such as a slide transparency unit is provided with at least one rupturable pod formed adjacent to an edge of a rectangular supporting member having a central opening across which a radiation-sensitive element extends. The unit preferably is provided with two pods which are adapted to be ruptured sequentially by a first-and-second-piston mechanism within an exposing device in such a manner that processing agents contained in the pods are ejected sequentially into a space between the radiation-sensitive element and a strippable sheet so that development and fixing of the image can take place. The strippable sheet, at least a portion of the pods, and any unabsorbed processing agents are stripped from the unit after the unit has been processed and removed from the camera so that the unit will be ready for use.

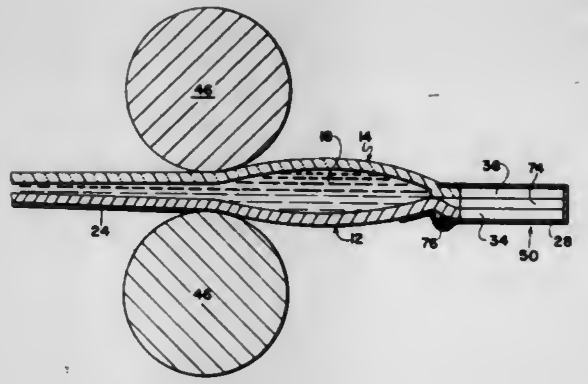
3,607,285
PHOTOGRAPHIC FILM UNIT

Richard J. Chen, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 726,252, May 2, 1968, which is a continuation-in-part of application Ser. No. 721,231, Apr. 15, 1968, now abandoned. This application Aug. 28, 1968, Ser. No. 756,017
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 **7 Claims**

A self-developing film unit including a photosensitive sheet and a transparent sheet bound at their margins in face-to-face relation and adapted to be processed to produce a visible image between the sheets by advancing the sheets between a pair of pressure-applying members to spread a

processing liquid between the sheets from a container one end thereof toward the other end of the film unit. Trapping means are provided at the other end of the film unit for collecting and retaining excess processing liquid. The film unit is adapted to be retained intact following spreading of the processing liquid and includes trapping means providing a trapping space bounded by the sheets at the other end of the film unit and means for securely laminating the sheets to one another intermediate the area of the film unit containing the image and the trapping space to prevent flowback and/or migration of excess processing liquid from the trapping space into the adjacent image-containing area.





3,607,286
PHOTOGRAPHIC MATERIAL COMPRISING AN ANTI-STATIC COATING

Henry Walter Wood, Ilford, England, assignor to Ilford Limited, Ilford, England
Filed July 1, 1969, Ser. No. 838,350
Claims priority, application Great Britain, July 3, 1968, 31,705/68
Int. Cl. G03c *1/82*
U.S. Cl. 96—87 A **8 Claims**

This application describes photographic material which comprises a support base having coated thereon on one or both sides at least one photographic emulsion layer, and having coated on each topmost emulsion layer a gelatin supercoat layer, there being present on at least one supercoat layer an antistatic layer which is a layer of a homopolymer of a compound of general formula I:

$$(CH_2{=}CH{-}CH_2)_2NR_1R_2\cdot X^-$$

where R_1 and R_2 are each hydrogen atoms or alkyl groups and X is an anion, or a copolymer thereof with minor amounts of other ethylenically unsaturated monomers, the said homo- or copolymer layer having been coated from a lower primary alcohol solution, or photographic material which comprises a support base which has on one side thereof at least one photographic emulsion layer and which has on the other side an antistatic layer which is a layer of a homopolymer of a compound of the above formula I or a copolymer thereof with minor amounts of other ethylenically unsaturated monomers.

3,607,287
NEGATIVE-WORKING TWO-COMPONENT DIAZOSULFONATE MATERIAL

Dieter Bohm, Niederwalluf/Rheingau, Germany, assignor to Keuffel & Esser Company, Morristown, N.J.
Filed Dec. 29, 1969, Ser. No. 888,837
Claims priority, application Germany, Dec. 30, 1968, P 18 17 417.9
Int. Cl. G03c *1/56, 1/60*
U.S. Cl. 96—91 R **3 Claims**

The storage stability and useful life of negative-working two-component diazo-type material is extended by including a polyether of a dihydric aliphatic alcohol in the light-sensitive composition with a light-sensitive diazosulphonate and an azo coupler component.

3,607,288
RADIATION-SENSITIVE SILVER HALIDE EMULSIONS CONTAINING AMINE BORANES AND GOLD COMPOUNDS

Cortland R. Burt, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 12, 1968, Ser. No. 736,276
Int. Cl. G03c *1/36*
U.S. Cl. 96—101 **11 Claims**

In direct positive emulsions chemically fogged with amine boranes, the tendency for red light to bleach the image because of red light sensitivity is reduced by digesting the molten emulsion in the presence of a water-soluble gold compound. The gold compound is added in an amount from $0.400\times10^{1}$to 3.40×10^{15} moles of Au^{++++}per 1.5 moles of silver nitrate. The gold compound may be added before or after the addition of the amine borane fogging agent.

3,607,289
GELATIN EMULSIONS HAVING IMPROVED PROPERTIES

Wolfgang Keberle; Wolfgang Himmelmann; Fritz Nittel, and Gunter Oertel, all of Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 23, 1967, Ser. No. 662,582
Int. Cl. G03c *1/04*
U.S. Cl. 96—114 **2 Claims**

Photosensitive photographic material having at least one gelatin-containing emulsion comprising an anionic polyurethane in which the salt-forming groups are phosponic acid, phosphoric ester or phosphoric acid amide groups, or their salts.

3,607,290
POLYMER-CONTAINING SILVER HALIDE PHOTOGRAPHIC EMULSIONS, PREPARATION THEREOF AND PHOTOGRAPHIC ELEMENTS PRODUCED THEREFROM

Louis Butler, Harlow, Essex, England, assignor to Minnesota Mining and Manufacturing, Saint Paul, Minn.
Filed Jan. 3, 1969, Ser. No. 788,937
Claims priority, application Great Britain, Jan. 8, 1968, 1147/68
Int. Cl. G03c *1/72*
U.S. Cl. 96—114 **17 Claims**

Silver halide photographic emulsions containing a water-insoluble latex of an alkoxyalkyl acrylate polymer are shown, together with a process for preparing such emulsions and photographic elements produced therefrom.

3,607,291
DIMETHYLAMINE OXIDES AS COATING AIDS FOR PHOTOGRAPHIC ELEMENTS

William J. Knox, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 8, 1968, Ser. No. 719,672
Int. Cl. G03c *1/38*
U.S. Cl. 96—114.5 **17 Claims**

Alkyldimethylamine oxides, e.g. lauryl-, cetyl-, myristyl-, and the like-, dimethylamine oxides are found to be particularly suitable for use as coating aids for gelatin-containing layers of photographic papers, films, plates, and the like.

These coating aids are more especially suitable in multiple-layer coating techniques in making such elements.

3,607,292
TRIACRYLYLDIETHYLENETRIAMINE, METHOD OF PRODUCING THE SAME, AND PHOTOPOLYMERIZATION PROCESS AND SYSTEM UTILIZING THE SAME

Edward J. Cerwonka, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed July 28, 1969, Ser. No. 845,519
Int. Cl. G03c *5/00, 1/68*
U.S. Cl. 96—115 P **9 Claims**

A new monomer triacrylyldiethylenetriamine is prepared by the reaction of diethylenetriamine acryloyl chloride and sodium hydroxide, the reaction yielding the desired monomer, sodium chloride and water. The monomer, triacrylyldiethylenetriamine, is useful in the photopolymerization process as high-speed polymerizable monomer in conjunction with a colloidal carrier and a light-sensitive ferric salt. Modification of the reactants in the above process allow for the production of polyacrylyl and polymethacrylyl polyethylene polyamines containing 2 to 4 ethylene groups.

3,607,293
METHOD FOR TREATING MICRO ORGANISM CELLS

Tadayasu Furukawa, Machida-shi, and Hideyuki Furukawa, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed May 12, 1969, Ser. No. 823,613
Claims priority, application Japan, May 15, 1968, 43/32197
Int. Cl. A23l *1/00*
U.S. Cl. 99—1 **18 Claims**

A method for treating micro-organism cells or protein extracted therefrom in order to bleach and improve the digestion rate thereof which comprises treating the cells or extracted protein with hydrogen peroxide. Advantageously, an aqueous solution or suspension of the cells or protein is prepared, the pH is adjusted to 3–12 and about 0.1 to 10 percent by weight of hydrogen peroxide is added thereto, the temperature of the mixture being maintained at 0°–100° C.

3,607,294
CHEESE COMPOSITION USEFUL AS A FISH BAIT

Carl Anthon Ernstrom, Logan, Utah, assignor to Nelson-Ricks Creamery Company, Salt Lake City, Utah
Filed Apr. 25, 1968, Ser. No. 724,236
Int. Cl. A01k *85/00*
U.S. Cl. 99—3 **6 Claims**

A cheese composition suitable for use as a fish bait is produced by techniques similar to those employed for the production of processed or blended cheese spreads. The cheese composition includes ingredients suitable for use in processed or blended cheese spreads but differs from such spreads by the inclusion of a high percentage of nonfat milk solids. The formulation is adjusted to maximize water content and minimize fat content thereby producing a fish bait composition of stiff consistency which can be molded over a fishhook and which will remain in place when it is moved through the water.

3,607,295
PLASTIC MOLDABLE COMPOSITION USEFUL AS A FISH BAIT

Dee R. Morgan, 1994 North 800 East, Logan, Utah
Filed Oct. 18, 1968, Ser. No. 768,929
Int. Cl. A01k *85/00*
U.S. Cl. 99—3 **7 Claims**

A composition for use as a fish bait is produced by blending fat characterized by an overall melting point above about 90° F. and a solid fat index above about 25 at 70° F. with appropriate quantities of water, casein (or caseinates), filler, and emulsifying agents to produce a moldable, semisolid, plastic material which retains its adhesive properties even after prolonged use in contact with water.

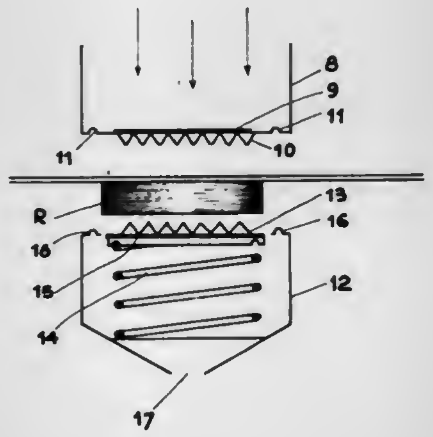
3,607,296
METHOD FOR THE PREPARATION OF A FEEDSTUFF BY USING PEATMOSS AS A STARTING MATERIAL

Ryonosuke Abbe, Yokohama, Japan, assignor to Tempoku Chemical Co., Ltd., Tokyo, Japan
Filed Nov. 5, 1968, Ser. No. 773,672
Int. Cl. A23k *1/14*
U.S. Cl. 99—9 **2 Claims**

This invention relates to a method for the preparation of a feedstuff using peatmoss as a starting material. The peatmoss is digested with calcium hydroxide in the presence of water to produce a pastelike product and a byproduct solution containing pentose. The pentose is converted into a complex compound of sodium borate and the complex compound is passed through an ion exchange resin for exchanging a complex ion by an anion which is ionically bonded to the ion exchange resin. The complex compound caught on the resin is recovered as a concentrated solution of pentose. The pastelike product is mixed with a diluted solution of pentose and the mixture is fermented by using a cellulose-decomposing bacterium to produce a feedstuff.

3,607,297
METHOD FOR PRODUCING BEVERAGES

Osvaldo Fasano, Strada Viciniale Prato del Lupo Frazione Corbiglia, Villarbasse, Turin, Italy
Continuation-in-part of application Ser. No. 648,646, Jan. 26, 1967, now abandoned. This application Mar. 13, 1969, Ser. No. 814,878
Int. Cl. A47j *31/02;* **A47f** *31/40*
U.S. Cl. 99—28 **4 Claims**



A relatively large quantity of a liquid is passed through a relatively small quantity of beverage-producing substance disposed in a pocket between two foils. Two conduits grasp the foils between them in endwise abutting sealed relationship, with the pocket within the conduits. One foil is weaker than the other, so as to be ruptured by the pressure of the liquid.

3,607,298
HOP CONCENTRATES

William Mitchell, Hatfield, England, and Robert O. V. Lloyd, Sandyford, Ireland, assignors to Bush Boake Allen Limited, London, England
Continuation-in-part of application Ser. No. 359,788, Aug. 14, 1964, now abandoned. This application Apr. 11, 1967, Ser. No. 629,905
Int. Cl. C12c *9/02*
U.S. Cl. 99—50.5 **33 Claims**

Hop extract free of fixed hop seed oil is prepared by treating hop and hop extracts with ethanol or methanol and 5–20 percent water. The hop extract may be isomerized. A brewing adjunct containing substantially no fixed hop seed oil and containing humulones or isohumulones emulsifying agents stabilizers and sugars is disclosed.

ERRATUM

For Class 99—71 see:
Patent No. 3,607,280

3,607,299
METHOD OF MAKING A DISPOSABLE POUCHED COFFEE PRODUCT

Gregory L. Bolt, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 4, 1969, Ser. No. 855,364
Int. Cl. B65b *29/02*
U.S. Cl. 99--77.1 **8 Claims**

A method of making a disposable pouched coffee product comprising compressing roast and ground coffee to provide a loosely agglomerated coffee ring, encasing said agglomerated coffee ring in a water-permeable fabric filter pouch and disintegrating said agglomerated coffee ring to provide particulate compressed coffee in a pouch.

3,607,300
PREPARATION OF ISOHUMULONE CONTAINING HOP EXTRACT

William Mitchell, Hatfield, England, assignor to Bush Boake Allen Limited, London, England
Filed July 10, 1968, Ser. No. 743,586
Claims priority, application Great Britain, Nov. 17, 1965, Aug. 8, 1967, 48866/65;36469/67
South Africa Nov. 11, 1966, 66/6829;
Canada Nov. 13, 1967, 004,813
Int. Cl. C12c *9/02*
U.S. Cl. 99—50.5 **11 Claims**

An improvement in the method of preparing an isohumulone containing hop extract in which a solution of an extract of hops in a water immiscible solvent which dissolves alkali metal humulate salts less readily than does a dilute aqueous alkali metal carbonate, is contacted with such a carbonate to transfer the humulate salts into the aqueous phase and leave the lupulones in the organic phase. The improvement comprises separating the humulate salts from the aqueous phase by (i) precipitating the salts or (ii) extracting them from the aqueous phase with a water-immiscible polar solvent. The humulate salts are then isomerized by heating. The invention also includes a method for flavoring beer by adding a novel aqueous solution of potassium isohumulates which is substantially free from lupulones and fixed and essential oils of hops, to fermented beer.

3,607,301
PRODUCTION OF WHIPPABLE CREAM

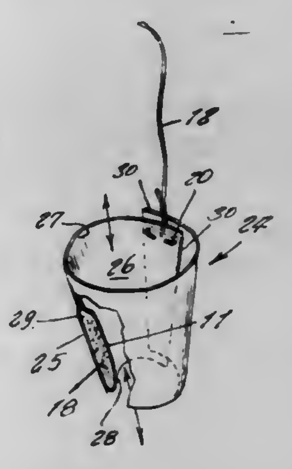
Arthur Bratland, Maudsvei 9, Hele, Notteroy, Norway
Filed Oct. 1, 1968, Ser. No. 764,345
Int. Cl. A23c *13/00, 13/12*
U.S. Cl. 99—60 **12 Claims**

A process for producing whipping cream having a fat content not greater than of the order of 25 percent by weight involving the step of expelling and separating pure butter oil from a milk product having above 15 percent by weight of milk fat and adding the remainder to a cream to constitute said whipping cream.

3,607,302
COFFEE BAG

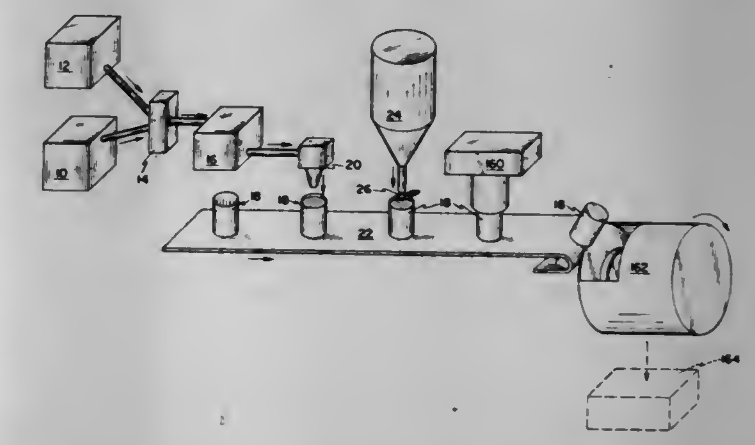
Russell C. Beck, 617 Cityview Ave., Avalon, Pa.
Filed Dec. 16, 1969, Ser. No. 885,565
Int. Cl. A23f *1/00*
U.S. Cl. 99—77.1 **2 Claims**

A coffee bag for brewing an individual cup of coffee, the device comprising a tea baglike assembly, consisting of a porous paper envelop containing a premeasured amount of ground coffee beans, and the envelop being attached to one end of a string for conveniently dipping into a cup of boiling hot water.



3,607,303
BEVERAGE CARBONATION METHODS AND APPARATUS

Joseph P. Bingham, Salt Lake City, Utah, assignor to Lynn G. Foster, Salt Lake City, Utah, a part interest
Filed Feb. 26, 1968, Ser. No. 708,062
Int. Cl. A23l *1/00;* **B65b** *63/08*
U.S. Cl. 99—79 **13 Claims**



Precooled uncarbonated beverage is filled into an open topped container. A slug of solid carbon dioxide is deposited into the container while the beverage temperature is still near its freezing point causing the solid carbon dioxide to be encapsulated by a film of ice formed by the beverage. The film acts to control the rate of sublimation of the solid carbon dioxide. The containers are sealed and agitated. Means are also disclosed to provide the sized slugs of solid carbon dioxide.

3,607,304
STABLE DRIED DEFATTED EGG PRODUCT

Ezra Levin, 1109 W. University Ave., Champaign, Ill.
Filed Feb. 1, 1968, Ser. No. 702,174
Int. Cl. A23j *1/08;* **A23b** *5/02*
U.S. Cl. 99—113 **5 Claims**

A stable, dried and defatted egg product which has the improved features of being free of Salmonella infection substantially free of any fat so as to have indefinite shelf life without spoilage. The product has higher protein content and may contain a small amount of an antioxidant in intimate dispersion characterized by a tendency to contact or adhere to the individual particles of the product so as to exert an improved effect. The product is made by removing water and the fat in a body of solvent at moderate temperatures below levels which would tend to cook the raw egg. The water is removed as an azeotropic mixture of solvent and water, and the fat is extracted into the solvent. The solid product is separated from the mixture of solvent and extracted fat, and the remaining solvent is preferably removed by introducing a body of water in the form of particulate droplets while maintaining a moderate temperature level.

3,607,305
COOL TASTING MARGARINE

Herbert Willem Lincklaen Westenberg, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.
Filed Dec. 29, 1967, Ser. No. 694,356
Claims priority, application Great Britain, Dec. 30, 1966, 58379/66
Int. Cl. A23d *3/02*
U.S. Cl. 99—122 R **9 Claims**

A liquid fat with low saturated fatty acid content is hydrogenated to a slip melting point of 30–40 °C while substantially increasing its trans acid content and providing a dilatation curve of specified steepness and is used in blends with liquid oils for the manufacture of cool-tasting margarine with little or no added lauric acid fats. The liquid and/or hydrogenated components of the blends may be interesterified and both may be derived from the same source, e.g. sunflower, safflower or rapeseed oil.

3,607,306
INSTANTIZED PRODUCTS

Thomas F. McMichael, Edinburgh, Scotland, assignor to Cerebos Foods Limited, London, England
Filed Feb. 19, 1968, Ser. No. 706,622
Claims priority, application Great Britain, May 17, 1967, 22845/67
Int. Cl. A23l *1/34*
U.S. Cl. 99—124 **8 Claims**

This invention relates to instantized products having thickening and/or flavoring and/or like properties which are for example useful in the production of foods and culinary preparations of the instantized type. The instantized products are prepared by incorporation of gelatin or other hydrophilic colloid to provide networks or paths whereby hot or cold aqueous liquid can readily penetrate throughout the product.

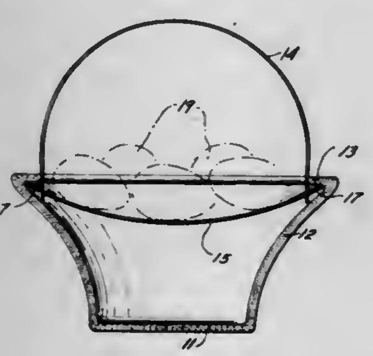
3,607,307
PROCESS FOR PREPARING A FROZEN CONFECTION FROM A CARBONATED BEVERAGE

Harry A. Peyser, Olympia Fields, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 9, 1969, Ser. No. 831,811
Int. Cl. A23g *5/00;* **B65b** *31/00*
U.S. Cl. 99—136 **3 Claims**

A packaged carbonated beverage which can be frozen to a flavored solid crystalline confection having a snowlike physical appearance, comprising a flavored carbonated beverage packaged in a suitable container having incorporated therein a fluorinated hydrocarbon.

3,607,308
CANDY NOVELTY

Paul H. Dubble, Reading, Pa., assignor to Court Candies, Inc., Reading, Pa.
Filed Feb. 28, 1969, Ser. No. 803,145
Int. Cl. A23g *1/22, 1/20*
U.S. Cl. 99—138 R **2 Claims**



A hollow container formed of edible chocolate and having an upwardly presented opening adapted to receive articles to be carried in the container. The container has an inturned lip around the opening and is provided with a means for carrying the container including an elongated strip type handle and a handle-anchoring member formed of sheet material and having an edge thereof engaged under the lip formed around the container opening.

3,607,309
PREPARATION OF MARSHMALLOW WITH MILK SOLIDS

Edward S. Olney, and Howard S. Thurmon, both of Deerfield, Ill., assignors to Kraftco Corporation, New York, N.Y.
Filed Nov. 1, 1968, Ser. No. 772,806
Int. Cl. A23g *3/00*
U.S. Cl. 99—134 A **5 Claims**

A marshmallow confection containing milk solids and a method for making same are provided. In one process for making the marshmallow confection a syrup is prepared from a mono-saccharide sugar, a di-saccharide sugar and water by heating a mixture of these ingredients with agitation. The syrup mixture is thereafter cooled to a temperature less than the caramelization of milk solids, and a concentrated dispersion of milk solids is added thereto. A dispersion of a colloid, such as gelatin, is then added and the mixture is pumped through a beater so as to aerate the mixture. The mixture is then cooled and formed into pieces of desired shape and size.

3,607,310
PRODUCTION OF FORTIFIED SUGAR

James F. Carter, Jr., 19005 Bryant St., Northridge, Calif.
Filed July 29, 1966, Ser. No. 568,989
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 **9 Claims**

Producing fortified beet cane or corn sugar identical in appearance to the unfortified sugar product by mixing a combination of coated nutrients, unfortified sugar and a masking agent, the mixing accompanied by a minimum of breaking of the nutrient coating.

3,607,311
OBTULINUM EXOTOXIN INHIBITED FOODS

Gerhard Julius Hass, 28 Arcadia Road, Woodcliff Lake, N.J., and Nino Insalata, 223 Martha Drive, Battle Creek, Mich.
Filed Feb. 16, 1968, Ser. No. 705,898
Int. Cl. A23b *1/00, 3/00*
U.S. Cl. 99—154 **2 Claims**

Food spoilage caused by the action of Clostridium botulinum is inhibited by adding small amounts of everninomicin to the food.

3,607,312
METHOD OF PREPARING AND PRESERVING READY-TO-EAT FOODS

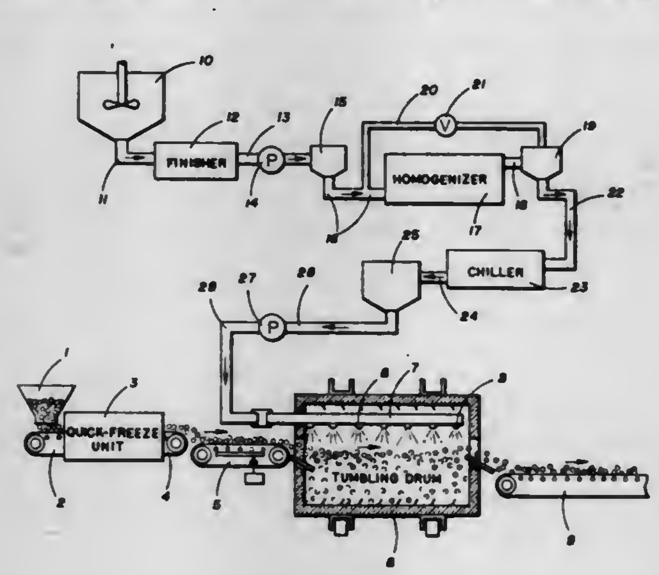
Charles Ambrosia Ready, Fountain Inn, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Apr. 1, 1969, Ser. No. 812,381
Int. Cl. A231 *3/00;* **B65b** *5/00*
U.S. Cl. 99—165 **4 Claims**

A method of preparing and preserving ready-to-eat food comprising vacuum packaging the food in a gas tight pouch, cooking the food in the pouch by immersing in hot water, rapidly chilling the food to about 30° F. but not freezing, storing at 30° F. until needed for consumption, and heating in hot water to serving temperature. A food package substantially free of pathogens results from the method.

3,607,313
METHOD OF APPLYING AN EDIBLE COATING TO INDIVIDUALLY QUICK-FROZEN FOOD PIECES BY FREEZE ADHERENCE

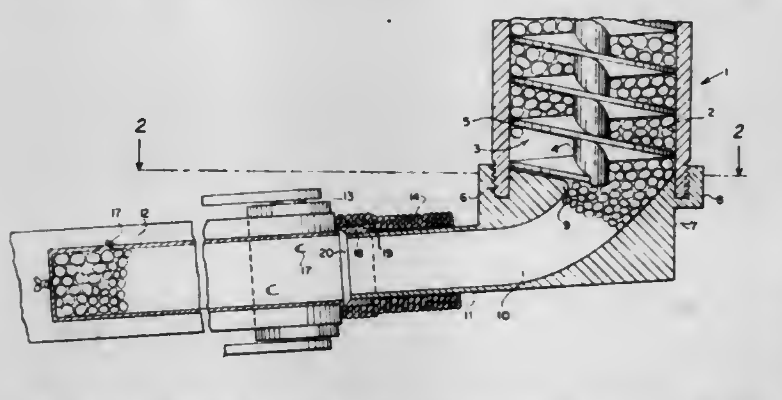
Theodore L. Roth, Stockton, Calif., assignor to Freezecoat Incorporated, Stockton, Calif.
Filed Oct. 14, 1968, Ser. No. 767,085
Int. Cl. A23b *7/04, 7/16*
U.S. Cl. 99—166 **1 Claim**

Individual food pieces are quick-frozen and transfered to a zone where they are subjected to turbulence while being sprayed with sauce. The quantity of sauce sprayed is proportioned by the quantity of food entering the zone. The sauce is prepared by mixing various ingredients, homogenizing a portion, and chilling the combined sauce so that it freeze adheres to the food pieces when sprayed.



3,607,314
METHOD OF PROCESSING BONELESS MEAT PIECES FOR SUBSEQUENT GRINDING

Robert C. Lugiewicz, Pittsburgh, Pa., assignor to Cubb-Pac Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 526,412, Feb. 10, 1966, now Patent No. 3,414,936. This application Oct. 3, 1968, Ser. No. 764,725
Int. Cl. A22c *18/00;* **A23b** *1/00*
U.S. Cl. 99—194 **8 Claims**



Discrete pieces of meat are introduced to a housing having a screw conveyor therein which compacts the meat pieces into a solid bar that is fed to and through a horn which communicates with the housing tangentially and laterally of the axis of the housing. The bar is extruded from the horn into a casing formed of an elastic, flexible material which has spaced openings therein and which is withdrawn from the horn by the bar as the latter is extruded. At the discharge end of the horn the casing is stretched radially and the meat bar expands radially. The expansion of the meat bar and the elasticity of the casing cooperate to fit the casing so tightly about the bar that those portions of the bar opposite the openings in the casing protrude therethrough. The bar is cut into substantially uniform lengths which are frozen for shipment to meat markets for subsequent grinding of the meat.

3,607,315
METHOD OF MAKING FROZEN PATTIES

Anthony S. Partyka, Chicago, Ill., assignor to Kraftco Corporation, New York, N.Y.
Filed Apr. 10, 1968, Ser. No. 720,394
Int. Cl. A23b *3/06;* **A23l** *1/33*
U.S. Cl. 99—195 **4 Claims**

A method for preparing portion controlled patties from fish, particularly shellfish. In the method frozen shellfish are comminuted while frozen to a desired particle size. The frozen particles are mixed with suitable flavoring materials to provide a mix and the mix is then molded into portion controlled patties while the temperature of the mix is maintained below freezing.

3,607,316
PROCESS OF PRODUCING LARGE DEHYDRATED ONION PIECES

Jaquelin H. Hume, 120 Montgomery St., San Francisco, Calif.
Filed Dec. 8, 1966, Ser. No. 601,293
Int. Cl. A23b *7/02*
U.S. Cl. 99—204 **7 Claims**

Producing large dehydrated onion pieces by submerging large cut onion pieces in a liquid, repeatedly drawing a vacuum over the liquid in order to remove at least one epidermol membrane and subsequently drying.

3,607,317
DUCTILITY PROMOTER AND STABILIZER FOR ELECTROLESS COPPER PLATING BATHS

Fredrick W. Schneble, Jr., Oyster Bay, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.
Filed Feb. 4, 1969, Ser. No. 796,542
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 **13 Claims**

The present invention provides a means for controlling the stability of electroless copper plating baths and enhancing the ductility properties of the electroless metal deposits produced therefrom.

3,607,318
POLISHING COMPOSITION FOR METAL SURFACES COMPRISING MERCAPTO THIOETHERS AS METAL TARNISH INHIBITORS

Paul F. Warner, Phillips, Tex., assignor to Phillips Petroleum Company
Division of Ser. No. 658,044, Aug. 3, 1967, Pat. No. 3,522,314. Filed Dec. 10, 1969, Ser. No. 884,027
Int. Cl. C08h ; C09d ; C09g
U.S. Cl. 106—3 **6 Claims**

The compound represented by

$$HS-R-O-R-S-R'$$

wherein each R is selected from saturated aliphatic hydrocarbon radicals having 1 to 5 carbon atoms and R′ is selected from alkyl, cycloalkyl and alkaryl radicals having 8 to 20 carbon atoms, is prepared by the reaction of a dimercaptan with a monoolefin. The compounds have utility with paints, sealing compounds and silver or copper polish compositions. A preferred compound, 3-mercaptopropyl 3-(*t*-dodecylthio)propyl ether, is a very effective tarnish inhibitor for silver.

3,607,319
PROCESS FOR MAKING REFRACTORY MOLDS

Robert K. Scott, Pittsburgh, Pa., assignor to Avnet, Inc., Plainview, Long Island, N.Y.
Filed Mar. 5, 1969, Ser. No. 804,649
Int. Cl. B28b *7/34*
U.S. Cl. 106—38.35 **8 Claims**

A refractory mold is prepared from a prehydrolyzed organic silicate and a particulate refractory material having a coating prepared from an air-stable organic base, water and a water-soluble polyhydric alcohol or an ester thereof.

3,607,320
PHOTOTROPIC GLASS-CERAMIC ARTICLES CONTAINING BISMUTH DOPED CALCIUM TUNGSTATE CRYSTALS

Sumio Sakka, Troy, N.Y., assignor to Pittsburgh Plate Glass Company, Pittsburgh, Pa.
Filed Apr. 1, 1968, Ser. No. 717,527
Int. Cl. C03c *3/22, 3/26, 3/14*
U.S. Cl. 106—39 DV **5 Claims**

The instant invention relates to new glass-ceramic articles containing alkaline earth tungstate crystals. More particularly, the invention pertains to a phototropic article comprising a glassy matrix containing an alkaline earth tungstate doped with bismuth. The invention especially pertains to glassy matrices of boric oxide or silica.

3,607,321

GLASS MATERIALS FOR SILVER-ACTIVATED PHOSPHATE GLASS DOSIMETER

Hyosuke Yokota, Yokohama-shi, and Saburo Nakajima, Kawasaki-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 4, 1966, Ser. No. 547,574

Claims priority, application Japan, May 12, 1965, May 14, 1965, 40/27328;40/27964

Int. Cl. C03c *3/16, 3/24*

U.S. Cl. 106—47 6 Claims

A dosimeter glass material exhibiting good durability against weathering, good workability, high sensitivity, low predose and low fading characteristics is comprised of from 40 to 55 parts by weight of lithium metaphosphate and complementarily, from 60 to 45 parts by weight of aluminum metaphosphate and from 2 to 11% of silver metaphosphate based on the combined weight of said lithium and aluminum metaphosphates.

3,607,322

LIGHT TRANSMITTING GLASS FIBERS, CORE AND CLADDING GLASS COMPOSITIONS

William C. Brady, Granville; Ralph L. Tiede, Granville; Folsom M. Veazie, Granville, and Warren W. Wolf, Columbus, all of Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed May 22, 1969, Ser. No. 827,056

Int. Cl. C03c *13/00, 3/10*

U.S. Cl. 106—54 22 Claims

Glass compositions are disclosed for use in producing light transmitting glass fibers composed of a central core glass surrounded by an outer cladding glass. The core glasses have the following range of proportions (by weight): SiO_2, 23–41%; Al_2O_3, 7–10%; B_2O_3, 2.5–11%; K_2O, up to 10%; BaO, 34–59%; Sb_2O_3, up to 0.05%, preferably 0.01 to 0.05%. The cladding glasses have the following range of proportions (by weight): SiO_2, 61–65%; Al_2O_3, 4–6%; CaO, up to 3%; MgO, 0.90–4%; B_2O_3, 12–16%; Na_2O, 7–12%; Li_2O, up to 4%; F_2, up to 3%; SeO_2 up to 0.004%, preferably 0.002 to 0.004%.

3,607,323

SINTERED STABILIZED ZIRCONIA CONTAINING DISCONTINUOUS PHASE OF COBALT-CONTAINING OXIDE

Craig S. Tedmon, Jr., Scotia, and Stephan P. Mitoff, Elnora, both of N.Y., assignors to General Electric Company

Filed July 31, 1968, Ser. No. 749,070

Int. Cl. C04b *35/48*

U.S. Cl. 106—57 4 Claims

The resistance of a zirconia mass or layer to gas penetration is maximized by sintering the zirconia body with a cobalt-containing sintering agent present therein as a separate phase. In the case of stabilized zirconia the cobalt-containing sintering agent may be introduced either during or after stabilization.

3,607,324

METHOD OF MAKING DENSE MAGNESIA-MAGNESIUM CHROMITE SPINEL BODIES

Peter E. D. Morgan, Cherry Hill, N.J., assignor to General Refractories Company, Philadelphia, Pa.

Filed Oct. 18, 1968, Ser. No. 768,918

Int. Cl. C04b *35/42;*

U.S. Cl. 106—59 16 Claims

Magnesium chromate is heated to thermally decompose the same while held in a confined zone under applied pressure whereby marked densification of the decomposing material occurs to produce dense magnesia/magnesium chromite spinel.

3,607,325

REFRACTORY-CERAMIC COMPOSITION AND METHOD

Earl G. Spangler, Corona Delmar; Milton M. Moore, Laguna Beach, and Ronald L. Topp, La Crescenta, all of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 19, 1968, Ser. No. 738,205

Int. Cl. C04b *35/02, 35/14*

U.S. Cl. 106—64 7 Claims

A refractory-ceramic composition is disclosed which contains from 15 to 30 percent by weight calcium aluminate cement and the balance a fused silica particle mixture, this mixture being composed of rodlike and platelike fused silica particles of as great a degree of purity as reasonable possible. The mixture of the silica particles is graded as to size so as to have a high proportion of comparatively large particles which abut against and interfit with one another in the final composition. Such a refractory-ceramic composition is formed into a final article by being mixed with water, then by being cast into a desired shape and then by being allowed to hydrate or "cure" so as to become hard. The resulting article is preferably air dried and then gradually heated to a temperature slightly above the temperature at which it will be used.

3,607,326

MINERAL GRINDING AIDS

Frank G. Serafin, 31 Livingston Drive, Peabody, Mass.

Continuation-in-part of application Ser. No. 556,589, June 10, 1966, now abandoned. This application Dec. 16, 1969, Ser. No. 885,640

Int. Cl. C04b *7/54*

U.S. Cl. 106—90 16 Claims

Solid inorganic compounds such as naturally occuring inorganic mineral compounds and Portland cement are interground with certain amine salts of aryl hydroxy compounds (e.g. triethanolamine phenoxide) to enhance the efficiency of the grinding operation.

3,607,327

METHODS AND COMPOSITION FOR THE MANUFACTURE OF PORTLAND CEMENT

Louis George Imperato, Jr., Tenafly, N.J., assignor to Blocked Iron Corporation, Albany, N.Y.

Filed Mar. 20, 1969, Ser. No. 809,020

Int. Cl. C04b *7/48, 7/38*

U.S. Cl. 106—100 6 Claims

A cement kiln feed material and method of operating a cement kiln are provided in which a kiln feed material comprising about 80–85 percent limestone, 10–14 percent of shale, clay or bentonite, 5 to 8 percent carbonaceous material and a member from the group consisting of oxides and hydroxides of alkaline earth metals are mixed with sufficient water to form lumps, dried to a moisture level below about 10 percent and reacted with carbon dioxide to form alkaline earth carbonates in situ and feeding the formed lumps into a kiln at high temperature and reacting the same to form a cement clinker.

3,607,328

PRODUCTION OF DELUSTERED CELLULOSIC SAUSAGE CASINGS

Henry J. Rose, and Albin F. Turbak, both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 431,181, Feb. 8, 1965, now abandoned. This application Sept. 30, 1968, Ser. No. 763,942

Int. Cl. C08b *21/20*

U.S. Cl. 106—166 9 Claims

Tubular regenerated cellulose films suitable for use as sausage casings are prepared in a highly delustered form by incorporating a mixture of two or more delustering agents having a refractive index substantially different from each other and from regenerated cellulose in a viscose solution prior to extrusion. The mixture of delustering materials is added to the viscose in solution in an inert cosolvent which is soluble in the viscose solution. The addition of the solution of mixed delustering materials produces a delusterant fog upon extrusion of the viscose and formation of a regenerated cellulose film or tube therefrom.

3,607,329

CELLULOSE ACETATE BUTYRATE SEMIPERMEABLE MEMBRANES AND THEIR PRODUCTION

Serop Manjikian, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Interior

Filed Apr. 22, 1969, Ser. No. 818,397

Int. Cl. B29d *27/04;* **C08b** *21/06, 27/42, 27/44, 27/58*

U.S. Cl. 106—177 10 Claims

Semipermeable membranes are produced by casting a solution consisting essentially of cellulose acetate butyrate, triethyl phosphate, a flux promoter and an organic solvent into a film, and subsequently gelling the film by immersion in water. The membranes of the invention find particular utility in separation of solutes from solutions by osmosis or reverse osmosis.

3,607,330

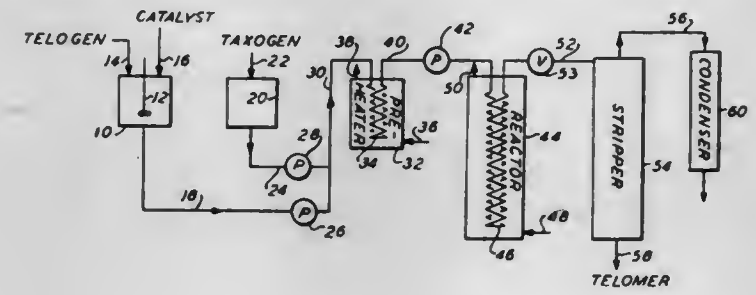
TELOMER AND PLASTICIZED COMPOSITION FORMED THEREFROM

Charles E. Blades, Spring Row, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed Dec. 29, 1967, Ser. No. 694,574

Int. Cl. C08b *27/44*

U.S. Cl. 106—178 7 Claims



A telomer of a vinyl ester and a benzene containing at least two methyl groups is used as a plasticizer for nitrocellulose to form plasticized nitrocellulose compositions, such as films, the telomer being produced by reacting the vinyl ester with the substituted benzene in the presence of a free radical catalyst.

3,607,331

CLAY-STARCH PAPER COATING COMPOSITIONS

Greene W. Strother, and William P. Coker, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 3, 1968, Ser. No. 733,809

Int. Cl. C08b *25/02*

U.S. Cl. 106—214 9 Claims

Clay-starch coating compositions have increased adhesion to paper when mixed with a small amount of a copolymer of a polyalkylenimine and an epihalohydrin. The copolymer insolubilizes the starch binder and thus increases its effectiveness in water resistant applications.

3,607,332

MODELING COMPOSITION

Harold T. Wingfield, Birchwood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 20, 1968, Ser. No. 714,459

Int. Cl. C08h *9/00*

U.S. Cl. 106—243 7 Claims

Thermoplastic modeling compositions which are resistant to cracking on standing after they have been molded. Preferably lightweight, they are relatively soft and easily molded at elevated temperatures and are slump or distortion-resistant but still pliable and finger-pressure deformable at room temperature. Distributed throughout the modeling compositions are rigid, regularly shaped microparticles, e.g., in the form of spheres or platelets.

3,607,333

DEVELOPERS FOR INSPECTION PENETRANTS EMPLOYING FUSIBLE WAXES

James R. Alburger, 5007 Hillard Ave., La Canada, Calif.

Filed Feb. 17, 1969, Ser. No. 799,701

Int. Cl. C08h *9/06;* **C09k** *1/02*

U.S. Cl. 106—271 2 Claims

A high-sensitivity, high-resolving power inspection penetrant developer in which the active developing ingredient is a waxy substance which is a solid or near-solid at room temperature, but which becomes fluid at slightly elevated temperatures. The waxy developer material may be dissolved in a suitable carrier liquid such as water or other inert volatile solvent, and is deposited on test parts by dipping, brushing or spraying, and allowing the carrier liquid to evaporate. When heat is applied to the test parts, during oven drying or by heating subsequent to air-drying, the waxy developer layer becomes a fluid, and a "liquid-film dilution-expansion" type development of penetrant entrapments in surface defects then takes place. When the test parts cool to room temperature, the fluid waxy layer, which now contains developed defect indications, solidifies and prevents excessive bleeding and migration of the indications.

3,607,334

COMPOSITIONS CONTAINING ASPHALT AND SECOND PASS FOOTS OIL

Eugene M. Fauber, Hammond, Ind., assignor to Atlantic Richfield Company

Filed Apr. 29, 1968, Ser. No. 725,188

Int. Cl. C08h *13/00, 17/22;* **C08j** *1/46*

U.S. Cl. 106—279 10 Claims

Asphaltic compositions are prepared which are suitable for use as felt saturants or as materials which may be airblown to suitable softening point and penetration for use as roofing material. These compositions comprise a major amount of asphalt and a minor amount of a second pass foots oil derived from a heavy lube distillate.

3,607,335

PIGMENT FORMULATIONS

Horst Belde, and Ewald Daubach, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Nov. 1, 1968, Ser. No. 772,808

Claims priority, application Germany, Nov. 8, 1967, Mar. 23, 1968, P 16 69 737.3;P 17 69 034.5

Int. Cl. C08h *17/02;* **C08g** *51/02*

U.S. Cl. 106—288 Q 8 Claims

Pigment formulations which contain the pigment dye finally dispersed in diglycol terephthalates or linear oligomers of terephthalic acid and ethylene glycol are outstandingly suitable for mass coloration of thermoplastics.

3,607,336

PROCESS FOR MAKING SOLID SOLUTIONS

Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 738,784 June 21, 1968, now abandoned, which is a continuation-in-part of Ser. No. 515,251, Dec. 20, 1965, abandoned. This application July 9, 1969, Ser. No. 840,500

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q 7 Claims

A process is provided for making a solid solution of at least two quinacridone derivatives by drowning in highly turbulent water, a sulfuric acid solution of at least two of the derivatives to form a precipitate with a particle size smaller than 0.5 micron, and digesting the precipitate at a temperature of from about 40° C. to the boil for about 10 minutes to about 2 hours.

3,607,337

PROCESS FOR THE PRODUCTION OF ORGANICALLY MODIFIED SILICIC ACIDS AND SILICATES

Edith Eisenmenger, Offenbach; Otto Kuhnert, Beuel; Robert Kuhlmann, Keldenich; Peter Nauroth, Wesseling, and Guenter Tuerk, Grossauheim, all of Germany, assignors to Deutsche Gold-Und Siber-Scheideanstalt Vormats Roessler, Frankfurt am Main, Germany
Filed Oct. 7, 1968, Ser. No. 765,683
Claims priority, application Germany, Oct. 12, 1967, Dec. 2, 1967, P 15 92 865.1;P 16 67 465.0
Int. Cl. C08h *17/04;* **C08f** *45/04*
U.S. Cl. 106—288 Q **12 Claims**

A process for modifying silicic acids, gels, and silicates by impregnating them with a wax or a thermoplastic material, such as polyethylene. The silicic acids, silica gels, or silicates can be impregnated either as they are being formed or after they have formed by adding an aqueous emulsion or dispersion of wax or thermoplastic material to an aqueous suspension or dispersion of the silicic acids, gels or silicates. The mixture is then filtered, washed, dried, and finely ground. The organically modified silicic acids, gels, and silicates are useful as delustering agents in lacquer systems.

3,607,338

SYNTHESIS OF ZINC TITANATE PIGMENT AND COATINGS CONTAINING THE SAME

James E. Webb, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Daniel W. Gates, 3026 Crescent Circle, Huntsville, Ala.; Gene A. Zerlaut, 60 E. 32nd St., Chicago, Ill., and Frederick O. Rogers, 639 North Harvey, Oak Park, Ill.
Filed Apr. 11, 1968, Ser. No. 720,546
Int. Cl. C09c *1/36, 1/04*
U.S. Cl. 106—292 **2 Claims**

Zinc titanate pigment resistant to degradation of reflective properties upon exposure to ultraviolet radiation in vacuum is prepared by reacting zinc oxide with anatase titanium dioxide at a molar ratio of 2:1 and a temperature of at least 900° C. and contacting the product with a zinc oxide extractant solution. The pigment prepared by this process is combined with a suitable binder to produce degradation-resistant coatings.

3,607,339

SINTERED AGGREGATES

William Davies, Stirling, Scotland, assignor to John G. Stein & Company Limited, Bonnybridge, Scotland
Filed Mar. 4, 1968, Ser. No. 709,960
Claims priority, application Great Britain, Mar. 2, 1967, May 2,1967, 9,923/67; 20,351/67
Int. Cl. C09c *1/00*
U.S. Cl. 106—309 **8 Claims**

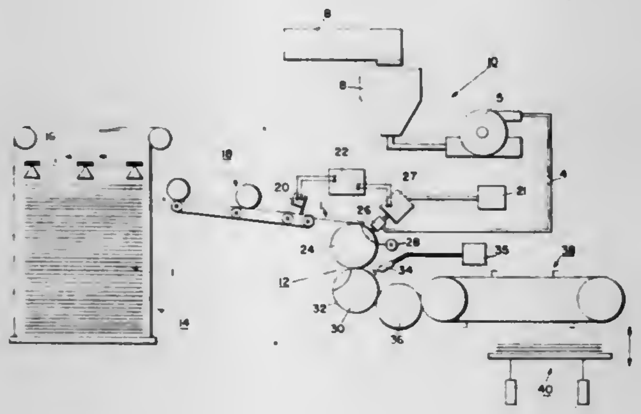
A synthetic aggregate suitable for use in a road surface is prepared by sintering together particles of hard mineral or ceramic material, a flux, and at least sufficient combustible material to complete the endothermic changes occurring in the sintering. The sintered product is in the form of hard particles linked in a cellular structure by strong crystalline ceramic bonds.

3,607,340

APPARATUS AND METHOD FOR SPOT-COATING SHEET AND WEB MATERIALS

Herman F. Stroupe, Arlington Heights, Ill., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 645,675, June 13, 1967, now abandoned. This application Apr. 6, 1970, Ser. No. 24,426
Int. Cl. B05c *3/18, 11/00*
U.S. Cl. 117—10 **10 Claims**

A method of and apparatus for accurately and rapidly spot or continually coating either sheet or weblike materials, to place a protective and/or functional coating thereon. A photoelectric or other control mechanism triggers the deposition of the coating material through an "antidrool" valve and nozzle arrangement after which the coated areas may be smoothed or otherwise deformed such as, for example, to form lenticulated lenses on the surface of the coating. These subsequent forming or deformation steps may, of course, be omitted if only very minute amounts of the coating are being deposited or if contoured or patterned surface areas are desired.



3,607,341

PROCESS FOR PRODUCING A COATED SUBSTRATE

Robert E. Goins, and Phillip M. Morris, both of Chattanooga, Tenn., assignors to G.A.F. Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 594,401, Nov. 15, 1966, now abandoned. This application Nov. 28, 1969, Ser. No. 880,990
Int. Cl. B44d *1/44*
U.S. Cl. 117—10 **9 Claims**

Improved foam coated textiles and similar materials are produced by (a) foaming an aqueous emulsion polymerized latex composition containing about 1.5 to about 10 parts by weight of a water soluble salt of a saturated organic acid to increase the volume of said latex from about 4 to about 12 times its original volume; (b) applying the thus obtained foam directly to said textile or similar substrate; (c) partially drying the foam and substrate to a moisture content of less than about 20 percent by weight while retaining the foam in its expanded form during the drying process without gelation or curing the polymer; (d) crushing the partially dried and uncured foam, and (e) thereafter drying and curing the resultant crushed foam.

3,607,342

METHOD OF DEVELOPMENT OF ELECTROSTATIC IMAGES

Masamichi Sato, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 29, 1967, Ser. No. 686,668
Claims priority, application Japan, Nov. 29, 1966, 41/78190
Int. Cl. G03g *13/08*
U.S. Cl. 117—17.5 **5 Claims**

A method of developing an electrostatic image which comprises feeding a toner, its carrier and a material having 1) a smaller apparent density than said carrier, 2) at least the same size as said carrier, and 3) an electrically conductive surface, to a surface having an electrostatic latent image, and effecting relative motion between said surface having said latent electrostatic image and the mixture of the toner, the carrier and the material.

3,607,343

FLAME SPRAY POWDERS AND PROCESS WITH ALUMINA HAVING TITANIUM DIOXIDE BONDED TO THE SURFACE THEREOF

Frank N. Longo, Ellwood, Huntington, and Ferdinand J. Dittrich, Bellmore, L.I., both of N.Y., assignors to Metco Inc., Westbury, Long Island, N.Y.
Continuation-in-part of application Ser. No. 492,887, Oct. 4, 1965, now abandoned. This application Jan. 24, 1967, Ser. No. 611,246
Int. Cl. B44d *1/097;* **C04b** *35/10*
U.S. Cl. 117—27 **8 Claims**

A flame spray process and a powder composition for use therein consisting of alumina particles having 1 to 50 percent by volume of titanium dioxide bonded to the surface thereof in which said alumina particles have a particle size between about +5 microns and −100 mesh and in which said titanium dioxide is in the form of particles having a particle size of −10 microns bonded to the alumina particles with a bonding agent which is substantially decomposed or volatilized during the flame spray process.

3,607,344

FLUORESCENT COATINGS

Michael F. Baumann, West Lawn; Eugene H. Reich, Shillington, and Charles E. Coco, Shillington, all of Pa., assignors to Wyomissing Corporation
Filed Nov. 17, 1967, Ser. No. 683,790
Int. Cl. B44d *5/06*
U.S. Cl. 117—33.5 **8 Claims**

Maximum effectiveness of fluorescent dyes in coatings is achieved by fusing or casting a fluorescent dye-impregnated resin into a continuous light-reflective and emissive film. Exceptionally pure colors are obtained due to the absence of any extraneous or different film-forming resins and high reflectivity is achieved due to the absence of discrete dye-impregnated resin particles that present irregular surfaces to cause a random scattering of incident light. In those instances where comparatively brittle resin systems are used to coat flexible substrates, special methods are provided for tightly adhering these resins to the substrate.

3,607,345

PROCESS FOR COATING PHOTOGRAPHIC EMULSION LAYERS

Donald B. Thomas, Webster; Richard W. Wheeler, Pittsford, and Donald N. Miller, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 26, 1968, Ser. No. 724,540
Int. Cl. G03c *1/86, 1/78;* **C03c** *1/00*
U.S. Cl. 117—34 **11 Claims**

Photographic emulsion layers are coated on corona activated polymer surfaces more than about 30 minutes after activation of the polymer surface for improvement of coating uniformity and stability of emulsion layers

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3,607,346

LAYERS METHOD OF WET TRANSFERRING UNEXPOSED PHOTOGRAPHIC EMULSION

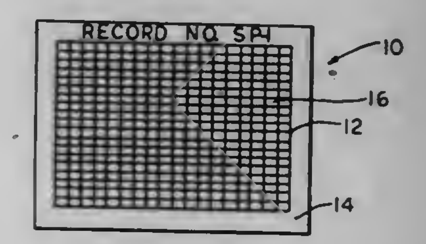
Rex Leslie Darlow; Guy William Willis Stevens, and Jill Frances Wood, all of Wealdstone, Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 21, 1969, Ser. No. 818,100
Int. Cl. G03c *1/90, 11/12*
U.S. Cl. 117—34 **8 Claims**

A method of retaining the sensitomeric properties of photographic silver halide emulsion layers which have been transferred from one support to another via an aqueous bath. Said method comprises suspending a stripped emulsion layer in an aqueous bath comprising a saccharide at a concentration of about 1 to 200 grams per liter, positioning a support beneath and contiguous to said layer, and removing said support bearing the emulsion layer from the bath.

3,607,347

DATA REDUCTION AND STORAGE

John L. Sprague, Holden; Robert S. Pepper, Grafton; Eugene P. Donovan, Westborough, and Frederick W. Howe, Westborough, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.
Filed Aug. 4, 1969, Ser. No. 847,328
Int. Cl. G03c *11/00*
U.S. Cl. 117—37 R **7 Claims**



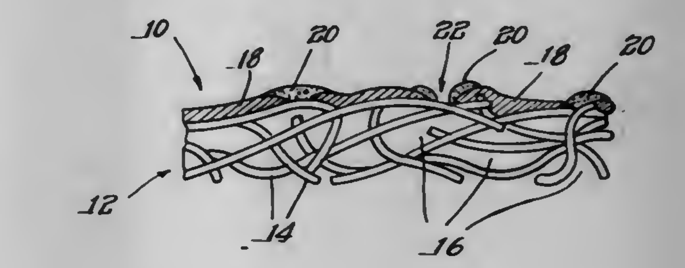
Permanent high density storage of alphanumerical information is provided by fine-line cuts which are extended through a thin surface layer to an underlying substrate and are arranged to provide a representation of the alphanumerical characters in microscopic size.

In the method, information in alphanumerical form is reduced to microscopic size and stored in a permanent medium by forming line cuts through a thin overlayer to a contrasting underlayer by photoreduction and photoetching techniques.

3,607,348

TWICE-COATED CELLULOSIC-FIBER STRUCTURE AND ITS MANUFACTURE

Joseph A. Wray, Columbus; Herbert N. Johnston, Columbus, Ohio, and Robert L. Leaf, Shawano, Wis., assignors to Little Rapids Pulp Company, Shawano, Wis.
Filed May 14, 1968, Ser. No. 735,486
Int. Cl. B44d *1/14;* **D21h** *1/21*
U.S. Cl. 117—38 **14 Claims**



A sheet product comprised of a substrate of nonwoven cellulosic fibers (which substrate either has a substantial porosity or is water-sensitive), a discontinuous prime coating of hydrophobic material adhering to the cellulosic fibers, and a second material filling surface interstices, and process for making same.

3,607,349

PRINTING ON SUBSTRATES SUCH AS GLASS USING EPOXY RESIN INK COMPOSITIONS

John E. Dereich, Pittsburgh, Pa., assignor to Neville Chemical Company, Pittsburgh, Pa.
Division of Ser. No. 525,117, Feb. 4, 1966, Pat. No. 3,468,835. Filed May 7, 1969, Ser. No. 839,753
Int. Cl. C03c *17/32;* **B44d** *1/14;* **B44c** *1/52*
U.S. Cl. 117—38 **7 Claims**

A thermosetting, normally solid, low melting, resinous printing ink base, which comprises an epoxy resin, a C_{14}–C_{18} alkanol such as cetyl or stearyl alcohol, a hardener such as a guanidine compound or an acid anhydride, and a viscosity modifier, is used in high speed printing on substrates such as glass.

3,607,350

ELECTROLESS PLATING OF PLASTICS

Richard J. Rathsack, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 5, 1967, Ser. No. 687,988

Int. Cl. B44d *1/092;* **C23c** *3/02*

U.S. Cl. 117—47 A **9 Claims**

An organic plastic substrate is metal plated by the following essential steps (1) sulfonation with SO_3 in a chlorinated hydrocarbon solvent, (2) neutralization of the sulfonated plastic in a dilute alkaline aqueous solution of an alkali compound, (3) immersing the neutralized, sulfonated plastic in a basic solution of silver nitrate and (4) coating a thin coat of copper or nickel on the activated, sulfonated plastic by means of a conventional electroless plating bath.

3,607,351

PROCESS FOR METAL PLATING OF SUBSTRATES

Sung Ki Lee, Niagara, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 671,337, Sept. 28, 1967, now abandoned. This application Aug. 2, 1968, Ser. No. 759,531

Int. Cl. B44d *1/092;* **C23c** *3/02*

U.S. Cl. 117—47 A **34 Claims**

Substrates, including plastics, are plated with metals by pretreatment of the substrate surfaces with phosphorus in an organic solvent and subjecting the phosphorus-treated surface to water and/or a surfactant to impregnate the surface with phosphorus. The resulting treated surface is contacted with a metal salt or complex thereof, to form a metal-phosphorus compound. The step of contacting with water and/or a surfactant can be accomplished by providing a layer of water or a layer of surfactant on the surface of the phosphorus-organic solvent contacting bath. The resulting treated surface is either conductive or is capable of catalyzing the reduction of a metal salt to produce a conductive surface. Such conductive surfaces are readily electroplated by conventional techniques.

3,607,352

ELECTROLESS METAL PLATING

Earl J. Fadgen, Jr., West Haven, and Gary Leibowitz, Woodbridge, both of Conn., assignors to Enthone, Incorporated, West Haven, Conn.

Filed Nov. 29, 1968, Ser. No. 780,200

Int. Cl. C23c *17/00*

U.S. Cl. 117—47 **23 Claims**

Sensitizer solutions and sensitizer concentrates for use in forming the sensitizer solutions, utilizable in chemical reduction metal plating. The sensitizer solution comprises an acid aqueous solution containing stannous chloride, HCl, and one or more of an alpha hydroxy dicarboxylic acid and water-soluble, solution-compatible salts thereof, for example tartaric acid, present in effective amount sufficient to inhibit formation of tin oxychloride. The sensitizer solution preferably also contains nickel and/or cobalt ions as an accelerator for the reduction and deposition of the catalytic noble metal during the activating of the surface to be electrolessly plated, and a buffering agent.

3,607,353

SURFACE TREATMENT FOR ELECTROPLATING

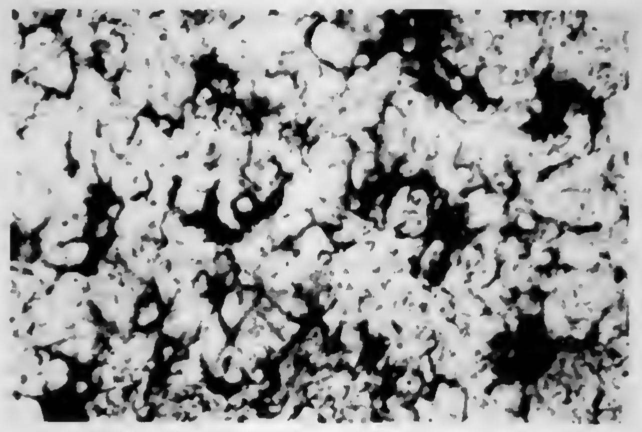
Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1969, Ser. No. 867,006

Int. Cl. B44d *1/02*

U.S. Cl. 117—47 **8 Claims**

A method for improving the adhesion between a metal coating and a nylon surface. The method includes the steps of treating a nylon surface with an aqueous solution of iodine and iodine ion in which the concentration of the iodine is at least about 0.2 molar and the concentration of the iodine ion is at least about 0.3 molar, and subsequently washing the surface to remove the iodine as quickly as possible prior to plating the polymer.



3,607,354

METHOD OF DELUSTERING POLYETHYLENE TEREPHTHALATE FILM

Lester C. Krogh, Roseville Township, and Richard E. Brink, White Bear Township, both of Ramsey County, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of application Ser. No. 552,684, Nov. 7, 1955, now abandoned. This application Nov. 14, 1969, Ser. No. 870,616

Int. Cl. B44d *1/092*

U.S. Cl. 117—47 R **6 Claims**

The normally lustrous surface of a polyethylene terephthalate film is delustered and made capable of forming a strong adherent bond with adhesive compositions. The film is treated with a coating of a hydroxybenzene derivative solvent primer material.

3,607,355

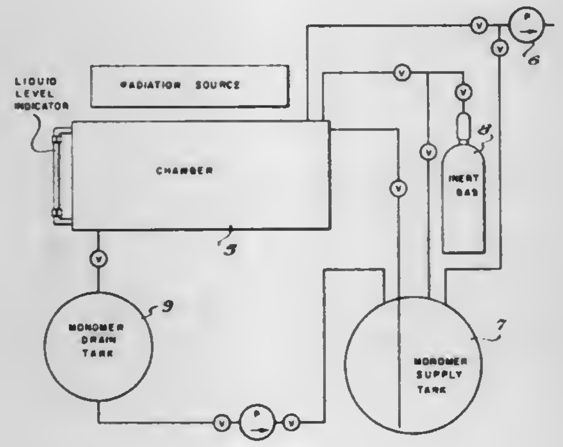
METHOD OF MAKING FUSED VENEER-PLASTIC PRODUCT

William A. Loeb, Chappaqua, N.Y., assignor to ISO Nuclear Corporation, New York, N.Y.

Filed Mar. 6, 1967, Ser. No. 620,708

Int. Cl. B44d *1/50, 1/28;* **B27k** *3/08*

U.S. Cl. 117—59 **3 Claims**



This invention is directed to the production of fused veneer-plastic products in multiunit quantities by impregnating a separator-interleaved stack of veneer sheets with a liquid plastic monomer and polymerizing the monomer in situ by irradiation with X or gamma rays.

3,607,356

IMPARTING FLAME RESISTANCE TO FIBROUS TEXTILES FROM AN ALKALINE MEDIUM

John V. Beninate, Grenta; Eileen K. Boylston, New Orleans; George L. Drake, Jr., Metairie, and Wilson A. Reeves, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Oct. 4, 1968, Ser. No. 767,584

Int. Cl. B44d *1/44;* **C09d** *5/18*

U.S. Cl. 117—62.2 **12 Claims**

Flame resistance has been imparted to fibrous textiles by application of an aqueous alkaline solution containing tris (hydroxymethyl) phosphine (heretofore referred to as THP) and tetrakis (hydroxymethyl) phosphonium hydroxide (heretofore referred to as THPOH) followed by heat drying to 10–20 percent moisture content, and finally polymerizing the phosphorous material in the fabric with ammonia vapor. The invention provides an improved process for flameproofing textiles, particularly lightweight apparel fabrics whereby the resulting treated textile materials are rendered flame resistant with little or no loss in tearing strength and tensile strength or undesirable change in hand. Cellulosic textiles treated by this process retain their flame resistant properties after repeated laundering.

3,607,357

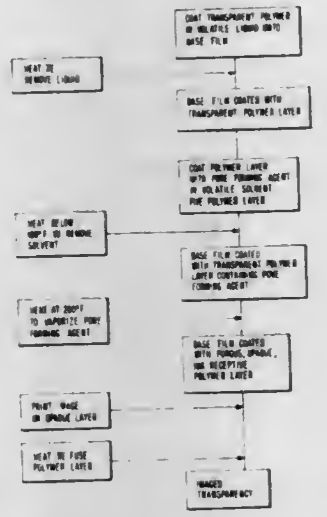
INK RECEPTIVE CONVERTIBLE FILMS AND PROCESS FOR THEIR PREPARATION

Hugh T. Findlay, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 5, 1968, Ser. No. 750,322

Int. Cl. B44d *1/14, 5/04, 5/02*

U.S. Cl. 117—63 **1 Claim**


COAT TRANSPARENT POLYMER IN VOLATILE LIQUID ONTO BASE FILM
HEAT TO REMOVE LIQUID
BASE FILM COATED WITH TRANSPARENT POLYMER LAYER
COAT POLYMER LAYER WITH PORE FORMING AGENT IN VOLATILE SOLVENT FOR POLYMER LAYER
HEAT BELOW 200°F TO REMOVE SOLVENT
BASE FILM COATED WITH TRANSPARENT POLYMER LAYER CONTAINING PORE FORMING AGENT
HEAT AT 200°F TO VAPORIZE PORE FORMING AGENT
BASE FILM COATED WITH POROUS, OPAQUE, INK RECEPTIVE POLYMER LAYER
PRINT IMAGE IN OPAQUE LAYER
HEAT TO FUSE POLYMER LAYER
IMAGED TRANSPARENCY

Ink receptive convertible films suitable for use in copying systems or projection slides are prepared by coating the surface of a transparent film with a fusible polymer material such as polyvinyl acetate with a pore forming agent such as ammonium carbonate. The polymer containing the pore forming agent to volatilize and render the film porous, and ink receptive. The film is then readily printed with a conventional ink after which the nonprinted portion of the opaque coating is rendered transparent through the application of heat and/or pressure, or the action of solvent vapors. The printed matter substantially retains the print quality it possessed during the ink receptive opaque stage.

3,607,358

METHOD OF DYEING A POLYURETHANE SURFACE LAYER COATED ON A SUBSTRATE AND RESULTANT PRODUCT

Friedrich Dangl, Mechenhard, and Klaus Gerlach, Obernau, both of Germany, assignors to Glanzstoff AG., Wuppertal, Germany

Filed Dec. 18, 1968, Ser. No. 784,938

Claims priority, application Germany, Dec. 23, 1967, P 16 19 577.0

Int. Cl. D06n *3/14;* **D06p** *1/02*

U.S. Cl. 117—63 **13 Claims**

Method of dyeing a polyurethane surface layer of an artificial leather by applying thereto a spirit-soluble dye dissolved in a mixture of organic solvents including at least one solvent which is a swelling agent for the polyurethane.

3,607,359

PROCESS FOR THE MANUFACTURE OF UNWOVEN FABRICS BONDED WITH A BINDING AGENT AND HAVING A SMOOTH SURFACE

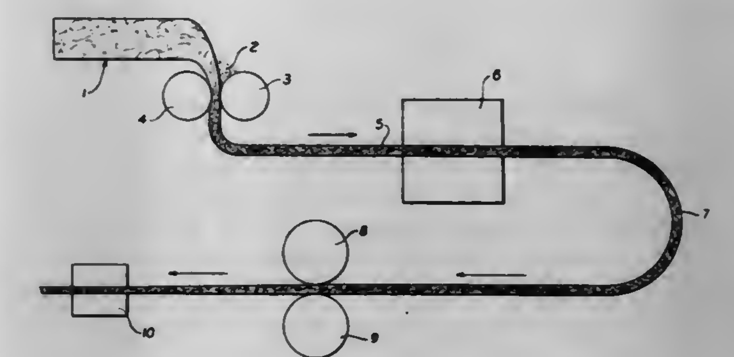
Dieter Bischoff, Hofenweg, and Harald Hordt, Am Drachenstein, both of Germany, assignors to Carl Freudenberg, Weinheim (Bergstr.), Germany

Filed Jan. 10, 1968, Ser. No. 696,744

Claims priority, application Germany, Jan. 12, 1967, F51237

Int. Cl. B44d *1/44;* **B32b** *27/12*

U.S. Cl. 117—65.2 **3 Claims**



Production of bonded nonwoven fabrics with a latex coagulated at relatively low temperature, where coagulation is followed by passing the fabric latex between heated rollers and then subjecting the fabric latex to vulcanization.

3,607,360

METHOD OF IMPROVING ADHESION OF LOW FRICTION COATING TO ELASTOMERS

Otto C. Elmer, 720 Hillsdale Ave., Akron, Ohio

Filed Apr. 3, 1969, Ser. No. 813,318

Int. Cl. B44d *1/14;* **B32b** *27/08*

U.S. Cl. 117—72 **5 Claims**

This invention concerns methods of improving the adhesion between low-friction coatings and elastomeric surfaces by the steps of precoating an EPDM elastomeric surface with a chlorinated ethylene-propylene copolymer containing from about 15 percent to about 25 percent chlorine and, applying a polyurethane low-friction coating to said precoated elastomeric surface. The copolymer may also be used as an additive to the low-friction coating mixture instead of as a precoat.

3,607,361

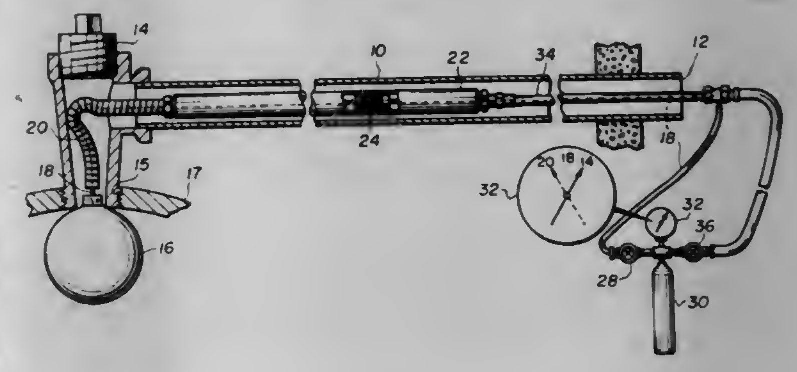
BALLOON BACKING FOR PIPE LINING

Hanford Z. Hight, Short Hills, N.J., assignor to Bonded/Products, Inc., South Orange, N.J.

Filed Nov. 15, 1968, Ser. No. 784,507

Int. Cl. B05c *8/02, 8/00*

U.S. Cl. 117—95 **5 Claims**



Balloon inserted through gas pipe, inflated in gas main beyond angle fitting, deflated and withdrawn thereinto, reinflated and lining material charged thereagainst at greater pressure. Pressure indicated on outside gauge verifies position of balloon.

3,607,362

PLASTISOL GASKET COMPOSITION

James B. Cormack, Jr., Oak Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 14, 1969, Ser. No. 824,696
Int. Cl. B44d *1/08, 1/00*
U.S. Cl. 117—95 6 Claims

Closure caps are lined with plastisol compositions which exhibit low orders of gas transmission, the compositions being comprised of a carboxyl containing vinyl chloride polymer and an epoxidized unsaturated fatty oil.

3,607,363

PROCESS FOR PRODUCING PHOTOCONDUCTIVE MATERIAL

Shigeru Sadamatsu, Odawara-shi, and Hiroyuki Kaneko, Odawara-shi, both of Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Ashigara-Kamigun, Kamagawa, Japan
Filed Oct. 17, 1967, Ser. No. 675,800
Claims priority, application Japan, Oct. 18, 1966, 41/68527
Int. Cl. B44d *1/18;* **G03g** *13/22*
U.S. Cl. 117—100A 4 Claims

A process for the production of a photoconductive powder, which comprises coating particles of a photoconductive material onto the surface of particles of a core material having an absorption ratio of less than 80 percent, at a thickness of 5 microns, to a light in the main region of the intrinsic sensitivity wave length region in which said photoconductive material exhibits a photoconductive property.

3,607,364

PROCESS FOR COATING PHARMACEUTICAL SOLID FORMS

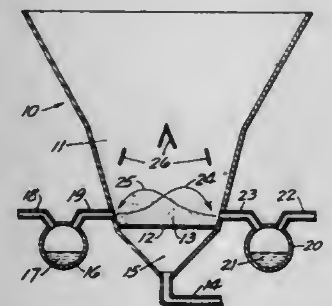
Benito Lopez, 300 Parsippany Road, Apt #181 E, Parsippany, N.J., and Saul S. Kornblum, 144 Short Hills Ave., Springfield, N.J.
Filed Sept. 16, 1968, Ser. No. 760,059
Int. Cl. A61k *9/00;* **B44d** *1/08*
U.S. Cl. 117—100 A 9 Claims

The invention concerns a coating process for coating a pharmaceutical solid form, which comprises applying a foamed coating medium to the solid form surface, and then urging the coating medium against the solid form surface to break down the foam and produce an even coat of the coating medium on the solid form surface.

3,607,365

VAPOR PHASE METHOD OF COATING SUBSTRATES WITH POLYMERIC COATING

James A. Lindlof, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 492,997, Oct. 5, 1965, abandoned.
Filed May 12, 1969, Ser. No. 841,657
Int. Cl. C23c *11/00;* **B44d** *1/00*
U.S. Cl. 117—100 R 10 Claims

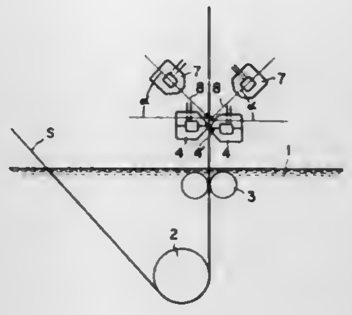


A method of providing a shaped substrate with a thin, uniform, dense, protective, polymeric coating, especially the reaction product of polyisocyanate and polyamine. The substrate is exposed to vapors of a compound having a plurality of reactive end groups, and subsequently exposed to vapors of a second compound having a plurality of radicals which are highly reactive with the end groups of the first compound. The cycle is repeated until a polymeric coating of desired thickness has been built up.

3,607,366

REMOVAL OF EXCESS MOLTEN METAL COATINGS BY GAS BLAST WITHOUT RIPPLE FORMATIONS ON COATED SURFACES

Kazutoshi Kurokawa, Kitakyushu, Japan, assignor to Yawata Iron & Steel Co., Ltd., Tokyo, Japan
Filed Nov. 14, 1968, Ser. No. 775,776
Int. Cl. B05c *11/06;* **C23c** *1/02*
U.S. Cl. 117—102M 11 Claims



An improvement in the method of controlling a metal material in a hot-dip metal plating process jetting at least one stream of compressed gas toward the metal plating coating on the surface of the sheet metal material drawn out of a hot-dip bath before said plating coating has solidified. The stream of compressed gas when it collides with the coated sheet metal material forms an upwardly flowing branch stream of gas. The improvement lies in directing at least one stream of ripple eliminating gas at a pressure at least substantially equal to the pressure of the first mentioned stream of compressed gas downwardly and toward the metal plating coating on the surface of the sheet material from a point above the point at which said first mentioned stream of gas is directed at the surface of the sheet material and at a point ahead of, with respect to the direction of advance of the sheet material, the point at which the metal plating coating solidifies and sufficiently close to the point at which the first mentioned stream of gas collides with said sheet material to cancel the upwardly flowing branch stream of gas. The stream of ripple eliminating gas prevents formation of ripple patterns on the plated surface of the sheet material.

3,607,367

HIGH-STRENGTH, HIGH-MODULUS, LOW DENSITY, BORON SILICIDE MONOFILAMENTS, AND METHOD OF MAKING SAME

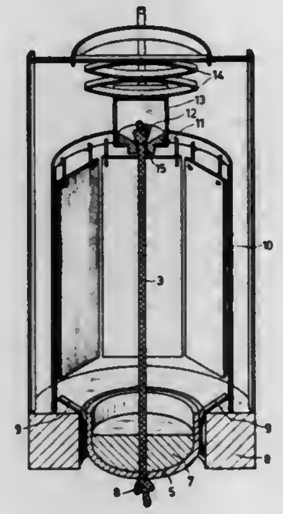
Lee C. McCandless, Reston, Va., and James C. Withers, Accokeek, Md., assignors to General Technologies Corporation, Reston, Va.
Continuation-in-part of application Ser. No. 519,625, Jan. 10, 1966, now abandoned. This application Apr. 1, 1968, Ser. No. 717,896
Int. Cl. C23c *11/08*
U.S. Cl. 117—106 A 3 Claims

This invention relates to high-strength, high-modulus low density boron silicide monofilaments, and to a method of making the same. The boron silicide monofilaments herein comprise a coating of about 40–70 wt. percent boron and about 60–30 wt. percent silicon on a substrate wire. The method for preparing such boron solicide monofilaments comprises reacting a boron halide, such as boron trichloride, silane and hydrogen in the vapor phase at elevated temperatures, e.g. about 1,000°–1,300° C. The reaction is carried out at atmospheric pressure. Usually the boron trichloride, silane and hydrogen are present in a concentration of about 10–40 mole percent, 0.1–1.5 mole percent and 55–90 mole percent, respectively.

3,607,368

METHOD OF COATING SUBSTRATES BY VAPOR DEPOSITION

Johannes Jacobus Asuerus Ploos Van Amstel, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Phillips Corporation, New York, N.Y.
Filed Oct. 8, 1968, Ser. No. 765,826
Claims priority, application Netherlands, Oct. 10, 1967, 6713713
Int. Cl. C23c *13/12*
U.S. Cl. 117—106 6 Claims



A method of coating substrates by vapor deposition. The material to be deposited is taken up in a lacelike body built up from graphite yarn heated to the vaporization temperature by the passage of electrical current.

3,607,369

METHOD FOR FORMING POROUS ALUMINUM LAYER

Louis Bela Batta, Grand Island, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Sept. 11, 1968, Ser. No. 759,204
Int. Cl. C23c *17/00*
U.S. Cl. 117—119 10 Claims

A method for forming a thin porous aluminum layer of interstitial and interconnected small pores on aluminum base material by mixing a slurry including a selected elemental bonding component, and aluminum powder matrix, a relatively insoluble aluminum brazing flux, and a vehicle, loosely coating the base material with the slurry, drying the coating and thereafter brazing the coating together and to the base material.

3,607,370

PRESSURE-SENSITIVE ADHESIVE TAPE COMPRISING GLUTEN HYDROLYPATE DERIVATIVES

Catherine Aranyi, Chicago; Kurt Gutfreud, Park Forrest; Ervin J. Hawrylewicz, Olympia Fields, and Joseph S. Wall, Peoria, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture
Division of Ser. No. 680,030, No. 2, 1967, Pat. No. 3,522,197. Filed May 21, 1969, Ser. No. 842,061
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 P 2 Claims

A pressure-sensitive adhesive tape comprising a backing with a pressure-sensitive coating comprising epoxy derivatives of the large peptide fraction of partially hydrolyzed gluten polymerized with various acrylic compounds.

3,607,371

PHOSPHATE-COATED RARE-EARTH OXIDE COMPOSITIONS AND A PROCESS FOR PRODUCING SAME

James W. Haynes, and Kenneth H. Shaner, both of Towanda, Pa., assignors to Sylvania Electric Products Inc.
Filed Oct. 30, 1969, Ser. No. 872,747
Int. Cl. B05c *7/14;* **B44d** *1/02*
U.S. Cl. 117—100 B 14 Claims

Rare-earth oxide compositions can be improved in handling characteristics by increasing the bulk density of the compound by uniformly coating the finely divided particles with a corresponding rare-earth phosphate.

Aqueous media comprising suspensions of finely divided particles of rare-earth oxide compositions and a water-soluble orthophosphate source are agitated under controlled pH conditions for sufficient lengths of time to dissolve sufficient amounts of the rare-earth oxide compositions, and to reprecipitate them to form solid rare-earth-phosphate-coated rare-earth compounds. The solids are then separated from the aqueous phases, washed with water, and heat-treated for sufficient lengths of time.

3,607,372

SELF-CLEANING CATALYTIC COATING FOR OVEN SURFACES

John W. Gilliom, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio
Filed Feb. 7, 1968, Ser. No. 703,538
Int. Cl. B32b *15/08*
U.S. Cl. 117—132 BS 1 Claim

A coating composition of a high-temperature release finish, such as silicone resin, and an oven catalyst, for cooking oven surfaces. The finish and catalyst are mixed, the composition applied to the surface, air dried, and then heat cured.

3,607,373

HEAT STABILITY IMPROVEMENT OF HYDROCARBON FIBERS OR FABRICS

Richard S. Berger, and Lee O. Edmonds, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Dec. 19, 1966, Ser. No. 602,525
Int. Cl. D06m *11/04*
U.S. Cl. 117—138.8 E 4 Claims

The thermal stability of polyolefins is increased by contact with a hydrosulfite.

3,607,374

DRAFTING FILM MATERIALS

Markus Seibel, Mainz, and Klaus Thoese, Wiesbaden-Schierstein, both of Germany, assignors to Keuffel & Esser Company, Morristown, N.J.
Filed Sept. 23, 1968, Ser. No. 761,811
Claims priority, application Germany, Sept. 25, 1967, K 63-437
Int. Cl. B32h *27/08*
U.S. Cl. 117—138.8 F 4 Claims

A noncurling drafting film of good ink receptivity is prepared by coating a polyester film support with a silica pigmented composition of an acrylic ester copolymer and a polyvinyl alcohol cross-linked with an aldehyde condensate resin.

3,607,375

PLASTIC SHEET MATERIAL HAVING DULL SURFACE COATING COMPRISING FILM OF POLYMER HAVING DISPERSED POLYESTER PARTICLES

Aleksander Jerzy Wiejak, Hyde, England, assignor to Imperial Chemical Industries Limited, Millbank, London, England
Continuation-in-part of application Ser. No. 514,397, Dec. 16, 1965, now abandoned , Continuation-in-part of application Ser. No. 524,876, Feb. 3, 1966, now abandoned , Continuation-in-part of application Ser. No. 528,401, Feb. 18, 1966, now abandoned. This application Feb. 16, 1968, Ser. No. 705,935
Claims priority, applications Great Britain, Dec. 23, 1964, Dec. 23, 1964, Feb. 18, 1965, Feb. 23, 1965, 52272/64, 52273/64, 7076/65, 7817/65
Int. Cl. B32b *27/20, 27/36*
U.S. Cl. 117—138.8UA **6 Claims**

A lacquer comprising a homogeneous or heterogeneous dispersion of a linear polyester in a solution of a film-forming polymer in a liquid. Useful linear polyesters are polymers of ethylene terephthalate, ethylene isophthalate, ethylene orthophthalate, propylene terephthalate, propylene isophthalate, propylene orthophthalate and copolymers of two or more of these. Especially suitable film-forming polymers for use with the invention are copolyesters of ethylene glycol, terephthalic acid and isophthalic acid. Particularly suitable liquids for use with the invention are ethylene carbonate and propylene carbonate. In preference in the lacquer the proportion by weight of linear polyester is in the range 2 percent to 30 percent, but preferably in the range 5 percent to 20 percent, of the total weight of linear polyester plus film-forming polymer in the lacquer. In a preferred lacquer the proportion by weight of linear polyester plus film-forming polymer based on the total weight of lacquer is in the range 5 percent to 35 percent, but is more preferably in the range 10 percent to 20 percent.

3,607,376

NOVEL INTERPOLYMER BLENDS

Robert B. Blance, East Longmeadow; David R. Cahill, Wilbraham, and Peter Wachtel, Springfield, all of Mass., assignors to Monsanto Company, Saint Louis, Mo.
Filed Dec. 13, 1968, Ser. No. 783,700
Int. Cl. B32b *27/10;* **D21h** *1/40*
U.S. Cl. 117—155 UA **11 Claims**

Disclosed herein are polymer blends comprising a first interpolymer of a vinyl alcohol ester and at least one ethylenically unsaturated acid ester and a second interpolymer comprising a vinyl aromatic compound, at least one ethylenically unsaturated acid ester and at least one compound containing one or more acid groups. These blends are particularly useful as zinc oxide binders. The polymer blends are also useful as adhesives and coatings for such substrates as paper, glass and metal foil.

3,607,377

ELECTROCONDUCTIVE PAPER

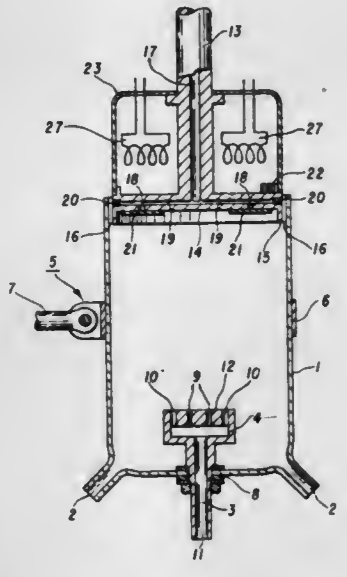
Robert A. Cross, Waltham, and John F. Hegarty, Somerville, both of Mass., assignors to Amicon Corporation, Lexington, Mass.
Filed Dec. 30, 1968, Ser. No. 788,087
Int. Cl. B44d *1/18*
U.S. Cl. 117—201 **10 Claims**

A cellulosic paper sheet, suitable for use as a substrate for receiving a coating of a light-sensitive electroconductive material such as zinc oxide, which paper sheet comprises a coating thereon of from 0.5 to 5 lbs. per ream of colloidal chrysolite asbestos and a quantity of lithium chloride therein to impart a surface resistivity of less than 10^{10} ohms at a relative humidity of 15 percent, while maintaining a volume resistivity of greater than 10^{10} ohms under the same environmental conditions.

3,607,378

TECHNIQUE FOR DEPOSITING SILICON DIOXIDE FROM SILANE AND OXYGEN

Edward M. Ruggiero, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 606,177, Dec. 30, 1966, now abandoned. This application Oct. 27, 1969, Ser. No. 869,957
Int. Cl. C23c *11/00*
U.S. Cl. 117—201 **4 Claims**

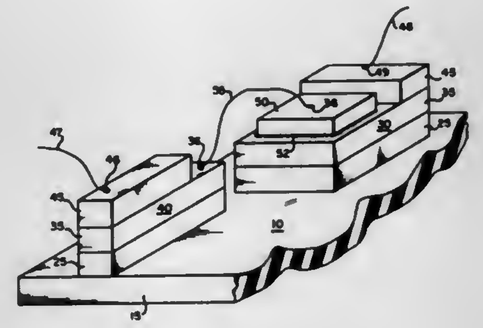


A pinhole-free film of silicon dioxide is deposited on a substrate by the vapor phase oxidation of silane in dilute admixture with an inert carrier gas such as helium, for example. By maintaining a high flow rate of helium to carry the silane and oxygen upward in contact with an inverted substrate, in combination with an oxygen flow rate appreciably higher than that of silane, a high rate of silicon dioxide deposition is assured with a minimum of quartz smoke, and without excessive premature oxidation of the silane.

3,607,379

MICROELECTRONIC INTERCONNECTION SUBSTRATE

Charles Z. Leinkram, Bowie, and Richard L. Prom, Oxon Hill, both of Md., assignors to The United States of America as respresented by the Secretary of the Navy
Filed Jan. 22, 1968, Ser. No. 699,724
Int. Cl. B44d *1/18;* **C23b** *5/56*
U.S. Cl. 117—212 **5 Claims**



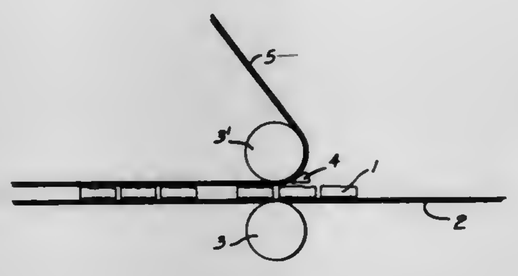
An interconnection substrate is disclosed for use in hybrid microelectronic systems interconnecting transistors, resistive elements, semiconductor-integrated circuits, and other microelectronic circuit elements. The substrate consists of an insulative base and three metal films, for example, a first chromium film, a second gold film metallurgically bonded to the chromium film, and a third nickel film bonded to the gold.

The interconnection substrate is prepared by (sequential) deposition of chromium, gold, and nickel onto a ceramic wafer. Alternatively the nickel film may be plated by other conventional methods. The desired circuit is then etched photolithographically to produce nickel pads for tin-lead soldered or welded connections. A second etching is made to produce gold pads suitable for thermal compression bonding, ultrasonic wire bonding and gold-silicon eutectic bonding. Circuits elements in the form of chips are then connected to the connection substrate and the entire unit encapsulated in a suitable protective material.

3,607,380

METHOD OF SURFACE COATING

Johan-Petter Brynjulf Thams, Gronviksvagen 69, Stockholm Bromma, Sweden
Filed Mar. 18, 1968, Ser. No. 713,937
Claims priority, application Sweden, Mar. 17, 1967, 3763/1967
Int. Cl. B44d *1/18;* **B44c** *1/02*
U.S. Cl. 117—212 **12 Claims**

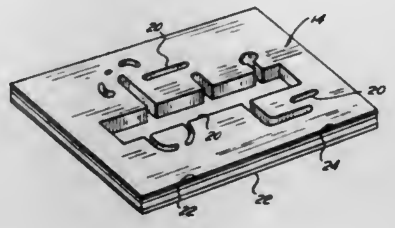


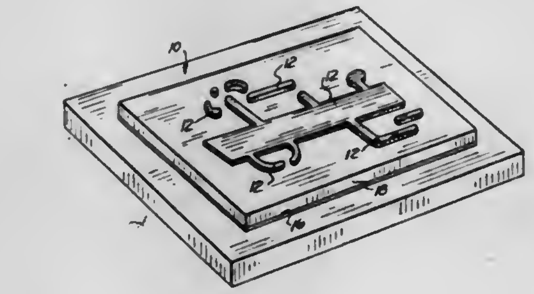
This invention pertains to a process for producing surfaces of desired and specified texture and/or physical, chemical, electrical and/or optical properties involving use of a viscous liquid treating composition.

3,607,381

SPRAY PROCESS FOR CREATING ELECTRICAL CIRCUITS

Thomas Edward Fairbairn, Westland, Mich., assignor to Platron Corporation, Detroit, Mich.
Filed June 14, 1968, Ser. No. 737,170
Int. Cl. B05b *7/20;* **B44d** *1/18*
U.S. Cl. 117—212 **2 Claims**





Electrically conductive pathways are applied to a metallic base by means of the plasma flame spray process, which process is also employed to apply an intermediate layer of ceramic insulation. The conductor pattern is formed into a kaolin template through which the powdered copper conductor material is sprayed.

3,607,382

METHOD OF PRODUCING PHOTOVARNISH MASKS FOR SEMICONDUCTORS

Heinz Henker, Wittelsbacherstr. 8, Munich 5, Germany
Filed Oct. 18, 1968, Ser. No. 768,797
Claims priority, application Germany, Oct. 23, 1967, S 112516
Int. Cl. B44d *1/02, 1/18, 1/50*
U.S. Cl. 117—212 **14 Claims**

Described is a method of producing photovarnish masks for semiconductors. A photovarnish layer, positioned on a workpiece, is selectively illuminated, whereupon portions of the photovarnish layer are removed through developing. The illumination is effected by means of a thin electron beam, moved essentially along a single coordinate direction. The photovarnish layer to be illuminated is moved perpendicularly to the movement direction of the electron beam. The respective movement length of the electron beam is limited according to the pattern of the photovarnish mask to be produced.

3,607,383

METHOD FOR TREATING DEFECTIVE WINDINGS OF ROTATING ELECTRICAL MACHINERY

Harry Clarence DeVroome, London, England, assignor to Ayrodev Processes Limited, Poplar, England
Filed Feb. 24, 1969, Ser. No. 801,804
Claims priority, application Great Britain, Oct. 8, 1968, 47626/68
Int. Cl. B44d *1/18*
U.S. Cl. 117—213 **5 Claims**

Locally defective insulation in the winding of a rotating electric machine is scanned with a megohmmeter to find the defective areas which are then cleaned with a solution of a cationic surfactant in an organic solvent until insulation resistance reaches a stable maximum value. The solvent is permitted to evaporate, preferably at elevated temperature, and the defective area is treated with insulating varnish to restore the insulation.

3,607,384

THIN-FILM RESISTORS HAVING POSITIVE RESISTIVITY PROFILES

Frank D. Banks, Dahlgren, Va., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed July 11, 1968, Ser. No. 744,116
Int. Cl. B44d *1/18*
U.S. Cl. 117—215 **2 Claims**

A thin-film resistor is provided having variable or nonhomogeneous resistivity which varies in a positive resistivity profile from the substrate to the film surface such that the resistivity at the surface of the thin-film is higher than the resistivity of the film adjacent to the substrate. Thin-film resistors, such as of tantalum nitride having a resistivity which varies either progressively or stepwise in a positive resistivity profile are obtained by (a) decreasing the voltage from one level to a lower level during sputtering, and/or (b) increasing the nitrogen concentration from one level to a higher level during vacuum deposition.

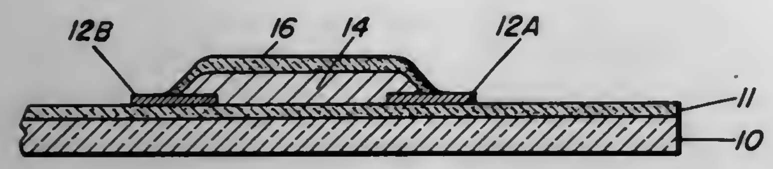
3,607,385

METHOD OF MANUFACTURING SOLID CAPACITORS

Takeshi Namikata, Kawasaki-shi; Kentaro Hirata, Suzaka-shi, and Yuji Ichikawa, Suzaka-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 21, 1968, Ser. No. 769,121
Claims priority, application Japan, Feb. 13, 1968, 43/9057
Int. Cl. B44d *1/18*
U.S. Cl. 117—215 **3 Claims**

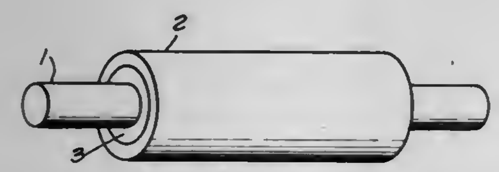
Described is a method of manufacturing a solid capacitor wherein a capacitor is constituted by forming a film or forming metal and attaching manganese dioxide. The method is characterized in that a solution of manganese nitrate in water impregnated in the element is first pyrolyzed under a high temperature and at the moment when generation of NO_2 gas is nearly finished, the ambient temperature is kept lower than said temperature.

3,607,386
METHOD OF PREPARING RESISTIVE FILMS
Robert T. Galla, and Harold M. Greenhouse, both of Baltimore, Md.
Filed June 4, 1968, Ser. No. 734,330
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 **7 Claims**



A method of preparing temperature stable high resistance, thin film resistors, wherein a metal whose oxide or silicide has a higher resistivity than the pure metal is vacuum evaporated through a suitable mask onto a glass substrate which has been completely undercoated with a layer of silicon monoxide. Immediately after the deposition of the metallic film a silicon monoxide overcoat is deposited through the same mask. The resulting resistors are heat treated for such time as is required to bring the resistors to the desired value. The resulting resistors have a low-temperature coefficient and relatively high sheet resistivities.

3,607,387
FLAME RESISTANT POLYIMIDE-COATED CONDUCTOR HAVING A LINEAR POLYIMIDE LAYER COVERED BY AN AROMATIC POLYAMIDE
Vincent L. Lanza, and Edward C. Stivers, both of Atherton, Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed Sept. 18, 1968, Ser. No. 760,713
Int. Cl. H01b *7/02, 3/00*
U.S. Cl. 117—218 **9 Claims**

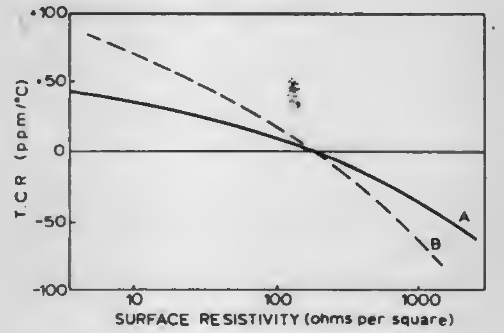


Laminates primarily for electrical insulation comprise at least one lamina of a thermoplastic polyimide, e.g., poly(1, 12-dodecamethylene pyromellitimide) and a covering lamina of an infusible or high-melting polymer, especially an aromatic polyimide. An insulated airframe wire is described in detail.

3,607,388
METHOD OF PREPARING PHOTOCONDUCTIVE LAYERS ON SUBSTRATES
Hiroo Hori, Kawasaki-shi; Shigeo Tsuji, Fujisawa-shi, and Yuji Kiuchi, Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Mar. 14, 1968, Ser. No. 713,043
Claims priority, application Japan, Mar. 18, 1967, 42/16707
Int. Cl. B44d *1/02;* **G03g** *5/00*
U.S. Cl. 117—224 **3 Claims**

A method of preparing a vapor-deposited layer having photoconductivity on a substrate, in which lead oxide and at least one of the compounds selected from the group consisting of chalcogenides of Cu, Ag, Zn, Cd, Hg, Ga, In, Tl, Ge, Sn, Sb and Bi are evaporated simultaneously from separate sources, and are vapor-deposited on the substrate. This vapor deposition is carried out in an oxygen or oxygen-containing atmosphere.

3,607,389
METALLIC FILM RESISTORS
Giovanni Canegallo, and Ubaldo Costa, both of Milan, Italy, assignors to Societe Elettrotecnica Chimica Italiana, Milan, Italy
Filed Oct. 18, 1968, Ser. No. 768,659
Claims priority, application Italy, Oct. 21, 1967, Feb. 15, 1968, 21866A/67;1208A/68
Int. Cl. H01c *7/00*
U.S. Cl. 117—227 **5 Claims**



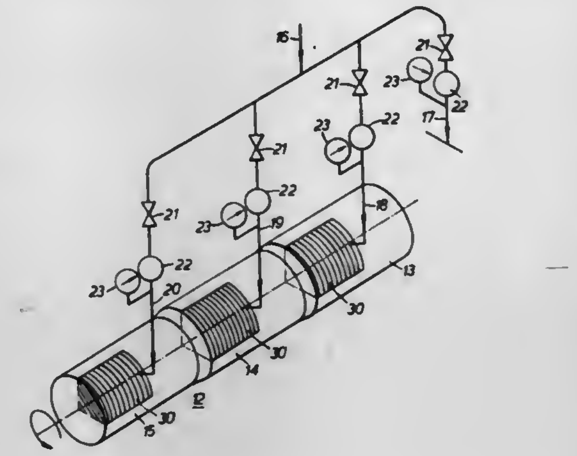
Precision resistors are produced by depositing, at a temperature of from 40 to 90° C., a nickel-phosphorus film upon former rods of steatite from an electroless plating solution having a pH value of 5 to 7 and containing specified amounts of a water soluble hypophosphite, nickel sulfate, soluble pyrophosphate, a water soluble orthophosphate and a water soluble salt of ethylenediaminetetraacetic acid, the resulting nickel-phosphorus film resistor rods being subsequently subjected to heat stabilization; the temperature coefficient of resistance of the resulting precision resistors is in the vicinity of zero.

3,607,390
SINGLE CRYSTAL FERRIMAGNETIC FILMS
Richard L. Comstock, San Jose, and Daniel A. Nepela, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 29, 1969, Ser. No. 862,080
Int. Cl. H01f *10/02*
U.S. Cl. 117—237 **5 Claims**

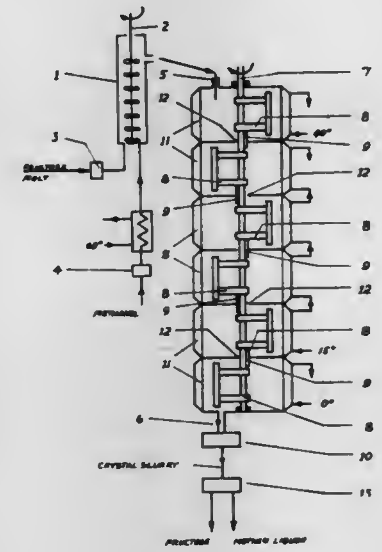
A process for preparing single crystal ferrimagnetic films having square hysteresis loops, a regulated coercivity, and a compensation temperature above 250° K. A film of gadolinium iron garnet wherein a carefully selected amount of terbium or dysprosium replaces part of the gadolinium is deposited on a tytrium or rare earth aluminum garnet substrate having [111] or [100] orientation and heated until crystallization occurs.

3,607,391
EXTRACTION
James Shann, Hull, and David Vincent Bessant, South Cave, both of England, assignors to Rose, Downs & Thompson Limited, Kingston-upon-Hull, Yorkshire, England
Filed Mar. 13, 1969, Ser. No. 806,909
Claims priority, application Great Britain, May 7, 1968, Aug. 2, 1968, 21526/68;36942/68
Int. Cl. C13d *1/12, 1/10, 1/04*
U.S. Cl. 127—7 **5 Claims**

A method of, and apparatus for, extracting a soluble component of a soluble material, in which the material is introduced into a press and subjected to pressure and while that pressure is maintained on the material, a liquid solvent for the component is introduced into the press so as to pass through the material. In one variant of the invention the pressure on the material is increased after the liquid solvent has been added and in another variant the liquid solvent introduced into the press itself contains dissolved elements of the soluble component.



3,607,392
PROCESS AND APPARATUS FOR THE RECOVERY OF CRYSTALLINE FRUCTOSE FROM METHANOLIC SOLUTION
Karl Lauer, Schriescheim Strahlenburg; Peter Stephan, Worms, and Georg Stoeck, Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany
Filed Dec. 5, 1968, Ser. No. 781,411
Claims priority, application Germany, Dec. 21, 1967, P 16 43 720.0
Int. Cl. C13k *9/00, 1/10;* **C13f** *1/02*
U.S. Cl. 127—15 **13 Claims**



An apparatus and method for recovering crystalline fructose from methanolic solutions thereof comprising dissolving molten fructose having a temperature of 60° 75° C. and a water content of less than 3 percent in substantially the same volume of preheated methanol to produce a solution having a concentration of 55–70 percent fructose and a temperature of 40°–50° C., continuously introducing the thusly formed solution into the top end of a system which includes a double-walled vertically arranged seed crystal containing cylindrical vessel, s stirrer shaft therein disposed inside this seed crystal-containing vessel, a plurality of horizontal dividers provided with central openings arranged in said system so as to divide the same into zones to be maintained at different temperatures, continuously withdrawing from the bottom end of said system an amount of crystalline fructose dispersed in methanol substantially equivalent to the amount of solution being charged into said system and thereafter separating the crystalline fructose from the methanol.

3,607,393
METHOD OF PREPARING A FOOD BATTER STARCH
Ronald R. Gabel, Western Springs, Ill.; Robert M. Hamilton, Minnetonka, Minn., and Wayne E. Dudacek, Lyons, Ill., assignors to CPC International Inc.
Filed Dec. 21, 1967, Ser. No. 692,320
Int. Cl. C13l *1/08*
U.S. Cl. 127—32 **10 Claims**

Method of preparing a starch useful as a batter mix to prepare breaded, deep-fried foods. Particularly covers a method of preparing a batter starch by treating an acidic aqueous slurry of raw starch with a mixture of hypohalogenous acid and halogen, followed by treatment with an oxidizing agent. In a preferred embodiment an alkali metal hypohalite such as sodium hypochlorite is the treatment agent in the first step and the oxidizing agent is hydrogen peroxide. The resultant starch when used as a batter mix results in a fried batter coating displaying a high degree of adhesion and cohesion.

3,607,394
NOVEL PREGELATINIZED STARCHES AND PROCESS FOR PREPARING SAME
Felix Joseph Germino, 12414 83 rd Ave., Palos Park, Ill.; Gerald Donald Miller, 3621 Douglas Road, Downers Grove, Ill., and Jerry Adam Moskaluk, 14500 Sawyer Ave., Midlothian, Ill.
Filed May 29, 1969, Ser. No. 829,083
Int. Cl. C13l *1/08*
U.S. Cl. 127—32 **5 Claims**

Pregelatinized starches are prepared by pasting an aqueous slurry of a starch which contains at least 50 percent amylopectin at a temperature of at least 300° F, and then rapidly, preferably instantaneously, removing the water therefrom as by roll or spray drying. The resultant products rapidly disperse in water to form smooth pastes which are characterized by low initial viscosity and minimal setback.

3,607,395
STARCH HYDROLYSIS
Alan William Stephenson, Victoria, Australia, assignor to Sidney Cooke Chemicals Pty. Ltd., Brooklyn, Victoria, Australia
Filed Nov. 19, 1968, Ser. No. 777,168
Claims priority, application Australia, Aug. 14, 1968, 42,116/68
Int. Cl. C13l *1/10*
U.S. Cl. 127—38 **6 Claims**

A method in which starch is hydrolysed by adding it to an acidified medium, containing from about 1 to about 5 percent by weight of mineral acid based on the weight of starch to be hydrolysed, at a temperature above about 80° C. and over a period of from about 5 to about 30 minutes, and allowing the starch to hydrolyse for a period of from about 10 to about 90 minutes thereby to produce a dextrine solution suitable for use in adhesives.

3,607,396
PROCESS FOR TREATING GRANULAR STARCH MATERIALS
Felix Joseph Germino, Palos Park; Van Deursen Harms, Homewood, and Edwin Hans Christensen, La Grange Park, all of Ill., assignors to CPC International Inc.
Filed July 16, 1968, Ser. No. 745,107
Int. Cl. C13l *1/08, 1/06, 1/00*
U.S. Cl. 127—71 **6 Claims**

Process for subjecting granular starch material, on a continuous basis, to the combined action of a solvent for the starch material and liquid that is not a solvent for the starch material, under controlled conditions, including direct heating, so as to produce controlled amounts of desired change in the granular starch material. Exemplary applications are for the continuous production of granular preswollen starch, and texturized starch.

3,607,397

METHOD OF RETARDING FOULING OF SUBSTRATE SURFACES

Larry H. Watters, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of application Ser. No. 673,964, Oct. 9, 1967, now Patent No. 3,475,217, dated Oct. 28, 1969. This application May 26, 1969, Ser. No. 827,885

Int. Cl. B08b *3/00;* **C23g** *1/02*

U.S. Cl. 134—3 **12 Claims**

A method of retarding the fouling of a substrate surface where the fouling is caused by exposing the said surface to amine compounds in the presence of water and carbon dioxide which comprises contacting the said surface with a mixture of a liquid chloro-substituted olefin and the said amine compound and subsequently treating the surface with an organic acid selected from at least one of the group consisting of formic acid, acetic acid and propionic acid and drying the said substrate surface. The method is particularly useful in restoring the ability of mold surfaces to release molded articles.

3,607,398

CHEMICAL STRIPPING PROCESS

Joseph G. Lucas, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed June 18, 1969, Ser. No. 834,522

Int. Cl. B08b *3/08;* **C23g** *1/12*

U.S. Cl. 134—3 **11 Claims**

Aluminide coatings are removed without attack of the substrate by immersion of coated articles in an aqueous liquid composed of a mixture of orthophosphoric acid, nitric acid and acetic and/or chloroacetic acid. For more rapid chemical stripping, the mixture of acids should be heated.

3,607,399

METHOD AND APPARATUS FOR CLEANING SCREEN DRUMS IN TEXTILE MACHINES

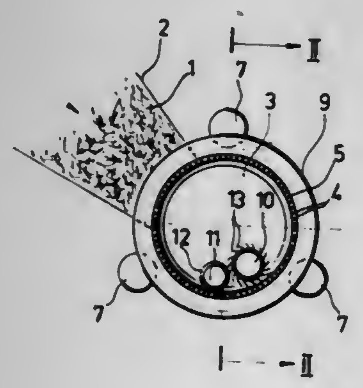
Daniel Hanselmann, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Dec. 9, 1968, Ser. No. 782,323

Claims priority, application Switzerland, Dec. 13, 1967, 17505/67

Int. Cl. B08b *9/00*

U.S. Cl. 134—8 **17 Claims**



In one embodiment a drive roll and a finned or fluted cleaning roll are freely mounted within the interior of the screen drum to remove tangles or beards from the interior surface of the screen. In another embodiment, balls are used for the same purpose. The removed fiber material is directed to the inside free space of the screen and eliminated with the carrier airstream.

3,607,400

METHOD AND APPARATUS FOR SCRAPING THE INNER WALLS OF A VESSEL CONTAINING FLUID

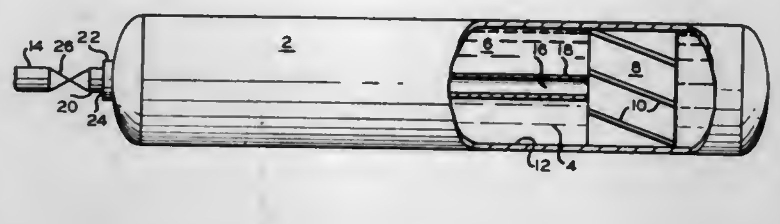
Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Co.

Filed May 14, 1969, Ser. No. 824,447

Int. Cl. B08b *9/00*

U.S. Cl. 134—8 **3 Claims**

Method and apparatus for scraping the inner walls of a vessel containing fluid wherein the pressure exerted against said inner walls is controlled by regulating the weight of an actuating shaft of the scraping means.



3,607,401

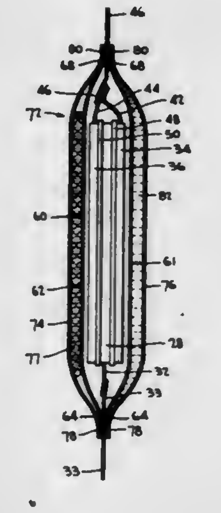
FRANGIBLE ELECTROCHEMICAL CELL

Gerald Halpert, Annandale, Va.; Joseph G. Haynos, Rockville, and Joseph M. Sherfey, Lanham, Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 15, 1968, Ser. No. 729,299

Int. Cl. H01m *35/32*

U.S. Cl. 136—6 **20 Claims**



A flexible, frangible electrochemical cell and a package therefor, suitable generally for application in an atmospheric environment, is fabricated with flexible, frangible electrode plates and electrolyte containing separators sandwiched between the plates. The electrodes and the separators are secured together by electrically nonconductive fasteners, and each electrode has an expanded metal terminal. The cell housing is a flexible polymeric member having bonded outer seams, some of which are formed directly over the expanded metal terminals which partially protrude from the housing. An additional envelope or outer container may be provided to thermally insulate the cell. Such a container may be made from foamed polymeric material or flexible polymeric sheet filled with insulation.

3,607,402

ELECTRICAL ENERGY STORAGE DEVICE CONTAINING A SILICON CARBIDE ELECTRODE

Edward S. Buzzelli, Solon, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 29, 1969, Ser. No. 872,012

Int. Cl. H01m *35/02*

U.S. Cl. 136—6 **4 Claims**

An electrical energy storage device exhibiting high energy storage capacity comprises a novel silicon carbide cathode and an aluminum-lithium alloy anode, the pair of electrodes being immersed in or in contact with a molten salt electrolyte composed of a lithium halide and one or more of the halides of the alkali metals or the alkaline earth metals or combinations thereof.

3,607,403

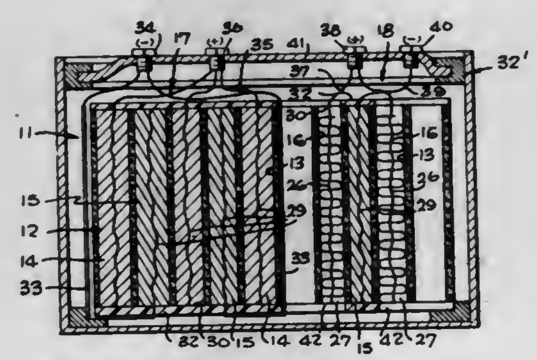
SELF-CHARGING BATTERY INCORPORATING A SOLID-GAS BATTERY AND STORAGE BATTERY WITHIN A HONEYCOMB MATRIX

Frank C. Arrance, Costa Mesa, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 15, 1968, Ser. No. 776,133

Int. Cl. H01m *35/00, 27/00*

U.S. Cl. 136—6 **21 Claims**



A self-charging battery unit incorporating solid-fluid battery cell sections and high energy density storage cell sections formed within a honeycomb matrix which acts to support and separate the electrodes, the solid-fluid cell sections being actuable to charge the storage cell sections when the latter are discharged.

3,607,404

ELECTRICAL ENERGY STORAGE DEVICE CONTAINING A BORON CARBIDE ELECTRODE

Edward S. Buzzelli, Solon, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 29, 1969, Ser. No. 872,024

Int. Cl. H01m *35/02*

U.S. Cl. 136—6 **4 Claims**

An electrical energy storage device exhibiting high energy storage capacity comprises a novel boron carbide cathode and an aluminum-lithium alloy anode, the pair of electrodes being immersed in or in contact with a molten salt electrolyte composed of a lithium halide and one or more of the halides of the other alkali metals or the alkaline earth metals or combinations thereof.

3,607,405

SEALED CONTAINER FOR ELEMENTAL SODIUM

Harold A. Christopher, Scotia, N.Y., assignor to General Electric Company

Filed Mar. 27, 1969, Ser. No. 811,015

Int. Cl. H01m *1/00*

U.S. Cl. 136—20 **2 Claims**

An evacuated, sealed container for pure elemental sodium is disclosed which has a casing, an ionic conducting portion in the casing, an electronic conductor in contact with the interior surface of the ionic conducting portion and extending outwardly from the casing. Such a container, when it is filled with pure elemental sodium, provides a suitable device for storing and dispensing the pure elemental sodium, or provides a sodium electrode with an associated ionic conducting electrolyte. A method is also described for forming such an evacuated, sealed container, and for filling the container with pure elemental sodium.

3,607,406

POROUS ELECTRODE PREPARATION

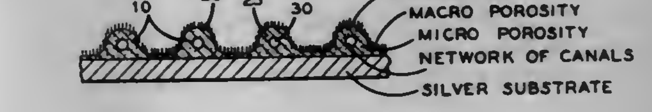
Nikola Marincic, Winchester, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed June 9, 1969, Ser. No. 831,463

Int. Cl. H01m *43/04*

U.S. Cl. 136—20 **13 Claims**

A porous electrode is prepared on a geometrical surface of desired form by employing a substrate of such desired structure, covering the substrate with a material mix of a metal or salt of a metal that is lower, or less active, on the electromotive series, and then treating such superposed structure on the substrate with a solution of a salt of a metal that is more active or higher on the activity or electromotive series, with the radical in the salt of the high-activity metal such as to form a soluble salt with the low-activity metal, whereupon, after completion of the reaction between the two salts, or metal and salt, to the extent possible with the available ingredients, the desired high-activity metal will be precipitated out of its solution to form a continuous porous structure, while the low-activity metal will be reacted into a salt, which, together with the other byproducts of the reaction, can be washed out by a suitable solvent, such as water, leaving the porous electrode form on its supporting substrate, to be used as an electrode in a battery, for example, or as a filter unit in a suitable filter, to which the structural dimensions of the porous unit will correspond by design.



3,607,407

METHOD OF PURIFYING THE ELECTROLYTE SALT EMPLOYED IN AN ELECTROCHEMICAL CELL

Harry A. Adams, Bedford Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 7, 1969, Ser. No. 848,219

Int. Cl. H01m *11/00*

U.S. Cl. 136—153 **5 Claims**

A process is described for increasing the energy storage capacity and cell life of an electrical energy storage device comprising a porous carbon cathode, a lithium alloy anode and a fused salt electrolyte composed of an alkali metal halide or an alkaline earth metal halide or mixtures thereof, wherein the electrolyte salt is purified electrochemically before use and is subsequently circulated to the electrochemical cell.

3,607,408

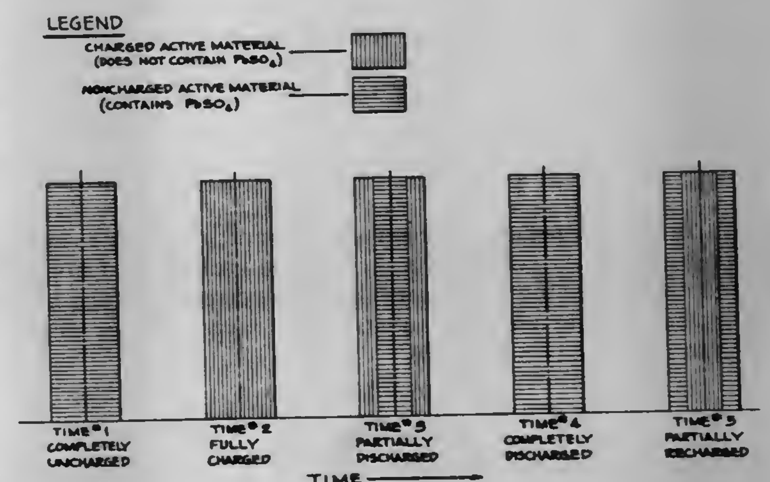
DRY-CHARGED LEAD ACID STORAGE BATTERY HAVING PARTIALLY RECHARGED ELECTRODES AND METHOD

Joseph C. Duddy, Trevose, Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 5, 1969, Ser. No. 874,276

Int. Cl. H01m *39/00*

U.S. Cl. 136—26 **2 Claims**



A dry-charged lead acid storage battery has partially recharged electrodes which serve as a source of sulfate ions. An additional source of sulfate ions is also inside the battery container. In contrast to the partially or fully discharged electrodes in previous dry batteries, the electrodes of this invention are characterized by having active material in which the percent of lead sulfate in the active material at a specified distance from the center of the electrode grid decreases as the specified distance of the material from the grid decreases. These improved electrodes are produced by being fully charged, then completely discharged, then partially recharged, and then washed and dried.

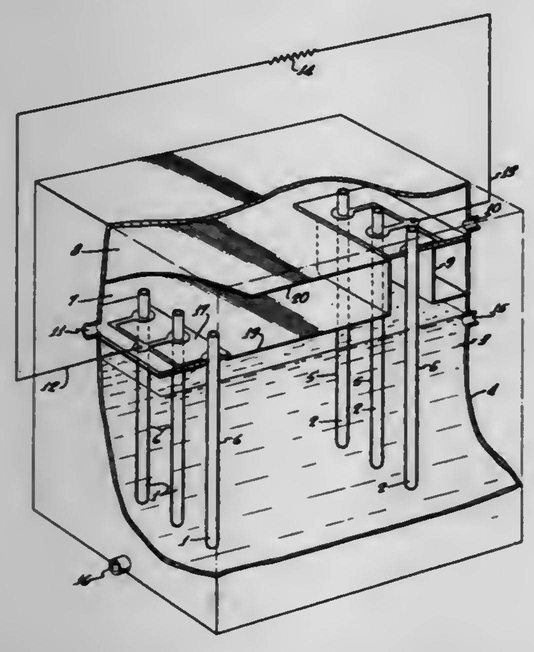
3,607,409
METHOD OF FORMING CALCIUM ZINCATE POWDER AND ELECTRODE

Robert P. Hamlen, Scotia, and John F. Wilfore, Troy, both of N.Y., assignors to General Electric Company
Filed June 28, 1967, Ser. No. 649,649
Int. Cl. H01m *43/02;* **C01f** *11/00;* **C01g** *9/00*
U.S. Cl. 136—30 **12 Claims**

A method of forming calcium zincate powder and an electrode from such powder comprises mixing together solutions of a soluble zinc salt and a soluble calcium salt, adding alkaline material to the mixed solution, and precipitating the calcium zincate. The liquid is decanted and the precipitate dried to provide a powder of calcium zincate with impurities of calcium hydroxide and zinc oxide. The powder contacted with a liquid, applied to a support or compacted under pressure to a particular configuration, and the powder is then dried to provide an electrode structure. Soluble zinc and calcium salts which may be employed in the method of the present invention include zinc acetate, zinc nitrate, zinc bromide, zinc chlorate, zinc perchlorate and zinc chloride, calcium acetate, calcium nitrate, calcium bromide, calcium chlorate, calcium perchlorate, calcium chloride, etc.

3,607,410
HIGH POWER DENSITY GALVANIC CELL

Carl Berger, 13401 Kootenay, Santa Ana, Calif.
Filed Nov. 6, 1967, Ser. No. 680,861
Int. Cl. H01m *13/00, 27/04*
U.S. Cl. 136—30 **23 Claims**

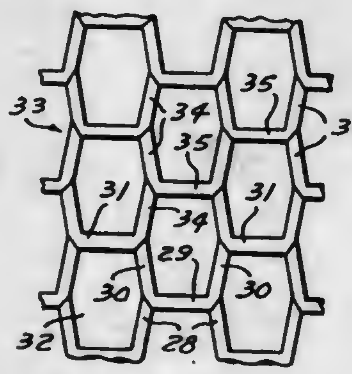


This invention relates to a novel element in galvanic cells, applicable to fuel cells and batteries. The inclusion of hollow porous capillaries increases greatly the electrode surface area in a given volume yielding substantially larger power densities than conventional systems.

3,607,411
PRESTRETCHED EXPANDED METAL AND METHOD OF MAKING IT

John A. Brownrigg, Redding Ridge, Conn., assignor to Exmet Corporation
Filed Mar. 21, 1968, Ser. No. 715,049
Int. Cl. H01m *35/04;* **B21c** *37/00*
U.S. Cl. 136—37 **13 Claims**

After production of expanded metal in substantially the usual way, sheet is stretched longitudinally until the strands in at least some of the rows become substantially longitudinally aligned. Punch may be shifted a distance equal to about one-third the tooth width to produce asymmetric diamond-shaped openings prior to stretching. Sheet may be bent longitudinally upon itself along a row of aligned strands to yield a smooth edge. Electrode may be formed by applying a chemically active powder to sheet.



3,607,412
BATTERY PLATE GRIDS

Frank Raymond Holloway, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Nov. 19, 1968, Ser. No. 776,997
Claims priority, application Great Britain, Nov. 27, 1967, 53781/67
Int. Cl. H01m *35/20*
U.S. Cl. 136—66 **9 Claims**

A method of manufacturing a battery plate grid includes the steps of, placing a conductive battery plate lug having an extension integral therewith in a mould containing an impression of the battery plate grid to be produced. The remainder of the mould is then filled with particles of a synthetic resin material, and the material is heated without the application of pressure, to cause the particles of resin material to adhere to one another. The shape of said extension of the lug is such that the extension is trapped by the resin material. The grid is then removed from the mould and is rendered conductive.

3,607,413
METHOD FOR ELECTROCHEMICAL ALLOYING OF ALUMINUM AND LITHIUM

Edward S. Buzzelli, Solon, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
Continuation-in-part of application Ser. No. 518,473, Jan. 3, 1966, now Patent No. 3,445,288. This application Sept. 10, 1968, Ser. No. 758,894
Int. Cl. H01m *35/30*
U.S. Cl. 136—76 **8 Claims**

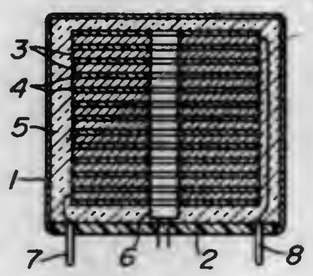
Method for electrochemical alloying of aluminum and lithium by immersing a pair of electrodes, one being of aluminum, into a molten bath of lithium salt or salts, and imposing a potential to electrolyze the molten salt and drive lithium into aluminum.

3,607,414
THERMAL BATTERY

Hiroshi Kumano, Daito-shi; Yoshimi Omukai, Hirakata-shi, and Hiroshi Yamasaki, Neyagawa-shi, all of Japan, assignors to Matsushita Electric, Industrial Co., Ltd. Oaza Kadoma, Kadoma-Shi, Osaka, Japan
Filed Dec. 16, 1968, Ser. No. 783,917
Claims priority, application Japan, Dec. 19, 1967, 42/82460
Int. Cl. H01m *21/14*
U.S. Cl. 136—83 T **6 Claims**

A thermal battery in which a salt of an oxyacid of a halogen having a valency of I, III, V or VII and an alkali

metal or alkaline earth metal is added to a depolarizer or an electrolyte, and which has an increased discharge capacity, a flat discharge voltage and a decreased internal resistance.



3,607,415
SOLID STATE ENERGY STORAGE DEVICE

Joseph T. Kummer, Riverview, and Tseng Y. Tien, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Nov. 17, 1969, Ser. No. 877,348
Int. Cl. H01m *21/00;* **H01g** *1/00*
U.S. Cl. 136—83 **6 Claims**

A disc of sintered zirconium oxide and yttrium oxide is sandwiched between electronically and anionically conductive discs of cerium oxide. The intermediate disc consists of an electronically insulative structural lattice that contains oxygen anions capable of migrating in relationship to said lattice under the influence of an external electric field. At temperatures of about 500°–1500° C. and under the influence of such an electric field, oxygen anions travel from one side disc through the intermediate disc to the other side disc while the corresponding electrons travel through an external circuit.

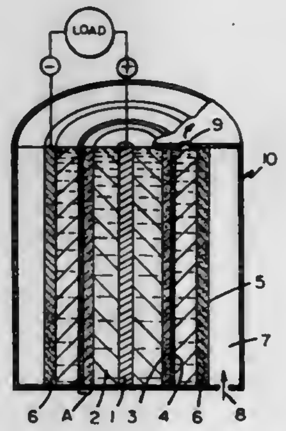
3,607,416
SPINEL-TYPE ELECTRODES, PROCESS OF MAKING AND FUEL CELL

John H. Sizer, Jr., Vernon, Conn., and Jose D. Giner, Sudbury, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 20, 1967, Ser. No. 617,073
Int. Cl. H01m *27/00, 27/04;* **C23c** *3/04*
U.S. Cl. 136—86 **14 Claims**

A process of forming a fuel cell electrode comprised of a nickel oxide-cobalt oxide spinel surface is disclosed. The process consists of first forming a nickel oxide layer on a substrate, then impregnating it with a solution of a cobalt salt and subsequently oxidizing the impregnated substrate to form the mixed oxide spinel-type electrode.

3,607,417
BATTERY CELL

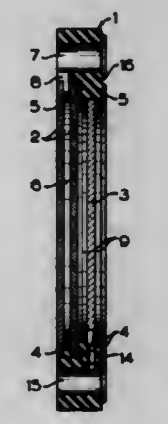
Wayne A. McRae, Lexington, Mass., and John O'M. Bockris, Philadelphia, Pa., assignors to Ionics, Incorporated, Watertown, Mass.
Filed Dec. 4, 1967, Ser. No. 687,607
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 **9 Claims**



A primary and/or secondary battery cell is disclosed in which the high electrochemical capacity and high voltage obtainable from the alkali metal-oxygen system is achieved without the inherent risk of the explosively violent reaction of the alkali metal with the aqueous catholyte of the cell by interposing an ion-permeable but water-impermeable substantially insoluble laminar membrane-diaphragm between said metal and said aqueous electrolyte. The laminar membrane-diaphragm comprises a supporting microporous material such as, for example, a ceramic material which is fused or otherwise attached to a thin nonporous substantially catholyte insoluble alkali metal composition which is permeable to the alkali metal ions.

3,607,418
FUEL CELL

Alfred Ortlieb, Stuttgart-Vaihingen, and Gunter Schnepf, Stuttgart-Bad Cannstatt, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 6, 1969, Ser. No. 804,778
Claims priority, application Germany, Mar. 19, 1968, P 16 71 728.5
Int. Cl. H01m *27/02*
U.S. Cl. 136—86 R **9 Claims**

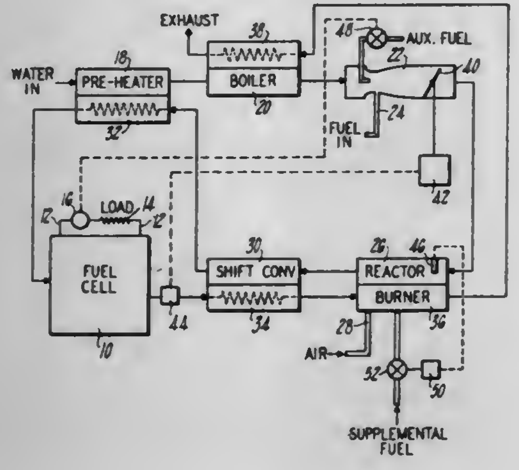


A fuel cell wherein an electrically insulating annular holder of natural or synthetic rubber comprises inwardly extending collars provided with sealing lips which engage marginal portions of disk-shaped oxygen and fuel electrodes which define between themselves oxygen and fuel chambers. The oxygen chamber receives oxygen and discharges residues through partly radial and partly axially parallel inlets and outlets of the holder. Similar inlets and outlets are provided in the holder for admission of fuel and electrolyte into and for evacuation of combustion products from the combustion chamber. The outlets and inlets are surrounded by annular sealing lips provided on one end face of the holder and arranged to abut against the other end face of an adjoining holder so that the inlets and outlets of one holder communicate with the corresponding inlets and outlets of the adjoining holder but are sealed from the atmosphere.

3,607,419
FUEL CELL SYSTEM CONTROL

Stephen J. Keating, Jr., West Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 1, 1969, Ser. No. 862,855
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 B **2 Claims**

A fuel cell system is controlled responsive to the hydrogen partial pressure in the anode effluent and the reformer-reactor temperature. The control concerns regulating stream flow to a venturi mixer dependent upon the hydrogen partial pressure. Auxiliary fuel flow may be scheduled responsive to abrupt changes in gross current to eliminate the time lapse normally associated with flow of fuel from the reformer to the fuel cell. Supplemental fuel is supplied to the reformer-burner dependent upon reactor temperature.



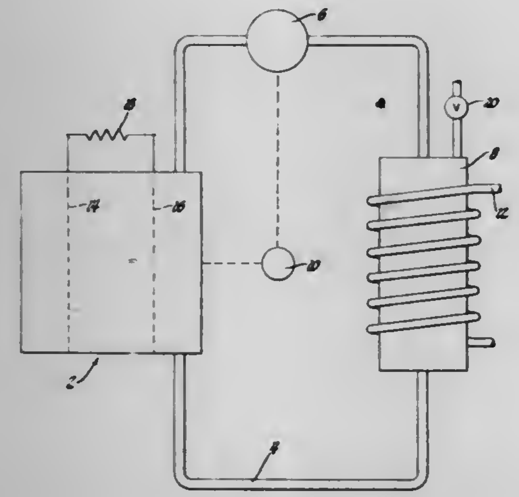
3,607,420
PROCESS OF OPERATING FUEL-CELL HALF CELL WITH CUPRIC-CUPROUS REDOX COUPLE

Leonard H. Cutler, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 609,776, Jan. 17, 1967, now abandoned. This application Nov. 17, 1969, Ser. No. 871,582
Int. Cl. H01m *27/26*
U.S. Cl. 136—86 **1 Claim**

A redox cathode system of an electrical conductor immersed in an acidic solution containing cupric chloride and excess chloride ions is disclosed for use in fuel cells. The system is isolated from the anode system by an ion-exchange membrane; and an anode having catalytic material associated therewith and an acid anolyte are employed. An organic hydrogen-containing fuel, e.g. formaldehyde, and an oxygen-containing oxidant, e.g. air and hydrogen peroxide, are preferred.

3,607,421
FUEL CELL GAS SUPPLY SYSTEM AND METHOD

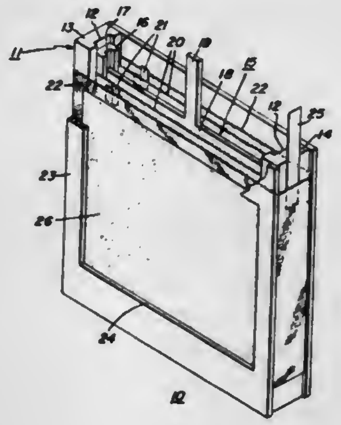
John J. Werth, Franklin, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 31, 1968, Ser. No. 749,185
Int. Cl. H01m *27/14, 29/04*
U.S. Cl. 136—86 **9 Claims**



Chlorine is stored in a low vapor pressure condition by adsorption on activated charcoal and is continuously released from the charcoal by means of a closed loop recirculation system between the charcoal and the fuel cell. The closed loop system recirculates a quantity of chlorine in excess of that required for electrochemical consumption in the cell. The excess chlorine acts as an efficient heat transfer medium for conducting heat away from the cell and into the charcoal whereby the temperature of the charcoal is increased, more chlorine is released and the pressure in the closed loop maintained. The rate of heat transfer from the cell to the charcoal is controlled by the recirculation rate of the excess chlorine, which is, in turn, controlled by the system's pressure.

3,607,422
METAL-AIR CELL

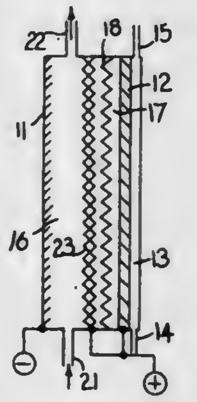
Paul J. Moran, Ballston Lake, N.Y., assignor to General Electric Company
Filed Aug. 30, 1967, Ser. No. 664,367
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 A **4 Claims**



A metal-air cell has a cathode, an aqueous electrolyte, a magnesium anode, and an electronically conductive porous grid positioned in contact with the electrolyte and between the cathode and the anode, and connected electrically to the cathode. A modified metal-air cell has such a porous grid connected electrically to a separate reference cathode which is in contact with both the air supply and the electrolyte.

3,607,423
RECHARGEABLE HYBRID FUEL CELLS AND METHOD OF RECHARGING

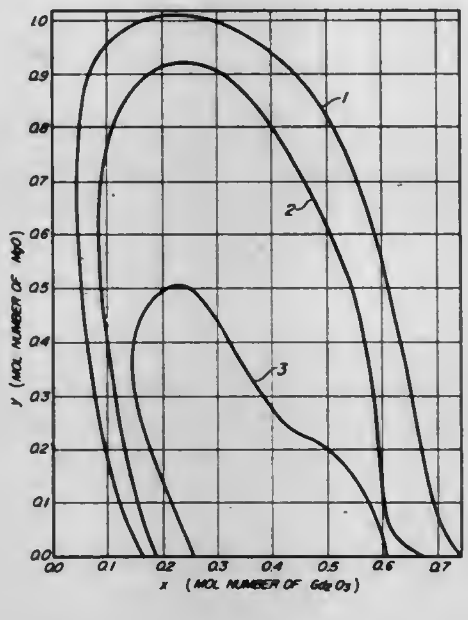
Michael Murray Bertioli, Lichfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Aug. 27, 1969, Ser. No. 853,432
Claims priority, application Great Britain, Aug. 27, 1968, May 13, 1969, 40825/68;24235/69
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 A **4 Claims**



The invention relates to a hybrid fuel cell having battery plates, oxygen electrode, counterelectrode and electrolyte. Such a cell is charged by connecting the oxygen electrodes and counterelectrodes to a DC source while isolating the oxygen electrodes and counterelectrodes electrically, and the feature of the invention is that the required isolation is effected by supplying gas under pressure to the spaces between the counterelectrodes and oxygen electrodes.

3,607,424
SOLID ELECTROLYTE FUEL CELL

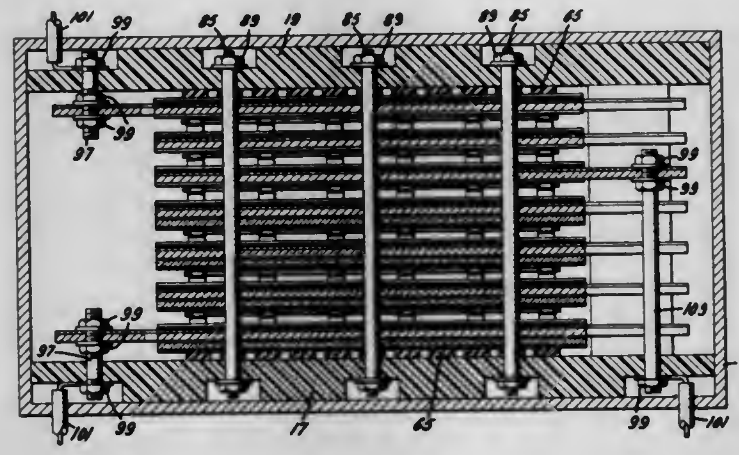
Yoshiyuki Maki, Fujisawa-shi; Masayuki Matsuda, Hachioji-shi, and Tetsuichi Kudo, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 25, 1969, Ser. No. 836,265
Claims priority, application Japan, June 28, 1968, 43/44601
Int. Cl. H01m *27/00, 13/00*
U.S. Cl. 136—86 F **2 Claims**



A solid electrolyte which consists of a mixture of cerium oxide and gadolinium oxide or said mixture with magnesium oxide added thereto, and which has an excellent oxygen-ion-conductive characteristic at a relatively low temperature as compared with conventional solid electrolytes.

3,607,425
FUEL BATTERY INCLUDING APPARATUS INNOVATIONS RELATING TO HEAT TRANSFER, REACTANT DISTRIBUTION, AND ELECTRICAL OUTPUT

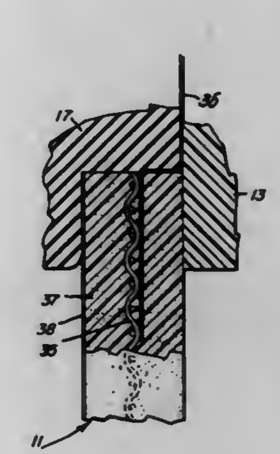
William A. Titterington, Lynnfield; John P. Gallagher, Wilmington, and Robert W. Milgate, Jr., Marblehead, all of Mass., assignors to General Electric Company
Filed Mar. 2, 1967, Ser. No. 621,114
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **6 Claims**



An internally tapped fuel battery which serially feeds a first group of cells between one terminal and an internal tap and a second group of cells between the internal tap and a second terminal. In addition, the external wall of the battery includes a deformable thermally conductive member to facilitate heat transfer from the battery.

3,607,426
FUEL CELL ELECTRODE

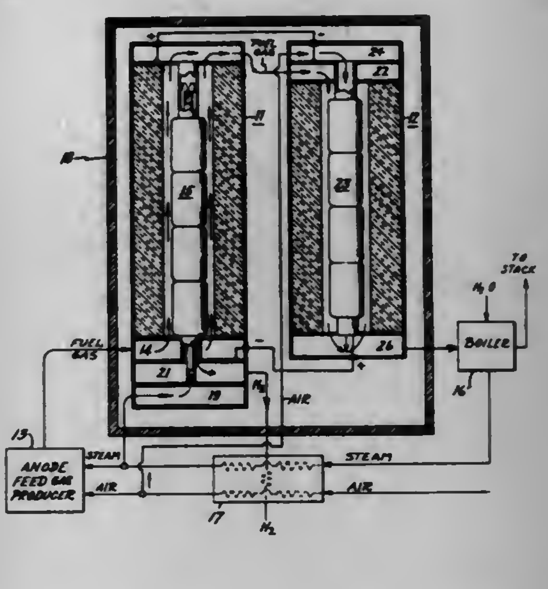
Leonard W. Niedrach, Schenectady, N.Y., assignor to General Electric Company
Filed Dec. 26, 1967, Ser. No. 693,639
Int. Cl. H01m *27/04, 13/00*
U.S. Cl. 136—86 D **12 Claims**



Fuel cell electrodes are composed of a mixture of catalytic and gas-adsorbing materials of a chromium-tungsten oxide and a metal selected from the class consisting of noble metals and alloys of noble metals, a current collector, and a binder bonding the materials together and to the current collector in electronically conductive relationship. An adhesive binder is employed which is not chemically attacked by the electrolyte or the reactant fluid of the cell in which the electrode is used. Such an electrode is particularly useful in a fuel cell employing a fuel containing carbon monoxide, such as reformer gas, an acid electrolyte, and under various operating conditions.

3,607,427
ELECTRICALLY COUPLED FUEL CELL AND HYDROGEN GENERATOR

Donald W. White, Burnt Hills, N.Y., assignor to General Electric Company
Filed Feb. 6, 1969, Ser. No. 797,144
Int. Cl. H01m *27/14*
U.S. Cl. 136—86 **4 Claims**



A solid oxygen-ion electrolyte fuel cell electrically coupled directly to a solid oxygen-ion electrolyte water dissociation cell (for the generation of hydrogen) is described. Hydrocarbon fuel is reacted with air and/or steam to produce a reducing gas mixture, which is admitted to the coupled cells to depolarize the anode of the dissociation cell and serve as fuel for the fuel cell. The fuel cell produces low voltage direct current useable, as produced, by the dissociation cell and, when these cells are directly coupled electrically, either cell will automatically adjust to altered operating conditions or cell characteristics of the other cell.

3,607,428

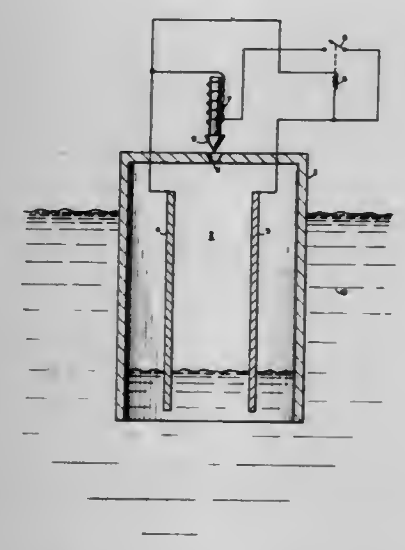
LONG LIFE REGULATED SEA WATER BATTERY

Joseph M. Marzolf, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 28, 1969, Ser. No. 819,875

Int. Cl. H01m *17/00*

U.S. Cl. 136—100 6 Claims



A sea water battery is housed within a container which is open to sea water at the bottom and which has a controllable valve for allowing gas to escape from the top. The opening and closing of the valve are actuated, respectively, by predetermined lower and upper battery voltage limits so as to control the amount of water within the container to thereby regulate the output voltage.

3,607,429

GALVANIC BATTERY

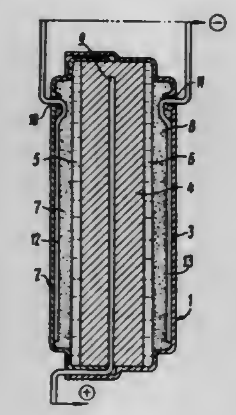
Meer Danilovich Kocherginsky, ulitsa Komarova 6, kv. 23; Lidia Fedorovna Penkova, 3 Mytischinskaya ulitsa, 14-a, kv. 124; Viktor Arsenievich Naumenko, Novoslobodskaya ulitsa, 62, kv. 64, and Sergei Leonidovich Kalachev, St. Kalininsky pereulok Traininskaya, 1, 6-a, all of Moscow, U.S.S.R.

Filed Oct. 25, 1968, Ser. No. 770,545

Claims priority, application U.S.S.R., Dec. 29, 1967, 1205879

Int. Cl. H01m *21/00*

U.S. Cl. 136—107 7 Claims



A galvanic battery, e.g. a flashlight battery, consisting of alkaline manganese dioxide-zinc cells, wherein each cell includes two shells forming a plastic casing and current collectors, the casing accommodating two zinc powder negative electrodes disposed on both sides of a positive electrode and separated therefrom by diaphragms. In each shell of the cell casing provision is made on the edge periphery for extensions which form a lap joint when assembling the cell. The cells assembled in banks are placed in a hermetic plastic film bag contained within a cellulosic outer casing of the galvanic battery.

3,607,430

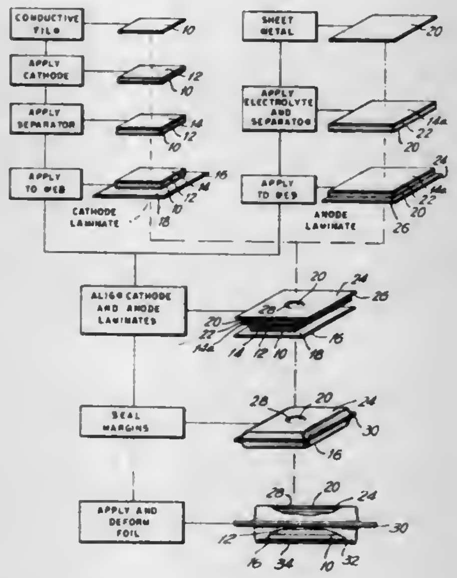
MANUFACTURE OF FLAT PRIMARY GALVANIC CELLS WITH TWO HALF CELLS

Roland L. Glover, Yonkers, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 20, 1969, Ser. No. 800,906

Int. Cl. H01m *21/04*

U.S. Cl. 136—111 3 Claims



In the manufacture of thin flat primary galvanic cells a cathode laminate is formed of cathode-collector, cathodic depolarizer mix and separator and placed on a web of nonconductive plastic film. An anode laminate is formed of sheet anode metal and a second web of nonconductive plastic film. The laminates are juxtaposed with a layer of immobilized electrolyte between anode and separator and marginal portions of the two webs are heat-sealed together to finish the cell.

3,607,431

PRIMABLE ELECTROCHEMICAL GENERATOR

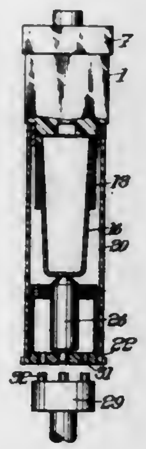
Maurice Garcin, Paris, and Claude Meunier, Saint-Denis, both of France, assignors to Societe Les Piles Wonder, Saint-Ouen, France

Filed Dec. 26, 1968, Ser. No. 787,092

Claims priority, application France, Dec. 28, 1967, 134088

Int. Cl. H01m *21/10*

U.S. Cl. 136—114 7 Claims



The generator comprises a recipient 1 containing the electrodes. The electrolyte is contained in a flexible bag separated from the interior of the recipient by a tearable membrane. A priming member is provided, including a piston or finger, and this priming member can be moved upward against the bag to fold the bag on itself, which first tears the tearable membrane and then displaces the electrolyte from the bag into the recipient.

3,607,432

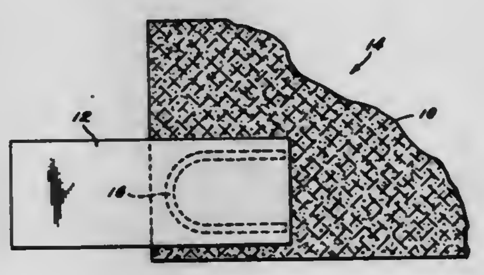
BATTERY ELECTRODE HAVING A LEAD ATTACHED THERETO AND METHOD OF MAKING SAME

Keith N. Johnson, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 16, 1967, Ser. No. 683,494

Int. Cl. Holm *13/00*

U.S. Cl. 136—120 R 13 Claims



A porous battery plate comprising nickel metal powder sintered to nickel metal mesh and having an electrochemically active material such as cadmium hydroxide impregnated therein is shown to be secured to a nickel lead member for use in electrically connecting the plate as an electrode in an alkaline electrolyte battery or the like by inserting a nickel-plated nickel wire between portions of the lead member and plate and by welding the lead member to the plate by electrical resistance welding, the nickel wire plating embodying a phosphor constituent or the like such as is inherently deposited therein during formation of the plating by electroless nickel-plating techniques for lowering the melting temperature of the nickel plating below the melting temperature of the nickel lead member, the plated nickel wire serving as a weld projection for securing the lead member to the plate.

3,607,433

METHOD OF PREPARATION OF ELECTRODES FOR GALVANIC HIGH-TEMPERATURE FUEL CELLS HAVING SOLID ELECTROLYTES

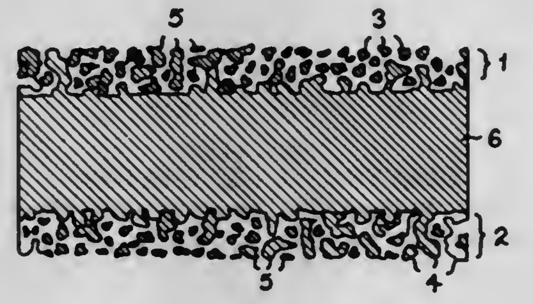
Arnold Isenberg, Neu-Isenburg II; Wilfried Pabst, Frankfurt am Main, and Gerd Sandstede, Frankfurt am Main, all of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Filed Feb. 28, 1967, Ser. No. 619,431

Claims priority, application Germany, Mar. 11, 1966, B86169

Int. Cl. H01m *13/00*

U.S. Cl. 136—120 FC 4 Claims



A method for the preparation of electrodes for galvanic fuel cells having solid porous surfaced electrolytes conducting ions, these cells operating at high temperatures and having electrodes made of metals and/or conductive oxides, wherein oxides are selected as starting materials and these are then connected to the porous surface of the electrolyte at high temperature either in a solid-solid or liquid-solid reaction. In one embodiment of the method, copper in powder form is applied to the porous surface of the electrolyte and heated in air to the fusion point causing infusion thereof in the form of copper oxide. The copper oxide can then be reduced immediately to form the metal or such reduction can be permitted to take place later in the cell under the influence of the hydrogen gas used in the cell. In another embodiment of the method, utilized when the oxides have a high melting point, the porous surface of the solid electrolyte is impregnated several times with a metallic salt solution such as a nickel nitrate solution and roasted after each such impregnation at a temperature of 500° C. to establish the oxide. This oxide is thereafter reacted with the solid electrolyte by further heat treatment at a temperature of 1800° C. to produce the electrode.

3,607,434

ELECTRIC STORAGE BATTERY INTERCELL CONNECTORS

Brian Robert Allen, Bournville, and Kenneth George Blandford, Solihull, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 22, 1969, Ser. No. 859,742

Claims priority, application Great Britain, Sept. 30, 1968, 46263/68

Int. Cl. H01m *13/10*

U.S. Cl. 136—134 R 2 Claims

An electric storage battery of the type in which adjacent cells are connected through intercell connectors extending through the cell wall having an additional connector integral with or secured to one of the intercell connectors by resistance welding, the additional connector having a portion extending along one of the sidewalls of the battery box and connected through that sidewall with an external terminal to provide an additional voltage tapping from the battery.

3,607,435

METHOD OF MAKING SINTERED BETA-ALUMINA BODIES

Richard J. Charles, Schenectady; Stephan P. Mitoff, Elnora, and William G. Morris, Schenectady, all of N.Y., assignors to General Electric Company

Filed Dec. 17, 1969, Ser. No. 885,960

Int. Cl. H01m *41/02*

U.S. Cl. 136—153 9 Claims

Sintered beta-alumina bodies specially suited for use as solid electrolytes are prepared through the use of alpha-alumina with sodium meta-aluminate as a binder for the formation of green bodies of good strength and as a source of sodium oxide for reaction with the alpha-alumina to produce sodium beta-alumina during the sintering operation.

3,607,436

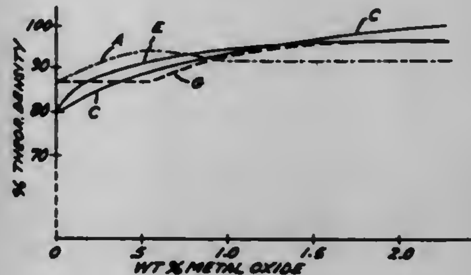
SINTERED BETA-ALUMINA BODIES AND METHOD

Richard J. Charles, Schenectady; William J. Dondalski, Schenectady, and Stephan P. Mitoff, Elnora, all of N.Y., assignors to General Electric Company

Filed Dec. 17, 1969, Ser. No. 885,698

Int. Cl. H01m *41/02*

U.S. Cl. 136—153 8 Claims



The electrical conductivity of a sintered sodium beta-alumina solid electrolyte can be increased substantially by incorporating small proportions of magnesia and yttria in the powder mixture used to produce the sintered body.

3,607,437
ELECTROLYTE FOR USE IN ALKALINE STORAGE BATTERIES HAVING A ZINC NEGATIVE ELECTRODE

Shigekazu Minagawa, Tokyo; Hideo Takahashi, Higashimurayama-shi; Kenzo Ito, Hachioji-shi; Tetsuo Gejyo, Tokyo, and Yoshiyuki Maki, Fujisawa-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 11, 1969, Ser. No. 806,253
Claims priority, application Japan, Mar. 15, 1968, 43/16488
Int. Cl. H01m *41/02*
U.S. Cl. 136—154 **6 Claims**

An electrolyte most suitable for use in alkaline storage batteries having a zinc negative electrode, which consists of an aqueous solution of alkali metal hydroxide with zinc or a zinc compound and a small quantity of a stannous compound dissolved therein, and which is capable of preventing the growth of zinc dendrites during charging of the batteries.

3,607,438
PENTACYANOCOBALTATE ELECTROLYTES FOR FUEL CELLS

Thomas H. Coffield, Orchard Lake, Mich., assignor to Ethyl Corp., New York, N.Y.
Division of Ser. No. 715,528, Mar. 3, 1968, Pat. No. 3,530,004. Filed Aug. 6, 1969, Ser. No. 848091
Int. Cl. H01m *11/00, 27/00*
U.S. Cl. 136—154 **3 Claims**

Alkali metal, alkaline earth metal, and ammonium pentacyanocobaltate solutions are efficacious electrolytes for fuel cells.

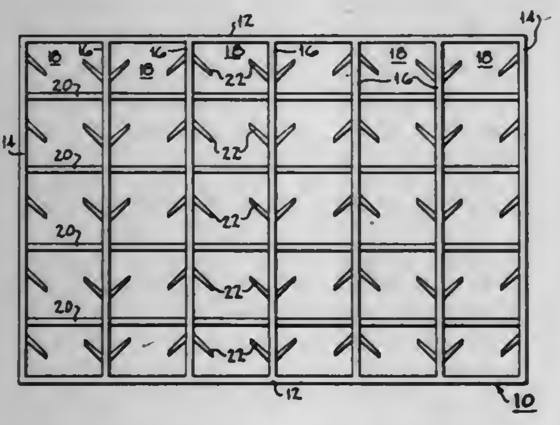
3,607,439
MINATURE BATTERY OR POWER CELL CONTAINERS

Eugene A. Lilley, Alton, Ill., assignor to Olin Mathieson Chemical Corporation
Filed July 2, 1969, Ser. No. 848,376
Int. Cl. H01m *1/00*
U.S. Cl. 136—166 **6 Claims**

A battery or power cell container comprising an iron base alloy component, a copper base alloy component containing an alloying substituent selected from the group consisting of 0.5 to 5.0 percent iron, 0.5 to 2.0 percent cobalt and mixtures thereof, balance essentially copper, bonded to a side of said iron base alloy component and an additional alloy component selected from the group consisting of the brasses, cupro-nickels, and nickel-silvers bonded to the opposite side of said iron base alloy component, and the method of producing said container.

3,607,440
BATTERY CONTAINER HAVING SPRINGLIKE PACKING RIBS TO ACCOMMODATE ELEMENTS OF VARYING THICKNESSES

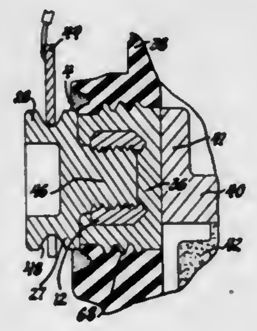
Fred P. Daniel, North Olmsted, and Eugene W. Mossford, Novelty, both of Ohio, assignors to ESB Incorporated
Filed Jan. 29, 1970, Ser. No. 6,768
Int. Cl. H01m *1/02*
U.S. Cl. 136—166 **10 Claims**



Springlike packing ribs integrally molded with the walls of a battery container permit a single container to accommodate elements of varying thicknesses, thus reducing the number of different sizes of containers and container molds required for battery manufacturing.

3,607,441
PROCESS FOR MAKING BATTERY TERMINALS

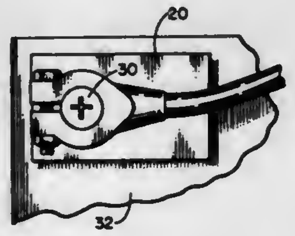
Renard E. Mix, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1969, Ser. No. 879,379
Int. Cl. H01m *5/00*
U.S. Cl. 136—176 **9 Claims**



A method of making a storage battery in which a terminal and a terminal-carrier are molded about a hollow core of hard metal. The terminal-carrier is molded into the core at the beginning of the process, used to facilitate handling of the terminal during processing, and discarded after the terminal is joined to the battery.

3,607,442
BATTERY WITH GALVANIC TERMINAL POST PROTECTOR

Harvey J. Hall, 1730 Steele Blvd., Baton Rouge, La.
Filed May 12, 1969, Ser. No. 823,752
Int. Cl. H01m *5/02*
U.S. Cl. 136—181 **10 Claims**

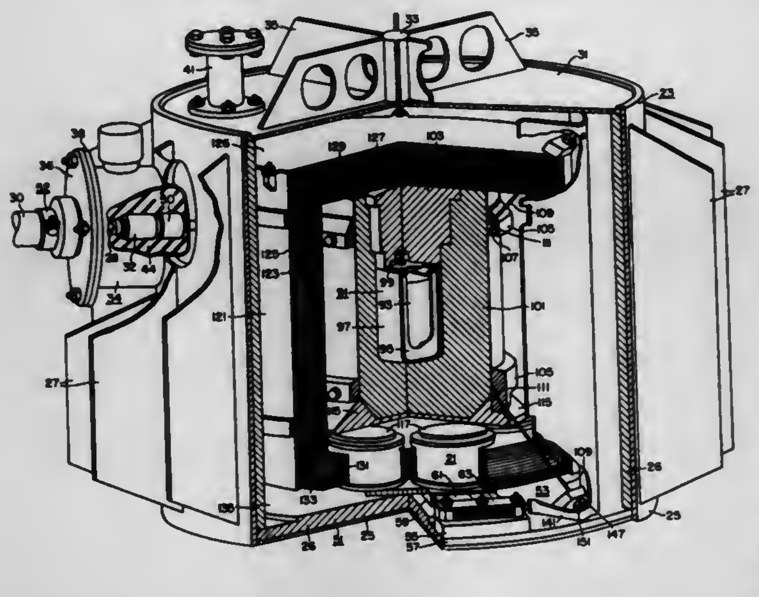


Means for improving the performance characteristics of acid batteries are described. Use of particular metallic shields to ward off battery acid attack of the terminal connection lengthens effective battery life, enhances battery reliability and reduces corrosion of the terminal connection.

3,607,443
ELECTRICAL GENERATOR

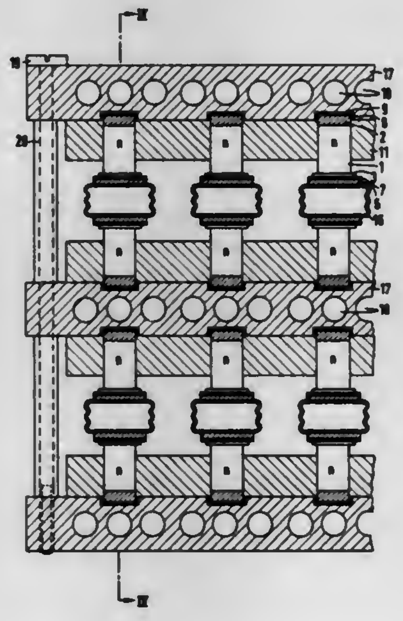
David L. Purdy, Indiana, Pa., assignor to Nuclear Materials and Equipment Corporation, Apollo, Pa.
Continuation-in-part of Ser. No. 554,874, June 2, 1966, abandoned, Ser. No. 817,271, Apr. 14, 1969 is a continuation of said Ser. No. 554,874. This application Sept. 23, 1966, Ser. No. 581,506
Int. Cl. G21h *1/10;* **H01v** *1/30*
U.S. Cl. 136—202 **10 Claims**

A radioactive thermoelectric generator is disclosed. The radioactive fuel is enclosed within a biological shield of tungsten to which a heat-transfer saddle is brazed. The thermoelectric converter includes modules with heat-transfer plates which are diffusion bonded to the shield so that the heat transfer to the hot junctions of the modules is through a metallurgical joint. The shield, fuel and thermoelectric converter are enclosed within an evacuated container in a heat shield of sheets of titanium nearer the biological shield and aluminum more remotely. Each module is enclosed in a second container within the evacuated container. The second container has gas at a substantial pressure to protect the thermoelectric elements.



3,607,444
THERMOELECTRIC ASSEMBLY

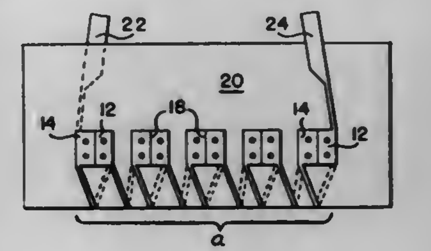
Eugen Szabo DeBucs, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Dec. 5, 1967, Ser. No. 688,050
Claims priority, application Germany, Dec. 6, 1966, S 107279
Int. Cl. H01v *1/30*
U.S. Cl. 136—208 **8 Claims**



Thermoelectric assembly includes a plurality of *p* and *n*-conductive thermocouple element legs, a plurality of contact bridges electrically interconnecting the thermocouple element legs and forming therewith a hot and cold side on opposite sides thereof, and a pair of heat exchangers located respectively on the opposite sides of the legs, at least one of the heat exchangers comprising a tube defining a flow channel for a fluid heat-exchanging medium, the tube being formed of heat-conductive material elastically deformable in a direction transversely to the axis of the tube and in the axial direction of the thermocouple element legs.

3,607,445
THERMAL APPARATUS

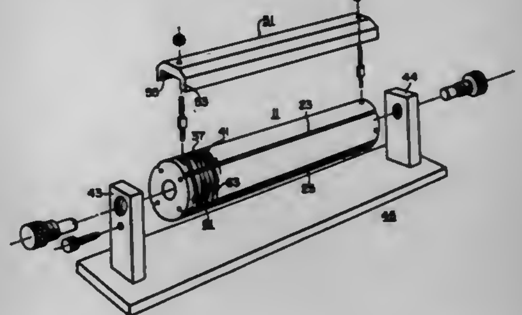
Frank F. Hines, Litchfield, N.H., assignor to RdF Corporation, Hudson, N.H.
Filed Feb. 19, 1968, Ser. No. 706,585
Int. Cl. H01v *1/02*
U.S. Cl. 136—225 **3 Claims**



A thermal apparatus having *n*, unitary, planar, thermoelectric elements arranged to produce $n-1$ thermoelectric junctions where the number of elements "*n*" is an odd number of five or more. The thermoelectric junctions can be arranged in series, parallel, or combinational configurations. Various geometries are used to produce substantially planar thermopiles having a very high junction density per unit area.

3,607,446
THERMOPILE AND METHOD OF MAKING

Alfred Sugarman, Monroeville; Han Chang, Apollo, and Alvin H. Kasberg, Murrysville, all of Pa., assignors to Nuclear Materials and Equipment Corporation, Apollo, Pa.
Filed Nov. 6, 1967, Ser. No. 680,895
Int. Cl. H01v *1/00*
U.S. Cl. 136—226 **9 Claims**

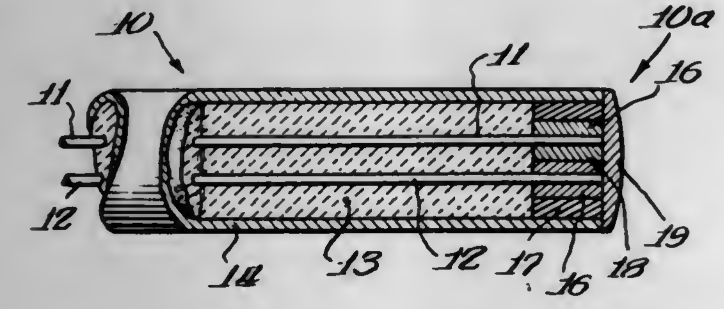


Method of making a thermopile 61 composed of a large number of wire elements in whose practice continuous wires **37** and **41** of dissimilar thermoelectric material are lapped in opposite directions. The wires form an array of regions of intersection. An electric arc is passed along this array while the portions of the wires near the intersection are cooled. The arc produces welded joints **58, 59** and at the same time separates the wires at the joints from the continuum of wire to produce thermocouples **63**. A thermopile assembly **80** formed by embedding the wires in insulating sheets **71, 73** before they are welded and wrapping the sheet with the wires in them in a cylinder **91**. Apparatus for making the thermopile including a mandrel **11** with opposite running helical grooves **13, 15, 17, 19** for winding the wires **37, 41**, channels **13, 25, 27, 29** along the arrays of intersection of the wires and chill blocks **51** for engaging the wires near their array of intersections to cool them.

3,607,447
NONWELDED THERMOCOUPLE JUNCTIONS

Bayard C. Davis, 425 South Grace St., Lombard, Ill., and Alvin Singer, 1125 Honikelder Road, Glencoe, Ill.
Continuation of application Ser. No. 769,560, Oct. 22, 1968, now Patent No. 3,538,596, which is a division of application Ser. No. 475,495, July 28, 1965, now abandoned. This application Apr. 16, 1970, Ser. No. 29,134
Int. Cl. H01v *1/02*
U.S. Cl. 136—233 **11 Claims**

A nonwelded thermocouple assembly specifically adapted for use in a high temperature environment is disclosed. The thermocouple wires are of a refractory metal composition including at least one metal selected from the group consisting of tungsten, rhenium and molybdenum. The wires extend through a refractory metal sheath and are supported in spaced relation therewithin by a refractory insulating materi-



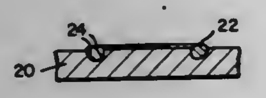
al. The ends of the thermocouple wires are received in apertures in an end plug and the plug is swaged about the wires to effect an exclusively mechanically bonded junction. An end closure cap for the sheath completes the assembly Three embodiments and other features are disclosed.

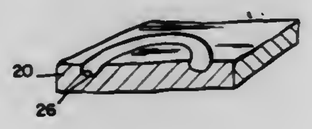
3,607,448
CHEMICAL MILLING OF SILICON CARBIDE

Howard L. Dunlap, Granada Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 21, 1968, Ser. No. 769,013
Int. Cl. H01l *7/50*

U.S. Cl. 148—1.5 **13 Claims**





The method comprises the steps of (1) placing molybdenum on a silicon carbide specimen, (2) alloying the molybdenum into the silicon carbide, (3) performing, if desired, ion implantation or other process steps, utilizing the molybdenum as a mask, (4) etching away the molybdenum alloy such as by sodium peroxide. The method permits the use of low temperature operations.

3,607,449
METHOD OF FORMING A JUNCTION BY ION IMPLANTATION

Takashi Tokuyama, Hoya-shi; Takao Miyazaki, Hachioji-shi; Takashi Tsuchimoto, Kodaira-shi; Tadahisa Morita, Mitaka-shi; Takahide Ikeda, Kokubunji-shi; Shigeru Nishimatsu, Tokyo; Hisumi Sano, Tokyo, and Masatada Horiuchi, Koganei-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 23, 1969, Ser. No. 860,303
Claims priority, application Japan, Sept. 30, 1968, 43/70131
Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **10 Claims**

Disclosed is a method of forming a PN junction comprising the steps of implanting impurity ions into an insulating layer formed on the surface of a semiconductor substrate and then diffusing the implanted impurity ions into the surface layer of the semiconductor substrate thereunder.

3,607,450
LEAD SULFIDE ION IMPLANTATION MASK

David A. Kiewit, Santa Monica, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 26, 1969, Ser. No. 861,388
Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **1 Claim**

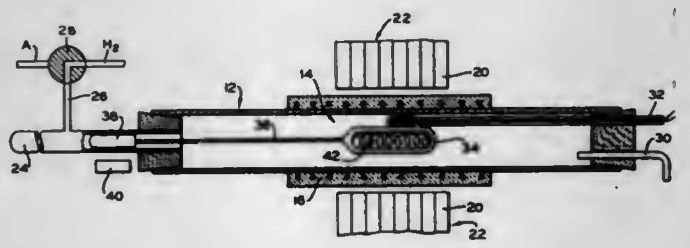
A method for masking semiconductor bodies during the ion beam implantation of contaminants into preselected portions of a semiconductor material. The method involves the deposition of a lead sulfide film onto the surface portion of a semiconductor material and the formation of the film into a mask through the use of conventional photoresist and chemical etching techniques. The lead sulfide masked semiconductor body can then be subjected to an ion implantation operation.

3,607,451
PROCESS FOR FORMING IRON WHISKERS OF UNIFORM HIGH QUALITY

Iqbal Ahmad, Elnora, N.Y., assignor to The United States of America as represented by the Secretary of the Army

Continuation-in-part of application Ser. No. 673,224, Oct. 5, 1967 abandoned.
Filed Oct. 8, 1969, Ser. No. 868,274
Int. Cl. B01j *17/32*

U.S. Cl. 148—1.6 **9 Claims**



This invention provides a process for growing single, uniaxial crystals of iron having uniform physical properties, the process consisting essentially of placing an iron halide in a boat, heating the boat and its contents to a temperature below the Curie point of iron in a flow of hydrogen gas and applying a magnetic field to the zone surrounding the boat during the growth of the resulting crystals.

3,607,452
COLOR COATING FOR ALUMINUM PRODUCTS

Michael N. Marosi, 4153 Hayvenhurst Drive, Encino, Calif.

Filed June 19, 1968, Ser. No. 737,863
Int. Cl. C23f *7/26*

U.S. Cl. 148—6.2 **16 Claims**

A process for forming a clear, unpigmented colored acryloid plastic protective coating on aluminum surfaces; the composition of materials forming the color coating; and the coated aluminum products of the process.

3,607,453
METAL TREATING PROCESS

Rolf Engesser, Frankfurt, am Main; Richard Tuch, rankfurt am Main, and Winfried Menzer, Sprer ingen-Hirschsprung, all of Germany, assignors to Hooke Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,326
Int. Cl. C23f *7/10*

U.S. Cl. 148—6.15 Z **6 Claims**

A process for phosphating iron and steel by treating it with a peroxide accelerated zinc phosphate solution. The phosphating solution used contains zinc, P_2O_5, H_2O_2, B_2O_3 and NO_3. The desired amounts and ratios of these components are maintained in the solution by the controlled addition of zinc, P_2O_5, NO_3(as HNO_3)and sodium perborate.

3,607,454
PAINT COMPOSITION FOR RUSTY METALS AND METHOD THEREFOR

Hans Dulliken Heiz, Bruggliacker, Switzerland, assignor to H. R. Schlatter, Kusnacht-ZH, Switzerland

Continuation of application Ser. No. 591,991, Nov. 4, 1966, now abandoned. This application Nov. 14, 1969, Ser. No. 871,571
Int. Cl. C23f *7/10*

U.S. Cl. 148—6.15 R **12 Claims**

An aqueous film-forming composition including at least 20 percent by weight phosphoric acid is applied to a rusted ferrous metal surface to chemically modify the rust and bind the modified rust to the metal.

3,607,455
METHOD FOR IMPROVING PAINT ADHESION ON STAINLESS STEEL

William G. Renshaw, deceased, late of 1508 Second St., Natrona Heights, Pa. (by Bernice M. Renshaw, executrix)

Filed Sept. 9, 1968, Ser. No. 759,820
Int. Cl. C23f *7/26*

U.S. Cl. 148—6.16 **6 Claims**

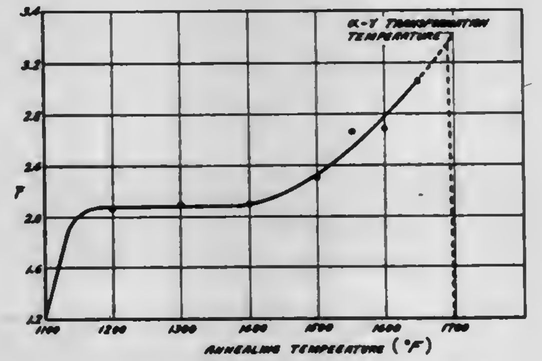
This invention relates to a method for treating the surface of stainless steel to improve the adhesion of paints and lacquers applied thereto. An aqueous solution of trisodium phosphate is applied to the stainless steel followed by rinsing and thereafter applying a hot aqueous solution of sodium dichromate and calcium fluoride and again rinsing.

3,607,456
DEEP DRAWING STEEL AND METHOD OF MANUFACTURE

James L. Forand, Jr., Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Apr. 15, 1969, Ser. No. 816,239
Int. Cl. C21d *9/48*

U.S. Cl. 148—12 **5 Claims**



A ferrous metal sheet having an *r* in the range of 2.5 to 3.3 and an ASTM grain size of 6.0 to 9.0 is produced by hot rolling to intermediate gauge strip ferrous metal containing 0.15 to 0.30 wt. percent titanium and small amounts of oxygen, carbon and nitrogen, the weight ratio of the titanium to the sum of the carbon and nitrogen being a minimum of 7:1. The steel is finished hot, coiled cold, cold reduced and batch annealed at temperatures approaching the alpha-gamma transformation temperature.

3,607,457
METHOD OF MANUFACTURING A ROTARY SCANNING PRISM

Bengt Olov Hagg, and Tore Bertil Reinhold Olsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Division of Ser. No. 693,003, Dec. 22, 1967. Filed May 29, 1969, Ser. No. 831,820
Int. Cl. C21d *9/00;* **C23f** *17/00*

U.S. Cl. 148—12.1 **11 Claims**

A method of producing a light-reflecting prism such as a mirror prism of equilateral polygonal cross section for image scanning by high speed rotation of the prism about its center axis by tempering and aging a steel blank. The blank is then machined to size and the sidewalls of the steel block thus obtained are coated with a highly light-reflecting metal such as gold.

3,607,458
WELDABLE AND WEAR RESISTANT MAGNETIC FERRITIC MALLEABLE IRON AND METHOD

Oral K. Hunsaker, and Bruce R. Shue, both of Dayton, Ohio, assignors to The Dayton Malleable Iron Company, Dayton, Ohio

Filed May 13, 1968, Ser. No. 728,807
Int. Cl. C21d *5/10;* **C22c** *37/02, 37/04*

U.S. Cl. 148—16 **12 Claims**

Weldable and magnetic ferritic malleable iron castings having an improved abrasion resistant wear layer, and the method of forming such castings are described. The casing includes a body portion of full ferritic malleable iron which is covered with several zoned layers, viz., a pearlitic type matrix of broken spheroidized martensite which is partially depleted of carbon nodules, a decarburized wear layer of finely dispersed well distributed spheroidized carbides in a ferritic matrix which provides a good weld zone and an outer intergranular oxidation layer. In machining castings to be used for abrasion resistance the outer two layers and a portion of the wear layer are removed to expose the abrasion resistant wear layer. In the case of a casting to be welded, the outer layer and a portion of the weldable layer are removed. By controlling the structure of the casting between the fully ferritic body and the wear layer, high magnetic permeability and low magnetic remanance are obtained while providing a weldable casting. In forming such castings, white iron of malleable composition is annealed in a decarburizing atmosphere in which the ratio of carbon monoxide to carbon dioxide is closely controlled. The castings are heated to between 1800° F. and 1975° F. for a period of time sufficient to decompose the cementite followed by cooling to 1400° F. to 1650° F., and quenching or air colling, and tempering. Various details of the annealing and tempering cycles are described.

3,607,459
QUENCH HARDENING OF METALS WITH IMPROVED QUENCHING MEDIUM ADDITIVE

Bill Mitacek, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 9, 1968, Ser. No. 766,315
Int. Cl. C21d *1/58*

U.S. Cl. 148—18 **9 Claims**

Metals are quench hardened by being heated above the critical temperature and then immersed in a quenching medium containing a calcium petroleum sulfonate having a base number less than 15 and prepared by sulfonating one part by weight of a propane-fractionated, solvent-extracted, dewaxed intermediate base bright stock having a viscosity of about 200 to 230 SUS at 210° F. and a viscosity index of at least about 85 with a quantity of sulfonating agent consisting essentially of liquid SO_3 dissolved in an inorganic solvent equivalent to from about 0.1 to about 1 part by weight of 20 percent fuming sulfuric acid, at a temperature in the range of about 50° to 200° F.; neutralizing the resulting reaction mixture with at least the minimum required for neutralization of an aqueous slurry of calcium hydroxide; heating the resulting mixture in the liquid phase at a temperature of about 360° to 400° F. for about 10 minutes; and removing water and inorganic solids therefrom to obtain calcium petroleum sulfonate product containing not more than 6 weight percent sulfated ash. This calcium petroleum sulfonate product can be used directly to supply the calcium petroleum sulfonate or the calcium petroleum sulfonate can be extracted from this product and utilized in a more purified form.

3,607,460

FIRST ORDER TRANSITION FILMS FOR MAGNETIC RECORDING AND METHOD OF FORMING

James M. Lommel, Schenectady, N.Y., assignor to General Electric Company

Filed Nov. 18, 1968, Ser. No. 776,619

Int. Cl. H01f *10/00, 1/14*

U.S. Cl. 148—31.55 **8 Claims**

Thin films of iron-rhodium exhibiting a broadly hysteretic first order transition between the ferromagnetic and antiferromagnetic states are produced by sequentially depositing iron and rhodium films upon a refractory substrate at a pressure in the range of 1×10^{16} torr, annealing the structure in a vacuum of 1×10^{16} torr at a temperature of approximately 700° C. for 1 hour to produce a complete diffusion of the iron and rhodium layers, and subsequently subjecting the diffused layers to a second anneal in an atmosphere greater than 10 parts per million oxygen in a thermal cycle that includes slowly heating the structure to 400° C., maintaining the 400° C. for approximately 10 minutes and slowly cooling to room temperature. Films thus formed are advantageously employed in the recording of digital information by electron beam heating individual regions through a first order transition to the ferromagnetic state whereupon the regions are permitted to cool to a biasing temperature slightly higher than the temperature of transition back to an antiferromagnetic state. A magnetic field then is applied to the entire film to magnetize only those regions of the film in the ferromagnetic state and readout of the recorded information can be achieved by conventional electron beam microscopy. The ferromagnetism of the film subsequently can be erased by cooling the film below the transition temperature to the antiferromagnetic state or by the application of a strain to the film.

3,607,461

HOT WORKABILITY OF AUSTENITIC STAINLESS STEEL ALLOYS

Delmar O. Stanley, and John F. Kocis, both of Mentor, Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 18, 1967, Ser. No. 691,187

Int. Cl. C22c *39/20, 39/54*

U.S. Cl. 148—38 **2 Claims**

Improving the hot workability of austenitic stainless steel alloys by first providing a cast slug with a controlled microstructure, usually by inoculation of the molten material with a metal such as titanium to produce a generally equiaxed structure, followed by forging of the cast slug into the desired shape.

3,607,462

PROCESS OF MAGNETIC PARTICLE PREPARATION

Alfred M. Laing, Butler, Pa., assignor to Spang Industries, Inc.

Filed Mar. 21, 1968, Ser. No. 714,805

Int. Cl. H01f *1/24*

U.S. Cl. 148—104 **11 Claims**

Magnetic particle cores suitable for phase shifting applications having a permeability substantially above 275 and core losses below 0.24 ohms per henry per unit of inductance at 1,800 Hertz are produced by a novel combination of steps including one or more of the following: reduction of prepowder anneal additives, selective distribution of magnetic particle sizes, adding flexibility to the electrical insulation applied to the magnetic particles, elevated pressure compacting, surface etching of the pressure compacted core after hydrogen anneal, and an oxidation heat treatment following surface etching. Surface etching and oxidation combine to increase the breakstrength and improve other properties of various permeability cores, for example, from 125 through 300 permeability.

3,607,463

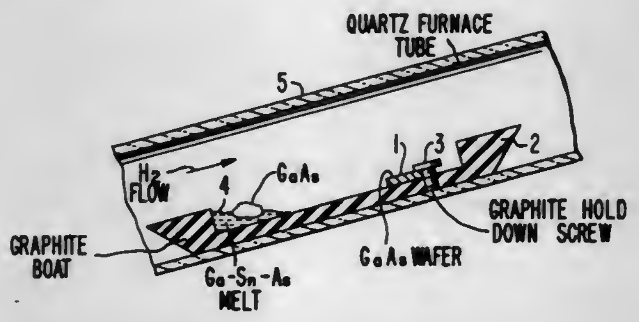
METHOD FOR GROWING TIN-DOPED N-TYPE EPITAXIAL GALLIUM ARSENIDE FROM THE LIQUID STATE

Joshyo Kinoshita, Santa Clara, and William W. Stein, Palo Alto, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Aug. 2, 1968, Ser. No. 749,777

Int. Cl. H01l *7/38*

U.S. Cl. 148—171 **5 Claims**



A charge consisting of gallium, gallium arsenide, and tin was heated to produce a liquid molten solution of gallium, arsenic, and tin with the atom fraction of tin being below 80 percent in the solution. The charge and a gallium arsenide substance are preferably heated in a refractory boat contained within a hydrogen furnace tube, such boat being tilted at an angle such that the substrate wafer is above the liquid level of the solution. The boat is then tipped to cover the heated surface of the gallium arsenide substrate member with the liquified charge solution. The furnace is then allowed to cool, resulting in an epitaxial growth of tin-doped N-type gallium arsenide upon the gallium arsenide substrate member. Growth of the epitaxial layer occurs within a few minutes, after which the excess charge is scraped from the layer and the substrate member and is then treated with a solution of molten tin bromide to facilitate removal of the excess tin and gallium. The tin bromide and excess tin and gallium are removed from the epitaxial surface by treatment with hydrochloric acid. By varying the atom fraction of tin in the liquified solution, the net donor carrier concentration in the resultant epitaxial layer can be readily varied within the range from 10^{16} to 10^{18} per cubic centimeter.

3,607,464

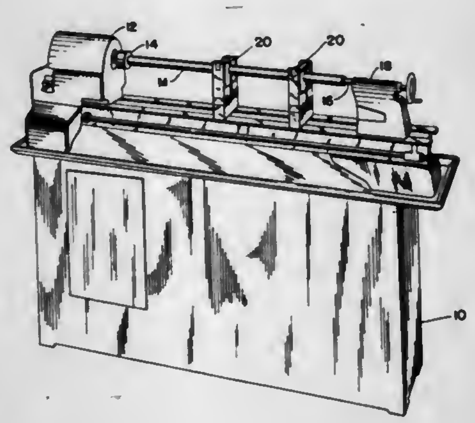
TREATMENT OF ELONGATED HIGH SPEED STEEL MEMBERS AFTER AUSTENITIZING

Richard F. Erxleben, Dearborn Heights, and Orie I. Causley, Fraser, both of Mich., assignors to Lear Siegler Inc., Santa Monica, Calif.

Continuation-in-part of application Ser. No. 552,944, May 25, 1968, now abandoned. This application July 10, 1968, Ser. No. 761,365

Int. Cl. C21d *1/00, 9/28*

U.S. Cl. 148—153 **18 Claims**



Elongated members formed of tool steel are maintained straight by sets of aligned rollers during cooling in air through the hardening range between 600° F. and room temperature following cooling after heating throughout to austenitizing temperature. Cooling throughout the hardening range is accelerated by blowing air on the member.

3,607,465

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING A ZENER DIODE AND SEMICONDUCTOR DEVICE MANUFACTURED BY SAID METHOD

Jean-claude Frouin, Defense Passive Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 28, 1968, Ser. No. 740,943

Claims priority, application France, June 30, 1967, 112630

Int. Cl. H01l *7/36*

U.S. Cl. 148—175 **9 Claims**

A method of making in a monolithic integrated semiconductor circuit a Zener diode having a reverse breakdown voltage in the range of 2.5–6 volts is described. This is obtained by constructing one of the diode zones as a heavily doped buried layer and the other diode zone as a heavily doped surface layer and out-diffusing the former and in-diffusing the latter until they meet to form an abrupt junction having the desired characteristics. A heavily doped surface contact region is diffused down to the buried zone to make available a surface contact for the latter.

3,607,466

METHOD OF MAKING SEMICONDUCTOR WAFER

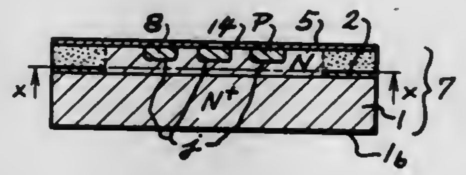
Masayoshi Miyazaki, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1968, Ser. No. 777,619

Claims priority, application Japan, Nov. 22, 1967, 42/75053/67

Int. Cl. H01l *7/36, 5/00;* **C23c** *13/00*

U.S. Cl. 148—175 **6 Claims**



A semiconductor wafer may be made extremely thin, for example, so as to be suitable for use as a solid target of enhanced sensitivity in a vidicon tube, by forming on the marginal portion of one side of a single crystal semiconductor substrate a seeding site which is crystallographically different from the substrate, coating that one side of the substrate with a vapor growth layer of the same conductivity type as the substrate to consist of a polycrystalline region overlying the seeding site and a single crystal region directly overlying the remainder of that side of the substrate, and then removing the semiconductor substrate from the vapor growth layer, as by grinding, to leave a semiconductor wafer of a thickness substantially determined by the thickness of the vapor growth layer and in which cracks that may originate at the edge of wafer, either during grinding or otherwise, are blocked from spreading into the single crystal region at the boundary of the latter with the marginal polycrystalline region. The semiconductor substrate is preferably of a high impurity type so that the concentration of impurity in the single crystal region of the semiconductor wafer produced as aforesaid increases across the thickness of the wafer in the direction toward the surface thereof from which the substrate has been removed.

3,607,467

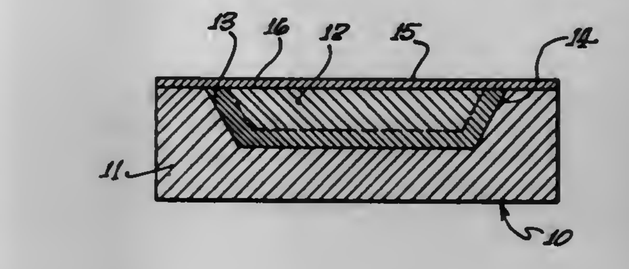
METHOD FOR FABRICATING AN ALLOYED SEMICONDUCTOR DEVICE

King Lau Hu, Torrance, Calif., assignor to TRW Semiconductors Inc., Los Angeles, Calif.

Filed June 2, 1969, Ser. No. 829,509

Int. Cl. H01l *7/46*

U.S. Cl. 148—181 **10 Claims**



An improved method for the fabrication of an alloyed semiconductor device. A silicon crystal of a first type conductivity is provided. A region of a metal for producing a second type conductivity is alloyed into a portion of the silicon crystal establishing a PN junction. Prior to heating the crystal to establish the desired device characteristics, a layer of oxide is disposed upon the surface of the crystal whereon the junction is exposed. Upon heating, the oxide combines with the passivating layer on the silicon crystal forming a glass encapsulating member which will prevent the crystal from cracking when the device is cooled by quenching.

3,607,468

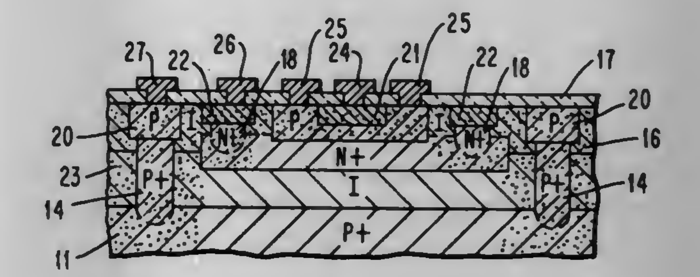
METHOD OF FORMING SHALLOW JUNCTION SEMICONDUCTOR DEVICES

Joseph J.F. Chang, Poughkeepsie, and Madhukar B. Vora, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,328

Int. Cl. Holl *7/44*

U.S. Cl. 148—186 **5 Claims**



A method for making a high-performance NPN silicon semiconductor device which has an arsenic emitter which gives a substantial improvement in transistor speed and current gain over similar phosphorous emitters. Arsenic atoms in the emitter region tend to squeeze the P-type impurity, such as boron in the base into a narrow base layer. For the same integrated base doping, a much narrower base can be obtained with arsenic-doped emitters than with phosphorous-doped emitters.

3,607,469

METHOD OF OBTAINING LOW CONCENTRATION IMPURITY PREDEPOSITION ON A SEMICONDUCTIVE WAFER

Lee P. Madden, Sunnyvale, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed Mar. 27, 1969, Ser. No. 811,116

Int. Cl. H01l *7/34*

U.S. Cl. 148—186 **18 Claims**

A method for predepositing very low concentrations of impurity on a semiconductive wafer essentially comprising the steps of immersing the wafer in a nonoxidizing acid solution to remove the oxide from predetermined surface areas of the chip to render those areas highly reactive, and immersing the wafer into an oxidizing solution having a controlled concentration of impurity material therein to cause a new layer of impurity impregnated oxide to be grown over the preselected surface areas. The wafer may then be heated in a diffusion oven to cause the predeposited impurities to be driven from the oxide into the surface of the wafer.

3,607,470
THIXOTROPIC GELLED LIQUID ROCKET FUEL CONTAINING HYDRAZINE AND ALUMINUM HYDRIDE COATED WITH A SEMICARBAZIDE COPOLYMER

James M. Lucas, El Dorado Hills, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Jan. 12, 1968, Ser. No. 698,660
Int. Cl. C06b *19/02*
U.S. Cl. 149—6 **6 Claims**

This patent describes a thixotropic, storage and mechanically stable, gelled liquid rocket fuel comprising hydrazine fuel containing therein a suspension of a polysemicarbazide coated aluminum hydride, and the method for the preparation of the same.

3,607,471
SOLID COMPOSITE PROPELLANTS WITH SALTS OF FERROCENE MONOSULFONIC ACID AS BURNING RATE MODIFIERS

Stephen W. Osborn, Yardley, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Oct. 13, 1961, Ser. No. 145,538
Int. Cl. C06d *5/00;* **C10l** *9/10*
U.S. Cl. 149—19 **22 Claims**

1. A solid propellant composition based on a polymer selected from the group consisting of hydrocarbon, polysulfide and urethane polymers and comprising, as a burning rate modifier component thereof, approximately 1 to 3 percent by weight of said composition of at least one salt of ferrocene monosulfonic acid which is less volatile than ferrocene.

3,607,472
WHITE SMOKE COMPOSITION CONTAINING RED PHOSPHOROUS

Bernard E. Douda, Bloomfield, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 12, 1969, Ser. No. 876,118
Int. Cl. C06d *3/00*
U.S. Cl. 149—19 **5 Claims**

A white smoke producing composition comprised of between 8 and 12 percent of magnesium, between 30 and 34 percent of magnesium dioxide, between 0 manganese 3 percent of zinc oxide, between 0 and 4 percent of lead dioxide, between 38 and 45 percent of red phosphorus and between 10 and 18 percent of a resinuous binder.

3,607,473
COMPOSITIONS FOR AND METHOD OF PRETREATING PLASTIC SURFACES TO IMPROVE ADHESION OF COATING MATERIALS

John J. Grunwald, New Haven; John P. Homrok, Terryville, and Ralph R. Wilkinson, Waterbury, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed Mar. 4, 1968, Ser. No. 709,955
Int. Cl. B44c *1/22;* **C23b** *3/00*
U.S. Cl. 156—2 **16 Claims**

Bath compositions and processes are disclosed for use in pretreating the surface of various synthetic molded plastics to improve adhesion to the surface thereof of films of different coating materials, such as paint, ink and adhesives, for example. An aqueous emulsion of an organic surface activating agent, followed by a strong acid aqueous oxidizing solution, are employed in the treatment of the plastic surface to effect the desired surface modification.

3,607,474
METHOD OF MAKING AN OPTICAL MASK FOR REPRODUCING CIRCUIT BOARDS

Samuel H. Hensdale, Kernersville, N.C., assignor to The United States of America as represented by the Secretary of the Army

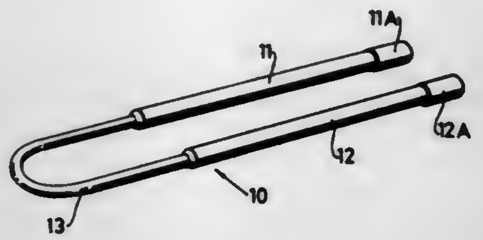
Filed Jan. 26, 1968, Ser. No. 700,696
Int. Cl. B32b *31/24;* **B44b** *1/22*
U.S. Cl. 156—3 **2 Claims**

A method of making an etched stripline circuit board comprising a copper-clad substrate covered with an etch-resist Mylar tape. A precision coordinatograph is employed for cutting the circuit through the Mylar tape on a 1:1 scale; unneeded portions of the tape are stripped away, and the remaining portions of the tape are utilized as a resist during an etching process.

3,607,475
METHOD OF MANUFACTURING ELECTRICAL RESISTANCE ELEMENTS AND ELEMENTS MANUFACTURED BY THE METHOD

Nils Gustav Schrewelius, Hallstahammer, Sweden, assignor to Aktiebolaget Kanthal, Hallstahammar, Sweden

Filed Oct. 24, 1967, Ser. No. 677,569
Claims priority, application Sweden, Oct. 24, 1966, 14564-66
Int. Cl. C23f *17/00;* **H01j** *1/02*
U.S. Cl. 156—6 **10 Claims**

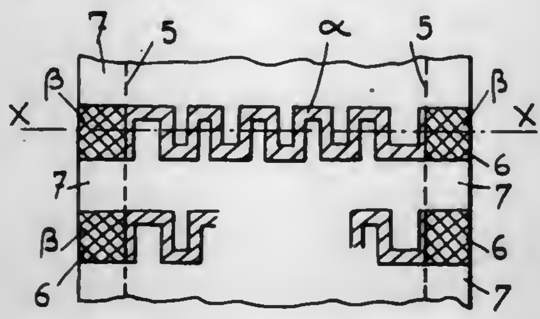


An electric resistance element of molybdenum disilicide has a thin incandescent zone whose dimensions are formed by chemical decomposition, dissolution or corrosion.

3,607,476
METHOD OF MANUFACTURING THIN FILM CIRCUITS

Rene Besamat, and Philippe Basseville, both of Montreuil-sous-Bois, France, assignors to L.C.C.-C.V.C.E.-Compagnie Europeenne de Composants Electriques

Filed July 9, 1968, Ser. No. 743,410
Claims priority, application France, July 19, 1967, 114759
Int. Cl. H05k *1/00, 3/06*
U.S. Cl. 156—11 **1 Claim**



A method for depositing a tantalum resistor with gold terminals on a substrate, which consists in masking part of the substrate with copper, producing a tantalum coating on the substrate by cathode-sputtering, and exploiting the differences in porosity between the tantalum, directly in contact with the substrate, and that in contact therewith through the medium of copper for removing all the deposits except that corresponding to the desired pattern.

3,607,477
ETCHANTS, THE TREATMENT OF MONCRYSTALLINE SEMICONDUCTOR WAFERS THEREWITH AND SEMICONDUCTOR DEVICES INCORPORATING SUCH WAFERS

Ravi Rao, London, England, and Robert I. Bradshaw, Kampala, Uganda, East Africa, assignors to Westinghouse Brake English Electric Semiconductors, Limited, London, England

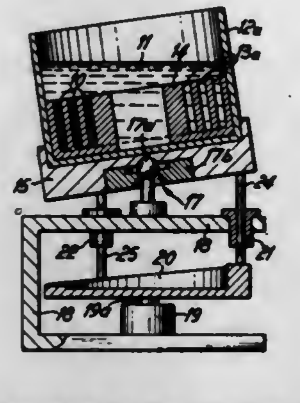
Filed Mar. 17, 1969, Ser. No. 807,959
Claims priority, application Great Britain, Mar. 21, 1968, 13,619/68
Int. Cl. H01l *7/50*
U.S. Cl. 156—17 **1 Claim**

This method involves the use of a solution of gluconic acid and caustic alkali to remove contaminants from a silicon wafer mounted for processing on a header.

3,607,478
METHOD OF TREATING SEMICONDUCTOR ELEMENTS OF CIRCULAR OUTLINE

Karin Henninges, Stuttgart, and Bernd Schulze, Benningen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 5, 1968, Ser. No. 781,315
Claims priority, application Germany, Dec. 14, 1967, P 16 21 428.1
Int. Cl. H01l *7/00;* **B08b** *3/10*
U.S. Cl. 156—17 **11 Claims**

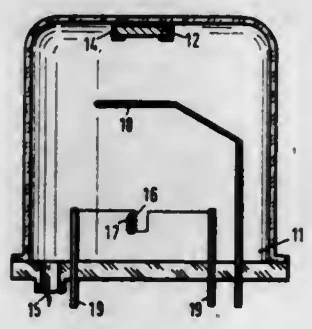


A method of and apparatus for treating elements of circular outline. A vessel is provided with guide grooves which are either straight and parallel to one another or are torus-shaped and concentric with one another. The vessel is mounted for tilting movement about a ball and socket joint and accommodates a bath of etching fluid. Disc-shaped elements to be treated are supported on edge in the respective guide grooves. A motor is mounted below the vessel and its output shaft drives a cam follower having at least one ascending and at least one descending surface portion, and in the case of straight parallel guide grooves two rod-shaped follower members are mounted for sliding movement in axial direction of the motor shaft with their ends resting on the cam disc surface and their upper ends engaging the bottom wall of the vessel so that, when they are shifted in axial direction of the motor output shaft, the vessel is tilted alternately to one side and the opposite side about the ball and socket joint. If the guide grooves are torus-shaped, then three such follower members are used which are circumferentially spaced about the axis at equiangular locations.

3,607,479
METHOD FOR PRODUCING METAL STRUCTURES UPON SEMICONDUCTOR SURFACES

Helmuth Murrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Sept. 11, 1967, Ser. No. 666,582
Claims priority, application Germany, Sept. 14, 1966, Sept. 14, 1966, S 105855;S 105859
Int. Cl. H01l *7/46;* **C23c** *7/00*
U.S. Cl. 156—17 **8 Claims**

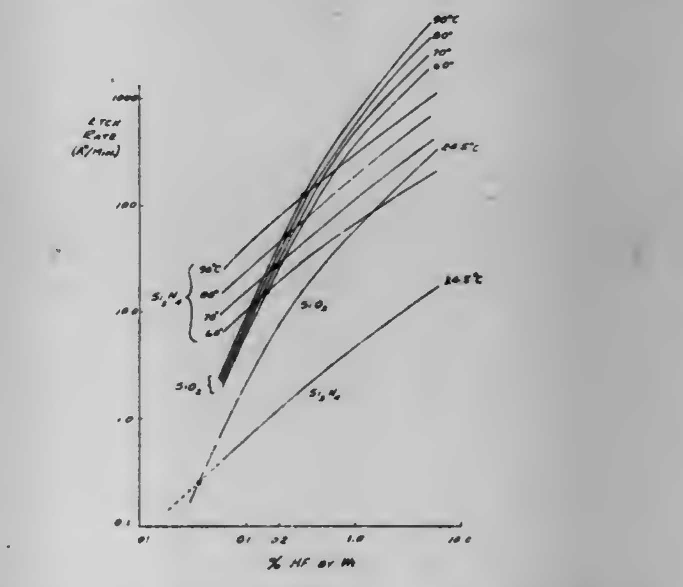


The invention describes a method of producing fine structures, preferably those consisting of a metal coating, upon semiconductor surfaces. More particularly, the invention relates to a method of producing metal layers upon semiconductor surfaces thus providing contact areas on semiconductor circuit components. The metal coating covers the entire area of the surface to be processed. According to conventional planar technique, the coated area is subsequently covered by a suitable photovarnish upon which the desired structure or configuration is impressed by photographic exposure and development of the photovarnish. The nonexposed areas of the metal coating are thereafter dissolved. According to the present invention, the metal deposition, initially covering the entire area of the surface to be processed, is given an addition of at least one metal which reduces the etching time required for subsequently eliminating the area portions not covered by the etching mask. This also stabilizes the semiconductor surface.

3,607,480
PROCESS FOR ETCHING COMPOSITE LAYERED STRUCTURES INCLUDING A LAYER OF FLUORIDE-ETCHABLE SILICON NITRIDE AND A LAYER OF SILICON DIOXIDE

Victor Harrap, Dallas, and Harold Gary Carlson, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1968, Ser. No. 787,738
Int. Cl. H01l *7/00*
U.S. Cl. 156—17 **17 Claims**

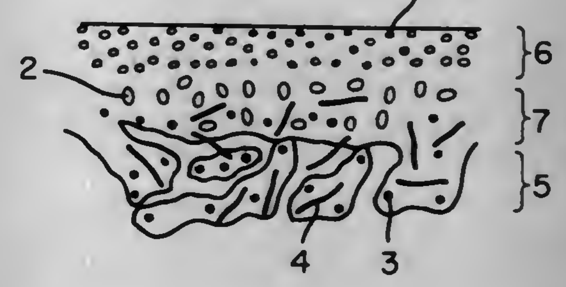


A single etchant process for etching a composite layered structure of silicon nitride and silicon dioxide. Hydrogen and fluoride ion-containing aqueous etching solutions, such as hydrofluoric acid having a concentration of less than approximately 2 percent by weight, and other equivalent solutions including ammonium fluoride and ammonium bifluoride solutions and fluosilicic acid, are applied to the structure while the temperature is maintained below the boiling point of these solutions, whereby the rate of etching of the silicon nitride is substantially equal to the rate of etching of the silicon dioxide.

3,607,481
PROCESS FOR PRODUCTION OF SYNTHETIC LEATHER

Toshikazu Shinohara; Hiroshi Hattori, and Konosuke Mitsukawa, all of Ohtsu-shi, Japan, assignors to Toyo Rayon Kabushiki Kaisha and Toray Industries, Inc., Tokoyo, Japan, part interest to each

Filed Sept. 15, 1967, Ser. No. 667,976
Claims priority, application Japan, Sept. 19, 1966, Mar. 4, 1967, 41/61482;42/13468
Int. Cl. B32b *23/02*
U.S. Cl. 156—148 **6 Claims**



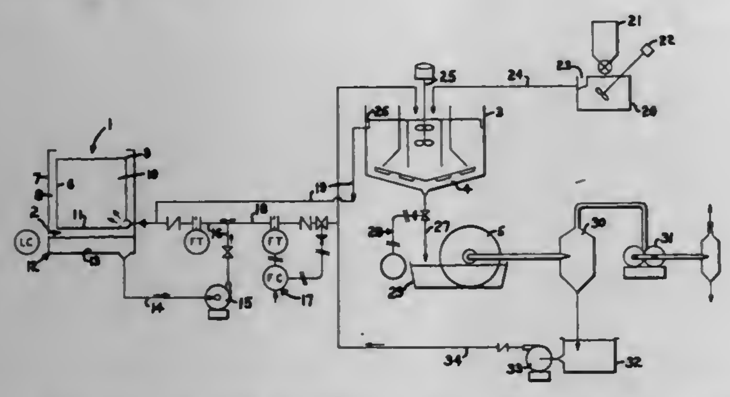
A synthetic leather is produced by impregnating a fiber web with a binder solution, coating one surface of the said web with a solution of a synthetic resin having a viscosity higher than that of the said binder solution before the said binder is coagulated, and thereafter coagulating the said binder and the synthetic resin simultaneously. In another embodiment, it is produced by impregnating a fiber web with a binder solution, applying to one surface of the said web at least one kind of binder solution having a viscosity higher than that of the first-mentioned binder solution in the order of a lower viscosity before the already applied binders are coagulated, applying to the said surface a solution of a synthetic resin having a viscosity of 50–10,000 poises, and thereafter coagulating the said binders and the synthetic resin simultaneously.

3,607,482

PROCESS OF REGENERATION OF METAL TREATING SOLUTIONS

Robert P. Selm, Salina, Kans., assignor to Wilson & Company, Salina, Kans.

Filed Aug. 11, 1969, Ser. No. 849,052
Int. Cl. C23f *1/00;* **C23g** *1/14*
U.S. Cl. 156—19 **8 Claims**



A process for regeneration of spent and partially spent metal treating solutions, such as used for treating aluminum. The process includes collecting a portion of the metal-treating solution with the collected solution containing metal salts dissolved from the metal being treated in a treating space, recirculating a portion of the collected solution, and flowing the remainder into a clarifying stage where a precipitating agent is introduced and mixed therewith and solids formed at said stage settled out providing a clarified supernatant solution which is returned to the treating space. The metal salts removed are in the class of carbonates, sulfates, chromates and aluminates and the precipitating agent is an alkaline earth hydroxide, such as calcium hydroxide, barium hydroxide and strontium hydroxide.

3,607,483

METHOD OF CHEMICAL TREATMENT FOR ZINC OR ZINC-IRON ALLOY SURFACES

Nakaaki Oda, Takaoka-shi; Nagaharu Morioka, Takaoka-shi; Akira Yoshida, Tonami-shi, and Yoshio Makino, Takaoka-shi, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1969, Ser. No. 864,910
Int. Cl. C23g *1/02;* **C23f** *3/00*
U.S. Cl. 156—20 **8 Claims**

Zinc or zinc-iron alloy surfaces are treated with aqueous solution containing bichromate $(Cr_2O_7^{1})$ ions, nitrate (NO_3^{1}) ions, tripolyphosphate $(P_3O_{10}^{1111})$ ions, organic acid ions and surface active agent at pH 0.3–1.5 and in the treatment the surfaces are polished and have corrosion resistance.

3,607,484

ETCHING OF ALUMINUM

Gohein Marukawa, Tokyo; Takashi Oikawa, Tokyo; Ryotatsu Otsuka, Tokyo, and Naomi Kagaya, Kawasaki-shi, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1968, Ser. No. 783,717
Claims priority, application Japan, Dec. 13, 1967, 43/79542
Int. Cl. C23f *1/00;* **B44c** *1/22;* **C23g** *1/22*
U.S. Cl. 156—22 **8 Claims**

An etchant liquid for metals (which consist mainly of aluminum) comprising an aqueous sulfuric acid solution containing halogen ions and the ions of a metal having an ionization tendency less than that of aluminum.

An etching bath containing the above liquid also comprising a water-immiscible organic liquid, and a surface active agent prepared by the phosphoric esterification of a polyalkylene glycol having alkylene oxide linked with the hydrocarbon residual group thereof.

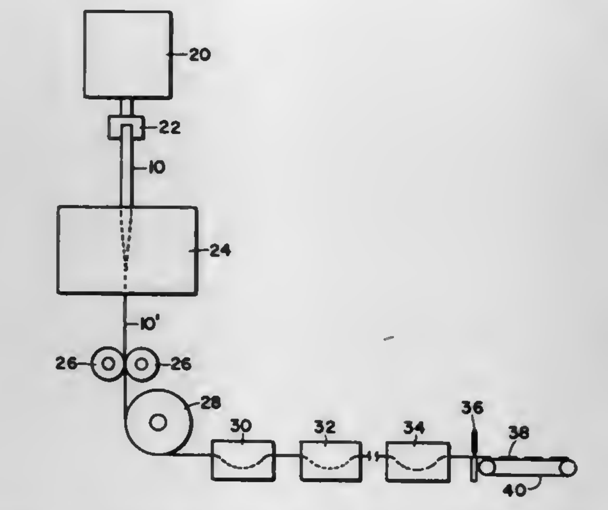
A process for forming a photographic image of an acid-resistant coating applied to the surface of a metallic plate (which consists mainly of aluminum) which comprises etching the plate using the described etchant liquid or etching bath.

3,607,485

METHOD OF MAKING GLASS RAZOR BLADES

Alan C. Bailey, Big Flats, and Harold E. Camp, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 23, 1967, Ser. No. 677,205
Int. Cl. C03b *37/02;* **C03c** *15/02*
U.S. Cl. 156—24 **4 Claims**



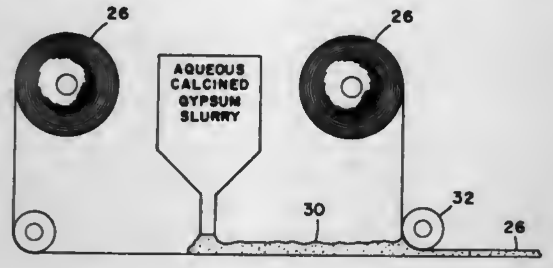
A blank of vitreous material is accurately ground to a desired razor blade configuration with specific dimensions, which are a multiple of the dimensions of the end product as represented by a predetermined attenuation ratio, and the blank is heated to about its softening point and drawn down with a desired attenuation to produce a continuous razor blade ribbon of uniform predetermined cross-sectional dimensions. The ribbon is then polished in an acid bath, provided with a lubricating coating, and cut into desired lengths for packaging.

3,607,486

PROCESS FOR MAKING WATER REPELLENT PAPER AND GYPSUM SHEATHING BOARD AND A COATING COMPOSITION USEFUL THEREIN

Norbie C. Jacks, and Jerry C. Sparks, both of Oxford, Ala., assignors to National Gypsum Company, Buffalo, N.Y.

Filed May 1, 1969, Ser. No. 820,961
Int. Cl. B32b *3/22;* **D21h** *5/00;* **C08h** *13/00*
U.S. Cl. 156—41 **16 Claims**



A method for making vapor permeable, water repellent paper having one surface treated with water repellent bituminous material and an opposite surface substantially free of water repellent material using a coating composition comprising an aqueous asphalt emulsion and an organic solvent with substantially all of said organic solvent being dispersed in the water phase of said emulsion.

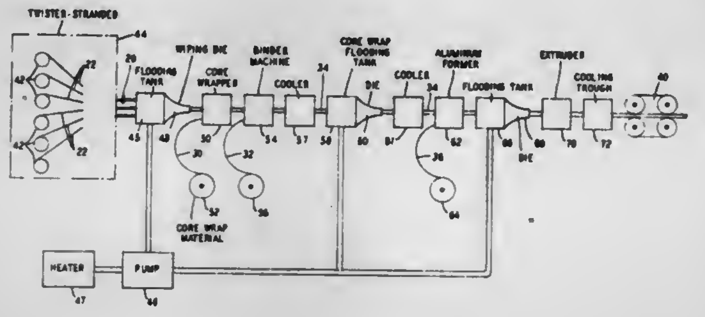
The process of making water repellent gypsum sheathing board using sheets of cover paper as described above.

3,607,487

WATERPROOF ELECTRICAL CABLE

Merle C. Biskeborn, Chatham; Joseph P. McCann, Colonia, and Raffaele A. Sabia, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1968, Ser. No. 780,314
Int. Cl. H01b *13/06, 13/22*
U.S. Cl. 156–47 **8 Claims**



An electrical communications cable having a plurality of insulated conductors is made waterproof by filling the interstitial spaces with a heated mixture of 85 percent petroleum jelly and 15 percent low-density polyethylene and cooling the mixture.

3,607,488

ORNAMENTAL PRODUCTS MADE FROM PLANT MATERIAL

Ernesto J. Colon Yordan, Box 2049, Ponce, P.R.

Filed July 9, 1968, Ser. No. 743,282
Int. Cl. A01n *3/00*
U.S. Cl. 156—57 **9 Claims**

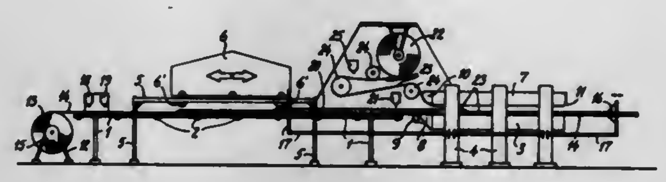
There is provided an ornamental object and a process for producing the same. Naturally occurring plant material is comminuted to a desired size and shape, e.g., one-sixteenth to 1 inch, treated with a preservative, e.g. formaldehyde, dyed, dried and coated with a waterproof resinous sealer.

3,607,489

METHOD FOR MANUFACTURE OF COATED BOARDS MADE OF WOOD SHAVINGS, FIBERS AND SIMILAR MATERIALS

Jonas Anders Gote Helgesson, Vallentuma, Sweden, assignor to Ingenjorsfirman B-Projekt Aktiebolag, Stockholmsvagen, Enebyberg, Sweden

Filed June 6, 1968, Ser. No. 734,946
Claims priority, application Sweden, Dec. 18, 1967, 17344/1967
Int. Cl. B29j *5/06, 5/08*
U.S. Cl. 156—62.2 **13 Claims**



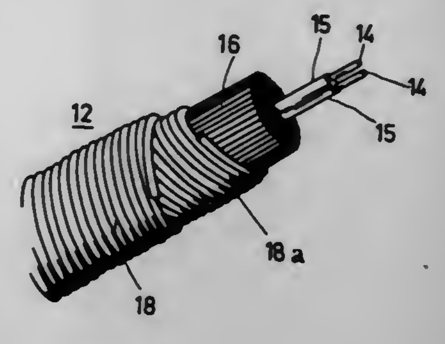
The invention provides method and apparatus for the manufacture of pressed synthetic fiberboard. A continuous web containing a layer of particulate material is drawn to a hot press having a stationary lower plate, pressed to form the fiberboard, and withdrawn from the press. The said web and consequent pressed fiberboard are moved to and through the press under traction provided by a traction means pulling the pressed fiberboard from the press cooperating with a braking means acting on the web at a position before said web is charged with the layer of particulate material.

3,607,490

METHOD OF MAKING A FLEXIBLE SIGNAL TRANSMISSION CABLE FOR AN AERODYNAMIC BODY

Werner Heinzmann, Ottobrunn, and Siegfried Pfahl, Hagen/Holthausen, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Division of Ser. No. 812,277, Apr. 1, 1969, Pat. No. 3,533,349. Filed Mar. 19, 1970, Ser. No. 22,286. Claims priority, application Germany, Apr. 6, 1968, P 17 65 133.1
Int. Cl. H01b *13/12, 13.26*
U.S. Cl. 156—56 **6 Claims**



A flexible electrical cable for transmitting control signals between a control station and a rapidly moving aerodynamic body includes at least two parallel enamel-insulated conductor wires cemented together in parallel relation and extending centrally through a tension member formed by a large number of thin individual filaments, and further includes a covering closely embracing the wires and the tension member and comprising superposed layers wound around the tension member in opposite respective angular directions. The conductor wires are high purity electrolytic copper having an elongation equal to or greater than 24 percent and, in the bare condition, a diameter of 0.07 mm. The tension member comprises a plurality of parallel filament strands, of 14μ diameter, or a polyester fiber having an elongation of substantially 7 percent to 8 percent. The covering layers comprise natural silk having a composition of 4×13/15 den. In producing the cable, the conductor wires, which are separately insulated in an enameling operation, are cemented together in parallel relation. The tension member filament strands are presorted and fed to a spinning device along with the parallel conductor wires. The tension member is covered, in two successive spinning operations, having the same spinning angle but different directions of rotation. The conductor wires are fed to the spinning device under a braking force of 40 g. The apparatus includes two serially arranged wire spinning devices, the first of which has a fixed spindle provided with an axially bore therethrough and a guide plate arranged close to the spinning head. The guide plate has a central opening for the conductor wires and plural openings for the tension member filament strands, these openings being arranged in a circle concentric with the central opening and at angular interval of 120°.

3,607,491

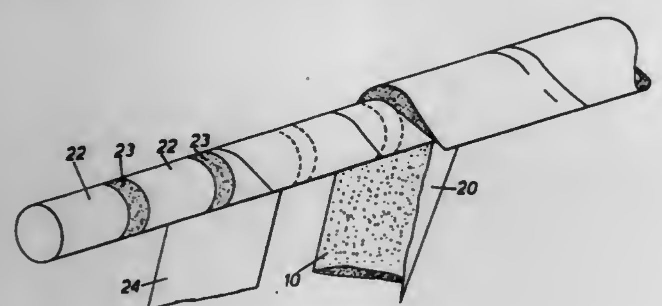
FLEXIBLE POROMERIC SHEET MATERIAL WITH A SUEDE FINISH

Ed Caldwell Brown, Hartville, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 14, 1969, Ser. No. 877,037
Int. Cl. B32b *5/18*
U.S. Cl. 156—77 **15 Claims**

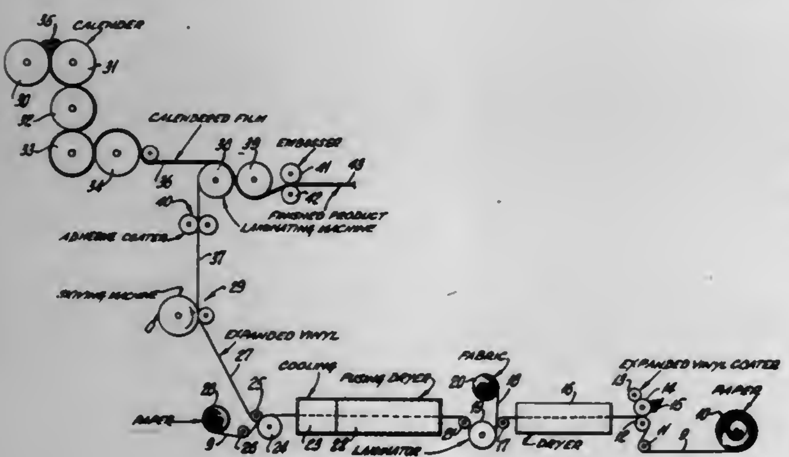
This invention is a process of making a flexible poromeric sheet material with a suede finish and the product produced by this process. A phase-invertible polymer solution, comprising an extended urethane polymer, a polyvinyl chloride resin, and a water-miscible solvent, is cast in a film onto a solid surface and phase-inverted in a water bath, containing a surface-active agent, to form a three-layered material comprising a skin layer adjacent the solid surface, a poromeric suede layer loosely bound to the skin layer, and a substantially smooth poromeric anchoring layer atop and integral with the suede layer. The product is removed from the surface and the skin layer removed from the suede layer to reveal a flexible poromeric sheet material with a suede finish.

3,607,492
PROCESS FOR PREPARING COMPOSITE TUBE
Donald George Keith, Mount Eliza, and Donald Robert Burch, Forest Hill, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia
Filed Nov. 18, 1968, Ser. No. 776,731
Int. Cl. B32b *31/00*
U.S. Cl. 156—79 **20 Claims**



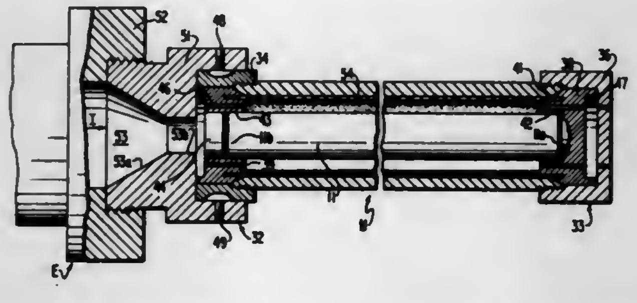
A process for the manufacture of composite tubes which may be multiwalled which comprises the steps of (a) rotating a tube having a wall thickness small in relation to its overall diameter around its longitudinal axis, (b) moving a ribbon of flexible material past foam-dispensing means and depositing a layer of nascent foam upon one face of the said ribbon, (c) feeding the said coated ribbon tangentially onto the rotating tube at an angle to the longitudinal axis of the tube such that the said coated ribbon forms a spirally wound envelope around the tube and (d) causing or allowing the foam to expand and cure.

3,607,493
METHOD OF MAKING A PLASTIC-COATED FABRIC
Albert E. Anderson, Norwich, Conn., assignor to Pervel Industries, Inc., Plainfield, Conn.
Filed Apr. 12, 1968, Ser. No. 721,002
Int. Cl. B32b *31/12*
U.S. Cl. 156—83 **12 Claims**



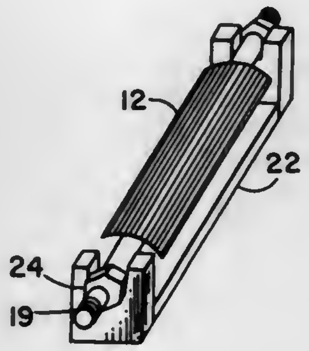
The invention contemplates plastic-coated fabrics wherein the exposed surface is a special skin over a layer of expanded plastic, thus imparting richness to the "feel" of the product. In making this product, the customary release sheet is first removed, and then a layer of plastic skin is stripped from the expanded-plastic layer, so as to expose the character of the expanded plastic; the voids and interstices of this packed surface are utilized for strikingly effective bonding of a separate skin layer, which may be a calendered film. As a final step in the bonding of skin to the expanded plastic, selected embossing rolls not only compress the laminations for enhanced adhesion but also impart surface contours for desired textural effects.

3,607,494
METHOD OF FORMING A COATED ROLL
Leroy J. Rowland, Charleston, S.C., assignor to Rowland Enterprises, Inc., Charleston, S.C.
Filed June 13, 1969, Ser. No. 832,973
Int. Cl. B32b *31/30, 31/12*
U.S. Cl. 156—86 **5 Claims**



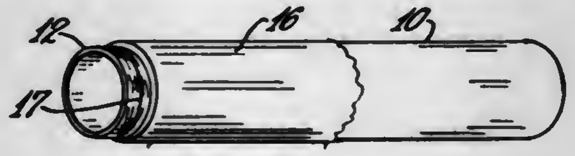
A method of forming a coated roll having a body and an outer layer of coating material which comprises positioning a tubular sleeve of release material, having on its inner surface a layer of coating material, in surrounding relationship with the body, compressing the layer of coating material to bond the layer to the outer surface of the body and subsequently removing the tubular sleeve.

3,607,495
TUBE-FABRICATING PROCESS
John G. Davis, Jr., Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Oct. 22, 1968, Ser. No. 769,592
Int. Cl. B29c *27/00*
U.S. Cl. 156—86 **8 Claims**



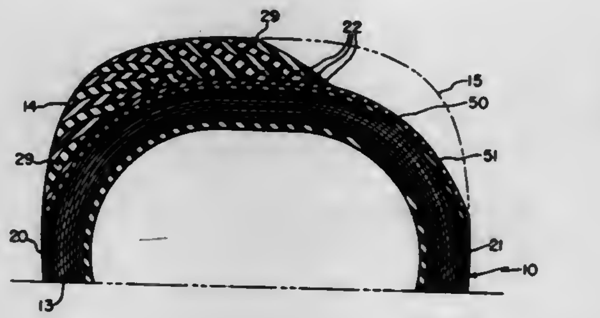
A method of fabricating uniaxial filament reinforced plastic tubes is disclosed wherein plies of uncured epoxy resin preimpregnated filament sheets are wrapped around a mandrel and a heat-shrinkable sleeve is used to apply pressure against the plies while the epoxy resin is being cured.

3,607,496
JACKETED FIBROUS DUCT AND METHOD AND APPARATUS FOR APPLYING THE JACKET TO THE DUCT
Ronald E. Kissell, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Mar. 17, 1969, Ser. No. 807,761
Int. Cl. B29c *27/20*
U.S. Cl. 156—86 **8 Claims**



The disclosure embraces a rigid duct of bonded fibers sheathed or encased in a heat-shrunk jacket and involves a method of and apparatus for applying a tubular jacket of a suitable heathshrinkable organic film onto the fibrous duct and applying heat to the end regions of the jacket and throughout the length of the jacket whereby the same is heat-shrunk or contracted to snugly engage and enclose the exterior surfaces of the fibrous duct.

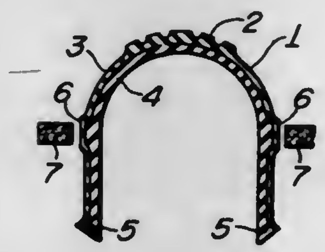
3,607,497
TIRE-TREADING METHOD
Dennis S. Chrobak, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 30, 1969, Ser. No. 837,795
Int. Cl. B29h *17/37*
U.S. Cl. 156—95 **9 Claims**



A method of applying a cord-reinforced tread to a tire carcass in which; a ribbon of uncured rubber stock is formed, cord reinforcing is applied longitudinally to the ribbon, and the ribbon and cord are wound about the circumference of the tire in a plurality of turns to form the tread.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,607,498
METHOD OF PRODUCING TIRES HAVING DECORATIVE SIDEWALLS
Hirokazu Kubota, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 12, 1967, Ser. No. 689,903
Claims priority, application Japan, May 17, 1967, May 17, 1967, May 30, 1967, May 30, 1967, 42/3181;42/31812;42/35048/35049
Int. Cl. B29h *17/04, 21/02*
U.S. Cl. 156—116 **2 Claims**



A method of producing a tire having on each sidewall thereof a band or bands of fluorescent colors which will not be detached from the tire body and remain fresh over a prolonged period of time and which are effective in decorating the tire particularly in the nighttime, said method comprising constructing the tire body with an outer rubber layer and an inner rubber layer having a color-developing effect and bonded integrally to said outer rubber layer, grinding each sidewall of the tire body by a grinder to form therein an annular groove or grooves and forming in said annular groove or grooves a laminate of an elastic undercoating layer of transparent anchoring agent and a fluorescent layer containing an ultraviolet ray-absorbing compound or a laminate of said undercoating layer, a fluorescent layer and a transparent top-coating layer containing the ultraviolet ray-absorbing compound.

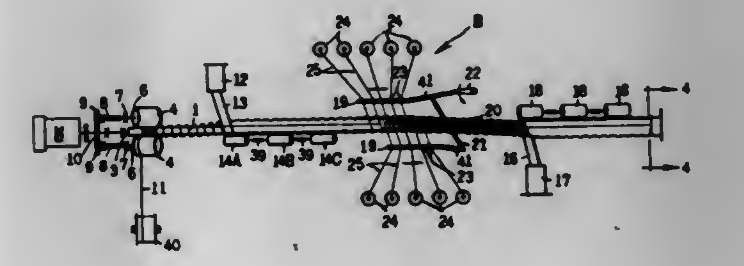
3,607,499
METHOD OF MAKING POWER TRANSMISSION BELTS
Albert J. Garbin, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation
Division of Ser. No. 641,222, May 25, 1967, Pat. No. 3,496,783. Filed Feb. 24, 1969, Ser. No. 831,796
Int. Cl. B29d *29/00*
U.S. Cl. 156—137 **8 Claims**

A method of forming an annular rubber V-belt comprising the wrapping of a layer of vulcanizable rubber about a mandrel, winding a length of cord about the layer, wrapping a second layer of vulcanizable material over the wound cord, cutting the thus formed member into individual belt members, and curing the belt members. The cord is composed of a twisted together plurality of yarns; the yarns being composed of a twisted together plurality of strands; the strands being composed of a plurality of individual filaments of glass and the twist present in the yarns and strands being opposite. Preferably, the yarn assembly features one-half, 2½ or 3½ twists per inch.

3,607,500
A MOLDING FIBROUS WEBS
Nathan D. Field, Allentown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 4, 1969, Ser. No. 830,533
Int. Cl. D04h *1/60*
U.S. Cl. 264—119 **11 Claims**

Expanded, nonwoven fibrous articles are formed by heating in a shaped mold compressed fibrous webs impregnated with a thermoplastic resin binder. The compressed webs may be economically shipped and the shaped articles generated at the point of destination.

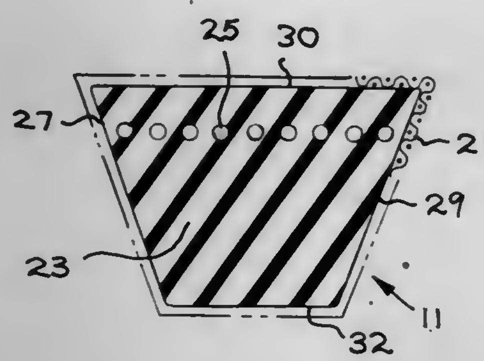
3,607,501
METHOD FOR MANUFACTURING HOSE
Akira Okumura, 7-2 Sawaragi-Cho, Takatsuki, Osaka, Japan
Filed Oct. 30, 1968, Ser. No. 771,928
Int. Cl. B31c *13/00*
U.S. Cl. 156—143 **1 Claim**



A method and apparatus for manufacturing a hose free of internal stress but having high flexibility by continuously winding a synthetic resin strip extruded from an extruder in half-molten state around a spiral member on a rotary shaft which has fully been restored by the resiliency of its own to the natural condition after having been spirally wound on the shaft.

3,607,502
INDUSTRIAL BELT CONSTRUCTION AND METHOD OF MANUFACTURING SAME
Alfred Marzocchi, and Albert J. Garbin, both of Cumberland, R.I., assignors to Owens-Corning Fiberglas Corporation
Division of Ser. No. 649,165, June 27, 1967, Pat. No. 3,473,400. Filed Feb. 27, 1969, Ser. No. 828,033
1969, Ser. No. 828,033
Int. Cl. B29h 7/22
U.S. Cl. 156—142 **6 Claims**

A method of industrial belt manufacture comprising the steps of wrapping a first layer of rubber about a core, winding a continuous length of reinforcement material about the layer, the length of reinforcement material bearing a coating which, on exposure to heat, expands to a cushionable sheath, wrapping another layer of rubberlike material about the assembly, dividing the assembly into a plurality of rings and heat curing the rings whereby the cushionable sheath is formed.



3,607,503

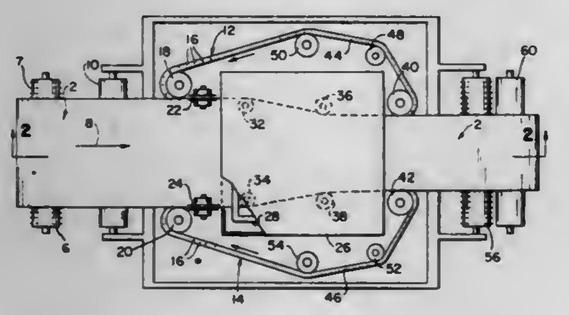
METHOD OF MANUFACTURING A NEEDLED HEAT-SHRINKABLE TUFTED PILE FABRIC

David B. Parlin, Thompsonville, Conn., and Ronald V. Canova, East Longmeadow, Mass., assignors to Bigelow-Sanford Inc., Thompsonville, Conn.

Filed Aug. 14, 1969, Ser. No. 850,153

Int. Cl. D04h *11/08*

U.S. Cl. 156—148 **16 Claims**



A process for the manufacture of tufted pile fabric in which the pile yarns are tufted on a backing comprising primarily needled heat-shrinkable synthetic thermoplastic fibers with the fibers of at least one surface bonded together, fibers in the interior of the backing remaining unbonded, and the fabric after tufting is subjected to a widthwise heat shrinkage treatment with the dimensions of the fabric controlled both widthwise and lengthwise of the fabric, and at a controlled temperature.

3,607,504

METHOD OF FABRICATING A BOX BEAM

James S. Howard, Riverside, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Jan. 30, 1969, Ser. No. 795,232

Int. Cl. B32b *31/00*

U.S. Cl. 156—155 **6 Claims**

Method of forming a lightweight compartmented box beam of resin-impregnated fiberglass tape and honeycomb core material, employing a segmented soluble mandrel about which said tape is wrapped.

3,607,505

METHOD OF PRODUCING A LAMINATED TUBULAR ARTICLE

Henry G. Schirmer, Spartanburg, S.C., assignor to W.R. Grace & Co., Duncan, S.C.

Filed Aug. 11, 1967, Ser. No. 659,940

Int. Cl. B29c *17/00*

U.S. Cl. 156—156 **9 Claims**

A laminated, tubular, thermoplastic film having high tensile strength, shrink energy, and tear resistance is produced by continuously extruding a layer of a first thermoplastic material onto a tubular substrate of a second thermoplastic material and then cooling, heating, and stretch-orienting the resulting laminate. By repeating the process, multiplelayer laminates may be produced.

3,607,506

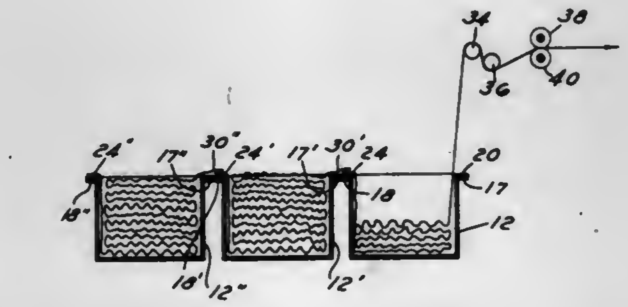
PROCESS FOR CONTINUOUSLY FEEDING SEPARATE LENGTHS OF SHEET MATERIALS

Harold C. Gerwin, Fraser, and Angelo V. Pugliese, Jr., Mount Clemens, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 28, 1968, Ser. No. 755,846

Int. Cl. B65h *75/02*

U.S. Cl. 156—157 **4 Claims**



Sheets of polyvinyl chloride about 5 inches wide and 7,500 feet long are folded into individual containers by a set of feed rolls reciprocating back and forth across the container opening. Each sheet is placed in its container so pulling on one end will draw the sheet linearly therefrom and the other end extends a short distance outside of the container opening. At least two containers are placed adjacent each other and the ends of the sheets are heat fused together so processing equipment begins drawing the sheet from the second container after emptying the first container.

3,607,507

NOVEL SPLICING METHOD

Raymond J. Enos, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1968, Ser. No. 694,791

Int. Cl. B65h *69/02*

U.S. Cl. 156—158 **8 Claims**

Disclosed herein is a method for splicing the ends of thermally stable fibers, filaments, strands, wires, etc., which comprises applying a thermally stable imide-forming polymer to the ends to be spliced and then converting the imide-forming polymer to a polyimide.

3,607,508

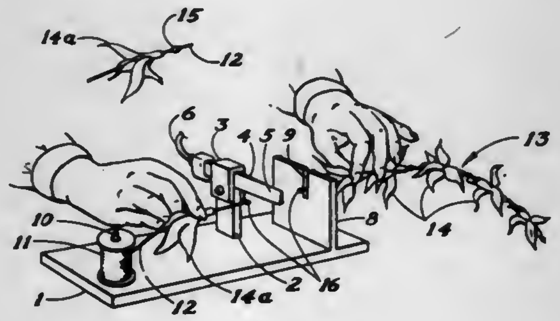
METHOD OF PRODUCING AN ORNAMENTAL GARLAND

Edward Ha, Jr., 49-721 Kam Hwy., Star Route Box 470, Kaaawa, Hawaii

Filed June 11, 1969, Ser. No. 832,331

Int. Cl. B31f *5/00*

U.S. Cl. 156—159 **10 Claims**



A method of producing an ornamental garland comprised of a row of tubular-necked flowers strung on a length of filament as, for example, in the manufacture of a lei; the method including the steps—repetitive in progression along the filament—of severing the filament at a point adjacent one flower previously strung thereon, the severed filament then providing one portion with said one flower thereon and a separate portion, stringing another flower on said separate portion of the filament, and then connecting said portions of the filament at their severed ends and in a fashion to produce an enlargement which—as a stop—limits movement of such other flower toward said one flower.

3,607,509

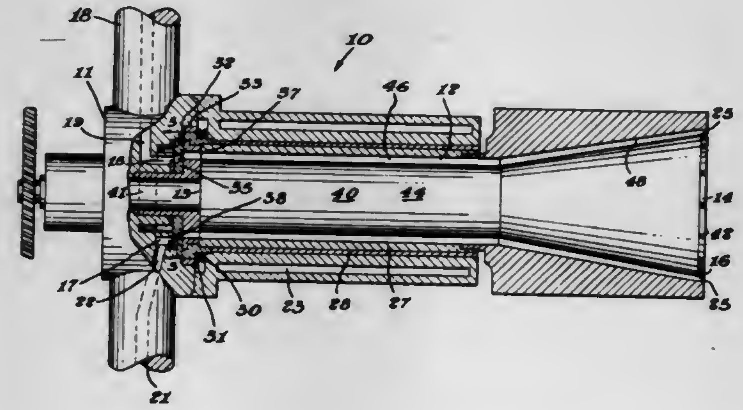
PRODUCTION OF NETLIKE STRUCTURES

Walter J. Schrenk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 505,674, Oct. 29, 1965, Pat. No. 3,498,873. Filed July 16, 1969, Ser. No. 856,513

Int. Cl. D04h *3/07, 3/16;* **B29f** *3/12*

U.S. Cl. 156—167 **7 Claims**



Thermoplastic net comprising bonded filaments which have at least two different thermoplastic components disposed in generally spirally arranged alternating layers wherein the material of one of the layers is monodirectionally oriented and the remaining material is generally unoriented is disclosed.

3,607,510

PLASTIC PIPE MANUFACTURE

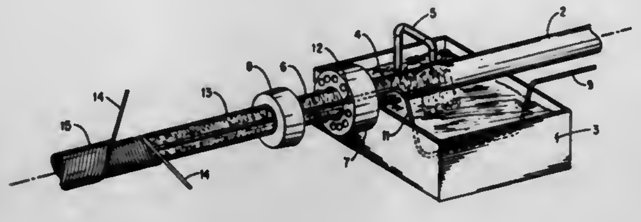
Pietro L. Serafino, and Pietro L. Culla, both of Torin, Italy, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Aug. 18, 1969, Ser. No. 850,971

Claims priority, application Italy, Oct. 14, 1968, 40450-A/68

Int. Cl. B65h *81/03*

U.S. Cl. 156—172 **5 Claims**



Lightweight pipe having a plastic core and a fibrous wrapping is obtained by first coating the core with a composition containing a polymerizable liquid resin, typically a polyester resin, and an accelerator therefor. Thereafter fibrous material in bundles, impregnated with a substance such as the liquid resin composition, is applied to the resin-bearing core, along the axis of the core, with adjacent bundles being spaced apart. Catalyst-impregnated additional fibrous material is then wound about the intermediate fiber-and-resin-bearing article. This wound article is next wrapped with fibrous mats impregnated with the liquid resin composition or the like and is subsequently wrapped with plastic film. The resulting article has enhanced burst strength and is particularly useful in irrigation.

3,607,511

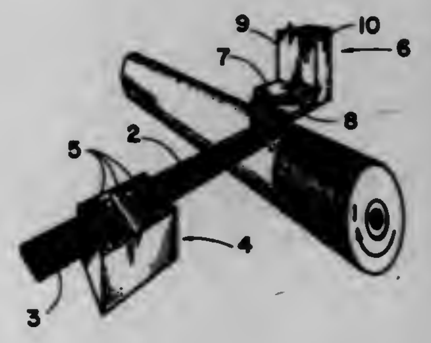
COMPOSITE REINFORCED PLASTIC PIPE

James L. Grosh, Los Altos, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 641,962, May 29, 1967, Pat. No. 3,470,917, Continuation-in-part of application Ser. No. 546,676, May 2, 1966, now Patent No. 3,483,896. Filed June 25, 1969, Ser. No. 842,075

Int. Cl. B65h *54/00*

U.S. Cl. 156—173 **4 Claims**



A process for providing reinforced plastic pipe wherein particulate material is incorporated in the resin matrix between the layers of continuous filaments. The particulate material is applied in a bimodal manner with coarse particles being applied first and fine particles applied over the coarse particles to fill the spaces therebetween.

3,607,512

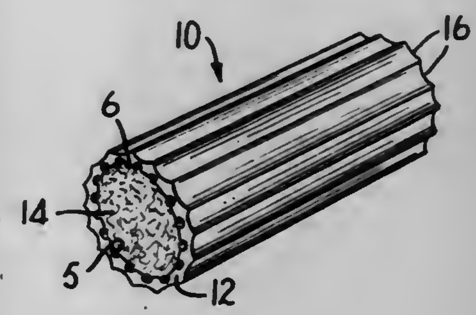
EXTRUDING TOW FILLED MOUTHPIECE ROD HAVING SERRATED INNER SURFACES CLENCHING THE TOW

George L. Mathe, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 3, 1969, Ser. No. 788,903

Int. Cl. B32b *5/00*

U.S. Cl. 156—178 **2 Claims**



A method with which a continuous length, tubular article filled with a tow of a fibrous material and having serrated or grooved inner surfaces clenching the tow is disclosed. The article is formed by extruding thermoplastic material as a tubular sheath having a smooth inner surface at extrusion around an advancing tow of fibers, the serrations or grooves being formed by spraying a cooling fluid against the inner wall surface of the plastic sheath at circularly spaced locations therein as it leaves the extrusion aperture. The cooling fluid functions to chill and set the inner wall surface sufficiently so that when the tubular sheath is thereafter pulled down from an initial to a final size, the sheath will pull down to a lesser extent at said spaced locations than at the still more plastic surfaces intervening said spaced locations thereby forming longitudinal grooves in the sheath inner wall surface.

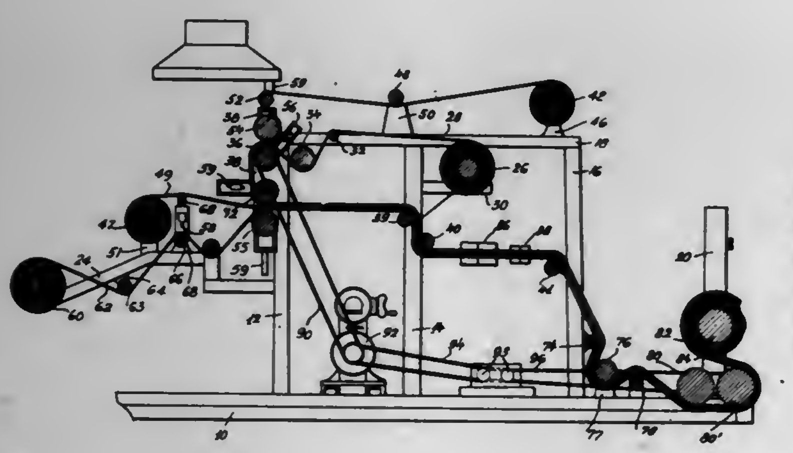
3,607,513
MANUFACTURE OF FIBER-REINFORCED, BITUMEN-CONTAINING PRODUCTS

Sigbert Samson, Rozendaal, Gilderland, Netherlands, assignor to American Enka Corporation, Enka, N.C.
Filed June 21, 1968, Ser. No. 738,815
Claims priority, application Netherlands, June 29, 1967, 67-09049
Int. Cl. B29h *9/04*
U.S. Cl. 156—181 **8 Claims**

A process for producing fiber-reinforced, bitumen-containing products which comprises reinforcing a bitumen-containing material with a fibrous material comprised of synthetic linear polycondensation products and substantially enhancing the adhesion between the fibrous material and the bitumen with the presence of an auxiliary substance comprising a resinous material that has a softening point between 50° and 160° C., is miscible with bitumen, and in the molten condition, acts as a wetting agent on the fibrous material of the polycondensation products.

3,607,514
METHOD OF PRODUCING A FLOCKED NONWOVEN LAMINATE STRUCTURE

Milton K. Solomon, 198 Beach 133rd St., and Norman Weill, 132-17 Boulevard, both of Belle Harbor, N.Y.
Continuation-in-part of application Ser. No. 366,054, May 8, 1965, now Patent No. 3,368,932, dated Feb. 13, 1968. This application Nov. 6, 1967, Ser. No. 680,785
Int. Cl. B32b *31/00*
U.S. Cl. 156—182 **2 Claims**

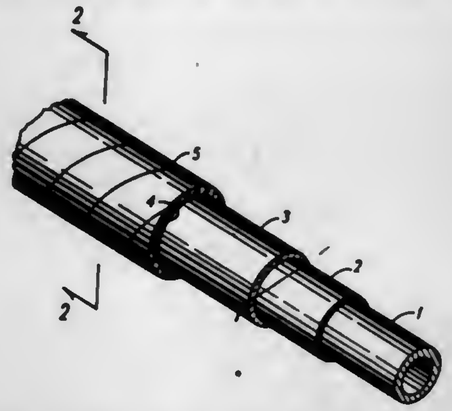


A method of forming a flocked nonwoven fabric laminate structure having a plurality of layers by a single continuous operation. The method consists of heating a sheet or web of foamed polyurethane plastic material on one surface thereof, for a time sufficient to fuse a layer thereto, pressing a sheet of nylon tricot material to the tacky surface, simultaneously heating a second sheet or web of foamed polyurethane plastic material on one surface thereof for a time sufficient to fuse a layer thereto, pressing a second sheet of nylon net material to the tacky surface of the second sheet, then pressing the tacky nylon webs together to secure them together, and spraying the outer surface of one sheet of foamed polyurethane plastic material with flock substance.

3,607,515
ASBESTOS PIPELINE FELT

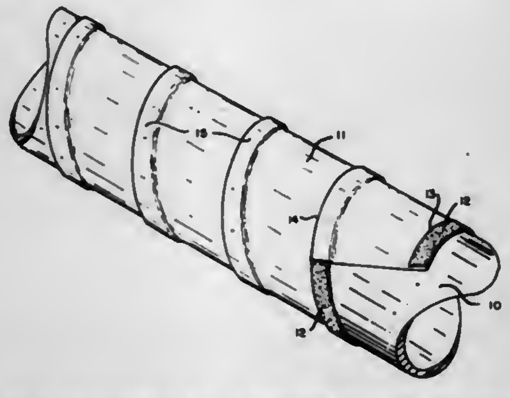
Walter L. Pennie, Elmhurst, Ill., assignor to Allied Chemical Corporation, New York, N.Y.
Filed July 18, 1967, Ser. No. 654,139
Int. Cl. B65h *81/04*
U.S. Cl. 156—187 **6 Claims**

An improved corrosion and stress resistant coating-wrap system for pipelines is made by coating the contacting surface of asbestos felt with a thin coating layer of either coal tar compounds having softening points in the range of about 120° F.–250° F. or natural and synthetic rubber-based coating compounds. Subsequent application of this coated felt to the hot enamel coating on a pipeline results in a void free felt-enamel interface.



3,607,516
METHODS OF COATING PIPE

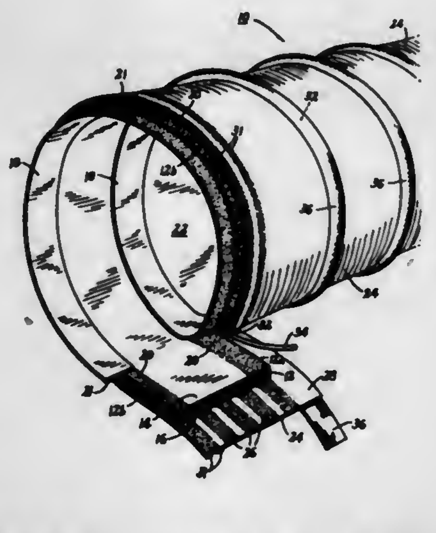
John H. Royston, Pittsburgh, Pa., assignor to Royston Laboratories, Inc.
Filed Dec. 2, 1969, Ser. No. 881,365
Int. Cl. B65h *81/03*
U.S. Cl. 156—187 **5 Claims**



A method is provided for forming an electrically insulative pipe by the steps of assembling an elongated wrapper having an inner band of self-adhering adhesive and an outer band of a mechanically strong material and wrapping said wrapper about a pipe to be protected with one side edge being bent upon itself so as to form an exposed edge of adhesive engaging the adhesive on the opposite edges of the wrap whereby to form an adhesive-to-adhesive bond at the overlap.

3,607,517
METHOD OF MAKING INSULATED WIRE-REINFORCED FLEXIBLE HOSE

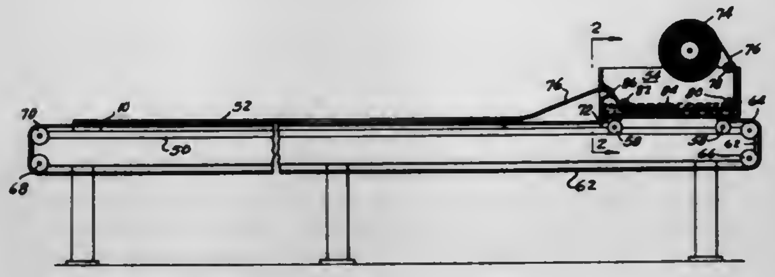
Richard B. Pelley, East Kingston, N.H.; James R. Warner, Groveland, Mass., and George E. Herbert, Haverhill, Mass., assignors to Callahan Mining Corporation, New York, N.Y.
Division of Ser. No. 717,304, Mar. 24, 1968, Pat. No. 3,554,237. Filed Jan. 27, 1970, Ser. No. 10,104
Int. Cl. B65h *81/04*
U.S. Cl. 156—195 **7 Claims**



The disclosed hose comprises an inner strip of insulating material laminated with heat reflective sheeting and covered with a flexible tape. The composite is wound into a hose with the lateral edges of consecutive tape convolutions overlapped and adhered together to form a helical seam. A helically deformed reinforcing wire is lodged in the helical seam just prior to its formation and a wear strip may be adhered thereover for abrasion resistance. The inner seam of the hose is sealed by a band of heat-reflective material. The hose is manufactured by a continuous process in which the insulating strip, band, tape and wear strip are fed through a pressure guide which bonds them together, and the composite hose cover is then fed to hose forming apparatus.

3,607,518
METHOD OF PRODUCING EXPANDED DOUBLE-FACED HONEYCOMB PANELS

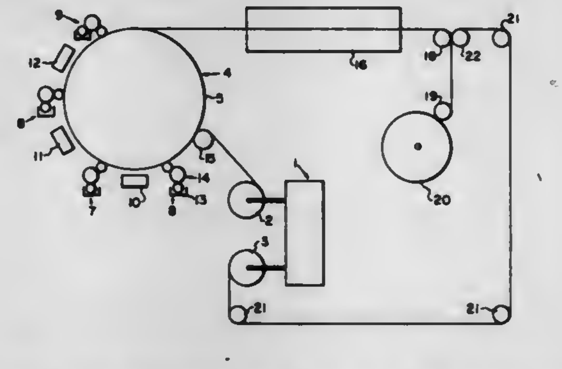
Daniel H. Ellinor, 11418 Denton Drive, Dallas, Tex.
Filed Dec. 12, 1969, Ser. No. 884,676
Int. Cl. B31d *3/02*
U.S. Cl. 156—197 **10 Claims**



Compressed honeycomb stock is expanded to fit inside a frame and temporarily secured in the frame in expanded condition. The frame, with the expanded honeycomb therein, is then surfaced on both sides with layers of scrim or cheesecloth which have been saturated with a solution of thermoplastic or thermosetting material in a volatile solvent. The cheesecloth is firmly in contact with the frame and with the crests of the honeycomb structure and adheres thereto with the thermoplastic acting as an adhesive. The solvent is permitted to evaporate and the frame, with the cloth facings, is then faced on both sides with a layer of metallic foil, preferably aluminum. The composite structure is then placed in a heated press for a time and at a temperature and pressure sufficient to reactivate the thermoplastic residue in the cloth and bring about a firm bond between the frame, the honeycomb, the cloth and the aluminum foil whereby to produce a panel or sandwich of honeycomb stock surfaced on each side with metallic foil.

3,607,519
LAMINATION OF PLASTIC PACKAGING FILMS

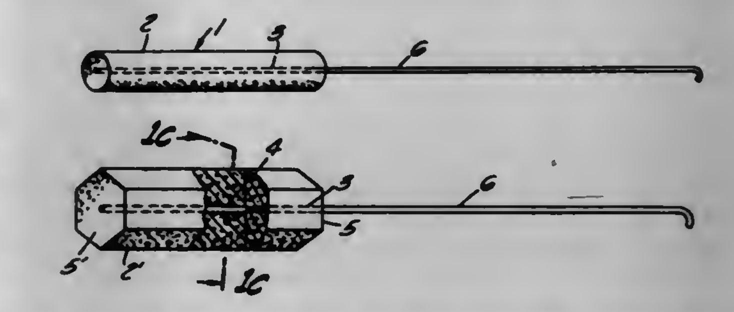
Myron S. Beyer, Danville; Stanley Manne, Markham, and G. R. Ramagopal, Urbana, all of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.
Filed Aug. 7, 1967, Ser. No. 658,764
Int. Cl. B32b *31/20, 31/12*
U.S. Cl. 156—192 **9 Claims**



Plastic film laminates for use in the packaging of food products and other materials are formed by adhesive lamination of polyethylene films to films such as nylon, polyester, cellophane, polypropylene, polyethylene, polyvinyl chloride, etc., by adhesive lamination. The polyethylene portion of the laminate provides for heat sealability of the resulting film laminate. The nylon, polyester, cellophane, polypropylene, etc., film gives flex strength, abrasion resistance, gloss, vacuum formability, barrier properties, etc., to the wound laminate. These film laminates are particularly useful in vacuum-forming packing machines and for manufacturing plastic pouches. In the manufacture of the film laminate, a pressure-sensitive but curable adhesive is applied to one of the plies of the film laminate on an ordinary plastic-film-printing press and the two films combined and rolled up on a windup reel. The pressure applied to the film laminate in the windup reel is the only laminating force applied to the film and the film laminate is cured simply by being stored under pressure of being wound on the rolls. After curing of the adhesive, the plastic film plies cannot be separated without being torn. If desired, the film to which the adhesive is applied may also be printed prior to application of the adhesive so that the resulting film laminate is provided with a desired imprint positioned between the film plies.

3,607,520
TAMPON MANUFACTURE

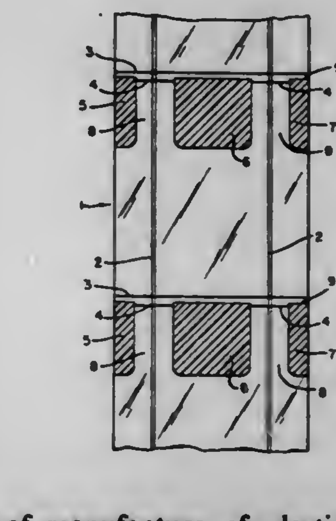
John Leslie Jones, Pasadena, Calif., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Division of Ser. No. 619,509, Feb. 13, 1967, which is a continuation-in-part of Ser. No. 350,193, Mar. 9, 1964, Pat. No. 3,342,237.
Filed Nov. 26, 1969, Ser. No. 879,984
Int. Cl. B29c *17/00*
U.S. Cl. 156—198 **6 Claims**



A process and apparatus for simultaneously manufacturing a multiplicity of one-piece, regenerated cellulose sponge tampons, for permanently bonding a coaxially disposed withdrawal string within the interior of each of the tampon bodies, and for compressing the tampons into their final form.

3,607,521
PLASTIC BAG OR THE LIKE WITH HANDLE

Heikki S. Suominen; Viljo J. Makinen, and Aarno S. Lindstrom, all of Tampere, Finland, assignor to said Suominen, by said Makinen and Linstrom
Division of Ser. No. 699,988, Jan. 8, 1968, Pat. No. 3,482,761. Filed May 9, 1969, Ser. No. 823,322
1969, Ser. No. 823,322
Int. Cl. B31f *1/00*
U.S. Cl. 156—199 **1 Claim**



A method of manufacture of plastic bags with handles formed from a tube of thin film plastic material and with the handles formed from the same material as the bag walls. Portions of the sidewalls of the tube of plastic material are cut away to form the handles, and in order to provide handles of sufficient strength to carry the load and to properly distribute the resulting stresses over the entire sidewalls of the bag, the tubular thin film of plastic is extruded so as to have portions thereof formed of a thicker material than the rest of the bag walls, and the handles are located so as to include portions of the thicker material.

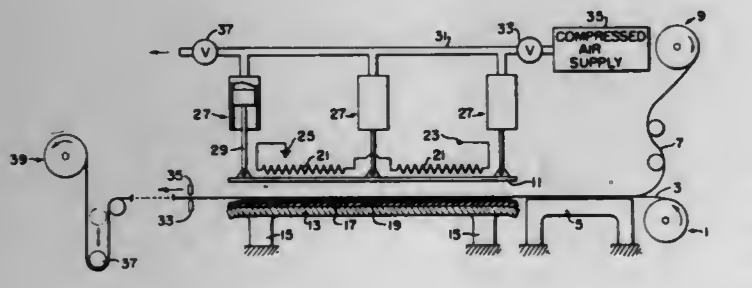
3,607,522
PROCESS FOR FINISHING SUBSTITUTE LEATHER MATERIALS

Fred N. Phillips, Jr., Boston, and Donald Tobin, Needham, both of Mass., assignors to Allied Research and Development Co., Boston, Mass.

Filed Apr. 26, 1967, Ser. No. 633,942

Int. Cl. B32b *31/14*

U.S. Cl. 156—209 **8 Claims**



This application discloses a process for finishing long sheets of substitute leather material having one surface of thermoplastic material by contacting the thermoplastic surface with a similarly shaped textured sheet, heating the superposed sheets under pressure in a series of sequential steps in a press, feeding each untreated portion to the press as the preceding portion is finished, and removing the textured sheet only after tests on a sample show the desired finish has been produced; if not, the superposed sheets are reprocessed. The full specification should be consulted for an understanding of the invention.

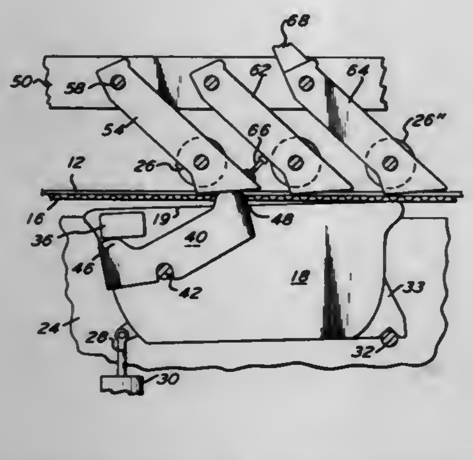
3,607,523
DOUBLE FACER HEAT CONTROL METHOD AND APPARATUS

George W. McGirr, Delran, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed July 28, 1969, Ser. No. 845,443

Int. Cl. B31f *1/20*

U.S. Cl. 156—210 **8 Claims**



A double facer machine for making double-faced corrugated paperboard is provided with an automatic control for ballast rolls. The automatic control is responsive to movement of heated platens. As surface contact between the corrugated paperboard and the platens decreases due to movement of the platens away from the paperboard, ballast rolls are caused to move upwardly away from the paperboard.

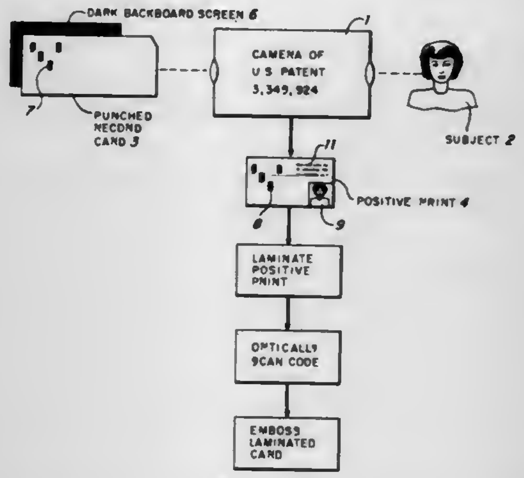
3,607,524
METHOD OF PRODUCING A LAMINATED IMPRINTED DATA-BEARING CARD WHICH METHOD ELIMINATES COLLATION ERRORS

Roger J. Kuhns, Lincoln, Mass., assignor to Avant Incorporated, Lincoln, Mass.

Filed Jan. 13, 1970, Ser. No. 2,454

Int. Cl. B44b *5/00*

U.S. Cl. 156—220 **6 Claims**



A novel method of producing a laminated data-bearing card which involves photographing a subject together with a keypunched record card relating to the subject upon positive diffusion transfer film. The card is photographed against a dark background so that dark marks are recorded upon the positive print which marks correspond to the punched holes. The positive print is thereafter laminated to a protective cover sheet and is scanned by a code reader which in turn drives a printer which automatically embosses indicia such as a social security number corresponding to the code upon the card.

3,607,525
METHOD FOR TRANSFER OF A PICTURE FROM AN INITIAL SUPPORT TO A NEW SUPPORT

Oscar R. F. Strom, Nigerian Civil Aviation Training Centre, Zaria, Nigeria

Filed July 17, 1968, Ser. No. 745,610

Int. Cl. B44c *1/16*

U.S. Cl. 156—235 **2 Claims**

In the transfer of a picture from an initial support to a new support, a method which comprises pressing a sheet covered with a glue means layer onto a printing dye layer contained on an original support, removing the sheet to leave the glue means layer on the printing dye layer, pressing into contact with the glue means layer an intermediate support comprising in layers above each other, a clear lacquer layer, an attachment means layer easily releasable from the lacquer layer and a base support layer, removing the original support, applying the intermediate support with said printing dye layer attached thereto onto a new support and removing the base support layer of the intermediate support.

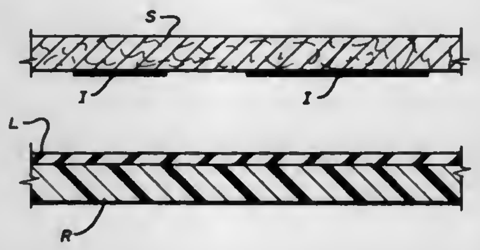
3,607,526
TRANSFER PROCESS

Stanley R. Biegen, 2043 S. University Blvd., Denver, Colo.

Filed Oct. 30, 1968, Ser. No. 771,775

Int. Cl. B44c *1/16*

U.S. Cl. 156—235 **16 Claims**



The disclosure concerns a method of transferring printed indicia from a paper sheet to a backing surface member by first pressing a film of tacky, contact adhesive, held on a release sheet, against the paper sheet. The sandwich consisting of the paper, the indicia, the adhesive and the release sheet is then soaked in water to remove the paper, leaving the indicia on the surface of the film, but eliminating to a substantial extent, the tacky character of the surface. Next, the backing surface is prepared to receive the indicia-carrying film, by either wetting the same with a solvent such as lacquer thinner which will render the adhesive film tacky or applying a layer of tacky, contact adhesive to this backing surface. It was determined that heat and pressure may also be operative to effect the transfer to the backing surface.

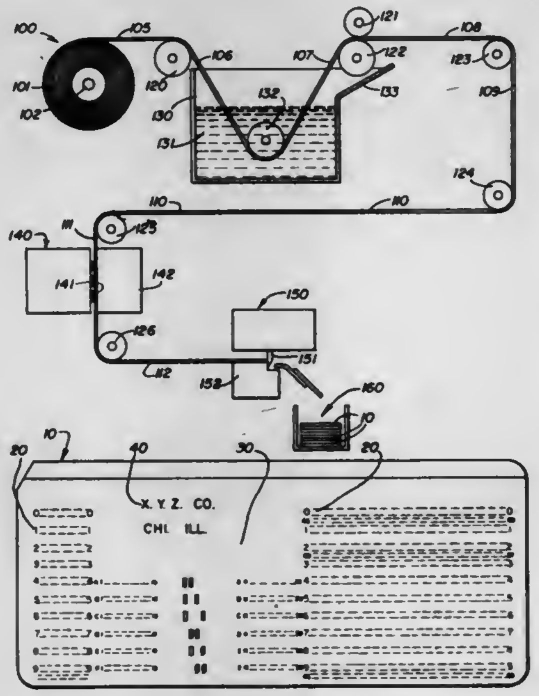
3,607,527
ADDRESSING METHODS

Ronald I. Morley, Minneapolis; Raymond W. Biernat, Minneapolis, and Arnold J. Smidt-Hayer, St. Paul, all of Minn., assignors to Dymo Industries, Inc., Berkeley, Calif.

Filed June 5, 1967, Ser. No. 643,718

Int. Cl. B41m *5/00, 7/00*

U.S. Cl. 156—238 **9 Claims**



There is disclosed an addressing system including an addressing apparatus and addressing methods and materials used therein. A set of master cards is provided formed of porous tab card stock impregnated with a sensitizer vaporizable at 100° C. to 160° C. and having a selected area on one face thereof for the address in infrared absorbing ink; as disclosed, the master card is made by passing the porous tab card stock through a bath containing the sensitizer and a solvent therefor, after which the solvent is evaporated. The set of master cards is then employed to provide a master tape that is a strip of nonporous release material that is oleophobic and transparent to infrared radiation, and carrying thereon reverse reading copies of the addresses in the form of bodies of partially fused novel toner applied to one side of the master tape; the addresses are transferred from the master cards to the master tape utilizing a novel apparatus and method wherein a printing station is provided having a first source of infrared radiation thereat, first feed mechanism for feeding the master cards sequentially to the printing station and a second feed mechanism for feeding the master tape to the printing station to position a predetermined portion of the master tape immediately adjacent to the address on a master card positioned at the printing station, thereafter operating the first source of infrared radiation to vaporize from the master card sensitizer in areas corresponding to the address thereon onto the one surface of the master tape, applying a toner to the master tape to adhere toner to the sensitizer in areas corresponding to the address, and thereafter exposing the master tape carrying the powdered toner to a second source of infrared radiation for at least partially fusing the toner to provide a reverse reading copy of the address on the master tape. The novel toner comprises a vehicle body of wood rosin and polymerized resin, modifiers of polyamide resin and a hydrocarbon resin and pigment of carbon black. The master tape with the addresses thereon in partially fused toner is then fed to an addressing station where an envelope or other article to be addressed is placed with the surface thereof against the partially fused toner on a section of the master tape after which heat and pressure are applied thereto to transfer the bodies of toner to the envelope and fully to fuse the toner to provide on the envelope bodies of fully fused toner in areas corresponding to the address on a master card.

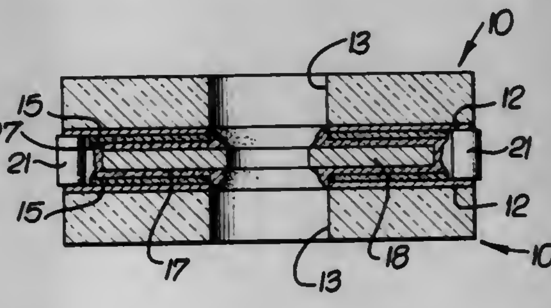
3,607,528
MAGNETIC MEMORY MEMBERS AND METHODS OF MAKING THE SAME

James S. Gassaway, 2356 Glendon Ave., Los Angeles, Calif. 90064

Filed Feb. 8, 1968, Ser. No. 704,031

Int. Cl. B44d *1/34, 1/40*

U.S. Cl. 156—230 **31 Claims**



A magnetic memory member produced by providing a master member of glass, or the like, having a predetermined finished surface to which a very thin silver or other parting agent may be applied, a magnetic coating of a desired thickness being applied to the parting agent, which coating may, for example, be magnetic particles in a binder or magnetic material plated directly on the parting agent, the magnetic coating assuming the same surface condition as the master member. A substrate is secured to the magnetic coating, the parting agent released from the master member and the parting agent removed from the coating. Where the magnetic coating includes a binder with magnetic particles therewithin, the magnetic memory member so produced has a dense film of magnetic particles concentrated at the outer surface of the coating for subsequent coaction with a recording or reproducing head.

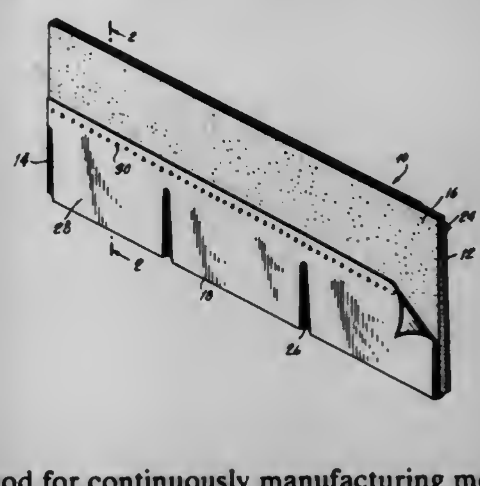
3,607,529
METHOD FOR FORMING TAPERED COMPOSITE METAL-CLAD SHINGLES

Alexander A. Chalmers, Chagrin Falls, Ohio, and S. Ted Giunta, Caldwell, N.J., assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Mar. 6, 1969, Ser. No. 804,822

Int. Cl. E04d *15/07*

U.S. Cl. 156—238 **6 Claims**



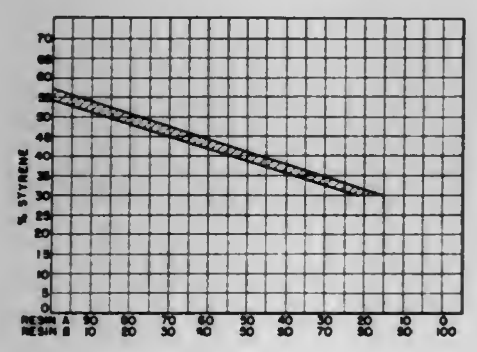
A method for continuously manufacturing metal-clad shingles which have a taper from their forward edge to their rear edge, which comprises the steps of depositing a plasticized asphaltic composition upon a continuously moving backing web, shaping the composition to form a tapered shingle body having at its rear edge a composition thickness not substantially greater than the backing web and a greater thickness at the forward body edge. A metal foil is adhesively applied to the rear face of the continuously moving backing web, and a metallic sheathing is continuously preformed and applied to a portion of the face of the asphaltic material on the backing web as the backing web continues its forward movement.

3,607,530

PREPARATION OF GLASS-REINFORCED POLYESTER SHEETS

Robert E. Carpenter, Minnetonka, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Dec. 13, 1967, Ser. No. 690,143
Int. Cl. B29c *19/00*
U.S. Cl. 156—245 2 Claims



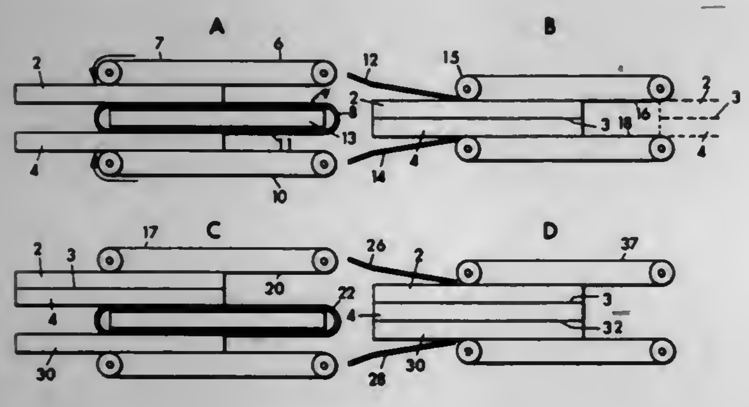
A method for the preparation of clear or transparent glass-reinforced plastic sheets or panels using a mixture of two different resins in controlled proportions. Rigid fiberglass-reinforced polyester panels (e.g., corrugated or decorative), having a negligible glass pattern when observed with the unaided eye, can be prepared in this manner. Such glass panels have a uniform appearance and can be made substantially clear or transparent.

3,607,531

CRYOGENIC INSULATION SYSTEM

Augustus B. Small, Brussels, Belgium; Paul T. Gorman, Arenzano, Italy, and Frederick J. McGarry, Weston, Mass., assignors to Esso Research and Engineering Company

Filed July 12, 1967, Ser. No. 652,748
Int. Cl. B32b *31/18*
U.S. Cl. 156—251 6 Claims



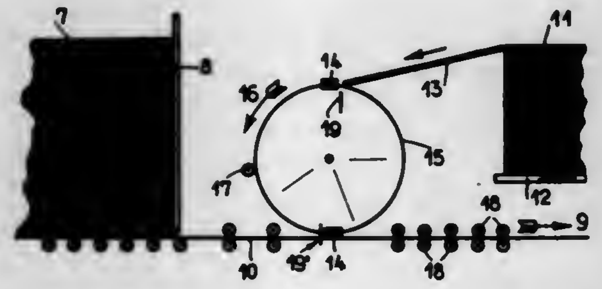
According to the teachings of the instant invention, a high-strength cellular plastic insulation system comprised of alternating layers of cellular plastic and thin columns of solid plastic is formed by heat sealing blocks of the cellular plastic together. The resulting product, while retaining its high insulation efficiency, has greatly improved compressive strength and increased fatigue resistance.

3,607,532

METHOD AND APPARATUS FOR THE REFERENCED LABELING OF SHEET MATERIAL

Henri Bobst, Lausanne, Switzerland, assignor to J. Bobst Et Fils S. A., Lausanne, Switzerland

Filed May 12, 1967, Ser. No. 638,144
Claims priority, application Switzerland, May 20, 1966, 7425/66
Int. Cl. B65c *1/02*
U.S. Cl. 156—252 10 Claims



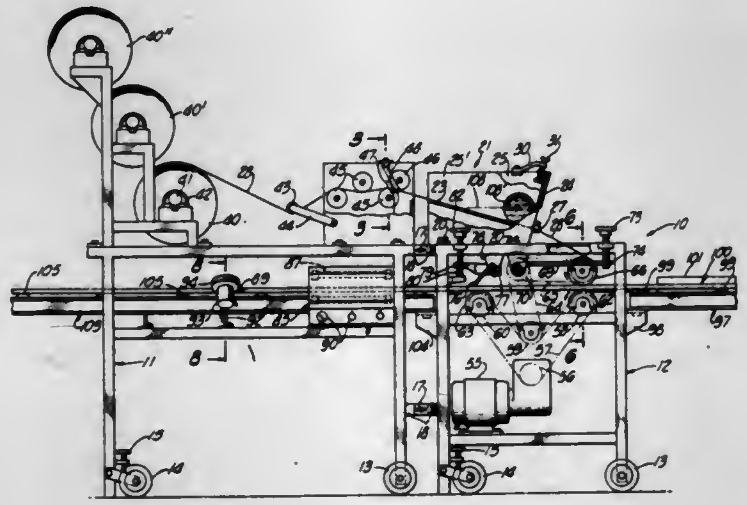
Accurate and consistent application of a label or the like to a sheet of cardboard or the like in fixed relation to a reference point on the cardboard is effected by an apparatus comprising a sheet material feeding means, a label feeding means, a label transport means synchronized with each of said sheet and label feeding means, a referencing means on said transport means in fixed relation to said label being carried thereby to cut and index said sheet material and thereby provide a uniform reference for application of said label and for further processing of said labeled sheet material. The label may be glued and as the glued label is brought into contact with the cardboard the cutting tool is operated to simultaneously notch the cardboard and/or the paper in the vicinity of the cardboard edge so that the composite cardboard-labeled sheet will be in exact relation to the print regardless of any irregularities which the edge of the cardboard might possess.

3,607,533

PORTABLE LAMINATING MACHINE AND METHOD

Alfred A. Moore, San Gabriel, Calif., assignor to Paste-Well Corporation, El Monte, Calif.

Filed Aug. 19, 1969, Ser. No. 851,236
Int. Cl. B32b *31/10;* **B05c** *3/18*
U.S. Cl. 156—259 38 Claims



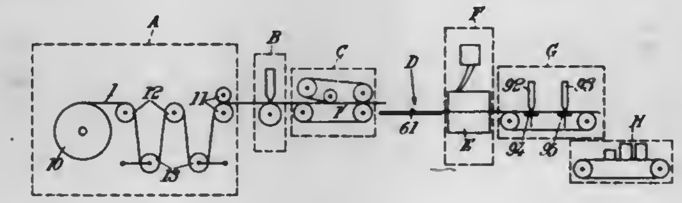
A compact, portable machine and method for laminating sheet stock to substrate and equally suitable for onsite or central plant lamination of a decorative cover sheet to wallboard and the like building components with minimum handling and labor. The adhesive applicator has no moving parts and applies uniform coating to the web as the web is advanced beneath a supply of adhesive thereby applying a drag on the supply to create a roll of adhesive rolling counter to the direction of the web travel thereby applying the outermost layer of adhesive to the web. A single pair of laminating rollers press the laminae together while advancing the same. Rotating brushes depress the marginal edges of the web about the edges of the substrate without need for adjustment to compensate for tolerance variations in substrate width or synchronizing the brush speed with that of the laminate.

3,607,534

BAGMAKING APPARATUSES

Isaj Gutman, Harrow, England, assignor to Flexigrip, Inc., Orangeburg, N.Y.

Filed May 8, 1969, Ser. No. 823,012
Claims priority, application Great Britain, May 9, 1968, 22,073/68
Int. Cl. B32b *7/06*
U.S. Cl. 156—269 12 Claims



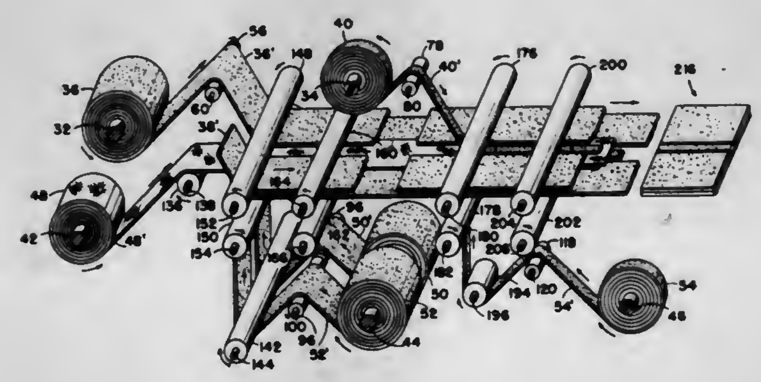
The bagmaking apparatus comprises a supply supplying intermittently a flattened tube of synthetic material having a lateral fastener; a transverse cutting and welding device; a device for placing a slider on the fastener of each tube element delimited by the cuts and welds; and a welding device for welding the cut portions of the tube elements.

3,607,535

APPARATUS AND METHOD FOR MAKING AND COATING BOOK COVER BOARD STRUCTURES

Edward K. Mullen, Westfield, and Leewood C. Carter, Warren Township, both of N.J., assignors to Book Covers, Incorporated, Newark, N.J.

Division of Ser. No. 446,820, Apr. 9, 1965, Pat. No. 3,476,406.
Filed Nov. 29, 1968, Ser. No. 805,057
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—269 16 Claims



A book cover board construction is provided wherein a multilayer spine board and a pair of multilayer leaf boards are hinged together by a strip of material between the respective panels and the entire structure encapsulated by an adherent coating material. The coating material is applied in fluid form so as to cover the panels in a thin coating. The coating can be applied by curtain coating or by spraying.

3,607,536

TREATMENT OF RESIN SURFACES TO IMPROVE ADHESIVE BONDING, ADHESIVE BONDING PROCESS AND RESIN BODIES WITH TREATED SURFACES

Robert Anthony Bragole, West Peabody, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Nov. 7, 1968, Ser. No. 774,204
Int. Cl. B44d *1/50;* **C08f** *27/10*
U.S. Cl. 156—272 20 Claims

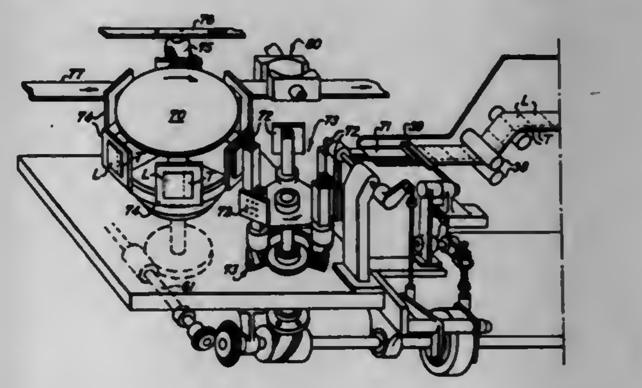
Surfaces of difficultly bondable resinous substrates, e.g. polyethylene, are treated to provide an organic isocyanate and a photosensitizer at the surface and thereafter subjected to ultraviolet radiation. The radiation causes an interaction between the isocyanate and the surface of the substrate to create a surface stratum for strong adhesive bonding.

3,607,537

SYSTEM OF LABEL VERIFICATION CONTROL AND PRODUCT ACCOUNTABILITY

George W. Von Hofe, Millington, and Edwin K. Wolff, Stockholm, both of N.J., assignors to New Jersey Machine Corporation, Hoboken, N.J.

Filed Feb. 12, 1968, Ser. No. 704,916
Int. Cl. B65c *9/46, 3/14*
U.S. Cl. 156—277 6 Claims



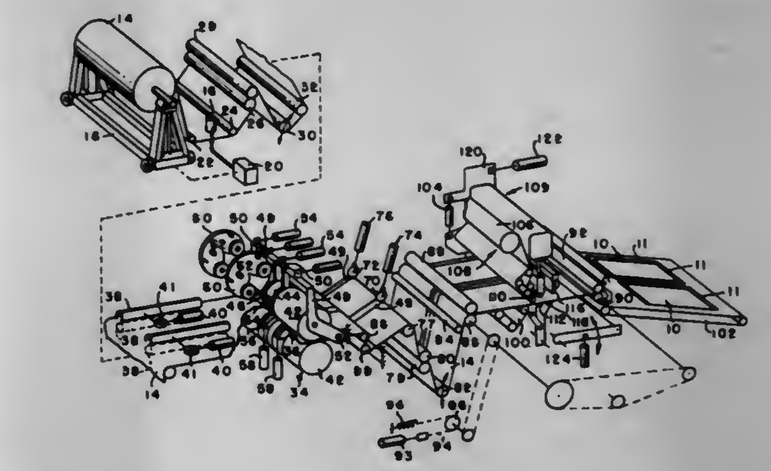
A system for preparing a continuous web with a longitudinally extending series of labels, a longitudinally extending series of slit tags which are removed by the manufacture for his records, and a longitudinally extending series of tabs which are removed by the distributor on delivery of a labeled package to a consumer. Control information is simultaneously applied to the associated labels, tabs and slit tags when the labels are printed on the web and in the labeling machine to effect verification of the labels and the accountability of the products labeled thereby.

3,607,538

SEALED EDGE PROCESS

Oscar M. Fuller, Gaffney, and Norman E. Klein, Inman, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 20, 1969, Ser. No. 834,943
Int. Cl. B32b *31/20, 31/08*
U.S. Cl. 156—271 2 Claims



Edge-sealing process to produce a textile product which is automatically sealed on at least three edges with a plastic film material to eliminate the sewing of a hem.

3,607,539
METHODS OF MANUFACTURING FACING PANELS

Romil Tonisberg, Bromolla, Sweden, assignor to Aktiebalaget Ifoverken, Bromolla, Sweden
Filed Dec. 23, 1969, Ser. No. 887,788
Claims priority, application Sweden, Jan. 3, 1969, 43/69
Int. Cl. B32b *31/06*
U.S. Cl. 156—276 **3 Claims**

A novel method of manufacturing decorative facing panels comprises continuously applying the materials of the panels to a continuously moving supporting foil. To begin with, a layer of reinforcing material is applied to the supporting foil and impregnated with resin, and on top of this layer there is placed a sand layer, whereupon another layer of reinforcing material is applied and impregnated with resin. Finally, the decorative layer is placed in the uppermost layer of reinforcing material.

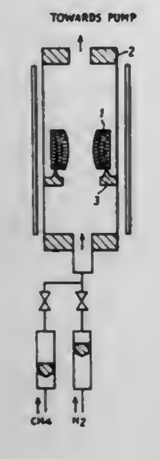
3,607,540
METHOD OF APPLYING PRESSURE-SENSITIVE SHEETING

Leon E. Hoogstoel, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.
Filed June 11, 1968, Ser. No. 736,170
Int. Cl. B32b *31/12*
U.S. Cl. 156—289 **9 Claims**

A porous surface to which a pressure-sensitive adhesive coated material is to be applied is first wet with a liquid to provide a temporary barrier film. The pressure-sensitive adhesive sheet material is then applied to the surface and because of such temporary liquid barrier film can be slid over and around on the porous surface to position it accurately in place. The temporary barrier film disappears by means of evaporation or absorption of the liquid into the porous substrate and the sheet material then becomes firmly affixed to the porous surface.

3,607,541
PROCESS FOR PRODUCING PYROLYTIC CARBON IMPREGNATED THERMAL INSULATING CARBONIZED FELT

Francis Tombrel, Saint-Gratien, France, assignor to Societe Le Carbone Lorraine, Paris, France
Filed June 30, 1967, Ser. No. 650,366
Claims priority, application France, Feb. 27, 1967, 96228
Int. Cl. C09j *5/00;* **C10b** *49/00;* **F16l** *59/00*
U.S. Cl. 156—280 **6 Claims**



For high-temperature thermal insulation, e.g., for rockets or missiles, a low density carbon felt assembly of carbonized viscose rayon felt is appropriately shaped and subjected to pyrolysis with a gas-containing chemically combined carbon, e.g., methane, at a reduced pressure and at low or high temperatures, e.g., 1,800° C.

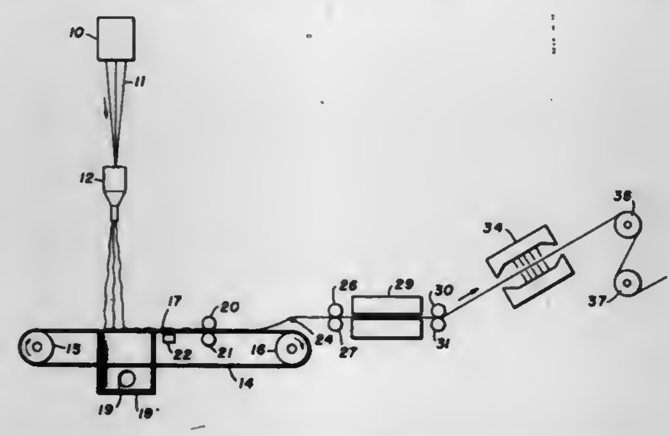
3,607,542
UNDERWATER ADHESIVE PROCESS

Fred Leonard, 7713 Beech Tree Road, Bethesda, Md., and George Brandes, 8750 Georgia Ave., Silver Spring, Md.
Continuation-in-part of application Ser. No. 699,062, Jan. 19, 1968, Continuation-in-part of application Ser. No. 586,316, Oct. 10, 1966, now abandoned. This application Sept. 12, 1969, Ser. No. 857,538
Int. Cl. C09j *5/04*
U.S. Cl. 156—285 **1 Claim**

Pastes of α-cyanoacrylic acid esters and insoluble fillers can be applied to surfaces submerged in water for securing thereto, in situ, a wide variety of metallic and nonmetallic substances.

3,607,543
PROCESS FOR FORMING LIGHTWEIGHT NYLON NONWOVEN WEB

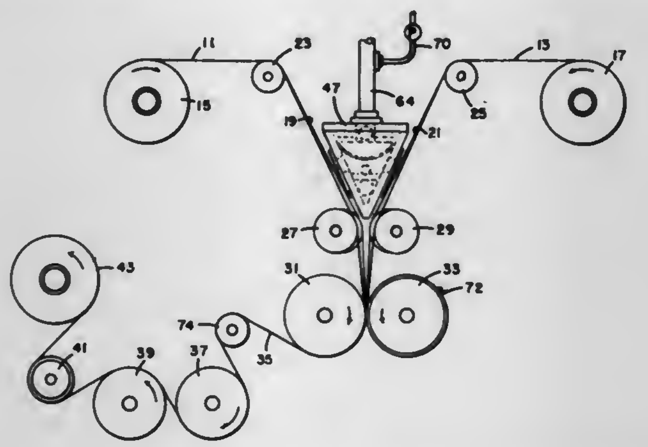
Philip J. Stevenson, 2624 McDowell Road, and Robert P. Teulings, Hudson Road, both of Durham, N.C.
Filed Mar. 21, 1969, Ser. No. 809,319
Int. Cl. C09j *7/00*
U.S. Cl. 156—306 **9 Claims**



A method of forming a lightweight nonwoven bonded web of nylon comprises collecting nylon filaments on a moving foraminous belt at a rate to form a web which weighs less than 1 oz/yd^2, providing a vacuum beneath the belt, contacting the web while on the belt with an activating gas to lightly bond the filaments together at filament crossover points, and removing the web from the belt prior to the belt's entering an arc around a belt-supporting roller.

3,607,544
MIXTURE OF STEAM, ALCOHOL AND POLYALKYLENEIMINE AS ADHESION PROMOTER FOR LAMINATES

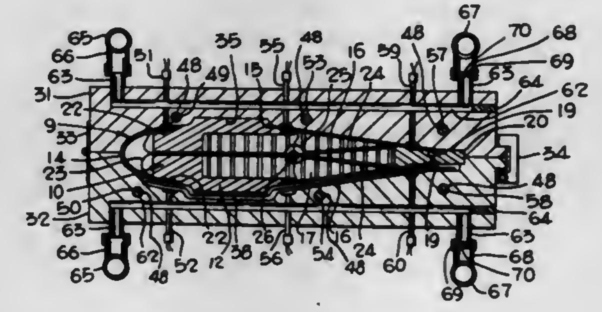
Richard J. Earner, Claymont, Del., and Raymond A. Thomas, Jr., Elkins Park, Pa., assignors to FMC Corp., Philadelphia, Pa.
Filed Apr. 30, 1969, Ser. No. 820,382
Int. Cl. C09j *5/02, 5/06*
U.S. Cl. 156—307 **5 Claims**



A mixture of steam and a volatile alcohol incorporating an additive proportion of a polyalkyleneimine, a method of laminating using this mixture and a laminate prepared therewith, are disclosed herein.

3,607,545
METHOD FOR ADHESIVELY BONDING HELICOPTER ROTOR BLADE ASSEMBLIES

John T. Parsons, and Jack L. Ritchey, both of Traverse City, Mich., assignors to Hitco, Gardena, Calif.
Filed Aug. 8, 1968, Ser. No. 751,297
Int. Cl. C09j *5/00*
U.S. Cl. 156—311 **3 Claims**



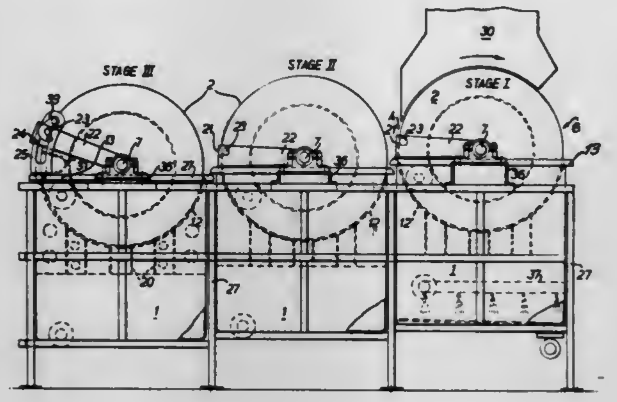
Method for controlling the heating and cooling steps in adhesive bonding of helicopter rotor blades and similar articles containing metal masses which serve as heat sinks. To bring the temperature at the adhesive bond line equally to flow temperature, local heaters, which roughly define separate zones of a metal pressure fixture, are separately energized to raise the zone temperatures unequally, to compensate for the local drain of heat into the heat sink. For cooling, liquid is pumped through passages while the local heaters cycle on as required to equalize the rate of cooling.

ERRATUM

For Class 156—329 see:
Patent No. 3,606,922

3,607,546
APPARATUS FOR ACID POLISHING OR LIKE TREATMENT OF GLASS ARTICLES

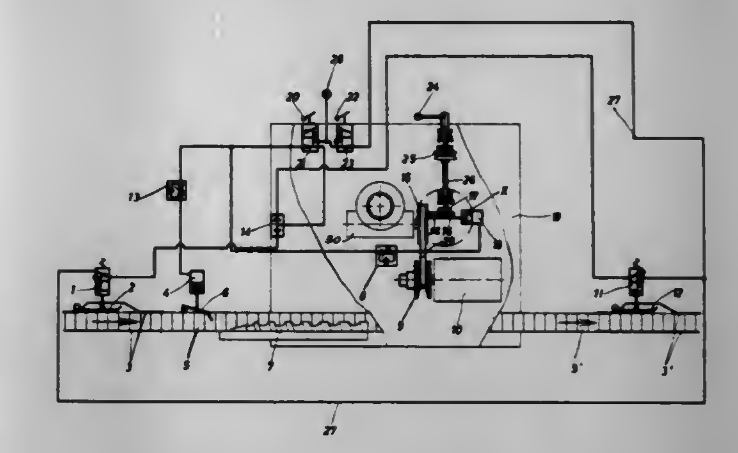
Michael Grealey, Brierley Hill, England, assignor to Stevens and Williams Limited, Brierley Hill, Staffordshire, England
Filed Nov. 25, 1968, Ser. No. 778,581
Claims priority, application Great Britain, Dec. 15, 1967, 57,230/67
Int. Cl. C03c *15/00*
U.S. Cl. 156—345 **12 Claims**



Apparatus for acid-polishing glassware by loading the articles into a revolving cage or cages having a movement in a vertical plane. Each cage is divided into peripherally spaced pockets or compartments to receive glasses, the pockets facing in opposite directions so that articles are placed in position as the pocket is moving in a downward path, discharge which takes place on the upward path, being semiautomatic utilizing gravity. The machine is emptied by a simple semiautomatic transfer system where the glasses are automatically transferred into a duplicate apparatus for swilling (second stage) final demineralized swilling (third stage) and hot air drying (fourth stage), producing the finished article with a minimum of labor and effort and to a high standard of quality.

3,607,547
LABELING MACHINE

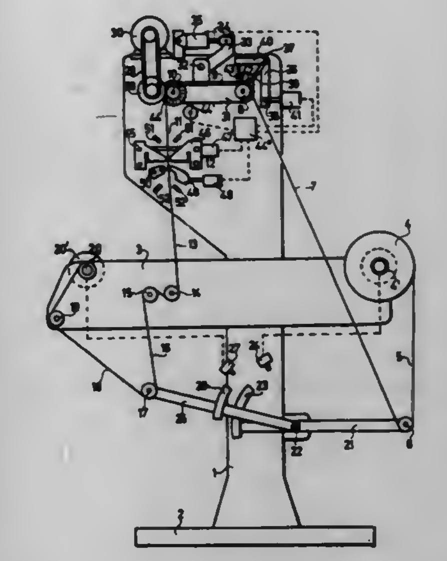
Hermann Kronseder, Berliner Str. 10, 8402 Neutraubling, Germany
Filed July 30, 1969, Ser. No. 846,077
Claims, priority, application Germany, Oct. 16, 1968, P 18 034 332.4
Int. Cl. B32b *35/00*
U.S. Cl. 156—351 **5 Claims**



A labeling machine for handling upright containers, such as bottles or cans, and having a bottle input conveyor, a bottle output conveyor, a label-applying mechanism, variable speed drive, sensors at the input and output conveyors, a container stop at the input conveyor and control mechanism subject to the sensors to actuate said stop and said variable speed drive to stop containers coming into the machine and reduce machine speed when the sensors respectively sense a deficiency of containers at the machine input and/or an accumulation of containers at the machine output.

3,607,548
WELDING MACHINE FOR PLASTIC FOIL WEB

Viggo Rasmus Hansen, Naestved, and Per Juel Hagemeister, Glostrup, both of Denmark, assignors to C. A. Harnden Limited, Hyde, Cheshire, England
Filed Oct. 4, 1968, Ser. No. 765,183
Claims priority, application Denmark, Oct. 10, 1967, 5039
Int. Cl. G05g *23/02*
U.S. Cl. 156—358 **7 Claims**



A machine for carrying out transverse weldings and perforations in a web of plastic foil, in which the foil web is advanced in stages, having supplying means for the web and means for welding and perforating. The advancing means is positioned between the supplying means and the treatment means. A mechanism is provided for keeping the section of the web between the advancing means and the treatment means slackened during the welding operation, the perforating means forming part of this mechanism.

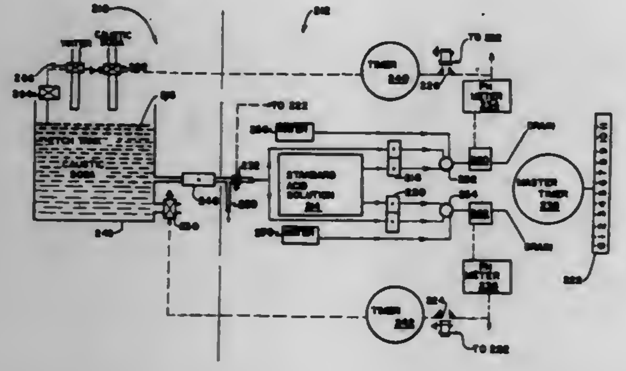
3,607,549
AUTOMATIC CHEMICAL ANALYZER AND CONTROLLER

Ewald J. Bielefeld, Jr., Benbrook, and Maurice J. Puma, Fort Worth, both of Tex., assignors to General Dynamics Corporation

Filed Oct. 9, 1968, Ser. No. 766,161

Int. Cl. G01n *31/16;* **C23f** *1/08;* **G05d** *11/08*

U.S. Cl. 156—345 **2 Claims**



A method and apparatus for the automatic monitoring, analyzing and controlling of the etch rate and chemical concentration of a chemical-milling solution responsive to pH values at first and second equivalence points for both caustic soda and inhibitor.

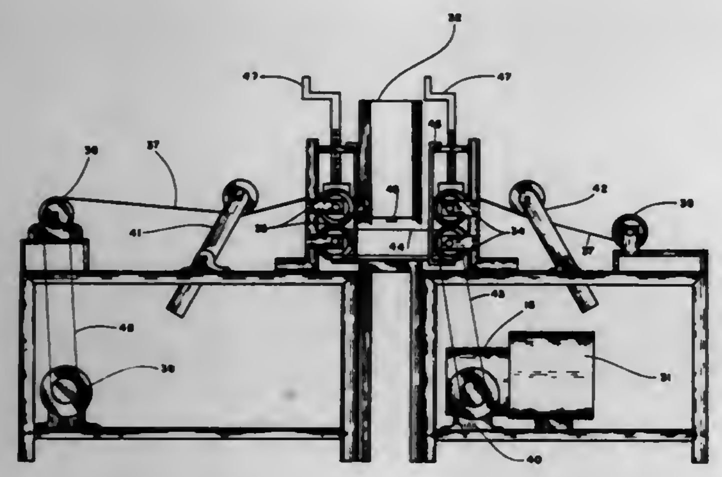
3,607,550
APPARATUS FOR MAKING PLASTIC BAGS

Thomas Cass Ballanger, Hickory; Jake Schoonderwoerd, Hickory, and John H. Oldham, Charlotte, all of N.C., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Nov. 22, 1968, Ser. No. 778,217

Int. Cl. B32b *31/04*

U.S. Cl. 156—358 **8 Claims**



Disclosed herein is an apparatus for effecting longitudinally spaced apart transverse seals with a high degree of linear accuracy in a continuous web of plastic material having a plurality of layers. The apparatus comprises two sets of dual sealer drive rollers for advancing the web past the sealer, and a means for accurately controlling the operation of the sealer and drive rolls. This control means comprises a digital converter operatively in contact with the drive rollers, adapted to convert the angle through which the roller has rotated into a train of electrical pulses. A counter is operatively connected to the converter and is responsive to the train of pulses so that when a predetermined number of these pulses are recorded, an electrical signal is emitted that activates a brake to stop the drive rolls and concomitantly activates a sealer.

3,607,551
ROTARY PRESS WASTE REMOVAL AND FOLDING APPARATUS

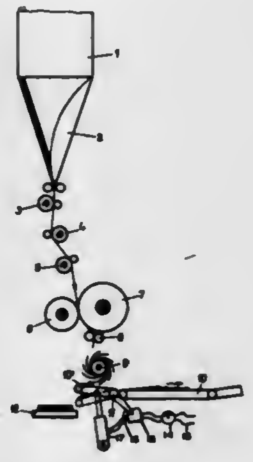
Karl A. Klingler, Frankenthal/Pfalz, Germany, assignor to Schnellpressenfabrik Frankenthal, Albert & Cie Aktiengesellschaft, Frankenthal/Pfalz, Germany

Filed Dec. 13, 1968, Ser. No. 783,629

Claims priority, application Germany, Dec. 18, 1967, P 16 11 301.2

Int. Cl. B32b *31/14*

U.S. Cl. 156—361 **2 Claims**



An apparatus for the removal of waste printed material used in conjunction with a folding device on a rotary printing press. The apparatus includes a conveyor system having a pivotable cantilevered conveyor and a fixed conveyor. Both conveyors have conveyor belts which are capable of running independently of each other. The cantilevered conveyor with its independent delivery belt can be pivoted by a suitable adjusting device that is actuated by a timer. The timer also activates a reversible motor, connected to the cantilevered conveyor so that as this conveyor is rotated downwardly, the motor reverses its direction and speeds up its conveyor belt, thus depositing wasted printed material in a remote location for subsequent removal.

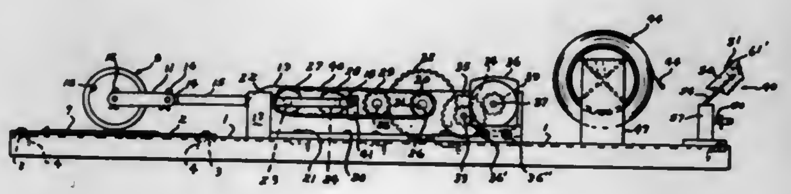
3,607,552
APPARATUS FOR MAKING STANDARDIZED TAPE SPECIMENS

Sylvester G. Domen, Sr., 3165 Orleans St., Mobile, Ala.

Filed Dec. 31, 1968, Ser. No. 789,056

Int. Cl. G01n *19/04;* **B30n** *3/02;* **G01b** *19/08*

U.S. Cl. 156—378 **5 Claims**



The apparatus employs a polished steel substrate on which a test tape with its adhesive side down is pressed by a rubber coated roller. The latter is moved over the tape in one direction and then in the reverse direction. The roller is connnected through a swinging yoke and a swivel joint to one end of a horizontally positioned actuator rod. The other end of the rod is provided with a slot which receives one end of a short rod which is adapted to rotate within the slot. The last mentioned rod, at its opposite end is fixedly secured to a small metal plate which is secured to an outer link of a chain passing over a number of aligned sprocket wheels. One of the

wheels is driven by a gear to which power is transmitted through a gear train by a synchronous motor. The small plate, in following the moving chain link, causes the actuator rod to travel back and forth in strict alignment with its axis and at the same instantaneous speed. Thus, the roller is given a strictly uniform speed over the tape. The tape is dispensed from a large roll and cut to proper width by a pair of trapezoidal-shaped cutters, spaced 1 inch apart over which the tape is pulled from the roll.

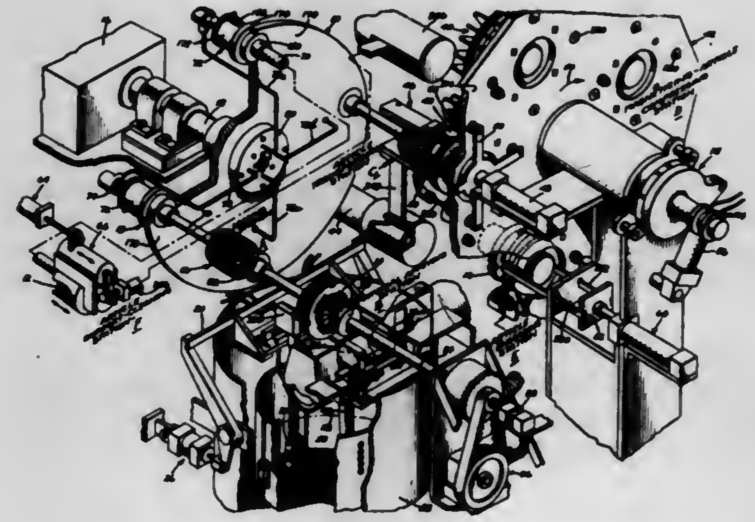
3,607,553
APPARATUS FOR PRODUCING A PROTECTIVE COATING ON THE SURFACE OF A MANUFACTURED ARTICLE

Harold L. Fritzsche, Fort Wayne, Ind., assignor to General Electric Company

Filed Feb. 27, 1969, Ser. No. 803,036

Int. Cl. B29c *25/00;* **B44d** *1/094;* **C23c** *3/04*

U.S. Cl. 156—380 **15 Claims**



Apparatus for forming a protective coating on an article of manufacture, such as a core formed from a stack of magnetic laminations. The material from which the protective coating is formed contains magnetic particles. Each core is carried by a different one of a plurality of article support and masking assemblies mounted on a first conveyor; e.g., a first rotary indexing assembly which rotates each of the support and masking assemblies sequentially through an Article-Loading Station, Material-Applying Station, Article-Transferring Station, and an Article Support-Cleaning Station. At the Article-Transferring Station, the core is transferred to a Magnetizing-Article Compressing Station, which transports the coated core to an Article-Unloading Station on a second conveyor. At the Magnetizing and Compressing Station, a magnetic field magnetically compresses the laminations and concurrently magnetically draws the protective coating material to selected surfaces of the core in order to form an increased thickness of coating material on those selected surfaces. Each of the support and masking assemblies is connected through a rotary valve to a fluid pressure source which feeds fluid through the assembly to accomplish masking and cooling of selected regions of the core. At the Article Support-Cleaning Station each support and masking assembly is mechanically cleaned to remove any residual protective coating material therefrom before the assembly is again indexed to the Article-Loading Station.

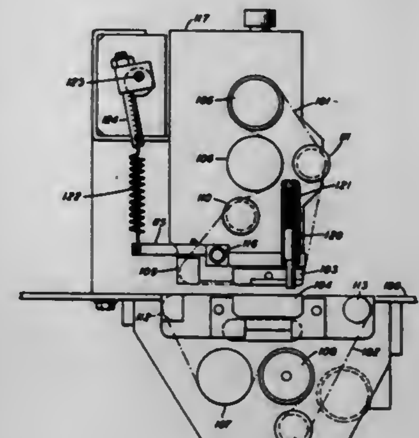
3,607,554
APPARATUS FOR JOINING SHEET MATERIAL ALONG A TWO-DIMENSIONAL CONTOUR

William R. Heffernan, Westfield, N.J., assignor to Bondit Corp., Newark, N.J.

Filed Mar. 12, 1969, Ser. No. 806,489

Int. Cl. B29c *24/00, 27/04;* **B32b** *31/04*

U.S. Cl. 156—380 **7 Claims**



Apparatus for joining layers of sheet material along a two-dimensional contour by means of dry thermally active adhesive therebetween comprises belt means for moving the materials lengthwise in a predetermined first direction, radiofrequency means for heating the adhesive to cause it to liquefy or plasticize, first means for applying a releasable compressive pressure to the materials and the adhesive in the area to be joined, and pivot pin means for applying constant compressive pressure to an isolated point of the materials, thereby, upon the momentary release of the pressure applied by the first means, to allow the materials to be pivoted about the isolated point and to be joined along the contour.

3,607,555
MULTIPLE WORK STATION TIRE BUILDING MACHINE

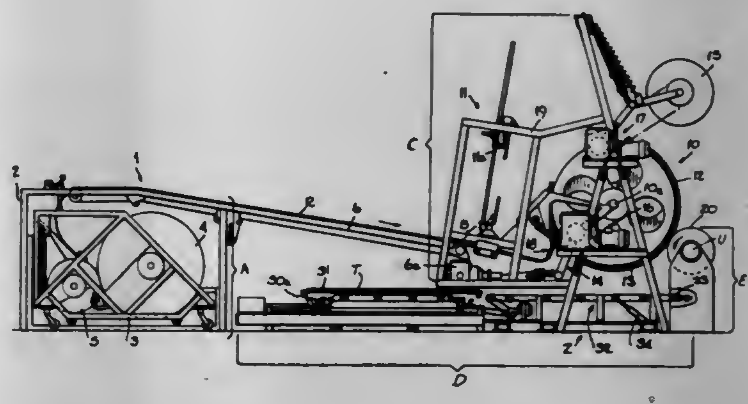
Jean Leblond, and Jean Biet, both of Compiegne, Oise, France, assignors to Uniroyal Englebert France S.A., Paris, France

Filed Sept. 10, 1968, Ser. No. 758,788

Claims priority, application France, Sept. 17, 1967, 121393

Int. Cl. B29h *17/20, 17/26*

U.S. Cl. 156—396 **11 Claims**



A tire-building machine, having a feed mechanism for supplying a continuous strip of breaker material, a severing device which severs the strip into strip portions, a transfer mechanism for transporting the severed strip portions to a given location at which there is positioned a breaker building drum and including an arrangement for applying to the building drum at said location the severed strip portions in alternatingly opposed orientation, a tire carcass support and shaping member spaced from the building drum, a transport mechanism for transporting tire tread material toward the breaker building drum positioned at said given location and for there applying the tread material to an annular breaker built up thereon, and a transfer ring for transferring a completed breaker-tread assembly from the building drum onto a carcass supported on the shaping member.

3,607,556

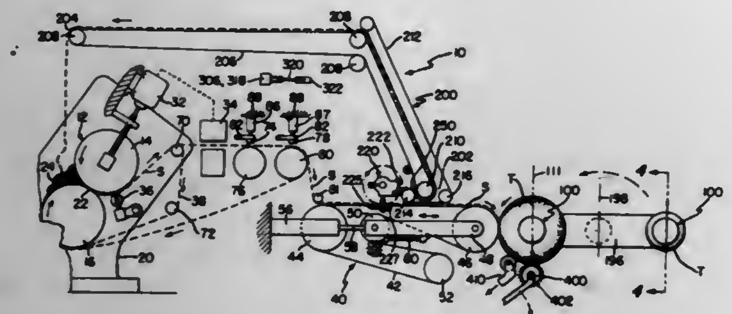
TIRE BUILDING MACHINE INCLUDING AN ELASTOMER CONVEYOR

Paul E. Appleby, Cuyahoga Falls, and Christopher E. Christie, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 11, 1969, Ser. No. 832,163

Int. Cl. B29h *17/10*

U.S. Cl. 156—405 **4 Claims**



A mill for forming a thin sheet of a curable elastomer and a tire carcass-receiving drum are combined in apparatus including a conveyor spaced from the mill and engageable with a tire carcass on the drum so as to rotate the drum and wind thereon a continuous plurality of convolutions of the sheet. Slitters located in a space traversed by the sheet between the mill and the conveyor and controlled by a profiling device to be movable in timed relation to the rotation of the carcass vary the width or widths of the sheet portion applied while a second conveyor diverts remaining portions of the sheet from the first conveyor for return to the mill.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,607,557

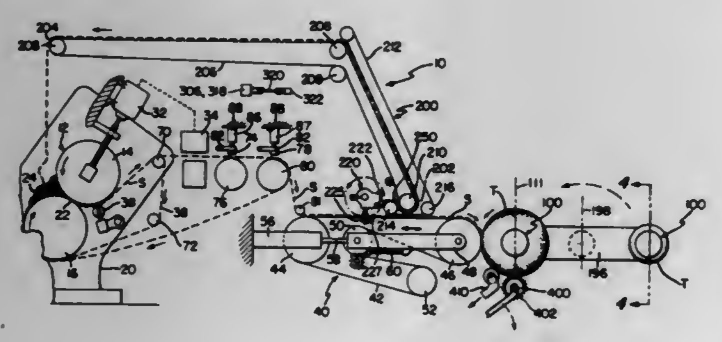
MACHINE FOR FORMING AND WINDING TREAD MATERIAL ON A TIRE

William R. Casey, and Christopher E. Christie, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 11, 1969, Ser. No. 832,362

Int. Cl. B29h *17/10, 17/37*

U.S. Cl. 156—405 **3 Claims**



A mill for forming a thin sheet of a curable elastomer and a tire carcass-receiving drum are combined in apparatus including a conveyor spaced from the mill and engageable with a tire carcass on the drum so as to rotate the drum and wind thereon a continuous plurality of convolutions of the sheet. Slitters located in a space traversed by the sheet between the mill and the conveyor and controlled by a profiling device to be movable in timed relation to the rotation of the carcass vary the width or widths of the sheet portion applied while a second conveyor diverts remaining portions of the sheet from the first conveyor for return to the mill.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,607,558

TIRE BUILDING FORMER HAVING CYLINDRICAL AND TOROIDAL CONFIGURATIONS

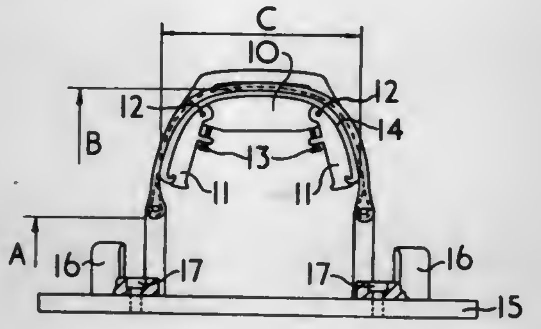
Noel Nebout, Montlucon Allier, France, assignor to The Dunlop Company Limited, London, England

Filed Mar. 9, 1967, Ser. No. 621,855

Claims priority, application France, Mar. 11, 1966, 53,139

Int. Cl. B29h *17/06, 17/16, 17/26*

U.S. Cl. 156—415 **16 Claims**



A tire-building former having radially and axially movable supporting elements to provide a tire-building surface which is rigid in both cylindrical and toroidal configurations of the former specifically to facilitate the building of radial-ply tires.

3,607,559

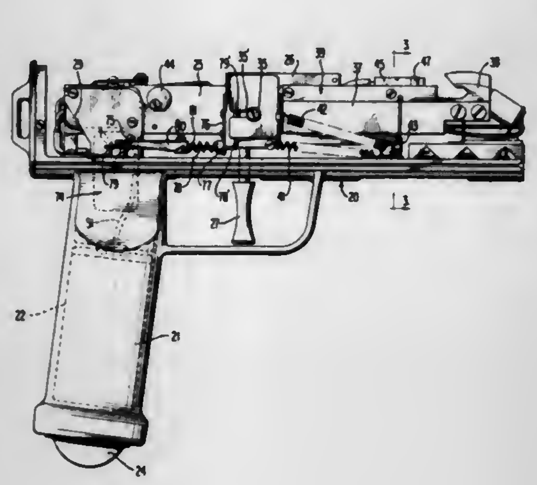
PORTABLE SYNTHETIC YARN-SPLICING APPARATUS

Willie V. Williams, P. O. Box 687, Dalton, Ga.

Filed Jan. 9, 1969, Ser. No. 790,077

Int. Cl. B65h *21/00*

U.S. Cl. 156—433 **2 Claims**



A lightweight pistol-type synthetic yarn slicer employing radiant heat to fuse the synthetic yarn without direct contact between the yarn and heating element. The apparatus contains a first retarder for the trigger stroke causing the yarn ends to traverse the heating zone in a controlled manner and a second retarder unit causes delayed activation of an indicator which, in effect, times the exposure of the synthetic yarn to the radiant heat.

3,607,560

APPARATUS FOR MAKING MONOFILAMENT FIBER OPTIC RIBBONS FOR COHERENT FIBERSCOPES

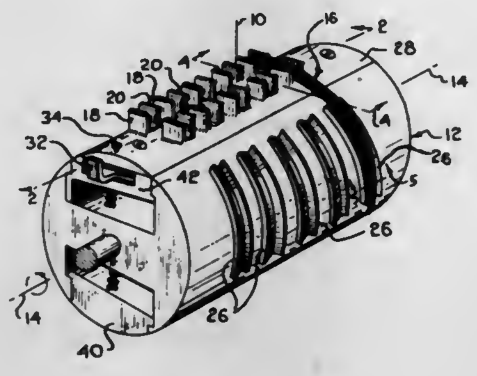
William F. Peck, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 15, 1969, Ser. No. 824,764

Int. Cl. B65h *65/00*

U.S. Cl. 156—433 **6 Claims**

Monofilament optical fiber ribbons are formed by winding fiber convolutions one over another throughout a short section of the length of each ribbon, bringing the convolutions into accurately superimposed parallel relationship in said section of the ribbon and cementing across the section to hold same intact for assembling and cementing together corresponding sections of a number of the ribbons as a fiberscope body.



3,607,561

APPARATUS FOR THE MANUFACTURE OF REINFORCED FLEXIBLE BELTS

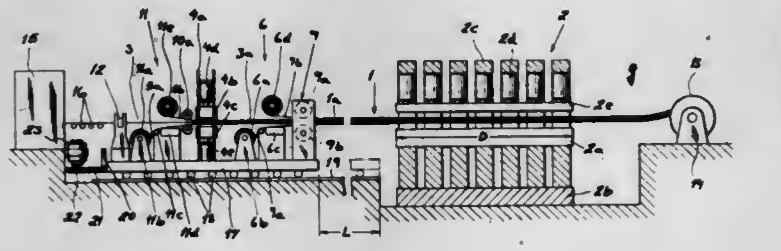
Gerhard Hutz, Suchteln/Rhineland, and H. J. Bongers, Huls, near Krefeld, both of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Filed Jan. 25, 1967, Ser. No. 611,626

Claims priority, application Germany, Jan. 26, 1966, S 101638

Int. Cl. B29h *9/00*

U.S. Cl. 156—437 **4 Claims**



System for the production of steel-wire-reinforced flexible belts consisting at least of an elastomeric or synthetic-resin upper layer, a core in which the steel strands are embedded and a lower layer of such material bonded into a unitary laminate while the reinforcing strands are tensioned; the invention resides in the use of an equalizing press adapted to bond the core to the steel strands prior to the application of the upper and lower layers and the final laminating phase. A supply means for each of the outer layers is provided downstream of the equalizing press and the layer is, in turn, downstream of a further supply system adapted to sandwich the generally planar array of longitudinally extending tension steel strands between layers of the core material.

3,607,562

APPARATUS FOR FASTENING SLATS TOGETHER EDGE-TO-EDGE

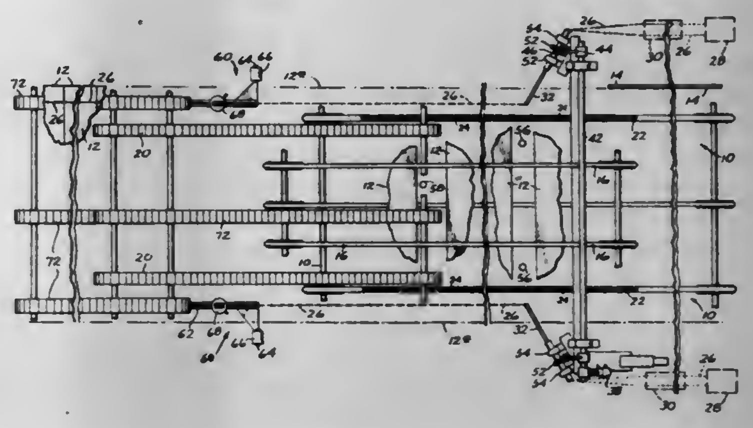
Roderick L. Brenneman, Corvallis, and Daniel M. McLean, Independance, both of Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Aug. 13, 1968, Ser. No. 752,285

Int. Cl. E06b *9/26*

U.S. Cl. 156—439 **8 Claims**

Substantially rectangular sheets are fastened together edge-to-edge by arranging the sheets in spaced relation, arranging a pair of continuous strings, one above and one below the sheets, traversing the strings and the spaced sheets relative to each other, crisscrossing the strings sequentially at each between-sheet space, crowding the sheets together edgewise, and fastening the crisscrossed strings to the sheets, thereby fastening the sheets together in a continuous strip.



3,607,563

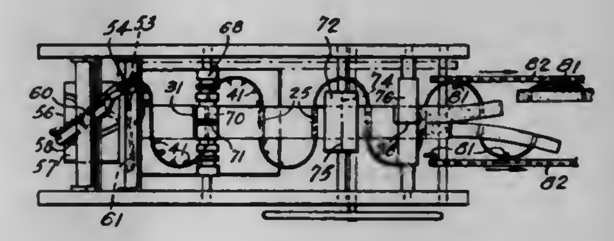
BAG HANDLE FORMING MACHINE

John Bagnall, 1785 Caledonia Road, Mount Royal, Quebec, Canada

Filed Aug. 22, 1967, Ser. No. 662,399

Int. Cl. B65h *17/00*

U.S. Cl. 156—439 **4 Claims**



The present invention relates to the formation of bag handles by laying a handle rope into a sinusoidal curve over a glued tape with the tape forming the axis of the curve and then superimposing the second tape over the first tape and severing the tapes along said axis and finally alternatively separating formed handles from opposite sides of said axis.

3,607,564

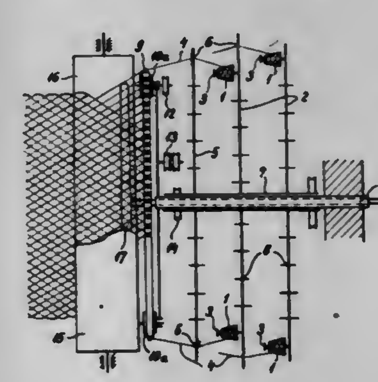
APPARATUS FOR THE PRODUCTION OF TEXTILE MATERIALS WHICH ARE NOT KNOTTED AND ARE NOT WOVEN

Istvan Rasko, Budapest, Hungary, assignor to Jarmufejlesztesi Intezet, Budapest, Hungary

Filed Oct. 5, 1967, Ser. No. 673,217

Int. Cl. B65h *57/16*

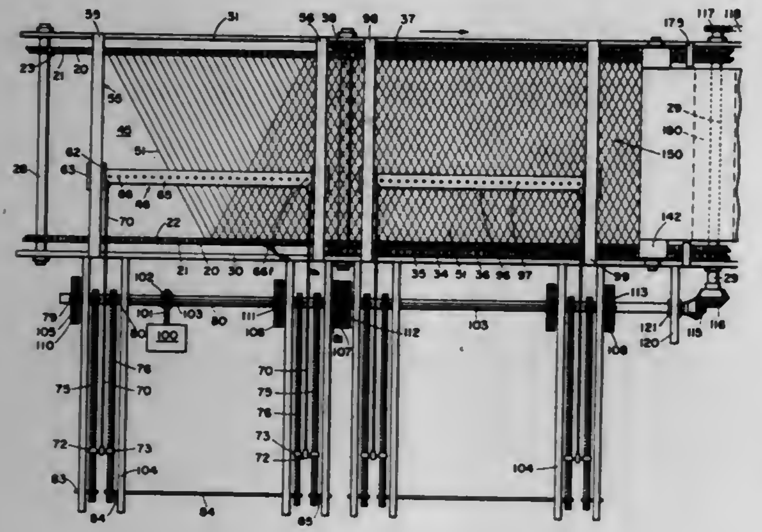
U.S. Cl. 156—441 **5 Claims**



An apparatus for the production of textiles which are neither knotted nor woven. According to the invention, the yarns which are to be formed into the textile cross each other and are joined together at their crossing points where they contact each other, either by welding of the yarns to each other or by adhering them to each other at their crossing points. The apparatus includes a pair of press rollers, the length of which corresponds to the width of the material which is produced, and a spindle, which extends at right angles to the press rollers upstream of the latter, carries a battery of spindles, on each of which a spool of yarn is mounted. A thread or yarn regulator is disposed between the press rollers and the battery of yarn spools, and this regulator has a number of holes corresponding to the desired spacing in the yarns in the material. A number of yarn-guiding eyelets are arranged parallel to the press rollers between the latter and the yarn regulator on an endless belt having a length corresponding to the width of the material and supported so as to carry out reciprocating movements, while between the yarn-guiding eyelets and the press rollers a yarn-coupling head extends parallel to the rollers and is mounted for movement toward the way from these rollers.

3,607,565
APPARATUS FOR FORMING NONWOVEN OPEN-MESH NETTING AND FOR INCORPORATING THE NETTING IN A LAMINATE

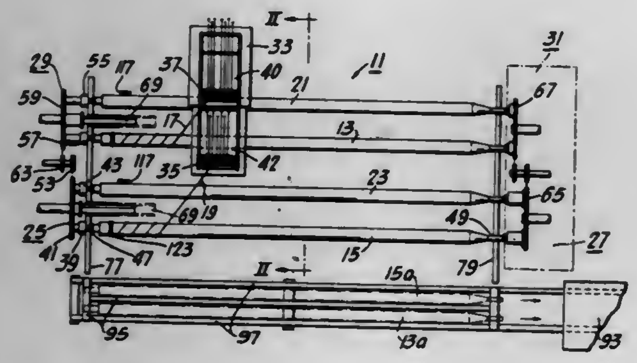
Mark S. Eaton, Rte. 1, Box 812, Bonita Spring, Fla.
Filed Apr. 11, 1969, Ser. No. 815,409
Int. Cl. D04h *3/05*
U.S. Cl. 156—440 **18 Claims**



An apparatus for forming a nonwoven open-mesh netting which has at least one pair of forwardly moving parallel rows of pins and a traversing shuttle which loops a plurality of strands around the pins. As the pins advance in one horizontal plane and the shuttle moves back and forth from one row of pins to the other in another horizontal plane, the strands are crisscrossed to form the netting. Means are provided to achieve positive anchoring of the strands on the pins. The apparatus also includes means to incorporate the netting thus formed into a laminate.

3,607,566
FILAMENT-WINDING APPARATUS

Jonas Medney, Oceanside, and Donald J. Baumgarten, Smithtown, both of N.Y., assignors to Koppers Company, Inc.
Filed Dec. 18, 1968, Ser. No. 784,812
Int. Cl. B65h *54/00*
U.S. Cl. 156—446 **10 Claims**

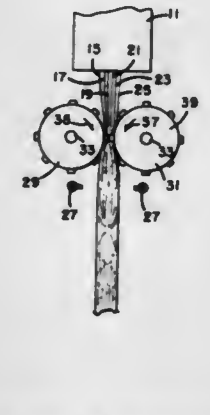


Filament-winding apparatus includes rotatable elements mounting supports between which mandrels, on which filament rovings are to be wound, are mounted. A winding head reciprocates along the length of the mandrel located at a winding station. When wound, the elements are rotated to place an unwound mandrel in the winding position. After the filament roving is severed, a wrap-cylinder helps to start to wrap or wind the filament roving on the unwound mandrel, while the wound mandrel is removed, moved into a curing oven, and replaced by an unwound mandrel.

A plurality of supports mounted adjacent a pair of winding heads operated simultaneously make it possible to wind two mandrels simultaneously.

3,607,567
APPARATUS FOR NONWOVEN FABRIC MANUFACTURE

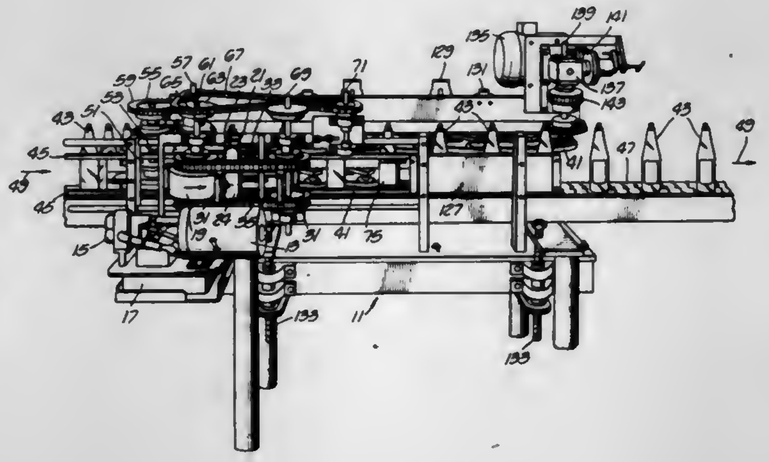
Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corp., Philadelphia, Pa.
Filed Jan. 2, 1968, Ser. No. 695,007
Int. Cl. D04h *3/02*
U.S. Cl. 156—441 **4 Claims**



Apparatus for making of nonwoven fabrics formed of strands which are bonded to each other at selected locations concomitantly with the extrusion thereof.

3,607,568
ROLL-THROUGH LABELER

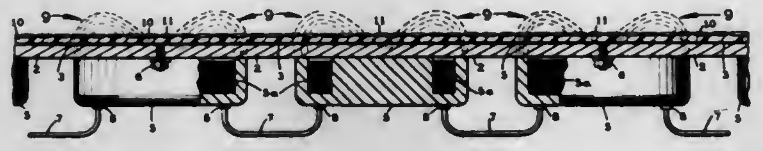
Herman Laub, III, 244 N. San Marino Ave., San Gabriel, Calif.
Filed Dec. 29, 1967, Ser. No. 694,507
Int. Cl. B65c *9/02, 9/22*
U.S. Cl. 156—453 **14 Claims**



An electromechanical labeling machine is disclosed for automatically pasting labels on containers as they are moved, as by a rolling movement, past a labeling mechanism. As the containers move along a conveyor, they pick up glue in a configuration corresponding to that of the label that is to be applied. The glued surface of the container then registers with a label in the labeling mechanism and the label adheres to the container.

3,607,569
MAGNETIC MOLD MEANS FOR MOLDING STEEL-REINFORCED HOLLOW BODIES

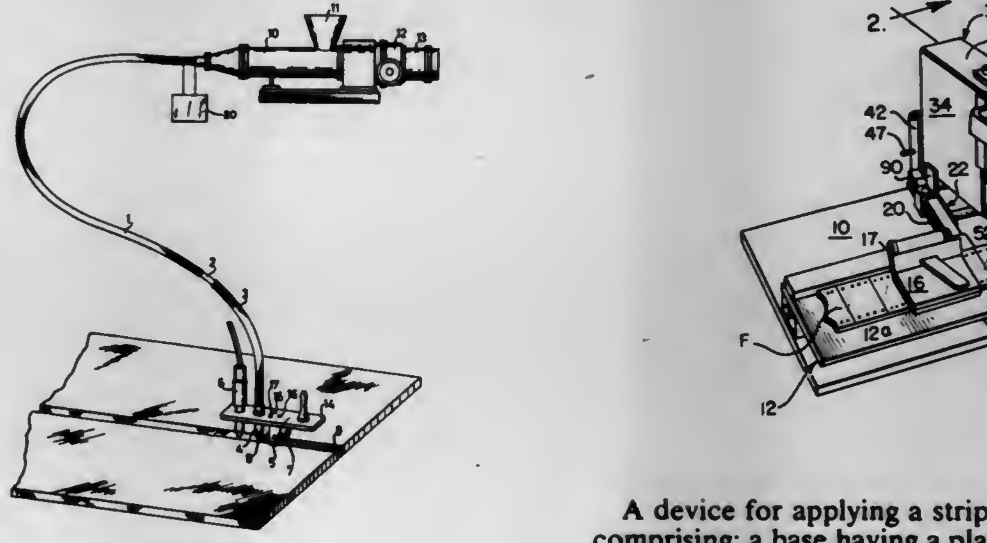
Joseph L. Greenwell, 8320 S.W. 151 St., Miami, Fla.
Filed Mar. 24, 1969, Ser. No. 809,581
Int. Cl. B29c *3/00*
U.S. Cl. 156—500 **10 Claims**



A mold of uniform thickness of nonmagnetic material for molding steel-reinforced laminar self-curing semifluid material into open side hollow bodies of substantially uniform thickness including a plurality of magnets distributed around the nonmolding side of the mold for urging by magnetic attraction through the mold perforated expanded or reticular steel reinforcement material into intimate and uniform engagement with each of a plurality of semicured layers of the molding material sequentially applied to the molding side of the mold to form a laminar steel-reinforced body of predetermined substantially uniform thickness when the material is cured.

3,607,570
APPARATUS FOR WELDING ARTICLES MADE OF THERMOPLASTIC MATERIALS

Joachim Hildebrandt, Hattersheim (Main), and Oskar Kunze, Langenhein/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Nov. 7, 1967, Ser. No. 681,224
Claims priority, application Germany, Nov. 12, 1966, F 50663
Int. Cl. B29b *3/02, 5/04;* **B32b** *31/30*
U.S. Cl. 156—500 **2 Claims**

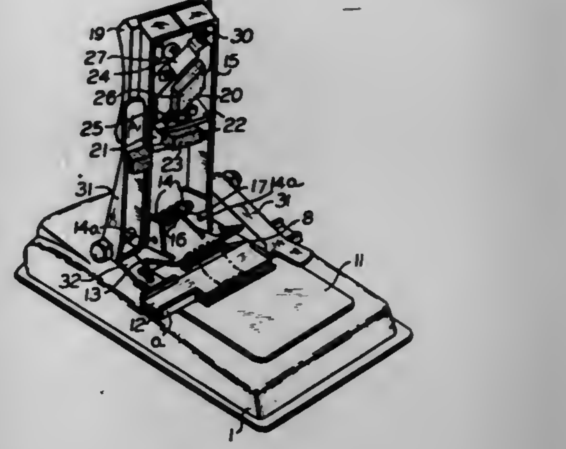


Thick-walled articles made of thermoplastic materials are welded by means of a welding apparatus comprising a screw extruder, a heated flexible conduit, a heated mouthpiece and a guiding device.

3,607,571
TAPE CUTTER AND SPLICER

Toshiharu Tange, Tokyo, Japan, assignor to Robins Industries Corporation, Flushing, N.Y.
Filed Dec. 4, 1967, Ser. No. 687,577
Int. Cl. B31f *5/06;* **G03d** *15/04*
U.S. Cl. 156—505 **3 Claims**

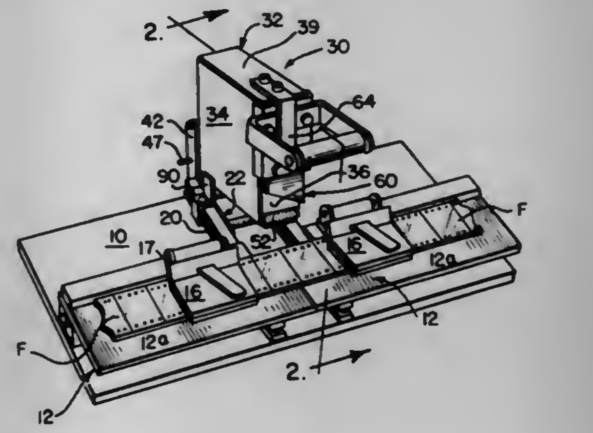
A tape-splicing device in which a pressure lever is pivotally mounted over an anvil on a hollow baseboard. A slide assembly on the pressure lever supports a tape-cutting knife, and a pair of trimming knives, with said knife or knives being selectively positionable over the anvil. A click stop on the slide assembly is provided to ensure correct orientation of the knife or knives with respect to the anvil. The anvil is formed with tape guides for orienting the tape to be spliced, and the hollow baseboard is provided with an adhesive tape-supporting reel, tape-orienting guideposts to direct the adhe-



sive tape from the reel to a delivery opening in the baseboard, and over a tape guide spring from which the tape is fed over the anvil, so that the adhesive splicing tape is maintained in a relatively dust-free condition, subject to being readily fed to the anvil for positioning over the tape to be spliced, after the tape to be spliced has been appropriately severed and positioned on the anvil.

3,607,572
TAPE-APPLYING MECHANISM

Leif G. Jorgensen, 517 W. St. Charles Road, Lombard, Ill.
Filed Dec. 14, 1967, Ser. No. 690,477
Int. Cl. B32b *31/18;* **B31f** *5/06*
U.S. Cl. 156—505 **15 Claims**

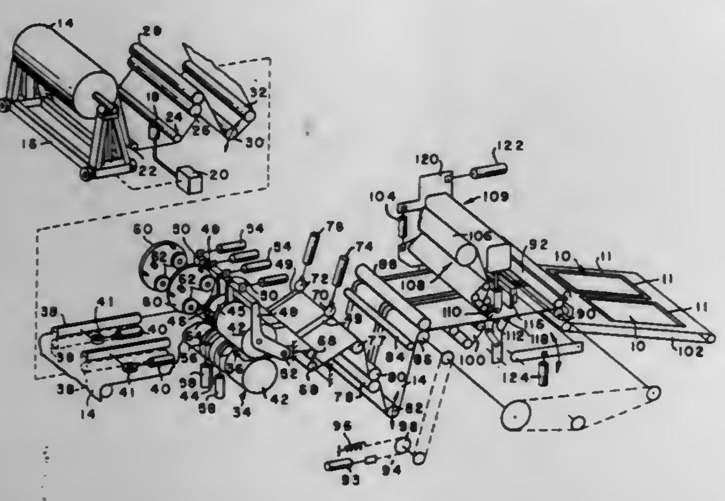


A device for applying a strip of adhesive tape to an article comprising: a base having a platform for holding the article; a carriage movable laterally on the base; an operating member pivoted to the carriage having means for carrying, dispensing, and cutting the tape; means for releasing the operating member and cutting means from inoperative positions; and means for releasing the locking means responsive to predetermined lateral movement of the operating member and carriage.

3,607,573
SEALED EDGE MACHINE

Andreas M. Michaelides, Wellford, and Charles A. Wethington, Spartanburg, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed June 20, 1969, Ser. No. 835,187
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—511 **4 Claims**

Apparatus to automatically provide severed sealed edge products to prevent unraveling. The machine is so designed to automatically hold the fabric during formation and to automatically guide the fabric during the advancing stage of the fabric prior to the formation of subsequent sealed edge products.



3,607,574
AUTOMATIC PACKAGING APPARATUS

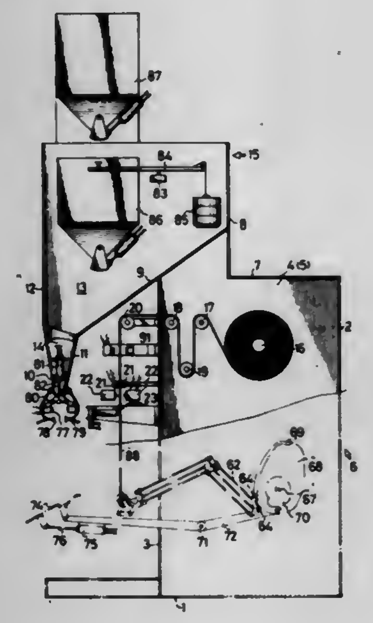
Toshihiko Satake, 2-38, Nishihon-machi, Saijyocho, Kamo-gun, Hiroshima, Japan

Filed July 8, 1969, Ser. No. 839,868

Claims priority, application Japan, July 11, 1968, 43-48906

Int. Cl. B32b *31/20;* **B65b** *1/02*

U.S. Cl. 156—515 **4 Claims**



A packaging machine utilizing a tubular plastic film material whereby the tubular material is formed into a bag and the bag is filled and sealed, all of these operations being performed on the machine. The apparatus includes a parallelogram linkage and gripper jaws for transferring the formed tubing, by its severed end, from the severing position to the material filling position, slackening the lateral margins of the tubing so that vacuum cups can hold them open during filling, and then tightening the margins so that the bag can be filled.

3,607,575
DEVICE FOR CONNECTING SUCCESSIVE STRIPS OF FILM FOR PROCESSING

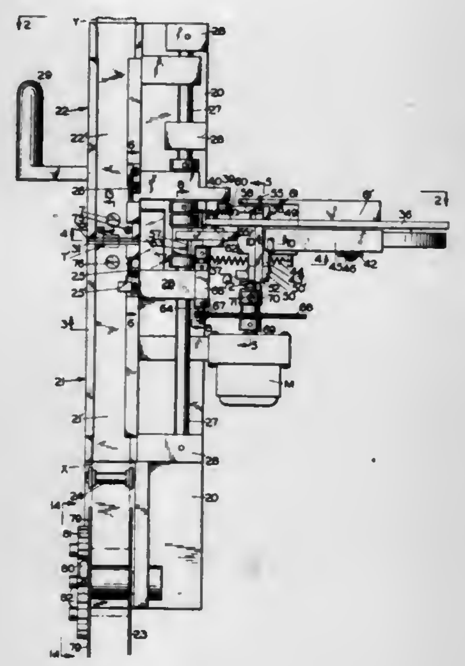
Donald W. Byers, and Chester H. Petry, Jr., both of Portland, Oreg.

Filed Jan. 10, 1968, Ser. No. 696,804

Int. Cl. G03d *15/04*

U.S. Cl. 156—506 **3 Claims**

A device for facilitating the attaching of one strip of photographic film onto the end of another for convenience in enabling separate strips of film to be processed, printed duplicated, etc. as a single continuing strip; the operation of the device causing overlapping ends of a pair of consecutive strips of film positioned thereon to be trimmed and connected together by a short length of pressure tape which is automatically cut off by the device from a tape supply roll and applied against the trimmed ends of the strips.



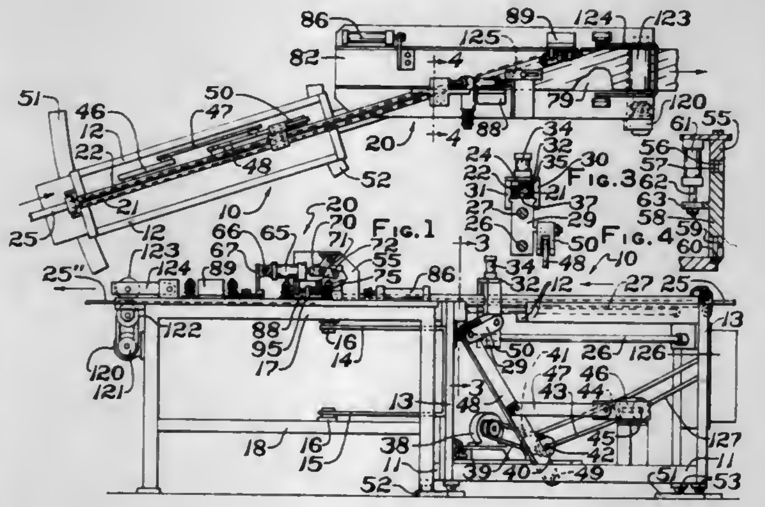
3,607,576
WIRE OVERHEAD MACHINE

Ronald W. Phillips, Tallmadge, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,410

Int. Cl. B65h *69/06;* **G03d** *15/04*

U.S. Cl. 156—507 **6 Claims**



A machine for fabricating a continuous web of bias-formed wire overhead material having a tape-index-feeding device cooperative with a cutting device which cuts a predetermined amount of tape onto a carrier member of a splicing table. The splicing table is subject to being magnetized to flatten and condition the wire tape for splicing to the wire overhead being formed. The magnetization of the table moves a hold-down bar and guide means into contact with the formed wire overhead maintaining the previously spliced material in position while cooperating with the carrier member to assure an effective butt splice.

3,607,577
FABRICATION OF HONEYCOMB-TYPE CELLULAR MATERIALS

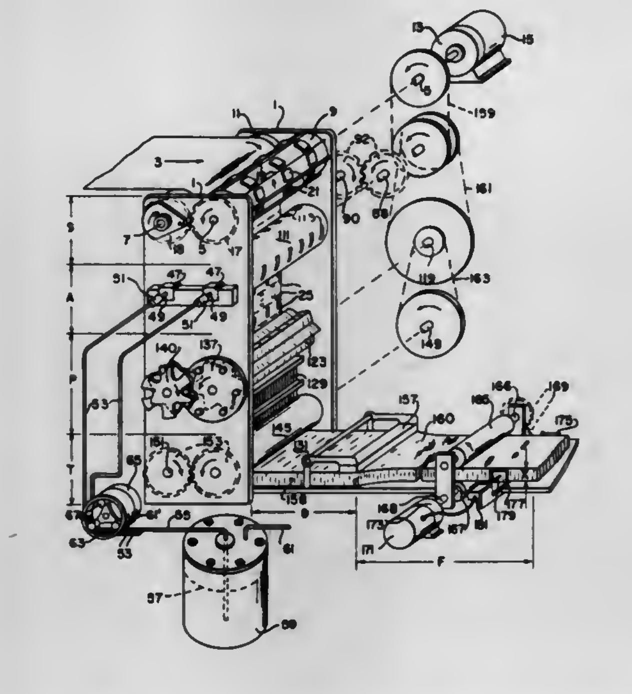
Robert C. Geschwender, 1800 Center Park Road, Lincoln, Nebr.

Division of Ser. No. 652,555, July 11, 1967, Pat. No. 3,528,334.

Filed Dec. 24, 1969, Ser. No. 887,985

Int. Cl. B32b *31/12;* **B31d** *3/02*

U.S. Cl. 156—548 **9 Claims**



A strip or web of suitable material, such as treated kraft paper, metal foil or the like is drawn between rolls of a slitter, so designed that by means of a very simple adjustment the finished product may have a selected one of a number of sizes and angles of honeycomb-type cells. After slitting, the strip passes through an adhesive applicator having outlets to imprint staggered areas of adhesive on opposite sides of the strip between rows of slits. The applicator is constructed to prevent access of air to the adhesive during its travel from a supply to the imprinting region thus preventing premature setting of the adhesive and clogging of moving parts. Next the slitted web with applied adhesive passes between substantially spaced folding wheels which will accept strips of various thicknesses for pleating and designed to minimize smearing of the adhesive. As the strip passes through the folding wheels the adhesive spacedly joins adjacent pleats. After the pleated material leaves the pleating wheels it is sent to braking apparatus which forms a compaction wherein the adhesive sets. Then the material is drawn from the compaction by pulling apparatus to stretch it, thereby forming the honeycomb-type cells. As the cellular band is pulled its width becomes less. Width-sensing means provides a signal indicating any deviation from a desired width. This signal is applied to control means for the speed of operation of the pulling apparatus to compensate for any incipient deviation from the desired width.

3,607,578
APPARATUS FOR PRODUCING DISPOSABLE DIAPERS

Bror Hugo Oolf Berg, Goteborg, and Erik Ragnar Johansson, Molndal, both of Sweden, assignors to Molnlycke AB, Goteborg, Sweden

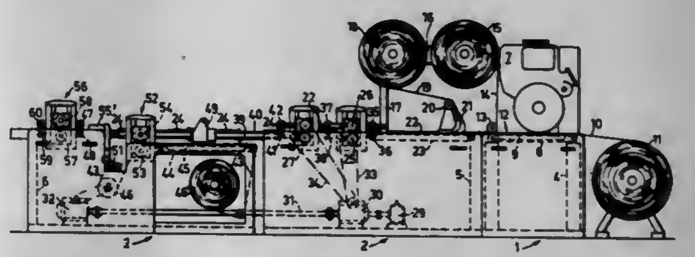
Filed Apr. 8, 1968, Ser. No. 719,477

Claims priority, application Sweden, Apr. 12, 1967, 5091/67

Int. Cl. B32b *31/10, 31/18*

U.S. Cl. 156—552 **4 Claims**

An apparatus for producing disposable diapers, the absorption bodies of which are fastened to a sheet of plastic material shaped to conform to the body of the child, and serving as pants or diaper-holder whilst the diaper is in use. The apparatus having means which continuously produce and/or advance finished absorption bodies, means for advancing and combining a plastic web with gradually advanced absorption bodies and means positioned in the direction of movement of the plastic web and intended to provide the two side edges of the plastic web with recesses which impart to the finished diaper-holder a shape which conforms to the body of the child. The apparatus also having means arranged along the path of movement of the plastic web for applying adhesive on said web at positions where the absorption bodies are fastened thereto and pressure means arranged at the position where the absorption bodies and the plastic web meet and intended to press the bodies onto the adhesive-coated positions on said plastic web. After this pressure means cutting means, for instance a roll pair provided with knives, being arranged for clipping the plastic web into lengths appropriate for the intended diaper-holder.



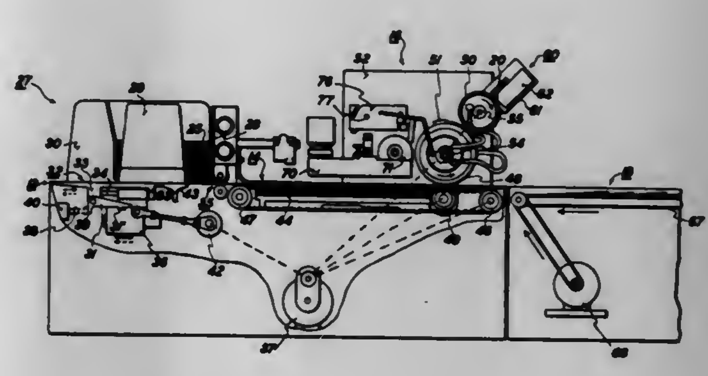
3,607,579
LABELING APPARATUS FOR MULTISHEET LABELS

Albert G. Enskat, Barrington, and Donald W. Kroening, Mundelein, both of Ill., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 14, 1969, Ser. No. 841,320

Int. Cl. B32b *31/20;* **B05c** *1/02*

U.S. Cl. 156—571 **8 Claims**



An article-labeling system having an article supply means; a labeling head including a label transfer wheel; a source of labels of the type comprising one or more information-bearing sheets projecting from a common stem; means to apply adhesive to the label stems to enable the transfer wheel to affix the labels to the articles by their stems; and means operable on the label sheets to prevent the label sheets from contacting the adhesive-applying means to avoid application of adhesive to the label sheets and undesired adhering of the label sheets to the articles and/or to one another.

3,607,580
TOOL HAVING PENETRATION LIMITING MEANS FOR JOINING THERMOPLASTIC PARTS BY SONIC OR ULTRASONIC ENERGY

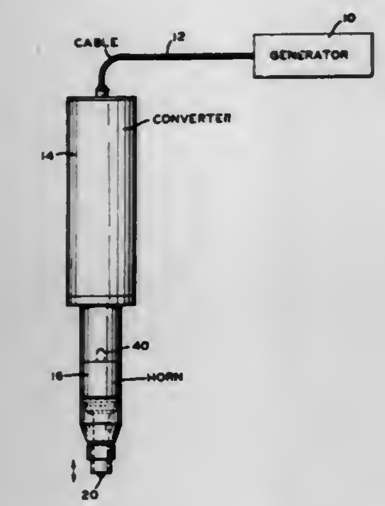
Edward G. Obeda, Brookfield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Feb. 24, 1969, Ser. No. 801,658

Int. Cl. B32b *31/16;* **B29c** *27/08*

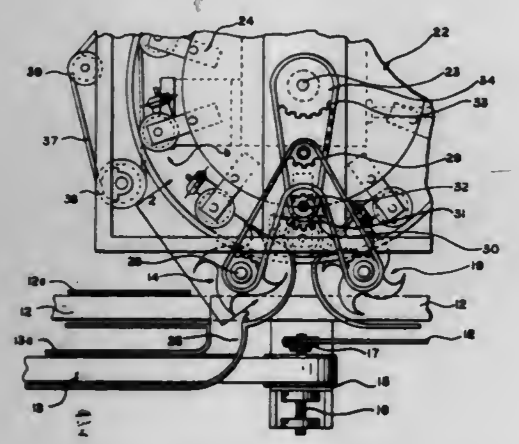
U.S. Cl. 156—580 **8 Claims**

A solid horn for sonic or ultrasonic energy transfer is provided with a sleeve assembly adapted to engage the workpiece to which the horn transfers energy. The sleeve assembly limits the penetration of the horn tip into the workpiece.



3,607,581
SPIN-WELDING HOLDER AND LOADING APPARATUS

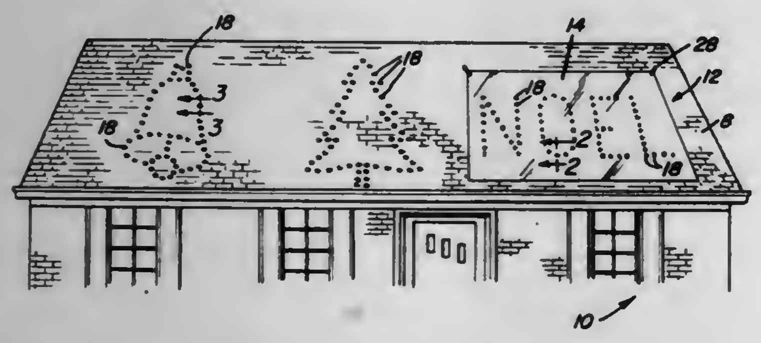
Gary A. Adams, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.
Filed June 5, 1969, Ser. No. 830,668
Int. Cl. B30b *3/04;* **B29c** *27/08*
U.S. Cl. 156—580 **18 Claims**



Friction-welding apparatus for joining thermoplastic container top and bottom parts which move continuously. The bottom parts are guided along a vacuum support plate and switched from one orbital path to another so as to be concentrically aligned with orbiting lower mandrels. The top parts are moved gradually up into the loops of holder bands which are tightened to positively grip them during the friction-welding operation.

3,607,582
AREA OUTLINING GUIDE FOR WALL OR ROOF

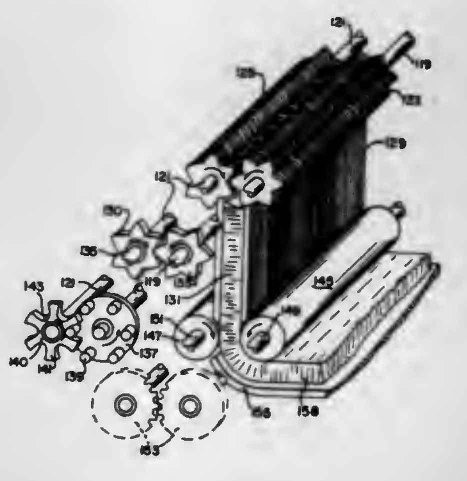
Mark W. Horacek, P.O. Box 12047, Houston, Tex.
Filed Aug. 21, 1969, Ser. No. 852,006
Int. Cl. B32b *7/14;* **B44d** *3/30*
U.S. Cl. 156—584 **6 Claims**



An area marking guide for use when one is called upon to plan and display an attractive seasonal message or simulated design on the viewable surface of a building roof or a wall. It comprises a prefabricated manually applicable and removable sheet material template which is capable of being placed flatwise atop a predetermined or selected roof ara and temporarily held or fastened in a given position The sheet has means which functions to permit the user to map-out , amrk and outlet the desird characterand, in so doing, to facilitate positioning and fastening a string of Christmas tree lights or reflective ornaments on said surface conforming with the outlined area.

3,607,583
FABRICATION OF HONEYCOMB-TYPE CELLULAR MATERIALS

Robert C. Geschwender, 1800 Center Park Road, Lincoln, Nebr.
Division of Ser. No. 652,555, July 11, 1967, Pat. No. 3,528,334.
Filed Dec. 24, 1969, Ser. No. 887,821
Int. Cl. B31f *1/22;* **B65h** *45/16*
U.S. Cl. 156—596 **5 Claims**

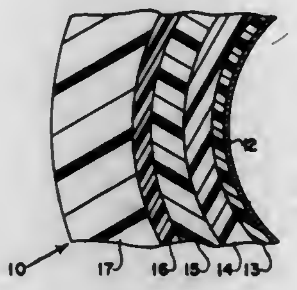


A strip or web of suitable material, such as treated kraft paper, metal foil or the like is drawn between rolls of a slitter, so designed that by means of a very simple adjustment the finished product may have a selected one of a number of sizes and angles of honeycomb-type cells. After slitting, the strip passes through an adhesive applicator having outlets to imprint staggered areas of adhesive on opposite sides of the strip between rows of slits. The applicator is constructed to prevent access of air to the adhesive during its travel from a supply to the imprinting region thus preventing premature setting of the adhesive and clogging of moving parts. Next the slitted web with applied adhesive passes between substantially spaced folding wheels which will accept strips of various thicknesses for pleating and designed to minimize smearing of the adhesive. As the strip passes through the folding wheels the adhesive spacedly joins adjacent pleats. After the pleated material leaves the pleating wheels it is sent to braking apparatus which forms a compaction wherein the adhesive sets. Then the material is drawn from the compaction by pulling apparatus to stretch it, thereby forming the honeycomb-type cells. As the cellular band is pulled its width becomes less. Width-sensing means provides a signal indicating any deviation from a desired width. This signal is applied to control means for the speed of operation of the pulling apparatus to compensate for any incipient deviation from the desired width.

3,607,584
LAMINATED LIGHTWEIGHT REFELCTOR STRUCTURES

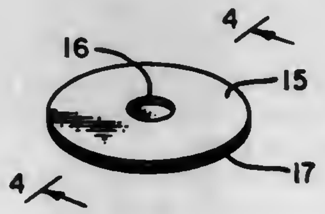
Cletus A. Becht, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed Mar. 4, 1968, Ser. No. 710,300
Int. Cl. G02b *5/08;* **B32b** *15/08;* **B29d** *27/00*
U.S. Cl. 161—4 **3 Claims**

A method for forming a complex curved structure and the structure itself which is essentially directed towards making lightweight reflectors for use as mirrors or radar antennae. Essentially the process involves capturing a complex geometric shape with a thin layer of cured high density resin, depositing a lightweight resin foam on the back of the thin resin layer, and curing the foam to retain the desired geometric shape to the resin layer and provide an extremely lightweight structure. The foam can be in one or more laminated layers to give greater structural rigidity properties, or dent-resistance. A resin impregnated fiberglass material covers the back of the laminated structure to provide structural integrity. The composite product is up to 10 times lighter than similar metallic or glass structures, and has extremely good optical qualities when formed for mirror surfaces. A thin reflective metallic coating can be deposited after the entire laminate is formed, or it can be deposited onto a thin plastic sheet which in turn is laminated to the formed resin layer.



3,607,585
PRINTED CIRCUIT BOARD ARTWORK PAD

Art E. Cassingham, Los Altos, and Arvin C. Skyrud, Milpitas, both of Calif., assignors to Sylvania Electric Products Inc.
Filed Nov. 29, 1968, Ser. No. 779,846
Int. Cl. B41m *3/08;* **B32b** *3/10*
U.S. Cl. 161—6 **5 Claims**

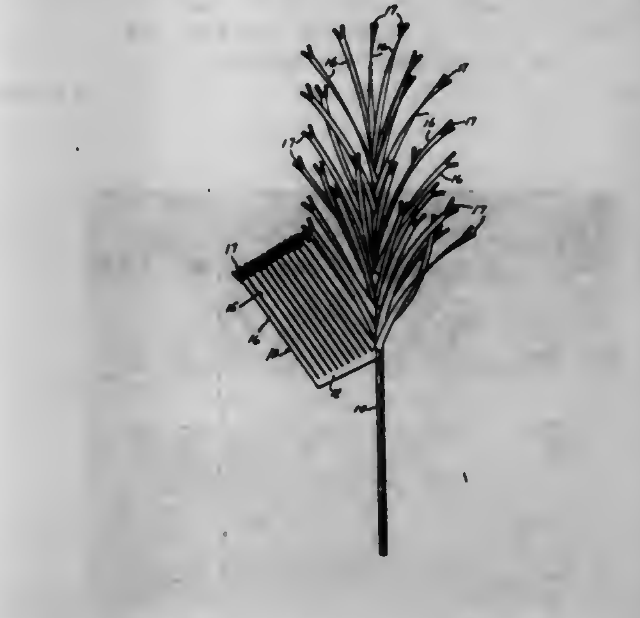


Artwork for printed circuit boards with plated-through holes is made with terminal area pads having center openings covered with an optical filter, preferably a colored strip. These pads permit photographic techniques to be used in making circuit pattern transparencies with and without pad center hole images and thus simplify this part of the process of making such printed circuit boards. The pads are formed by successively punching center openings in a continuous sheet of pad material, adhesively pressing a like sheet of filter material against the perforate sheet, cutting the pad shape in the double laminate, and removing the severed pads from the parent stock.

3,607,586
BRANCH OF WOUND PLASTIC RIBBON FOR ARTIFICIAL CHRISTMAS TREES

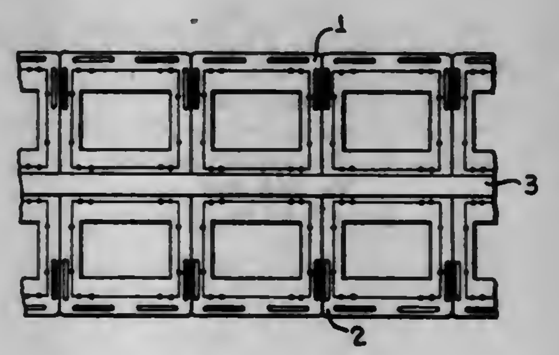
Chester Peter Hankus, 12346 Throop St., Calumet Park, Ill.
Filed Nov. 5, 1968, Ser. No. 773,515
Int. Cl. 156 *195;* **A47g** *33/06*
U.S. Cl. 161—24 **5 Claims**

Branch for artificial Christmas tree in which a metal rod having a slit extending across the top of the rod receives the end of a bead of a needled ribbon of plastic or metal foil wound about the rod in the general form of the spiral from the top to the bottom of the rod. The ribbon has a narrow bead extending along one side of the ribbon and fitting into a slot in the rod and wound about the rod and bent relative to the plane of the needled ribbon to place a twist in the needles of the ribbon when wound spirally about the rod. The needles of the ribbon are formed in side-by-side relation by slits extending transversely of the bend and at equal leading angles relative to the bead. The ends of the needles are forked by slitting from the ends thereof to increase the appearance of fullness of the branch.



3,607,587
A CHAIN OF PHOTOGRAPHIC TRANSPARENCY FRAMES CONNECTED TOGETHER BY A FLEXIBLE TAPE

Herbert R. Langkopf, 234 Furstenwall, 4000 Dusseldorf, Germany
Filed Sept. 27, 1968, Ser. No. 763,282
Claims priority, application Germany, Oct. 4, 1967, L 45 737
Int. Cl. B32b *3/16*
U.S. Cl. 161—39 **4 Claims**



This disclosure relates to a chain of photographic transparency frames which are adapted for feeding into a processing machine comprising a plurality of generally rectangular transparency frames arranged in side-by-side and end-to-end relationship with transversely adjacent side-by-side transparency frames being connected to each other by a flexible tape to produce a chainlike effect by being adhered in overlying relationship to marginal side edges of the transparency frames. The flexible nature of the tape permits transversely adjacent transparency frames to be swung, folded or hinged into overlying relationship to each other to encapsulate therebetween an associated photographic transparency, i.e., a photographic negative or the like. The tape preferably includes pressure sensitive or similar adhesive media on the surface thereof opposing the transparency frames, although in another embodiment of the invention both sides of the tape are provided with adhesive to fixedly secure each transparency to an associated frame prior to overfolding transversely adjacent frames into interlocked relationship. In accordance with a further embodiment of the invention each frame includes a "transparency area" inboard of marginal edges of the frame and the tape includes adhesively coated tonguelike projections disposed in the "transparency area" such that each transparency will be fixedly secured in a "-transparency area" by the projections.

3,607,588

NONWOVEN FIBROUS PRODUCTS AND METHODS AND APPARATUS FOR PRODUCING SUCH PRODUCTS

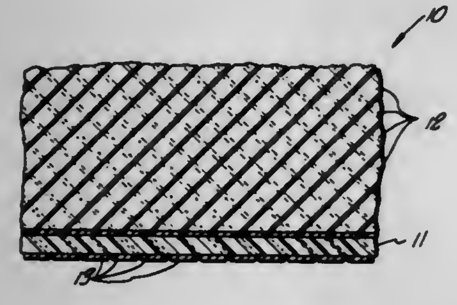
John W. Soehngen, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed Sept. 21, 1966, Ser. No. 580,994
Int. Cl. D03d *27/00;* **B32b** *3/12*
U.S. Cl. 161—53 **13 Claims**

1. A nonwoven fibrous product comprising a series of similar fibrous subassemblies each made up of randomly arranged fiber components bonded together in the form of a thin sheet, each of said subassemblies including top and bottom zones extending generally parallel to the surfaces of the product and an intermediate zone extending angularly with respect to the surfaces of the product, the top and bottom zones of a plurality of adjacent ones of said subassemblies being disposed in overlapping and contacting relation to each other to provide the product with surface strata of substantial density, and major portions of the intermediate zones of adjacent subassemblies being spaced apart from each other.

3,607,589

DELAMINATION RESISTANT LAMINATED STRUCTURE

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.
Continuation-in-part of application Ser. No. 406,350, Oct. 26, 1964, now abandoned. This application Aug. 12, 1969, Ser. No. 866,405
Int. Cl. B32b *5/12*
U.S. Cl. 161—55 **7 Claims**

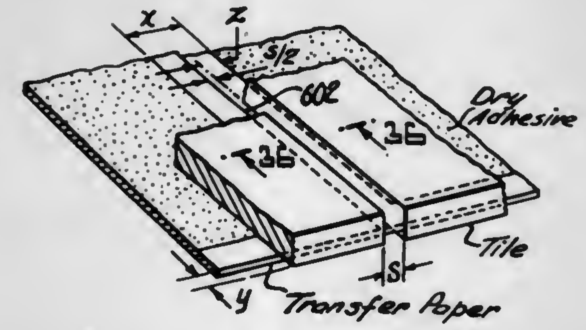


A laminated structure capable of sustaining local deformations to compound curvature without delamination including a central sheetlike layer of elastomeric material and a plurality of spaced parallel tensile elements bonded to each opposite side of the central layer. The tensile elements are fabricated of a material which, if provided in sheet form, would be susceptible to delamination upon local deformation to compound curvature. The tensile elements have a width parallel to the sheet greater than their thickness normal to the sheet. The tensile elements on one side of the sheet are aligned at a predetermined angle to the length of the tensile elements bonded to the opposite side of the sheet. The elastomeric core of the laminated structure absorbs interlaminar shear between the tensile elements and prevents delamination of the structure when the structure is deformed locally to compound curvature.

3,607,590

TILE PRODUCT AND METHOD FOR MAKING THE SAME

Frank L. Califano, Hackensack, N.J., and Joseph Laszlo, New York, N.Y., assignors to The Flintkote Company, New York, N.Y.
Division of Ser. No. 528,569, Feb. 18, 1966. Filed June 16, 1969, Ser. No. 840,587
Int. Cl. B32b *3/02, 3/14*
U.S. Cl. 161—39 **1 Claim**

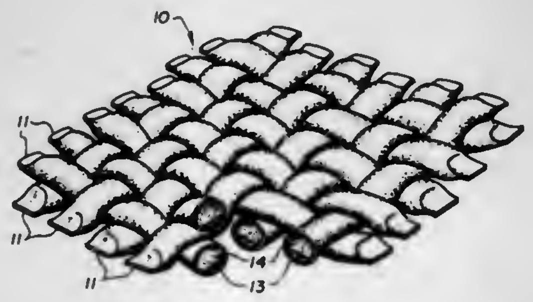


A tile product and a method for preparing an adhesive coated tile product with a protective sheet thereon which sheet is removed when the tile products are installed. The uncoated tile products are moved from a stack in succession by a conveyor at a constant speed and in uniformly spaced relationship and an adhesive coated web having an adhesive patch with an area less than the area of the tile product is applied over the moving tile products and bonded thereto. This web is then severed between each adjacent tile product by a cutting knife in such a manner as to provide an overlap of the web and the resultant adhesive bonded to the tile is set back from the tile edges.

3,607,591

TEMPERATURE ADAPTABLE FABRICS

Ralph H. Hansen, Short Hills, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Apr. 22, 1969, Ser. No. 818,323
Int. Cl. D01d *5/24*
U.S. Cl. 161—77 **10 Claims**

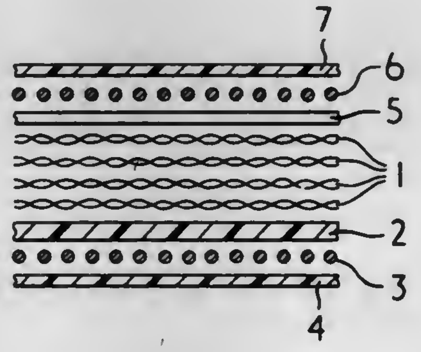


This invention relates to novel fabrics characterized by thermal insulation properties which change in response to changes in environmental temperature. The fabrics contain hollow inflatable elements having entrapped therein a gas and a solvent material which can be converted from liquid to solid phase by temperature changes within the environment of usage, said solvent material dissolving more of the gas when in the liquid phase than in the solvent phase. The elements contain more gas than can be dissolved by the solvent material within the elements when this material is in the solid phase and thus lowering the environmental temperature, so as to convert said material from the liquid to the solid phase, results in the expulsion of gas formerly dissolved in the liquid phase. The expelled gas inflates the inflatable elements within the fabric and increases the thermal-insulating properties of the fabric.

3,607,592

PORTABLE PLATFORMS

Peter J. Jenkins, Burscough, England, assignor to Dunlop Rubber Company Limited, London, England
Continuation of application Ser. No. 505,503, Oct. 28, 1965, now abandoned. This application Dec. 18, 1969, Ser. No. 886,416
Int. Cl. B32b *5/12, 25/10*
U.S. Cl. 161—57 **5 Claims**



Portable platform for use, for example, as a temporary road, comprising a flexible plastic material in which is embedded a composite reinforcement comprising two layers of parallel transverse metal cords and sandwiched between the two layers a layer of textile reinforcement and a layer of longitudinal parallel metal cords, the layer of longitudinal cords lying between the textile reinforcement and the load-bearing surface of the platform so that "one way" longitudinal rigidity is achieved.

3,607,593

POROMERIC MATERIAL HAVING HIGH PERMEABILITY TO GASES

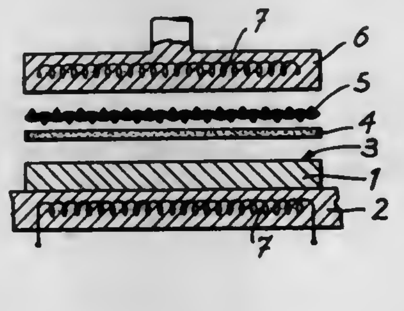
Dorino Semenzato, Milan, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy
Filed Nov. 5, 1968, Ser. No. 773,664
Claims priority, application Italy, Nov. 7, 1967, 22394 A/67
Int. Cl. B32b *5/22, 5/32*
U.S. Cl. 161—87 **6 Claims**

Poromeric material that is impermeable to water but permeable to gases such as air and water vapor. Material comprises a backing fabric, a first foamed layer of a vinyl polymer containing another polymeric material incompatible therewith, this first layer being bonded to the fabric, and a second layer similar to the first layer and bonded thereto, the second layer being foamed less than the first layer.

3,607,594

PROCESS FOR MAKING A SELF-LUBRICATING MATERIAL AND PRODUCTS OBTAINED THEREBY

Raymond Mancel, Paris, France, assignor to Societe Anonyme Societe d'Adaptation Industrielles et Commerciales des Mateires Plastiques, SAIMP, Paris, France
Filed May 16, 1967, Ser. No. 638,810
Int. Cl. B32b *5/00;* **F16c** *1/00*
U.S. Cl. 161—92 **11 Claims**

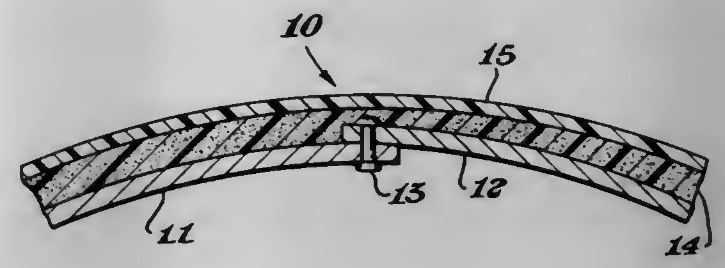


The self-lubricating material comprises a metal fabric completely impregnated with a thermoplastic material bonded to a metal support. The metal fabric and a sheet of the thermoplastic material are assembled on the metal support, the assembly is heated to a temperature sufficient to at least soften the thermoplastic material, after which pressure is applied to the assembly and maintained until after the latter has cooled, the pressure being sufficient to force the metal fabric into intimate contact with the metal support and to cause the thermoplastic material to fill the pores of the metal fabric and to adhere to the metal support.

3,607,595

METHOD OF PRODUCING AERODYNAMICALLY SMOOTH SURFACES

Leo J. Windecker, Midland, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 31, 1966, Ser. No. 553,956
Int. Cl. B32b *3/00*
U.S. Cl. 161—119 **6 Claims**

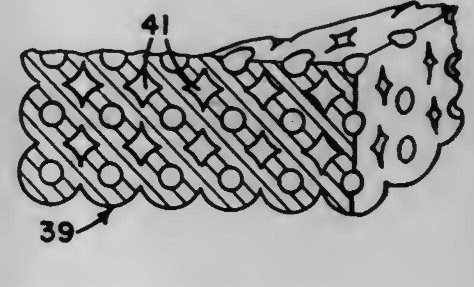


Aerodynamically smooth surfaces are prepared by covering an irregular surface such as a riveted aircraft wing with a flexible foam embedded with a thermosettable resin. The foam has a smooth outer layer of resin. Pressure is applied to the smooth outer layer of resin to deform the foam layer and cover the surface irregularities.

3,607,596

CELLULAR ARTICLE

Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed July 10, 1968, Ser. No. 743,683
Int. Cl. B32b *3/00, 27/00, 31/30*
U.S. Cl. 161—122 **4 Claims**



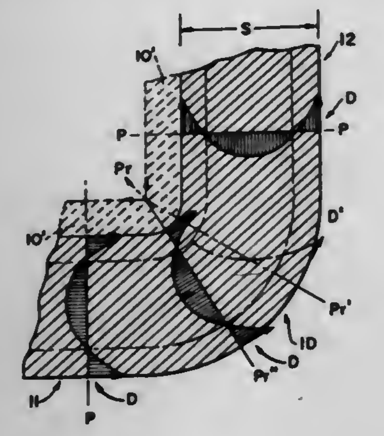
An article including generally parallel, elongated members at least some of which have bulbous portions along the lengths thereof which are bonded to adjacent of such members so that the members together provide an integral article. The elongated members are formed of polymeric material, the molecules of which are oriented at least along one of the longitudinal and transverse directions of the article.

3,607,597

METHOD OF AND APPARATUS FOR THE PRODUCTION OF TEMPERED GLASS ARTICLES OF CHANNELED OR U CROSS-SECTIONAL FORM AND ARTICLE FORMED THEREBY

Piero Ferretti, Milan, Italy, assignor to Vetreria Milanese Lucchini Pegego, Milan, Italy
Filed Apr. 21, 1969, Ser. No. 817,737
Claims priority, application Italy, Apr. 20, 1968, 15,566A/68
Int. Cl. C03b *27/00*
U.S. Cl. 161—125 **16 Claims**

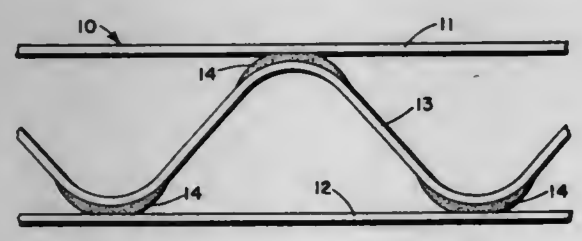
Method and apparatus for production of articles of tempered glass in the form of channels of U-shaped cross section. The articles are formed from a ribbon of molten glass emerging continuously from a furnace. The side edges of the ribbon are turned upwardly to form the channel having an internal radius at the curved portion connecting the bottom and sidewalls, which is small with relation to the thickness of the walls. The channel is severed into sections of desired lengths, each section is reheated to tempering temperatures, then cooled rapidly in and by an apparatus wherein the jets of fluid coolant are so varied over the curved areas of the article, that all elemental areas thereof are cooled at the same rate. Thereby are produced glass articles for use in building walls, etc., which display great strength against shattering and on breakage, fragment into very small, uniform and harmless pieces.



3,607,598
CORRUGATED FIBERBOARD

John R. LeBlanc, Wilbraham, Mass., and Robert W. Miller, Mentor, Ohio, assignors to Monsanto Company, St. Louis, Mo. and Alton Box Board Company, Alton, Ill., a part interest to each

Filed Sept. 26, 1969, Ser. No. 861,271
Int. Cl. B32b *3/28*, *27/42*; **C08g** *37/18*
U.S. Cl. 161—133 **10 Claims**



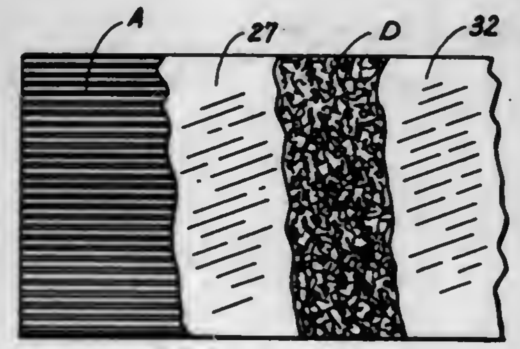
Corrugated fiberboard which resists deterioration in strength when in the presence of moisture or water, and which has improved folding endurance. Such board is made by preliminarily treating medium and, optionally, liner members with a mixture of phenol-aldehyde resole resin and polyvinyl alcohol (and/or polyvinyl acetate and/or partially hydrolyzed such materials) and thereafter fabricating corrugated fiberboard from the so-treated members using a waterproof adhesive system containing polyvinyl alcohol, polyvinyl acetate, and/or phenol-aldehyde resin.

3,607,599
REINFORCED NONWOVEN LAMINATED FABRIC

George Bruce McPherson, Roper Mountain Road, Greenville, S.C.

Filed Nov. 15, 1967, Ser. No. 683,265
Int. Cl. B32b *3/16*; **D04h** *5/08*
U.S. Cl. 161—144 **2 Claims**

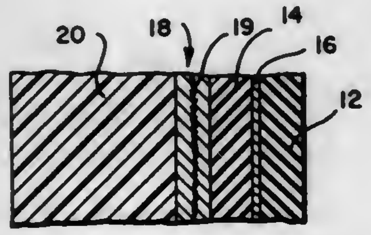
A nonwoven laminated fabric, such as a carpet, comprising a series of parallel warp strands coated with a latex binder and having a backing comprising randomly oriented scrim yarn and plastic sealing members. A modified form of the nonwoven laminated fabric or rug includes a series of parallel warp yarns having a backing which includes a first plastic sheet, a layer of randomly oriented scrim yarn, and a second plastic sheet providing a sealed backing. The layers of said laminated rug are secured together by a suitable bonding agent. Also, enclosed is the method of manufacturing such nonwoven laminated fabrics.



3,607,600
COMPOSITE MOLDING PROCESS AND PRODUCT

Robert E. Schreter, Lebanon, and John A. Marino, Palmyra, both of Pa., assignors to Hauck Manufacturing Company, Lebanon, Pa.

Filed July 15, 1969, Ser. No. 842,832
Int. Cl. B32b *7/04*, *25/02*, *25/04*, *25/10*
U.S. Cl. 161—156 **16 Claims**



Strong, abrasion-resistant composite molded articles are produced that include a reinforced synthetic resin backing layer and an elastomeric surface layer that is molded to predetermined dimensions. The articles are molded by applying a first coating of an elastomer on a treated mold surface and then curing the elastomer just enough to produce a tack-free surface. A second coating of liquid elastomer is applied to the tack-free surface and fibers are deposited on the liquid coating of elastomer and worked to form a continuous fiber coating. Subsequently, at least one layer of reinforced synthetic resin is applied and rolled into the exposed surface of the fibers before the second elastomer coating solidifies. The fibers which extend from the second elastomer coating into the backing layer provide a strong mechanical bond that prevents separation of the elastomer layers from the synthetic resin. A porous reinforcing mat can be inserted into the first coating of elastomer while it is liquid to dramatically increase the article's tear strength and flexural strength.

3,607,601
FOAMED SHOCK-ABSORBENT STRUCTURE

Paul B. Milam, Jr., and Nolan J. Edmunds, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Aug. 5, 1968, Ser. No. 750,342
Int. Cl. B32b *3/12*, *7/02*, *7/08*
U.S. Cl. 161—159 **12 Claims**

A shock-absorbent structure comprises a first foamed layer of a normally solid synthetic thermoplastic polymeric material, for example polyethylene, having a compressive strength at 10 percent deflection in the range of about 30 to about 200, and a second underlying layer of a flexible cellular rubber, for example flexible polyurethane.

3,607,602
METHOD OF AND A LAMINATED MATERIAL FOR PACKAGING ARTICLES

Eduard Greskiewicz, West Wyoming, Pa., assignor to Chemie-Industrie-Investment AG

Filed Aug. 4, 1967, Ser. No. 658,324
Claims priority, application Switzerland, Aug. 9, 1966, 11,704/66
Int. Cl. B32b *3/26*, *7/12*
U.S. Cl. 161—160 **9 Claims**

A method of packaging articles is provided whereby a laminated packaging material is assembled and wrapped around at least one article. The laminated packaging material comprises a heat-shrinkable thermoplastic resin film, a plastic foam layer, and an adhesive bonding material to attach the thermoplastic film to the foam layer. The wrapped article may be subjected to heat to shrink the thermoplastic resin.

3,607,603
TOY SLIDE

James C. Coverdale, Jr., Chadds Ford, Pa., assignor to Haveg Industries, Inc., Wilmington, Del.

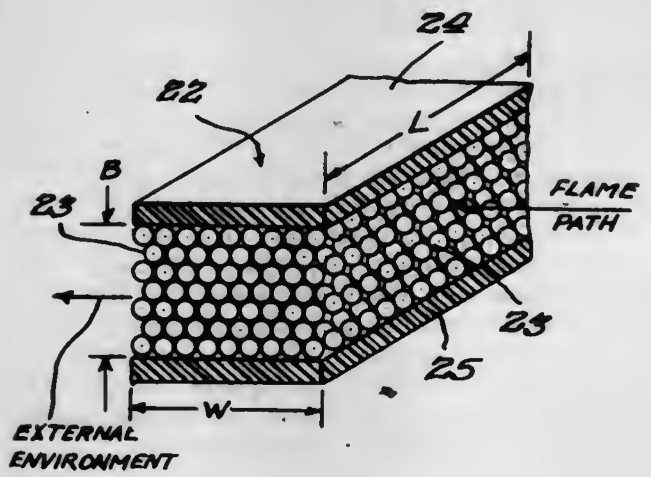
Filed Aug. 27, 1969, Ser. No. 853,484
Int. Cl. B32b *3/12*, *7/02*, *27/06*
U.S. Cl. 161—160 **1 Claim**

A slide which comprises a resilient flexible plastic closed cell foam support with a linear or high density polyethylene film laminated thereto. The linear or high density polyethylene film is the sliding surface.

3,607,604
FLAME ARRESTER AND PRESSURE RELIEF

Robert D. Nava, 73 South Lodge Lane, Lombard, Ill.

Filed Nov. 19, 1969, Ser. No. 878,050
Int. Cl. B32b *3/12*, *17/00*
U.S. Cl. 161—161 **12 Claims**



The explosionproof enclosure of the invention has high performance characteristics in the functional area of flame arrest and pressure relief. The flame arrester which also functions as a pressure relief and water seal for the enclosure may be fabricated by bonding a top and bottom laminate to an interlaminate which is porous in a direction parallel to the top and bottom laminates. More particularly the interlaminate may be formed of a plurality of spheres so disposed in contacting relation as to provide a flame path between the environment within the enclosure and the atmosphere outside the enclosure.

3,607,605
COMPOSITE BUILDING MATERIAL

Kazuo Suzukawa, Koga-gun, Shiga-ken, Japan, assignor to Toray Engineering Co., Ltd., Osaka-shi, Osaka, Japan

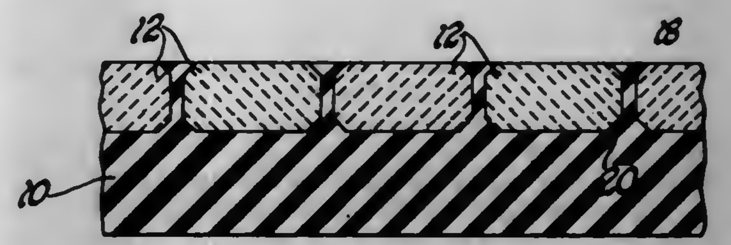
Filed June 16, 1967, Ser. No. 646,506
Claims priority, application Japan, June 23, 1966, Nov. 14, 1966 41/40385, 41/104475
Int. Cl. B28b *1/50*
U.S. Cl. 161—161 **6 Claims**

An improved composite building material, which comprises a pair of laminar articles, a core material made of mixed paste of foaming cement containing fibrous materials infused into a determined intervening space between the laminar articles for composing them, and plurality of connecting blocks positioned in the space when stronger bonding required.

3,607,606
CERAMIC-RUBBER COMPOSITES

Duane H. Beninga, Golden, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Filed May 16, 1967, Ser. No. 643,787
Int. Cl. B32b *5/16*, *25/02*, *15/06*
U.S. Cl. 161—162 **4 Claims**

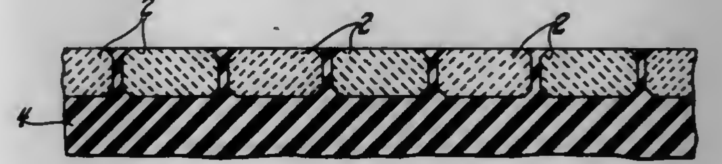


A composite of rubber, natural or synthetic, and alumina-base ceramic, useful as a wear-resistant lining for ball mills, conveyors, chutes and the like, comprising a layer of rubber having embedded in and bonded to the surface thereof closely spaced shaped bodies of alumina-base ceramic. Such composite is made by molding and thereby bonding the rubber material to the shaped alumina-base ceramic bodies either directly or preferably through an intermediate bonding layer applied to the ceramic bodies prior to the molding operation.

3,607,607
ORGANIC RESIN CERAMIC COMPOSITE AND METHOD FOR MAKING SAME

Duane H. Beninga, Golden, and Hugh P. Gibbons, Boulder, both of Colo., assignors to Coors Porcelain Company, Golden, Colo.

Continuation-in-part of application Ser. No. 638,879, May 16, 1967, now abandoned. This application May 27, 1968, Ser. No. 736,527
Int. Cl. B32b *15/08*, *25/02*, *27/04*
U.S. Cl. 161—168 **17 Claims**



A composite of organic resin, preferably an elastomer, and ceramic useful for wear-resistant linings for ball mills, conveyors or chutes for abrasive materials, truck bed linings and the like comprising ceramic pieces with metallized surfaces and with the organic resin bonded to the metallized surfaces of the ceramic, the metallized surfaces being applied to the ceramic by contacting the ceramic with metal, preferably titanium or zirconium with sufficient force and relative motion to cause the metal to be bonded to the ceramic.

3,607,608
FIBER-REINFORCED CERAMICS

August C. Siefert, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Jan. 17, 1966, Ser. No. 520,871
Int. Cl. C04b *35/70*
U.S. Cl. 161—170 **6 Claims**

A composite having high strength and impact resistance comprising from 30 to 90 percent by volume of a glassy material from the group consisting of the following approximate formulations given in approximate percentages by weight: 4% SiO_2, 3% Al_2O_3, 10% B_2O_3, 83% PbO; and 28.7% SiO_2, 9.1% CaO, 11.77% Na_2O, 26.3% B_2O_3, 5.3% ZnO, 17.2% BaO, and 3.1% F_2; and having from 10 to 70% by volume of stainless steel fibers, boron fibers, or graphite fibers.

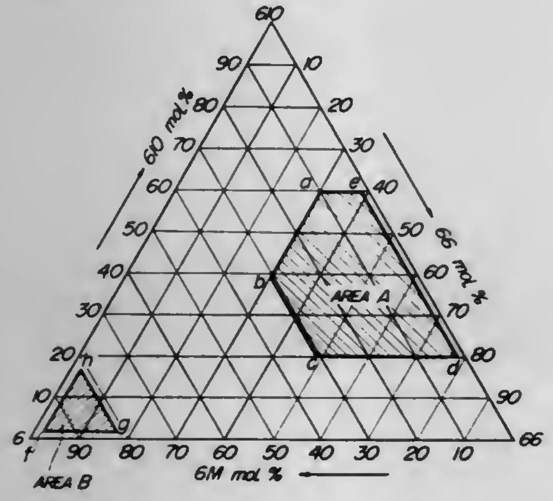
3,607,609
ARTIFICIAL LEATHER MADE OF COLLAGEN FIBERS MIXED WITH SYNTHETIC FIBERS AND METHOD OF MAKING SAME

Ladislav Bogdanovicz, Kunovice; Zdenek Eckmayer, Otrokovice; Zdenek Hrabal, Otrokovice; Radko Krcma, Brno; Vaclav Mrstina, Brno; Antonin Pavlik, Strelice, and Rudolf Vilcek, Oldrichovice, all of Czechoslovakia, assignors to SVIT, Narodni Podnik, Gottwaldov, Czechoslovakia
Filed Nov. 10, 1966, Ser. No. 593,289
Claims priority, application Czechoslovakia, Nov. 13, 1965, PV 6776/65
Int. Cl. D04h *1/30*
U.S. Cl. 161—170 **8 Claims**

Manufacturing leather substitutes comprising the steps of preparing dry collagen fibers and synthetic fibers, forming a web of said fibers and apply an adhesive bonding agent thereto to produce a web having fibers in three dimensional pattern.

3,607,610
CRIMPED COMPOSITE FILAMENTS OF POLYCAPROLACTAM OR POLYHEXAMETHYLENE ADIPAMIDE, AND A TERPOLYAMIDE OF E-CAPROLACTAM, HEXAMETHYLENEDIAMMONIUM ADIPATE, HEXAMETHYLENE DIAMMONIUM SEBACATE

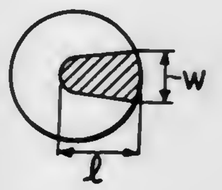
Noboru Fukuma; Hiroshi Chayamiti; Toshio Okamoto; Seizaburo Shigeta, and Hiroshi Takeda, all of Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku Osaka, Japan
Filed Jan. 30, 1968, Ser. No. 701,615
Claims priority, application Japan, Jan. 31, 1967, Jan. 31, 1967, 42/5793;42/5794
Int. Cl. D02g *3/00*
U.S. Cl. 161—173 **4 Claims**



Composite filaments capable of giving excellent crimped yarns are obtained by using, in the production of polyamide composite filaments, the terpolyamide 6/66/610 as a copolymer to be used in combination with either nylon 6 or nylon 66. The proportions of the individual monomers in the terpolyamide are specified in the areas A and B in the accompanying drawing.

3,607,611
COMPOSITE FILAMENT HAVING CRIMPABILITY AND LATENT ADHESIVITY

Masao Matsui, Takatsuki; Susumu Tokura, Osaka, and Masahiro Yamabe, Neyagawa, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Sumida-Ku, Tokyo, Japan
Filed Dec. 13, 1968, Ser. No. 783,585
Claims priority, application Japan, Oct. 9, 1968, Dec. 21, 1967, Dec. 21, 1967, 43/73752;42/82250;42/82257
Int. Cl. D02g *3/00*
U.S. Cl. 161—173 **22 Claims**



A composite filament suitable for manufacturing ladies' stockings having a crimpability comprising at least two fiber-forming components differing in shrinkability, which has such a particular cross section that one component is interposed into the other component, for example, in a wedge-shape and occupies only 5 to 30 percent of the peripheral surface of the filament, is manufactured by flowing two independent same or different spinning materials in opposite directions to each other in two ducts each connecting to a common conduit and combining them and interposing a thin layerlike flow of another spinning material different from the above-described spinning materials between the two spinning material flows at the combined portion in the above-described particular cross-sectional shape and then extruding the thus combined spinning materials through the conduit from a common orifice.

3,607,612
SARAN RIBBON FOR DRY-CLEANABLE TEXTILES

Robert L. Hudson, Saverna Park, Md., assignor to Esso Research and Engineering Company
Filed June 24, 1969, Ser. No. 836,172
Int. Cl. C08f *45/36;* **D01f** *7/02*
U.S. Cl. 161—181 **10 Claims**

Flat extruded saran filaments are provided for use in textile fabrics which may be dry cleaned in perchloroethylene without providing excessive shrinkage of the saran. The saran composition from which the flat filaments are formed must contain no more than 5 percent by weight of extractable organic additives based on the total quantity of the saran copolymer and the additives. The organic additives constitute a stabilizing plasticizer which is an ester of fumaric acid, maleic acid, itaconic acid or aconitic acid, and a light stabilizer; in addition, no more than about 0.5 percent of a nonextractable, primarily inorganic phosphate stabilizer is also used. The composition contains an additional quantity of about 5 percent of branched polyethylene.

3,607,613
ELECTRICALLY CONDUCTIVE REFRACTORY BODIES

Edmund M. Passmore, Wilmington, and Donald P. Wilde, Marblehead, both of Mass., assignors to Sylvania Electric Products Inc.
Filed May 27, 1968, Ser. No. 732,073
Int. Cl. B32b *9/04*
U.S. Cl. 161—182 **2 Claims**

A unitary electrically conductive refractory body is made by joining at least two such smaller bodies. A thin layer of refractory powder is first applied to the interface layer between the two bodies. Heat and pressure is then applied thereto to form the unitary body. The smaller bodies can be formed of an admixture of AlN, BN and TiB_2 and the refractory powder can be a transition metal boride, carbide or nitride.

3,607,614
ADHESIVES

Iain Andrew MacKay, London, England, and Nanbhai Bharucha, Montreal, Quebec, Canada, assignors to The British Non-Ferrous Metals Research Association, London, England
Filed Mar. 4, 1969, Ser. No. 804,307
Int. Cl. C08f *45/60;* **C09j** *3/14;* **H01b** *7/20*
U.S. Cl. 161—218 **5 Claims**

An adhesive, for a metal, particularly for adhering lead to a polyolefin, contains an addition of 2,5-dimercaptothiadiazole in an amount suitable to act as a complexing agent for the metal so as to create a barrier to prevent acidic scission products formed in the adhesive from reacting with the metal and destroying adhesion.

3,607,615
COMPOSITE ACRYLIC FILMS FOR COATING

Hiroshi Hatakeyama, Ohtsu-shi; Takeo Fusayama, Ohtsu-shi; Motozo Fujiwara, Nagoya-shi, and Masahiro Aoyama, Nagoya-shi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed June 2, 1969, Ser. No. 829,802
Claims priority, application Japan, May 31, 1968, 43/36912
Int. Cl. B32b *15/08, 27/08, 27/30*
U.S. Cl. 161—218 **16 Claims**

Composite films comprising upper and lower layers of acrylate copolymers adapted to be employed as coating compositions, and coated laminates produced therefrom.

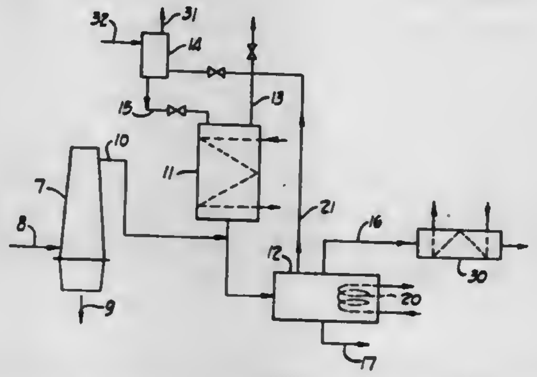
3,607,616
LAMINATED AMORPHOUS AND CRYSTALLINE POLYPROPYLENE SHEETING

Herbert S. Barbehenn, and Robert F. Williams, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 22, 1968, Ser. No. 778,330
Int. Cl. B32b *27/12*
U.S. Cl. 161—252 **6 Claims**

A laminated polypropylene sheeting having physical properties comparable to those of crystalline polypropylene sheeting and comprising a core of polypropylene fiber batting impregnated with amorphous polypropylene laminated to at least one and preferably between two sheets of crystalline polypropylene is disclosed.

3,607,617
TURPENTINE RECOVERY FROM THE WET GASEOUS EFFLUENT OF WOOD-PULPING PROCESSES

John Drew, Jacksonville, Fla., assignor to SCM Corporation, Cleveland, Ohio
Filed Aug. 9, 1968, Ser. No. 751,425
Int. Cl. D21c *11/06*
U.S. Cl. 162—15 **7 Claims**



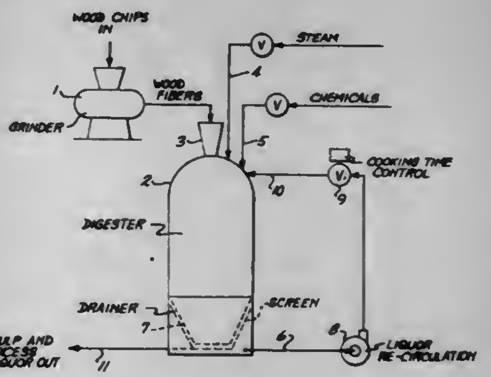
This application discloses a method and apparatus for improving the recovery of turpentine from the gaseous byproducts of wood-pulping processes through improved condensation and decantation processes. The turpentine recovery is improved by condensing the wet gaseous effluent from a wood-pulping process to produce a condensate containing turpentine and water, and then decanting the turpentine phase from the water phase at a temperature that ranges from at least about 125° F., to the boiling point of the condensate thereby reducing turpentine losses with the aqueous underflow from the decanter.

The wet gaseous effluent can be condensed and cooled at conventional condensing temperatures (i.e. 90° F.-110° F.) in which case the condensate is warmed to 125° F. or higher before decanting.

Alternatively and preferably the wet gaseous effluent is condensed and cooled to a temperature ranging from at least about 125° F. to the boiling point of the condensate and the immiscible phases are separated without additional heat exchange. In this preferred embodiment vent gases from the condenser must be further cooled to prevent the loss of turpentine as uncondensed vapor.

3,607,618
WOOD-PULPING PROCESS

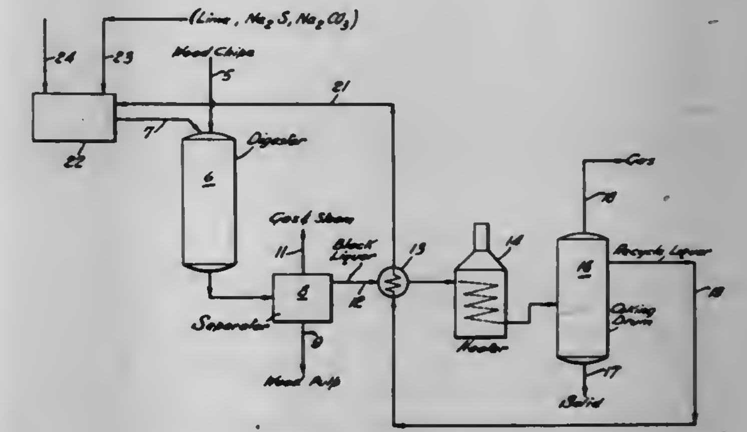
Curt Uschmann, Lebanon, and Erik Berglund, Oswego, both of Oreg., assignors to Process Development Corporation, Portland, Oreg.
Filed Nov. 6, 1967, Ser. No. 680,731
Int. Cl. D21b *1/04;* **D21c** *3/24*
U.S. Cl. 162—17 **2 Claims**



Woolly wood fibers having lengths in the range of one-sixteenth to one-quarter of an inch and cross-sectional dimensions within the range of 0.1 to 0.05 mm., obtained by grinding wood chips of the order of one inch in length in a ribbed plate grinder, are digested in a continuous type of digester by heating such fibers at a temperature in the range of 220° F. to 330° F. for a period of 1 to 20 minutes in acid bisulfite, bisulfite or neutral sulfite cooking liquor. The consistency of the mixture is controlled by regulating the amount of cooking liquor which is recirculated through the digester, and the consistency of the mixture governs the speed of its flow through the digester and consequently controls the cooking time.

3,607,619
COKING OF BLACK LIQUOR IN THE ABSENCE OF ADDED FREE OXYGEN

Howard V. Hess, Glenham, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Nov. 29, 1968, Ser. No. 780,079
Int. Cl. D21c *11/12*
U.S. Cl. 162—30 **6 Claims**



Process for treatment of black liquors from kraft pulp mills wherein black liquor is heated, in the absence of added free oxygen, under pressure at a temperature in the range of 450 to 700° F. for a period of 0.5 minutes to 6 hours to form a solid granular coke product which is separated from the resulting liquid to yield an aqueous liquid effluent suitable for reuse in the pulp making process.

3,607,620
BATCH DIGESTION WITH PREMIXED DIGESTION LIQUOR

Lawrence A. Carlsmith, Amherst, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Jan. 27, 1969, Ser. No. 794,023

Int. Cl. D21c

U.S. Cl. 162—37 **9 Claims**

A batch digesting or pulping apparatus in which a reaction vessel is provided a premixed, reaction liquors mixture predetermined as suitable for the batch-pulping operation. The reaction vessel is connected to supply premixed liquors to a mixing vessel wherein the liquors are intermixed with wood chips; and the wood chips—liquors mixture is pumped to the reaction vessel whereby the chips are sluiced into the latter and the mixture displaces liquors from the reaction vessel. Also, a batch digesting or pulping method wherein a premixed, reaction liquors mixture is supplied to a reaction vessel, then discharged to a mixing vessel in which it is intermixed with wood chips, and the wood chips—liquors mixture is supplied to the reaction vessel to displace premixed liquors therefrom.

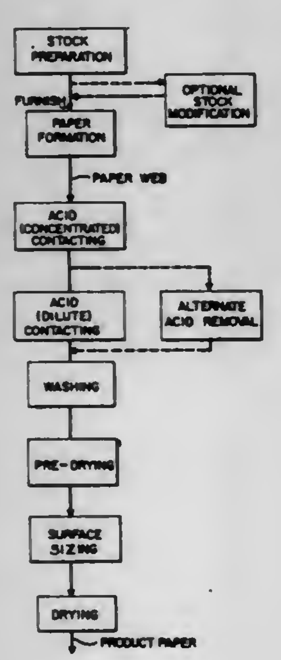
3,607,621
ERASABLE PAPER AND PROCESS FOR MAKING SAME

William R. Wasko, Cherry Hill; Milton R. Sheppard, Willingboro, N.J.; Orsi R. Schultz, Philadelphia, Pa., and Sol A. Albertson, Willingboro, N.J., assignors to Paterson Parchment Paper Company, Bristol, Bucks County, Pa.

Filed Jan. 17, 1968, Ser. No. 698,474

Int. Cl. D21h *3/34;* **D21f** *11/00*

U.S. Cl. 162—135 **8 Claims**



Process for making erasable paper by forming a paper web, contacting the formed web with a parchmentized solution, removing excess acid, at least partially drying the web, and applying to a surface of the paper one or more sizing agents which are low molecular weight polyesters made by reaction of rosin and maleic anhydride adducts with polyhydric alcohols, and are preferably polyesters of rosin-maleic anhydride adducts with aliphatic polyols, and are applied alone or in combination with certain additives. The invention also includes the product of the foregoing process.

3,607,622
AMINOPOLYAMIDE-ACRYLAMIDE-POLYALDEHYDE RESINS HAVING UTILITY AS WET AND DRY STRENGTH AGENTS, RETENTION AIDS AND FLOCCULANTS AND A PROCESS OF MAKING AND USING THEM AND PAPER MADE THEREFROM

Herbert H. Espy, Fairfax, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 24, 1968, Ser. No. 747,090

Int. Cl. D21h *3/58;* **C02b** *1/20;* **C08g** *9/02*

U.S. Cl. 162—167 **22 Claims**

Disclosed is a novel aminopolyamide—acrylamide—polyaldehyde resin useful in the paper making art to enhance the wet and dry strength of paper. Small amounts of the resin can also be used as a retention aid for mineral fillers in paper and as a flocculant for suspended matter.

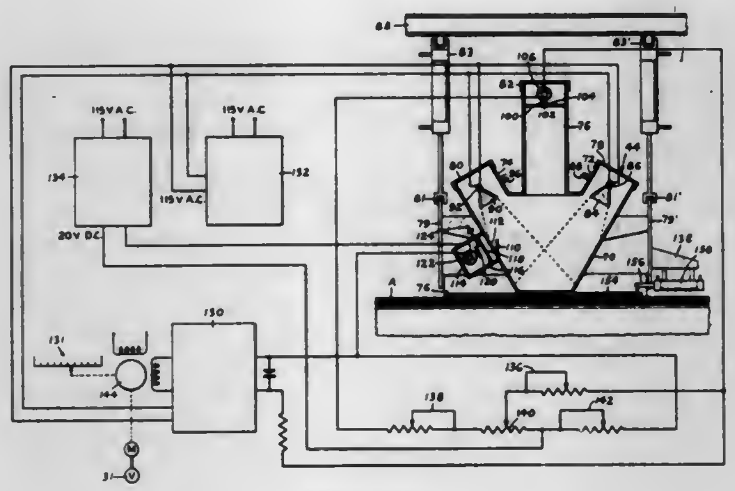
3,607,623
METER FOR MEASURING BRIGHTNESS OF BLEACHED FIBERS AND CONTROLLING THE BLEACHING PROCESS

James H. Chappelle, Kensington, Georgetown, S.C., assignor to International Paper Company, New York, N.Y.

Continuation of application Ser. No. 535,402, Mar. 18, 1966, now abandoned. This application May 1, 1970, Ser. No. 31,857

Int. Cl. D21c *7/12;* **H01j** *39/12*

U.S. Cl. 162—252 **5 Claims**



Apparatus for continuously controlling the bleaching of fibers and for continuously measuring and recording the brightness of light reflected from the bleached fibers having a bleaching tank, means for feeding fibers to the tank, means for feeding bleaching agents to the tank, means for feeding bleached fibers from the tank, a drum for forming the bleached fibers into a mat on the drum, a housing open at one end and closed at its sides and opposite ends supported on the mat on the drum on rollers, a light source and a light-responsive phototube in the housing, means in the housing for directing light from the light source onto a mat at the open end of said housing and for directing reflected light from such mat to the phototube and means responsive to the phototube and light reflected to the phototube for controlling the feed of bleaching agent to the bleaching tank and for recording the brightness of the mat.

3,607,624
SELF-CLEANING DECKLE RAIL FOR PAPERMAKING MACHINES

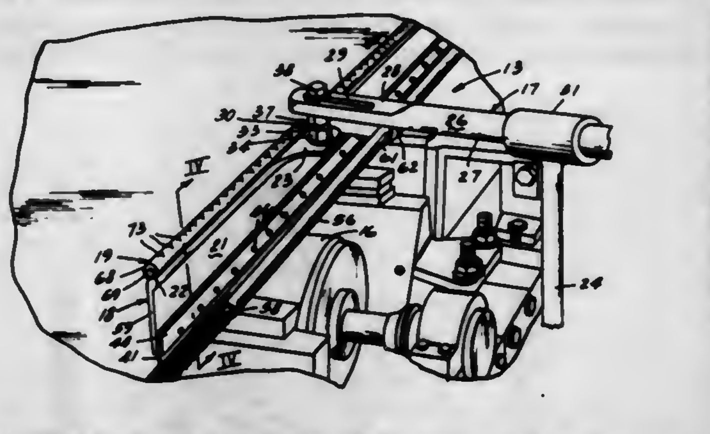
Walter R. Moody, NeKoosa; Thomas S. O'Day, Wisconsin Rapids, and Stanley J. Cwicklo, Wisconsin Rapids, all of Wis., assignors to Nekoosa Edwards Paper Company Inc., Port Edwards, Wis.

Filed Aug. 22, 1969, Ser. No. 852,282

Int. Cl. D21f *1/56, 1/58*

U.S. Cl. 162—272 **11 Claims**

A water-distribution tube is placed superjacent the deckle rail on a papermaking machine. The tube is provided with an aperture opening on its upper surface and directing notches which are formed on the upper surface of the tube and disposed transverse to the length of the tube. Water discharged from the aperture is directed by the notches downwardly along opposite sides of the tube and on the corresponding sides of the deckle rail. In this manner the rail is continuously washed and coated with water thereby eliminating corrosion loading.



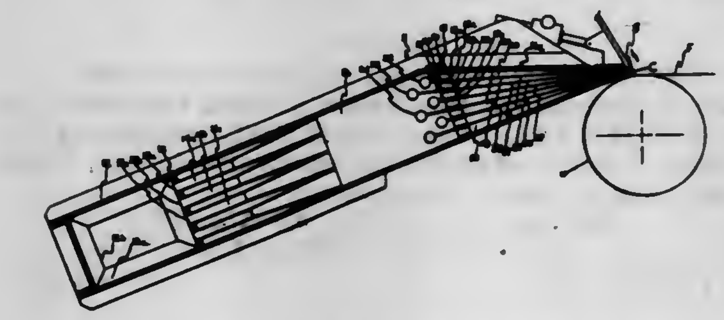
3,607,625
HEADBOX

Lester M. Hill, Beloit, Wis.; Joseph D. Parker, Roscoe, Ill., and Richard E. Hergert, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Jan. 17, 1968, Ser. No. 698,633

Int. Cl. D21f *1/02*

U.S. Cl. 162—343 **14 Claims**



A headbox construction for a papermaking machine which comprises a slice chamber connected to a preslice flow chamber by means of a perforate member. The slice chamber contains a plurality of plates and/or filaments attached to said perforate member and extend in the direction of stock flow through said slice chamber and define therein a multiplicity of relatively narrow channels of decreasing cross-sectional area in the direction of flow.

3,607,626
DOUBLE-FELTED PRESS

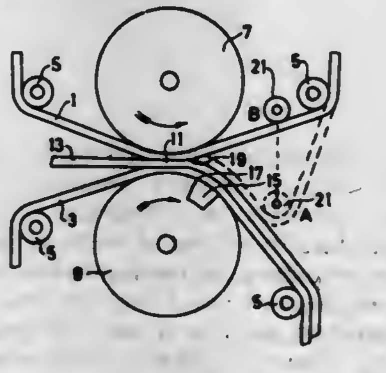
Jan Peter Nilsson, Karlstad, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Sept. 10, 1969, Ser. No. 856,654

Claims priority, application Sweden, Sept. 17, 1968, 12491/68

Int. Cl. D21f *3/00*

U.S. Cl. 162—358 **1 Claim**



A double-felted press for a papermaking machine or the like comprises a pair of press rolls arranged to form a nip and an endless press felt trained around a segment of each of the rolls, the press felts passing through the nip. One of the rolls is a suction roll, and the suction zone is located entirely on the downstream side of the roll, relative to the direction of rotation of the roll, from the nip, is contiguous or in proximate relation to the nip, and is within the segment of the roll over which the felt for that roll is trained. A guide roll for the felt associated with the other press roll (the nonsection-roll is normally positioned such that the felt is separated from the web being pressed before the web reaches the suction zone of the suction roll but is arranged to be moved to a position training that felt around the suction zone of the suction roll so that the two felts turn around the suction zone of the suction roll and ensure that the web runs with the suction-roll felt. Normally, the two felts are trained to run together over the suction zone of the suction roll only upon startup of the machine.

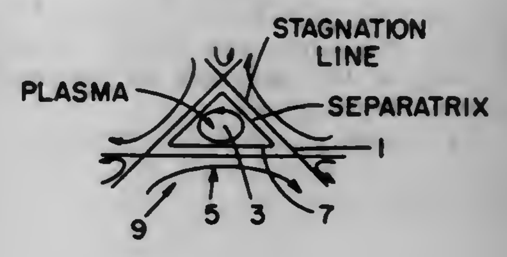
3,607,627
STELLARATOR CONFIGURATION UTILIZING INTERNAL SEPARATRICES

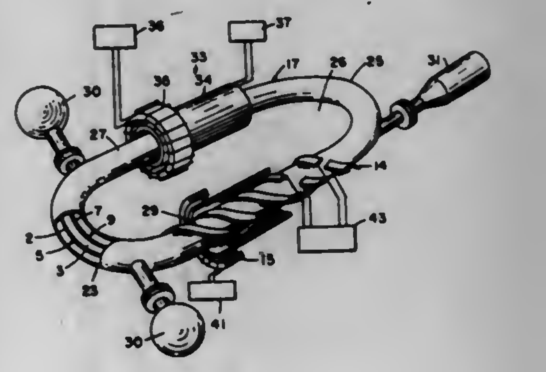
Harold P. Furth, Princeton; John L. Johnson, Princeton, and George V. Sheffield, Hopewell, all of N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 10, 1968, Ser. No. 766,432

Int. Cl. G21b *1/00*

U.S. Cl. 176—3 **9 Claims**





Stellarator having internal separatrices such that the equilibrium properties are favorable for stability and stellarator method for providing a stable equilibrium region for confining a plasma both inside and outside the internal separatrices, and for maximizing the three functions of large rotational transform, strong shear θ, and deep well V''.

3,607,628
REFUELLING TUBE IN A WATER-COOLED NUCLEAR REACTOR

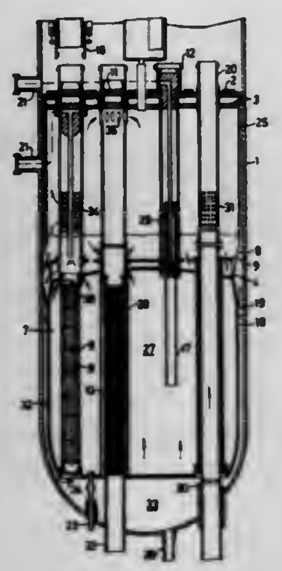
Lars Olof Tor Wadmark, Nasby Park, Sweden, assignor to Aktienbolaget Atomenergi, Stockholm, Sweden

Continuation of application Ser. No. 598,757, Dec. 2, 1966, now abandoned. This application Oct. 8, 1968, Ser. No. 768,211

Int. Cl. G21c *19/20*

U.S. Cl. 176—31 **1 Claim**

In a water-cooled nuclear reactor, fuel is introduced into the interior of the reactor vessel through a refuelling tube which extends through a water-filled portion of the reactor core. The cooling of the refuelling tube is made possible by the provision of openings in said tube below the reactor core and above the reactor core whereby heat produced by a fuel cartridge when passing through said tube induces a flow of water through said tube.



3,607,629

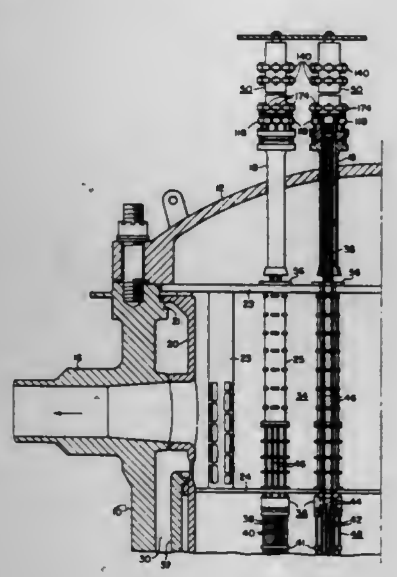
DRIVE MECHANISM FOR CONTROL ELEMENTS

Erling Frisch, Pittsburgh, and Harry N. Andrews, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1968, Ser. No. 700,121

Int. Cl. G21c *7/16*

U.S. Cl. 176—36 **10 Claims**



A nuclear reactor is disclosed wherein hydraulic drive mechanisms are provided to vary the location of a plurality of neutron-absorbing control elements associated with selected fuel assemblies. Each fuel assembly comprises a fixed array of commingled and spaced fuel pins and guide tubes. Each selected assembly has a plurality of individually movable two-position control elements which are coupled to drive mechanisms which operate to telescope the control elements within their associated guide tubes.

3,607,630

MOLTEN CORE STOPPING DEVICE

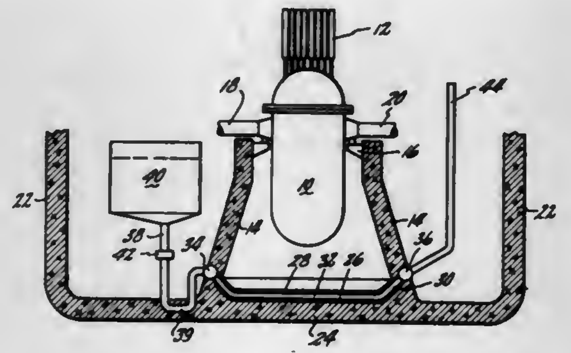
John M. West, and William D. Fletcher, III, both of Hartford, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 22, 1969, Ser. No. 852,175

Int. Cl. G21c *9/00*

U.S. Cl. 176—38 **12 Claims**

A water-cooled metal basin is located under a nuclear reactor vessel to catch, cool, solidify and retain molten core material dropped from the vessel upon a burn-through of the vessel. A plurality of horizontally disposed water-filled tubes in the basin have a common inlet connected with an elevated storage tank and have discharge outlets positioned at a height at least equal to the water level in the storage tank. The basin provides a level floor on which the molten core material may spread out in a thin layer and be solidified and maintained solid by transfer of heat to water passing through the tubes. The tubes may also extend vertically above the basin to absorb heat radiated from the upper surface of the layer and radiating fins may be provided in the basin. A second material may also be provided to absorb heat from the molten reactor material by melting of the second material thereby solidifying the molten core material. Waterflow is started automatically by convention and gravity.



3,607,631

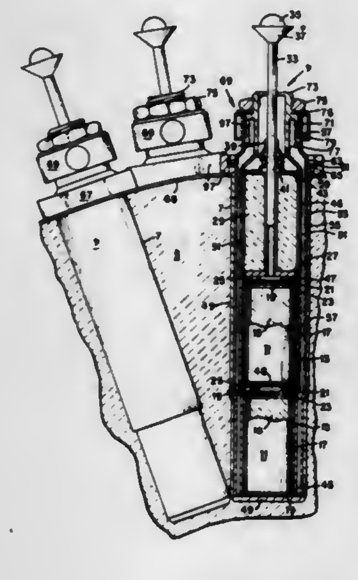
MODERATED THERMIONIC REACTOR CORE

Robert R. Hobson, San Jose; Robert N. Scott, Livermore, and Paul R. Hill, Castro Valley, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission.

Filed Nov. 6, 1968, Ser. No. 774,227

Int. Cl. G21c *1/00;* H02n *3/00*

U.S. Cl. 176—39 **8 Claims**



A moderated thermionic core assembly has been provided which employs vapor chamber condenser-cooled stacked thermionic fuel elements. A cylindrical moderator block is provided with a plurality of radial wells drilled in an ordered array about the periphery of the moderator block. Each well is adapted to receive a tubular fuel element which includes two series-connected nuclear fueled thermionic converter elements having a neutral plasma maintained between the emitter and collector electrodes of each converter. Each fuel element includes a vapor chamber condenser which extracts excess heat from the collectors and transmits it to an external reflector from which the excess heat is radiated to space.

3,607,632

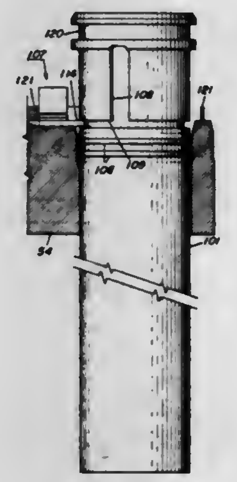
NUCLEAR REACTOR ORIFICE-SEAL ARRANGEMENT

Ned P. Hansen, and Ralph W. Guenther, both of San Jose, Calif., assignors to General Electric Company

Filed Nov. 26, 1968, Ser. No. 779,135

Int. Cl. G21c *15/22*

U.S. Cl. 176—43 **5 Claims**



An orifice-seal arrangement, acting primarily as a coolant conduit, for nuclear reactors is disclosed. An orifice-seal consists of two coaxial telescoped tubes which are secured to a fuel assembly and to a wall of the coolant outlet plenum during reactor operation. The orifice-seal is adapted to conduct coolant from individual nuclear fuel assemblies to an outlet plenum, while sealing against coolant leakage. In addition, the orifice-seal supports the individual fuel assemblies in a manner accommodating slight radial movement of fuel assemblies and thermal expansion within the assemblies during changes in reactor temperature. The orifice-seal also functions as an indicator of proper core assembly during fuel loading and reloading.

3,607,633

BOILING HEAVY WATER INDIRECT-CYCLE REACTOR

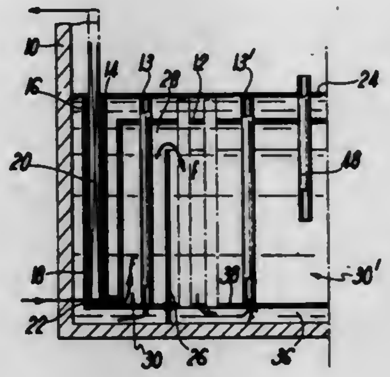
Maurice Fajeau, Verrieres Le Buisson, France, assignor to Commissariat a L'Energie Atomique, Paris, France

Filed Mar. 21, 1968, Ser. No. 714,866

Claims priority, application France, Apr. 5, 1967, PV104138

Int. Cl. G21c *15/00*

U.S. Cl. 176—54 **5 Claims**



The boiling heavy water reactor has heat exchangers located in the pressure vessel around a tank containing part of the heavy water inventory which constitutes the moderator. The flow of heavy water used as coolant circulates along two different paths. The first path comprises the heat exchangers, the interior of the tank and certain of the guide tubes locating the fuel elements. The second path comprises the other guide tubes. Both paths open into a collector space above the tank.

3,607,634

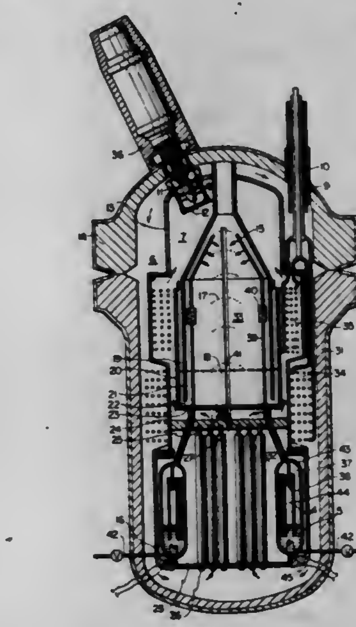
PRESSURIZED NUCLEAR REACTOR WITH SIMPLIFIED ARRANGEMENT FOR DISTILLATION OF PRIMARY FLUID

Claude J. O. L. Gerard, Erpent; Fernand A. J. L. Lamproye, Haccourt, and Henri C. G. Piron, Liege, all of Belgium, assignors to Societe Anglo-Belge Vulcain, Brussels, Belgium

Continuation-in-part of application Ser. No. 482,830, Aug. 26, 1965, now abandoned. This application Dec. 10, 1968, Ser. No. 782,623

Int. Cl. G21c *19/30*

U.S. Cl. 176—54 **10 Claims**



A nuclear reactor of the type having a boiler therein for distillation of primary fluid, in which reactor the internal arrangements have been simplified and the distilling operation rendered more efficient by location of the boiler in the thermal shield.

3,607,635

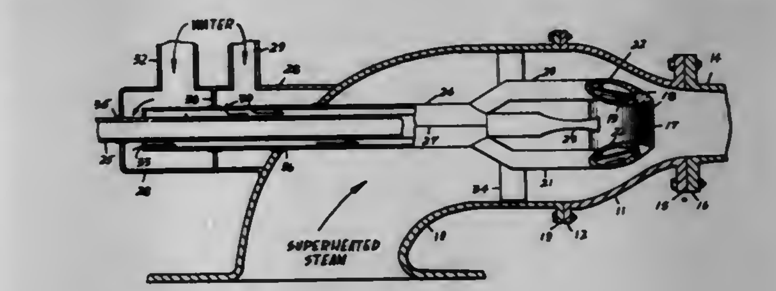
NUCLEAR REACTOR WITH VARIABLE FLOW STEAM CIRCULATOR

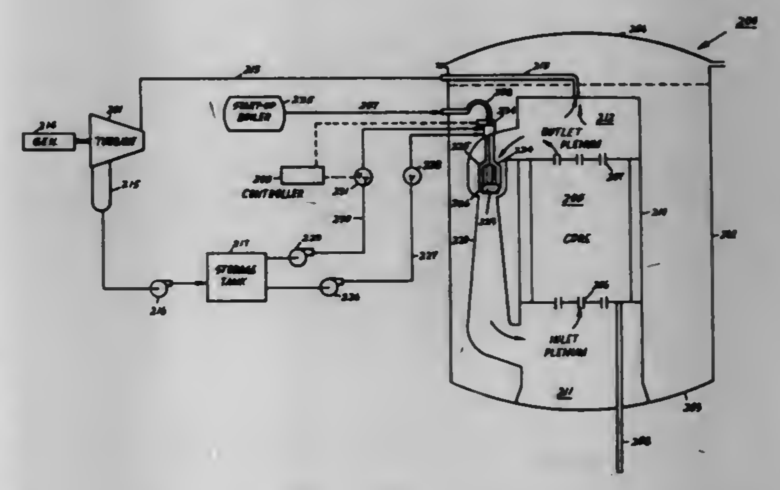
Charles C. Ripley, and Gerald L. O'Neill, both of San Jose, Calif., assignors to General Electric Company

Filed Apr. 10, 1968, Ser. No. 720,320

Int. Cl. G21c *15/24*

U.S. Cl. 176—56 **2 Claims**

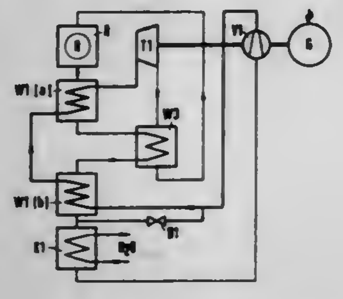




A steam cooled nuclear reactor power plant having an improved thermopresser capable of part load operation. In a steam thermopresser in which water droplets are injected into flowing superheated steam, a system is provided by which waterflow can be decreased as steam flow decreases, while maintaining an optimum thermopresser throat configuration at any flow rate.

3,607,636
NUCLEAR POWER STATION WITH CO COOLING SYSTEM

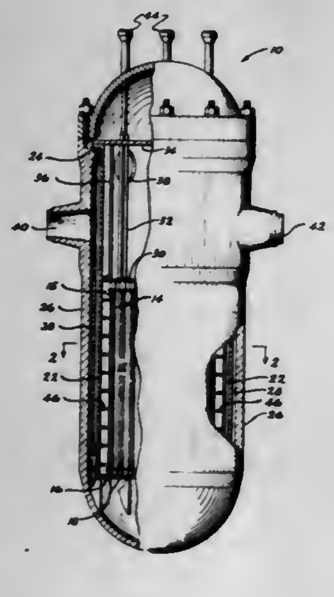
Jorg Nageler, and Hans-Peter Schabert, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed Sept. 27, 1968, Ser. No. 763,264
Claims priority, application Germany, Sept. 29, 1967, P 16 14 620.6
Int. Cl. G21c *19/28*
U.S. Cl. 176—60 **8 Claims**



Carbon dioxide cooling system for a nuclear power station producing electrical energy includes a gas turbine connected to a compressor and located upstream of the coolant gas inlet to the reactor, a regenerative heat exchanger connected in the coolant gas line between the compressor and the gas turbine, the primary loop of the regenerative heat exchanger being traversed by heated coolant issuing from the reactor either directly or after being relatively slightly reduced in pressure, the coolant further traversing a cooler connected in the primary loop, the coolant entering the compressor having a pressure within a range of at least 40 atma. and 130 atma., and further including means for supplying supplementary heat from the gas leaving the turbine to the high-pressure gas heated in the regenerative heat exchanger so as to increase the turbine inlet temperature and the entire efficiency therewith.

3,607,637
NUCLEAR REACTOR COOLANT FLOW DEVICE

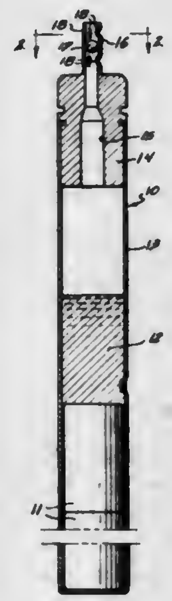
Robert C. Marshall, West Avon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jan. 3, 1969, Ser. No. 788,709
Int. Cl. G21c *15/02, 15/24*
U.S. Cl. 176—61 **14 Claims**



A flow-confining arrangement for a nuclear reactor which has a core comprised of a plurality of parallel fuel elements. The core is of the open type wherein the flow surrounds each of the fuel rods. A core barrel surrounds the core and generally confines the coolant flow which is passing longitudinally of the fuel elements. A plurality of seal plates extend transversely from the core barrel to the outer fuel elements of the core. These plates prevent flow through the irregular annular space between the core barrel and the core so as to avoid coolant bypassing the core. A plurality of these plates are at locations intermediate the top and bottom of the core with the spacing between these seal plates being sufficiently smaller so that the coolant flow does not expand in this flow path to flow through all the irregular annular opening. This close spacing assures that the coolant flow is effectively confined to the reactor core not only at the seal plate location but also at the locations intermediate the seal plate. The maximum spacing to perform this function is preferred to avoid the requirement of too many seal plates. These seal plates provide a minimum of neutron-absorbing material near the outer fuel elements of the core thereby increasing the output of these fuel elements and accordingly the overall power capability of the core.

3,607,638
FUEL ELEMENT VENTING SYSTEM

Orville S. Selm, Wheaton, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Apr. 8, 1970, Ser. No. 26,575
Int. Cl. G21c *3/10*
U.S. Cl. 176—68 **5 Claims**

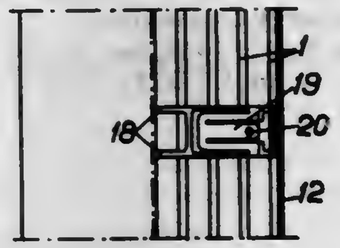


A fuel element for a nuclear reactor includes a vent permitting release of gaseous fission products to the coolant during operation of the reactor while ensuring that the fuel material is sealed within the fuel element at other times. This is accomplished with a valve member such as a ball or needle of low coefficient of thermal expansion disposed within a passageway in an end cap for the fuel element which is formed of a material having a high coefficient of thermal expansion. At low temperatures the vent is sealed by the ball or needle, at high temperatures it is open so that fission gases can pass therethrough.

3,607,639
FUEL ASSEMBLY FOR NUCLEAR REACTORS

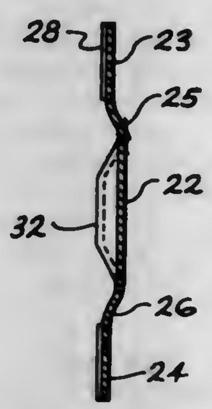
Aart Van Santen, Hokasen; Lars-Erik Samskog, Vasteras, and Lars Tornblom, Vasteras, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed July 11, 1968, Ser. No. 744,127
Claims priority, application Sweden, July 17, 1967, 10593/67
Int. Cl. G21c *3/32*
U.S. Cl. 176—78 **7 Claims**

A fuel assembly for nuclear reactors is formed of a plurality of substantially parallel fuel rods arranged between a top plate and a bottom member inside a sheathing tube. Spacer elements for these tubes are provided with leaf springs secured to the spacer frames, the free ends of the springs having buttons thereon engaging in holes in the sheathing tube to position the spacer elements in the tube.



3,607,640
PERIMETER STRIP FOR A NUCLEAR REACTOR FUEL ASSEMBLY SUPPORT GRID

Donald M. Krawiec, Thompsonville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed June 24, 1968, Ser. No. 739,221
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **9 Claims**

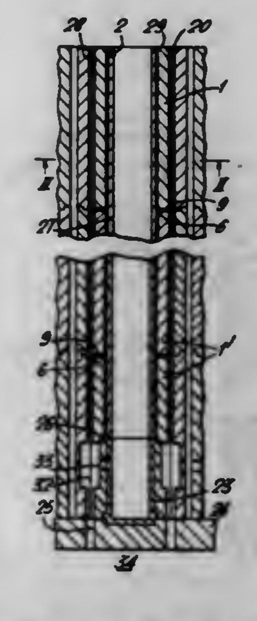


A perimeter strip for a nuclear reactor fuel assembly support grid. The perimeter strip forms the outer edge of an egg-crate-type fuel-rod-spacing grid and is rigidly welded to the strips passing intermediate the fuel rods. It comprises a central portion parallel to the fuel rods and spaced therefrom as well as upper and lower portions parallel to the fuel rods at a location inwardly of the central portion. Sloping portions of the strip join the central portion and the upper and lower portions, with the distance between the outer surface of the outer fuel rods and the outer surface of the upper and lower portions being less than the distance between the outer surface of the central portion. The upper and lower portions are arched inwardly slightly to contact alternate fuel rods, while the and portion is formed to make resilient spring contact with the intermediate fuel rods. The sloped portion has holes therethrough adjacent the arches where rigid contact is made with the fuel rods. The egg crate structure is welded to the perimeter strip intermediate the arches and springs only at the upper and lower portions.

3,607,641
GRAPHITE MODERATOR STRUCTURES FOR NUCLEAR REACTORS

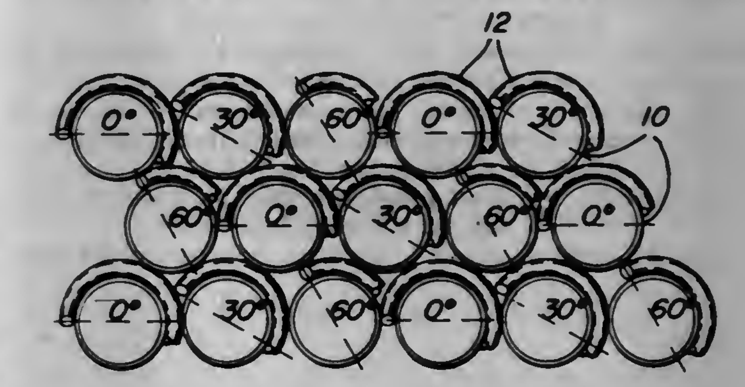
Robert Lind, and Norman Price, both of Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Feb. 2, 1968, Ser. No. 702,735
Claims priority, application Great Britain, Feb. 28, 1967, 9482/67
Int. Cl. G21c *19/28*
U.S. Cl. 176—59 **3 Claims**

A graphite-moderated nuclear reactor with a reentrant core is provided with means for inducing coolant flowing through the moderator to diffuse into the moderator. The means may comprise flow restrictors in the coolant flow path whereby a pressure drop is created across individual graphite bricks forming the moderator, and gas seals between the bricks. To facilitate sealing, engagement between bricks stacked in columns is in the peripheral region by recesses and separate keys pegged in position, leaving internal annular plane continuous surfaces in and between which a sealing ring is provided.



3,607,642
NUCLEAR REACTOR FUEL ASSEMBLY

Thomas B. Murdock, and Jack N. Fox, both of San Jose, Calif., assignors to General Electric Company
Filed Nov. 26, 1968, Ser. No. 778,999
Int. Cl. G21c *3/30*
U.S. Cl. 176—78 **18 Claims**

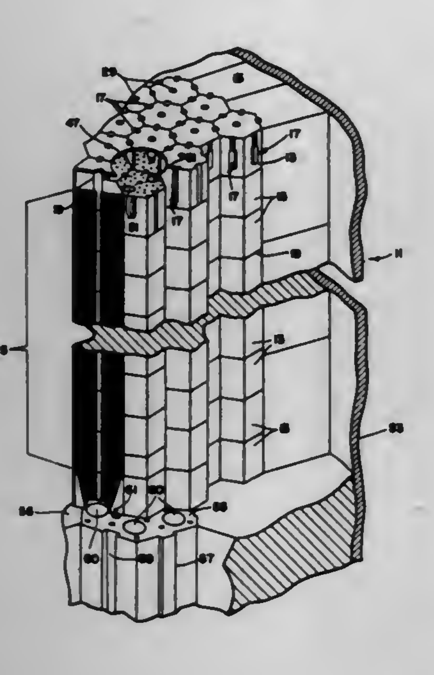


An assembly comprising a plurality of rods containing fissionable material is disclosed. Typically, the fuel rods are arranged in a hexagonal parallel array, with the rods spaced from each other by wires wound around and down each rod in a spiral manner. The rods are fastened only at the bottom, to a plurality of spaced support bars. The assembly is surrounded by a shroud terminating in inlet and outlet orifices or transitions at the ends. The lower orifice is adapted to fit in an opening in a plate, while allowing slight transverse movement of the shroud and fuel rods relative to the lower orifice. Also, improved flow and heat transfer characteristics are obtained where at least some of the wires in the row of fuel rods adjacent the assembly shrouds are formed from thin tubes, which are flattened slightly where they contact the shroud to decrease the size of the fluid flow gap between the fuel rods and the shroud.

3,607,643
REACTOR CORE WITH REMOVABLE CORE ELEMENTS

John A. Paget, Imperial Beach, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Apr. 4, 1969, Ser. No. 813,450
Int. Cl. G21c *5/00*
U.S. Cl. 176—84 **3 Claims**

In the top layer of a lattice of core elements, keys interlock the core elements and provide geometric stability for a reactor core. Mores specifically, the core elements are interlocked by loose, shared keys extending between keyways in a pair of adjacent core elements. These loose shared keys are readily slideable from the keyways with removal of either of the core elements whereby the cavity is left clear to receive new replacement core elements. Fixed keys may also be attached to the core elements to facilitate alignment and keying of core elements to each other.



3,607,644

LIQUID-SAFETY-ROD SYSTEM WITH A FLEXIBLE DIAPHRAGM ACCUMULATOR

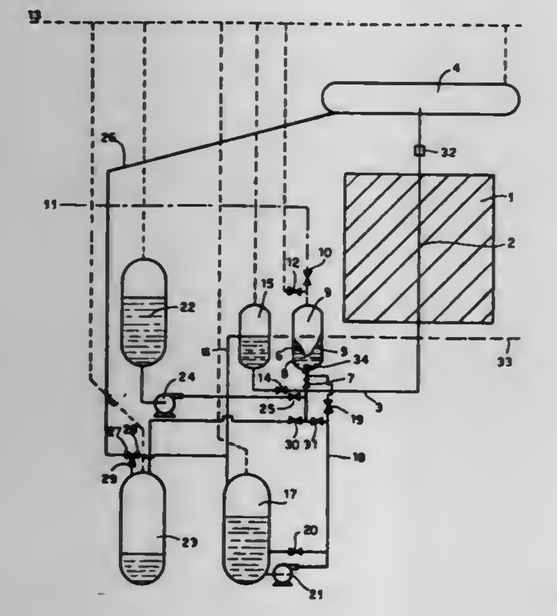
Alberto Agazzi, Bergamo, Italy; Armando Broggi, Santa Fe, Argentina; Sergio Galli De Paratesi, Varese, Italy, and Luciano Ghiurghi, Varese, Italy, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed Oct. 2, 1968, Ser. No. 764,413

Claims priority, application Belgium, Oct. 26, 1967, 50095

Int. Cl. G21c *7/22*

U.S. Cl. 176—86 **9 Claims**



A liquid-safety-rod system for nuclear reactors comprising a lower poison-solution reservoir, a poison-solution accumulator containing a flexible diaphragm connected therewith, a source of high-pressure gas to force the poison solution out of the accumulator into a connecting collector and thence into tubes extending through the reactor core and a washing circuit comprising a washing-liquid reservoir, a washing-residue reservoir and a pump connected to said tubes.

3,607,645

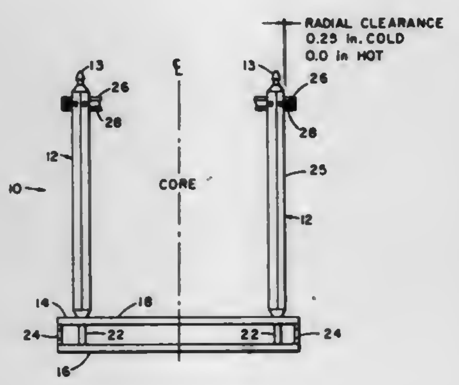
REACTOR CORE RADIAL LOCKING DEVICE

Raymond S. Stankiewicz, Ellington, Conn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed July 2, 1968, Ser. No. 741,960

Int. Cl. G21c *19/06*

U.S. Cl. 176—87 **3 Claims**



A nuclear reactor core-locking device which holds the fuel assembly loosely for refueling and tightly against vibration or other adverse movement under operating conditions. A core-retainer band surrounds and is spaced from the core at assembly. The retainer band is made from material having a lower coefficient of thermal expansion than the core structural material so that when operating temperatures are reached the core expands into contact with the band and becomes effectively locked into place.

3,607,646

METHOD FOR THE PRESERVATION OF ANIMAL OR HUMAN ORGANS IN LIVING CONDITION

Henry de Roissart, Grenoble, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Apr. 2, 1969, Ser. No. 812,696

Claims priority, application France, Apr. 4, 1968, 147,053

Int. Cl. A61r *17/00*

U.S. Cl. 195—1.7 **12 Claims**

A method and apparatus is described, pertaining to the preservation of living tissue such as an organ excised from the body for an extended time in view of future transplant thereof. The organ is placed in a refrigerated environment and under pressure while a nutrient fluid is circulated through its arterial complex. The gas utilized for pressurizing the environment of the organ is biochemically inert and serves as a carrier of oxygen which is absorbed by the nutrient, the latter being subjected to the influence of the pressurizing gas.

3,607,647

TREATMENT OF SUGAR SOLUTIONS

Peter Hidi, Kingsgrove, New South Wales; Ian G. R. Burgess, Warrawee, New South Wales, and Robin H. Holdgate, Wahroonga, New South Wales, all of Australia, assignors to The Colonial Sugar Refining Company Limited, Sydney, New South Wales, Australia

Filed Apr. 19, 1967, Ser. No. 631,888

Int. Cl. C13d *3/00*

U.S. Cl. 195—11 **7 Claims**

Process for reducing the starch level of a starch-containing sucrose solution derived from sugar-bearing plant material, for example, a mill-clarified liquor or a refinery syrup, in which a thermostable bacterial amylase, such as one having α-amylase activity and being derived from the species Bacillus subtilis, is added to the solution at a temperature between 160° F. and the deactivation temperature of the amylase, the pH of the solution being neutral to slightly alkaline.

3,607,648

METHOD FOR THE PRODUCTION OF D-RIBOSE

Masahiko Yoneda, Kobe, and Ken-Ichi Sasjima, Ikeda, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 29, 1969, Ser. No. 795,045

Claims priority, application Japan, Feb. 1, 1968, 43/6224

Int. Cl. C12d *13/02*

U.S. Cl. 195—28 **10 Claims**

D-ribose is produced by culturing a D-ribose-producing micro-organism of the genus *Bacillus*, said micro-organism requiring L-tyrosine, L-tryptophan and L-phenylalanine in a proper culture medium. The accumulated D-ribose is subsequently recovered from the medium.

3,607,649

METHOD FOR THE PRODUCTION OF GUANOSINE AND 5'-GUANYLIC ACID

Masahiko Yoneda, Suita; Makoto Kida, Fuse; Teiuji Hemmi, Amagasaki; Ikuo Nogami, Kyoto; Akira Imada, Nishinomiya; Yuichi Takeuchi, Akashi, and Einosuke Ohmura, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of application Ser. No. 525,289, Feb. 7, 1966, now abandoned. This application June 11, 1969, Ser. No. 834,933

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 **12 Claims**

5'-guanylic acid, guanosine or a mixture thereof produced by culturing a mutant of Bacillus pumilus Gottheil, Bacillus megaterium de Bary or Brevibacterium ammoniagenes Breed which requires both (1) adenine and (2) an amino acid and/or a water-soluble vitamin.

3,607,650

PROCESS FOR THE ENZYMATIC EXTRACTION AND PURIFICATION OF A GLYCOPEPTIDE OBTAINED FROM ANIMAL ORGANS, USEFUL AS A DRUG

Gianfranco Bertellini, Maslianico; Adriano Butti, Tavernola, and Giuseppe Prino, Milan, all of Italy, assignors to Prephar Prospection De Recherches Pharmaceutiques S.A., Schaffhausen, Switzerland

Continuation-in-part of application Ser. No. 583,070, Sept. 29, 1966, now abandoned. This application May 15, 1970, Ser. No. 37,886

Int. Cl. C07g *7/026;* **C12d** *5/06*

U.S. Cl. 195—29 **10 Claims**

Glycopeptides are extracted from the gastric mucosa or duodenum of swine by hydrolysis of the animal organ under specified conditions, followed by separation of acidic hydrolysis byproducts and dilution of the extraction product with a nonsolvent to precipitate the glycopeptides.

3,607,651

METHOD FOR THE BIOCHEMICAL ISOLATION OF L-MENTHOL

Tatsuo Moroe, Tokyo; Satohika Hattori, Yokohama-shi; Akira Komatsu, Tokyo, and Yuzo Yamaguchi, Yokohama-shi, all of Japan, assignors to Takasago Perfumery Co., Ltd, Tokyo, Japan

Filed Dec. 11, 1968, Ser. No. 783,126

Int. Cl. C12d *13/02*

U.S. Cl. 195—30 **7 Claims**

Method for the biochemical isolation of *l*-menthol. Specifically, an improved method for the optical resolution of racemic menthol utilizing an enzyme, carboxylic ester hydrolase, produced by the action of a micro-organism belonging to the class of Penicillium, Gliocladium, Trichoderma, Geotrichum, Aspergillus, Pullaria, Fusarium, Absidia, Cunninghamella, Rhizopus, Actinomucor, Chlamyclomucor, Mucor, Gibberella, Streptomyces or Bacillus.

The *l*-menthol may be utilized in perfumes, medicines, etc.

3,607,652

PROCESS FOR THE PRODUCTION OF D-ARABITOL

Kiyomoto Ueda, Tokyo, Japan, assignor to Eisai Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1969, Ser. No. 827,932

Claims priority, application Japan, May 25, 1968, 43/35311

Int. Cl. C12d *13/00*

U.S. Cl. 195—37 **2 Claims**

A process for the fermentative production of D-arabitol by cultivating under aerobical condition a micro-organism Pichia ohmeri No. 230 (ATCC Deposit No. 20209) in a nutrient medium containing fermentable saccharides such as glucose, sucrose, mannose, fructose and the like as carbon source, and recovering D-arabitol accumulated in the cultivated liquor.

D-arabitol is thus obtained at a high yield without substantial formation of other polyhydric alcohols having similar properties.

3,607,653

BACTERIAL PROTEASE COMPOSITIONS AND PROCESS FOR PREPARING THEM

Jack Ziffer, Milwaukee, and Simon Rothenberg, Shorewood, both of Wis., assignors to Pabst Brewing Company, Milwaukee, Wis.

Filed July 16, 1968, Ser. No. 745,092

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 R **10 Claims**

Polyethylene glycol polymers are incorporated with bacterial protease in order to improve granular characteristics and also to stabilize the protease and decrease the typical protease odor.

3,607,654

PROCESS FOR PRODUCING PURIFIED L-ASPARAGINASE

Kazuo Mochizuki, Sunto-gun; Masahiro Kohagura, Sunto-gun; Tsuneo Kagawa, Sunto-gun, and Masao Tanaka, Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 27, 1969, Ser. No. 828,386

Claims priority, application Japan, June 15, 1968, 43/40854

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 A **14 Claims**

The antitumor activity of L-asparaginase produced from the cultured cells of micro-organisms belonging to the genus Serratia is retained by a purification process wherein the substrate, L-asparagine, is added to the enzyme-containing solution recovered from the cells and the pH of the solution is adjusted to 4.0 or less, preferably 3.0–3.5. In this way, the L-asparaginase-inactivating factors are eliminated without impairing the activity of the L-asparaginase. This treatment can be used on a crude enzymatic solution, with subsequent purification steps, or it can be employed with an already purified L-asparaginase solution.

3,607,655

PROCESS FOR PRODUCING MILK CLOTTING ENZYME

Noboru Mukai, and Masanobu Kawai, both of Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1968, Ser. No. 711,530

Claims priority, application Japan, Mar. 14, 1967, Dec. 1, 1967, 15578;76751

Int. Cl. C12d *13/10;* **A23c** *19/02*

U.S. Cl. 195—66 **11 Claims**

A process for producing a milk clotting enzyme by fermentation which comprises culturing a micro-organism belonging to the genus Irpex, Fomitopsis, Coriolus or Lenzites in a nutrient medium under aerobic conditions. The enzyme accumulates in the culture liquor and may be recovered therefrom and treated so as to give a solid enzyme product useful, for example, in manufacturing cheese.

3,607,656
PRODUCTION OF A GRISEOFULVIN COMPOSITION

Bernard Maurice Laine, and Claude Raymond Magnoux, both of Lavera, Bouches, France, assignors to The British Petroleum Company, Limited, London, England

Filed Nov. 13, 1967, Ser. No. 682,610
Claims priority, application Great Britain, Nov. 25, 1966, 52,796
Int. Cl. C12d *9/00*
U.S. Cl. 195—81 **2 Claims**

Culturing an antibiotic-producing strain of a micro-organism under aerobic conditions in the presence of an aqueous nutrient medium and in the presence of a substrate and extracting the aqueous nutrient medium, or an aqueous medium derived therefrom containing an antibiotic, with a hydrocarbon containing material and recovering a solution of an antibiotic in said material,

The invention also includes: a. culturing an antibiotic-producing strain of a micro-organism, suitably a griseofulvin-producing strain, under aerobic conditions in the presence of an aqueous nutrient medium and in the presence of a hydrocarbon substrate and thereafter, with or without the addition of a hydrocarbon medium to the culture product, separating a hydrocarbon fraction containing an antibiotic. b. culturing a first micro-organism in the presence of an aqueous nutrient medium and thereafter passing the spent medium to a second stage in which an antibiotic-producing strain of a micro-organism, is cultivated in the presence of s substrate, said substrate comprising, wholly or in part, hydrocarbons or comprising, wholly or in part, carbon compounds which are nonhydrocarbons, and thereafter, with or without addition of a hydrocarbon medium to the culture product, separating a hydrocarbon fraction containing an antibiotic, said second stage hydrocarbon comprising, wholly or in part, unmetabolished hydrocarbon from the first stage or comprising, wholly or in part, an added hydrocarbon.

Suitably the antibiotic-producing strain employed in the process of the invention is a strain producing an antibiotic having a solubility in the hydrocarbon which is used as a solvent therefore which is greater than 1 milligram-liter, suitably in the range 0.001–5 grams/liter and preferably greater than 0.5 grams/liter.

Suitably the strain which is used is a griseofulvin-producing strain.

3,607,657
PROCESS FOR THE PRODUCTION OF KASUGAMYCIN

Hamao Umezawa, 23, 4 chome, Toyotama kita, Nerima-ku; Yoshiro Okami, 18-3, 6 chome, Denenchofer, Ohta-ku; Tomio Takeuchi, 273, Imaizumi-cho, Ohta-ku, and Masa Hamada, 3-4, 7 banchi, 1 chome, Fuji-machi, Hoya, all of Tokyo, Japan

Filed Mar. 20, 1968, Ser. No. 714,432
Claims priority, application Japan, Apr. 7, 1967, 21865/67
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 **2 Claims**

Kasugamycin is produced by fermentation of a new species of streptomyces which has been named Streptomyces kasugaspinus.

3,607,658
-METHYLCROTONIC ACID AND DERIVATIVES IN CARBOMYCIN A FERMENTATION

Joseph L. Sardinas, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 6, 1969, Ser. No. 805,019
Int. Cl. C12d *9/00*
U.S. Cl. 195—114 **6 Claims**

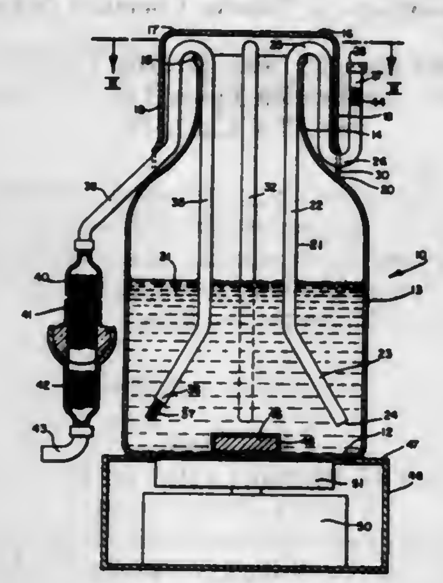
Addition of β-methylcrotonic acid, or derivatives thereof, to carbomycin A-producing fermentation media gives rise to an increased yield of the antibiotic.

3,607,659
FERMENTATION APPARATUS

James L. Bloomer, Philadelphia, Pa., assignor to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.

Filed Dec. 24, 1968, Ser. No. 786,570
Int. Cl. C12b *1/00*
U.S. Cl. 195—142 **12 Claims**

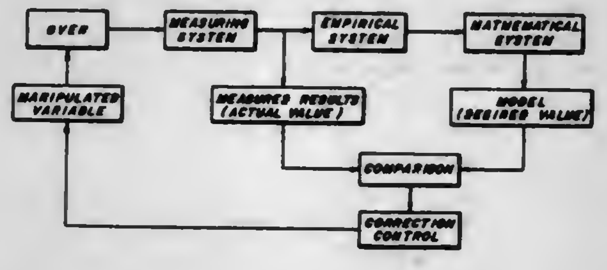
Apparatus is provided in the form of fermentation vessels which are provided with caps for substantially sealing the same against contamination, and with tube means for communicating between the inside and outside of the vessels. Stirring is effected by a magnetic element disposed within the vessels which is actuated by an external electromagnetic source.



3,607,660
PROCESS FOR REGULATING THE TEMPERATURE OF A COKE OVEN CHAMBER

Ernst Kumper, Essen, Germany, assignor to Heinrich Kappers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed June 20, 1969, Ser. No. 834,995
Claims priority, application Germany, June 26, 1968, P 17 71 688.0
Int. Cl. C10b *21/10*
U.S. Cl. 201—1 **5 Claims**



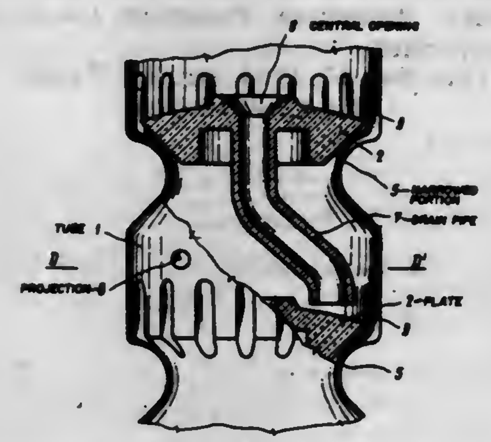
The vertical temperature profile of the coke oven chamber is continually measured during the coking process. The measured temperature profile is compared with an optimum temperature profile for that period of the coking process and deviations of the actual temperature profile from the optimum temperature profile are corrected by regulating the heat supplied to the coke oven heating walls.

3,607,661
LABORATORY DISTILLATION COLUMN WITH FREELY MOVEABLE BUBBLE PLATES

Alexandr Cerny, Kyje U Prahy, and Otto Grubner, Praha, both of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia

Filed Sept. 4, 1968, Ser. No. 757,406
Claims priority, application Czechoslovakia, Sept. 5, 1967, P.V. 6327-67
Int. Cl. B01d *3/20*
U.S. Cl. 202—158 **3 Claims**

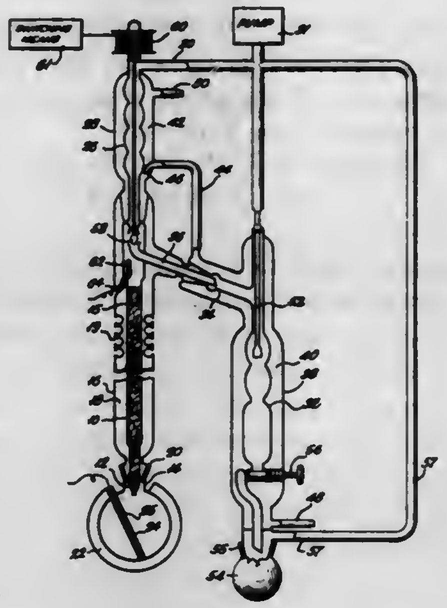
A method of manufacturing a distilling bubble plate column to be used in various laboratory techniques. The column is made from a plain glass tube which is successively and locally preheated, whereupon it is shaped by means of a shaping mandrel inserted step by step thereinto to build alternating bottlenecks and broad sections thereon, said bottlenecks serving as saddles for centrally perforated column trays providing each with a drain pipe for off downward flow of the liquid through the column while vapors pass the column in the counterflow direction through portions between the inner column wall and the edge of said loosely located trays which are out of contact with each other.



3,607,662
FRACTIONAL DISTILLATION APPARATUS HAVING VAPOR FLOW CONTROL MEANS FOR ALTERNATE CONDENSERS

John A. Glover, Wicker Estates, Munster, Ind., assignor to Sinclair Oil Corporation

Filed Aug. 8, 1968, Ser. No. 751,296
Int. Cl. B01d *3/42;* **F28b** *11/00*
U.S. Cl. 202—160 **10 Claims**



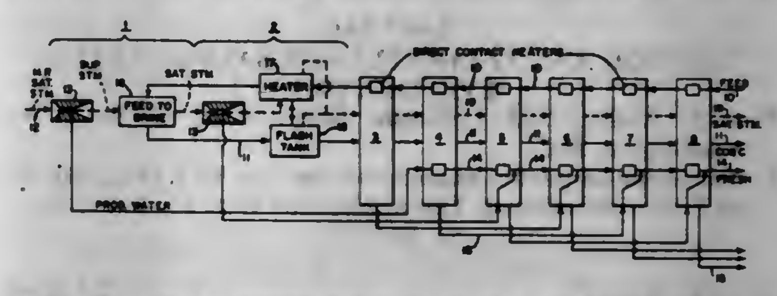
A laboratory distillation apparatus suitable for operation over wide temperature and pressure ranges to permit distillation of materials regardless of their state at room temperature. A vapor from the charge passes through a distillation column containing a packing material and then enters an overhead fractionating condenser. The condensate drops onto the packing, and contact rectification causes more complete separation of the vapor components. When an equilibrium condition is reached, the input to the fractionating condenser is closed and an input is opened to an overhead receiving condenser. The vapor then condenses and passes to a receiver. A temperature-control fluid surrounds the two condensers to insure that the material in them remains in the liquid state. Connections are provided for a vacuum pump to permit operation under reduced pressure.

3,607,663
FLUID PURIFICATION SYSTEM

Leonard B. Vandenberg, Scotia, N.Y., assignor to General Electric Company

Filed Oct. 27, 1969, Ser. No. 869,723
Int. Cl. B01d *3/02, 3/00*
U.S. Cl. 202—173 **9 Claims**

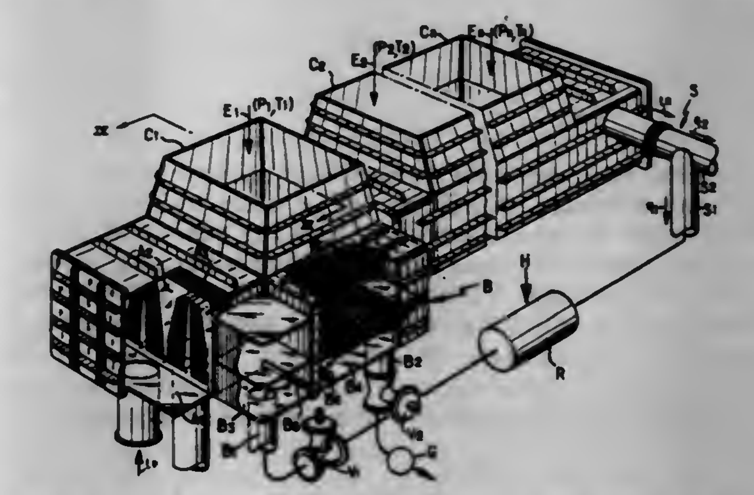
A desalination system using a cascade of modified venturi tubes to extract fresh water from saturated steam in the nozzle throat with pressure recovery in a diffuser section. Heat transfer for regenerative feedwater heating as feedwater flows up the cascade is achieved by direct contact between fluids. Hydraulic regeneration to reduce pumping energy is obtained by feedwater flowing down the cascade providing energy to move brine and fresh liquid product up the cascade.



3,607,664
SINGLE-STAGE FLASH DISTILLATION APPARATUS IN A STEAM CONDENSATION PLANT

Jean Mascarello, Versailles, and Roger Personnic, Chaville, both of France, assignors to Electricite de France (Service National), Paris, France

Filed Dec. 13, 1968, Ser. No. 783,539
Claims priority, application France, Dec. 15, 1967, 132,537
Int. Cl. B01d *3/00*
U.S. Cl. 202—180 **1 Claim**

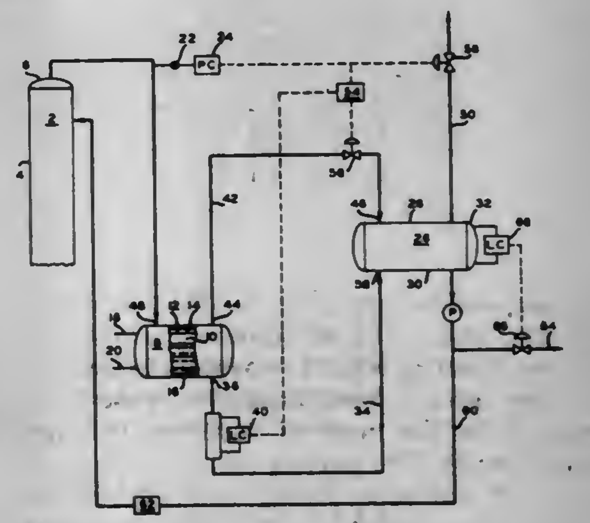


A steam condensation plant comprising a plurality of condensers incorporates a flash distillation apparatus which includes an instantaneous vaporization and condensation chamber associated with at least one of the condensers. Impure feed water for the apparatus comprises cooling water from the plant and is derived from downstream of said one of the condensers.

3,607,665
FRACTIONATOR PRESSURE CONTROL SYSTEM

Ronald S. Rogers, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 12, 1969, Ser. No. 823,693
Int. Cl. B01d *3/42*
U.S. Cl. 203—1 **8 Claims**



A method and apparatus for controlling the pressure within a fractionation column by regulating the rate of condensing, the liquid level height within the condenser and gas flow.

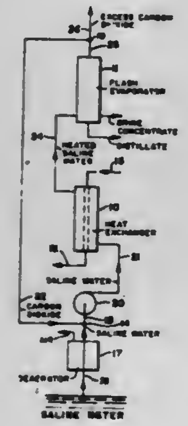
3,607,666
METHOD AND APPARATUS FOR SALINE WATER EVAPORATION

Paul S. Rolier, 703 Colorado Bldg., 1341 G St. N.W., Washington, D.C.

Continuation-in-part of application Ser. No. 657,142, July 31, 1967, now abandoned. This application Oct. 17, 1969, Ser. No. 868,293

Int. Cl. B01d *3/34, 3/00*

U.S. Cl. 203—7 **12 Claims**



In order to prevent the formation of alkaline scale, chiefly calcium carbonate, in heating saline water before evaporation, carbon dioxide is combined with the deaerated, and, as required, chemically deoxygenated saline water, and retained during the heating. Carbon dioxide evolved after heating comprises that which had been added and that concurrently formed by bicarbonate decomposition. A portion of the evolved carbon dioxide is recirculated for combination with the saline water, while the excess is discharged or stored.

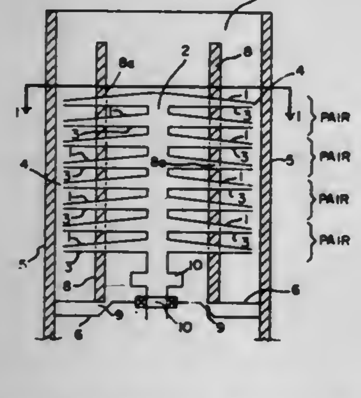
3,607,667
DESALINATION OF WATER BY HEAT EXCHANGE, MICROWAVE HEATING AND FLASH DISTILLATION

Edward M. Knapp, 951 North Livingston St., Arlington County, Va., and Stephen J. Nesbitt, 1111 Massachusetts Ave., Washington, D.C.

Filed Dec. 30, 1966, Ser. No. 606,261

Int. Cl. B01d *3/06*

U.S. Cl. 203—11 **3 Claims**



A process and the apparatus for the desalination of water by flash distillation. The Distillation operation is performed in five steps initiating with (1) counter current heat exchange of the water with hot fresh desalinated water; (2) generating heat throughout the body of water by the application of microwave energy; (3) passing the water in counter current heat exchange with super heated stem; (4) reducing the pressure on the water thereby causing flash vaporization and (5) separating the solute by centrifugal action. The apparatus comprises a central pipe having flat ducts in sets of four.

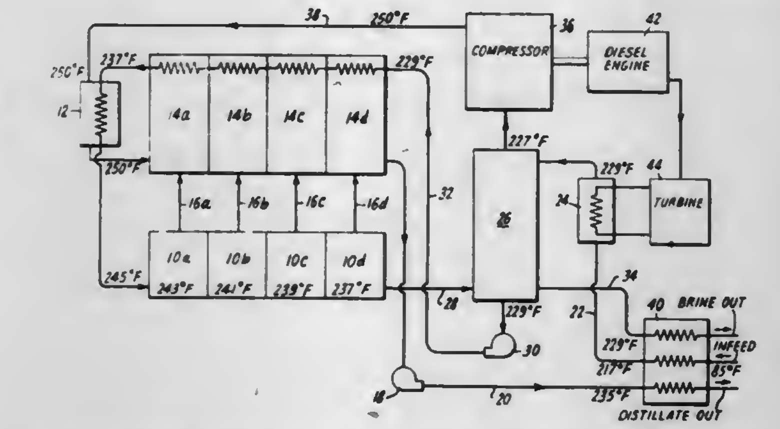
3,607,668
CONCENTRATED BRINE-INCOMING FEED VAPOR COMPRESSION DESALINATION SYSTEM

William Rodger Williamson, Waterford, Conn., assignor to AMF Incorporated

Filed Nov. 12, 1968, Ser. No. 774,801

Int. Cl. B01d *3/06*

U.S. Cl. 203—11 **10 Claims**



A multistage flash distillation system wherein heated feed water is passed through successively lower stages to flash into vapor, which vapor is condensed as distillate, the effluent brine from the lowest stage being passed to a boiler to produce steam, which steam is compressed and so utilized to heat the incoming feed.

3,607,669
SEPARATION OF PROPYLENE OXIDE FROM WATER BY DISTILLATION WITH AC-8 TO 12 HYDROCARBON

John C. Jubin, Jr., Wallingford, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,727

Int. Cl. B01d *3/34*

U.S. Cl. 203—14 **13 Claims**

This invention relates to a method of separating propylene oxide from water which comprises distilling the mixture in the presence of an open chain or cyclic paraffin containing from 8 to 12 carbon atoms. The paraffin alters the volatility of the water relative to that of propylene oxide and permits the removal of water as overhead while the propylene oxide is taken off as bottoms. The amount of paraffin utilized normally ranges from about 5 to about 40 parts by weight per 1 part by weight propylene oxide.

3,607,670
METHOD AND APPARATUS FOR DEODORIZING GLYCERIDE OILS WITHIN A SINGLE VESSEL USING COUNTER CURRENT INDIRECT HEAT EXCHANGE AND DIRECT SUPERHEATED STEAM INJECTION

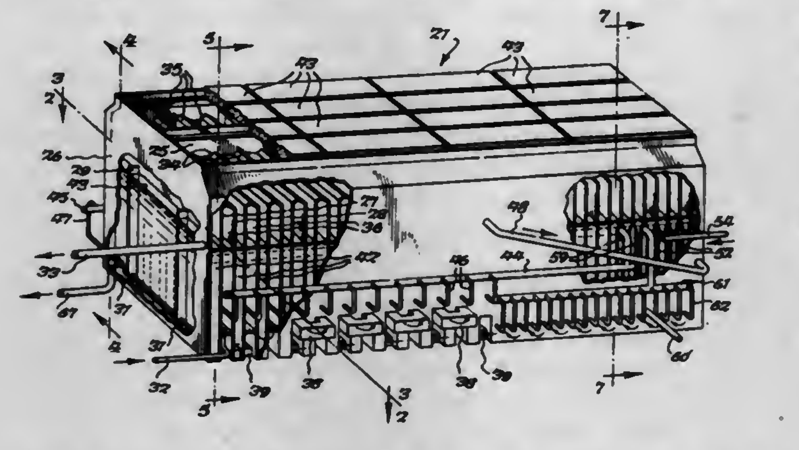
Robert R. King, Sherman, Tex., assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Feb. 26, 1968, Ser. No. 714,156

Int. Cl. B01d *3/10;* **C09f** *5/10*

U.S. Cl. 203—23 **10 Claims**

A process and apparatus for continuously deodorizing glyceride oil in a single vessel of rectangular or annular cross section arranged in and open at its upper end to discharge oil vapors into a vacuum chamber and including an outer low heat exchange section and an inner high heat exchange section, wherein the incoming oil is passed inwardly through the low heat exchange section in a circuitous path to the inner end of the high heat exchange section bypassing the outer end thereof, the outgoing oil is passed outwardly successively through the high and low heat exchange sections in a circuitous path, the incoming oil is heated and the outgoing oil is cooled by counter flow heat exchange relation therebetween in the low heat exchange section, the outgoing oil is heated to deodorizing temperature by passing a high temperature medium through the high heat exchange section in heat exchange relation with the outgoing oil therein, steam is superheated by passing steam through the high heat exchange section in heat exchange relation to the heated outgoing oil therein, and both the incoming and outgoing oil are permeated with superheated steam bubbles by passing the superheated steam through the oil in the low and high heat exchange sections.



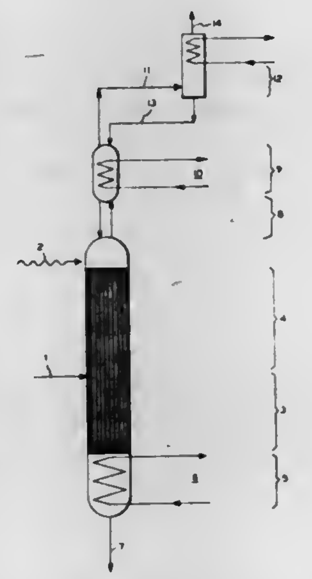
3,607,671
CONDENSING LIQUID CYANURIC CHLORIDE FROM CASES INCLUDING WASHING THE GASES WITH LIQUID PHOSPHOROUS OXYCHLORIDE

Jean Riethmann, and Andreas W. Moerikofer, both of Basel-land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of application Ser. No. 683,571, Nov. 16, 1967, now abandoned. This application July 2, 1970, Ser. No. 49,546

Int. Cl. C07d *55/42;* **B01d** *3/34, 11/04*

U.S. Cl. 203—50 **8 Claims**



A process for the continuous recovery of substantially pure liquid cyanuric chloride from a gaseous mixture containing the same in mixture with other gases, especially with chlorine, which process involves, after separation from the mixture of a first portion of liquid cyanuric chloride by condensation, recovery of a second portion by dissolving the residual mixture containing the latter in phosphorous oxychloride and fractionation of the resulting solution.

3,607,672
METHOD FOR PRODUCING FIBROUS CARBON STRUCTURES

Charles R. Schmitt, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 4, 1970, Ser. No. 8,695

Int. Cl. C01b *31/07*

U.S. Cl. 23—209.1 **6 Claims**

Carbonized fibrous material of improved resiliency and tensile strength is produced by impregnating rayon fibers with a solution of polyethylene or polypropylene dissolved in a volatile hydrocarbon solvent such as xylene, driving off the solvent, and thereafter heating the impregnated fibers to a temperature adequate to carbonize the rayon. After carbonization, the polyethylene-treated fibers showed a marked improvement in resiliency as well as an average tensile strength increase of about 55 percent over untreated fibers of the same type.

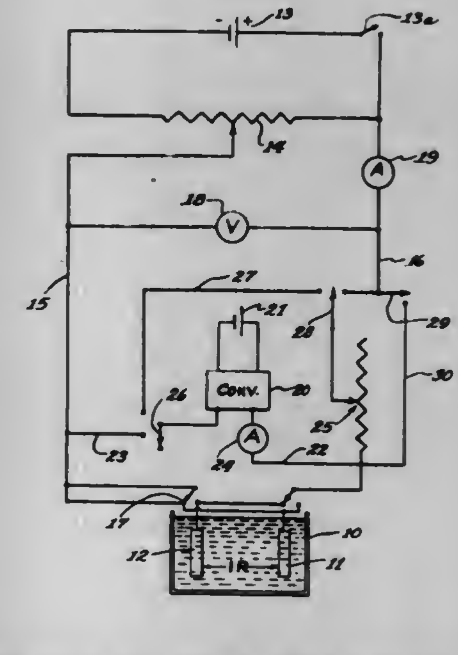
3,607,673
METHOD FOR MEASURING CORROSION RATE

Robert G. Seyl, Evanston, Ill., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed Mar. 18, 1968, Ser. No. 713,576

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 **4 Claims**



A system for correcting for the IR drop between electrodes when corrosion rate of the electrodes is measured by applying a small DC voltage across the electrodes. Ionic conductor resistance is measured by an AC circuit and the AC circuit is then used to adjust a resistor to an equivalent value whereupon the adjustable resistor is used to add a compensating voltage gain to the voltage applying circuit.

3,607,674
METHOD FOR PRODUCING HOLLOW NEEDLES

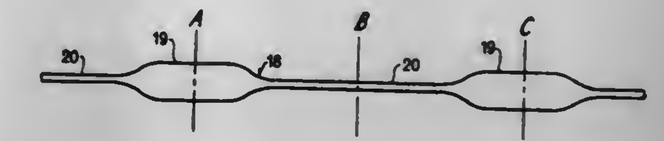
Erik Lauritzen, Gentofte, Denmark, assignor to Niels Bay-Schmith, Mosebakken, Virum, Denmark

Filed Mar. 21, 1968, Ser. No. 719,294

Claims priority, application Denmark, Mar. 28, 1967, 1598/67

Int. Cl. C23b *7/02, 5/48, 5/56*

U.S. Cl. 204—9 **2 Claims**



The invention relates to a method for producing hollow needles, such as cannulae, hypodermic needles and the like. A material, such as metal, is applied as discrete particles, e.g. electrogalvanically, by chemical precipitation or by spraying, to a surface part of a basic body made from an easily shapeable material, such as plastics or glass. The basic body may be solid or tubular, and the metal layer may be applied to the outer and/or inner surface thereof. The basic body may also have such a form that a needle integral with another syringe part is produced. After the application of the basic layer the basic body material may be partly or totally removed, if desired.

3,607,675

MANUFACTURE OF MAGNETIC PARTICLES BY ELECTRODEPOSITION OF IRON, COBALT, OR NICKEL IN DIALKYL SULFOXIDE

Robert S. Haines, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 14, 1969, Ser. No. 791,161
Int. Cl. C22d *5/00;* **C23f** *17/00*
U.S. Cl. 204—10 **25 Claims**

The invention relates to the preparation of fine ferromagnetic particles by electrodeposition of iron, nickel, cobalt, or mixtures of these metals, in a dialkyl sulfoxide bath, such as dimethyl sulfoxide, the particles produced at the electrode being removed at desired intervals. Heat-stable organic binders may be dissolved in the plating bath during electrodeposition to coat the formed particles and thereby inhibit surface oxidation and agglomeration. The particles are oblong in shape and, coated or uncoated, are especially useful for magnetic recording media, magnetic cores, magnetically responsive fluid suspensions and permanent magnets.

3,607,676

METHOD OF MAKING THIN FILM STRUCTURE OF METAL

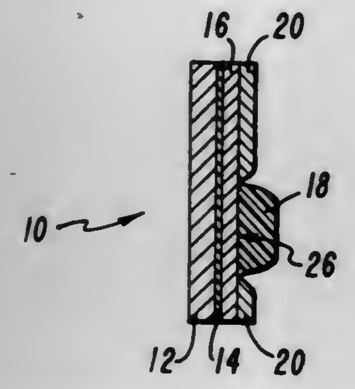
Yoshihiro Uno, Machida-shi, and Hidehiko Kawakami, Kawasaki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 18, 1968, Ser. No. 776,707
Claims priority, application Japan, Nov. 27, 1967, Dec. 29, 1967, 42/76670;43/215
Int. Cl. C23b *7/02*
U.S. Cl. 204—12 **4 Claims**

A method of making an electron-beam permeable thin film of metal for use as a window of an electronic recording tube whose interior must be maintained at a high vacuum, so as to obtain a thin film structure which does not permit infiltration of gas into the tube and fully maintains the desired high vacuum within the tube.

3,607,677

METHOD OF MAKING A THIN FILM MEMORY

Irving W. Wolf, and Andre A. Jaecklin, both of Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Nov. 16, 1965, Ser. No. 508,108
Int. Cl. C23b *5/48, 5/32;* **G11b** *5/00*
U.S. Cl. 204—15 **3 Claims**



A thin film storage memory and method of fabrication, wherein a high coercive force film is deposited as a separate layer on a low coercive force film, in a selected pattern as determined by a masking, coating of an electrically nonconductive material. The invention method is relatively simple due to the invention structure.

3,607,678

ELECTROCOATING

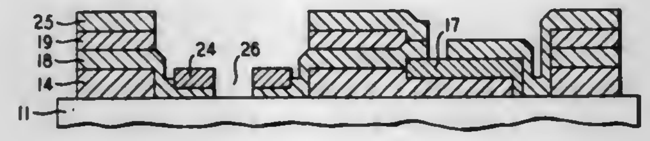
Lowell G. Wise, Cleveland, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio
Filed Dec. 30, 1968, Ser. No. 787,875
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **7 Claims**

Methods and apparatus for electrocoating a conductive article from an aqueous coating bath by means of a direct current potential applied to the article to be coated through a liquid metal such as mercury. The mercury is contained at the bottom of an electrocoating vessel wherein an intermediate layer of insulating liquid between the liquid metal and the aqueous coating bath prevents direct contact of the bath with the liquid metal. The article to be coated extends through the intermediate layer to establish electrical contact with the liquid meal and an electrodeposited coating is applied to that portion of the article in contact with the aqueous coating bath. This process is useful for applying coatings to metals by electrolytic plating of metals, electrophoretic deposition of resins and by anodizing a metal article.

3,607,679

METHOD FOR THE FABRICATION OF DISCRETE RC STRUCTURE

David O. Melroy, Springfield, N.J.; William H. Orr, Allentown, Pa.; Frank P. Pelletier, Hanover, and Willis H. Yocom, Chatham, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed May 5, 1969, Ser. No. 821,844
Int. Cl. C23b *5/48;* **C23f** *17/00;* **C23c** *15/00*
U.S. Cl. 204—15 **4 Claims**

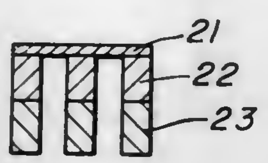


A technique for the fabrication of tantalum-based resistors and capacitors on a single substrate involves a series of process steps wherein an anodic tantalum oxide film initially formed on areas destined for use as either resistors or capacitors serves as an etch stop when removing subsequently deposited tantalum components therefrom.

3,607,680

METHOD FOR PRODUCING A DEVICE FOR TRANSMITTING AN ELECTRON BEAM

Yoshihiro Uno, Machida-shi, and Hidehiko Kawakami, Kawasaki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Sept. 24, 1968, Ser. No. 762,047
Claims priority, application Japan, Oct. 3, 1967, 42/64193
Int. Cl. C23b 5/48; B29c 17/08; H01i 33/00
U.S. Cl. 204—24 **6 Claims**



A device pervious to an electron beam having a partition through which the electron beam is led from one atmosphere to another. The partition is in the form of a thin film of an electron-beam pervious metal oxide such as alumina which has a high mechanical strength that can withstand the pressure difference between the two atmospheres.

3,607,681

METALLIZATION OF CERAMICS

Victor F. G. Cooke, Youngstown, and Sung Ki Lee, Niagara, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Sept. 3, 1969, Ser. No. 855,027
Int. Cl. C23b *5/64*
U.S. Cl. 204—30 **15 Claims**

A method of metallizing ceramics comprises applying to a ceramic substrate, a paste of ingredients comprising phosphorus sesquisulfide, a reducible metal salt and a volatile liquid, and heating the thus-treated substrate to a temperature sufficient to ignite the phosphorus sesquisulfide. The resulting treated surface can be electroless plated and/or electrolytically plated by conventional techniques.

3,607,682

ELECTROPLATING BATHS AND METHODS FOR ELECTROPLATING GOLD ALLOYS AND A PRODUCT THEREOF

Thomas J. Menzel, Daytona Beach, Fla., assignor to KDI Corporation, Fairfax, Ohio
Filed July 17, 1969, Ser. No. 842,704
Int. Cl. C23b *5/42*
U.S. Cl. 204—43 **6 Claims**

Alkaline gold cyanide electrolyte solutions to be employed for depositing gold alloys by an electroplating process, such solutions having incorporated therein a mixture of an alkali metal silver cyanide and ethylenediaminotetraacetic acid and, optionally, alkali metal indium cyanide, processes of electroplating employing such solutions, and electroplated products produced thereby.

3,607,683

BRASS PLATING BATH AND BRIGHTENER COMPOSITION THEREFOR

Daniel Richard France, 1637 West Third St., Brooklyn, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,887
Int. Cl. C23b *5/36, 5/46*
U.S. Cl. 204—44 **4 Claims**

An additive for a brass electroplating bath which comprises (1) an amine such as diethylene diamine; (2) cyanoethyl glycine or cyanoethyl sucrose; (3) sodium or potassium hydroxide; (4) a compound such as lauroyl sarcosine acid; (5) an ethylene oxide condensate; (6) sodium or potassium nitrate and (7) phenol. Typical bath compositions using said additive to deposit brass are disclosed.

3,607,684

MANUFACTURE OF ALKALI METALS

Anselm Thomas Kuhn, Runcorn, England, assignor to Imperial Chemical Industires Limited, London, England
Filed Mar. 8, 1968, Ser. No. 711,600
Claims priority, application Great Britain, Mar. 31, 1967, 14,782/67
Int. Cl. C22d *3/06*
U.S. Cl. 204—62 **6 Claims**

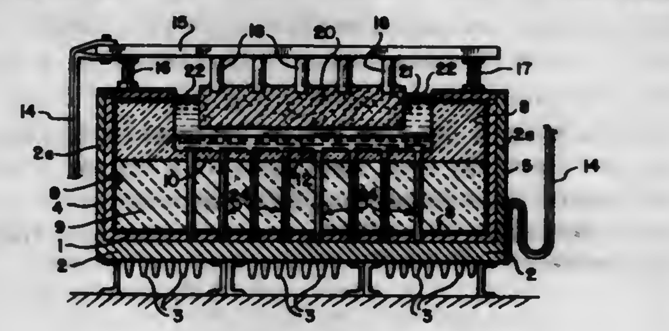
There is provided a process for the manufacture of alkali metal by passing an electroyzing current from an anode to a cathode. The anode is in contact with a fused metal halide salt comprising ions of the alkali metal and no other monovalent cations. The cathode is in the form of liquid alkali metal. Interdisposed between the anode and the cathode is a diaphragm. The diaphragm is polycrystalline ceramic material which has ions of the alkali metal or ions capable of being replaced by the alkali metal. The diaphragm is permeable only to monovalent cations and therefore will pass only the cations of the alkali metal which is being manufactured.

Halogen can be recovered as the anode product or a halogenated hydrocarbon can be recovered as the anode product by introducing a hydrocarbon or partially halogenated hydrocarbon into the anode compartment.

3,607,685

ALUMINUM REDUCTION CELL AND SYSTEM FOR ENERGY CONSERVATION THEREIN

Arthur F. Johnson, 203 Creole Lane, Franklin Lakes, N.J.
Filed Aug. 21, 1968, Ser. No. 754,387
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 **22 Claims**



A compact electrolytic potcell for the reduction of aluminum in fluoride fusions including a multiplicity of spaced and sized electrical conductors extending from the reduced aluminum pad underlying the fluoride fusion, through the refractory potlining, and to an aluminum slab heat-sink on the potshell, the conductors being molten where in contact with the pad and solid where in contact with the aluminum slab and the temperature and voltage difference of the slab relative to the pad being adjusted to as low as feasible with cell operation to conserve energy for reduction.

3,607,686

PROCESS FOR THE REDUCTIVE CLEAVAGE OF SULPHONIC ACID GROUPS FROM ANTHRAQUINONE-SULPHONIC ACIDS

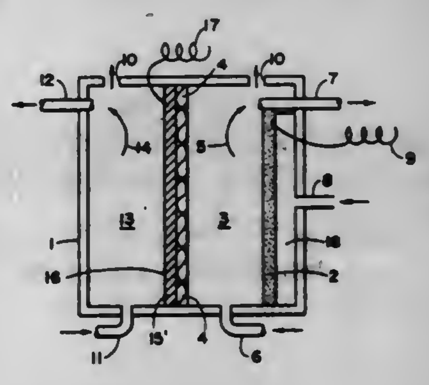
Paul Buecheler, Reinach/BL, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland
Filed May 26, 1969, Ser. No. 827,907
Claims priority, application Switzerland, June 5, 1968, 8317/68
Int. Cl. C07b *29/06;* **C07c** *45/00, 87/64*
U.S. Cl. 204—73 **12 Claims**

The invention relates to an electrochemical reductive desulphonation of anthraquinone-βsulphonic acids which contain an electron donator as substituent in at least one α-position of the nuclei bearing the sulphonic acid groups.

3,607,687

PROCESS FOR PRODUCING PEROXIDES

Donald H. Grangaard, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Division of Ser. No. 612,515. Jan. 30, 1967, abandoned.
Filed July 29, 1969, Ser. No. 845,739
Int. Cl. C01b *15/00;* **B01k** *3/00*
U.S. Cl. 204—84 **2 Claims**



An electrolytic cell for the production of peroxide having a cathode, an electrolyte-permeable anode, and a diaphragm separating the cathode and anode, the cell being characterized by the position of the anode against the diaphragm such that the anolyte passes through the anolyte compartment on the rearward face of the anode. The process of operation of the cell in which anolyte flow is across the anode only on the anode face remote from the diaphragm.

3,607,688

TREATING SEA WATER WITH PRODUCTION OF CHLORINE AND FERTILIZER

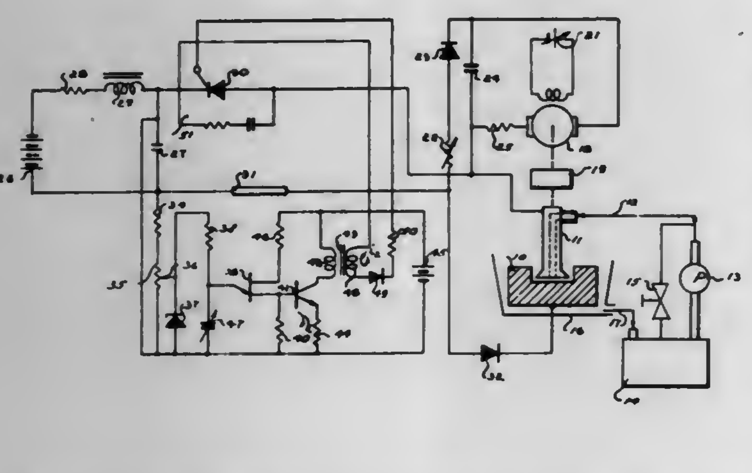
Seiichi Inoue, 3, Hayakurakuen-cho, Nara-shi, Nara-ken; Kunichi Hayashi, Yamaguchiken; Minoru Tamura, Yamaguchiken, and Masaya Kamiyoshi, Yamaguchiken, all of Japan
Filed Jan. 17, 1969, Ser. No. 792,152
Int. Cl. B01k *1/00*
U.S. Cl. 204—90 **6 Claims**

This method of purifying sea water, together with the production of chlorine and fertilizer, consists of treating saline water in a two-compartment electrolytic cell in which the two compartments of the cell are separated by a porous membrane. The saline water is electronically treated to produce potable water, as well as chlorine and a fertilizer which is commercially usable in agriculture.

3,6Q7,689

POWER SUPPLY FOR LARGE-SURFACE ELECTROCHEMICAL MACHINING

Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Japan
Filed Aug. 6, 1968, Ser. No. 750,576
Claims priority, application Japan, Oct. 17, 1967, Jan. 17, 1968, 42/66787;43/2519
Int. Cl. B23p *1/00, 1/02;* **B01k** *3/00*
U.S. Cl. 204—143 R 11 Claims

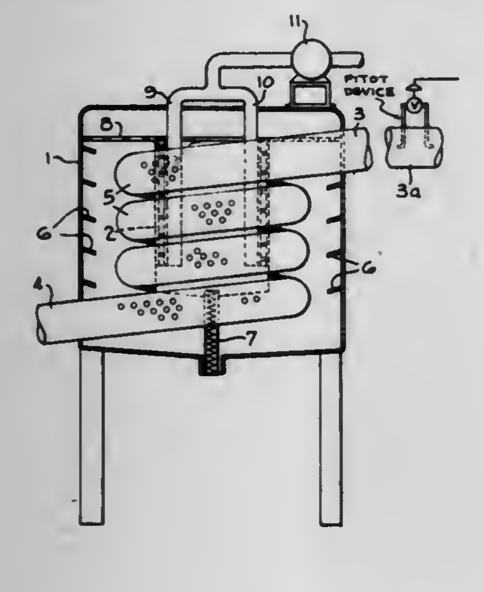


A system for the electrochemical machining of metallic workpieces over large areas in which a storage impedance (e.g. a capacitor) is intermittently charged and discharged via a solid-state controlled rectifier switching circuit to apply periodic unidirectional electrolysis pulses of a current magnitude substantially greater than that of the charging source to the electrode system consisting of a tool electrode and the metallic workpiece while an electrolyte is circulated through the gap therebetween.

3,607,690

AIR-WATER DEPOLLUTION SYSTEMS

John Weber Brant, 1780 B Devers Road, Colony Park Apts., York, Pa.
Filed Apr. 17, 1968, Ser. No. 722,083
Int. Cl. C02b *1/82, 1/00*
U.S. Cl. 204—151 8 Claims



An air-water depollution system is described. The system includes a number of subsystems which precipitate particulates from gaseous emissions, cool the emission, and mix it with cold water to form an electrolyte for subsequent electrochemical and/or oxidative use. The electrolyte source may be mixed with waste water and the resulting mixture processed in an electrochemical processing unit which produces a cleansed effluent ready for reuse.

3,607,691

SYSTEM FOR THE REDOX PHOTOPOLYMERIZATION OF VINYL MONOMERS IN THE PRESENCE OF PERIODATES

Gershon M. Goldberg, Arlington, and Robert J. Allen, Saugns, both of Mass., assignors to Technical Operations, Incorporated, Burlington, Mass.
Filed July 9, 1968, Ser. No. 743,526
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.23 15 Claims

A visible light activated photopolymerization system is disclosed. The polymerization mixture contains a vinyl monomer, a reducible dye and reducing agent as the photopolymerization initiator, and a strong oxidizing agent. It is found that the presence of the strong oxidizing agent materially increases the rate of polymer formation over the same mixture in the absence of the strong oxidizing agent, particularly at the early stages of the photopolymerization reaction.

3,607,692

PROCESS FOR THE RADIATION PRODUCTION OF POROMERIC MATERIALS

Axe Sanner, Ludwigshafen, and Carl Heinrich Krauch, Heidelberg, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed Sept. 17, 1969, Ser. No. 858,839
Claims priority, application Germany, Sept. 21, 1968, P 17 95 378.5
Int. Cl. B01j *1/10, 1/12;* **C08c** *17/08*
U.S. Cl. 204—159.12 5 Claims

Production of poromeric materials by impregnating flat fibrous structures with liquids containing monoolefinically unsaturated monomers and high polymeric plastics in dissolved, emulsified or dispersed form, but no polyolefinically unsaturated monomers, freezing the impregnated fibrous structures, irradiating the frozen structures to effect polymerization of the monomers, and freeing the poromeric materials from the remaining liquid. The poromeric materials may be used as floor coverings, insulating materials, leather substitutes and coating materials.

3,607,693

POLYESTER COMPOUNDS WHICH ARE HARDENABLE BY ULTRAVIOLET RADIATION IN THE PRESENCE OF AN α-SUBSTITUTED BENZOIN ETHER

Hans-Georg Heine, Krefeld; Karl Fuhr, Krefeld; Hans Rudolph, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed July 2, 1969, Ser. No. 838,638
Claims priority, application Germany, July 26, 1968, P 17 69 854.3
Int. Cl. C08f *1/00, 21/00*
U.S. Cl. 204—159.15 5 Claims

The present invention relates to compounds which contain at least one activated carbon-carbon double bond and which can be polymerized by ultraviolet irradiation and to mixtures of such compounds to which special benzoins substituted in the α-position are added as photosensitizers. While the addition of known photosensitizers of this kind to the polymerizable compounds has the disadvantages that the compositions are insufficiently reactive when irradiated with ultraviolet rays and especially their stability in dark storage is quite unsatisfactory, these disadvantages are avoided by the use of α-substituted benzoin ethers as photosensitizers according to the invention.

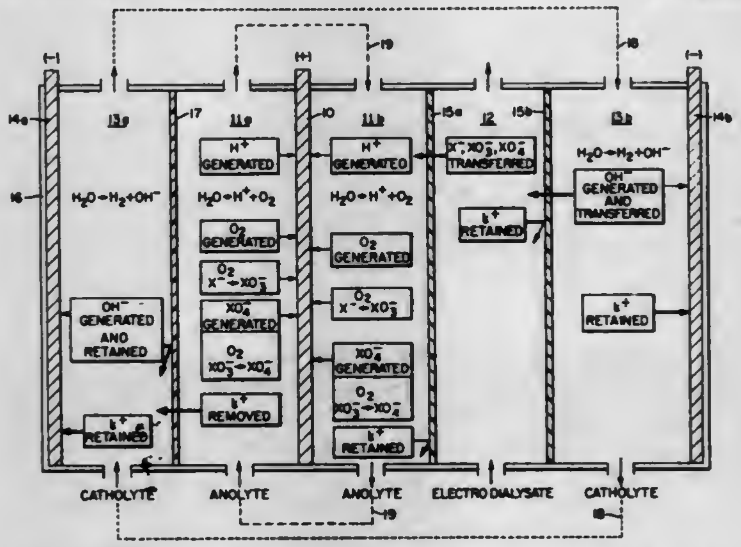
ERRATUM

For Class 204—167 see:
Patent No. 3,608,039

3,607,694

PER(HALO-OXYGEN) ACID OXIDATION, PURIFICATION AND RECOVERY PROCESS

Allyn Harold Helt, Mount Holly, and James Norris Williamson, Marlton, both of N.J., assignors to Sybron Corporation, Rochester, N.Y.
Filed Apr. 8, 1968, Ser. No. 719,361
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P 4 Claims



An electrodialytic apparatus utilizing anion and cation permselective membranes and having at least one two-chamber cell for purification and at least one three-chamber cell proximal the two-chamber unit for concentration of aqueous per(halo-oxygen) acids and their salts, all anolyte chambers sharing a common anolyte stream, all catholyte chambers sharing a common catholyte stream, and at least one of the anolyte chambers of the purification and the concentration cells sharing a common anode. A multistep process for recovering and regenerating the periodate oxidant used in preparing oxidized polysaccharides in which the primary liquor and subsequent wash liquors from the oxidized polysaccharide filter cake are circulated in the anolyte and middle chambers of the electrodialytic apparatus having two-chamber and three-chamber cells for reoxidation and concentration respectively, the liquors having a concentration of 1 to 15 weight percent being circulated in the anolyte chambers; those liquors having a concentration of 0.5 to 5 weight percent being circulated in the middle chamber, all liquors and effluents having a concentration of less than 0.5 weight percent being passed through a strong base anion exchange resin which removes the remaining periodate or chemically reduced periodates, which are subsequently eluted by the sodium hydroxide catholyte, which in turn is circulated in the anolyte chambers of the apparatus for regeneration.

3,607,695

HEMOGLOBINOPATHY CONTROLS

Paul Schneider, Spring Valley, N.Y., assignor to Chas. Pfizer & Co., Inc., New York, N.Y.
Filed Feb. 14, 1969, Ser. No. 799,526
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 S 6 Claims

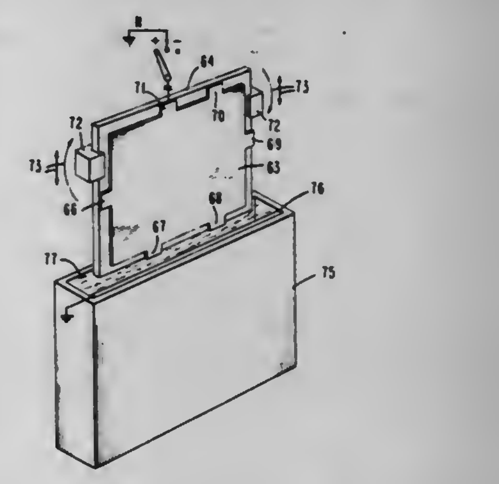
A diagnostic method for the detection of abnormal hemoglobins in the blood of humans by conversion to cyanmethemoglobins and electrophoretic comparison with similarly treated hemoglobin controls.

3,607,696

REVERSIBLE ELECTROPHORESIS AND APPLICATIONS THEREOF

Blair E. Cornish, Stone Ridge; Eugene P. Damm, Jr., Poughkeepsie, and Sidney L. Phillips, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 21, 1968, Ser. No. 769,027
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 12 Claims

Normally difficult to remove coatings of certain polymeric substances, including a polytetrafluoroethylene, are removed by the presently disclosed electrical stripping technique. The coatings are deposited by electrophoresis on a conductive surface of an object used as an electrode and stripped or removed from the same surface by applying a voltage of opposite polarity while the coating particles are still in an uncoalesced condition due to retention of electrolyte fluid between the particles. Certain of these coatings are strippable even after removal of the base electrode from the electrolyte medium, provided that sufficient electrolyte moisture is retained to keep the coating in a solvated condition until reimmersion and application of the reverse voltage. The deposition and stripping actions are repeatable an indefinite number of times for particular coating substances under particular conditions. This is used in a closed system to construct specific devices based on selectively variable thermal resistance effects and visual indication effects. These effects have an associated memory property in the sense that the effect persists indefinitely upon removal of the electromotive force which is depositing or stripping the coating.



3,607,697

SPUTTERING PROCESS FOR MAKING A FILM OF SILICA AND SILICON NITRIDE

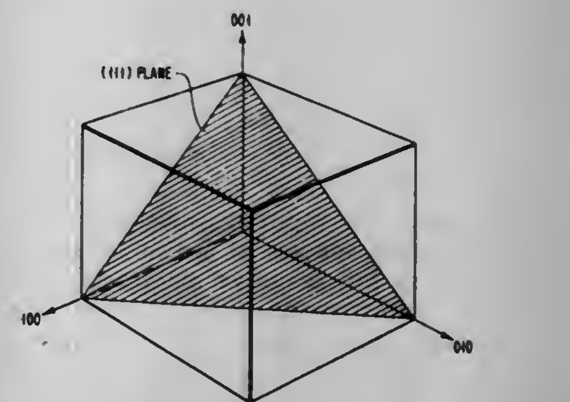
George A. Shirn, Williamstown, and Alan Janus, Charlemont, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.
Filed Apr. 18, 1968, Ser. No. 722,447
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 3 Claims

Formation of a sputtered film on a silicon substrate, said film being a graded composition ranging from pure SiO_2 to pure Si_3N_4 and the composition resulting therefrom.

3,607,698

EPITAXIAL GARNET FILMS

Eric Kay, Kensington, and Erich Sawatzky, San Jose, both of Calif., assignors to International Busines Machines Corporation, Armonk, N.Y.
Filed Oct. 11, 1968, Ser. No. 766,698
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 3 Claims



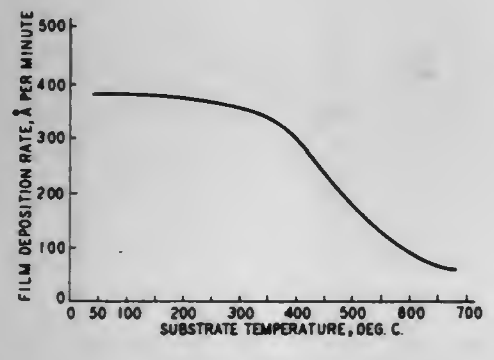
A method of making improved garnet thin films in a sputtering apparatus. The film is sputtered from a source containing yttrium or rare earth garnet in bulk form onto a garnet substance. Epitaxial films with square hysteresis loops are obtained only when the garnet substrate is in the (111) orientation.

3,607,699
TECHNIQUE FOR THE DEPOSITION OF GALLIUM PHOSPHIDE RESISTIVE FILMS BY CATHODIC SPUTTERING

Jacob Sosniak, Millburn, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 8, 1969, Ser. No. 848,612
Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **5 Claims**



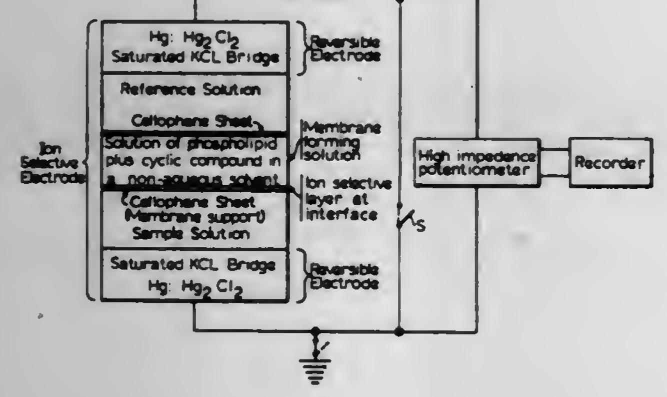
Gallium phosphide thin films manifesting resistivities within the rage of 10 to 10^6 ohm-centimeters are obtained by cathodic sputtering of gallium phosphide at controlled temperatures and deposition rates. The resistivity of the sputtered films may increased to 10^8 ohm-centimeters by annealing at elevated temperatures.

3,607,700
ELECTRODE FOR MEASURING POTASSIUM AND OTHER SPECIFIC ION ACTIVITIES

Daniel C. Tosteson, Orange County, N.C., assignor to Duke University, Inc., Durham, N.C.

Filed Dec. 20, 1967, Ser. No. 692,065
Int. Cl. G01n *27/30, 27/40*

U.S. Cl. 204—195 **4 Claims**


$Hg: Hg_2Cl_2$
Saturated KCL Bridge
Reversible Electrode
Reference Solution
Cellophane Sheet
Solution of phospholipid plus cyclic compound in a non-aqueous solvent
Membrane forming solution
Ion Selective Electrode
Cellophane Sheet (Membrane support)
Sample Solution
Ion selective layer at interface
S
High impedance potentiometer
Recorder
Saturated KCL Bridge
$Hg: Hg_2Cl_2$
Reversible Electrode

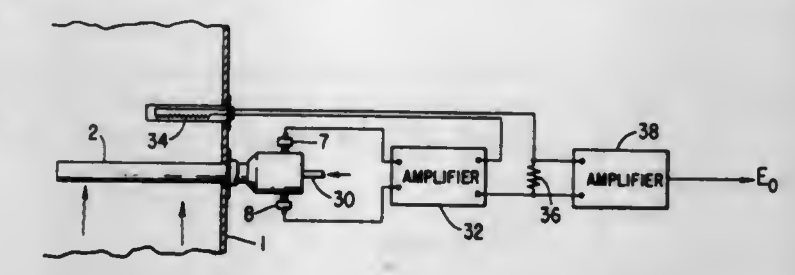
The direct and very rapid measurement of the activity of a particular chemical species of ion in an aqueous solution is achieved with an ion selective electrode embodying as the selective element a mechanically stable layer established between the aqueous solution and a nonaqueous phase, said layer being established by a surface active agent such as phospholipid, said layer also containing an ion selective macrocyclic compound such as valinomycin and said agent and macrocyclic compound being dissolved in a solvent which forms the nonaqueous phase. High selectivity for potassium ions, in particular, is achieved.

3,607,701
ELECTROCHEMICAL ANALYZER FOR MEASURING THE OXYGEN CONTENT OF HOT GASES

Peter J. Wheeler, Carshalton Beeches, England, assignor to Bailey Meters & Controls Limited, Purley Way, Croydon, Surrey, England

Filed Jan. 5, 1968, Ser. No. 696,060
Int. Cl. G01n *27/46*

U.S. Cl. 204—195 **3 Claims**



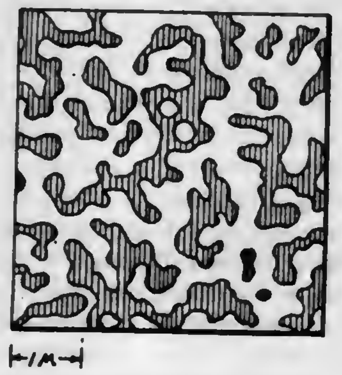
An analyzer for determining the oxygen content of a hot gas employing an electrochemical cell having one electrode disposed in the gas, the oxygen content of which it is desired to determine and the other electrode disposed in a reference gas of known oxygen content. The effect of temperature variations on the cell output is eliminated so that the cell may be operated in a varying temperature environment thus making it particularly adaptable for in situ applications.

3,607,702
ELECTROCHEMICAL APPARATUS

Wolfgand Haller, 5400 Pooks Hill Road, Apt 912, Bethesda, Md.

Filed Feb. 5, 1968, Ser. No. 702,873
Int. Cl. G01n *27/46*

U.S. Cl. 204—195 **8 Claims**



An electrolytic junction membrance for the measuring of ionic potential in electrolytes is formed of a glass body having a continuous interconnected system of pores of an average, and preferably substantially uniform, pore-diameter between about 125 A. and 1,700 A. and preferably not above 250 A., and wherein the ratio of pore-volume to glass-volume is between about 1:2 and 2:1; and a method of producing such glass body by heating glass above its melting point so as to form two distinct phases therein, solidifying the glass while maintaining said distinct phases, and removing one of the two distinct phases by leaching.

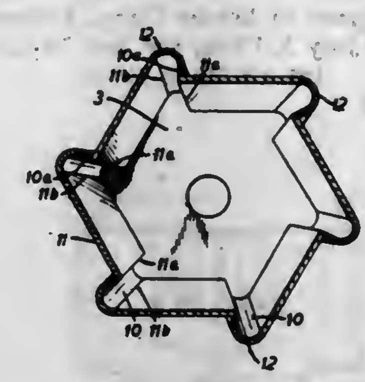
3,607,703
PLATING APPARATUS

George Hadley, deceased, late of Petts Woods, Kent, England (by Edith Emily Hadley and Jean Winifried Hadley, executrices), assignor to Electrochemical Development Limited

Filed May 6, 1968, Ser. No. 727,760
Claims priority, application Great Britain, May 9, 1967, 21522/67
Int. Cl. C23b *5/78*

U.S. Cl. 204—213 **4 Claims**

A processing barrel having a peripheral wall and supports for rotation about a horizontal axis, a discharge element being provided which in one sense of rotation allows articles to move relative to the wall about the barrel axis and in the opposite direction will lift the articles and drop them for collection by a receptacle positioned in the barrel.

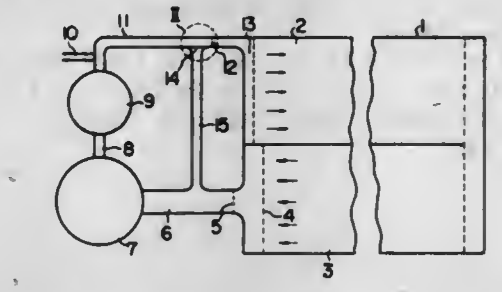


3,607,704
ALKALI SALT ELECTROLYSIS BY MERCURY PROCESS AND APPARATUS THEREFOR

Hiroshi Shibata; Teruo Imai, and Shigeji Kumaki, all of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Chuo-ku, Tokyo-to, Japan

Filed Mar. 21, 1968, Ser. No. 715,046
Claims priority, application Japan, Apr. 5, 1967, 42/21227
Int. Cl. C01d *1/08*

U.S. Cl. 204—220 **2 Claims**



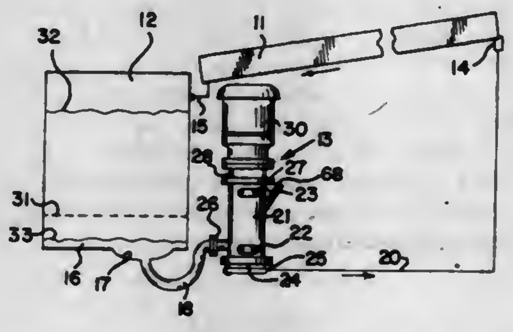
In an alkali salt electrolysis operation by the mercury process in which mercury recovered in a denuding tower is recirculated with wash water through a return passageway to return to an electrolysis vessel, a large portion of this mecury is thus returned to the electrolysis vessel, and the remainder portion of the mercury, together with the wash water and mecury emulsion floating and flowing above it, undergo auxiliary recirculation back to the denuding toward.

3,607,705
PUMPING SYSTEM

James Nagle, 20536 Greenwood Drive, Olympia Fields, Ill.

Filed Apr. 14, 1969, Ser. No. 815,909
Int. Cl. C22d *1/04;* **B01k** *3/00*

U.S. Cl. 204—220 **6 Claims**



A pumping arrangement particularly adapted for use to pump mercury from a decomposer to a mercury cell. The novel arrangement permits removal of the impeller, shaft and motor and replacement or inspection without draining the system while significantly reducing the volume of mercury required when compared with prior art pumps. The pumping arrangement provides space for sealing water to be located over the mercury to preclude contact between air and the mercury cell. The simplified pump arrangement eliminates the need for dynamic seals between the pressurized fluid and the atmosphere, as there are no wetted bearings or rubbing parts in the area of the pumping chamber.

3,607,706
METHOD OF MAKING STABLE LAMINATED CATION-EXCHANGE MEMBRANES

John L. Eisenmann, Hingham; Edward T. Roach, Arlington, and Anthony Scieszko, Dorchester, all of Mass., assignors to Ionics, Incorporated, Watertown, Mass.

Filed Aug. 4, 1967, Ser. No. 660,563
Int. Cl. B01k *3/10*

U.S. Cl. 204—296 **9 Claims**

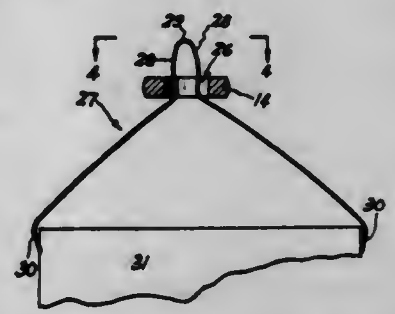
A method of making laminated multilayered, reinforced, cation-exchange membranes of a styrene-divinylbenzene, diethylbenzene solvated structure, whereby the organic solvating medium is substituted by equilibration with a polar solvent, such as methanol, before the polymerized structure is sulfonated with concentrated sulfuric acid.

3,607,707
PLATING AND ANODIZING BATH RACKS

Paul A. Chenevier, Lugarno, New South Wales, Australia, assignor to Raynors Pty. Limited, Punchbowl, New South Wales, Australia

Filed Sept. 10, 1968, Ser. No. 758,833
Claims priority, application Australia, Feb. 5, 1968, 33082/68
Int. Cl. C23b *5/70*

U.S. Cl. 204—297 R **4 Claims**



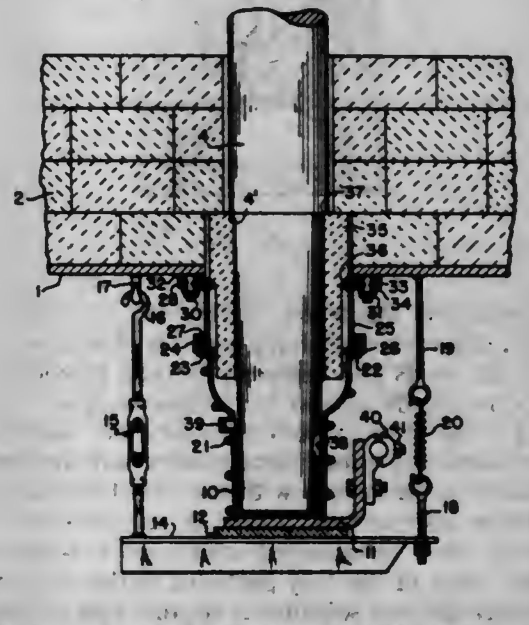
A plating or anodizing rack with a supporting structure having at least one socket recess through it and a detachable spring clip inserted into the recess. The clip has a U-shaped resilient body with two arms extending from a junction point, the edges of the clip making a line contact with the surface of the recess and frictionally engage it.

3,607,708
ELECTRODE SUPPORT

John C. Priscu; Linden E. Snyder, and Eldon R. Poulsen, all of Las Vegas, Nev., assignors to Titanium Metals Corporation of America, West Caldwell, N.J.

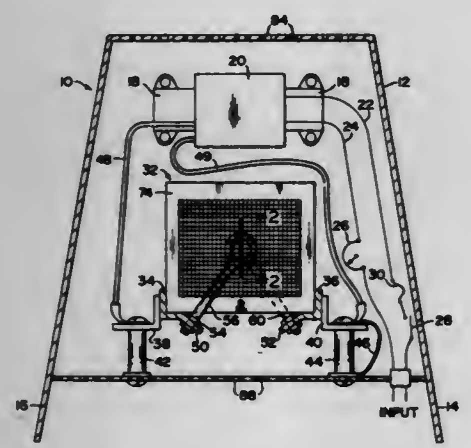
Filed Mar. 26, 1969, Ser. No. 810,603
Int. Cl. C23b *5/70;* **B01k** *3/04*

U.S. Cl. 204—297 R **5 Claims**



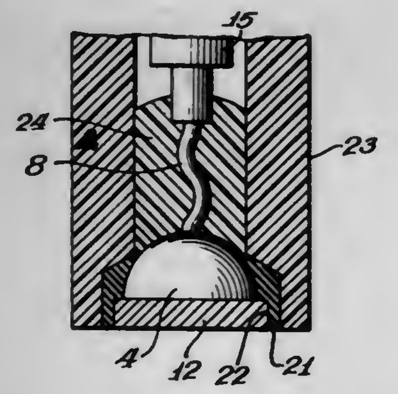
An improved electrode support arrangement comprising a can adapted to surround an end of the electrode located exteriorly of a cell and conduct current to the electrode, a cylindrical member extending from the open end of the can and insulated from the can, a ceramic sleeve adapted to support an electrode located within the cylindrical member and supported on a lip carried on the cylindrical member and means to independently support the cylindrical member and the can.

3,607,709
OZONE GENERATOR
William H. Rice, Akron, Ohio, assignor to Air and Water Purification, Inc., Akron, Ohio
Filed Mar. 13, 1969, Ser. No. 806,796
Int. Cl. C01b *13/12*
U.S. Cl. 204—317 **9 Claims**



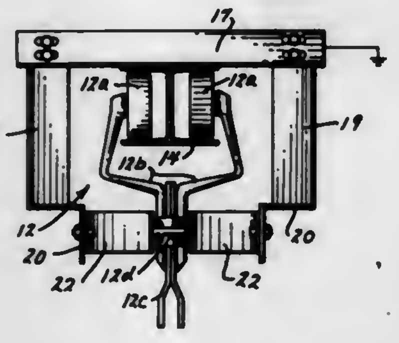
This invention relates to an ozone generator basically comprised of at least two electrodes having a dielectric therebetween. The electrodes are made from stainless steel wire mesh and the dielectric is a sheet of high quality material such as mica. The ozone generator utilizes a relatively low amperage current in conjunction with a compact and simplified mounting and electrical connection of the generator to effectively provide substantial amounts of ozone for purifying purposes.

3,607,710
SEAL FOR ION-SELECTIVE ELECTRODE
Gerard M. Farren, Lombard, and John J. Staunton, Oak Park, both of Ill., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Continuation-in-part of application Ser. No. 750,305, Aug. 5, 1968, now abandoned. This application Feb. 14, 1969, Ser. No. 799,385
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **6 Claims**



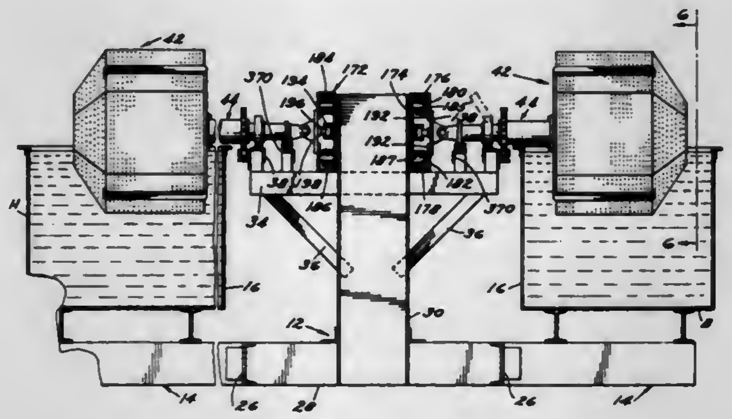
An ion-selective electrode having its ion-transfer membrane sealed about its periphery with an elastomeric material free of fissures, voids and bubbles, thereby providing an electrode which responds almost instantaneously to a change to potential at the test solution-membrane interface. The preferred sealant is a room temperature vulcanizing silicone rubber bonded to the crystal with the aid of a silicone primer. The invention also contemplates a membrane (substitute crystal) made from compacted microsize ion-transfer particles in which each of the tiny particles in the membrane face which contacts the test solution is coated with an elastomeric water impervious film e.g. a room temperature vulcanizing silicone rubber.

3,607,711
ELECTROCOATING EQUIPMENT
Robert L. Koch, II, and Forest J. Greenwood, both of Evansville, Ind., assignors to Ashdee Corp., Evansville, Ind.
Filed July 3, 1968, Ser. No. 742,246
Int. Cl. B65g *49/00*
U.S. Cl. 204—198 **4 Claims**



A hanger assembly for electrocoating equipment characterized by the use of a series of resilient metal bus springs, at ground electrical potential, which continually urge into engagement with the drive chain and/or the moving hangers for the parts during coating to maintain the hangers and the parts also at ground electrical potential.

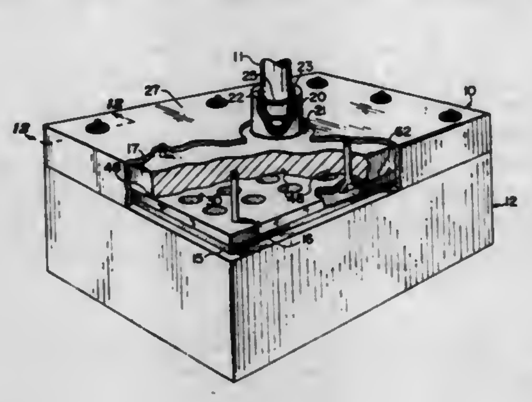
3,607,712
BARREL-TYPE PROCESSING APPARATUS
James Barton, Grosse Pointe Woods, and Patrick H. Norton, Birmingham, both of Mich., assignors to Ionic International Inc.,, Warren, Mich.
Division of Ser. No. 568,287, July 27, 1966, Pat. No. 3,521,650. Filed Jan. 21, 1969, Ser. No. 821,533
Int. Cl. B01k *3/00;* **C23b** *5/78;* **B05c** *3/00*
U.S. Cl. 204—202 **7 Claims**



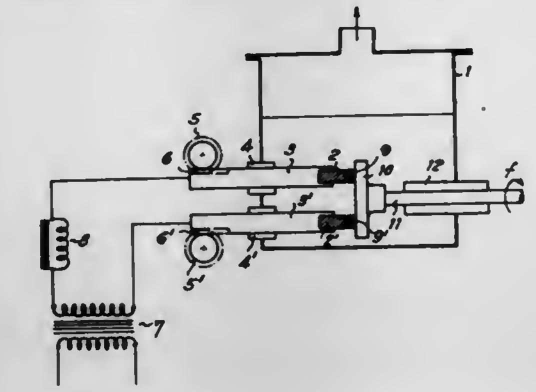
A cam rail moves an arm assembly into and out of a treating solution, the assembly comprising an elongated nonrotatable tubular sleeve resiliently urged in contact with an end of a conductor shaft mounted in but insulated from said sleeve. A housing surrounds and is spaced from end portion of said sleeve, being mounted for rotation by bearing means between the sleeve and housing. A nonrotatable housing is fixedly mounted on the other end portion of said sleeve, and a supporting cam carried by said nonrotatable housing is adapted to engage the cam rail. An electrical contact shoe carried by but insulated from the nonrotatable housing is in electrical contact with said conductor shaft, being adapted to engage an electrical cathode rail.

3,607,713
ANODE FOR PRODUCTION OF ALUMINUM METAL
Lloyd H. Brown, Crystal Lake, and David D. Watson, Barrington, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.
Filed May 7, 1969, Ser. No. 822,416
Int. Cl. B01k *3/04;* **B32b** *31/20*
U.S. Cl. 204—290 R **9 Claims**

Carbon anode for use in aluminum extraction is attached to a metallic stub by means of a carbon-rich furfuryl alcohol-derived resin mortar and a flat perforated metal plate which has a plurality of perforations, the sidewalls of which taper upwardly and outwardly.

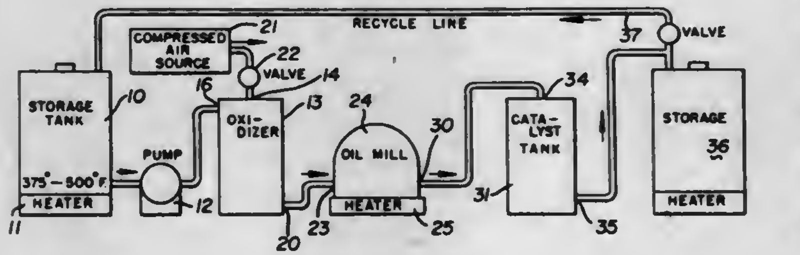


3,607,714
DEVICE FOR CRACKING ORGANIC PRODUCTS IN LIQUID PHASE BY MEANS OF AN ELECTRIC ARC
Andre C. Vialaron, La Barthe De Neste, France, assignor to Ugine Kuhlmann, Paris, France
Filed Feb. 4, 1969, Ser. No. 796,353
Claims priority, application France, Feb. 7, 1968, 138,966
Int. Cl. C22d *7/08*
U.S. Cl. 204—326 **8 Claims**



A device for the cracking of organic products in liquid phase by means of a submerged intermittent electric arc wherein the electric arc is produced between stationary electrodes and movable electrodes which are secured to a rotary support at uniform angular intervals over a circumference which is cocentric with the axis of rotation of said support. The stationary electrodes and the movable electrodes which are in cooperating relation therewith are so arranged that the free extremities of the movable electrodes come successively into contact with the free extremities of the stationary electrodes in a plane at right angles to the axis of rotation of the movable electrode support.

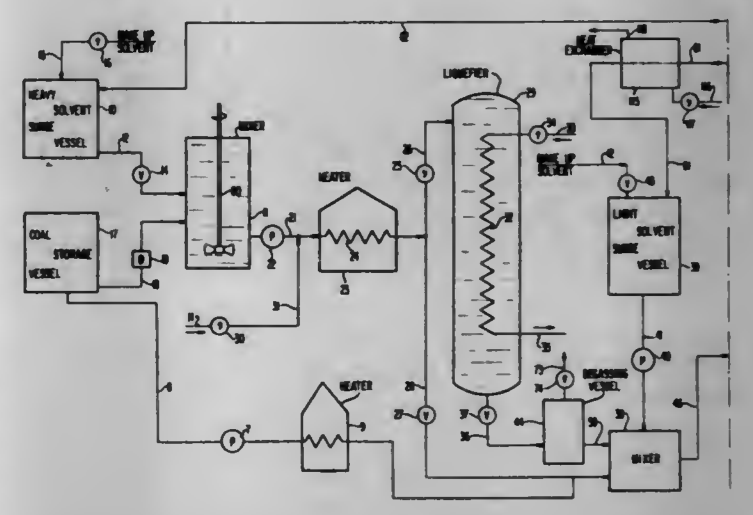
3,607,715
METHOD OF OXIDIZING ROOFING ASPHALT
Everett H. Crawley, Lexington, Ky., assignor to Volcanic Heater Inc., Alliance, Ohio
Filed Mar. 28, 1969, Ser. No. 811,518
Int. Cl. C10c *3/04*
U.S. Cl. 208—6 **1 Claim**



A method and apparatus for oxidizing roofing asphalt is disclosed in which heated liquid asphalt is subjected to air entrainment in an oxidizer tank supplied with a suitable air source, the air and asphalt mix is then mechanically mixed by an oil mill and passed through a catalyst tank so as to provide a large surface area for a relatively thin asphalt film enabling complete oxidation thereof. The resulting asphalt product is light, contains air and penetrates paper and felt much better than asphalt not so treated. Additionally, the treated asphalt covers a greater area and remains in a stable condition, thus, contributing economically to the formation of roofing shingles and the like.

The apparatus includes an oxidizer tank which has horizontally positioned apertured baffles and through which the asphalt and air from a suitable source are forcibly directed, an oil mill in which a series of circular saws and spacers revolve within a housing divided into a number of attrition chambers through which the asphalt and air mixture is pumped so as to thoroughly intermix the air in the asphalt. The thoroughly mixed air and asphalt are then moved into a catalyst tank which is filled with raschig rings and which catalyst tank provides a large surface area for the thin asphalt film that forms thereover and enables the complete oxidation of the air asphalt mixture to be obtained. The asphalt product is then passed to heated storage and/or recycled if necessary and desirable.

3,607,716
FRACTIONATION OF COAL LIQUEFACTION PRODUCTS IN A MIXTURE OF HEAVY AND LIGHT ORGANIC SOLVENTS
Jack W. Roach, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.
Filed Jan. 9, 1970, Ser. No. 1,690
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 **31 Claims**

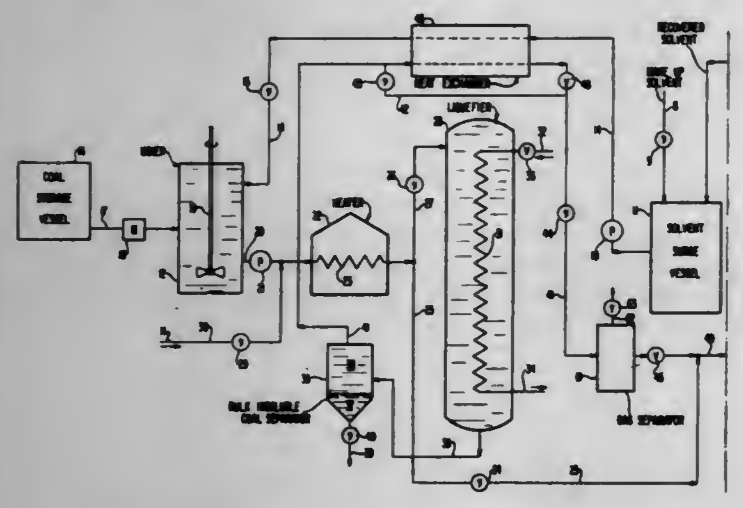


Coal liquefaction products are separated into a plurality of fractions of varying softening points and molecular complexity in a solvent mixture containing a heavy organic coal liquefaction solvent and a light organic fractionating solvent having a critical temperature below 800° F. under elevated temperature and pressure conditions. In one variant, coal is liquefied with a heavy organic coal liquefaction solvent, the light organic fractionating solvent is added to the solution thus produced, and thereafter the coal liquefaction products are separated into a plurality of fractions at elevated temperature and pressure. Preferred heavy organic solvents include anthracene oil, tetralin, catalytic cracker recycle stocks, thermally cracked stocks and lubricating oil aromatic extracts, and preferred light organic solvents include pyridine, benzene and hexane. In a preferred variant, a mixture of the light and heavy organic solvents is recovered directly from the final fractionating stage, the solvent mixture is separated in a solvent separating vessel directly into a heavy organic solvent phase and a light organic solvent phase, and the two solvent phases are passed in heat exchange relationship with incoming solvent-rich streams to preceding fractionating stages to recover the heat content and produce cooled liquid heavy and light organic solvent streams for recycle. The invention further provides a method of separating finely divided insoluble material from products of coal liquefaction present in a solvent comprising a heavy organic coal liquefaction solvent.

3,607,717
FRACTIONATING COAL LIQUEFACTION PRODUCTS WITH LIGHT ORGANIC SOLVENTS

Jack W. Roach, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jan. 9, 1970, Ser. No. 1,818
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 28 Claims

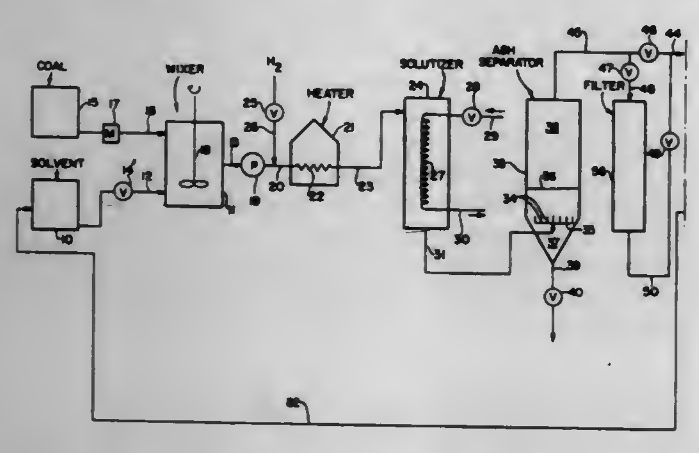


Coal liquefaction products are separated into a plurality of fractions of varying softening points and molecular complexity by treatment with light organic solvents having critical temperatures below 800° F. under elevated temperature and pressure conditions. In one variant, coal is liquefied employing selected light organic solvents which are suitable for both liquefaction and fractionation, and thereafter the coal liquefaction products are separated into a plurality of fractions by treatment with the solvent contained in the resultant solution. Preferred solvents for liquefying coal include pyridine and benzene, and preferred fractionating solvents include pyridine, benzene and hexane. In a preferred variant, a solvent phase is recovered directly from the final fractionating stage and is passed in heat exchange relationship with solvent-rich streams to preceding fractionating stages to recover the heat content and provide cooled solvent for recycle. The invention further provides a method of separating finely divided insoluble material derived from coal during liquefaction thereof from an organic-solvent solution of coal liquefaction products.

3,607,718
SOLVATION AND HYDROGENATION OF COAL IN PARTIALLY HYDROGENATED HYDROCARBON SOLVENTS

William M. Leaders, and Jack W. Roach, both of Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jan. 9, 1970, Ser. No. 1,689
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 30 Claims

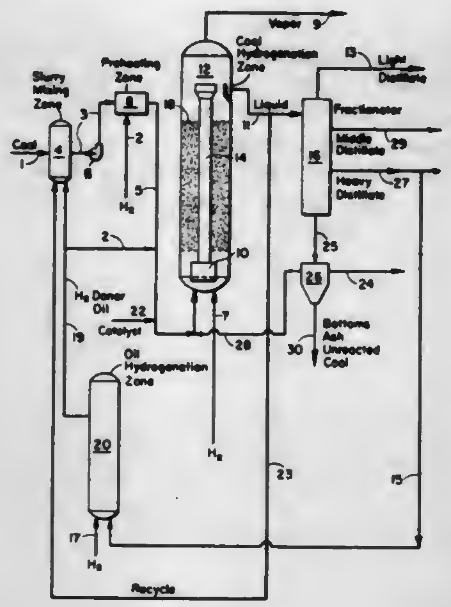


Coal is solubilized and hydrogenated in partially hydrogenated hydrocarbon streams such as clarified slurry oil to produce a nonviscous solution which is readily deashed by settling or filtering. Both inorganic sulfur and organically combined sulfur are removed, and the deashed solubilized coal thus produced has a very low sulfur content. The invention is also useful for producing a hydrogenated solubilized coal solution which is suitable for use as a feedstock for a petroleum refinery, and valuable liquid hydrocarbon distillate products boiling, for example, within the gasoline, kerosene, naphtha, light fuel oil and gas oil ranges may be produced therefrom.

3,607,719
LOW-PRESSURE HYDROGENATION OF COAL

Clarence A. Johnson, Princeton; Edwin S. Johanson, Princeton, and Ronald H. Wolk, Trenton, all of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,454
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 4 Claims

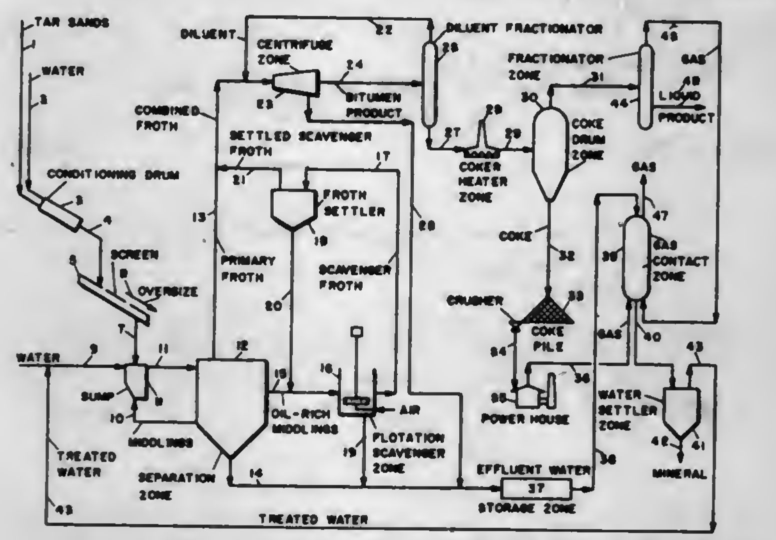


The hydroconversion of coal to benzene-soluble hydrocarbon products is accomplished at conversion pressures with a hydrogen partial pressure of less than about 1,000 p.s.i. in the presence of a hydrogen donor oil and a particulate contact material. Under these operating conditions, the particulate contact material is maintained in random motion. Hydrogen partial pressures as low as 350 p.s.i. are practical and economical. From the resulting liquid effluent, a distillate fraction is recovered and it is further hydrogenated to produce an effective hydrogen donor oil.

3,607,720
HOT WATER PROCESS IMPROVEMENT

Joseph F. Paulson, Claymont, Del., assignor to Great Canadian Oil Sands Limited, Toronto, Canada

Filed July 17, 1968, Ser. No. 745,543
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 9 Claims

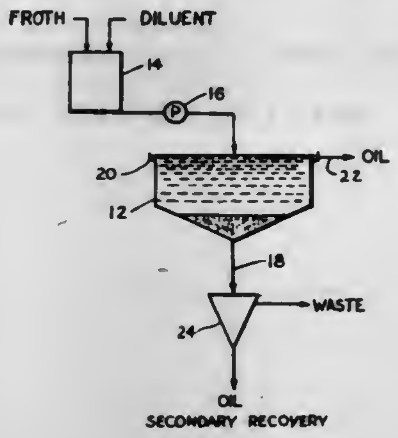


The specification discloses an improvement to the hot water process for treating bituminous tar sands. By the invention water discharged from the hot water process is contacted with a gaseous effluent from the upgrading of bitumen to synthetic crude, the gaseous effluent containing sulfur dioxide, carbon dioxide, hydrogen sulfide, or mixtures of these gases. The contacting between the water and the effluent followed by settling produces clarified water which can be reused in the hot water process.

3,607,721
PROCESS FOR TREATING A BITUMINOUS FROTH

Elmer Nagy, Edmonton, Alberta, Canada, assignor to Cities Service Athabasca, Inc.; Imperial Oil Limited; Atlantic Richfield Corporation and Royalite Oil Company Limited, part interest to each

Filed June 30, 1969, Ser. No. 837,749
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 5 Claims



A method for the removal of solids and emulsified water from a bituminous froth resulting from the hot water treatment of Athabasca tar sands. The froth is diluted with a light hydrocarbon diluent such as coker naphtha and fed to a settling vessel where the solids and water droplets settle out in the form of a sludge constituting a concentrated stable emulsion containing most of the impurities. The substantially purified bituminous froth is withdrawn as overflow. The settled sludge is removed from the bottom of the vessel at rates of between 4 and 5 percent by volume of the diluted bituminous froth feed rate and centrifuged to recover its oil content.

3,607,722
ASPHALT MANUFACTURE

Gordon A. McLaren, Westport, Conn., and John W. Gibson, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,629
Int. Cl. C106 *3/02*
U.S. Cl. 208—44 5 Claims

Asphalt products having improved rheological properties are prepared from asphaltic residues by means of catalytic hydrogenation under moderate conditions.

3,607,723
SPLIT FLOW HYDROCRACKING PROCESS

Reese A. Peck; Raymond F. Wilson, and Frank E. Guptill, Jr., all of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

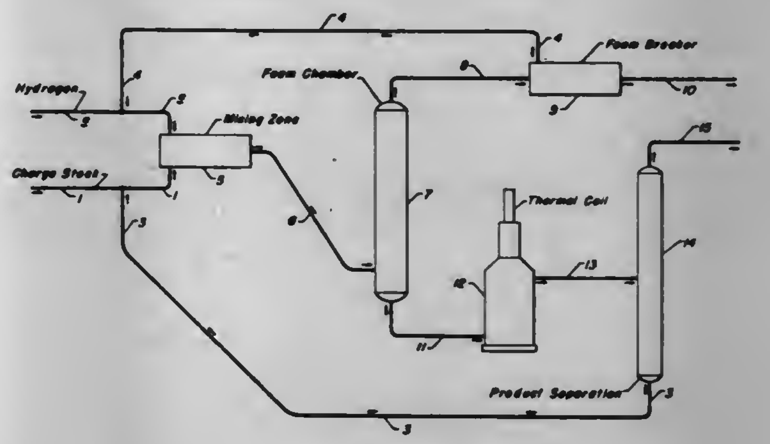
Filed Mar. 28, 1969, Ser. No. 811,604
Int. Cl. C10g *13/00, 37/02*
U.S. Cl. 208—59 10 Claims

A hydrocracking process for the substantially complete hydrocracking of a heavy hydrocarbon charge stock by introducing a heavy hydrocarbon charge stock into a catalyst zone comprising a first catalyst zone below and a second catalyst zone above the point of entry of the charge stock, in the presence of hydrogen which is introduced in countercurrent relationship to said charge stock in first catalyst zone and maintained at a rate sufficient to provide for lower boiling liquid contact of the second catalyst zone followed by recycling the remaining hydrocarbon material from the first catalyst zone to the charge stock.

3,607,724
SEPARATION OF ASPHALTENES AND CONVERSION OF BLACK OILS

Rogers, Edward S., Hinsdale, and Edward Horvath, Hickory Hills, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 17, 1969, Ser. No. 885,858
Int. Cl. C10c *3/00*
U.S. Cl. 208—86 5 Claims

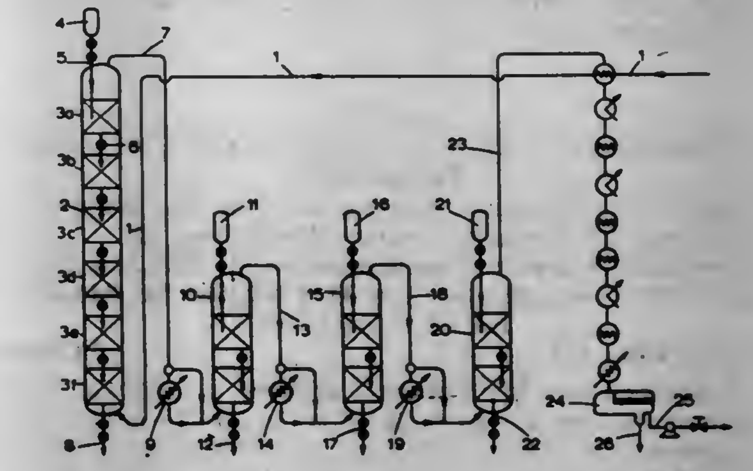


Removal of asphaltenes from a hydrocarbonaceous black oil is effected through the use of a foam chamber and a foam breaker. In one application, the asphaltene-free material is thermally cracked and the heavier portion of the cracked effluent is recycled to combine with the fresh feed. The foam is created through the use of high-pressure hydrogen, being intimately admixed with the black oil, followed by depressuring into a foam chamber.

3,607,725
HYDROCRACKING PROCESS

Robert L. Irvine, Rob Nes, Pyle Hill, Woking, Surrey, England

Filed Mar. 25, 1969, Ser. No. 810,127
Claims priority, application Great Britain, Mar. 27, 1968, 14630/68
Int. Cl. C10g *23/10*
U.S. Cl. 208—89 18 Claims



The invention relates to the hydrogenation of non-hydrocarbons in crude or residua feed by the catalytic hydrogenation of the feed using a multibed reactor with descending catalyst and ascending feed, the conditions being so adjusted to produce fluidization of catalyst particles in each bed. The process is particularly suitable for treatment of crude or residua to be subjected to hydrocracking.

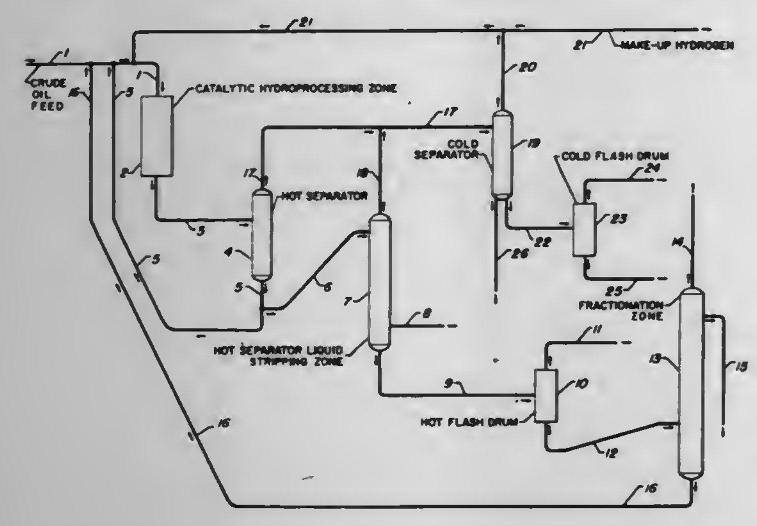
3,607,726
RECOVERY OF HYDROGEN

Newt M. Hallman, Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 29, 1969, Ser. No. 795,123

Int. Cl. C10g *13/00*

U.S. Cl. 208—108 **8 Claims**



Hydrogen is recovered from a normally liquid hydrocarbon fraction produced by the catalytic hydroprocessing of a petroleum crude oil feedstock utilizing a hot separator liquid stripping zone and high pressure superheated steam as the stripping medium.

3,607,727
HYDROPROCESSING OF HYDROCARBONS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 828,762, May 28, 1969. This application July 7, 1969, Ser. No. 839,643

Int. Cl. C10g *13/02*

U.S. Cl. 208—111 **9 Claims**

A process for hydrotreating (hydroprocessing) hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a Group VIII noble metal component and a germanium component, in which process there is effected a chemical consumption of hydrogen. A specific example of one such catalyst is a composite of a crystalline aluminosilicate, a platinum component and a germanium component, for utilization in a hydrocracking process. Other hydrocarbon hydroprocesses are directed toward the hydrogenation of aromatic nuclei, the ring-opening of cyclic hydrocarbons, desulfurization, denitrification hydrogeneration, etc.

3,607,728
HYDROGEN-CONSUMING PROCESS AND CATALYST THEREFOR

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 835,218, June 20, 1969. This application July 31, 1969, Ser. No. 846,622

Int. Cl. C10g *13/02*

U.S. Cl. 208—111 **9 Claims**

A hydrocarbon hydroprocess utilizing a catalytic composite of a porous carrier material, a Group VIII noble metal component and a lead component, in which process there is effected a chemical consumption of hydrogen. A specific example of one such catalyst is a composite of a crystalline aluminosilicate, a platinum component and a lead component, for utilization in a hydrocracking process. Other hydrocarbon hydroprocesses are directed toward the hydrogenation of aromatic nuclei, the ring-opening of cyclic hydrocarbons, desulfurization, denitrification, hydrogenation, etc. The catalyst contains 0.01 percent to about 2.0 percent by weight of the noble metal component, and the atomic ratio of lead to noble metal is in the range of 0.05:1 to 0.9:1.

3,607,729
PRODUCTION OF KEROSENE JET FUELS

Robert E. Robinson, and William K. Meerbott, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Apr. 7, 1969, Ser. No. 814,520

Int. Cl. C10g *13/02;* **C07c** *5/16;* **B01j** *11/08*

U.S. Cl. 208—112 **9 Claims**

A process for the production of kerosene jet fuels in which kerosene boiling range petroleum fractions are contacted with hydrogen and a catalyst comprising a noble metal and fluoride on alumina, the process being further characterized by control of the kerosene feed water content to a low level (e.g., 10 p.p.m. or lower).

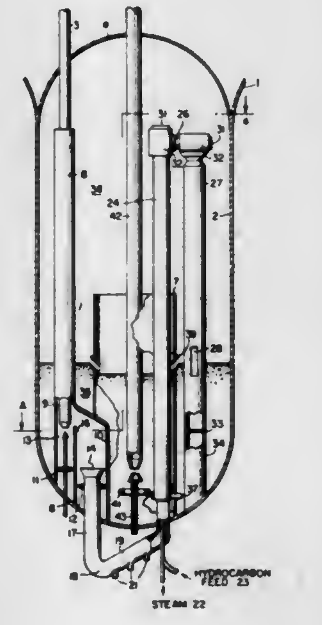
3,607,730
APPARATUS AND METHOD FOR CONVERSION OF HYDROCARBONS

Robert W. Pfeiffer, Bronxville, N.Y., assignor to Pullman Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 719,052, Apr. 5, 1968, Pat. No. 3,492,221. This application Jan. 23, 1970, Ser. No. 5,168

Int. Cl. C10g *13/14;* **B01j** *9/06*

U.S. Cl. 208—164 **25 Claims**



An apparatus and method for effecting fluid catalytic cracking of hydrocarbons to products boiling in the gasoline range including a seal well containing a pressure-developing column of regenerated catalyst for transfer of the catalyst through a reaction zone, the seal well being in open pressure communication with the outlet of the reaction zone.

3,607,731
RE-REFINED WASTE CRANKCASE OILS AND METHOD

Graham L. Gulick, Schiller Park, Ill., assignor to Quvoe Chemical Industries, Inc., Schiller Park, Ill.

Filed Apr. 9, 1969, Ser. No. 814,845

Int. Cl. C10m *11/00*

U.S. Cl. 208—181 **12 Claims**

A method of removing contaminants, including detergents and other additives, dispersed in waste crankcase oil. A treating solution comprising a mixture of (1) compounds furnishing nitrate ions, such as nitric acid, or nitrate salts, and (2) sulfuric acid; in a ratio of about one-half to about two parts by weight of nitrate ion per part by weight of sulfuric acid, is allowed to react with waste crankcase oil, preferably waste crankcase oil which has been previously partially re-refined, in a ratio of from about 0.1 percent to about 2 percent by volume of the treating solution in relation to the volume of waste oil. The mixture may be heated to about 80° C. with thorough agitation. Improved separation is sometimes obtained by adding dimethyl formamide or dimethyl sulfoxide to the reaction mixture.

3,607,732
TREATMENT OF HYDROCARBONS WITH HYDROGEN CHLORIDE GAS AND OXYGEN

Jesse K. Boggs, Houston, Tex., assignor to Esso Research and Engineering Company

Filed Mar. 19, 1969, Ser. No. 808,411

Int. Cl. C10g *17/02*

U.S. Cl. 208—254 **11 Claims**

Heterocyclic compounds containing nitrogen are removed from hydrocarbon oils by treatment with oxygen (preferably in the form of air) and hydrogen chloride gas. The hydrocarbons may be treated alone, or a solvent may be used which assists in precipitating the complex of heterocyclic compounds formed by the reaction of the present invention. A preliminary heat-treating step makes the compounds even more susceptible to treatment by the present process. The products are worked up by neutralization and distillation or hydrofining. Improved oxidation resistance and color are obtained by the treatment of the present invention.

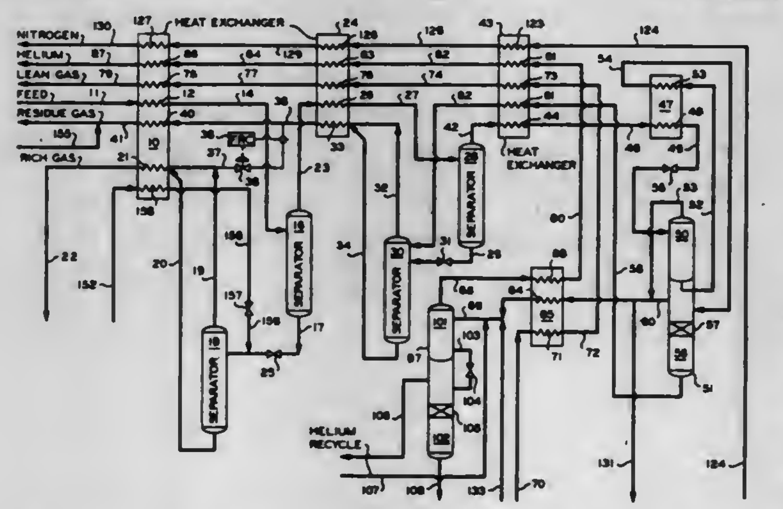
3,607,733
CONTROLLED EVAPORATION IN HEAT EXCHANGE ZONES

Ernest A. Harper, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Apr. 25, 1969, Ser. No. 819,223

Int. Cl. F25j *3/00, 3/02, 3/06*

U.S. Cl. 208—340 **10 Claims**



A method for improving the ΔT distribution of a heat exchange zone used in cryogenic separation. The invention comprises refluxing selected hydrocarbon ranges from a rich gas effluent to control the evaporation of the rich gas stream passing through said heat exchange zone.

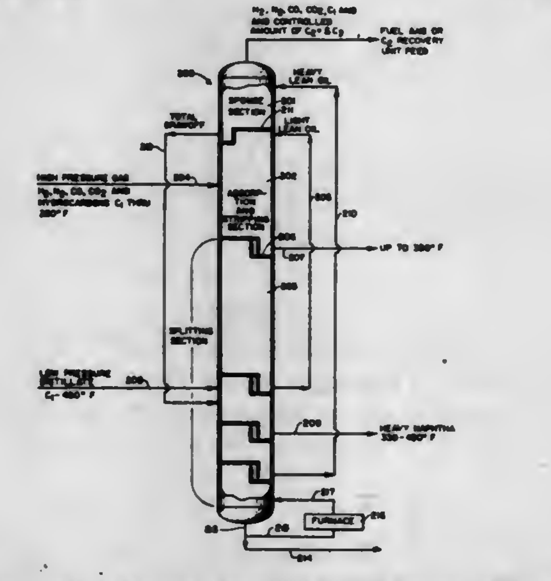
3,607,734
LIGHT HYDROCARBON ABSORPTION AND FRACTIONATION

Thomas R. Stafford, Sr., Baton Rouge, La., assignor to Esso Research and Engineering Company

Filed Nov. 6, 1969, Ser. No. 874,592

Int. Cl. C10g *5/04*

U.S. Cl. 208—341 **4 Claims**



A mixture of gaseous and liquid hydrocarbons are processed in an integrated column in which absorbing, demethanizing (or deethanizing or depropanizing) and splitting operations are combined. Gaseous feed is introduced to the absorber section and liquid feed to the absorber section and/or the splitter section. A light naphtha fraction from the splitter section is used as the primary absorbing medium in the absorber section. Heavy naphtha, also from the splitter section is used as lean oil in a sponge section, primarily to remove light lean oil from absorber section overhead. Absorber fat oil, light naphtha, heavy naphtha, bottoms and fuel gas are or can be produced as products.

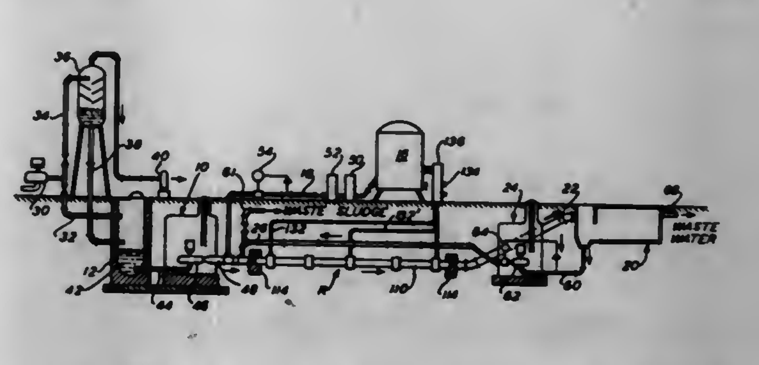
3,607,735
SYSTEM FOR TREATMENT OF SECONDARY SEWAGE

Howard K. Hover, Somerville; Derk Th. A. Huibers, Berkeley Heights, and Lawrence J. Serkanic, Jr., North Plainfield, all of N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed July 2, 1969, Ser. No. 838,547

Int. Cl. C02c *1/08*

U.S. Cl. 210—7 **21 Claims**



Sewage effluent from a primary treatment plant is initially pumped to a vacuum deaerator for removal of dissolved air and hence nitrogen, from the effluent stream. This stream, deaerated as required, is joined with a stream of recycled activated sludge and a stream of pure oxygen in quantity sufficient to meet the "biological oxygen demand" (BOD) of the combined effluent and recycled activated sludge. The confluence is pumped through an underground pipeline reactor having a static mixer for enhancing contact between the oxygen, aerobic bacteria and organic pollutants. The reactor stream BOD is progressively reduced to the required level at the reactor outlet. A downstream clarifier separates the reactor activated sludge from treated waste water and separated sludge in part is returned for recycling to the inlet of the reactor. The clear waste effluent from the clarifier is sent to tertiary treatment units or to receiving waters.

3,607,736
METHOD OF TREATING ORGANIC WASTE WATER

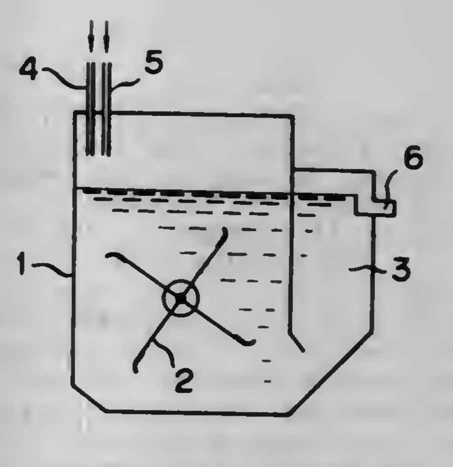
Miyaji, Yusho, Kanagawa-ken, Japan, assignor to Kurita Water Industries Ltd., Osaka-shi, Japan

Filed Mar. 21, 1969, Ser. No. 809,109

Claims priority, application Japan, Mar. 29, 1968, 43/20070

Int. Cl. C02c *1/14*

U.S. Cl. 210—11 **10 Claims**

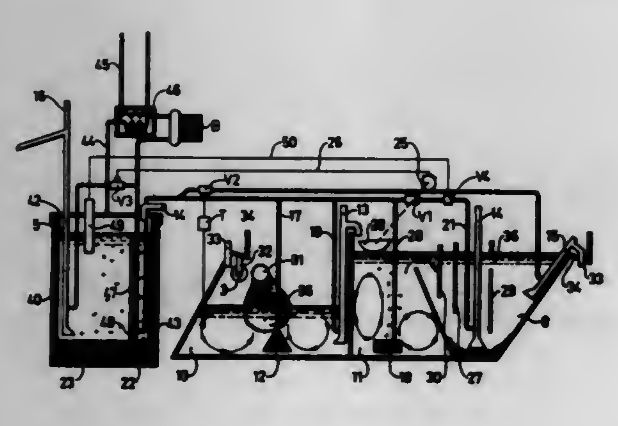


A method of treating organic waste water which comprises the steps of bringing activated sludge consisting mainly of denitrifying bacteria into contact with organic waste water in the presence of nitrate ions or nitrite ions, keeping said waste water in an anaerobic state and destroying the decomposable organic matters contained in the waste water by virtue of the nitrate respiration of said denitrifying sludge.

3,607,737

METHOD AND APPARATUS FOR THE AEROBIC PURIFICATION OF SEWAGE WATER AT A TEMPERATURE HIGHER THAN THE AMBIENT TEMPERATURE

Sven Gustaf Yngve Gamer, Norrkoping, Sweden, assignor to Stenberg-Flygt AB, Solna, Sweden
Filed Jan. 28, 1969, Ser. No. 794,632
Claims priority, application Sweden, Sept. 18, 1968, 12598/68
Int. Cl. C02c *1/06*
U.S. Cl. 210—12 **3 Claims**



An aerobic method for purification of sewage water taking place at a sludge temperature above the ambient temperature, according to which method sludge is at first sedimented and then passed to a reactor vessel of small size, which vessel is insulated against loss of heat to the surroundings and in which vessel the sludge is subjected to exothermic oxygenation, while retaining the reaction heat generated.

3,607,738

SEWAGE TREATMENT

Donald A. Nelson, Knoxville, Tenn., assignor to Nalco Chemical Company, Chicago, Ill.
Filed Feb. 12, 1969, Ser. No. 798,783
Int. Cl. C02b *1/18*
U.S. Cl. 210—18 **3 Claims**

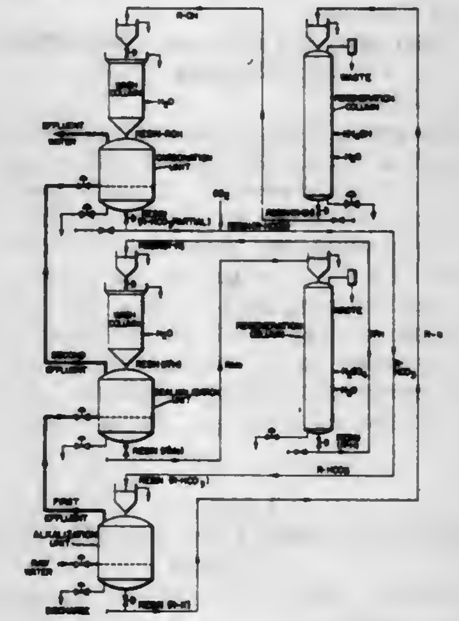
Sewage treatment in which sewage is passed to a tertiary treatment plant from an activated sludge plant, said tertiary treatment including the step of intimately mixing lime and particular polyamines with the effluent from the secondary clarifier. The polyamines catalyze the reduction of phosphate in the sewage by the lime, thereby lowering the quantity of lime required to produce water having a satisfactory phosphate level.

3,607,739

DESALTING AND PURIFYING WATER BY CONTINUOUS ION EXCHANGE

Charles H. Thorborg, Succasunna, N.J., assignor to Gulf Degremont, Inc., Bridgewater Township, N.J.
Filed July 11, 1968, Ser. No. 744,076
Int. Cl. B01d *15/02*
U.S. Cl. 210—33 **9 Claims**

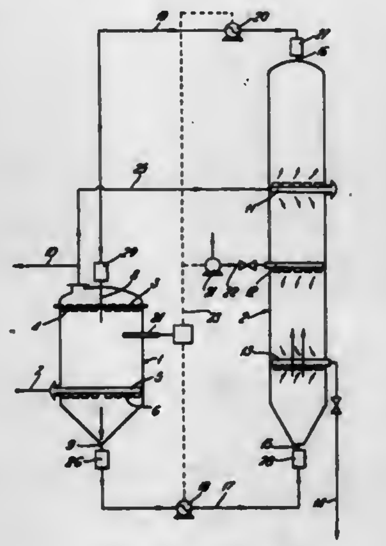
A method and apparatus are provided for the continuous treatment of brackish water, sea water, industrial wastes or sewage effluents using continuous ion exchange. Three units are provided in series, the raw water entering the first unit and the purified water leaving the third unit. While the water moves continuously through the three units, an ion exchange resin is caused to flow countercurrent therethrough, a weak base anion exchange resin in the bicarbonate state passing through the first unit and the same resin, in the free base form, passing through the third unit. Passing through the second unit countercurrent to the effluent is a weak acid cation exchange resin. After passage through the first and second units, the resins are regenerated.



3,607,740

ION-EXCHANGE PROCESSES

Ewart Ingham Akeroyd, Thames Ditton, England, assignor to The Permutit Company Limited, London, England
Filed July 7, 1969, Ser. No. 839,482
Claims priority, application Great Britain, July 15, 1968, 33666/68
Int. Cl. B01d *15/02*
U.S. Cl. 210—33 **8 Claims**



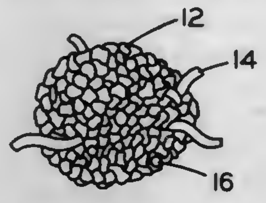
In a continuous ion-exchange process for treating water with movement of the resin through a circuit that includes an absorber and a regenerator, the resin is in the form of magnetic beads less than 295 microns in size. These beads form beds presenting no more resistance to flow than beds of conventional resin beads, but as they do not break up on passing through pumps they can be forced into the absorber without interruption of the service flows.

3,607,741

OIL SLICK REMOVAL SYSTEM

Alfred Sohnius, 2 Elmhurst Road, Baltimore, Md.
Continuation-in-part of application Ser. No. 808,023, Mar. 17, 1969, now abandoned. This application Feb. 19, 1970, Ser. No. 12,685
Int. Cl. E02b *15/04;* **B01d** *39/04*
U.S. Cl. 210—36 **10 Claims**

Physical means for removing oil slicks from water and other surfaces utilizing chemically treated cellulosic bulk material contained in encasements of netting. The chemically treated material is hydrophobic but exhibits an affinity for oil. Oil thus gathered can be reclaimed.



3,607,742

METHOD AND COMPOSITION FOR PHOSPHATE REMOVAL

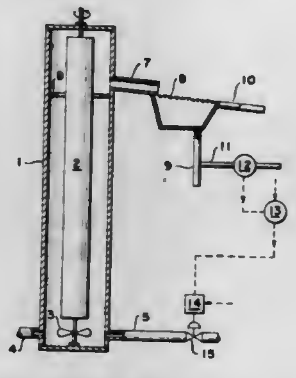
William C. Steigerwald, Jr., Box 3040, Euclid, Ohio
Filed June 30, 1969, Ser. No. 837,914
Int. Cl. C02b *1/20*
U.S. Cl. 210—47 **12 Claims**

Composition for removing phosphate content of raw sewage and waste comprising a solution of sodium hydroxide, aluminum hydrate, unmodified starch and water. Method of applying such composition.

3,607,743

PROCESS FOR THE SEPARATION OF SOLIDS FROM A SUSPENSION THEREOF IN WATER BY MEANS OF AGGLOMERATION

Pieter Visser; Johannes Boom, and Henricus G. J. Van Noesel, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed June 17, 1969, Ser. No. 834,113
Claims priority, application Netherlands, June 18, 1968, 6808575
Int. Cl. B01d *21/01*
U.S. Cl. 210—51 **10 Claims**



A process is disclosed for the continuous agglomeration of solid particles from a suspension thereof in water by passing the suspension and a binding agent through an agglomeration zone in which a turbulent motion is maintained and adding binding agent to the agglomeration zone at varying rates responsive to the particle concentration of the aqueous stream flowing from the agglomeration zone.

3,607,744

PREPARATION OF FIRE-EXTINGUISHING MATERIAL COMPRISING HEATING A MIXTURE OF UREA AND AN ALKALI METAL BICARBONATE CARBONATE SESQUICARBONATE OR HYDROXIDE

Arnold George Cottrell, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Feb. 3, 1969, Ser. No. 796,178
Claims priority, application Great Britain, Feb. 26, 1968, 9204/68
Int. Cl. A62d *1/00;* **C07c** *127/00*
U.S. Cl. 252—7 **6 Claims**

Improved yields of fire-extinguishing compounds having the empirical formula $MC_2N_2H_3O_3$ where M is Na or K, and made by heating urea with carbonates, bicarbonates, sesquicarbonates or hydroxides of sodium or potassium at temperatures below 150° C., are obtained by having water vapor present in the atmosphere in contact with the reaction system. The preferred proportion of water vapor is 15% to 35% by volume and the preferred reaction temperature 120° C. to 140° C.

3,607,745

AEROSOL FLAME RETARDANT COMPOSITIONS COMPRISING AN ALIPHATIC CHLOROFLUORO HYDROCARBON AND A FLAME RETARDANT

Joseph DiPietro, Alma, Mich., assignor to Michigan Chemical Corporation, Saint Louis, Mich.
Filed Sept. 30, 1968, Ser. No. 776,845
Int. Cl. C09k *3/28, 3/30*
U.S. Cl. 252—8.1 **10 Claims**

Aerosol solutions or emulsions useful in treating consumer's goods especially fabrics to render them fire-retardant are formulated for packaging under pressure in a valved container; and comprise a freon-type solvent, a brominated or chlorinated phosphate or phosphite such as tris (2,3-dibromopropyl) phosphate and, if desired, a carrier such as a polyvinyl chloride latex.

3,607,746

SURFACE COATED WAX-POLYMER LUBRICANT COMPOSITIONS

Gerard P. Caruso, New Orleans, La., assignor to Shell Oil Company, New York, N.Y.
Filed Nov. 29, 1968, Ser. No. 780,180
Int. Cl. C10m *5/22, 5/12, 5/02*
U.S. Cl. 252—12 **6 Claims**

Lubricant compositions consisting essentially of free-flowing discrete particles of wax-polymer, the surface of which is coated with a wetting agent and a solid lubricant.

3,607,747

LUBRICANT COMPRISING A NOVEL LUBRICATING IMPROVER OF INORGANIC GRAPHITE FLUORIDE

Toshikatsu Ishikawa, Tokyo, and Tamotsu Hori, No. 28-2, Higashi-Machi, Tojiin, Kita-ku, Kyoto, both of Japan, assignors to Nippon Carbon Company Limited, Tokyo, Japan, by said Hori
Filed May 19, 1969, Ser. No. 825,660
Claims priority, application Japan, May 27, 1968, 43/35,439
Int. Cl. C10m *1/10*
U.S. Cl. 252—18 **6 Claims**

Lubricants having excellent physical properties are composed of a base oil usually used and a high molecular weight inorganic graphite fluoride having a formula of (CF)n as an improver. Graphite fluoride is produced by reacting carbon or graphite with fluorine, halogen fluoride or a higher fluorine compound at a temperature of lower than 550° C.

3,607,748

SULFUR CONTAINING HYDROCARBON COMPOSITION

Raymond F. Wilson, and Reese A. Peck, both of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Feb. 28, 1969, Ser. No. 803,397
Int. Cl. C10m *1/38*
U.S. Cl. 252—48.2 **6 Claims**

Compositions which exhibit improved oxidation resistance and process for producing such compositions prepared by treating an oxidized hydrocarbon material with hydrogen sulfide. The preferred oxidized hydrocarbon material is an oxidized mineral oil which has been oxidized with oxygen, preferred air.

3,607,749

VISCOSITY INDEX IMPROVERS

Eric Simon Forbes, Knaphill, Woking, Surrey, England, assignor to The British Petroleum Company, Limited, London, England
Filed Nov. 19, 1968, Ser. No. 777,176
Claims priority, application Great Britain, Dec. 5, 1967, 55294/67
Int. Cl. C10m *1/28*
U.S. Cl. 252—56 **4 Claims**

Viscosity Index improvers for lubricating oils comprise a polymer of molecular weight above 100,000 e.g. a polymethacrylate, and a polymer of molecular weight below 25,000 e.g. a polyisobutylene. The low molecular weight polymer increases the shear-stability of high molecular weight polymer.

3,607,750

METAL COATED METAL CARRIER PARTICLES FOR ELECTROSTATIC DEVELOPERS

Kenneth W. Rarey, South Holland; John B. Kennedy, Jr., Chicago, and Marion J. Ziminkowski, Chicago, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 12, 1968, Ser. No. 752,081
Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **4 Claims**

In an electrostatic printing process employing a developer mixture comprised of electrically conductive carrier particles and electrostatically attractable toner particles, the effect of humidity of the air on the electrical conductivity of the carrier particles is substantially reduced by coating the carrier particles with a thin surface coating of a metal of the platinum group of the metals of Group VIII of the Periodic Table of Elements.

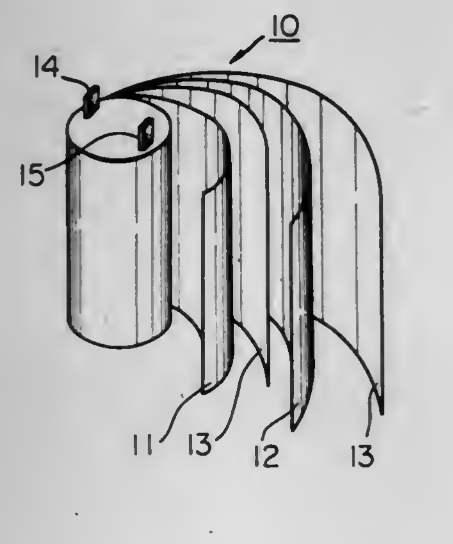
3,607,751

ELECTROLYTIC CAPACITOR

Susumu Yoshimura, Kadoma, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed June 24, 1969, Ser. No. 835,927
Claims priority, application Japan, July 2, 1968, Sept. 19, 1968, Sept. 19, 1968, 43-46684;43-68993;43-68994
Int. Cl. H01g *9/02*

U.S. Cl. 252—62.2 **1 Claim**



An electrolytic capacitor having a metal electrode with a dielectric film thereon and an electrolyte which is composed of an organic acid, substances such as p-quinone and manganese dioxide as an ionization substance and highly dielectric solvents such as dimethyl formamide and polyhydric alcohol.

A good conductivity and a large film recovery capability are achieved with this composition electrolyte.

3,607,752

PROCESS FOR THE CULTURE OF LARGE MONOCRYSTALS OF LITHIUM NIOBATE

Heini Graenicher, Erlenbach/ZH, Switzerland, assignor to Ciba Limited, Basel, Switzerland

Continuation-in-part of application Ser. No. 692,622, Dec. 1, 1967, now abandoned. This application June 30, 1970, Ser. No. 51,140
Int. Cl. B01j *17/20;* **C01d** *11/00*

U.S. Cl. 252—62.9 **8 Claims**

The present invention relates to a process for cultivating larger unstressed single-domain crystals containing niobium and an alkali metal, preferably lithium. The process is conducted by the Zochralski technique for cultivating crystals from a melt in an oxidizing moist atmosphere by means of resistance heating, which maintains an electric short circuit between crystal seed and the melt.

3,607,753

METHOD OF MAKING LITHIUM FERRITE POWDERS

Lydia A. Suchoff, New Shrewsbury, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 16, 1967, Ser. No. 684,603
Int. Cl. C04b *35/26*

U.S. Cl. 252—62.61 **6 Claims**

Ceramic powders of uniform and fine particle size are made by freeze drying a liquid solution of ceramic forming metallic salts, subliming the solvent, and applying heat to decompose the remaining solute to a ceramic powder.

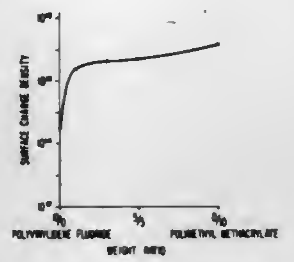
3,607,754

HIGH MOLECULAR WEIGHT ELECTRETS AND PROCESS FOR PRODUCING THEM

Mitsuo Asahina; Haruko Kakutani; Kinuko Wada, and Masahiko Tamura, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan and Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 9, 1969, Ser. No. 883,494
Claims priority, application Japan, Dec. 9, 1968, 43/89522
Int. Cl. H01b *3/18*

U.S. Cl. 252—63.2 **6 Claims**



An electret comprising a resin mixture of from 50 to 90 percent by weight of a vinylidene fluoride resin and from 10 to 50 percent by weight of a methyl methacrylate resin, said resin mixture having been subjected to polarization.

3,607,755

NOVEL HALOCARBON COMPOSITIONS

Kevin Paul Murphy, Bernardsville, and Richard Frederick Harry Stahl, Madison, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 25, 1968, Ser. No. 778,759
Int. Cl. C09k *3/02*

U.S. Cl. 252—67 **8 Claims**

Dichlorodifluoromethane (CCl_2F_2) and 1,1,1,2-tetrafluoroethane (CF_3CH_2F), in certain proportions, form an azeotrope and essentially azeotropic mixtures, which are constant boiling, or essentially constant boiling, and which mixtures possess refrigeration capacities higher than either of the CCl_2F_2 and CF_3CH_2F components alone. These mixtures are especially adapted for use in systems having high-condensing temperatures such as automobile air conditioning systems.

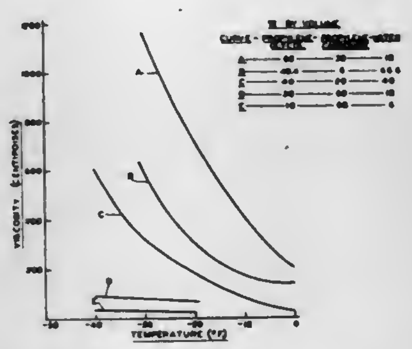
3,607,756

HEAT TRANSFER LIQUID AND USE

Wendell F. Phillips, Moorestown, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Mar. 22, 1968, Ser. No. 715,419
Int. Cl. C09k *3/00, 3/18*

U.S. Cl. 252—73 **15 Claims**



A liquid composition, having a freezing point well below the freezing point of water and adapted for use as a liquid heat transfer composition at low temperatures, is provided which consists essentially of propylene glycol, propylene carbonate and water, in defined proportions. Typical advantageous uses for the composition include use as a defrosting and as a coolant (including freezing) liquid.

3,607,757

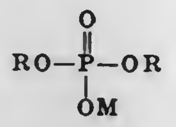
CORROSION RESISTANT ANTIFREEZE COMPOSITIONS

Harold McDonald, Harrington Park, N.J., assignor to Stauffer Chemical Company, New York, N.Y.

Filed July 24, 1968, Ser. No. 747,093
Int. Cl. C09k *3/02;* **C23f** *11/16*

U.S. Cl. 252—75 **12 Claims**

Corrosion resistant antifreeze compositions consisting essentially of at least one antifreeze fluid having from 1 to 4 carbons inclusive and from 1 to 3 hydroxy groups inclusive and a minor but effective amount sufficient to inhibit corrosion of an alkali metal dialkyl phosphate. The alkali metal dialkyl phosphate can be represented by the formula:



$$\mathrm{RO{-}}\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle OM}{|}}{\mathrm{P}}}\mathrm{{-}OR}$$

wherein R is an alkyl group containing from about 8 to about 16 carbon atoms inclusive. and M is an alkali metal ion.

3,607,758

FUNCTIONAL FLUID COMPOSITIONS

Frank H. Langenfeld, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 682,546, Nov. 13, 1967, now Patent No. 3,513,097, which is a continuation-in-part of application Ser. No. 516,077, Dec. 23, 1965, now abandoned. This application Mar. 17, 1970, Ser. No. 20,395
Int. Cl. C09k *3/00;* **C10m** *3/38;* **C23f** *11/08*

U.S. Cl. 252—78 **7 Claims**

Compositions comprising amide of an acid of phosphorus and a small amount of water exhibit the ability to inhibit and control damage to mechanical members in contact with said compositions. The compositions have many uses, among which are their use as hydraulic fluids.

3,607,759

DENTURE SOAK TABLET

Jordan B. Barth, East Brunswick, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 17, 1969, Ser. No. 817,199
Int. Cl. C11d *7/54*

U.S. Cl. 252—100 **8 Claims**

This disclosure relates to the process of preparing a water-soluble effervescent denture soak tablet free of capping or picking tendencies, which comprises the thorough blending of the water-soluble ingredients including a carbonate, organic acid and at least one oxidizing agent, the terminal addition and blending of a water-soluble detergent to the above formulation, subjecting the homogenous mixture to normal pressures in a tableting device, yielding tablets with clean surfaces and sharp edges. The terminal addition of the water-soluble detergent to the formulation lubricates the dies and permits easy and clean ejection of the tablet.

3,607,760

CLEANING COMPOSITION FOR PET STAINS

Edna M. McIntyre, 17280 E. 11th, Tulsa, Okla.

Filed June 9, 1969, Ser. No. 831,700
Int. Cl. C11d *7/54*

U.S. Cl. 252—104 **7 Claims**

A composition for removing pet stains from carpets and the like comprising 10 to 14 parts by weight of butyl cellosolve, 5 to 15 parts of isopropyl alcohol (or ethyl alcohol), about one to three parts of a 3.5 percent solution of hydrogen peroxide, about one-quarter to two parts of ethylene diamine tetracetic acid and 103 parts of water.

3,607,761

SOAP BARS CONTAINING SALTS OF FATTY ACIDS DERIVED FROM THE GUERBET REACTION

George C. Feighner, Franklin Lakes, N.J., and William L. Groves, Jr., Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Dec. 9, 1968, Ser. No. 782,416
Int. Cl. C11d *9/00, 9/18, 17/00*

U.S. Cl. 252—108 **5 Claims**

A detergent bar comprising an alkali metal salt or a blended magnesium-alkali metal salt of blends of C_{12} to C_{16} acids derived from the oxidation of alcohols produced by the Guerbet reaction and an alkali metal soap or a blended magnesium-alkali metal soap of a C_{16}–C_{18} fatty acid.

3,607,762

SOAP COMPOSITIONS CONTAINING VICINAL HYDROXYALKYL MALEATES

Roger L. Kidwell, Kirkwood, and John H. Payne, Saint Louis, both of Mo., assignors to Monsanto Company, Saint Louis, Mo.

Filed July 1, 1969, Ser. No. 838,331
Int. Cl. C11d *9/26*

U.S. Cl. 252—132 **4 Claims**

The tendency of natural soap compositions to deposit precipitates in hard water is inhibited by addition of 12–25 percent by weight sodium or potassium vicinal hydroxy alkyl maleate wherein the alkyl group contains from 12 to 20 carbon atoms.

3,607,763

PROCESS FOR THE PREPARATION OF LAUNDERING COMPOSITIONS

Leo A. Salmen, Union City; Marvin Liebowitz, Edison, and Jerome Stanley Schrager, Cedar Grove, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of application Ser. No. 587,364, Sept. 26, 1966, now abandoned. This application Dec. 5, 1969, Ser. No. 878,989
Int. Cl. C11d *1/62, 1/86, 3/06*

U.S. Cl. 252—137 **10 Claims**

A process for the preparation of a spray-dried, built, detergent-softener composition containing an ethoxylated nonionic detergent in combination with a di-higher alkyl quaternary ammonium textile softener is described which comprises the steps of (1) admixing the softener, nonionic detergent, and water to form an aqueous mixture containing a homogeneous dispersion of the softener; (2) incorporating an inorganic sodium or potassium phosphate builder in the aqueous mixture of step 1 to form a mixture containing more than 50 percent solids by weight, the temperature of the mixture being at least about 180° F. at the time the phosphate is introduced therein, and (3) spray drying the mixture of step 2.

3,607,764

GLASS WASHING COMPOUND AND PROCESS

Homer E. Crotty, and Michael T. Zalzal, both of Cincinnati, Ohio, assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 31, 1968, Ser. No. 701,829
Int. Cl. C11d *3/075*

U.S. Cl. 252—139 **4 Claims**

Glassware is washed with an aqueous solution of a washing compound comprising from 25 to 75 parts alkali metal hydroxide, 5 to 25 parts alkali metal tripolyphosphate, 5 to 25 parts tetra-alkali metal pyrophosphate, 5 to 25 parts of a hydroxy carboxylic acid sequesterant, from 5 to 20 parts of a glycol ether, from 0.2 to 10 parts of a nonionic polyalkoxylated surfactant, and from 0 to 25 parts of sodium carbonate. By this process, all types of typical soils found on laboratory glassware as well as permanent marking inks used in the pharmaceutical industry are removed.

3,607,765

DETERGENT SOFTENER COMPOSITIONS

Harold Eugene Wixon, New Brunswick, N.J., assignor to Colgate-Polmolive Company, New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,173

Int. Cl. C11d *1/18, 1/38, 1/50, 3/26, 7/32*

U.S. Cl. 252—152 **5 Claims**

A detergent composition which also softens textiles and which is nonyellowing and further does not render the textile water repellent, comprising a surface active detergent component and an imidazoline oxide compound.

3,607,766

COMBINATION SOAP AND HYDROGENATED OLEFIN SULFONATE DETERGENT BARS

Gar Lok Woo, Tiburon, and William Alan Sweeney, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 748,188, July 29, 1968. This application Aug. 11, 1969, Ser. No. 849,207

Int. Cl. C11d *1/12*

U.S. Cl. 252—161 **5 Claims**

Soap and detergent bars prepared from a major proportion of soap and a minor proportion of hydrogenated olefin sulfonate containing from 10 to 24 carbon atoms in an amount sufficient to retain in suspension insoluble lime soaps resulting from use in hard water.

3,607,767

AZEOTHROPIC COMPOSITION OF 1,1,2-TRIFLUOROETHANE, METHYLENE CHLORIDE, AND CYCLOPENTANE

John Allan Schofield, Irvington, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 661,807, Aug. 21, 1967, now abandoned. This application Oct. 10, 1969, Ser. No. 865,525

Int. Cl. C09d *9/00;* **C11d** *7/50;* **C23g** *5/02*

U.S. Cl. 252—171 **2 Claims**

It is not intended that the following abstract of the disclosure be construed as limiting the invention in any manner.

The disclosure relates to azeotropic mixtures of trichlorotrifluoroethane, methylene chloride and cyclopentane. The azeotropes are useful in solvent cleaning applications.

3,607,768

AZEOTROPIC COMPOSITION

Jan R. Haase, Rochester, and John A. Schofield, Irvington, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 590,204, Oct. 28, 1966, now abandoned. This application Nov. 17, 1969, Ser. No. 877,441

Int. Cl. C09d *9/00;* **C11d** *7/50;* **C23g** *5/02*

U.S. Cl. 252—171 **2 Claims**

Azeotropes are formed between 1,1-dichloroethane and 1,1,2-trichloro-1,2,2-trifluoroethane which boils at about 115.5° F. at 760 mm. mercury pressure. The azeotrope is useful in solvent degreasing applications.

3,607,769

BORE CLEANER

Charles E. Page, 1016 Hancock St., Piqua, Ohio

Filed Dec. 18, 1969, Ser. No. 886,404

Int. Cl. C09d *9/04;* **C11d** *7/52;* **C23g** *5/02*

U.S. Cl. 252—171 **6 Claims**

A composition, useful for removal of residues from gun barrels deposited during firing, consisting essentially of from 5 to 15 percent by volume of N,N-dimethyl formamide, from 40 to 50 percent by volume of ethylene glycol, and remainder substantially distilled water. Preferably, up to 0.1 percent by volume of a nonionic wetting agent, and a trace of a water soluble dye, are included.

3,607,770

GASEOUS REACTION PROCESS FOR THE PRODUCTION OF RARE EARTH OXYHALIDE AND OXIDE LUMINESCENT MATERIALS

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company

Filed Oct. 23, 1968, Ser. No. 780,928

Int. Cl. C09r *1/08;* **C22b** *59/00;* **C01f** *17/00*

U.S. Cl. 252—301.4 R **12 Claims**

A method for the production of well-formed crystals of oxyhalides including oxychlorides, oxybromides, and oxyiodides, and oxides, of yttrium and the rare earth metals, i.e., elements having atomic numbers 39 and 57 through 71. Particles of the oxide of the selected element are heated in an atmosphere containing enough of the selected hydrogen halide to cause conversion of the oxide to the oxyhalide and recrystallization of the oxyhalide. This recrystallized oxyhalide can be converted to the corresponding oxide as large, well-crystallized particles by pyrohydrolysis. Alternatively, the oxyhalide can be formed by initially firing the oxide particles as a mixture with the selected ammonium halide. By starting with rare earth activated oxides, the process of the invention produces luminescent materials which are useful for cathode-ray tube applications, in lamps, and in X-ray applications such as in image converter tubes and film intensifier screens.

3,607,771

RARE EARTH-ACTIVATED SILVER AND COPPER-SENSITIZED ZINC AND CADMIUM SULFIDE PHOSPHORS

Jerome S. Prener, and Jack D. Kingsley, both of Schenectady, N.Y., assignors to General Electric Company

Continuation of application Ser. No. 518,311, Jan. 3, 1966, now abandoned. This application Dec. 6, 1968, Ser. No. 785,019

Int. Cl. C09k *1/12*

U.S. Cl. 252—301.4 **2 Claims**

Phosphors exhibiting very narrow wavelength bands of high-intensity emission are composed of a chalcogenide host and activated with a rare earth and a noble metal. Zinc sulfide activated with erbium and sensitized with silver is an example of the phosphors.

3,607,772

INFRARED SENSITIVE ZINC SULFIDE LUMINOPHORE

Otto R. Kozak, Long Beach, N.Y., assignor to I. R. Research, Palo Alto, Calif.

Filed Dec. 11, 1968, Ser. No. 783,153

Int. Cl. C09k *1/12;* **G01j** *1/58*

U.S. Cl. 252—301.6S **2 Claims**

A luminophore that is extremely sensitive to both low intensities and very long wavelengths of infrared radiation is described. The luminophore consists of very high purity zinc sulfide crystals that are sensitized to infrared radiation by adding minute quantities of the elements lead, cobalt and praseodymium thereto. The lead, cobalt and praseodymium-activated zinc sulfide crystals, when prepared in a suitable emulsion film, will detect infrared radiation having energies as low as 10^{12} electron volts and of wavelengths as long as 15 microns. When first "sensitized" by ultraviolet light and subsequent illumination by infrared radiation, the luminophores of the invention luminesce, generally within the visible red range of the spectrum, with color gradations all the way out to the blue, depending upon the intensity of infrared radiation received.

3,607,773

EMULSIFYING WATER AND AIRBLOWN ASPHALT WITH TALL OIL AND TRIETHANDLAMINE

Armin C. Pitchford, and Gene N. Woodruff, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 26, 1968, Ser. No. 762,991

Int. Cl. B01j *13/00*

U.S. Cl. 252—311.5 **7 Claims**

Airblown asphalt and water are hard to emulsify with either tall oil or triethanolamine as the emulsifying agent. The use of both tall oil and triethanolamine gives a synergistic effect, and weight percents based on the total weight of

the emulsion of 0.9 tall oil and 0.7 triethanolamine produced stable emulsions while 1.6 of either one alone failed to produce an emulsion. Alkali metal hydroxide to adjust the pH above 7 and known emulsion stabilizing agents may be added.

3,607,774

PRODUCTION OF SILICA SOLS

William Cummings, Marford, Flintshire, Wales, England, assignor to Monsanto Chemicals Limited, London, England

Filed July 30, 1969, Ser. No. 846,232

Claims priority, application Great Britain, Aug. 8, 1968, 37,837/68

Int. Cl. C01b *33/14*

U.S. Cl. 252—313 S **7 Claims**

This invention relates to a process for producing aquasols and products thereof in which the silica particles have a dissymmetry diameter greater than 500 A. which involves adding aqueous silicic acid having a pH less than 7 to a heated vessel containing a heel, an aqueous alkali metal silicate (i.e., sodium silica) solution having an initial concentration expressed as SiO_2 of from about 2.5 percent to 10 percent by weight with the quantity of aqueous silicic acid added being such that the molar ratio of SiO_2 added as silicic acid to M_2O content of the alkali metal silicate in the heel (where M is an alkali metal atom) is at least 25:1.

3,607,775

PROCESS FOR ENCAPSULATING MINUTE PARTICLES BY USE OF AUTOGENOUSLY POLYMERIZABLE CAPSULE WALL MATERIAL

Noble Hauime Yoshida, Kettering, and Robert Erwin Miller, Dayton, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Jan. 29, 1968, Ser. No. 701,125

Int. Cl. B01j *13/02;* **B44d** *1/02, 1/44*

U.S. Cl. 252—316 **9 Claims**

A method is provided for producing, en masse, in a liquid manufacturing vehicle, minute capsules having walls which comprise a complex of at least two polymeric materials originally having opposite net electrical charges, at least one of which polymeric materials additionally is autogenously polymerizable to a solid polymeric material insoluble in the manufacturing vehicle. In the process, a liquid-liquid phase separation is effected by complex coacervation that is brought about by the opposite charges on the charged polymeric materials while in solution, and the complexly combined materials thereby emerge from solution in the manufacturing vehicle as a liquid phase relatively rich in the polymeric materials. The emergent liquid phase wets and enwraps particles of intended capsule core entities which have been dispersed in the manufacturing vehicle to form liquid-walled capsules and then conditions in the manufacturing vehicle are altered to cause the autogenously polymerizable material to react and produce solid, water-insoluble, capsule walls.

3,607,776

MANUFACTURE OF INGESTIBLE CAPSULES

John E. Santo, West New York, and Philip G. Abend, Teaneck, both of N.J., assignors to Pennwalt Corporation

Filed June 11, 1968, Ser. No. 736,017

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **13 Claims**

In encapsulation by interfacial polycondensation between intermediates respectively incorporated in minute droplets of one liquid and in a surrounding, continuous phase of another, immiscible liquid, safely ingestible microcapsules, as for containing substances to be used in or with foods, pharmaceuticals and the like, are prepared by such reaction between an intermediate comprising an amino acid, i.e. an amino carboxylic acid having at least two amine groups capable of the condensation reaction, and a suitable complementary intermediate such as a diacid chloride, e.g. adipoyl chloride, yielding a capsule wall of basically polyamide structure, which may also include anhydride linkages.

3,607,777

PROCESS FOR PREPARING MICROSPHEROIDAL DESICCANT SILICA GEL

Milton E. Winyall, Ellicott, and Ellsworth G. Acker, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed June 18, 1968, Ser. No. 737,816

Int. Cl. B01j *13/00;* **C01b** *33/16;* **C09k** *3/00*

U.S. Cl. 252—317 **4 Claims**

An aqueous alkali metal silicate solution is partially neutralized with a mineral acid until a pH of about 9.6–10.9 is reached. When a soft gel has formed, the mixture is vigorously agitated to obtain a fine slurry, and more mineral acid is added until a pH of about 0.5–3.0 is reached. The resultant slurry is then spray dried and washed. After drying at about 200° C., product particles of desiccant silica gel having average particle sizes ranging from 10 to 100 microns, a surface area of about 650–950 m.²/g., and a pore volume of 0.35–0.8 cc./g. are obtained.

3,607,778

ANIONIC SURFACE-ACTIVE AGENTS FROM EPOXYALKANES AND METHOD FOR THEIR PRODUCTION

Robert M. Lincoln, Moylan, and Joseph A. Meyers, III, Springfield, both of Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed June 25, 1968, Ser. No. 739,612

Int. Cl. B01f *17/04;* **C11d** *1/16*

U.S. Cl. 252—353 **3 Claims**

Random epoxyalkanes in the C_8–C_{20} range are reacted with ethylene glycol to produce a hydroxy ether having a primary alcohol group, which reaction product is sulfated to produce an anionic surface active agent.

3,607,779

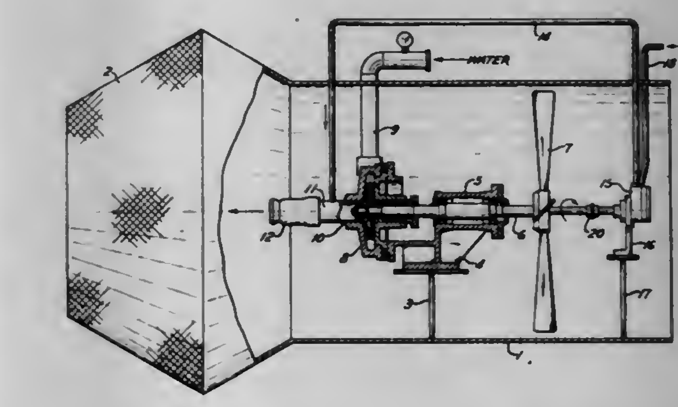
FOAM GENERATOR

Earle C. King, Evans City, and Walter Milich, Renfrew, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Aug. 7, 1969, Ser. No. 848,215

Int. Cl. B01d; B01f; B02j *13/00*

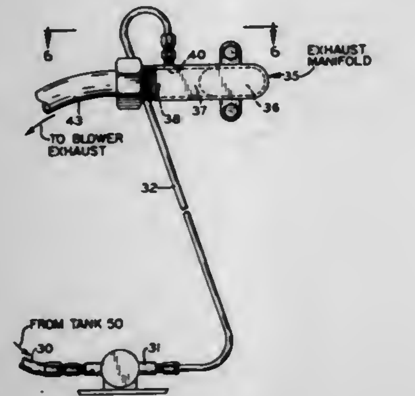
U.S. Cl. 252—359 E **5 Claims**



A tubular housing with a rear inlet and a front-end outlet has a foraminous cover over its front end. A shaft extends lengthwise of the inside of the housing and is rotatably supported. It is driven by a water turbine on its front end, the turbine having an inlet for water under pressure and a central front outlet that delivers the water to a forwardly directed nozzle connected to the turbine. Rigidly mounted on the shaft behind the turbine is a fan for blowing air through the housing from back to front. Also mounted on the shaft is a pump for delivering foaming solution to the rear end of the nozzle to mix with the water from the turbine outlet.

3,607,780
NONLETHAL THERMAL-AEROSOL GENERATOR WEAPON

Forrest G. Scott, P.O. Box 246, Auburn, Ind.
Filed Oct. 28, 1968, Ser. No. 771,154
Int. Cl. B01d ; B01f ; B01j *13/00;* **A01m** *19/00*
U.S. Cl. 252—359 A **5 Claims**



A weapon for producing a nonlethal, voluminous fog of tear gas or riot control agents or material for controlling one or more persons is provided with a two-cycle internal combustion engine that drives an air blower. A manifold is connected to the engine exhaust to cause the exhaust gases to turn at least 90°, and pass through a pipe to be discharged in the outlet opening of the blower. The liquid to be produced as a fog is drawn or injected into the manifold, and is vaporized by the hot exhaust gases. This vapor is discharged or drawn from the pipe by the air blown by the blower and further atomized to efficiently produce a dense, voluminous fog containing air, the vaporized and atomized liquid material, and the engine exhaust gases.

3,607,781
CORROSION INHIBITOR FOR HYDROCHLORIC ACID PICKLING OF STEEL

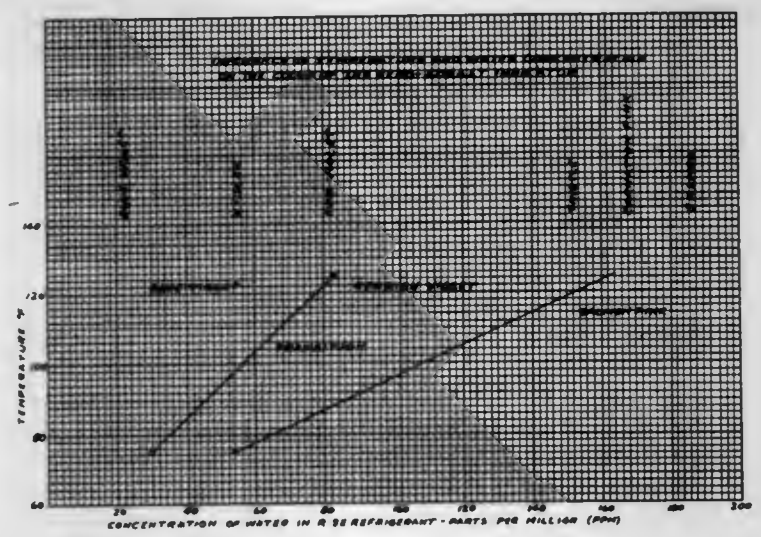
Thomas M. Kaneko, Trenton; Irving R. Schmolka, Grosse Ile, and John W. Compton, Grosse Ile, all of Mich., assignors to Wyandotte Chemicals Corporation, Wyandotte, Mich.
Filed Jan. 15, 1968, Ser. No. 697,631
Int. Cl. C23f *11/04, 11/12*
U.S. Cl. 252—389 **10 Claims**

A corrosion inhibitor composition for addition to aqueous solutions normally corrosive to metal surfaces is prepared by dissolving a surface active agent and an amine in a mixture of mineral acids.

3,607,782
MOISTURE CONTENT INDICATOR FOR REFRIGERATION SYSTEMS CONTAINING COBALT-SUBSTITUTED SULFONIC ACID CATION EXCHANGER

Shelvin Rosen, Murraysville, Pa., assignor to Emerson Electric Co.
Filed July 30, 1968, Ser. No. 748,777
Int. Cl. C08g *33/20;* **G01n** *31/22*
U.S. Cl. 252—408 **13 Claims**

Cobalt-substituted sulfonic acid cation exchangers, the functional part of which is the sulfonic acid moiety which is uniformly distributed and supported on an organic base or matrix. The sulfonic acid cation exchangers may be polymers of the polyvinyl aryl type and particularly cobalt-substituted sulfonated polystyrene divinylbenzene copolymer type ion exchange resins which are used as moisture indicators by providing readily detectable color changes with increase and decrease of ambient moisture content. In particular, they can give readily detectable color changes in ambients with as low as a few parts per million of moisture. Different percentages of cobalt substitution may be used, the lower proportions of cobalt being more sensitive in the minimal moisture ranges. The material may be used loose or may be bonded into a separate matrix with some inert material by use of an appropriate binder such as an epoxy resin. The invention is especially applicable to detecting moisture in halogenated refrigerants in closed refrigeration systems in either liquid or vapor phases. It may also be used in other ambients having limited water solubility.



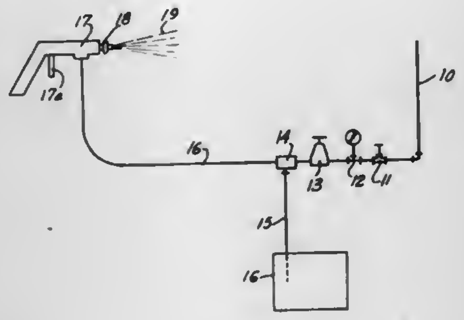
3,607,783
SOLUTION FOR PRESERVING MICROSCOPIC CORPUSCLES

Antonio Tata, Via Valpolicella 39, and Glauco Torlontano, Via Nicolo Piccinni 32, both of Rome, Italy
Filed Nov. 6, 1968, Ser. No. 773,949
Claims priority, application Italy, Nov. 8, 1967, 40552A/67
Int. Cl. G01n *31/08, 33/16*
U.S. Cl. 252—408 **10 Claims**

Organic corpuscles are purified by forming a dilute suspension of the corpuscles in an aqueous solution containing (a) 0.1–3.0 percent of a halogen salt of a strong base and a strong acid, (b) 0.2–15.0 percent by weight of a salt of a strong base and a strong acid selected from phosphates and sulphates, and (c) 10–400 mg. per 1,000 ml. of solution of a weak organic acid such as acetic acid, wherein the aqueous solution has a pH of 1–4.5.

3,607,784
METHOD OF REMOVING EXCESS PENETRANT FROM THE SURFACE OF A WORKPIECE

Adolf Mlot-Fijalkowski, Elmwood Park, Ill., assignor to Magnaflux Corporation, Chicago, Ill.
Filed Feb. 18, 1969, Ser. No. 800,097
Int. Cl. C09k *1/02;* **G01n** *21/16, 21/38*
U.S. Cl. 252—408 **19 Claims**



A liquid remover composition for the removal of a film of excess liquid penetrant from the surface of a workpiece undergoing inspection for surface discontinuities. The remover composition is a two-phase liquid in which the continuous phase is water and dispersed phase is a liquid immiscible with water but miscible with the liquid penetrant, and is present in an amount from about 0.2 percent to 10 percent by weight, or higher, of the remover composition. The dispersed phase is in very finely divided form suspended in the water when

pplied with vigorous turbulence against the film of excess enetrant to be removed. Preferably, the dispersed phase quid is of a substantially different density from water so that :paration can be easily effected, after removal of the enetrant from the surface, between the water and the adiixed penetrant and dispersed phase liquid so as to facilitate :parate use or disposal thereof without pollution problems.

3,607,785
POLYMERIZATION CATALYSTS, THEIR MANUFACTURE AND USE FOR POLYMERIZING CYCLIC ETHERS

aseh Osgan, Paris; Robert Charpentier, Epinay, Seine, and Philippe Teyssie, Vesinet, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, (Hauts de Seine), France
Filed Nov. 21, 1968, Ser. No. 777,893
laims priority, application France, Nov. 21, 1967, 129,123
Int. Cl. C08g *23/14*
S. Cl. 252—431 C **9 Claims**

A process for manufacturing an improved catalyst comsing reacting an aluminum compound with a zinc comund and contacting the resultant catalyst with a primary alhol of the general formula R'-CH_2-OH, wherein R' is a drocarbon monovalent radical containing from 1 to 20 carn atoms.

3,607,786
PRODUCTION OF A CONCENTRATED AQUEOUS COBALT SALT SOLUTION

ns Nienburg, Ludwigshafen; Karl Eichner, Munich; Peter 'avs, Ludwigshafen, and Horst Kerber, Mannheim, all of ;ermany, assignors to Badische Anilin- & Soda-Fabrik Akiengesellschaft, Ludwigshafen, Rhein, Germany
Filed Dec. 5, 1968, Ser. No. 781,636
aims priority, application Germany, Dec. 7, 1967, P 16 42 944.0
Int. Cl. C07c *45/02*
. Cl. 252—431 **6 Claims**

process for the production of an aqueous solution of alt salts of aliphatic carboxylic acids having from two to it carbon atoms which contains from 3 to 8 percent by ght of cobalt and is suitable as a catalyst solution for the synthesis, in which process an aqueous solution of cobalt s obtained by treating an oxo reaction mixture with oxits in an aqueous acid medium at elevated temperature separation of the aqueous solution and containing from to 1.5 percent by weight of cobalt is treated with from . to 3 percent by weight, with reference to the aqueous alt salt solution to be treated, of a noble metal from ip VIII of the Periodic System in the presence of an unt equivalent to the amount of cobalt contained in the eous solution of an aliphatic carboxylic acid having from to eight carbon atoms, and subsequent concentration by llation.

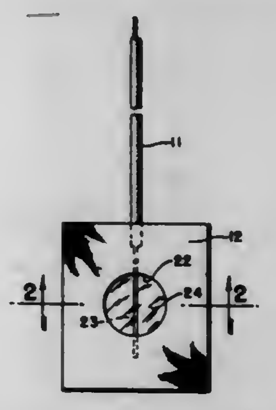
3,607,787
.VER-CONTAINING MATERIAL AND ELECTRODES AND PROCESSES

garete Jung, Nieder-Escbach; Harald Becker, Frankrt am Main, and Hans von Doehren, Frankfurt am Main, of Germany, assignors to Varta Aktiengesellschaft, ankfurt am Main, Germany
sion of Ser. No. 579,408, Sept. 14, 1966, Pat. No. 3,479,276.
Filed Nov. 12, 1969, Ser. No. 870,260
Int. Cl. B01j *11/08, 11/22*
Cl. 252—474 **3 Claims**

method for the preparation of catalytically active parate material which includes sorbing hydrogen into the cles of hydrogen-sorbing metallic material, treating the cles with an ionic silver solution, reducing the silver to ietallic state and depositing it onto the particles.

3,607,788
LIQUID ELECTRODE MATERIAL

Robert J. Adolph, 7933 Glen Orchard Drive, and Aribert H. Bernstein, 6127 Graceland Ave., both of Cincinnati, Ohio
Filed Nov. 20, 1967, Ser. No. 687,955
Int. Cl. H01b *1/06;* **A61n** *1/18*
U.S. Cl. 252—510 **3 Claims**



A novel electrode material for use with medical diagnostic potentiometric devices having a wire lead extending therefrom to be secured to the skin of a patient, is provided. The electrode material is a viscous, adhesive, electrically conductive liquid which dries on the skin. Upon application the electrode material will envelope the wire lead, and after drying will assure that dependable and durable electrical contact between skin and wire lead has been made.

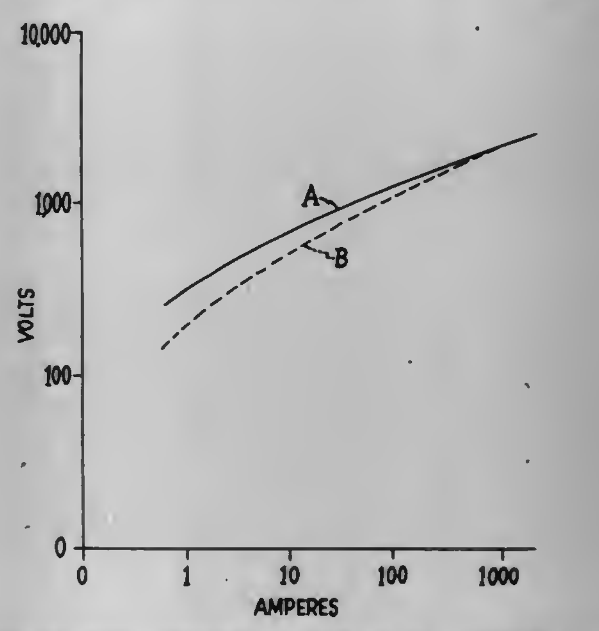
3,607,789
ELECTROCONDUCTIVE GLAZE AND METHOD FOR PREPARATION

Gunciappa Krishna Murthy, and Raymond H. Caley, both of Toronto, Ontario, Canada, assignors to Precision Electronic Components Ltd., Toronto, Ontario, Canada
Filed May 2, 1968, Ser. No. 726,198
Int. Cl. H01b *1/06;* **C03c** *3/12*
U.S. Cl. 252—514 **16 Claims**

An electroconductive glaze and process for formation thereof. The glaze comprises a particulate dispersion of conductive metals and/or metal oxides in a germanate glass matrix. The glaze is preferably formed by firing a paste comprising an intimate admixture of the particulate component with a crystallized, finely ground, lead germanate-based glass.

3,607,790
RESISTANCE MATERIAL AND METHOD OF MAKING

John J. Pitha, Lenox, Mass., assignor to General Electric Company
Filed Dec. 5, 1968, Ser. No. 781,473
Int. Cl. H01b *1/04;* **C04b** *35/14*
U.S. Cl. 252—516 **9 Claims**



Lightning-arrester resistance material is composed of silicon carbide particles and a binder therefor composed of cordierite formed of a fired mixture of cordierite-forming glass material and cordierite-forming crystalline material.

3,607,791
METHOD FOR REMOVING HYDROCARBONS
Francis J. Shell, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 10, 1969, Ser. No. 883,988
Int. Cl. E02b *15/04*
U.S. Cl. 431—2 **8 Claims**

A method for removing hydrocarbons from the surface of a body of water by placing a polypropylene sheet over and in contact with the hydrocarbons and combusting those hydrocarbons passing onto the upper surface of the sheet.

3,607,792
POLYOXYALKYLENE POLYAMINE VULCANIZING AGENTS FOR EPICHLOROHYDRIN POLYMERS
George Phillip Speranza, and Harold George Waddill, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
Filed Jan. 2, 1969, Ser. No. 788,635
Int. Cl. C08g *43/00*
U.S. Cl. 260—2 A **16 Claims**

Polyoxypropylene polyamines are vulcanizing agents for halogen-containing polymers such as polyepichlorohydrin. The cured polymers are useful specialty rubbers which are resistant to ozone attack.

3,607,793
PROCESS FOR FORMING POROUS STRUCTURES
Bert H. Mahlman, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.
Filed Feb. 23, 1968, Ser. No. 707,488
Int. Cl. C08f *3/08, 47/08, 45/28*
U.S. Cl. 260—2.5 M **4 Claims**

An improved method is taught for preparing porous structures from olefin polymers by heating a dispersion of such polymers in a hydrocarbon liquid to a temperature above the solution temperature, cooling slowly to form a gel and extracting the hydrocarbon liquid. The improvement resides in employing, as a starting material a polymer in the form of particles no larger than about 0.5μ.

3,607,794
PROCESS OF REACTING ORGANIC POLYISOCYANATE WITH ALKALI METAL SILICATE SOLUTION
William Abbotson; John Miles Macnair; Frederick James Wallace, and Peter John Hancox, all of Nechells, Birmingham, England, assignors to Conteki Developments Limited, London, England
Filed May 3, 1968, Ser. No. 726,553
Claims priority, application Great Britain, May 12, 1967, July 28, 1967, 32190/67;34884/67
Int. Cl. C08g *22/46, 53/08*
U.S. Cl. 260—2.5 A **10 Claims**

Siliceous products may be made by direct reaction between an alkali metal silicate and an organic isocyanate or isothiocyanate. By varying the proportions, reaction conditions and ingredients used, products varying from light cellular foams, to mastics and high-density solids may be obtained.

3,607,795
CELLULAR PLASTICS OF EPOXY RESINS AND PROCESS FOR THEIR MANUFACTURE
Ernst Nolken, Frankfurt am Main, and Hans Dexheimer, Kelkheim, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Jan. 17, 1969, Ser. No. 792,165
Claims priority, application Germany, Jan. 22, 1968, P 17 20 775.9
Int. Cl. C08g *53/10*
U.S. Cl. 260—2.5 EP **6 Claims**

A process for foaming and hardening an epoxy resin or mixtures of an epoxy resin with a lactone or a cyclic ether under the action of inert readily /volatile organic solvents as foaming agents and a mixture of a Lewis acid with phosphoric acid and/or a phosphoric acid derivative containing at least one POP group.

3,607,796
FOAM-FORMING POLYPROPYLENE COMPOSITION
Hans Eberle, Limburgerhof, Pfalz, and Gerhard Wuttke, Neuhofen, Pfalz, both of Germany, assignors to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed Jan. 24, 1969, Ser. No. 793,914
Claims priority, application Germany, Jan. 27, 1968, P 16 94 357.0
Int. Cl. C08f *3/08, 29/12, 47/10*
U.S. Cl. 260—2.5 E **23 Claims**

A foam-forming polypropylene composition comprising

a. a major proportion of a stereoregular propylene polymer having a relatively high molecular weight, the said molecular weight being too high to permit foaming of the polymer by means of a low-boiling hydrocarbon blowing agent;

b. a minor proportion of a relatively low molecular weight heptane-soluble propylene polymer; and

c. a blowing agent having sufficient affinity for the low molecular weight polypropylene to be absorbed thereby, the said blowing agent being substantially homogeneously distributed throughout the entire polymer mass due to the solubility of the low molecular weight polypropylene in the high molecular weight polypropylene.

3,607,797
COMPOSITE CELLULAR MATERIAL
Louis C. Rubens, Midland, and Donald H. Clarke, Essexville, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Feb. 20, 1969, Ser. No. 801,162
Int. Cl. C08g *41/04*
U.S. Cl. 260—2.5 AK **4 Claims**

The disclosure concerns composite cellular material comprising foamed styrene polymer bodies dispersed in a polyurethane foam matrix and a method of making the cellular material.

3,607,798
HALOGEN TREATMENT OF AROMATIC POLYAMIDE-SHAPED ARTICLES
Stephen S. Hirsch, Raleigh, N.C., assignor to Monsanto Company, Saint Louis, Mo.
Filed July 17, 1967, Ser. No. 653,626
Int. Cl. C08g *10/38, 53/08, 53/20*
U.S. Cl. 260—2.5 N **4 Claims**

A process for the conversion of thermally stable aromatic polyamide-shaped articles into dimensionally stable fireproof products which involves a constructive heat treatment at elevated temperatures in an elemental halogen-containing atmosphere under carefully controlled conditions.

3,607,799
PROCESSES FOR GRAFTING VINYL-TYPE COMPOUNDS TO CELLULOSIC MATERIALS
Herbert S. Barbehenn; Gerald M. Leszyk, and Edward D. Morrison, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 24, 1969, Ser. No. 868,988
Int. Cl. C08f *1/34*
U.S. Cl. 260—17A **8 Claims**

It has been found that the age of ceric ion/nitric acid redox catalysts has a significant effect on the degree of reactivity of vinyl compounds (such as, for example, acrylonitrile) with cellulosic materials. Whereas, the catalyst complex apparently loses its efficacy with the passage of time, it has been found that by aging the catalyst complex for a period of at least several hours after it is initially prepared (before the catalyst complex is added to the other reactant), a very high degree of catalyst stability, catalyst predictability and catalyst efficacy results.

3,607,800
WATER-DISPERSIBLE POLYURETHANE RESINS
Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Des Plaines, Ill.
Filed Feb. 24, 1969, Ser. No. 801,783
Int. Cl. C08g *41/00;* **C08j** *1/46*
U.S. Cl. 260—18 PT **13 Claims**

Water-dispersible polyurethane resins are provided by reacting a resinous polyol with a stoichiometric deficiency of polyisocyanate to provide an hydroxy-functional polyurethane in which carboxyl functionality is generated with a portion of the carboxyl functionality being preferably consumed by reaction with monoepoxide to generate hydroxy ester groups.

3,607,801
ORGANOPOLYSILOXANE COMPOSITIONS
Michael Fulton, Cowbridge, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, Berkshire, England
Filed July 16, 1969, Ser. No. 842,333
Claims priority, application Great Britain, July 22, 1963, 34,893/68
Int. Cl. C08g *31/09*
U.S. Cl. 260—18 S **4 Claims**

The tin carboxylate catalyst employed in room temperature vulcanizing silicone rubber systems based on hydroxyl endblocked diorganosiloxanes and silicate cross-linking agents is admixed with polyalkoxysilyl endblocked diorganosiloxane fluids for ease and accuracy of measurement and mixing.

3,607,802
METHYLOLATED ACRYLAMIDE INTERPOLYMERS CONTAINING ISOBUTYL ACRYLATE AND HYDROXY POLYESTERS
Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.
Filed Nov. 27, 1968, Ser. No. 779,604
Int. Cl. C08g *51/72, 17/16, 37/34*
U.S. Cl. 260—21 **9 Claims**

Organic solvent-soluble thermosetting acrylic interpolymers uniquely adapted for coil coating application are provided by interpolymerizing from 6%–15% acrylamide or methacrylamide with from 10%–35% of polyethylenically unsaturated polyester having an hydroxy value of 150–350, from 30%–60% of isobutyl acrylate, from 10%–22% of styrene or vinyl toluene, and from 2%–15% methyl methacrylate. The amide component is methylolated and the interpolymer is provided with an acid number of from 3–20 in order to provide a rapid curing system which will have the gloss, flexibility, hardness and solvent resistance required for coil coating application and which will, nonetheless, provide superior flow and wetting characteristics.

3,607,803
STABLE PREPARATIONS OF MODIFIED AMINOPLAST PRECONDENSATES, PROCESSES FOR THEIR MANUFACTURE AND USE
Rosemarie Toepel, Basle; Heinz Abel, Reinach/Bl, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed Oct. 29, 1969, Ser. No. 872,368
Claims priority, application Switzerland, Nov. 8, 1968, 16733/68
Int. Cl. C08g *37/30;* **C09d** *3/50*
U.S. Cl. 260—21 V **9 Claims**

Stable preparations of modified aminoplast precondensates are provided, which are prepared by reacting aminoplast precondensates containing alkyl-ether groups with basic polyamides. The polyamides are made from polymeric unsaturated acids and polyalkylene polyamines. The reaction is carried out in the presence of organic solvents at 20° to 100° C. Not later than after completion of the reaction, it is ensured that a sample of the reaction mixture has a pH-value of 2 to 8 after dilution with water. The resulting reaction products are soluble in water and are useful in the textile industry e.g. for rendering wool nonfelting. Especially suitable are the preparations when applied in combination with a dyeing process.

3,607,804
DYEABLE PILL RESISTANT POLYESTERS
Akihiro Nishimura, Williamsburg, Va., assignor to Dow Badische Company, Williamsburg, Va.
Filed July 16, 1969, Ser. No. 842,390
Int. Cl. C08f *21/04;* **C08g** *17/16*
U.S. Cl. 260—22 D **16 Claims**

Improved polyesters consist of the condensation product of a polyhydric alcohol, a major proportion of a first dibasic acid, a minor proportion of a long chain dibasic acid having molecular weight of 550 to 2,500, and optionally, a minor proportion of a long chain polyfunctional compound having 30 to 60 carbon atoms and at least three reactive sites.

3,607,805
PROCESS FOR STABILIZING VINYL HALIDE RESINS
Raymond E. Meyers, Westchester, Ill., and Edgar W. Eubanks, Westview Village, Ohio, assignors to SCM Corporation, Cleveland, Ohio
Filed Jan. 15, 1969, Ser. No. 791,499
Int. Cl. C08f *47/00, 45/58*
U.S. Cl. 260—23 EP **9 Claims**

A method for improving the thermal stability of vinyl halide resins formed by dispersion polymerization techniques is disclosed. To achieve this improved stability an effective amount of a hydrophobic, lipophilic organic epoxide compound is admixed with the polymerization dispersion after the polymerization is substantially completed, but before the vinyl halide resin is separated from the aqueous polymerization medium.

3,607,806
STABLE ORGANIC SOLVENT SOLUTIONS OF CALCIUM STEARATE
John S. Taylor, Newark, Del., and Wilbur T. Brader, Jr., Media, Pa., assignors to FMC Corporation, Philadelphia, Pa.
Filed Mar. 13, 1969, Ser. No. 807,066
Int. Cl. B01f *1/00*
U.S. Cl. 260—23 XA **9 Claims**

A volatile organic solvent solution of permanently dissolved calcium stearate and a method of preparing the same, are disclosed herein. Such solutions are particularly useful as coating compositions containing film-forming resins.

3,607,807
HIGH SOLIDS RUBBER LATEX AND METHOD
George R. Huddleston, Jr., Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.
Filed June 13, 1969, Ser. No. 832,971
Int. Cl. C08d *5/00*
U.S. Cl. 260—23.7 A **10 Claims**

The preparation of a high solids, low viscosity rubber latex by blending a fast reaction latex of small particles with a slow reaction latex of large particles, before concentration, and preferably before stripping for removal of unreacted monomers, stripping and concentrating the blend to about 50 percent solids, freezing the concentrate after acidifying to a pH of about 8.3, and then thawing and concentrating the frozen blend to a solids content above 60 percent.

3,607,808
THERMOPLASTIC INK

Stanley P. Thompson, and Don L. Shofner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Dec. 19, 1966, Ser. No. 602,551

Int. Cl. C08f *29/02*

U.S. Cl. 260—27 **2 Claims**

A composition of matter useful for printing at elevated temperatures comprising polyethylene, an ester of rosin and minor amounts of coloring matter.

3,607,809
BLAST FURNACE TAPHOLE PLUGS

Pierre Elby, 76 Rue du Chlvaire, Berck, Sur-mer 62, France

Filed Aug. 1, 1967, Ser. No. 657,499

Claims priority, application France, June 28, 1967, 112,264

Int. Cl. C08g *51/52;* **C08f** *45/52;* **B22c** *1/22*

U.S. Cl. 260—28 **4 Claims**

This invention relates to anhydrous plugs for stopping the tapholes of blast furnaces. This plug comprises, as a basic refractory material, a mixture consisting of low alumina pure silica and one or more refractory or gritty clays, and, as a binder, a resin or a plastic material containing a setting retarder such that the plug be heat stable at about 200° C.

3,607,810
AQUEOUS ALKALINE SOLUTIONS OF POLYHYDRAZIDES

Albert Schopf, Hering, Odenwald, and Gerhard Meyer, Obernburg, Blumenstrasse, both of Germany, assignors to Glanzstaff AG, Wuppertal, Germany

Filed May 7, 1968, Ser. No. 727,374

Claims priority, application Germany, May 10, 1967, G 50052 IVc/39b

Int. Cl. C08g *51/24, 20/22;* **D01f** *7/04*

U.S. Cl. 260—29.2 N **10 Claims**

As a composition of matter, a dilute aqueous alkaline solution in which there is dissolved a polyhydrazide characterized by recurring polymeric units of the formula

$$\left(\mathrm{NH{-}NH{-}CO{-}R{-}CO{-}NH{-}NH{-}CO{-}R'{-}CO}\right)_n \qquad \text{(I)}$$

in which R and R′ represent divalent aromatic or heterocyclic radicals such a phenylene, naphthalene or diphenylether and *n* is a large integer. This alkaline polymer solution can be used to form shaped products which in turn can be converted by heating into thermally-stable and insoluble polyoxadiazoles.

3,607,811
STABLE PHENOL FORMALDEHYDE RESIN SOLUTION FOR PREPARATION OF FIRE-RESISTANT LAMINATES

Sivert Hovd, Flattenlia, Porsgrunn, Norway, assignor to Norsk Spraengstofindustri A/S, Oslo, Norway

Filed Dec. 6, 1968, Ser. No. 781,962

Claims priority, application Norway, Dec. 13, 1967, 170,967

Int. Cl. C08g *51/04*

U.S. Cl. 260—29.3 **3 Claims**

The invention relates to an aqueous alcoholic phenol formaldehyde resin solution suitable for one-step impregnation of kraft paper for the preparation of fire-resistant laminates, containing alkyl phosphates and/or salts thereof and ammonium bromide.

3,607,812
METHOD OF MANUFACTURING POLYVINYL ALCOHOL FILMS AND PRODUCT

Bin Takigawa; Akio Wakabayashi; Tanio Hayashi, and Masanori Kasagi, all of Tokyo, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1968, Ser. No. 784,471

Int. Cl. B29f *3/00;* **D01f** *1/02*

U.S. Cl. 260—29.6 B **8 Claims**

A method of manufacturing a polyvinyl alcohol film insoluble in water at a temperature below 40° C. by adding 13 to 5 parts by weight of a polyhydric alcohol plasticizer to 87 to 95 parts by weight of polyvinyl alcohol resin which has a polymerization degree of from 700 to 1,500 and a hydrolysis degree of at least 97 mol percent and contains less than 0.5 percent by weight of sodium acetate, drying the mixture to reduce the moisture content to less than 2 percent by weight and finally melt extruding the mass into a film with a die heated to temperatures of from 190° to 250° C.

3,607,813
PRINTING INK COMPOSITIONS

Chester L. Purcell, and John B. Wheeler, III, both of Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 584,086, Oct. 4, 1966, now abandoned. This application Sept. 5, 1969, Ser. No. 855,746

Int. Cl. C08f *45/24;* **C09d** *5/02*

U.S. Cl. 260—29.6 **10 Claims**

Printing ink compositions having excellent gloss, adhesion and scuff resistance on such substrates as paper, treated polyethylene, aluminum or glass have been formulated from inorganic salts of interpolymers of ethylene and an acrylic acid and pigments.

3,607,814
COMPOSITION OF MATTER COMPRISING A SOLUTION OF A POLYIMIDE IN A MIXTURE OF SOLVENTS

Roland Ralph DiLeone, Rowayton, Conn., assignor to American Cynamid Company

Filed Feb. 17, 1969, Ser. No. 799,896

Int. Cl. C08g *51/32, 51/34*

U.S. Cl. 260—30.4 N **2 Claims**

A composition of matter comprising a solution of a polyimide of a 3,4-dicarboxy-1,2,3,4-tetrahydro-1-naphthalene succinic dianhydride and a diprimary diamine in the presence of a mixture of solvents comprising butyrolactone and a ketone selected from the group consisting of acetophenone, isopharone, benzophenone propiophenone and cyclohexanone in certain proportions and solids.

3,607,815
DYEABLE POLYOLEFIN FIBER

Tad L. Patton, Baytown, Tex., assignor to Esso Research and Engineering Company

Filed May 21, 1968, Ser. No. 730,915

Int. Cl. C08f *45/22, 45/50*

U.S. Cl. 260—30.6 **12 Claims**

Disclosed is an improvement in the drawing of fiber from a polyolefin blend containing up to about 10 percent by weight of a dye receptor additive wherein the drawing utilizes a drawbar heated from about 65° C. to about 140° C. The improvement comprises employing as a dye receptor additive a polymer of a vinyl pyridine base plasticized with a minor amount of plasticizer to have a glass transition temperature equal or lower than the temperature to which the drawbar is heated, whereby the vinyl pyridine polymer substantially elongates with the polyolefin during drawing. A dyeable composition consists of a polymer of a vinyl pyridine base mixed with a minor portion of a plasticizer. A dyeable fiber is prepared from a blend of a fiber-forming polyolefin with up to about 10 percent, based on weight of the blend, of a polyvinylpyridine plasticized with a sufficient amount of plasticizer to reduce the glass transition temperature of the polyvinylpyridine to a level equal or lower than the temperature at which the drawbar is heated in the drawing of the fiber.

3,607,816
SOLUTIONS IN ORGANIC SOLVENTS OF COPOLYMERS OF ACRYLIC OR METHACRYLIC ESTERS

Klaus Holzer, Frankenthal; Alfred Mueller, Biblis, and Bernhard Dotzauer, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed June 3, 1969, Ser. No. 830,131

Claims priority, application Germany, June 6, 1968, P 17 69 528.2

Int. Cl. C08f *15/40, 45/30, 55/36*

U.S. Cl. 260—31.2 X **11 Claims**

Solutions of solution copolymers of 60 to 90 percent of (meth) acrylic esters of alkanols containing from four to ten carbon atoms, 0.15 to 3 percent of olefinically unsaturated alkanediol monoesters and olefinically unsaturated alkoxymethylamides with or without up to 39 percent of other olefinically unsaturated monomers can be used for the production of contact adhesive layers having particularly advantageous properties.

3,607,817
PRODUCTION OF DYEABLE POLYACRYLONITRILE COMPOSITIONS AND ARTICLES

Louis E. Trapasso, Westfield, and Charles L. Smart, Millington, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 9, 1967, Ser. No. 621,762

Int. Cl. C08f *15/40, 29/56, 37/18*

U.S. Cl. 260—32.6 **15 Claims**

Dyeable (especially cationic-dyeable) acrylonitrile (AN) compositions and articles (e.g., films and filaments) are produced from blends of (I) a particular ternary or higher multicomponent AN polymer and (II) a copolymer of vinyl acetate and N,N-dimethylacrylamide wherein the latter constitutes from 1 to 90 percent by weight of the said copolymer. The polymer of (I) contains at least three different copolymerized monomers of the kind and in average percent mers, based on the total number of mers from individual monomers employed in making the copolymer, as follows:

A from 85 to 99% AN;

B from 1 to 14.5% of

- a. a vinylidene halide, or
- b. a dye diffusion-promoting, ethylenically unsaturated monomer that is copolymerizable with the other components of the copolymer, e.g., vinyl acetate, acrylic and methacrylic acids, methacrylonitrile, methacrylamide, N-isooctylacrylamide, N,N-dimethylacrylamide, diacetone acrylamide and the monoallylether of trimethylolpropane, and

C. from 0.15 percent to about 2 percent of a water-soluble salt of an organic sulfonic acid, e.g., vinylsulfonic, allylsulfonic, methallylsulfonic acids, and especially organic sulfonic acids wherein the sulfo group is separated from the ethylenic unsaturation by at least three carbon atoms, e.g., styrenesulfonic acid.

The total of A, B and C is 100 percent.

The amount of the copolymer of (II) that is blended with the AN polymer of (I) is, for example, from 2–15 wt. percent of the total of (I) and (II).

The components may be dry-blended, but are preferably blended while dissolved in a common solvent, e.g., dimethylacetamide, The solutions can be cast to form cationic-dyeable films or wet-spun to form cationic-dyeable filamentary materials and other shaped articles.

3,607,818
OPAQUE POLYESTER FILM

Michael P. Trubisky, Fairport, N.Y., and Darrell J. Parish, Circleville, Ohio, assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 23, 1968, Ser. No. 746,761

Int. Cl. C08k *1/16*

U.S. Cl. 260—33.2 R **12 Claims**

Polyester film suitable for support of photosensitive coatings rendered opaque by incorporation of carbon black and adherable by flame treatment.

3,607,819
BUTADIENE-STYRENE COPOLYMER INTERCONNECTED WITH SILICON OIL-EXTENDED AND STABILIZED

Joseph A. Beckman, Akron, and Jerry Donald Hunt, Cuyahoga Falls, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed June 16, 1969, Ser. No. 833,687

Int. Cl. C08d *11/04*

U.S. Cl. 260—33.6 AQ **2 Claims**

An unvulcanized interconnected linear rubbery polymer of conjugated dienes of 4 and 5 carbon atoms and copolymers thereof with olefins, preferably oil diluted, is stabilized by the reaction product of boric acid and salicylic acid.

3,607,820
PRINT PASTES AND DYE PASTES

Hans Wilhelm, Ludwigshafen/Rhine; Klaus Gulbins, Limburgerhof/Pfalz; Gerhard Faulhaber, Manheim, and Wolfgang Schwindt, Ludwigshafen/Rhine, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Nov. 20, 1967, Ser. No. 684,496

Claims priority, application Germany, Nov. 24, 1966, P 16 19 353.6

Int. Cl. C08f *45/28*

U.S. Cl. 260—33.6 **13 Claims**

Print pastes and dye pastes for printing and dyeing fibrous materials based on organic dispersion of cross-linkable copolymers as binders for the pigments. The disperse copolymers, which can be used as binders without emulsions, are prepared by polymerization of (a) monomers which bear N-methylol groups or N-alkoxymethyl groups with (b) comonomers which do not contain any of the groups specified under (a), in (c) an organic liquid in which the copolymer is insoluble, and in the presence of a copolymer of comonomers of groups (a) and (b) which is soluble in (c) and acts as a polymeric emulsifier.

3,607,821
PROCESS OF PREPARING STABLE DISPERSIONS OF SYNTHETIC POLYMER PARTICLES IN AN INERT ORGANIC LIQUID

Michael R. Clarke, Frankston, Victoria, and Leon Filipowicz, East St. Kilda, Victoria, both of Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia

Filed June 27, 1968, Ser. No. 740,469

Claims priority, application Australia, July 6, 1967, 24202/67

Int. Cl. C08f *47/20;* **C08j** *1/46*

U.S. Cl. 260—34.2 **8 Claims**

Stable dispersions of synthetic polymer in an inert organic liquid in which the polymer is insoluble are prepared by forming the particles in the liquid in the presence in solution in the liquid of a polymeric stabilizer which associates with the particles and provides around the particles a stabilizing steric barrier. Additionally, the stabilizer is coreacted with the disperse polymer, each coreacted stabilizer molecule forming covalent links with the disperse polymer. The coreaction may be an addition or a copolymerization reaction.

3,607,822
THIXOTROPICAL POLYURETHANE COMPOSITIONS

Kenichi Nishino, Takatsuki-shi, Japan, assignor to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka-shi, Japan

Filed Mar. 18, 1968, Ser. No. 714,005

Claims priority, application Japan, Mar. 23, 1967, 42/18137

Int. Cl. C08g *51/04, 51/14*

U.S. Cl. 260—37 **7 Claims**

A thixotropical polyurethane composition comprising 100 weight parts of a polyurethane prepolymer, 0.1 to 50 weight parts of colloidal silica of an average particle size of 3 to 50 μ **0.001** to 50 weight parts of at least one ethylene glycol polymer, having an average molecular weight of 100 to 20,000, of the group consisting of polyethylene glycol, polyethylene glycol ether and polyethylene glycol ester; the weight ratio of said ethylene glycol polymer to said colloidal silica being in the range of between 0.05:1 and 0.5:1.

3,607,823
DISPERSION OF TITANIUM DIOXIDE IN POLYAMIDES

Lawrence W. Crovatt, Jr., Gulf Breeze, Fla., assignor to Monsanto Company, Saint Louis, Mo.
Filed May 27, 1968, Ser. No. 732,153
Int. Cl. B29b *3/04;* **C08g** *51/04*
U.S. Cl. 260—37 N **5 Claims**

The agglomeration of titanium dioxide in polyamides containing a metal salt electrolyte is substantially inhibited by combining the titanium dioxide and the metal salt electrolyte in the polyamide under substantially anhydrous conditions.

3,607,824
MODIFIED GLYCIDYL ISOCYANURATE RESINS AND PROCESS

Zissis Aggias, Hilden/Rhineland, and Gunter Tauber, Dusseldorf-Reisholz, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
Filed Mar. 6, 1969, Ser. No. 804,989
Claims priority, application Switzerland, Mar. 12, 1968, 3608
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 N **6 Claims**

An adhesive composition which is liquid or pasty at room temperature comprising a reaction product of (1) a content of triglycidyl isocyanurate having an epoxide oxygen content of at least 14 percent, (2) an epoxide resin hardener anhydride of an organic polycarboxylic acid having a melting point below 40° C., (3) an organic polycarboxylic acid polyanhydride, and (4) a thixotrophy-producing means, said reaction product produced by homogenizing said ingredients at temperatures between 50° C. and 80° C., as well as the process of producing said adhesive composition and its utilization.

3,607,825
REINFORCED MOLDABLE COMPOSITION AND PROCESS OF PRODUCING THE SAME

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation
Division of Ser. No. 329,312, Dec. 9, 1963, Pat. No. 3,499,955.
Filed Nov. 5, 1969, Ser. No. 871,252
Int. Cl. C08g *51/04*
U.S. Cl. 260—38 **18 Claims**

This invention relates to a reinforced moldable composition and the process of producing the same, and more particularly, to such a composition which includes a bonding material and glass both in fibrous form and in flake or platelet form and which is substantially free of entrapped vapors.

3,607,826
STABILIZATION OF ETHYLENE POLYMERS

Willard Henry Wharton, Lake Jackson; Wayne Cole Brady, Angleton, and Michael Calvin McGaugh, Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Aug. 14, 1968, Ser. No. 752,721
Int. Cl. C08f *45/08, 45/56, 45/58*
U.S. Cl. 260—41 R **7 Claims**

Ethylene polymer of increased stability against oxidative degradation are described wherein a stabilizing amount of carbon black, a dithiodibenzoic acid, and an alkylated hydroxy anisole are incorporated into the polymer.

3,607,827
VINYLIDENE FLUORIDE POLYMER COMPOSITIONS

Andrew Anthony Dukert, Ambler, and Alkis Christofas, Philadelphia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Feb. 13, 1969, Ser. No. 799,084
Int. Cl. C08f *45/04;* **C09d** *3/76*
U.S. Cl. 260—41 **10 Claims**

A resin composition comprising a blend of from about 50 to 99 weight percent of vinylidene fluoride polymer and 1 to 50 weight percent of diallyl phthalate monomer or prepolymer is useful in preparing a coating having high softening point, good heat stability and solvent resistance.

3,607,828
ULTRA VIOLET STABILIZED POLYOLEFINS

Edward Walter Hussey, Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 1, 1970, Ser. No. 12,849
Int. Cl. C08f *45/02, 45/60*
U.S. Cl. 260—41 R **6 Claims**

Polyolefins stabilized against ultra violet light with nickel dialkyl dithiocarbamates and 2-hydroxy-4-octyloxybenzophenone.

3,607,829
SULFUR-CURABLE ELASTOMER HAVING IMPROVED BUILDING TACK

Alexander T. Harris, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 31, 1968, Ser. No. 748,951
Int. Cl. C08d *9/08, 9/16*
U.S. Cl. 260—41.5 R **14 Claims**

A sulfur-curable synthetic elastomer is tackified by mixing with an isoprenoidal resin characterized by a polymer of an isoprene/piperylene co-dimer and an allylically terminated cyclo compound, such as dicyclopentadiene.

3,607,830
CARRIER MEDIUM FOR LIQUID N,N'POLYTHI-BIS-DIALKYLAMINE

James E. Kearnan, Yorktown Heights, and Edward D. Weil, Yonkers, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.
Filed Oct. 30, 1968, Ser. No. 772,007
Int. Cl. C08f *27/06*
U.S. Cl. 260—41.5 **3 Claims**

A curing agent for rubber compounds consisting essentially of a liquid N,N'-polythio-bis-dialkylamine curing agent absorbed into finely divided solid carrier which is inert to the reaction of the rubber compound which is in the form of a free flowing nonsticky powder which has nondusting, semipelletized characteristics and releases the liquid curing agent in the rubber compound at cure temperatures without loss of any effectiveness.

3,607,831
THERMOPLASTIC POLYACETALS STABILIZED WITH AMINOCARBOXYLIC AMIDES

Bruno Sander, and Wilhelm Schuette, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed Oct. 16, 1968, Ser. No. 768,158
Claims priority, application Germany, Oct. 17, 1967, Oct. 17, 1967, P 16 69 727.1;P 16 69 728.2
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.9 **7 Claims**

A process for stabilizing polyacetals against thermal degradation by adding special aminocarboxylic amides of the type of β-aminolactamide, with or without polycondensates of isophthalic diamide, N,N'-alkyleneureas and formaldehyde.

3,607,832
SILICON-CONTAINING COMPOSITIONS

Peter R. A. Hansen, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, Berkshire, England
Filed Oct. 13, 1969, Ser. No. 866,030
Claims priority, application Great Britain, Oct. 18, 1968, 49,618/68
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 UA **9 Claims**

Organosilicon compositions comprising (1) a compound containing aliphatic carbon atoms linked by multiple bonds, such as isoprene or organopolysiloxanes containing vinyl substituents, (2) a silicon compound containing at least one ^{1}SiH in the molecule, such as methylhydrogen polysiloxane, (3) a platinum catalyst, and (4) a sufficient amount to retard reaction at room temperature between (1) and (2) of a compound containing at least one ketoxime group, such as methylethyl ketoxime, are disclosed as heat curable elastomers.

3,607,833
PREPOLYMER OF EPOXY RESIN AND TRIS(HYDROXYMETHYL) AMINOMETHANE AND CURABLE COMPOSITION THEREOF

Ronald L. De Hoff, Maplewood, N.J., and George D. Grieco, Ridgefield, Conn., assignors to R. T. Vanderbilt Company, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 767,846, Oct. 15, 1968, now abandoned. This application Oct. 3, 1969, Ser. No. 863,710
Int. Cl. C08g *30/10*
U.S. Cl. 260—47 **8 Claims**

The specification relates to accelerating the cure of epoxy resins by incorporating a prepolymer of an epoxy resin with tris(hydroxymethyl) aminomethane. The specification also relates to alcohol solutions of this prepolymer for the preparation of paint films and the like.

3,607,834
COATING AND BONDING AGENTS OF ACETOACETATES OF POLYVALENT METALS, DILUENTS AND COPOLYMERS OF ACETOACETIC ACID ESTERS

Matthias Marx, Bad Duerkheim; Hermann Pankraz Hofmann, Frankenthal, Upper Palatinate, and Hans Klug, Lampertheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed June 26, 1968, Ser. No. 740,104
Claims priority, application Germany, June 28, 1967, P 16 44 988.0
Int. Cl. C08f *11/00;* **C08s** *15/00;* **C08g** *25/00*
U.S. Cl. 260—63R **4 Claims**

Coating and bonding agents based on mixtures of acetoacetates of polyvalent metals, diluents, copolymers of polymerizable acetoacetic esters having the general formula where Y is a hydrocarbon radical and R is H or CH_3, and acrylic and/or methacrylic esters and/or styrene given hard and clear films which are resistant to weathering and may chemicals.

3,607,835
ACRYLONITRILE COPOLYMERS AND METHOD OF PREPARING THEM

Teo Paleologo; Roberto Costa, and Luigi Lugo, all of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy
Filed Dec. 16, 1968, Ser. No. 784,169
Claims priority, application Italy, Dec. 20, 1967, 24187-A/67
Int. Cl. C08f *15/38, 15/40*
U.S. Cl. 260—63 N **13 Claims**

Dyeable acrylonitrile copolymers for spinning contain as comonomers diacetonacrylamide and esters selected from methyl and ethyl esters of acrylic and methacrylic acids.

3,607,836
NEW COLOR IMPROVED POLYESTERS OF CHLORENDIC ACID OR ANHYDRIDE

Richard L. Smith, Chattanooga, Tenn., assignor to Velsicol Chemical Corporation, Chattanooga, Tenn.
Filed Feb. 14, 1969, Ser. No. 799,528
Int. Cl. C08g *17/10, 51/58*
U.S. Cl. 260—75 **4 Claims**

This invention discloses the improvement in the preparation of unsaturated polyesters of chlorendic acid or anhydride which comprises carrying out the esterification reaction in the presence of a color inhibiting amount of a combination of phosphoric acid and 2,6-di-*t*-butyl-*p*-cresol.

3,607,837
WATER-SOLUBLE URETHANE-UREA POLYMERS PREPARED BY MELT POLYMERIZATION

Sidney L. Reegen, Oak Park, and Bernard A. Merkl, Detroit, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
Filed Nov. 12, 1968, Ser. No. 775,130
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 AM **11 Claims**

Water-soluble urethane-urea polymers are prepared by the reaction of polyoxyalkylene glycols or copolymers of polyoxyalkylene glycols or blends thereof with an excess of organic polyisocyanates to form an isocyanate-terminated prepolymer, partially curing the prepolymer by exposing it to atmospheric moisture, and then chain-extending with a diamine. The reactions are carried out in the absence of a solvent.

3,607,838
PROCESS FOR PRODUCING POLYIMIDES IN GLYCOL

Jorg Strickrodt, Heinrick Stoerl Strasse 39/3011, Laatzen, and Ullrich Konig, Holbeinstrasse 12/334, Wolfenbuttel, both of Germany
Filed Jan. 28, 1970, Ser. No. 6,595
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 TF **3 Claims**

The present invention relates to a process for producing polyimides in which both the formation of intermediate products, the polyamide acids, and also the formation of polyimides, for example, at two different temperatures, are carried out in glycol, and recovery of the pure polyimides follows through filtration and drying.

3,607,839
DODECANOLACTAM POLYMERIZATION PROCESS

Harry McGrath, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 6, 1968, Ser. No. 727,015
Claims priority, application Great Britain, May 10, 1967, 21666/67
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 L **3 Claims**

Anhydrous polymerization of dodecanolactam by heating with an alkaline catalyst and an amide R_1CONHR_2 wherein one of R_1/R_2 is aryl and the other is aryl, alkyl or cycloalkyl.

3,607,840
METHOD FOR MANUFACTURING POLYHEXAMETHYLENEADIPAMIDE

Shozo Yura, and Yoshio Koyake, both of Kyoto-shi, Japan, assignors to Honshu Chemical Industry Co. Ltd., Chuo-ku, Tokyo, Japan
Filed Dec. 16, 1968, Ser. No. 784,219
Claims priority, application Japan, Aug. 2, 1968, 43/54309
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **2 Claims**

The present invention provides an improved method for manufacturing polyhexamethyleneadipamide directly from hexamethylenediamine and adipic acid ester by heating adipic acid ester together with hexamethylenediamine and water to hexamethylene diammonium adipate (hereinafter called AH salt), the alcohol formed during said heating process being taken out of the system continuously by distillation, and then polymerizing said AH salt.

Further advantages offered by the method according to the present invention are that the product is less colored and the alcohol formed from the adipic acid ester can be recovered with a high yield.

3,607,841
PRODUCTION OF POLY-2,2-DISUBSTITUTED-β-PROPIOLACTONES

Masataka Nakahara, Takatsuki, and Yasuhiro Ogawa, Suita, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1968, Ser. No. 710,776
Claims priority, application Japan, Mar. 22, 1967, 42/17832
Int. Cl. C08g *17/017*
U.S. Cl. 260—78.3 **5 Claims**

A method of producing poly-α,α-disubstituted-β-propiolactones by ring-opening polymerizing a compound of the formula wherein R_1 and R_2 are aryl or alkyl having 1–4 carbon atoms, in the presence of an anionic polymerization catalyst, characterized by conducting the polymerization in the presence of a molecular weight controlling agent selected from the group consisting of acid anhydrides, aldehydes, sulfoxides, organic acids and phenolic compounds in order to control the molecular weight of the polymer.

3,607,842
COPOLYMERS OF A CONJUGATED DIENE AND MALEIC ANHYDRIDE

Chester L. Parris, Morris Plains, and Leo S. Rieve, Schooleys Mountain, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 18, 1969, Ser. No. 843,187
Int. Cl. C08f *17/00, 1/28*
U.S. Cl. 260—78.5 R **9 Claims**

Substantially equimolar copolymers of a conjugated diene, such as butadiene, and a comonomer which is maleic anhydride or acrylonitrile can be prepared by copolymerizing the conjugated diene and the comonomer in an inert organic solvent in the presence of a Ziegler-type catalyst. The reaction proceeds rapidly at room temperature to yield a copolymer which is useful to form shaped articles.

3,607,843
PROCESS FOR MAKING POLY (PHENYLENE SULFIDE) POLYMERS OF INCREASED MOLECULAR WEIGHT

Fernando C. Vidaurri, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 16, 1969, Ser. No. 825,448
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 R **5 Claims**

The inherent viscosity of poly(phenylene sulfide) polymers is substantially increased and the range narrowed by recycling to the reactor as one of the reaction ingredients previously produced poly(phenylene sulfide) polymer.

3,607,844
PROCESS FOR THE PREPARATION OF POLY(TRITHIOCARBONATE)

Ray D. Taylor, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,968
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **8 Claims**

Poly(trithiocarbonate) is prepared by the reaction of alkali or alkaline earth metal trithiocarbonate and halogen at a controlled pH in an aqueous reaction medium. The process gives high purity and high molecular weight poly(trithiocarbonate) in yields as high as 90 percent.

3,607,845
FERRIC CHLORIDE CURED MERCAPTAN-TERMINATED POLYMERS

Robert W. Ireland, and Douglas E. Skillicorn, both of Avon Lake, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 6, 1969, Ser. No. 864,217
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **8 Claims**

Mercaptan-terminated liquid polymers in combination with ferric chloride and amine accelerators provide curable one-component elastomeric compositions suitable for sealant and caulking compositions.

3,607,846
PROCESS OF JOINING LITHIATED POLYMERS OR COPOLYMERS

Adel F. Halasa, Akron, and David P. Tate, Northfield, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of application Ser. No. 709,885, Mar. 4, 1968, and a continuation-in-part of 760,077, Sept. 16, 1968. This application Jan. 21, 1969, Ser. No. 792,825
Int. Cl. C08d *5/04, 5/02, 5/00*
U.S. Cl. 260—85.1 **15 Claims**

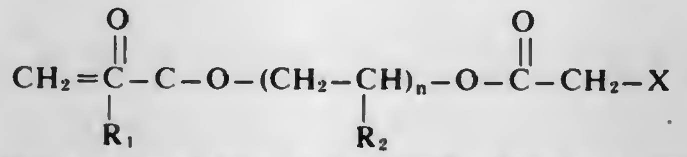
Polymers of increased molecular weight are produced from plastic and/or rubbery polymers derived from vinylidene monomers by reaction with an organic halogen compound in the presence of an alkali metal hydrocarbon and also in the presence of an accelerator which is a Lewis base. The reactant polymers include polystyrene and similar plastic polymers and rubbery polymers such as polybutadiene and butadiene-styrene copolymers. The organic halogen compound is any carbon compound containing at least one reactive halogen atom per molecule. The halogen is fluorine, chlorine, bromine and/or iodine. The alkali metal hydrocarbon is preferably a "live" polymer containing reactive alkali metal, e.g., polybutadiene produced by polymerization of butadiene-1,3 by means of a lithium initiator. The Lewis base may be organic or inorganic, but it is preferred to use organic compounds and especially ethers. Preferred products are nonflow rubbery polymers.

3,607,847
HALOGENATED ACRYLIC MONOMERS AND POLYMERS

Maurice Troussier, Pierre-Benite, and Edouard Grimaud, Oullins, both of France, assignors to Ugine Kuhlmann, Paris, France

Division of Ser. No. 610,238, Jan. 19, 1967. Filed Oct. 2, 1969, Ser. No. 871,058
Int. Cl. C08f *15/16*
U.S. Cl. 260—86.1 **10 Claims**

Halogenated acrylic monomers of the formula

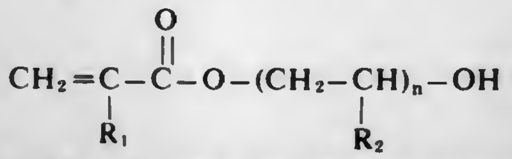


$$CH_2=\underset{R_1}{\underset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-(CH_2-\underset{R_2}{\underset{|}{C}}H)_n-O-\overset{O}{\overset{\|}{C}}-CH_2-X \quad (I)$$

wherein R_1 and R_2 each is a hydrogen atom or a methyl group, X is a chlorine or a bromine atom, and n is an integer from 1 to 5, are prepared by reacting in the presence of an acid acceptor, (a) halogenated acetyl chloride of the formula

$$XCH_2COCl \quad (II)$$

wherein X is a chlorine or a bromine atom and (*b*) hydroxyl group containing acrylic monomers of the formula



$$CH_2=\underset{R_1}{\underset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-(CH_2-\underset{R_2}{\underset{|}{C}}H)_n-OH$$

wherein *R*1, *R*2 and *n* each has the same meaning as statec hereinabove. The halogenated acrylic monomers thus produced are suitable for preparing polymers containing reactive halogen atoms.

3,607,848
METHOD FOR PREPARING INSOLUBLE, CROSS-LINKED ORGANIC HYDROGELS COMPRISING COPOLYMERS OF GLYCOL MONOESTERS WITH DIESTERS

Vladimir Stoy; Richard Chromecek; Zdenek Tuzar; Miroslav Stol; Karel Kliment; Jaroslava Otoupalova, and Miloslav Bohdanecky, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed July 23, 1968, Ser. No. 746,735
Claims priority, application Czechoslovakia, Aug. 7, 1967, PV 5701-67
Int. Cl. C08f *15/18*
U.S. Cl. 260—86.1 **6 Claims**

Insoluble hydrogels are prepared by cross-linking linear or branched soluble copolymers of glycol methacrylates or glycol acrylates with glycol dimethacrylates or glycol diacrylates, preferably in presence of glycol acrylate or glycol methacrylate monomers which may contain the respective diester, and preferably also in presence of initiators liberating free radicals, and in presence of solvents having the interaction parameter χ. Soluble glycol methacrylate or acrylate polymers can be used in form of fine solid particles and the cross-linking may be aided by heating till to about 150° C.

3,607,849
BULK COPOLYMERIZATION OF VINYL CHLORIDE AND ONE, TWO-TRANS-DICHLORETHYLENE

Robert Buning, Oberlar; Karl-Heinz Diessel, Troisdorf; Siegmund Frick, Oberlar, and Gerhard Bier, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf (Bez. Cologne), Germany

Filed Sept. 29, 1966, Ser. No. 583,005
Claims priority, application Germany, Oct. 2, 1965, D 48 388
Int. Cl. C08f *1/04, 1/62, 15/06*
U.S. Cl. 260—87.5 **5 Claims**

Production of an improved chlorinated polymer by the low temperature bulk copolymerization of vinyl chloride and 1,2-trans dichloroethylene where the polymerization is carried out to at least a 30 percent conversion of monomers at a temperature of −5 to −30° C. and under substantially shearing action.

3,607,850
POLYMERS OF CONJUGATED FLUORINATED DIENES AND METHOD OF MAKING, USING AS THE CATALYST A RHODIUM SALT OR COMPLEX

Homer P. Smith, Little Falls, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Apr. 8, 1969, Ser. No. 814,450
Int. Cl. C08f *3/20, 15/06*
U.S. Cl. 260—87.5 **1 Claim**

Method of polymerizing conjugated fluorinated dienes in aqueous emulsions wherein a rhodium salt or rhodium complex which is water-soluble catalyzes the polymerization and increases the conversion of the conjugated fluorinated dienes to polymers thereof.

3,607,851
POLYMERIZATION OF CONJUGATED DIOLEFINS

Lawrence E. Forman, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 24, 1969, Ser. No. 819,089
Int. Cl. C08f *7/04;* **C08d** *3/08, 1/16*
U.S. Cl. 260—94.2 M **1 Claim**

Conjugated diolefins, with or without vinyl aromatic comonomers, are polymerized using a catalyst which is a combination of ROK and R'K, where R is an alkyl or alkenyl radical, and R' is an alkenyl radical. Polymerization of 1,3-butadiene in this system results in a product which is primarily trans-1,4-polybutadiene, with essentially no cis-1,4-polybutadiene.

3,607,852
VINYL ESTER POLYMERIZATION IN ALCOHOL AND WATER SOLUTION

Wilfried Eichhorn, Kelfheim, Taunus; Gerhard Roh, Hofheim, Taunus, and Peter Seibel, Frankfurt, Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany

Filed Mar. 6, 1969, Ser. No. 804,933
Claims priority, application Germany, Mar. 19, 1968, P 17 20 806.9
Int. Cl. C08f *3/54*
U.S. Cl. 260—89.1 **6 Claims**

A process for the solution polymerization of a vinyl ester in the presence of an alcohol and a free radical polymerization catalyst is shown. Water in controlled amounts is added to the feed mixture of monomer, alcohol and catalyst prior to their entering the first polymerization zone.

3,607,853
PROCESS FOR THE PREPARATION OF TRANS-POLYPENTENAMER

Wolfgang Oberkirch, Cologne-Stammheim; Peter Gunther, Opladen, and Josef Witte, Cologne-Stammheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 9, 1969, Ser. No. 865,183
Claims priority, application Germany, Oct. 25, 1968,
Int. Cl. C08f *3/02*
U.S. Cl. 260—93.1 **9 Claims**

A process for the polymerization of cyclopentene with ring-opening, in which cyclopentene dissolved in an inert organic solvent is polymerized in the presence of a catalyst, characterized in that an organometallic mixed catalyst of

a) a molybdenum, tungsten or tantalum salt,
b) tertiary butyl hypohalite,
c) an organic aluminium compound in the molar ratio of a:b:c as 1:0.1 to 5:0.8 to 15 is used.

3,607,854
METHOD OF PRODUCING CIS-1,4-POLYISOPRENE

Helena Antroplusova, Prague; Karel Mach, Roztoky u Prahy; Bohumir Matsyska, Horni Pocernice; Jaromif Trneny, Kralupy nad VL ta vou, and Cestmir Vyroubal, Kralupy nad VL ta vou, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation-in-part of application Ser. No. 729,896, May 17, 1968, now abandoned. This application Oct. 28, 1968, Ser. No. 771,286
Int. Cl. C08d *3/12*
U.S. Cl. 260—94.3 **10 Claims**

Isoprene is readily polymerized to have over 90 percent repeating isoprene units in the 1,4-cis configuration if the polymerization catalyst employed is prepared by reaction of titanium tetrachloride with an excess of dialkylaluminum fluoride. The proportions of the reactants are not critical because the resulting reduction of Ti^{IV} does not go beyond Ti^{III}. The alkyl bound to aluminum should have 1 to 5 carbon atoms. Ethers may be added to the catalyst reaction mixture.

3,607,855
CONTINUOUS PRODUCTION OF CHLORINATED POLYOLEFINS

Hans-Georg Trieschmann, Hambach, and Gerhard Zeitler, Hessheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Rhineland-Pfalz, Germany

Filed Sept. 16, 1968, Ser. No. 762,314
Claims priority, application Germany, Sept. 16, 1967, 17 20 302
Int. Cl. C08f *27/03*
U.S. Cl. 260—94.9 H **9 Claims**

A continuous process for the chlorination of polyolefins in the presence of chlorohydrocarbons.

3,607,856

OXIDIZED MANGANESE CATALYST AND POLYMERIZATION PROCESS OF ETHYLENE

Edwin F. Peters, Lansing, Ill., assignor to Standard Oil Company, Chicago, Ill.
Filed May 9, 1967, Ser. No. 637,083
Int. Cl. C08d *3/04, 3/06, 3/10*
U.S. Cl. 260—94.9 2 Claims

A novel catalyst composite for the polymerization of unsaturated organic compounds is oxidized manganese extended on a support used in conjunction with an organoaluminum compound.

3,607,857

PROCESS OF REMOVING ACRINOL FROM GAMMA GLOBULIN USING SILICEOUS MATERIAL SUCH AS SILICA GEL

John W. Nelson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Continuation-in-part of application Ser. No. 812,404, Apr. 1, 1969 now abandoned. This application Mar. 3, 1970, Ser. No. 16,225
Int. Cl. C07g *7/00*
U.S. Cl. 260—112 9 Claims

Removal of acrinol (ethacridine lactate monohydrate) from blood proteins, especially Y-globulin, is accomplished by treating aqueous acrinol solutions of the proteins with a siliceous material which preferentially absorbs the acrinol. Free of acrinol, Y-globulin from sera or plasma especially immune sera or plasma is useful in combatting rejection of tissue and organ transplants and in replacement management of gamma globulin.

3,607,858

PROCESS FOR PREPARING LYOPHILIZED HUMAN BLOOD PROTEINS SUCH AS GAMMA GLOBULIN IN THE PRESENCE OF A NONIONIC SURFACTANT

Merle Vernon Querry, Westwood, N.J., and Francis Fremonte Buck, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Filed Mar. 31, 1970, Ser. No. 24,364
Int. Cl. C07g *7/00*
U.S. Cl. 260—112 B 4 Claims

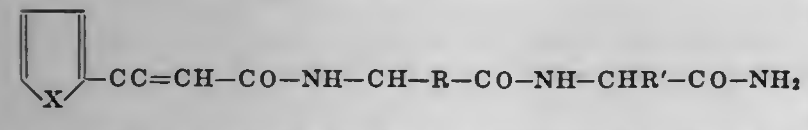
Human blood proteins, such as alpha globulin, beta globulin, albumin, and particularly gamma globulin, are prepared in dry lyophilized form by freeze drying an aqueous solution in the presence of small amounts of nonionic surface active agents, the initial freezing being very rapid, from 1 to 3 minutes, preferably by freezing in small containers, such as vials, immersed in an alcohol Dry Ice bath.

3,607,859

FURYLACRYLOYLGLY-CLYCYL-L-LEUCINAMIDE AND RELATED PEPTIDES AND USE THEREOF IN SPECTROPHOTOMETRIC ASSAY FOR NEUTRAL PROTEASE

Joseph Feder, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed June 12, 1968, Ser. No. 744,286
Int. Cl. C07c *103/52;* **C07d** *5/16;* **G01n** *21/34*
U.S. Cl. 260—112.5 7 Claims

Novel furylacryloylglycyl-L-leucine amide (FAGLA) type compounds. A spectrophotometric assay, based upon hydrolysis of these compounds by neutral protease, is also provided. Compounds have the formula I:



$$\text{—CC=CH—CO—NH—CH—R—CO—NH—CHR'—CO—NH}_2$$

wherein: X is oxygen or sulfur, R is hydrogen or lower-alkyl, and R′ is lower-alkyl or phenyllower-alkyl. FAGLA is the preferred compound.

3,607,860

PROCESS FOR THE PRODUCTION OF SOY PROTEINS HAVING GEL FORMING ABILITY

Yukiomi Yamato, Kawanishi-shi; Hitoshi Taniguchi, Osaka-shi; Sadao Nakayama, Osaka-fu, and Teisaburo Tateishi, Osaka-fu, all of Japan, assignors to Fuji Oil Company Limited, Osaka-shi, Japan
Filed Nov. 28, 1967, Ser. No. 686,338
Claims priority, application Japan, Dec. 1, 1966, 41/78819
Int. Cl. A23l *1/20*
U.S. Cl. 260—123.5 7 Claims

A soy protein having excellent water-solubility, gel-forming ability, water-binding property and emulsifying property is obtained by separating the protein at a temperature below 80° C. in an acidic condition from soy milk which is obtained from soybean meal or soybeans by water extraction, alkalizing the protein with an alkalizing agent, returning the pH to about neutral with acid and thereafter heating the resulting protein solution at a temperature above 60° C.

3,607,861

PROCESS FOR THE PREPARATION OF WATER-INSOLUBLE AZO-DYESTUFFS

Oskar Braun, Frankfurt am Main, and Reinhold Deubel, Kelkheim, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Feb. 1, 1968, Ser. No. 702,184
Claims priority, application Germany, Feb. 4, 1967, F 51442
Int. Cl. C09b *35/04;* **G03f** *7/100*
U.S. Cl. 260—176 7 Claims

Process for the preparation of a water-insoluble azodyestuff having particularly good qualities for printing by adding in the coupling process an auxiliary comprising a mixture consisting essentially of a primary aliphatic amine and/or a salt thereof with a low-molecular weight fatty acid, and of an aminoxide or phosphine oxide which contains a long-chained hydrocarbon radical.

3,607,862

PROCESS FOR PREPARING CARBOHYDRATE KETALS

Gerald Myer Jaffe, Verona; William Szkrybalo, Verona, and Peter Hans Weinert, Wayne, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Feb. 4, 1969, Ser. No. 796,578
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R 29 Claims

Preparation of ketal sugars from sugars utilizing perchloric acid as a catalyst.

3,607,863

CLATHRATE COMPOUNDS

Werner Dosch, Mainz, Germany, assignor to Dyckerhoff Zementwerke A.G., Wiesbaden-Amoneburg, Germany
Filed Feb. 28, 1967, Ser. No. 619,486
Int. Cl. C07c *47/18;* **C07f** *15/02*
U.S. Cl. 260—209 10 Claims

A composition composed of an inorganic carrier material of the formula

$$4\,MeO \cdot X_2O_3 \cdot n\,aq$$

wherein

Me is an alkaline earth metal,
X is trivalent iron or aluminum,
aq is water of crystallization, and
n is at least 7,

having adsorbed thereto or included in its crystal lattice a polar organic compound or a non-polar organic compound and a polar organic compound. Said carrier material may contain anions such as SO_4^{-2}, CO_3^{-2}, or Cl^- and may be alkylated.

The resulting adsorption complex, inclusion or clathrate compound is stable, of a high degree of crystalline orderliness, and uniform in its physical and chemical properties.

It is prepared by contacting the inorganic carrier material with the liquid or gaseous organic compound or with its solution. It is also obtained by adding the organic compound during preparation of the inorganic carrier material.

The adsorption complexes, inclusion or clathrate compounds are useful for modifying cement and concrete, for storing insecticides, perfumes, drugs, dyes etc. to be released at the site of their use, and for many other technical purposes.

The inorganic carrier material is obtained, for instance, by reacting mono-or tricalcium aluminate or tetracalcium aluminate ferrite with water or calcium hydroxide suspensions or by reacting alkali aluminate solutions with the oxides or hydroxides of calcium or magnesium.

3,607,864

PROCESS FOR PREPARING NEOMYCIN UNDECYLENATE

Alfred Halpern, Great Neck, N.Y., assignor to Synergistics, Inc., New York, N.Y.
Filed Apr. 21, 1969, Ser. No. 817,876
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 NE 6 Claims

The method for preparing neomycin undecylenate in pure form by reacting an acid salt of neomycin with an alkali metal or an ammonium salt of undecylenic acid in an inert saline medium containing not more than 10 percent of inorganic salt ions, so that the formed neomycin undecylenate may be readily separated, washed free of contaminants and dried.

3,607,865

PREPARATION OF XANTHATES

John Dyer, Media, and Lyle H. Phifer, West Chester, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.
Filed May 28, 1968, Ser. No. 732,551
Int. Cl. C07c *69/32*
U.S. Cl. 260—234 R 10 Claims

A method of forming alcohol xanthates utilizing a transxanthation reaction between an alcohol xanthate and an alcohol, is disclosed herein.

3,607,866

3,4-DIHYDRO-1H-1,3,4-BENZOTRIA-ZEPINE-2,5-DIONES AND THEIR PREPARATION

Denis M. Bailey, E. Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
Filed Aug. 15, 1968, Ser. No. 752,770
Int. Cl. C07d *55/54*
U.S. Cl. 260—239.3 B 22 Claims

1-R′-3-R″-4-R‴-3,4-dihydro-1H-1,3,4-benzotriazepine-2,5-dione where R′ is hydrogen, lower-alkyl, lower-alkenyl, halo-(lower-alkenyl), phenyl-(lower-alkyl)-, phenyl, phenyl-O-Y-, B=N-Y- or B=N-COCH$_2$- where Y is polycarbon-lower-alkylene and B=N is lower-tertiary-amino, and R″ and R‴ are each hydrogen or lower-alkyl, having sedative and anti-inflammatory activities, are prepared by reacting a lower-alkyl N-R′-N-(lower-carbalkoxy)anthranilate with a hydrazine of the formula R″-NHNH-R‴

3,607,867

PURIFICATION OF BENZODIAZEPINE DERIVATIVES

Shigeho Inaba, Takarazuka-shi; Toshiyuki Hirohashi, Kobe; Takahiro Izumi, Takarazuka-shi, and Hisao Yamamoto, Nishinomiya-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
Filed Feb. 14, 1969, Ser. No. 799,503
Claims priority, application Japan, Feb. 21, 1968, 43/011300
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D 8 Claims

A 1 - alkyl - 5 - phenyl - 7 - chloro - 1,3 - dihydro - 2H - 1,4 - benzodiazepine-2-one derivative, which is useful as a tranquilizer, a muscle relaxant or a spasmolytic, is purified by dissolving a crude benzodiazepine derivative in hydrochloric acid, partially neutralizing by adding an aqueous alkali solution to deposit impurities such as 2-methylamino-5-chlorobenzophenone, removing the deposited impurities from the solution by filtration, further adding the aqueous alkali solution to the filtrate and separating the purified benzodiazepine derivative from the filtrate by solvent extraction.

3,607,868

Δ^4-3-OXO ANDROSTENES AND PROCESS FOR THEIR MANUFACTURE

Georg Anner, Basel, and Peter Wieland, Oberwil, Basel-Land, both of Switzerland, assignors to CIBA Corporation, Summit, N.J.
Filed July 22, 1968, Ser. No. 746,278
Claims priority, application Switzerland, Dec. 4, 1964, 15741/64
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 16 Claims

The invention involves converting a Δ^5-3-hydroxy-17-androstene, in known manner, into the ethyleneketal, brominating, then oxidizing the brominated steroid in a neutral or preferably basic medium and finally eliminating hydrogen bromide from the resulting product. This $\Delta^{4,6}$-3,17-dioxoandrostadiene-17-ethyleneketal may be treated with dilute acid to form the free dioxo compound or treated with methyl magnesium halide in the presence of copper salt to form a Δ^4-3,17-dioxo-17α- and 17β-methyl androstene-17-ethyleneketal. The ketals may be converted into the free dioxo compounds.

3,607,869

PROCESS FOR HYDROLYZING 7-AMINOCEPHALOSPORANIC ACID LACTONE

Constantino John Di Cuollo, Drexel Hill; George L. Dunn, Wayne, and Louis R. Fare, La Fayette Hill, all of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.
Filed Nov. 17, 1969, Ser. No. 877,481
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 4 Claims

Desacetyl 7-aminocephalosporanic acid is obtained chemically in reasonable yield from desacetyl 7-aminocephalosporanic acid lactone by subjecting the lactone in a basic water-containing medium to a pH of 11–13 for 5 seconds to 5 minutes.

3,607,870

PRODUCTION OF DITHIOCARBAMATES

Friedrich Becke, Heidelberg, and Helmuth Hagen, Ludwigschafen/Rhineland, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigschafen am Rhineland-Pfalz, Germany
Filed May 13, 1968, Ser. No. 728,833
Claims priority, application Germany, May 13, 1967, P 16 70 223.1
Int. Cl. C07d *87/46*
U.S. Cl. 260—246 B 5 Claims

Production of dithiocarbamates by reacting halogenated methanes with elementary sulfur and secondary amines. The products are valuable starting materials for the production of herbicides, fungicides, insecticides, rubber auxiliaries, and stabilizers in the petroleum industry.

3,607,871

2-CYCLOHEXYLALKANOYL-1-(TERTIARY-AMINO)-CYCLOALKENES

Sydney Archer, Bethlehem, and Roman R. Lorenz, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 589,201, Oct. 25, 1966, now Patent No. 3,523,959. This application Oct. 13, 1969, Ser. No. 866,008
Int. Cl. C07d *87/34*
U.S. Cl. 260—247.7 K 2 Claims

2-Cyclohexylacetyl-1-BN-cyclohexene, 2-cyclohexylacetyl-1-BN-cyclopentene and 2-(3-cyclohexylpropanoyl)-1-BN-cyclopentene are prepared respectively by reacting cyclohexylacetyl halide with 1-BN-cyclohexene or 1-BN-cyclopentene or reacting 3-cyclohexylpropanoyl halide with 1-BN-cyclopentene, where BN is morpholino, piperidino, pyrrolidino or di-(lower-alkyl)amino. These compounds are intermediates for the preparation of 2-hydroxy-3-(8-cyclohexyloctyl)-1,4-naphthoquinone and 2-hydroxy-3-(7-cyclohexylheptyl)-1,4-naphthoquinone, which are potent antimalarial agents.

3,607,872
PRODUCTION OF CYANURIC CHLORIDE
Jean Riethmann, Allschwil, Basel-Land, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,645
Int. Cl. C07d *55/42*
U.S. Cl. 260—248 C **4 Claims**

A new and improved procedure is provided for effectively extending the life of the activated carbon catalyst used in producing cyanuric chloride from gaseous cyanogen chloride. In the process, the moist gaseous cyanogen chloride feed stream is contacted with phosphorus pentoxide prior to its conversion to the desired cyanuric chloride product.

3,607,873
PRODUCTION OF CYANURIC CHLORIDE
John F. Ferguson, Ardsley, N.Y., and Philip G. McCracken, Baton Rouge, La., assignors to Geigy Chemical Corporation, Town of Greenburgh, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,646
Int. Cl. C07d *55/42*
U.S. Cl. 260—248 C **4 Claims**

A new and improved procedure is provided for effectively extending the life of the activated carbon catalyst used in producing cyanuric chloride from gaseous cyanogen chloride. In the process, the moist gaseous cyanogen chloride feed stream is contacted with calcium sulfate prior to its conversion to the desired cyanuric chloride product.

3,607,874
PRODUCTION OF N-METHYLPIPERAZINE
Ernst Fuerst, Neustadt; Herbert Toussaint, Frankenthal, and Georg Sold, Schifferstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed Nov. 21, 1968, Ser. No. 777,886
Claims priority, application Germany, Nov. 24, 1967, P 16 70 288.8
Int. Cl. C07d *51/66*
U.S. Cl. 260—268 SY **7 Claims**

Production of N-methylpiperazine by reaction of aqueous formaldehyde solution with piperazine followed by hydrogenation of the polymethylenepiperazine formed in the presence of known hydrogenation catalysts at superatmospheric pressure and elevated temperature, the reaction being carried out in the presence of acetic acid or piperazine acetate and the N,N′-dimethylpiperazine formed during the hydrogenation being distilled off as an azeotrope with water. N-methylpiperazine is used as a selective solvent for the extraction of aromatics from hydrocarbon mixtures.

3,607,875
METHOD OF PREPARING N,N-DIMETHYLPIPERAZINIUM HALIDE
Gordon R. Miller, and James C. Renfro, both of Lake Jackson, Tex., assignors to Dow Chemical Company, Midland, Mich.
Filed June 6, 1969, Ser. No. 831,214
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 SY **6 Claims**

N,N-Dimethylpiperazinium halide is prepared in a novel reaction which comprises reacting by contacting N,N-dimethylethylenediamine with 1,2-dihaloethane.

3,607,876
3-[4-(SUBSTITUTED-OXY)-PHENYL]-2-SUBSTITUTED-PHTHALIMIDINES
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
Filed Nov. 27, 1968, Ser. No. 779,649
Int. Cl. C07d *27/52*
U.S. Cl. 260—294 AC **18 Claims**

3-(4-R-O-Phenyl)-2-Z-phthalimidines, having endocrinological activities, are prepared by reacting a 3-(4-hydroxyphenyl)phthalide with an amine of the formula Z-NH_2 and reacting the resulting 3-(4-hydroxyphenyl)-2-Z-phthalimidine with an R-halide where R is lower-alkyl, lower-carbalkoxy-(lower-alkyl), 2,3-epoxypropyl or BN-Y where BN is lower-tertiary-amino and Y is polycarbon-lower-alkylene, and Z is alkyl having from four to 10 carbon atoms, cycloalkyl having from three to eight ring-carbon atoms inclusive, phenyl and Q-phenyl where Q is from one to three substituents selected from halo, lower-alkyl, lower-alkoxy, trihalomethyl, hydroxy or benzyloxy.

3,607,877
PROCESS FOR CONVERTING AROMATIC THIOLS TO NITROSO AND NITRO COMPOUNDS
Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 31, 1968, Ser. No. 772,429
Int. Cl. C07d *31/40*
U.S. Cl. 260—290 **2 Claims**

A process is disclosed for converting aromatic thiols to the corresponding nitroso- or nitro-substituted compounds by treating the thiol compounds with an excess of nitric acid having a HNO_3 concentration of 90 to 100 percent. Representative starting compounds are benzenethiols and pyridinethiols which, in addition to the thiol group, are substituted with one or more electron-with-drawing groups such, for example, as chloro, nitro or cyano, among others. The nitroso and nitro compounds produced during the reaction have utility as pesticides and are variously effective as herbicides and in the control of fungi and nematodes as well as of parasites infecting warmblooded animals.

3,607,878
METHOD OF POLYMERIZATION OF TETRAFLUORETHYLENE
Edouard Grimaud, Oullins; Pierre Plurien, Palaiseau, and Maurice Troussier, Pierre Benite, all of France, assignors to Societe D'Electro-Chimie, D'Electro-Metallurgie Et Des Acieries Electriques D'Ugine
Continuation of application Ser. No. 557,464, June 14, 1966, now abandoned. This application Mar. 5, 1970, Ser. No. 20,464
Int. Cl. C08f *3/24, 45/24*
U.S. Cl. 260—29.6 **8 Claims**

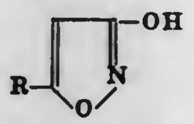
An improved process for the production of aqueous colloidal dispersions of tetrafluoroethylene polymer wherein tetrafluoroethylene monomer is polymerized in the presence of water, a catalyst and a dispersing agent. The improvement comprising progressively introducing tetrafluoroethylene monomer and a dispersing agent into a reaction vessel wherein a small concentration of dispersing agent is present prior to the beginning of polymerization, at a rate which provides a concentration of dispersing agent which at each instant does not exceed by more than 10 percent the theoretical concentration required to provide continuous coverage of the entire surface of the polymerized particles formed with dispersing agent but which is sufficient to provide continuous coverage of at least 60 percent of the surface of said particles with dispersing agent.

3,607,879
CERTAIN 2-THIAZOLINEALKANOIC ACIDS AND ESTERS
Robert Anthony Newberry, Bourne End, England, assignor to John Wyeth & Brother Limited, Berkshire, England
Filed Apr. 8, 1969, Ser. No. 814,445
Claims priority, application Great Britain, Apr. 9, 1968, 16909/68
Int. Cl. C07d *91/24*
U.S. Cl. 260—306.7 **10 Claims**

This invention concerns 2,5-dicyclyl-4-hydroxy-2-thiazoline-4-alkanoic acids which are pharmacologically efficacious as anti-inflammatory agents and which are useful as intermediates in the preparation of the corresponding thiazoles.

3,607,880
PREPARATION OF 3-HYDROXYISOXAZOLE COMPOUNDS
Kazuo Tomita, Tokyo, Japan, assignor to Sankyo Company Limited, Tokyo, Japan
Filed Feb. 9, 1970, Ser. No. 9,094
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H **4 Claims**

In a process for preparing a 3-hydroxyisoxazole of the formula



wherein R is hydrogen or alkyl of 1 to 5 carbon atoms and wherein a compound of the formula

$$R—C \equiv C—COOR'$$

wherein R is as defined and R′ is alkyl of 1 to 5 carbon atoms is reacted with hydroxylamine, the invention proposes that the reaction is conducted in the presence of an alkaline earth metal hydroxide in an amount of 0.5 to 1.5 moles per mole of free hydroxylamine base.

3,607,881
PHENYLBUTAZONE DERIVATIVES
Miguel Izquierdo, and Pedro Gomis, both of Barcelona, Spain, assignors to Laboratorios Hosbon S.A., Barcelona, Spain
Filed May 5, 1968, Ser. No. 734,528
Claims priority, application France, June 6, 1967, 109,213
Int. Cl. C07d *49/04*
U.S. Cl. 260—310 A **2 Claims**

The compounds phenylbutazone 3,4,5-trimethoxybenzoate and γ-keto-phenylbutazone 3,4,5-trimethoxybenzoate and therapeutic compositions containing the same. The compounds have anti-inflammatory, analgesic and antipyretic properties and are well tolerated with low toxicity. They may be administered orally, rectally or parenterally. The compounds are prepared by reacting 3,4,5-trimethoxybenzoyl chloride with an alkaline enotate of the desired pyrazolone derivative.

3,607,882
PROCESS FOR PURIFYING ACETALS
Franz Wenger, 100 Memorial Drive, Apt. 8-7C, Cambridge, Mass.
Filed Feb. 29, 1968, Ser. No. 728,376
Int. Cl. C07c *43/30;* **C07d** *19/00, 17/00, 15/04, 13/02, 15/02*
U.S. Cl. 260—340 **9 Claims**

Acetals such as trioxane which contain impurities are purified by contacting them with an alkali metal ketyl such as one derived from benzophenone and p,p′-diphenylbenzophenone.

3,607,883
BROMINE CHLORIDE-DIOXANE COMPLEX
John A. Schneider, and Jack F. Mills, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Apr. 24, 1969, Ser. No. 819,541
Int. Cl. C07d *15/10*
U.S. Cl. 260—340.6 **5 Claims**

A bromine chloride complex of p-dioxane has been discovered which is useful as a solid source of bromine chloride. A dioxane-bromine chloride complex formed by mixing bromine chloride with dioxane in methylene chloride at 10° C. has been used to selectively brominate salicylanilide to give an 88 percent yield of 3,4′,5-tribromosalicylanilide.

3,607,884
PREPARATION OF 5-CARBOXYPHTHALIDE IN LIQUID SODIUM TRIOXIDE
Le Roy S. Forney, Metuchen, N.J., assignor to Mobil Oil Corporation
Filed Mar. 11, 1969, Ser. No. 806,299
Int. Cl. C07d *5/40*
U.S. Cl. 260—343.3 **1 Claim**

5-Carboxyphthalide is prepared by reacting a concentrated solution of terephthalic acid in liquid SO_3 with formaldehyde. 5-Carboxyphthalide derivatives have been disclosed as lubricating oil additives in U.S. Pat. No. 3,261,780.

3,607,885
PREPARATION OF LACTONES SUCH AS SUBSTITUTED DELTA VALEROLACTONES
Robert A. Dombro, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Aug. 15, 1968, Ser. No. 752,840
Int. Cl. C07d *7/06*
U.S. Cl. 260—343.5 **9 Claims**

Lactones may be prepared from alcohols by treating said alcohol with methyl alcohol in the presence of an alkaline substance and an oxidizing agent at an elevated temperature to prepare the desired product. Examples of such lactones are dimethyl, diphenyl, dicyclohexyl and di-p-tolyl-delta-valerolactones. These compounds have utility as solvents and as starting monomers in the preparation of polyester formulations, among other uses.

3,607,886
CHROMANAMINES
Ian Moyle Lockhart, Egham, Surrey, England, assignor to Parke, Davis & Company, Detroit, Mich.
Filed Apr. 24, 1969, Ser. No. 819,091
Int. Cl. C07d *7/20*
U.S. Cl. 260—345.2 **3 Claims**

An isomer of N,N,2-trimethyl-3-chromanamine, and its acid-addition salts (such as the hydrochloride, m.p. 217°–218πζ c.), having distinctive physicochemical and pharmacological properties. The compounds are produced by reacting the appropriate isomer of 2-methyl-3-chromanamine in free base or acid-addition salt form with a methylating agent.

3,607,887
PROCESS FOR THE PREPARATION OF MELLOPHANIC DIANHYDRIDE
Shinpei Gomi; Masaaki Takahashi, and Hiroshi Nagai, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 19, 1968, Ser. No. 760,971
Claims priority, application Japan, Sept. 20, 1967, 42/59916
Int. Cl. C07c *63/32*
U.S. Cl. 260—346.3 **7 Claims**

Mellophanic dianhydride is prepared by the reaction of cyclohexane-1, 2, 3, 4-tetracarboxylic acid and bromine followed by the dehydration of the mellophanic acid thus prepared.

3,607,888
25-HYDROXYTACHYSTEROL$_3$ 25-HYDROXYDIHYDROTACHYSTEROL$_3$ AND METHODS FOR PREPARING SAME
Hector F. DeLuca, and Tatsuo Suda, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Aug. 7, 1969, Ser. No. 848,334
Int. Cl. C07c *171/10*
U.S. Cl. 260—397.2 **2 Claims**

The new compounds 25-hydroxytachysterol$_3$, 25-hydroxydihydrotachysterol$_3$ and methods for preparing same. 25-hydroxydihydrotachysterol$_3$ is characterized by antirachitic activity and by its ability to induce bone mobilization and thereby increase serum calcium concentration indicating its application for the treatment of hypoparathyroidism. 25-hydroxytachysterol$_3$ is a valuable intermediate in the preparation of 25-hydroxydihydrotachysterol$_3$.

3,607,889

10B-METHYL-13B-POLYCARBONALKYLGON-4-EN-3-ONES

Donald P. Strike, Philadelphia; David R. Herbst, King of Prussia, and Herchel Smith, Wayne, all of Pa., assignors to American Home Products Corporation, New York, N.Y.
Filed May 19, 1966, Ser. No. 551,317
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 **9 Claims**

13-Aklyl-10-methylgon-4-en-3-ones possessing androgenic, anabolic, progestational activity are prepared from the correspondingly substituted 13-alkyl-10-methylgonan-4-ones wherein groups labile to mesylation are protected to permit selective mesylation of subsequently formed 4-hydroxy group, by converting the 4-one to its 3-hydroxy-methylene derivative, hydrolyzing the oximino group, mesylating the 4-hydroxy group, catalytically hydrogenating the unsaturation at the 4-position, and eliminating the 4-mexyloxy group to form the 4-en-3-one conjugated system.

3,607,890

PROCESS FOR THE EXTRACTION OF A FRACTION OF THE UNSAPONIFIABLE OF A VEGETABLE OIL

Pierre Mastagli, Paris, France, assignor to Serdex-Societe D'Etudes, De Recherches, De Diffusion Et D'Exploitation, Levallois-Perret, France
Filed Sept. 30, 1969, Ser. No. 862,495
Claims priority, application France, Oct. 14, 1968, 169,758
Int. Cl. C07c *167/40*
U.S. Cl. 260—397.25 **7 Claims**

This process for the extraction of a fraction, principally citrostadienolic and/or cycloarthenolic, of the unsaponifiable of the vegetable oil comprises contacting the oil with dimethylformamide to form a dimethylformamide phase wherein the fraction is dissolved, separating said phase and then isolating the fraction therefrom.

3,607,891

PROCESS FOR PREPARING TRICYCLOHEXYLTIN HALIDES

Bernard G. Kushlefsky, Edison; Gerald H. Reifenberg, Hightstown; William J. Considine, Somerset, and Justin L. Hirshman, East Brunswick, all of N.J., assignors to M&T Chemicals Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 773,331, Nov. 4, 1968. This application Apr. 16, 1969, Ser. No. 816,783
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **13 Claims**

The process of this invention for preparing tricyclohexyltin halide $(C_6H_{11})_3SnX$ wherein X is selected from the group consisting of chloride and bromide comprises a first step of preparing organotricyclohexyltin by reacting as reactants organotin trihalide $RSnX_3$ with cyclohexyl magnesium halide $(C_6H_{11})MgCl$ in an amount of at least three moles of cyclohexyl magnesium halide per mole of organotin trihalide to form said organotricyclohexyltin and a second step of reacting as reactants said organotricyclohexyltin prepared in said first step and tin tetrahalide to produce said tricyclohexyltin halide.

3,607,892

CATALYTIC ADDITION OF STANNE TO OLEFINS

Gerald H. Reifenberg, Hightstown, and William J. Considine, Somerset, both of N.J., assignors to M & T Chemicals Inc., New York, N.Y.
Filed July 3, 1968, Ser. No. 742,165
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **14 Claims**

This invention comprises a method for producing tetraorganotin compounds comprising reacting stannane, SnH_4, and a compound selected from the group consisting of α-olefinic compounds and cycloolefinic compounds in the presence of a catalyst and recovering said tetraorganotin compounds.

3,607,893

ADDITION OF TRIHALOSTANNOUS ACID TO OLEFINS

Gerald H. Reifenberg, Hightstown, and William J. Considine, Somerset, both of N.J., assignors to M&T Chemicals Inc., New York, N.Y.
Filed Dec. 18, 1968, Ser. No. 784,879
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 **8 Claims**

This invention comprises a method for producing organotin trihalides comprising reacting as reactants trihalostannous acid, $HSnX_3$, wherein X is halogen, in an ethereal solution, and a compound selected from the group consisting of α-olefinic compounds and cycoolefinic compounds and recovering said organotin trihalide compounds.

3,607,894

EXTRACTION OF ALKYL LEAD COMPOUNDS FROM ORGANOMETALLIC COMPLEXES

William H. Harwood, and Kang Yang, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Dec. 12, 1968, Ser. No. 783,395
Int. Cl. C07f *9/24, 5/06*
U.S. Cl. 260—437 **5 Claims**

Alkyl cyanide compounds are disclosed as addition agents for improving the liquid-liquid extraction of alkyl lead compounds from mixtures thereof with organometallic complexes with an extraction medium comprising iso-octane.

3,607,895

BIS(ORGANOSILYL) TRIHYDROCARBYL SILYLAMINES

Richard P. Bush, Penarth, Glamorgan; Norman C. Lloyd, Cardiff, Glamorgan, and Christopher Pearce, Cowbridge, Glamorgan, all of Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England
Filed June 4, 1968, Ser. No. 734,243
Claims priority, application Great Britian, June 12, 1967, 27067/67
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 N **5 Claims**

Novel organosilicon compositions are prepared which contain silicon to nitrogen bonds which are attached to functional atoms and radicals. The organosilicon compounds are depictable by the formula $(XR_2Si)_2NSiR'_3$ wherein X represents H, Cl, Br, I or a hydrocarbonoxy radical and each R and R′ represent an alkyl radical containing less than 6 carbon atoms, in an alkenyl radical or a monocyclic aryl radical. These compounds are useful as intermediates in the production of other silazane or siloxazane derivatives.

3,607,896

PREPARATION OF MONO-HYDROCHLOROSILANES I

Keith W. Michael, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Feb. 19, 1969, Ser. No. 800,731
Int. Cl. C07f *7/08, 7/12*
U.S. Cl. 260—448.2 E **6 Claims**

Chlorosilanes of the formula R_xSiHCl_{3-x} are prepared by reacting $R_xSi(OR')Cl_{3-x}$ with dialkyl aluminum hydrides employing certain ethers such as 1,4-dioxane or dihexyl ethers. There are two variations of the process. One, the ether is present during reaction, in which case, the reaction temperature is in the range from −40° C. to above 25° C. Two, the reaction is carried out at temperature at or below about 25° C. and the ether is then added and the product distilled at temperatures which can be above 25° C.

3,607,897

PREPARATION OF MONOHYDROCHLOROSILANES II

Keith W. Michael, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Feb. 19, 1969, Ser. No. 800,715
Int. Cl. C07f *7/08, 7/12*
U.S. Cl. 260—448.2 E **2 Claims**

Chlorosilanes of the formula $R_xSiHCl_{3-x}$are prepared by reacting $R_xSi(OR')Cl_{3-x}$ with dialkyl aluminum hydrides at a temperature from −40° to 25° C. and thereafter separating the desired product from the reaction mixture at a temperature not exceeding 25° C.

3,607,898

PROCESS FOR PREPARING CYCLIC SYN-TETRAMETHYLTETRAVINYLTETRASILOXANE

Robert J. Macher, Elnora, N.Y., assignor to General Electric Company
Filed Aug. 20, 1969, Ser. No. 851,752
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 E **12 Claims**

Cyclic sym-tetramethyltetravinyltetrasiloxane is produced from a hydrolyzate, consisting primarily of methylvinylpolysiloxane employing lithium hydroxide, in combination with a cocatalyst. Heating of the hydrolyzate with lithium hydroxide in combination with one of the cocatalysts provides for rearrangement of the hydrolyzate into cyclic organopolysiloxanes and for a high yield of the cyclic sym-tetramethyltetravinyltetrasiloxane to be distilled from the heated mixture avoiding cleavage of the vinyl groups and gelation of the starting material.

3,607,899

PRODUCTION OF TRIMETHYLSILYL-ENDBLOCKED TRIFLUOROPROPYLMETHYLPOLYSILOXANES

Eric D. Brown, and Loren A. Haluska, both of Midland, Mich., assignors to Dow-Corning Corporation, Midland, Mich.
Filed Sept. 29, 1969, Ser. No. 862,038
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 E **5 Claims**

Trimethylsilyl-endblocked trifluoropropylmethylpolysiloxanes are produced by the acid-clay catalyzed reaction of the trifluoropropylmethylcyclotrisiloxane with a trimethylsilylendblocker.

3,607,900

TRANSHALOGENATION OF ORGANOSILICON HALIDES WITH SILICON TETRAFLUORIDE

George Morris Hart, Adrian, Mich., assignor to Stauffer-Wacker Silicone Corporation. Division of Ser. No. 689,755, Dec. 12, 1967, Pat. No. 3,507,799.
Filed Sept. 25, 1969, Ser. No. 871,347
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 E **4 Claims**

An aqueous solution of tetrahydrofuran is saturated with silicon tetrafluoride and the resulting product, after removal of excess tetrahydrofuran, is applied as a transhalogenation reagent. The silicon tetrafluoride-tetrahydrofuran complex transhalogenation reagent is caused to react with diorganosilicon monohalides of the formula $(R)_2$ HSiX wherein R represents hydrocarbyl groups and X represents chlorine, bromine and iodine forming the fluoride analogue thereof.

3,607,901

METHOD OF MAKING ISOCYANATOALKYL-SUBSTITUTED SILANES

Abe Berger, Schenectady, N.Y., assignor to General Electric Company
Division of Ser. No. 669,298, Sept. 20, 1967, Pat. No. 3,494,951.
Filed Aug. 15, 1969, Ser. No. 870,717
Int. Cl. C07f *7/10, 7/18*
U.S. Cl. 260—448.2 N **3 Claims**

A method is provided for making various nitrogen-containing organosilicon compounds, such as silylorganoisocyanates, the corresponding carbamate and isocyanurates. The method involves contacting silylorganohalide and a metal cyanate in the presence of a suitable aprotic solvent. Nitrogen-containing organosilicon compounds are provided having silicon and nitrogen atoms separated by a divalent hydrocarbon radical. In instances where a urethane is desired, an appropriate aliphatic monohydric alcohol can be utilized in combination with the silylorganohalide and metal cyanate. The subject nitrogen-containing organosilicon compounds can be utilized for making silicon-organic copolymers and as treating agents for imparting water repellency to various substrates.

3,607,902

NEW SILICON DERIVATIVES OF ALLYL ALCOHOL

Pierre Brison, Oullins, and Marcel Lefort, Caluire, both of France, assignors to Rhone-Povlenc S. A., Paris, France
Filed Oct. 29, 1969, Ser. No. 872,369
Claims priority, application France, Oct. 31, 1968, 172,172
Int. Cl. C07f *7/18*
U.S. Cl. 260—448.8 R **10 Claims**

New organosilicon compounds based on allyl alcohol, which are 1-triorganooxysilyl-prop-1-en-3-ols or their 3-triorganosiloxy derivatives are useful as finishing agents for woven glass fabric/epoxy resin laminates or for adhesion undercoats in the glueing of organosilicon elastomers to metal or wooden supports.

3,607,903

PREPARATION OF AROMATIC ISOCYANATES

Zoltan Csuros, Budapest; Rudolf Soos, Budapest; Jozsef Bozzay, Budapest; Janos Dancso, Budapest; Dezso Ambrus, Budapest, and Jozsef Haraszti, Sajobabony, all of Hungary, assignors to Chemokomplex Vegyipari Gep es Berendezes Export-Import Vallalat, Nepkoztarsasag utja, Budapest, Hungary
Filed Nov. 13, 1967, Ser. No. 682,543
Claims priority, application Hungary, Nov. 18, 1966, CU-102
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PH **8 Claims**

A continuous process for the preparation of aromatic monoisocyanates, diisocyanates, or mixtures thereof, by contacting a corresponding amine with an amount of phosgene being in excess of that which is stoichiometrically required for the conversion of the amine, at a temperature between about 120° C. and about 200° C. The improvement of the invention comprises carrying out the reaction in two successive steps. Partial conversion, suitably up to between about 75 percent and about 88 percent of the starting amine, is accomplished in the first step, such as by contacting the amine with a preheated solution of suitably as much phosgene as is stoichiometrically required for the first step of the process. The product resulting from the first step is contacted in the second step with a further amount of phosgene which is in excess, preferably an excess of between about 5 percent and about 20 percent, over the amount of phosgene stoichiometrically required for substantially completing the conversion.

3,607,904

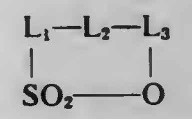
SULPHONATED S-ALKYL AND S-ARALKYL THIOSULPHATES

Jozef Frans Willems, Wilrijk, and Frans Clement Heugebaert, Kontich, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Antwerp, Belgium
Filed May 8, 1968, Ser. No. 727,665
Claims priority, application Great Britain, May 8, 1967, 21250/67
Int. Cl. C07c *139/00, 141/00*
U.S. Cl. 260—453 **6 Claims**

A process of preparing an S-alkyl or S-aralkyl thiosulphate compound having the formula:

$$MO_3S—L_1—L_2—L_3—S—SO_3M$$

comprising the steps of mixing an intramolecular ester having the formula:



$$\begin{array}{ccc} L_1—L_2—L_3 \\ |\qquad\quad | \\ SO_2——O \end{array}$$

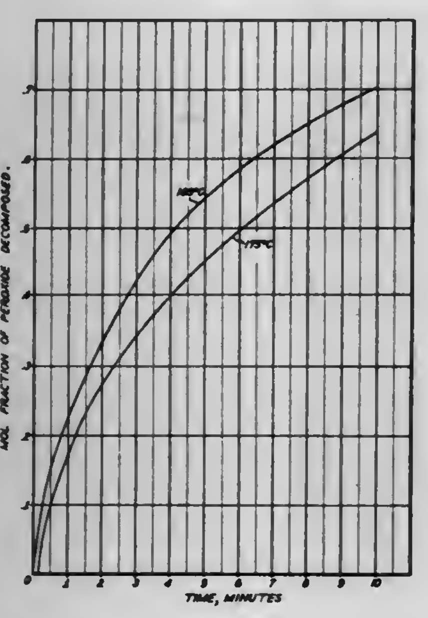
with an aqueous solution containing an inorganic thiosulphate and heating the mixture, wherein each of L_1 and L_3 stands for a methylene group, and

L_2 stands for an alkylene group comprising from 1 to 3 carbon atoms in straight line, or

L_1 together with L_2 stands for the group $-\overset{Z}{\overbrace{C=C}}-$ wherein Z represents the atoms necessary to close an aromatic nucleus, and M stands for a metal atom such as an alkali metal atom or an ammonium group, is described. The compounds are useful in photographic silver halide emulsions.

3,607,905
VAPORIZATION OF UNREACTED CYCLOHEXANE FROM CYCLOHEXANE OXIDATION PRODUCTS

Joseph L. Russell, Ridgewood, N.J., assignor to Halcon International, Inc.
Filed Feb. 19, 1968, Ser. No. 706,511
Int. Cl. C07f *5/04;* **C07c** *35/08*
U.S. Cl. 260—462 3 Claims



The present invention relates to a process for the oxidation of cyclohexane with molecular oxygen in the presence of boric acid-type additives to produce borate esters and is particularly concerned with vaporization of at least a part of the unreacted cyclohexane is the oxidation effluent under the conditions so as to minimize oxidation or oxygen transfer during this vaporization.

3,607,906
METHOD OF MAKING NITRILES FROM CARBOXYLIC ACIDS

Hansdieter Hofmann, Petter-Weil; Stefan Janacek, Dietzenbach, and Horst Corsepius, Frankfurt am Main, all of Germany, assignors to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen
Filed Nov. 20, 1968, Ser. No. 777,463
Claims priority, application Germany, Nov. 22, 1967, P 16 68 833.8
Int. Cl. C07c *121/10*
U.S. Cl. 260—465.2 4 Claims

Nitriles and dinitriles of monocarboxylic and dicarboxylic acids are produced by evaporating the acid in a film-forming evaporating apparatus, which is preferably made of titanium or stainless steel, in the presence of 0.26 to 40 moles of superheated steam per mole of carboxylic acid, the evaporated acid and steam being then mixed with 4 to 60 moles of gaseous ammonia per mole of carboxylic acid and reacted in the gaseous phase at a temperature between 260° to 500° C. in the presence of a dehydrating catalyst.

3,607,907
PROCESS FOR MAKING COPOLYESTERS CONTAINING ETHER GROUPS

Herbert Eck, and Hellmuth Spes, both of Burghausen-Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany
Filed Oct. 18, 1967, Ser. No. 676,048
Claims priority, application Germany, Oct. 26, 1966, W 42670
Int. Cl. C07c *69/76;* **C08g** *51/42*
U.S. Cl. 260—473 G 5 Claims

This invention relates to the manufacture of copolyesters containing ether groups, and it has for its object to provide a simple and efficient process for this purpose.

3,607,908
PROCESS FOR PURIFYING BIS (β-HDROXYETHYL) TEREPHTHALATE

Kichiji Enoki; Tokio Sumitani, and Yoichi Yoshihara, all of Takaoka-shi, Japan, assignors to Nippon Soda Kabushiki Kaisha, Tokyo-to, Japan
Filed Oct. 18, 1968, Ser. No. 768,912
Claims priority, application Japan, Oct. 23, 1967, 42/67863
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR 9 Claims

Process for purifying crude bis (β-hydroxyethyl) terephthalate produced from crude terephthalic acid which comprises contacting a solution of crude bis (β-hydroxyethyl) terephthalate with light metal such as zinc, tin or magnesium, which is preferably used in the shape having a large surface area per unit volume, in the presence or absence of a water soluble organic or inorganic acid salt of said light metal.

3,607,909
NEW PHENYL-AMINO PROPANE DERIVATIVES

Laszlo Beregi, Boulogene; Pierre Hugon, Rueil-Malmaison, and Jean-CLaude Le Douarec, Suresnes, all of France, assignors to Science Union et Cie Societe Francaise de Recherche Medicale, Suresnes, France
Filed Mar. 31, 1967, Ser. No. 627,323
Claims priority, application Great Britain, Apr. 15, 1966, 16,660/66
Int. Cl. C07c *63/12*
U.S. Cl. 260—477 R 6 Claims

Trifluoromethylphenyl amino propane substituted on the nitrogen atom (1) optionally, by lower-alkyl of up to 5 carbon atoms, and (2) in any case, by $-(CH_2)_n$ $-OR'$ wherein n is 2 or 3 and R′ represents hydrogen or -COR″ wherein R″ is lower-alkyl, lower-cycloalkyl, lower-alkenyl, or carbocyclic aryl.

These compounds possess anorexigenic, analgesic, anticonvulsant, and lipid metabolism regulating activity.

3,607,910
PROCESS FOR PRODUCING DIMETHYLIMINODIACETATE

Louis L. Wood, Potomac, Md., and Richard A. Hamilton, Houston, Tex., assignors to W. R. Grace & Co., New York, N.Y.
Filed June 13, 1969, Ser. No. 833,188
Int. Cl. C07c *101/20*
U.S. Cl. 260—482 R 10 Claims

"A method for producing dimethyliminodiacetate by reacting methanol with iminodiacetonitrile in the presence of anhydrous hydrogen chloride. Subsequently, adding anhydrous ammonium chloride to adjust the pH to from 6.5 to 8.5 and recover dimethyliminodiacetate."

3,607,911
BASIC AMINO ACID SALTS OF CHLORAMPHENICOL SUCCINATE

Yoshitaka Ikezuki; Sadayoshi Fujimori; Yuji, Kawashima and Yoshihisa Nozaki, all of Tokyo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan
Filed Aug. 30, 1968, Ser. No. 756,547
Claims priority, application Japan, Aug. 31, 1967, 42/55490
Int. Cl. A61k *27/00;* **C07c** *69/40, 103/40*
U.S. Cl. 260—485 G 1 Claim

The basic amino acid salts of chloramphenicol succinate cause little or no pain when administered intramuscularly to human beings.

3,607,912
PREPARATION OF ALKYL ESTERS OF A, B UNSATURATED MONOCARBOXYLIC ACIDS

James P. Russell, Berkeley, N.J., assignor to Air Products and Chemicals Inc., Allentown, Pa.
Filed Sept. 27, 1967, Ser. No. 671,116
Int. Cl. C07c *69/52*
U.S. Cl. 260—486 9 Claims

Lower alkyl esters of α,β-unsaturated monocarboxylic acids are converted to higher esters by treatment with the appropriate higher alcohol in the presence of an alkaline esterification catalyst, and in the presence of about 0.05 to about 2.5 weight percent of water.

3,607,913
PREPARATION OF TRICHLOROVINYL DICHLOROACETATE

Jerome M. Lavanish, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 29, 1968, Ser. No. 732,861
Int. Cl. C07c *69/62;* **C08f** *1/82;* **C07c** *121/32*
U.S. Cl. 260—487 8 Claims

Trichlorovinyl dichloroacetate is prepared by reacting a tertiary amine with an excess of dichloroacetyl chloride. Preferably, the reaction is conducted in the presence of an inert diluent.

3,607,914
PREPARATION OF ESTERS BY CARBONYLATION OF ETHERS

Bernhard Stouthamer, and Arien Kwantes, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed May 16, 1969, Ser. No. 825,251
Int. Cl. C07c *67/00*
U.S. Cl. 260—496 13 Claims

Esters are prepared by reacting carbon monoxide with an ether in the presence of water-containing liquid fluoride.

3,607,915
CONTINUOUS CATALYST REACTIVATION IN CARBOXYLIC ACID VINYLATION

Albertus C. H. Borsboom; Pieter A. Gautier, and Dirk Medema, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Apr. 8, 1968, Ser. No. 719,714
Claims priority, application Great Britain, Apr. 27, 1967, 19376/67
Int. Cl. C07c *67/04*
U.S. Cl. 260—498 6 Claims

A continuous process for producing vinyl carboxylates by reacting acetylene with carboxylic acids in the presence of a catalyst-containing reaction medium wherein catalyst is continuously reactivated by direct contact of a portion of reaction medium with the acid charge.

3,607,916
PROCESS FOR PRODUCING VINYL ACETATE

Naoya Kominami; Kusuo Kawarazaki, and Masao Hashinaga, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Nov. 23, 1966, Ser. No. 596,414
Claims priority, application Japan, Dec. 17, 1965, 40/77525
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A 2 Claims

The production of vinyl acetate by passing ethylene and oxygen through acetic acid in the presence of a catalyst comprising a noble metal and a promoter metal, wherein catalyst activity is maintained by including a small amount of mono-, di- or trichloracetic acid or salts thereof.

3,607,917
PHTHALATE SALT HYDROGENATION

Vernon W. Buls, Alamo, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed Feb. 27, 1969, Ser. No. 803,102
Int. Cl. C07c *51/36*
U.S. Cl. 260—514 R 6 Claims

Salts of phthalic acids are hydrogenated to hexahydrophthalic acid salts at temperatures below 150° C. by liquid-phase contact with hydrogen in the presence of Raney nickel when excess alkali is present.

3,607,918
PREPARATION OF N,N-DIMETHYLTEREPHTHALAMIC ACID AND TEREPHTHALAMIDES FROM TEREPHTHALIC ACID AND ALIPHATIC AMIDES OR NITRILES

Anthony T. Jurewicz, Middlesex, N.J., assignor to Mobil Oil Corporation
Filed Jan. 10, 1969, Ser. No. 790,455
Int. Cl. C07c *103/33*
U.S. Cl. 260—518 R 6 Claims

Terephthalamide N-methyl derivatives are prepared by reacting terephthalic acid with lower alkyl cyanides or with lower alkanoic amides or N-methyl derivatives, in oleum solution, at atmospheric pressure, and at 25° C.–100° C.

3,607,919
PROCESS FOR THE OXIDATION OF AROMATIC COMPOUNDS

Bruno J. Barone, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
Filed Feb. 23, 1967, Ser. No. 617,803
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R 16 Claims

A process for the oxidation of mono nuclear aromatic compounds having at least one methyl nuclear substituent in the presence of oxygen, cobaltous or cobaltic ion, at 60° C. to 150° C. and atmospheric pressure or greater, and characterized by the addition of an initiator at the period of maximum oxygen uptake in the course of reduction. The use of particular cocatalysts such as zirconium, columbium, and lanthanum is contemplated.

3,607,920
PROCESS FOR THE PREPARATION OF HIGH PURITY ISOMERS OF TOLUIC ACID

Allan Pennington Clark, Camillus, N.Y., assignor to Cowles Chemical Company, Cleveland, Ohio
Filed Oct. 20, 1967, Ser. No. 676,932
Int. Cl. C07c *51/42, 63/02*
U.S. Cl. 260—524 R 6 Claims

The preparation of high purity isomers of toluic acid by catalytic oxidation of the corresponding xylene isomer followed by introduction of a hot, concentrated solution of the oxidation-product to a cooled, moving slurry of the corresponding toluic acid crystals at a controlled concentration to produce supersaturation and thereafter crystallizing the desired toluic acid and recovery thereof is disclosed.

3,607,921
CATALYTIC PURIFICATION OF TEREPHTHALIC ACID
Arnold F. Stancell, Highland, and Clairborne A. Duval, Jr, Westfield, both of N.J., assignors to Mobil Oil Corporation
Filed June 12, 1968, Ser. No. 736,252
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 **16 Claims**

Crude terephthalic acid is purified at elevated temperatures by contact in the presence of carbon monoxide with solid particles of an adsorptive agent having substantial carbon monoxide sorption capacity (e.g., palladium on a carbon support) to obtain a high recovery of the purified acid while effecting a high percentage conversion of the small amounts of para-carboxybenzaldehyde contaminating the crude acid. In at least some instances, small amounts of hydrogen may be charged to increase the catalyst life; and steam or another inert gaseous carrier is desirably employed in vapor phase operations.

3,607,922
CATALYTIC OXIDATION OF GLUCOSE
Garry J. K. Acres, and Anthony E. R. Budd, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England
Filed Oct. 9, 1967, Ser. No. 673,947
Claims priority, application Great Britain, Oct. 13, 1966, 45735/66
Int. Cl. C07c *51/26*
U.S. Cl. 260—528 **10 Claims**

This invention relates to the oxidation of glucose to gluconic acid or glucosaccharic acid. An aqueous solution of glucose containing an alkali (the carbonates or bicarbonates of sodium and potassium) is contacted with an oxygen-containing gas in a trickle column reactor in the presence of a supported platinum group metal catalyst.

3,607,923
PROCESS FOR PREPARING DIBASIC ACIDS
Charles Nathan Winnick, 491 Palmer Ave., Teaneck, N.J.
Filed Mar. 21, 1968, Ser. No. 714,758
Int. Cl. C07c *51/28, 55/04*
U.S. Cl. 260—531 R **12 Claims**

This invention relates to a process for preparing dibasic acids from the corresponding cycloalkytriene by epoxidation of this latter compound to the corresponding epoxydiene and converting this compound to a derivative oxidizable to the dibasic acid.

3,607,924
PROCESS FOR THE PREPARATION OF GLYOXYLIC ACID
Jacques Boichard; Bernard Pierre Brossard; Michel Louis Marie Joseph Gay, and Raymond Marc Clement Janin, all of Lyon, France, assignors to Rhone-Poulenc S. A.
Filed Sept. 15, 1966, Ser. No. 579,521
Claims priority, application France, Sept. 22, 1965, May 11, 1966, 32310;61181
Int. Cl. C07c *59/30*
U.S. Cl. 260—533 R **8 Claims**

Glyoxylic acid is produced in good yield by oxidizing ethylene with 10 to 14.5 percent aqueous nitric acid.

3,607,925
PROCESS FOR THE PREPARATION OF ACETIC ACID
Jacques Boichard, Irigny, Rhone; Bernard Brossard, Lyon, Rhone; Michel Gay, Lyon, Rhone, and Raymond Janin, Lyon, Rhone, all of France, assignors to Rhone-Poulenc S. A., Paris, France
Filed Sept. 25, 1968, Ser. No. 762,561
Claims priority, application France, Sept. 26, 1967, 122338
Int. Cl. C07c *53/08*
U.S. Cl. 260—533 R **8 Claims**

Acetic acid is made by oxidizing but-2-ene with nitric acid in the presence of a vanadium catalyst.

3,607,926
DICARBOXYLIC ACID MANUFACTURE
Richard D. Smetana, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Mar. 18, 1969, Ser. No. 808,349
Int. Cl. C07c *55/12, 55/14*
U.S. Cl. 260—533 C **9 Claims**

A method of producing alkanedioic acid of from 3 to 9 carbons comprising contacting in an oxidation zone a cycloalkane of from 3 to 9 carbons with a mixture comprising ozone and at least about 100 wt. percent nitric acid to form a two-phase reaction mixture containing said dioic acid and recovering said dioic acid by withdrawing said mixture to a separation zone, recycling the upper cycloalkane layer in the separation zone to the reaction zone and recovering said dioic acid from the lower layer in said separation zone, concentrating the nitric acid and byproducts in the residual lower layer for reuse in said oxidation zone.

3,607,927
PROCESS FOR THE OXIDATION OF ALKENES TO UNSATURATED ACIDS AND ALDEHYDES USING A SILVER CADMIUM CATALYST
Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 596,817, Nov. 25, 1966, now Patent No. 3,489,787, which is a continuation-in-part of application Ser. No. 293,156, July 5, 1963, now Patent No. 3,334,143, dated Aug. 7, 1967, which is a continuation-in-part of application Ser. No. 2,802, Jan. 18, 1960, now abandoned. This application June 19, 1969, Ser. No. 834,890
Int. Cl. C07c *57/04*
U.S. Cl. 260—533 N **4 Claims**

Unsaturated aldehydes, unsaturated acids, or mixtures thereof are prepared in good yield from alkenes having 3–4 carbon atoms using a nonporous silver-cadmium alloy catalyst containing 1% to 15%, by weight of cadmium.

3,607,928
PROCESS FOR THE PREPARATION OF METHIONINE SULFOXIMINE
Albert William Lutz, and Richard Joseph Magee, both of Princeton, N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Oct. 3, 1967, Ser. No. 672,446
Int. Cl. C07c *101/00*
U.S. Cl. 260—534 S **6 Claims**

An improved process for the preparation of methionine sulfoximine which comprises reacting methionine sulfoxide with an alkali metal azide at temperatures of 25° to 50° C., in the presence of sulfuric acid containing essentially no free water in the absence of immiscible organic solvents.

3,607,929
INCREASING THE OPTICAL PURITY OF L-LYSINE MONOHYDROCHLORIDE
Albertus H. Pecasse; Jentje Bonnema, and Gerardus A. Geurts, all of Geleen, Netherlands, assignors to Stamicarbon N. V., Heerlen, Netherlands
Filed Jan. 3, 1968, Ser. No. 695,360
Claims priority, application Netherlands, Jan. 11, 1967, 6700368
Int. Cl. C07c *99/12, 101/24*
U.S. Cl. 260—534 **6 Claims**

A process for the purification of optically active lysine monohydrochloride, containing racemic lysine monohydrochloride as an optical impurity, is disclosed. In this process the solid salt is treated with water to effect an at least partial dissolution or extraction of the optical antipod of the lysine monohydrochloride which is present in the original salt. The aqueous solution thus formed is separated from the solid phase before an equilibrium state is reached, the solid phase thus obtained being of lower optical purity than the original salt.

3,607,930
CONTINUOUS PRODUCTION OF ALKALI METAL SALTS OF NITRILOTRIACETIC ACID
Christoph Berding, Limburgerhof, Pfalz; Paul Guenthert, Igelheim, Pfalz; Waldemar Koehler, Ludwigshafen (Rhine), and Gerhard Schulz, Ludwigshafen (Rhine), all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed July 8, 1968, Ser. No. 743,221
Int. Cl. C07c *101/20*
U.S. Cl. 260—534 E **4 Claims**

A continuous process for the production of alkali metal salts of nitrilotriacetic acid by reaction in a first stage of alkali metal cyanide, formaldehyde and excess ammonia at superatmospheric pressure and elevated temperature to form an aminoacetic acid solution, followed by depressurizing and treating the solution obtained with further amounts of alkali metal cyanide and formaldehyde while removing the ammonia formed until conversion to nitrilotriacetic acid is complete.

3,607,931
METHOD FOR THE MANUFACTURE OF THE DISODIUM SALT OF ETHYLENEDIAMINETETRAACETIC ACID
James Hegarty, Nashua; Jon Thunberg, Milford, and Corbet Johnson, Nashua, all of N.H., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 716,003, Mar. 26, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 660,135, Aug. 11, 1967, now abandoned , which is a continuation of application Ser. No. 382,947, July 15, 1964, now abandoned. This application June 27, 1969, Ser. No. 837,345
Int. Cl. C07c *101/20, 101/26*
U.S. Cl. 260—534 E **4 Claims**

A process for making partial salts of polycarboxylic polyamino acid chelating agent compounds characterized by forming a solution of a polyamino polycarboxylic acid salt adjusting it to a pH level above the normal pH of the salt which it is desired to produce, evaporating, and separating from the mother liquor the desired partial salt which crystallized first thereby salvaging a useful mother liquor, producing a crystalline partial salt of the chelating agent which has the characteristic of being capable of going into aqueous solution in subsequent use at a rate far greater than partial salts prepared by conventional neutralization technique.

3,607,932
BLACK PIGMENT DYES OBTAINED BY REACTION OF CITRIC ACID OR SALTS THEREOF WITH UREA AND FORMAMIDE
Peter Dimroth, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed Aug. 27, 1969, Ser. No. 853,494
Claims priority, application Germany, Sept. 9, 1968, P 17 94 105.8
Int. Cl. C07c *59/16*
U.S. Cl. 260—535 R **1 Claim**

Black pigment dyes obtained by reaction of citric acids or salts of citric acid with urea and formamide at from 100° to 250° C.

3,607,933
PREPARATION OF OMEGA-HALOALKANOIC ACIDS
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 28, 1968, Ser. No. 771,345
Int. Cl. C07c *53/20, 53/30*
U.S. Cl. 260—539 R **4 Claims**

Omega-haloalkanoic acids are produced by the reaction of a hydrogen halide, water and an omega-cyanoalkyl carboxylate.

3,607,934
PROCESS FOR THE MANUFACTURE OF CHLOROPHOSPHINES
Otto Bretschneider, Bonn-Venusbert; Heinz Harnisch, Weiden-Lovenich, and Werner Klose, Knapsack near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany
Filed Sept. 8, 1967, Ser. No. 666,494
Claims priority, application Germany, Sept. 17, 1966, K 60275
Int. Cl. C07f *9/34*
U.S. Cl. 260—543 P **14 Claims**

Hydrocarbon-substituted chlorophosphines of the general formula $R_nP(Cl)_{3-n}$ in which R stands for a hydrocarbon radical having 1 to 3 carbon atoms and *n* stands for 1 or 2 are produced by reaction of phosphorus in vapor or gas form with a hydrocarbon chloride in gas or vapor form in the presence of active carbon as the catalyst.

3,607,935
SULFONYL-UREAS AND A PROCESS FOR PREPARING THEM
Hans Hilmer; Gerhard Korger; Rudi Weyer, and Walter Aumuller, all of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormais Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed July 25, 1958, Ser. No. 750,887
Claims priority, application Germany, July 31, 1957, F 23664
Int. Cl. C07c *127/16*
U.S. Cl. 260—553 D **3 Claims**

This invention relates to antidiabetic sulfonylureas of the general formula

$$R—SO_2—NHCONH—CH_2—CH_2—SH$$

$$(R—SO_2—NHCONH—CH_2—CH_2—S—)_2$$

wherein R is phenyl or substituted phenyl, cycloalkyl or cycloalkyl-alkyl of 6–7 carbon atoms which have a good blood sugar lowering effect.

The above mercapto derivatives are made by reaction of the appropriate sulfonylurethanes, sulfonylisocyanates, or N-sulfonyl-N-acyl ureas with cystamine, which mercapto derivatives can be further oxidized to the disulfide compounds shown above.

3,607,936
PRODUCTION OF NITRILOTRISPROPIONIC UREIDE,
Franz Merger Ludwigshafen, Germany, assignor to Badische Anilin- & Soda- Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed Dec. 27, 1968, Ser. No. 787,625
Claims priority, application Germany, Dec. 29, 1967, P 16 43 726.6
Int. Cl. C07c *27/00*
U.S. Cl. 260—553 E **1 Claim**

Production of nitrilotrispropionic ureide by reaction of acrylic ureide with ammonia, and the new nitrilotrispropionic ureide itself which is a stabilizer for polyformaldehyde and a valuable starting material for the production of textile auxiliaries, synthetic resins and antistatic agents in the textile and plastics fields.

3,607,937

TWO-STAGE UREA SYNTHESIS

Eiji Otsuka; Kazumichi Kanai, and Tadao Sakai, all of Fujisawa, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed June 26, 1968, Ser. No. 740,114

Int. Cl. C07c *127/00*

U.S. Cl. 260—555 A **8 Claims**

Two-stage synthesis of urea comprising synthesizing urea in a first urea synthesis zone without recycle of the unreacted starting materials, separating the unreacted starting material from the resulting synthesis effluent, absorbing the unreacted starting material separated into an absorbent, subjecting to the resulting absorbate to the distillation at a pressure in a second urea synthesis zone and utilizing the unreacted starting material separated by the distillation in the second urea synthesis zone.

3,607,938

PROCESS FOR THE SYNTHETIC MANUFACTURE OF UREA FROM AMMONIA AND CARBON DIOXIDE

Wilhelm F. Braun, Lucerne, Switzerland, assignor to Chemical Construction Corporation, New York, N.Y.

Filed May 17, 1968, Ser. No. 730,111

Claims priority, application Switzerland, May 22, 1967, 7182/67

Int. Cl. C07c *127/00*

U.S. Cl. 260—555 A **19 Claims**

A process is provided for the synthetic manufacture of urea from ammonia and carbon dioxide, in which the ammonium carbamate contained in the urea synthesis effluent stream is stripped and separated in mixed off-gas and returned to the synthesis reactor. The stripping of the carbamate takes place using previously separated mixed off-gas which is carried in a cycle to the heated stripping zone. A feed gas component which may be ammonia or carbon dioxide is also introduced into the zone, so that the total stripping proceeds either in one stage with ammonia or carbon dioxide addition, or in two stages, with the synthesis effluent stream being divided into two portions which flow in parallel to the separate stages. In the first stage, ammonia is added for stripping, and in the second stage carbon dioxide is added. An amount of at least 40 percent of the synthesis effluent stream is admitted to the first decomposition and stripping stage which operates at synthesis pressure, and a mixture consisting of the remainder of the synthesis effluent stream and the solution flowing from the first stage is added to the second stage, which may be operated at reduced pressure.

3,607,939

PREPARATION OF UREA IN COMBINATION WITH THE SYNTHESIS OF AMMONIA

Petrus J. C. Kaasenbrood, Sittard, and Gerardus J. J. M. Taks, Geleen, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Dec. 23, 1968, Ser. No. 785,971

Int. Cl. C07c *127/00*

U.S. Cl. 260—555 A **3 Claims**

A process for the manufacture of urea from ammonia and carbon dioxide is described with particular reference to procedures in handling the ammonia feed to the urea reactor whereby the volume of inert gases in said reactor is reduced without need for condensation and liquefication of the ammonia synthesis gas. The technique described involves absorbing the ammonia from the ammonia synthesis gas mixture (containing ammonia, hydrogen and nitrogen) in water, a dilute aqueous solution of urea, or a dilute aqueous solution of ammonia and carbon dioxide at a relatively high pressure (250 atm. or more) and then delivering the absorbed ammonia solution to the urea plant—this technique being practiced so that only a relatively small amount of additional water (over and above that autogenously formed in the urea reaction itself) is introduced into the urea reactor.

3,607,940

β-ALIPHATICAMINOPROPIONAMIDES

Eugene J. Miller, Jr., Wheaton; Harlan E. Tiefenthal, Western Springs; Steven C. Ducey, Broadview, and Frederick S. Marsh, Chicago, all of Ill., assignors to Armour Inustrial Chemical Company

Filed Aug. 28, 1967, Ser. No. 663,520

Int. Cl. C07c *103/18*

U.S. Cl. 260—561 **6 Claims**

β-aliphaticaminopropionamides having a secondary-alkyl group prepared by the reaction of a secondary-alkyl amine or diamine with acrylamide providing a superior product for uses such as hot melt wax adhesive slip agents and as settling agents for particulate suspensions in hydrocarbon systems.

3,607,941

2-(LOWER-ALKOXY)-2-PHENYLALKANAMIDOXIMES

Denis M. Bailey, E. Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed June 27, 1968, Ser. No. 740,473

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 G **5 Claims**

A 2-(lower-alkoxy)-2-phenylalkanamidoxime, having hypoglycemic activity, is prepared by reacting a 2-(lower-alkoxy)-2-phenylalkanenitrile with hydroxylamine. The intermediate 2-(lower-alkoxy)-2-phenylalkanenitrile is prepared preferably by first reacting a benzaldehyde with a tri-(lower-alkyl) orthoformate to form the aldehyde di-(lower-alkyl) acetal, reacting the latter with an acyl halide to form the corresponding a-halobenzyl lower-alkyl ether and reacting said ether with an alkali cyanide to yield said intermediate nitrile.

3,607,942

SYNTHESIS OF 1-HYDROXY-4-KETO-α-IONONE

Ralph Lawrence Rowland, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed May 8, 1968, Ser. No. 727,691

Int. Cl. C07c *49/60*

U.S. Cl. 260—587 **3 Claims**

Air oxidation of 4-keto-α-ionone on solid surfaces to produce 4-(1-hydroxy-4-oxo-2,6,6-trimethyl-2-cyclohexene-1-yl)-3-butene-2-one.

3,607,943

PREPARATION OF PYRUVALDEHYDE

John S. Warner, Columbus, Ohio, assignor to Wm. Wrigley Jr. Co., Chicago, Ill.

Filed Mar. 21, 1968, Ser. No. 714,793

Int. Cl. C07c *49/04*

U.S. Cl. 260—593 **9 Claims**

A process for the preparation of pyruvaldehyde which comprises the gradual addition of an aqueous solution of dihydroxyacetone to a water-immiscible organic liquid maintained at a temperature of about 100° C. to about 200° C. in the presence of an acidic catalyst and collecting the pyruvaldehyde produced. Suitable acidic catalysts include sulfuric acid, para-toluene sulfonic acid, acidic ion exchange resins, phosphoric acid and potassium acid sulfate.

3,607,944

SOME BIS(HALOMETHYL)-PHOSPHORYLMETHYLTRIPHENYLPHOSPHONIUM HALIDES AND A STABLE PHOSPHINE METHYLENE

Donald J. Daigle, New Orleans; Leon H. Chance, New Orleans, and George L. Drake, Jr., Metairie, all of La.

Filed Aug. 29, 1969, Ser. No. 854,326

Int. Cl. C07f *9/54;* **C09k** *3/28*

U.S. Cl. 260—606.5 F **6 Claims**

The 1:1 triphenylphosphine adducts of tris(chloromethyl)-phosphine oxide, tris(bromomethyl)phosphine oxide, and tris(iodomethyl)phosphine oxide were prepared. The chloro derivative was converted to triphenylphosphine bis(chloromethyl)phosphorylmethylene by reaction with aqueous ammonium hydroxide. These phosphorus compounds are useful as flame retardants for cellulosic materials.

3,607,945

HYDROCARBYLTHIOALKANETHIOLS

Jack E. Reece, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 4, 1968, Ser. No. 781,239

Int. Cl. C07c *149/06, 9/12*

U.S. Cl. 260—609 A **4 Claims**

Hydrocarbylthioalkanethiols, e.g., 6-(t-butylthio)-1-hexanethiol, are prepared by the reaction of hydrocarboncarbothiolic acids, e.g., thiolacetic acid, with hydrocarbylthioalkenes, e.g., 6-(t-butylthio)-1-hexene, to provide hydrocarbylthioalkyl hydrocarbonthiolates, e.g., 6-(t-butylthio)-1-hexyl methanecarbothiolate, followed by conversion with a base to provide said thiols. The hydrocarbythioalkanethiols are useful as chain transfer agents in the polymerization of monomers to form polymers, such as elastomers and the like.

3,607,946

PRODUCTION OF TECHNICALLY PURE 2,6-DIMETHYLANISOLE

Erich Behr, Troisdorf, and Gunter Meyer, Oberlar, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of application Ser. No. 721,609, Apr. 16, 1968, now abandoned. This application May 11, 1970, Ser. No. 37,408

Claim priority, application Germany, May 17, 1967, D 53104

Int. Cl. C07c *43/20*

U.S. Cl. 260—612 D **1 Claim**

Process for preparing technically pure 2,6-dimethylanisole comprising reacting 2,6-dimethylphenol and methyl chloride in an alkaline, aqueous medium at a temperature of from 20 to 100° C. and a pressure of up to 15 atmospheres gauge and thereafter separating the 2,6-dimethylanisole by steam distillation from an alkaline solution.

3,607,947

1,2-BIS [P-(HYDROXYBENZYL) PHENOXY] ETHANE

John Penfold, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 10, 1968, Ser. No. 735,553

Claims priority, application Great Britain, June 15, 1967, 27734/67

Int. Cl. C07c *39/12*

U.S. Cl. 260—613 R **1 Claim**

Preparation of the polyphenol, 1,2-bis [P-(hydroxybenzyl)Phenoxy] ethane, and the reaction of said polyphenol with formaldehyde to prepare a resole from which are prepared resin forms.

3,607,948

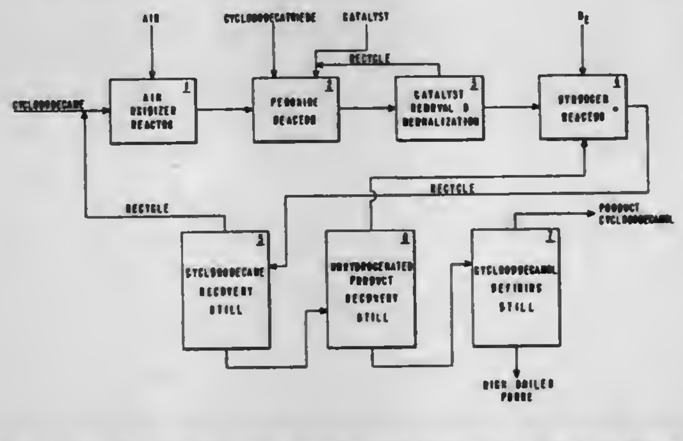
PREPARATION OF CYCLODODECANOL

Donald Eldon Welton, Victoria, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1968, Ser. No. 706,018

Int. Cl. C07c *35/02, 51/28*

U.S. Cl. 260—617 C **8 Claims**



A process for the preparation of a cyclic alcohol by air oxidation of a cycloaliphatic compound to a mixture containing 1–30 percent by weight cycloaliphatic hydroperoxide, oxidizing cycloolefin by means of the cycloaliphatic hydroperoxide, hydrogenating the resulting product, and recovering cyclic alcohol and unconverted cycloaliphatic compound for recycle.

3,607,949

PRODUCTION OF 2,2′-METHYLENEBIS (3,4,6-TRICHLOROPHENOL)

Thomas F. Cleary, Summit, N.J., assignor to Centerchem, Inc., New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 798,146

Int. Cl. C07c *39/16*

U.S. Cl. 260—619 **4 Claims**

This invention is directed to the production of 2,2′-methylenebis (3, 4, 6-trichlorophenol), commonly known as hexachlorophene, by reacting 1 mol of 2, 4, 5-trichlorophenol, 1 mol of 2, 4, 5-trichlorophenylsulfate and 1 mol of formaldehyde in a solvent solution in which the 2, 4, 5-trichlorophenylsulfate has been prepared in situ by reacting 2, 4, 5-trichlorophenol with sulfurtrioxide.

3,607,950

PRODUCTION OF 2,6-DIMETHYL-3,4-DIHALOPHENOLS

Rolf Platz, Mannheim, and Franz Merger, Ludwigshafen am Rhine both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed May 13, 1968, Ser. No. 728,842

Claims priority, application Germany, May 13, 1967, P 12 92 661.3

Int. Cl. C07c *39/26*

U.S. Cl. 260—623 **4 Claims**

The production of 2,6-dimethyl-3,4-dihalophenols by reaction of 2,6-dimethyl-4-tertiary-butylphenol with sulfuryl halides. The new products of the process are valuable starting materials for the production of fungicides and bactericides.

3,607,951

PROCESS FOR PREPARING 1.4-DIBROMO-2-BUTANOL

Lars Andersen, N. Hesperiagatau 7 A, Helsinki, Finland, assignor to OY Medica AB, Helsinki, Finland

Filed Feb. 9, 1968, Ser. No. 704,244

Claims priority, application Finland, Feb. 28, 1967, 586/67

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **8 Claims**

A process for preparing 1.4-dibromo-2-butanol from allyl bromide, including the steps of treating allyl bromide with formaldehyde in the presence of an acid catalyst and a solvent, and treating the resulting diol with hydrogen bromide to obtain the dibromobutanol product. The latter is an intermediate in the production of pyrrolidine derivatives.

3,607,952

PROCESS FOR PREPARATION OF HEXAFLUOROISOPROPANOL

Kung Hsing Lee, Wilmington, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1969, Ser. No. 811,668

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **7 Claims**

A process for reducing hexafluoroacetone to hexafluoroisopropanol with hydrogen and a noble metal containing reduction catalyst in the presence of a hexafluoroisopropanol reaction diluent, using hydrogen pressure of 10 to 50 atm., and catalyst concentrations of from about 0.1% to 1.0% based on the weight of hexafluoroacetone used.

3,607,953

PROCESS FOR PRODUCTION OF 2,2-BIS(HALOMETHYL)-1,3-PROPANEDIOL FROM PENTAERYTHRITOL

Edward Hurley, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Apr. 7, 1969, Ser. No. 814,150
Int. Cl. C07c *31/34*
U.S. Cl. 260—633 **8 Claims**

Production of 2,2-(Halomethyl)-1,3-propanediol by reacting pentaerythritol with anhydrous HBr or HCl in the presence of N-alkylpyrrolidone in which the alkyl groups contain from one to about six carbon atoms is taught. The process is also applicable to the production of the corresponding di-products from di-pentaerythritol.

3,607,954

3,3′ DINITRO-OCTAFLUOROBIPHENYL

Leon Jerzy Belf, Avonmouth, and David Thomas Saggers, Saffron Walden, Essex, both of England, assignors to Imperial Smelting Corporation (N.S.C.) Limited, London, England
Filed Jan. 24, 1969, Ser. No. 793,916
Claims priority, application Great Britain, Jan. 29, 1968, 4539/68
Int. Cl. C07c *79/12*
U.S. Cl. 260—646 **4 Claims**

The new compound 3,3′-dinitro-octafluorobiphenyl is prepared (e.g. by nitration of the corresponding dihydro-compound or biphenyl linking of the 3-bromo 2,4,5,6-tetrafluoronitrobenzene with copper bronze) and formulated into antifungal compositions.

3,607,955

HYDROFLUORINATION AND DEHYDROFLUORINATION AND CATALYSTS THEREFOR

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillip Petroleum Company
Division of Ser. No. 398,442, Sept. 22, 1964, Pat. No. 3,413,369.
Filed Apr. 8, 1968, Ser. No. 719,712
Int. Cl. C07c *21/18, 17/34*
U.S. Cl. 260—653.5 **4 Claims**

Hydrofluorination and dehydrofluorination reactions are accomplished over a catalyst bed formed by heating a bed of particles of porous alumina to a temperature of at least 220° F. and flowing therethrough a gaseous mixture of HF and an inert diluent until the hot zone of chemical reaction has passed completely through said bed.

3,607,956

PROCESS FOR PREPARING ALLYL CHLORIDE AND METHALLYL CHLORIDE

Lothar Hornig; Horst Grosspietsch, and Gunter Mau, all of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany
Continuation of application Ser. No. 667,640, Sept. 14, 1967, now abandoned. This application Mar. 27, 1970, Ser. No. 20,876
Claim priority, application Germany, Sept. 23, 1966, F 50273.
Int. Cl. C07c *21/04*
U.S. Cl. 260—654 A **10 Claims**

Preparation of allyl chloride or methallyl chloride by reaction of oxygen with (a) propylene or isobutylene and hydrogen chloride or (b) a monochloropropane or monochlorisobutane in the presence of a catalyst containing (1) tellurium and/or compounds thereof, (2) basic nitrogen compounds or salts thereof and (3) vanadium, molybdenum or tungsten or compounds thereof.

3,607,957

TRICHLOROETHYLENE AND DICHLOROETHYLENES PREPARED BY OXYCHLORINATION

Albert Antonini, Paris; Claude Kaziz, La Courneuve, and Georges Wetroff, Le Thillay, all of France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Paris, France
Filed May 20, 1968, Ser. No. 730,664
Claims priority, application France, May 19, 1967, 106978
Int. Cl. C07c *17/06, 21/10*
U.S. Cl. 260—654 A **15 Claims**

Process for preparation of trichloroethylene and dichloroethylenes by oxychlorination with a fluid bed catalyst of C_2 chlorinated ethylenic derivatives such as vinylidene chloride, dichloroethylenes and possibly vinyl chloride.

3,607,958

BROMINATION PROCESS

Robert Leitch Forman, and Reuben Rowlands, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Nov. 4, 1966, Ser. No. 591,963
Claims priority, application Great Britain, Nov. 18, 1965, 49,079/65
Int. Cl. C07c *17/10, 19/00*
U.S. Cl. 260—658 R **13 Claims**

Bromination of paraffinic hydrocarbons containing from 8 to 22 carbon atoms or chlorinated derivatives thereof using a mixture of liquid bromine and chlorine in the presence of a free radical catalyst.

3,607,959

CATALYST FOR HYDROCARBON CONVERSION

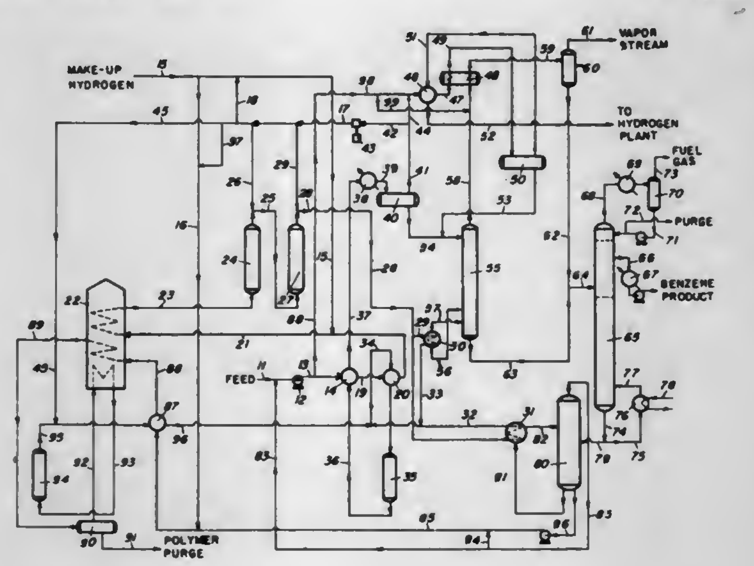
John Estes, Wappingers Falls; Robert M. Suggitt, Fishkill, and Stanley Kravitz, Wiccopee, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed June 16, 1967, Ser. No. 646,455
Int. Cl. C07c *3/00, 3/50*
U.S. Cl. 260—671 **10 Claims**

This invention relates to a method of preparing a catalyst useful in hydrocarbon conversion such as alkylation and polymerization. More particularly, this invention relates to the polymerization of polymerizable hydrocarbons e.g. propylene and the alkylation of alkylatable hydrocarbons e.g. benzene in the presence of an alumina catalyst activated with an organic species having at least two carbon atoms per molecule, and chlorine or bromine in suitable proportions, or with a mixture of multicarbon activators and chlorine and bromine.

3,607,960

THERMAL HYDRODEALKYLATION PROCESS

Delbert L. Button, Allison Park, Pa., and Lawrence J. Kirby, Tokyo, Japan, assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 723,998, Apr. 25, 1968, now abandoned. This application June 18, 1970, Ser. No. 47,586
Int. Cl. B01d *3/06;* **C07c** *3/58;* **C10q** *9/16*
U.S. Cl. 260—672 NC **8 Claims**

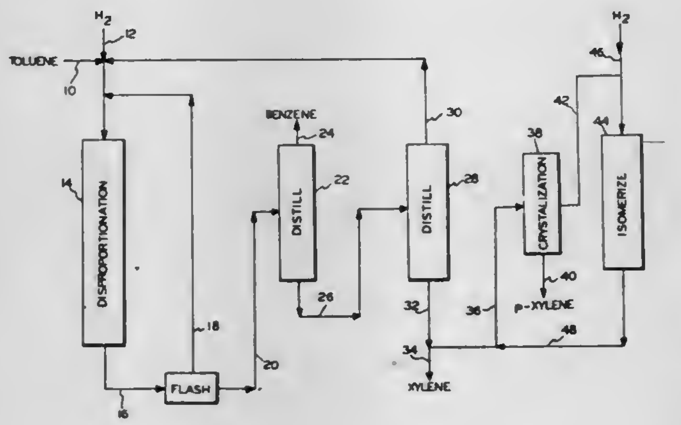


In a process for the thermal hydrodealkylation of an alkyl aromatic, such as toluene, to produce benzene, a mixture of diphenyls and high-boiling polymers is separated as bottoms from the effluent of a primary hydrodealkylation zone. This mixture is mixed with recycle hydrogen and flash vaporized, the vapor comprising polyphenyls and hydrogen being passed to an auxiliary reactor wherein the polyphenyls are converted to benzene. The flash vaporization selectively rejects substantially all of the high-boiling polymer compounds which would otherwise tend to form coke in the auxiliary reactor.

3,607,961

ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VIII METALS ON BORIA-ALUMINA

Stephen M. Kovach, and Ronald A. Kmecak, both of Ashland, Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.
Filed Dec. 19, 1968, Ser. No. 785,248
Int. Cl. C07c *3/58, 15/08;* **B01j** *11/06*
U.S. Cl. 260—672 R **17 Claims**



A process for the alkyl transfer of alkyl aromatics including contacting an alkyl aromatic feed material, such as toluene, with a catalyst comprising a Group VIII metal, such as nickel, platinum, or palladium and boria deposited on an alumina base at a temperature of about 800° to 1100° F., a pressure of about 0 to 2000 p.s.i.g., and a liquid hourly space velocity of about 0.1 to 10, and in the presence of hydrogen introduced at a rate of about 1 to 10 moles hydrogen per mole of hydrocarbon feed. Promoters selected from Group I, Group II, Group IV, and the Rare Earth metals of the Periodic System may be added to the catalyst. Deactivated catalyst may be periodically rejuvenated by discontinuing the introduction of aromatic feed material and purging with hydrogen and the catalyst can be reactivated by calcination in an atmosphere such as air. Where toluene is the feed, the alkyl transfer product may be distilled to separate benzene, toluene and xylenes, the toluene may be recycled to the alkyl transfer step, the xylenes may be crystallized to separate para-xylene from the remaining xylenes, the mother liquor from the crystallization step may thereafter be isomerized to readjust the para-xylene content and the product of the isomerization may be recycled to the crystallization zone.

3,607,962

PROCESS FOR THE MANUFACTURE OF ACETYLENE

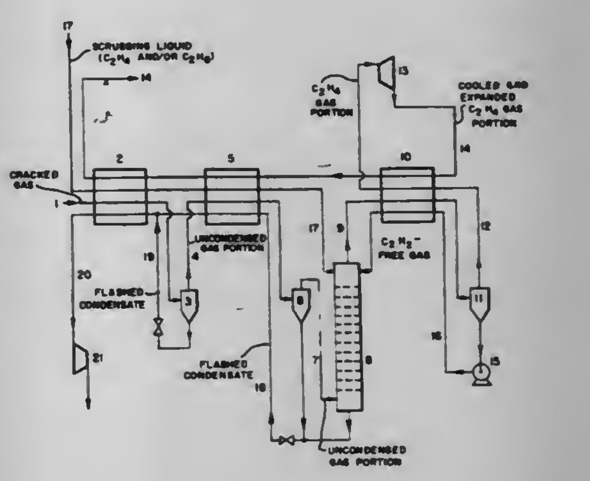
Hans Krekeler, Wiesbaden; Klaus Gunther, Frankfurt am Main, and Heinz Schmitz, Frankfurt am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany
Filed Jan. 28, 1969, Ser. No. 794,808
Claims priority, application Germany, Feb. 28, 1968, P 16 68 102.0
Int. Cl. C07c *11/24*
U.S. Cl. 260—679 R **10 Claims**

Process for the manufacture of acetylene and its homologs by dehydrohalogenating dihalogen-alkanes or monohalogen-alkenes by means of alkaline earth metal oxides or alkaline earth metal hydroxides.

3,607,963

SEPARATION OF ACETYLENE AND ETHYLENE FROM CRACKED GAS

Axel Danneil, Ludwigshafen; Otto Nagel, Hambach; Rolf Platz, Mannheim, and Kurt Taglieber, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda- Fabrik Aktiengesellschaft, Ludwigshafen am Rhine Germany
Filed Feb. 10, 1969, Ser. No. 798,041
Claims priority, application Germany, Feb. 13, 1968, P 16 43 757.3
Int. Cl. F25j 3/02; **F25j** 3/06, 3/08
U.S. Cl. 260—679 **4 Claims**

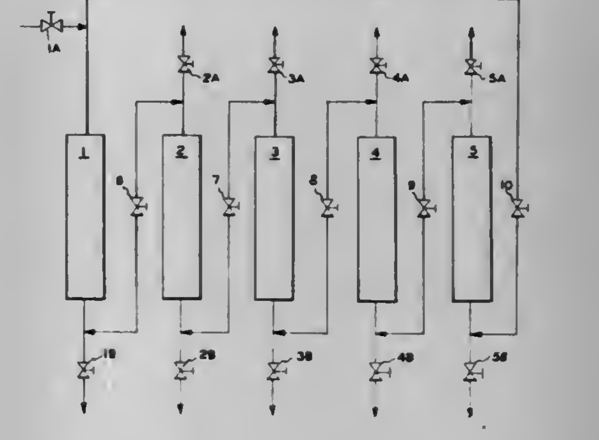


Joint separation of acetylene and ethylene from cracked gas, obtained by submerged-flame methods, by condensing the hydrocarbons in one or more stages by cooling to a temperature above the solidification temperature of acetylene in admixture with the other condensable constituents, separating the condensate, washing the residual gas mixture with liquid ethylene and/or ethane, and further cooling the gas mixture free from acetylene to −140° to −170° C.

3,607,964

METHOD FOR PRODUCING ISOPRENE AND APPARATUS THEREFOR

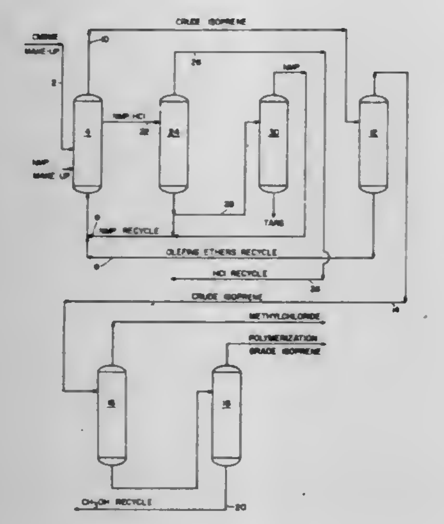
Kenji Naito, and Yoshio Kamatani, both of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd.. Osaka, Japan
Filed Jan. 22, 1970, Ser. No. 4,959
Claims priority, application Japan, Jan. 23, 1969, 4886/69
Int. Cl. C07c *11/18, 1/20*
U.S. Cl. 260—681 **4 Claims**



An improved method for the production of isoprene from the fixed vapor phase condensation of formaldehyde and isobutene which comprises housing a portion of the catalyst in each of a series of reaction chambers, the oldest being the terminal chamber. The said terminal chamber is replaced by adding a chamber housing fresh catalyst at the opposite end.

3,607,965
DIOLEFINS FROM CHLOROETHERS

John R. Coleman, Jr., Littleton; David W. Hall, Englewood, and Frank L. Dormish, Denver, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Sept. 25, 1969, Ser. No. 861,108
Int. Cl. C07c *1/20, 41/12*
U.S. Cl. 260—681 **10 Claims**



In the production of diolefins by reaction of a halo ether and an olefin followed by cracking hydrogen halide and alcohol from the intermediate adduct, olefin ethers are formed in the cracking reactor and are isolated by conventional distillation and recycled to the cracking reactor to be converted to diolefins and alcohol.

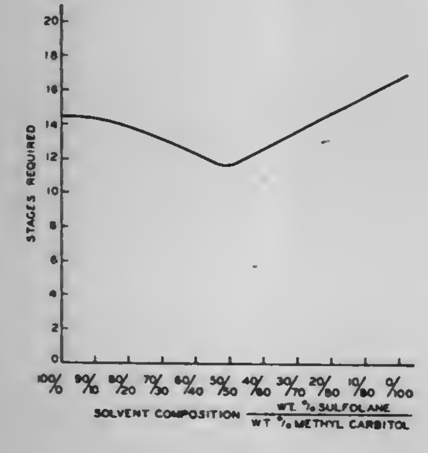
3,607,966
OXIDATIVE DEHYDROGENATION

Louis J. Croce, Seabrook, Tex., and Laimonis Bajars, Princeton, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.
Filed Mar. 28, 1968, Ser. No. 716,986
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 **13 Claims**

Compositions of matter comprising ferrites of magnesium, manganese, cobalt, nickel, zinc or cadmium modified with boron and a process of oxidative dehydrogenation by feeding oxygen to a reactor containing these compositions.

3,607,967
SOLVENT EXTRACTION OF ISOPRENE

Duane D. Shaul, Beaverton, Oreg., assignor to Phillips Petroleum Company
Filed Sept. 10, 1969, Ser. No. 856,748
Int. Cl. C07c *11/18, 7/10;* **C10g** *21/16, 21/22*
U.S. Cl. 260—681.5 **5 Claims**



A method of separating isoprene from isoamylenes by solvent extraction in which an isoprene-isoamylene stream is contacted with a solvent comprising sulfolane and methyl carbitol, the improvement comprising employing as the solvent about equal weight percentages of sulfolane and methyl carbitol in a mixture containing about 3.5 percent water.

3,607,968
ISOMERIZATION OF ALIPHATIC OLEFINS HAVING A TERMINAL DOUBLE BOND

Walter Schenk, Bad Duerkheim, and Hans Boehm, Speyer, both of Germany, assignors to Badische Anilin- & Soda-Fabrikaktiengesellschaft, Ludwigshafen am Rhine, Germany
Filed June 23, 1970, Ser. No. 49,163
Claims priority, application Germany, July 12, 1969, P 19 35 504.5
Int. Cl. C07c *5/24*
U.S. Cl. 260—683.2 **8 Claims**

Isomerization of aliphatic olefins having terminal double bonds while retaining the carbon chain by isomerization of olefins having nine to 22 carbon atoms in the presence of a boron phosphate catalyst at elevated temperature. Isomerization mixtures according to the invention and their components are starting materials for the production of detergents and emulsifiers and auxiliaries for the textile, paper and leather industries.

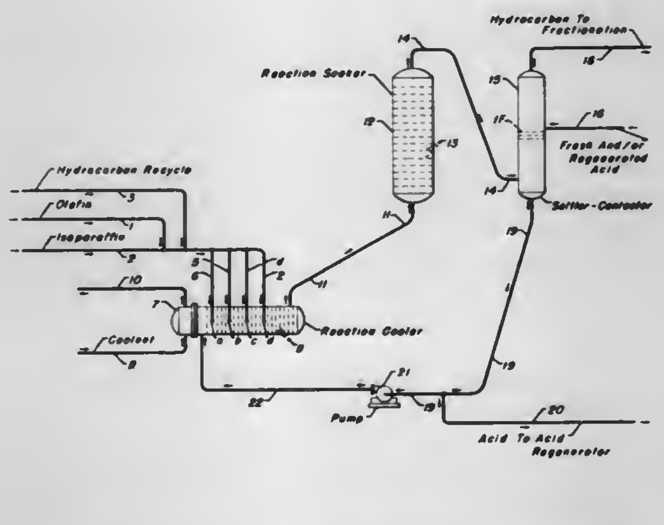
3,607,969
PROCESS FOR HYDROGENATING UNSATURATED COMPOUNDS IN C_3-HYDROCARBON FRACTIONS

Walter Kronig, Leverkusen; Wilhelm Mayrhofer, Leverkusen; Gerhard Scharfe, Leverkusen, and Kurt Halcour, Cologne-Stammheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of application Ser. No. 545,553, Apr. 27, 1966, now abandoned. This application Apr. 11, 1969, Ser. No. 858,548
Int. Cl. C07c *5/04*
U.S. Cl. 260—683.9 **3 Claims**

Process for the complete saturation of a stream containing C_2 to C_4 hydrocarbons by hydrogenating such in a trickle phase over a fixed bed noble metal catalyst in the presence of a hydrogen atmosphere wherein about 0.3 to 3 parts of hydrogenation products per part of fresh feed are recycled in the process.

3,607,970
PROCESS FOR PRODUCING HIGH OCTANE ALKYLATED HYDROCARBONS SUBSTANTIALLY FREE OF ALKYL FLUORIDE COMPOUNDS

William B. Borst, Jr., Mount Prospect, Ill., assignor to Universal Oil Products, Company, Des Plaines, Ill.
Filed Apr. 25, 1969, Ser. No. 819,295
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 **9 Claims**



Process for producing high-octane alkylated hydrocarbons substantially free of alkyl fluoride compounds utilizing a hydrogen fluoride alkylation catalyst and a reactor system comprising a reaction cooler and a reaction soaker and a settler-contactor wherein the reactor soaker effluent is separated in the settler-contactor into a catalyst fraction and a fraction comprising high-octane alkylated hydrocarbons, unreacted hydrocarbons and alkyl fluoride compounds, the latter friction being contacted with concentrated hydrogen fluoride in the settler-contactor so that the alkyl fluoride compounds are reacted with the concentrated hydrogen fluoride.

3,607,971
POLYMERIZATION PROCESS FOR DODECANOLACTAM

Harry McGrath, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 6, 1968, Ser. No. 727,014
Claims priority, application Great Britain, May 10, 1967, 21665/67
Int. Cl. C08g *20/10*
U.S. Cl. 260—78 L **9 Claims**

Dodecanolactam is polymerized by heating with a catalytic amount of a hydrocarbon monosulphonic acid and if desired a chain stopper, especially an N-substituted amide of a stated formula.

3,607,972
ROOM TEMPERATURE VULCANIZABLE SILOXANE BLOCK COPOLYMER

James D. Kiles; Robert C. Hartlein, and Harold L. Vincent, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Filed Dec. 1, 1969, Ser. No. 881,298
Int. Cl. C08g *47/00*
U.S. Cl. 260—825 R **18 Claims**

A room temperature vulcanizable siloxane block and a monoorganosiloxane block being endblocked with monoorganodiacetoxysiloxy units, monoorganodiketoximesiloxy units or monoorganodialkoxysiloxy units where the polydiorganosiloxane block is a mixture of polydiorganosiloxane blocks having 6 to 40 diorganosiloxane units per block and polydiorganosiloxane blocks having 200 to 500 diorganosiloxane units per block where the mixture has an average of from 25 to 460 diorganosiloxane units per block can be a resin or an elastomer, useful as caulking compounds, sealants, roof coatings, adhesives, optically clear compositions and low modulus compositions.

3,607,973
SATURATED LINEAR POLYMERS HAVING PENDANT POLYETHYLENIC UNSATURATION

Donald F. Holicky, Parma; Kenneth G. Hahn, Brookpark, and Robert C. Gasman, Parma, all of Ohio, assignors to SCM Corporation, Cleveland, Ohio
Filed Feb. 12, 1969, Ser. No. 798,769
Int. Cl. C08g *45/04, 15/00, 19/00*
U.S. Cl. 260—836 **14 Claims**

A class of polymers comprising a saturated linear ester-free backbone having pendant therefrom a plurality of ethylenically polyunsaturated groups which are polymerizable with vinyl monomer for thermosetting purposes under the influence of free radical catalysis is described, along with processes for preparing these polymers. The plurality of ethylenically polyunsaturated groups are attached to the linear polymer backbone through ester, ether, amine or amide linkage.

Linear polymers falling within the scope of this invention are advantageous in that when thermoset they produce shaped bodies or objects which have controlled physical properties (e.g., mechanical strength, rigidity or flexibility) and which also have increased chemical resistance to the action of solvents, acids and alkalis of shaped bodies or objects prepared from conventional polyester polymers. Additionally, cured films or products obtained from the polymers tend to be "uninhibited," that is the inhibition to cure of surfaces of films or articles is substantially reduced.

3,607,974
THERMOSETTING RESIN CONTAINING PENDANT UNSATURATION AND MONOMER WHERE MONOMER AND PENDENCY HAVE IDENTICAL FUNCTIONALITY

Donald F. Holicky, Parma; Kenneth G. Hahn, Brookpark, and Robert C. Gasman, Parma, all of Ohio, assignors to SCM Corporation, Cleveland, Ohio
Filed Feb. 11, 1969, Ser. No. 798,461
Int. Cl. C08g *45/04, 41/04;* **C08f** *15/00, 19/00*
U.S. Cl. 260—836 **6 Claims**

Thermosettable resin compositions comprising: (1) a linear copolymer consisting of linear saturated ester-free backbone having pendant therefrom through linkage F, where F is selected from the group consisting of ester, ether, isocyanate, amine and amide, a plurality of etylenically unsaturated groups polymerizable with vinyl monomer for thermosetting purposes, and (2) a copolymerizabel ethylenically unsaturated monomer containing residues of a saturated compound having functionality F′, where F′ is selected from the group consisting of a saturated ester, ether, isocyanate, amine, and amide wherein, in said composition, F and F′ are identical.

3,607,975
ADHESIVE COMPOSITION

Tomomichi Tsukada, Kawasaki-shi; Jiro Kano, Kawasaki-shi, and Tetuzo Nakai, Kawaguchi-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed May 16, 1968, Ser. No. 729,522
Claims priority, application Japan, June 9, 1967, Dec. 13, 1967, 42/36509;42/79492
Int. Cl. C08g *37/34*
U.S. Cl. 260—850 **9 Claims**

An adhesive composition which comprises a linear polyester-type polyethylene isophthalate, an amino compound containing an amino group of which a hydrogen atom is substituted by a functional methylol group, a curing catalyst and an oxide of a multivalent metal. When the adhesive composition is heated to cause curing, it will produce an adhesive layer having desirable physical properties of high-resistance to organic solvents and heat.

3,607,976
COMPOSITIONS FROM ISOCYANATE-TERMINATED POLYDIENES WITH ISOCYANATE-TERMINATED CYCLIC POLYETHERS AND ADIAMINE OR DIOL CHAIN EXTENDER

Henry L. Hsieh, and William R. Busler, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Feb. 5, 1968, Ser. No. 702,793
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 **9 Claims**

Novel polymeric compositions comprise the reaction product of (a) isocyanate-telechelic polymers obtained by the reaction of diisocyanates with hydroxy-telechelic polymers of conjugated dienes or conjugated diene/monovinyl aromatic compound copolymers; (b) isocyanate-telechelic polymers obtained by the reaction of diisocyanates with hydroxy-telechelic polymers of oxiranes, oxetanes, or tetrahydrofurans and (c) a simple diol or diamine.

3,607,977
BLOCK COPOLYMER COMPOSITIONS EXHIBITING ALTERED SURFACE ACTIVITY

Glenn L. Taylor, Palos Verdes; John W. Cotton, Mill Valley, and De Loss E. Winkler, Orinda, all of Calif., assignors to Shell Oil Company, New York, N.Y.
Filed Sept. 12, 1968, Ser. No. 759,521
Int. Cl. C08f *29/12*
U.S. Cl. 260—876 **3 Claims**

Block copolymer compositions are provided comprising a hydrocarbon block polymer containing at least three polymer blocks one or more being of a monovinyl arene and one or more being of a conjugated diene or hydrogenated derivative of said polymers, combined with certain derivatized block copolymers characterized by their content of blocks compatible with the monovinyl arene blocks of the first block polymer and by their content of a second type of polymer block which is incompatible with the first named polymer block but may or may not be compatible with the conjugated diene polymer blocks of the first block polymer. These compositions are especially useful for such purposes as adhesion to polar surfaces, reduction in flammability, improvement in weatherability and other properties.

3,607,978

NITRILE POLYMERIC BLENDS

Yoon Chai Lee, and Quirino A. Trementozzi, both of Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 3, 1969, Ser. No. 788,911
Int. Cl. C08f *37/18, 41/12*
U.S. Cl. 260—876 R 9 Claims

A polymeric blend is prepared from a nitrile polymer and a modifying polymer containing dicyanobutene-1. The modifying polymer greatly improves the processability of the nitrile polymer while maintaining or improving the barrier properties thereof, and products molded from the blends exhibit better optical characteristics than products similarly produced from the unmodified nitrile polymer.

3,607,979

HYDROPHILIC CHLOROSULFONATED BLOCK COPOLYMERS

De Loss E. Winkler, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 24, 1968, Ser. No. 770,384
Int. Cl. C08f *19/04, 19/06*
U.S. Cl. 260—879 8 Claims

Block copolymers are provided which retain a high degree of elastomeric properties while at the same time exhibiting a large water absorption capacity are especially useful for water desalinization purposes. These block copolymers comprise chlorosulfonated derivatives of block polymers wherein the terminal polymer blocks are either polyvinyl arene blocks or polyvinyl cycloalkane blocks while the center blocks are hydrogenated conjugated diene blocks or alpha-olefin copolymer blocks of elastomeric character. The end blocks may also comprise alpha-olefin thermoplastic blocks. The chlorosulfonation is carried to an extent sufficient to impart a hydrophilic character to the polymers and is characterized by a sulfur content in the order of 1–10 percent by weight of the block copolymer.

3,607,980

METHOD OF POLYMERIZING VINYL CHLORIDE WITH ETHYLENE-VINYL ACETATE COPOLYMERS

Jean Claude Thomas, Lyon; Francis Fournel, Lyon, and Salomon Soussan, Saint-Fons, all of France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Paris, France

Filed Nov. 2, 1967, Ser. No. 680,041
Claims priority, application France, Nov. 14, 1966, 83,489
Int. Cl. C08f *15/40, 15/24*
U.S. Cl. 260—878 R 8 Claims

Resins of high shock resistance when shaped as tubes, rods, plates or the like are prepared by dissolving a copolymer of vinyl acetate and ethylene in liquid vinyl chloride, partly polymerizing another quantity of vinyl chloride with high turbulence in mass, mixing the solution of vinyl acetate-ethylene copolymer and the suspension of polyvinyl chloride in vinyl chloride, and subjecting this mixture to conditions of temperature, pressure, agitation and catalysis favorable to graft polymerization in mass of vinyl chloride on the vinyl acetate-ethylene copolymer.

3,607,981

NITRILE RUBBERS

Roger E. Morris, Cuyahoga Falls, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Oct. 28, 1969, Ser. No. 871,953
Int. Cl. C08d *3/02*
U.S. Cl. 260—879 5 Claims

Improved nitrile rubbers that are readily processed, have an excellent balance of low temperature-oil swell properties and other good physical properties are prepared polymerizing a polar monomer as acrylonitrile or methacrylonitrile with a mixture of (1) an elastomer of a conjugated diene and a nitrile and (2) a polymer of a conjugated diene and a nitrile having a molecular weight below 20,000. This low molecular weight copolymer may also be liquid xanthate-, mercaptan- or carboyxl-terminated polymers.

3,607,982

HYDROXYLATED BLOCK COPOLYMERS OF BUTADIENE AND ISOPRENE

Deloss E. Winkler, Orinda, and Alfred W. Shaw, Moraga, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed June 17, 1970, Ser. No. 47,124
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—880 4 Claims

Novel epoxidized block copolymers and novel hydroxylated products derived from them are prepared by epoxidation, and then hydrolysis, of conjugated diene block copolymers. In the selectively epoxidized polymers at least one highly (80–100 percent) epoxidized polymer block A, formed from a branched chain conjugated diene, is attached to at least one polymer block B, formed from a straight chain conjugated diene that is less than about 50 percent epoxidized. Hydroxylated products are prepared by acid hydrolysis of the epoxidized copolymers.

3,607,983

PROCESS FOR THE PRODUCTION OF HIGH IMPACT STRENGTH GRAFT POLYMERS

George L. Rushton, and Bobby Ray Martin, both of Trenton, N.J., assignors to Columbian Carbon Company, New York, N.Y.

Filed May 28, 1969, Ser. No. 828,709
Int. Cl. C08f *15/04, 1/13*
U.S. Cl. 260—880 R 10 Claims

Processes are described for the preparation of synthetic resins by polymerizing a mixture of vinyl aromatic and vinyl cyanide monomers in the presence of a small particle size butadiene-styrene copolymer latex. Extruded sheets of this graft polymer product exhibit high impact strengths and possess scuff resistant matte finish surfaces which make them well suited for use in the manufacture of luggage.

3,607,984

IMPERMEABLE ELASTOMERS OF BUTYL RUBBER MIXED WITH A CONJUGATION DIENE POLYMER HAVING 40–90 PERCENT OF ITS DOUBLE BONDS IN A LATERAL POSITION

Jean-Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed July 19, 1968, Ser. No. 746,038
Claims priority, application France, July 20, 1967, 115,078
Int. Cl. C08d *9/08*
U.S. Cl. 260—888 5 Claims

An impermeable elastomer which comprises a mixture of from about 50 percent to about 95 percent by weight of a butyl rubber and from about 50 percent to about 5 percent by weight respectively of a polymer of a conjugated diene having from about 40 percent to about 100 percent of its double bonds in a lateral position.

3,607,985

ELASTOMER HAVING IMPROVED BUILDING TACK

Robert Edward Tarney, Chadds Ford, Pa., and John J. Verbanc, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1968, Ser. No. 771,996
Int. Cl. C08d *9/08*
U.S. Cl. 260—889 10 Claims

An EDODM elastomer is tackified by uniformly mixing with a hydroxylated, carboxylated or phenolated isoprenoidal resin formed by copolymerization of isoprene with piperylene.

3,607,986

VINYL CHLORIDE-PROPYLENE COPOLYMER MODIFIED POLYPROPYLENE

Patrick W. Ager, West Chester, Pa., and Louis A. Graham, Greensboro, N.C., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 6, 1968, Ser. No. 781,974
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 C 6 Claims

A polypropylene composition comprising polypropylene containing a minor amount of a vinyl chloride-propylene copolymer.

3,607,987

COATING COMPOSITION COMPRISING POLYETHYLENE AND A VISBROKEN COPOLYMER OF ETHYLENE AND PROPYLENE

Roger J. Walton, and Royce G. Cowan, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 20, 1967, Ser. No. 654,683
Int. Cl. C08f *37/18*
U.S. Cl. 260—897 6 Claims

A coating composition comprising a blend of a thermally cracked copolymer containing a major amount of propylene and a low density homopolymer of ethylene and a coating method.

3,607,988

STEREOISOMERIC COMPLEX AS LIGHT-TRANSMISSIVE MEANS OF IMPROVED RESISTANCE TO RADIATION DAMAGE

Donald G. Gardner, Livermore, Calif., and George A. Henry, Kingston, Jamaica

Continuation of Ser. No. 538,914, Mar. 28, 1966, abandoned.
Filed Oct. 1, 1968, Ser. No. 764,211
Int. Cl. C08f *29/50*
U.S. Cl. 260—901 3 Claims

A solid polymer composition mixture of 60–75 percent syndiotactic polymer with 25–40 percent isotactic polymer produced from certain monomers of the type having an asymmetric structure and including polar substituent groups, and having improved resistance to radiation damage.

3,607,989

PROCESS FOR PREPARING CATIONIC POLYVINYLAROMATIC RESINS WITH IMPROVED COLOR

Lawrence F. Sonnabend, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 4, 1968, Ser. No. 773,309
Int. Cl. C08f *7/04, 27/03, 27/08*
U.S. Cl. 260—93.5 4 Claims

The color of cationic resins prepared by chloromethylation and amination of soluble, essentially linear polyvinylaromatic resins is improved by hydrogenation of the polyvinylaromatic resins to reduce the residual ethylenic unsaturation prior to chloromethylation. The resulting cationic resins are particularly useful in preparing electroconductive cellulose products.

3,607,990

PROCESS FOR THE MANUFACTURE OF PENTAERYTHRITOL PHOSPHITE HEPTANOATE

Silvio L. Giolito, Whitestone, and Walter Stamm, Tarrytown, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Nov. 22, 1967, Ser. No. 684,970
Int. Cl. C07d *105/04;* **C08f** *45/50*
U.S. Cl. 260—971 5 Claims

A process for manufacturing pentaerythritol phosphite heptanoate which comprises the step of reacting triphenyl phosphite with pentaerythritol to form an impure pentaerythritol phosphite intermediate. The impure pentaerythritol phosphite intermediate is then reacted with phenylheptanoate to form a crude pentaerythritol phosphite heptanoate in commercial yields. The end product can optionally be flash distilled to remove the impurities. The product of this process is known to be useful as a plasticizer for vinyl chloride and the like, and as an additive to lubricating oil base stocks to increase wear resistance.

3,607,991

PROCESS FOR PREPARING PHOSPHATE ESTERS

Willard D. Peterson, Pasadena, and Gilbert L. DuPertuis, La Habra, both of Calif., assignors to Kerr-McGee Corporation

Continuation-in-part of application Ser. No. 385,499, July 27, 1964. This application Mar. 21, 1968, Ser. No. 714,814
Int. Cl. C07f *9/08*
U.S. Cl. 260—973 10 Claims

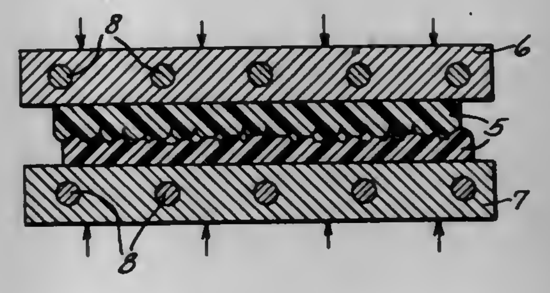
A process for preparing phosphorothioate and phosphorodithioate esters by reacting a Chloro-0, 0-dialkylphosphorothioate 0-dialkylphosphorothioate with an alkali metal salt of an organic compound which has a pKa value of from about 7 to 12, in the presence of a trimethylamine catalyst. The use of trimethylamine as the catalyst for the reaction enables the reaction to be carried out at relatively low temperatures, that is, between about 0° and 80° C., with the reaction being completed in a relatively short period of time.

3,607,992

METHOD OF MAKING ORNAMENTAL MATERIALS

Arno H. Scheiding, Darien, Conn., assignor to L. E. Carpenter & Company, Wharton, N.J.

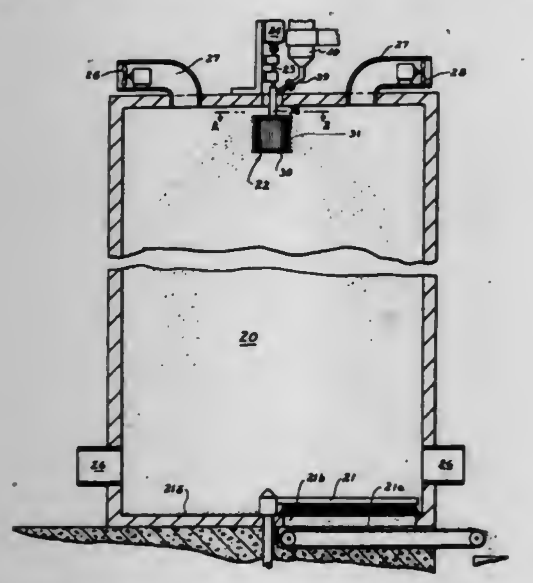
Filed Oct. 31, 1969, Ser. No. 871,215
Int. Cl. B29d *11/00, 7/14*
U.S. Cl. 264—1 4 Claims



Method of making ornamental sheet material having a moving highlight pattern, by forcing together contoured surfaces of two pressing members, each having an array of relief elements in its contoured surface, all elements of each array being of the same shape and size and arranged in intersecting rows, with the rows of one member at an angle to the rows of the other. At least one member is deformed in response to the pressure between the members. A permanent impression is made of the surface of the deformed member. This impression may be made in one of the members itself. This permanent impression may then be used as a master to form an embossing roll for reproducing the pattern defined by the deformation.

3,607,993
METHOD OF PRILLING

Malcolm H. Tuttle, 56 Avon Road, New Rochelle, N.Y.
Division of Ser. No. 531,658, Mar. 4, 1966, Patent No. 3,461,489. Filed May 20, 1969, Ser. No. 826,231
Int. Cl. B01j *2/04*
U.S. Cl. 264—8 **4 Claims**



Prills are formed from molten material by expelling hot melt through sets of orifices drilled through the outer wall of a rotating centrifugal distributor on spaced horizontal planes and along lines which are related to the tangent, at the point of discharge, to the circle described by the distributor as it rotates through angles which differ in magnitude progressively from the upper to the lower portions of the distributor so that jets of hot melt are discharged from the distributor along sets of lines respectively slanted toward the direction of rotation at the uppermost plane of discharge and toward the other direction at the next lower plane of discharge, and at related speeds.

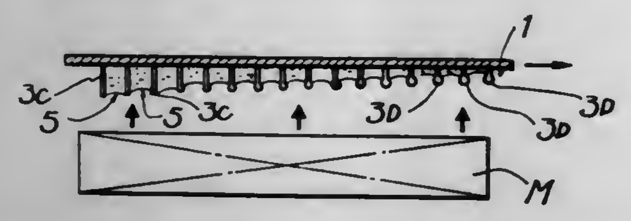
3,607,994
PROCESS FOR MAKING CAUSTIC SODA PELLETS

Janusz Jozef Henryk Krause, and Francis James Willson, both of Northwich, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Aug. 21, 1969, Ser. No. 852,089
Claims priority, application Great Britain, Sept. 18, 1968, 44402/68
Int. Cl. B01j *2/04*
U.S. Cl. 264—14 **3 Claims**

Caustic soda in the novel form of anhydrous small spheres of approximately 0.50 to 2.0 millimeters diameter is made by projecting upwards in a chamber a stream of molten anhydrous caustic soda cocurrently with a stream of ambient cooling air surrounding the stream of caustic soda, and allowing the latter on reaching the highest point of its trajectory to turn over and fall on the outside of the stream of ascending air to the base of the chamber, the temperature of the spheres collected at the base being above 90° C. and preferably 120° to 200° C.

3,607,995
METHOD FOR PRODUCING TERMINAL STRUCTURES

Yoshio Chiba, 1/8/2 Tennoji-machi, Abeno-Ku, Osako, Japan
Filed July 22, 1968, Ser. No. 746,376
Int. Cl. B29d *21/00;* **B29c** *23/00*
U.S. Cl. 264—15 **3 Claims**



A method for forming spherically swollen headed filaments on a base fabric in a fabric fastener, comprising the steps of forming a number of projecting filaments of thermoplastic resinous material on one surface of a base fabric, soaking the base fabric in viscous liquid in a container, removing the base fabric from the liquid thereby forming a liquid layer among the projecting filaments, and then passing the base fabric along a heater, heating in such a manner that the one surface having the projecting filaments with liquid layer faces against the heater and is subjected to heat of the heater whereby exposed terminals of the filaments caused by evaporation of the liquid are melted and swelled by surface extension, thereby forming spherically swollen headed filaments on the base fabric.

3,607,996
METHOD OF PROCESSING DENTURES

Alexander B. Pickands, 325 West Huron St., Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,532
Int. Cl. A61c *13/00*
U.S. Cl. 264—16 **4 Claims**

A method of processing dentures wherein the physical-chemical volumetric expansion and contraction of the polymerization investing compound is controlled by utilizing layered silicone to separate the denture resins from the mold surfaces and by removing the resin-filled plaster or stone casts as a unitary unit from the compression flask, placing said unit under yieldable pressure and subjecting such unit to a predetermined pressure and temperature for completing its curing cycle within a shortened period of time.

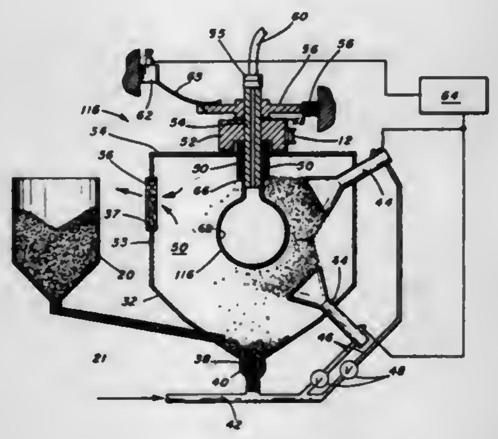
3,607,997
METHOD FOR PRODUCING AN X-RAY INTENSIFYING SCREEN

Patrick John Linturn, Ilford, Essex, England, assignor to Ilford Limited, Ilford, Essex, England
Filed July 25, 1968, Ser. No. 747,446
Claims priority, application Great Britain, July 31, 1967, 35030/67
Int. Cl. H01j *29/28*
U.S. Cl. 264—21 **3 Claims**

This application describes a method for the production of a self-supporting plastic-material film assembly which comprises coating onto a casting surface a thin layer of a solution of plastic material or a plurality of superimposed thin layers of solutions of plastic materials, each layer being dried before any subsequent layer is applied, the improvement which comprises coating on the dried top layer of plastic material a relatively thick layer of a plastisol, heating this layer to solidify the plastisol and removing the thus prepared film assembly from the casting surface, each layer of the assembly being selected so as to be strongly adherent in the product to the layer or layers with which it is in contact.

3,607,998
METHOD FOR PRODUCING HOLLOW ARTICLES

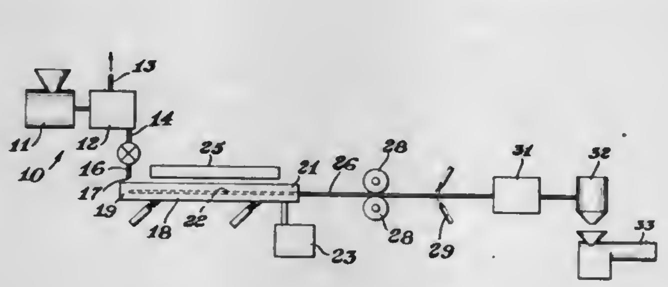
Walter R. Goodridge, Birch Groves, New Milford, Conn.
Filed Apr. 7, 1969, Ser. No. 814,121
Int. Cl. B29c *13/04;* **B29f** *5/02*
U.S. Cl. 264—24 **10 Claims**



A generally hollow article is produced by coating a flexible bladder with material, integrating the material into a unitary structure, and thereafter removing the bladder therefrom. The apparatus includes coating means to form a fluidized mass of integrable particles, a flexible bladder which provides the form for the article, and means to cause adherence of the material to the bladder.

3,607,999
FOAM SCRAP RECOVERY AND APPARATUS

John M. Corbett, and James L. Fookes, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed June 19, 1969, Ser. No. 834,677
Int. Cl. B02c *13/04;* **B29d** *27/08;* **G08f** *47/24;* **H05b** *3/40*
U.S. Cl. 264—25 **5 Claims**



Thermoplastic foam scrap is recovered as extrudable granules by grinding the scrap, passing it over a vibrating cooled trough, applying radiant heat to the scrap, cooling and grinding to provide an extrudable pellet or particle.

3,608,000
METHOD FOR SEALING LEAKS IN VESSELS

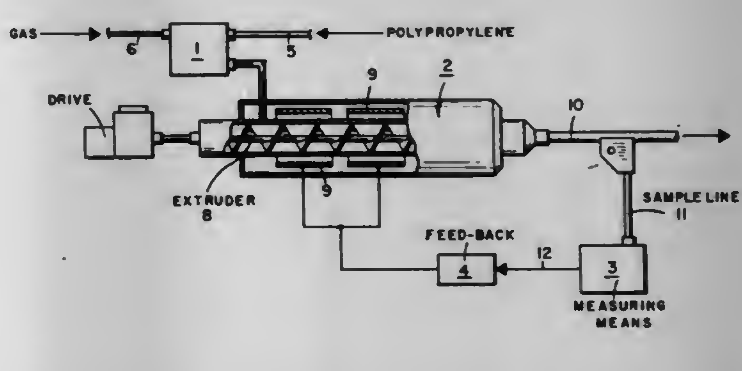
Amos R. Anderson, Adrian, Mich., assignor to Joseph J. Packo
Filed Aug. 20, 1969, Ser. No. 851,734
Int. Cl. B29c *23/00, 27/17*
U.S. Cl. 264—36 **13 Claims**

The invention relates to a method for sealing leaks in pipes, conduits, gaslines, closed containers, tanks and the like. The interior of such equipment is first purged with a nonreactive dry gas, such as nitrogen, to remove any moisture and/or oxygen which may be present. Then the sealing composition is introduced into the interior of the equipment in a suitable inert gas vehicle under pressure. The sealant composition in the gas vehicle will escape from any leaks present in the equipment into the outer ambient atmosphere or adjacent soil in the case of pipelines buried in soil. The sealant reacts with oxygen and/or moisture to form at the situs of the leak a solid reaction product. The sealant composition comprises (1) a volatile metal alkyl compound and (2) a volatile organosilane compound. The volatile metal alkyl compound has the formula $M(R)_2$, wherein M is zinc or cadmium, or the formula $X(R)_3$, wherein X is aluminum, gallium, indium, or thallium, and R is an alkyl having 1 to 3 carbon atoms. The organosilane compound has the formula $R_{4-n}Si(OR')_n$, wherein R is an alkyl having 1 to 3 carbons atoms, R′ is an alkyl having 1 to 3 carbon atoms, and *n* is an integer from 1 to 4. The proportions of the metal alkyl compound may range by volume from about 1 percent to about 99 percent, the remainder being the organosilane compound.

An illustrative sealant composition is a mixture by volume of 80 percent tetraethoxysilane and 20 percent diethyl zinc which is introduced in a stream of nitrogen into a pipeline under pressure to seal existing leaks. The sealant compositions are supplied to the interior of the apparatus or vessel which may contain leaks in sufficient concentration and suitable pressure so that upon escape from the leaks a solid seal will form in sites.

3,608,001
CONTROLLED DEGRADATION OF POLYPROPYLENE IN EXTRUDER-REACTOR

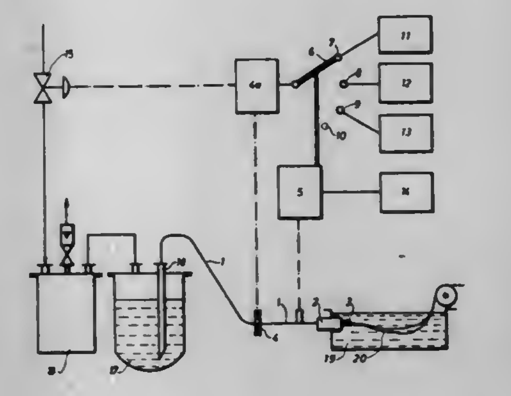
Ronald C. Kowalski, New Canaan, Conn.; John W. Harrison, Westfield, N.J.; John C. Staton, Baytown, and James P. Keller, Baytown, Tex., assignors to Esso Research and Engineering Company
Division of Ser. No. 602,676, Dec. 19, 1966, Patent No. 3,551,943. Filed Aug. 26, 1969, Ser. No. 853,017
Int. Cl. B29f *3/00*
U.S. Cl. 264—40 **5 Claims**



A process for producing in a reproducible, predictable and controllable manner a polypropylene having a desired weight average molecular weight and molecular weight distribution by heating the polypropylene in an extruder-reactor, sampling a portion of the polypropylene to measure a parameter of molecular weight and controlling the conditions in the extruder-reactor in response to the measured parameter.

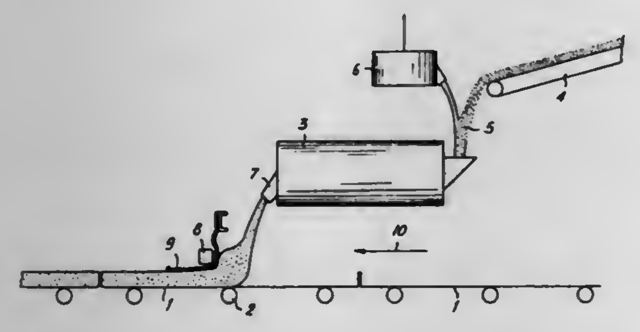
3,608,002
PRODUCTION OF SPUN FILAMENTS OF UNIFORM THICKNESS

Dieter Wurstlin, Leverkusen, and Heinz Hornig, Cologne-Lindenthal, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of application Ser. No. 604,450, Dec. 23, 1966, now abandoned. This application Nov. 17, 1969, Ser. No. 871,676
Int. Cl. D01d *5/06, 11/00*
U.S. Cl. 264—40 **1 Claim**



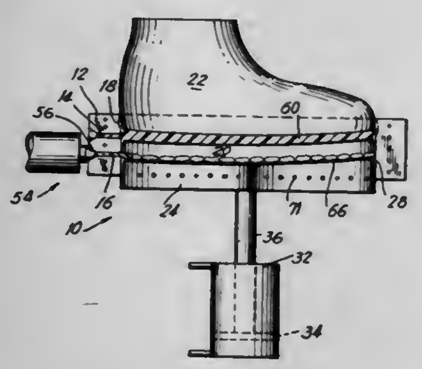
A process for the spinning of filaments of a substantially uniform thickness. Spinning fluid is forced under pressure from a storage means through conduit means into a spinneret and out spinning nozzles. The pressure of the spinning fluid is controlled according to the value measured by flow measuring means situated in the conduit. Significant pressure variation in the system is measured by measuring the pressure on the spinning fluid feed. The pressure variation measured is translated into switching means preset to operate in relation to the number of spinning nozzles operating. The appropriate preset flow rate controller is utilized depending upon the value measured by the pressure measuring means.

3,608,003
METHOD AND APPARATUS FOR PRODUCING LIGHTWEIGHT CONCRETE PLATES
Hermann Klaue, Montreux, and Emil Metzger, Thayngen, both of Switzerland, assignors to Insec Institution europlennede Credit Trust, Valduz, Liechtenstein
Filed Nov. 21, 1966, Ser. No. 595,864
Claims priority, application Germany, Nov. 20, 1965, Jan. 15, 1966, Jan. 15, 1966, Feb. 5, 1966, K57705;K58152;K58153;K58345
Int. Cl. B28b *1/08*
U.S. Cl. 264—42 **8 Claims**



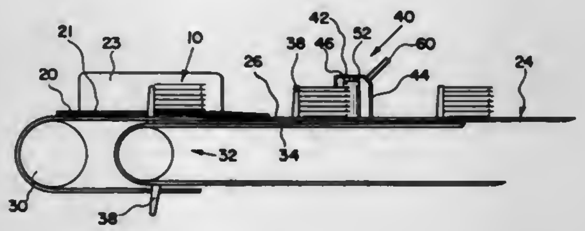
In a method and apparatus for producing lightweight constructional plates by casting a mixture of filling materials and a binder into a mold, a cement and water are continuously centrifuged to form a liquid cement binder, and the binder and filling materials are continuously fed to a slowly rotating drum mixer to form the mixture. The mixture is continuously supplied to a mold while the mold is moved at a speed coordinated with a rate of mixture supply thereto to fill the mold progressively to a uniform height, while progressively subjecting only the mixture in the mold to vibration and to leveling to a uniform height. The mixture is supplied to the mold at a rate so coordinated with the rate of mold movement that the hardening reaction of the liquid cement binder just begins when the mixture is subjected to such vibration. As each mold is filled and the mixture therein vibrated, the mold is transported to a curing area and, when the cast mixture has hardened and cured, it is removed from the mold and the mold is returned for refilling. A glass fiber mat, soaked in a liquid cement, is applied to at least the under surface of the cast mixture while the mixture is being cast and before the liquid cement coating of the glass fiber mat has completely solidified. The liquid cement applied to each glass fiber mat preferably has an addition of 20 to 30 percent of natural or synthetic rubber. Each plate may have imbedded therein one or more reinforcing grids, and these reinforcing grids, as well as the glass fiber mat or mats are supplied to the mixture in the mold in a continuous manner while each mold is being filled and its mixture vibrated.

3,608,004
METHOD OF MAKING FOOTWEAR HAVING A TWO-COLOR RUBBER SOLE
John F. Borisuck, and Reuben A. LaChall, both of Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.
Filed May 16, 1968, Ser. No. 729,570
Int. Cl. B29h *7/08*
U.S. Cl. 264—244 **6 Claims**



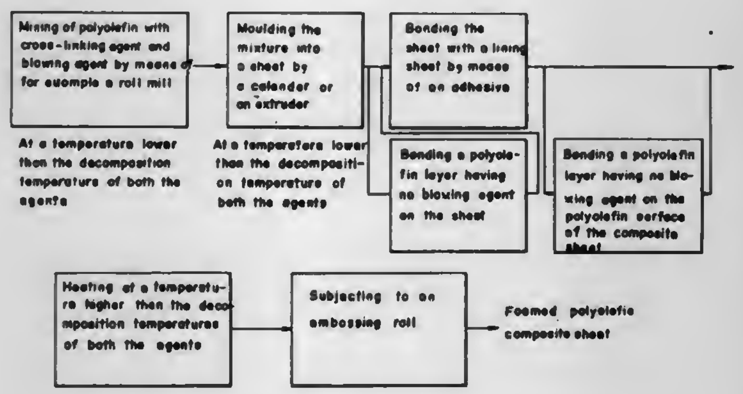
An article of footwear having a two-color rubber sole construction, and a method and apparatus for manufacturing the article. The sole construction includes a midsole-foxing component having foxing surrounding and engaging an outsole component which is vulcanized to the midsole-foxing component. The rubber used for the midsole-foxing component has a higher modulus than the rubber used for the outsole component. The higher modulus rubber is injected into a mold cavity having a column considerably greater than the volume of the injected rubber and a movable soleplate spreads the injection rubber against the underside of a lasted upper. The soleplate has a peripheral shoulder which determines the lower end and inner surface of the foxing. The lower modulus rubber is also injected into a mold cavity of considerably greater volume. The soleplate is again advanced toward the lasted upper to spread the outsole rubber against the midsole rubber to be vulcanized thereto.

3,608,005
METHOD FOR TREATING THE FLANGES OF CONTAINERS
Cecil P. Fortner, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 10, 1968, Ser. No. 782,535
Int. Cl. B29c *25/00;* **B44d** *5/00*
U.S. Cl. 264—45 **9 Claims**



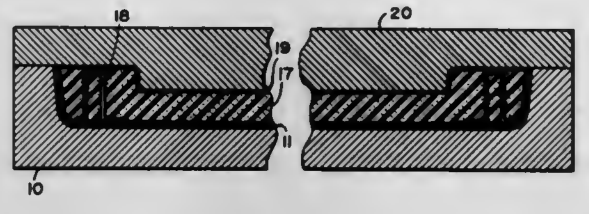
Containers of synthetic plastic material having an outwardly extending flange about at least a portion of their periphery have applied to the outer edge of the flange an organic compound which penetrates into the synthetic plastic material and which is caused to effect the synthetic plastic material so as to eliminate projecting portions for a smooth edge surface. Solvents and foaming agents may be used.

3,608,006
PRODUCTION OF FOAMED POLYOLEFIN COMPOSITE SHEET
Kirokuro Hosoda, Yokohama; Naonori Shiina, Tokyo; Hideyo Ueno, Tokyo; Junnosuke Sasajima, Yokohama; Junichi Yanase, Yokohama; Tetsuo Itoh, Funabashi, and Terutoshi Ohsumi, Matsudo, all of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan
Filed Sept. 25, 1967, Ser. No. 670,434
Claims priority, application Japan, Oct. 1, 1966, 41/64,703
Int. Cl. B29d *27/00*
U.S. Cl. 264—47 **17 Claims**


Mixing of polyolefin with cross-linking agent and blowing agent by means of for example a roll mill
At a temperature lower than the decomposition temperature of both the agents
Moulding the mixture into a sheet by a calender or an extruder
At a temperature lower than the decomposition temperature of both the agents
Bonding the sheet with a lining sheet by means of an adhesive
Bonding a polyolefin layer having no blowing agent on the sheet
Bonding a polyolefin layer having no blowing agent on the polyolefin surface of the composite sheet
Heating at a temperature higher than the decomposition temperatures of both the agents
Subjecting to an embossing roll
Foamed polyolefin composite sheet

Production of a foamed polyolefin composite sheet, which comprises milling the polyolefin with a cross-linking agent and a blowing agent homogeneously to obtain a composition, moulding the composition into a sheet, adhering the sheet with a lining such as cloth or paper by means of an adhesive to form a composite sheet and then heating the composite sheet at a temperature higher than the decomposition temperatures of the cross-linking agent and the blowing agent to form cross-linkage and foam and subjecting to embossing.

3,608,007
METHOD OF FORMING A RIGID PANEL BY CASTING POLYURETHANE IN A RESIN IMPREGNATED PAPER SHELL
Bror W. Henrikson, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Aug. 5, 1968, Ser. No. 750,310
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **2 Claims**



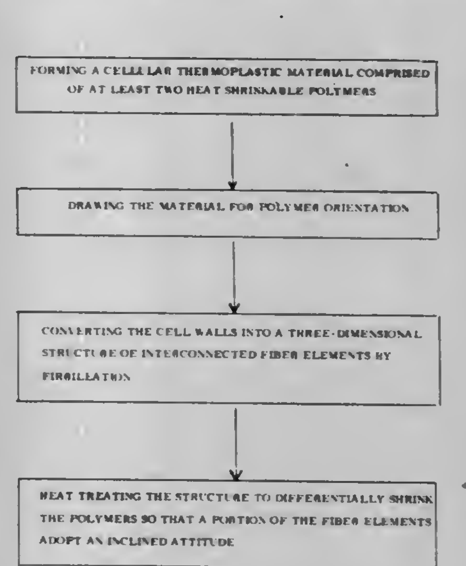
A rigid panel, such as a desk top, is formed by molding and curing phenol-formaldehyde resin-impregnated paper sheets in the form of a hollow shell having depending sidewalls and open on its lower side, filling the interior of the shell with a polyurethane foam body, and curing the foam body to form a rigid porous interior structure, together with a skin reinforcing the shell and closing the open side of the shell. If desired, a sheet may be secured over the open lower side of the shell and the skin of the foam material united with the sheet.

3,608,008
METHOD OF FORMING A SKINNED POLYURETHANE FOAM BY OVERFILLING A CLOSED PREHEATED MOLD
Victor G. Soukup, and Donald Dunn, both of Cincinnati, Ohio, assignors to Cincinnati Milacron, Cincinnati, Ohio
Filed Sept. 13, 1968, Ser. No. 759,765
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **6 Claims**

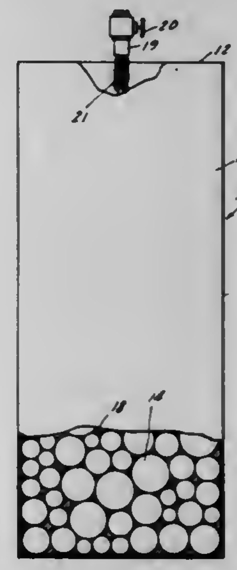
A process for the production of rigid polyurethane articles with a hard dense skin which comprises charging a mold with liquid polyurethane foam components in a amount equal to twice but not exceeding ten times the quantity which would be required to give the same volume as the mold cavity were the foam allowed to free blow, said mold having been preheated to a temperature of from 110° to 175° F. before charging; closing the mold; curing said foam while externally heating to at least maintain the preheat of the mold; and removing the article from the mold.

3,608,009
METHOD OF FRIBRILLATING A FOAMED EXTRUDATE COMPRISED OF TWO HEAT SHRINKABLE POLYMERS
Pushpkumar Dewanmal Changani, Newport, England, assignor to Monsanto Chemicals Limited, London, England
Filed Dec. 18, 1968, Ser. No. 784,722
Claims priority, application Great Britain, Dec. 21, 1967, 58,060/67
Int. Cl. B29d *27/00;* **D02g** *3/04*
U.S. Cl. 264—51 **1 Claim**

In a process for the production of a textured fiber assembly, which includes a three-dimensional structure of interconnected fiber elements; a foamed thermoplastic material comprising at least two different heat shrinkable polymers is drawn so that it becomes oriented essentially in one direction whereupon the walls of the drawn foamed material are converted into a three-dimensional structure of interconnecting fiber elements after which the structure is treated so that a portion of the fiber elements adopt an inclined attitude.


FORMING A CELLULAR THERMOPLASTIC MATERIAL COMPRISED OF AT LEAST TWO HEAT SHRINKABLE POLYMERS
DRAWING THE MATERIAL FOR POLYMER ORIENTATION
CONVERTING THE CELL WALLS INTO A THREE-DIMENSIONAL STRUCTURE OF INTERCONNECTED FIBER ELEMENTS BY FIBRILLATION
HEAT TREATING THE STRUCTURE TO DIFFERENTIALLY SHRINK THE POLYMERS SO THAT A PORTION OF THE FIBER ELEMENTS ADOPT AN INCLINED ATTITUDE

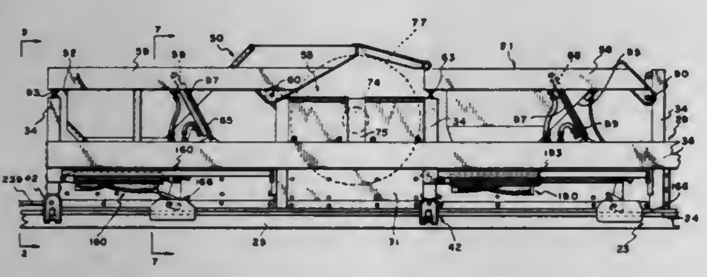
3,608,010
METHOD OF FORMING A LIGHTWEIGHT STRUCTURAL ASSEMBLY BY JOINING ACRYLIC RESIN BALLS WITH A POLYESTER OR EPOXY RESIN MATRIX
Vance Allen Stayner, Wauconda, Ill., assignor to Federal-Huber Co., Chicago, Ill.
Filed Jan. 24, 1968, Ser. No. 700,212
Int. Cl. B29d *27/00*
U.S. Cl. 264—51 **5 Claims**



Method of forming a lightweight structural assembly of high structural strength comprising, in combination, a hollow member, a filler therein of hollow plastic balls and a resinous matrix therefor of a resin selected from the group consisting of epoxy and polyester resins. The method of making the assembly uses the hollow member as the mold and effects the formation and curing of the matrix resin by the exothermic reaction between the resin-forming components, thereby liberating sufficient heat to cause the plastic balls to expand and subsequently upon cooling to exhibit a stressed state than increases the structural strength of the resulting assembly. The hollow member is preferably formed of a lightweight rigid material, such as aluminum, an aluminum or magnesium alloy, or a resin, and the balls are preferably formed with thin continuous spherical walls of a polymethylmethacrylate or polymethacrylate with diameters varying from one-half to 1¾ inches. The balls are coated with a tacky polyester or epoxy resin prior to charging the balls into the cavity to cause the balls to become attached to one another and relatively fixed in place prior to introducing the liquid resin matrix.

3,608,011
METHOD OF FORMING CONTINUOUS PRE-STRESSED CONCRETE SLABS

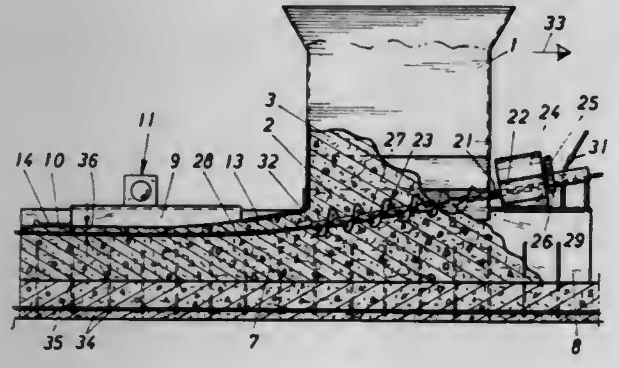
Cordis W. Jones, Englewood, Colo., assignor to Hastings Dynamold Corporation, Hastings, Nebr.
Division of Ser. No. 587,041, Oct. 17, 1966, Patent No. 3,475,800. Filed June 30, 1969, Ser. No. 851,523
Int. Cl. B28b *1/08, 1/16, 23/04*
U.S. Cl. 264—70 **2 Claims**



This disclosure relates to a method of producing hollow cored concrete slabs in a continuous operation from an initial concrete material having a slump test in the range of 0.5 to 4.0 per ASTM testing. More particularly, the method of the invention is a continuous one to produce the slabs wherein they are continuously formed, vibrated and trowelled, and wherein the concrete material is extruded to produce an elongated prestressed reinforced cored concrete slab.

3,608,012
METHOD FOR THE MANUFACTURE OF ELONGATED OBJECTS OF CONCRETE

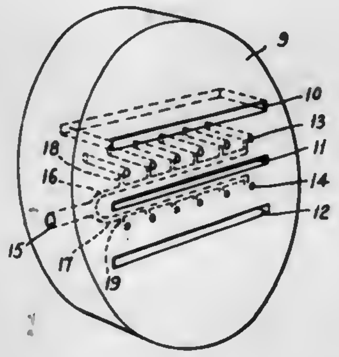
Per Olof Jonell, Goteborg, and Sven Melker Nilsson, Kallered, both of Sweden, assignors to Ingeniorsfirman Nilcon Aktiebolag, Kallered, Sweden
Filed June 19, 1968, Ser. No. 738,276
Claims priority, application Sweden, June 29, 1967, 9602/67
Int. Cl. B28b *1/08*
U.S. Cl. 264—70 **1 Claim**



The present invention relates to a method for the manufacture of concrete objects by means of a slidable moulding assembly by feeding a concrete mass down from a movable container onto a support bed and vibrating the concrete for the compression of the concrete. The invention eliminates any risk of fissures in the final object primarily by inserting a reenforcement rod into the mass along with some water through an axial bore in a sleeve guide on the container, after a majority of the compressing or compacting of the mass has occurred. A container-carried rotating screw is used for separating, by means of its threads, the concrete remaining in the container from the concrete in the object being formed.

3,608,013
OPTICALLY PATTERNED MATERIAL

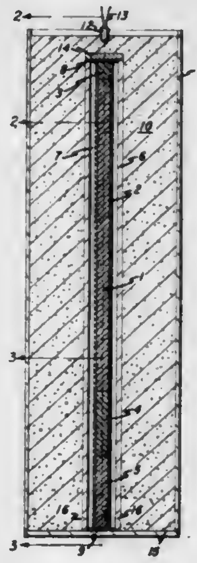
Raymond G. Ingham, Johnstown Near Wrexham, Wales, assignor to British Celanese Limited, London, England
Filed Oct. 8, 1968, Ser. No. 765,863
Claims priority, application Great Britain, Oct. 11, 1967, 46403/67
Int. Cl. B29c *9/00;* **B29f** *3/12*
U.S. Cl. 264—70 **7 Claims**



A method of making an optically patterned material comprising urging a molten translucent or transparent matrix polymer through a plurality of constrictions and intermittently injecting a visibly different molten polymer composition into at least some of the constrictions, thereby interrupting the flow of the matrix polymer composition therethrough, allowing the matrix polymer composition to purge the constrictions of the injected composition at the conclusion of each injection and combining and shaping the polymer composition streams emerging from the constrictions. Apparatus for making such optically patterned material is also described.

3,608,014
METHOD OF EXPLOSIVELY SHOCKING SOLID MATERIALS

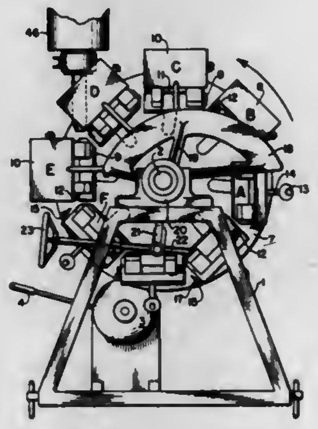
Anthony S. Balchan, and George R. Cowan, both of Woodbury, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 4, 1969, Ser. No. 804,230
Claims priority, application Great Britain, June 28, 1968, 31,117/68
Int. Cl. B22f *3/08*
U.S. Cl. 264—84 **8 Claims**



An improved method of explosively shocking solid materials, e.g., powders, powder compacts, or nonporous solids, which are in the form of a solid circular cylinder, and preferably contained within a circular metal cylinder, comprising positioning the solid cylinder coaxially within a hollow circular metal cylinder with a spacing between the facing surfaces of the cylinders; explosively propelling the hollow cylinder to cause progressive collision of the two cylinders; and separating the shocked solid, usually fragmentary or particulate, material from the metal cylinder(s) surrounding it after the collision.

3,608,015
PROCESS FOR THE PRODUCTION OF PLASTIC HOLLOW BODIES

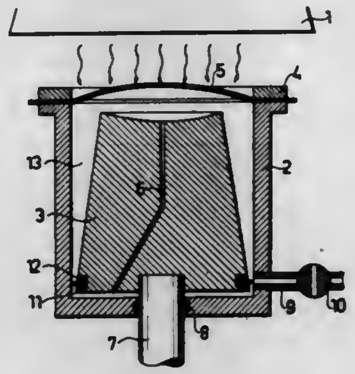
Nerio Martelli, Bologna, Italy, assignor to Ethyl Development Corporation
Division of Ser. No. 510,788, Dec. 21, 1969, Patent No. 3,473,192. Filed Mar. 21, 1969, Ser. No. 840,862
Int. Cl. B29c *17/07, 23/00*
U.S. Cl. 264—89 **2 Claims**



A process for the continuous production of hollow bodies from a softened tube of plastic material. A softened tube of plastic material is continuously extruded through the head of an extrusion machine and a part of successive sections of the tube is enclosed in a series of adjacent molds. The molds are moving at a spaced slightly greatly than the speed of extrusion and the remaining portion of each tube section is stretched while it lies between the extrusion head and one of the molds. The stretched portion of the tube is perforated for venting and the stretching causes elongation of the perforation which facilitates the venting. Suction is sequentially applied to each mold cavity to shape the enclosed tube portions against the molds and a cooling medium is circulated through the molds to cool the shaped tube sections.

3,608,016
METHOD OF FORMING AND PRODUCING PREFERABLY CUP-SHAPED HOLLOW BODIES BY DRAWING A MATERIAL CAPABLE OF BEING FORMED BY HEAT

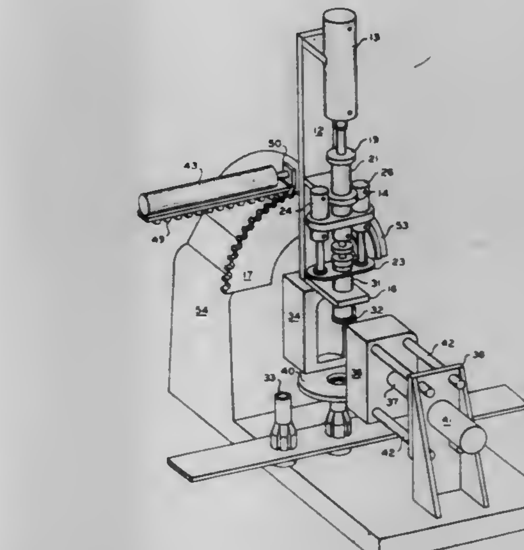
Sven Nils Hakan Holmstrom, Loberod, and Jan-Erik Olsen, Lund, both of Sweden, assignors to AB Tetra Pak, Lund, Sweden
Filed Jan. 27, 1969, Ser. No. 794,257
Claims priority, application Sweden, Feb. 7, 1968, 1611/68
Int. Cl. B29c *17/04, 17/10*
U.S. Cl. 264—89 **2 Claims**



Cup-shaped hollow bodies formed by clamping a sheet of thermoplastic material over a closed space having a mandrel therein and heating the sheet and then moving the mandrel against the heated sheet to deform same and form the hollow bodies. Provisions are made for making the walls of the body substantially uniform and for severing the hollow body from the unused sheet of material.

3,608,017
METHOD FOR PRODUCING A BLOWN ORIENTED CONTAINER WITH AN OPENING AT AN ANGLE WITH THE MAJOR AXIS OF THE CONTAINER

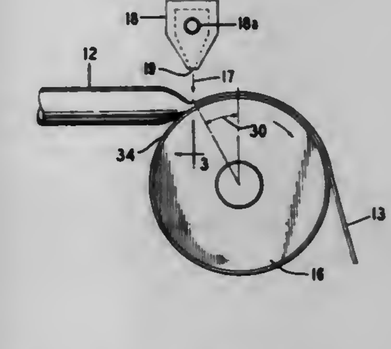
Martin R. Cines, Bartlesville, Okla., assignor to Phillip Petroleum Company
Filed June 19, 1967, Ser. No. 646,882
Int. Cl. B29c *17/07*
U.S. Cl. 264—89 **7 Claims**



A parison, after proper temperature conditioning is stretched by being grasped at both ends and moving the ends of the parison apart relative to one another. The bottom end of the parison is closed and the top end is grasped in a molding device. A small amount of air is introduced into the parison to partially inflate it. One clamping unit is moved at an angle from about 15° up to 90° relative to the other in one plane. The stretched parison is then in proper position between the mold halves which subsequently close. Full air pressure is then admitted to finish the forming of a biaxially oriented container having an opening at an angle from 15° to 90° with the principal axis of the container.

3,608,018
COLLAPSING INFLATED TUBING

William E. Henderson, Hinsdale, Ill., assignor to Union Carbide Corporation
Filed Apr. 18, 1968, Ser. No. 722,383
Int. Cl. B29d *7/20*
U.S. Cl. 264—89 **16 Claims**



An apparatus and method are provided for collapsing an extruded inflated tubular material so that damage to the tubular material upon collapse is minimized and substantially reduced.

3,608,019

METHOD AND APPARATUS FOR MANUFACTURING A BIAXIALLY ORIENTED CYLINDRICAL FILM BODY

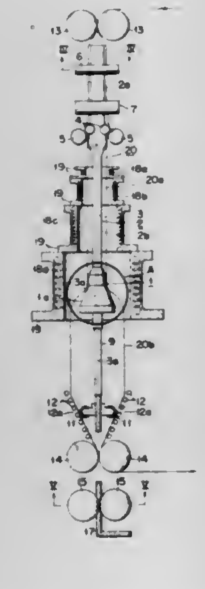
Wasuke Sato, Kawasaki; Osamu Uemura, Yokohama, and Akihiro Hashimoto, Yokohama, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Mar. 6, 1970, Ser. No. 17,156

Claims priority, application Japan, Mar. 8, 1969, 44/17370

Int. Cl. B29c *17/07, 23/00;* **B29d** *23/04*

U.S. Cl. 264—95 **4 Claims**



A method and apparatus for manufacturing a biaxially oriented cylindrical film body, which comprises providing a guide bar projecting above a mandrel to be inserted into a cylindrical film body, conducting said film body from the upper nip rollers positioned at the top of said guide bar down said guide bar to said mandrel and further to the lower nip rollers located below said mandrel with said guide bar and mandrel suspended by a plurality of pairs of rollers, whereby there is biaxially stretched said cylindrical film body by introducing compressed gas thereinto, while forming a thin layer of gas between the outer surface of said mandrel and the inner wall surface of said cylindrical film body.

3,608,020

METHOD FOR PREPARING LABELS OR PLATES IN A BLOW MOLDING PROCESS FROM THERMOPLASTIC ARTIFICIAL MATERIAL

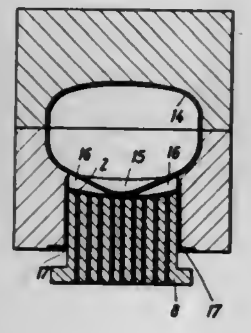
Erhard Langecker, Hohbuschner Weg, Meinerzhagen, Germany

Filed Oct. 15, 1968, Ser. No. 767,719

Claims priority, application Germany, Aug. 22, 1968, P 17 86 133.5

Int. Cl. B29c *1/14, 5/06, 27/14*

U.S. Cl. 264—98 **3 Claims**



A process for applying label and plates on hollow bodies of thermoplastic synthetic substances in which a blow mold has openings therein to guide a punch and is provided with grooves for ventilation purposes. The method includes the insertion of a thin foil into a blow mold and holding the foil in a curved position, corresponding to the curve of the hollow body and finally holding a punch during the blowing process and in a receding position in relation to the walls of the mold.

3,608,021

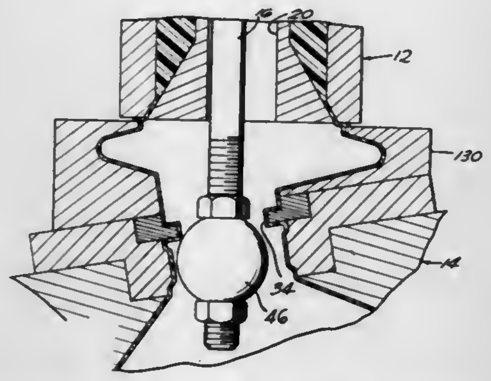
METHOD AND APPARATUS FOR BLOW MOLDING AND TRIMMING PLASTIC ARTICLES

William E. Ziegler, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed July 24, 1969, Ser. No. 844,490

Int. Cl. B29c *17/07*

U.S. Cl. 264—98 **12 Claims**



Blow molding apparatus for forming plastic bottles and jugs in a sectional mold and trimming the neck of the bottle or jug before opening the mold. An extruder head is provided for extruding a molten plastic tube around a blow pin having an enlarged head at its end. The blow pin is axially reciprocable and in its advanced position is located so that the enlarged head is within the cavity of the sectional mold when the latter is closed about the extruded tubing. The sectional mold has a circular shear edge for cooperating with the enlarged head portion when the blow pin is retracted from the closed mold for severing from the blown bottle or jug the portion of the molten plastic material exterior of the cavity. The enlarged head of the blow pin is a ball which is supported on the stem of the blow pin and the stem has flexible properties and is mounted so that the ball will pilot itself through the circular shear edge even though misaligned with the shear edge, thereby permitting the mold to be tilted, if desired, relative to the extrusion orifice so that optimum placement of the plastic material within the mold can be realized.

A method is disclosed comprising the steps of positioning a parison of molten plastic material about a ball, closing a sectional mold about the parison and ball, blowing the parison so that it conforms to the mold cavity, and removing the ball from the mold by a piloting action so that the ball in cooperation with the mold sections will trim the internal diameter of the opening in the blown article.

3,608,022

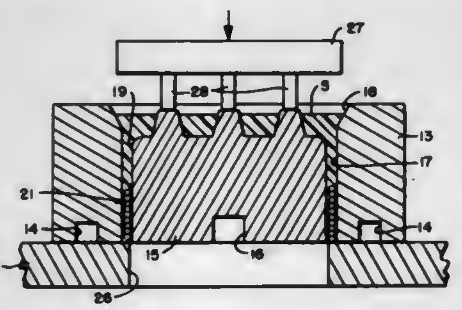
METHOD OF MOLDING ZERO DRAFT OBJECTS

Alan G. Wallskog, Prospect Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 21, 1968, Ser. No. 754,426

Int. Cl. B29c *7/00;* **B29d** *3/00*

U.S. Cl. 264—102 **1 Claim**



A method of making voice coils having no mold release taper comprising pouring a casting resin into a mold including a nontapered outer member and a nontapered inner member, dropping a preformed coil of conductive material through the resin, curing the resin, forcing the inner member out the bottom of the coil and forcing the coil out the top of the outer member.

3,608,023

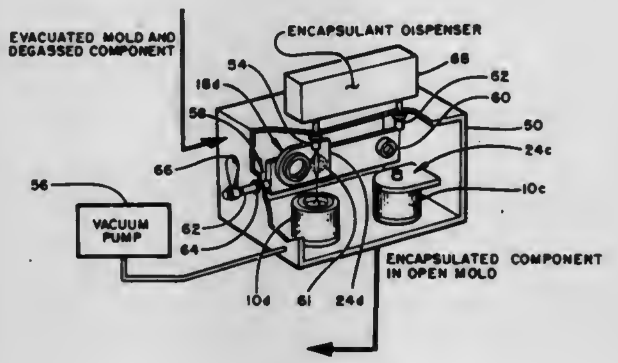
ENCAPSULATING METHOD

Donald D. Scarborough, Redington Shores, Fla., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 4, 1969, Ser. No. 855,230

Int. Cl. B29c *6/02*

U.S. Cl. 264—102 **1 Claim**


EVACUATED MOLD AND DEGASSED COMPONENT
ENCAPSULANT DISPENSER
54
18d
58
66
56
VACUUM PUMP
62
64
68
62
60
50
24c
10c
ENCAPSULATED COMPONENT IN OPEN MOLD
10d
61
24d

Method for encapsulating components utilizing individually evacuatable molds for receiving the components which may be separated and removed from the means evacuating the mold without loss of vacuum and positioned within an evacuated chamber where the molds may be opened and the component encapsulated under vacuum. The mold with encapsulated component may thereafter be subjected to atmospheric pressure and the encapsulant cured.

3,608,024

METHOD FOR PRODUCING CRIMPED CONJUGATED SPLIT FIBER

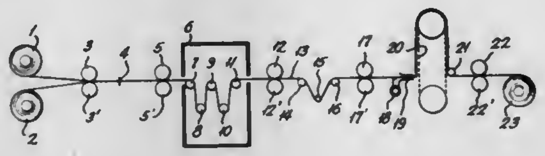
Masahide Yazawa; Yoshiaki Murono, and Kazuhiko Kurihara, all of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Itabashiku, Tokyo, Japan

Filed Feb. 7, 1968, Ser. No. 703,710

Claims priority, application Japan, Feb. 9, 1967, 42/8581

Int. Cl. B29d *7/24*

U.S. Cl. 264—103 **6 Claims**



Method for producing crimped conjugated split fibers which comprises stretching simultaneously two kinds of films or tapes having mutual affinity but different heat-induced shrinkage which are stretchable with approximately the same stretch ratio in piled state whereby said two kinds of films or tapes are mutually adhered to form an integrally conjugated stretched film, splitting the resultant integrally conjugated stretched film into conjugated split fibers having potential shrinkage and developing crimps upon the goods made of said split fibers by heating under tensionless state.

3,608,025

SLITTING TO FORM FILAMENTS

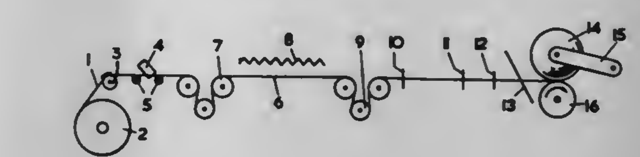
Alexander Mirsky, 12, Montagu Mansions, York St., London, W.1., England

Filed Sept. 4, 1968, Ser. No. 757,446

Claims priority, application Great Britain, Sept. 5, 1967, 40538/67

Int. Cl. B29c *17/02, 17/14*

U.S. Cl. 264—103 **10 Claims**



Producing filaments by drawing plastic film laterally, slitting the film into filaments and drawing the filaments longitudinally.

3,608,026

METHOD OF MANUFACTURING RODS OR TUBES FROM POWDER

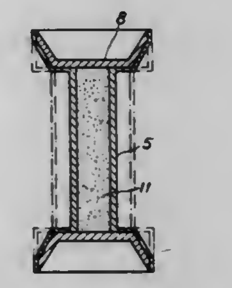
Sven-Erik Isaksson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska, Aktiebolaget, Vasteras, Sweden

Filed Apr. 17, 1969, Ser. No. 816,977

Claims priority, application Sweden, May 2, 1968, 5908/68

Int. Cl. B29j *5/10*

U.S. Cl. 264—109 **2 Claims**



In hydrostatic compression of powder, the powder is enclosed in a capsule of yielding material having an opening therein. Adjacent the opening there is a portion of enlarged cross section connected to the adjacent portion of the main body of a capsule by a transverse member which is a plane substantially perpendicular to the axis of the opening. The opening is closed by a lid having a main body portion overlying the opening and sloping walls, the upper end of the lid being of substantially the same cross section as the enlarged part of the capsule. Upon subjecting the capsule filled with powder to hydrostatic compression, the powder and the main body are compressed while the wall of the enlarged section is pressed inwardly against the sloping wall of the lid.

3,608,027

METHOD OF MANUFACTURING DISPERSION STRENGTHENED LEAD

Alan Williams, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 29, 1969, Ser. No. 845,916

Claims priority, application Great Britain, Aug. 9, 1968, 38063/68

Int. Cl. B22f *3/18*

U.S. Cl. 264—111 **1 Claim**

A sheet of dispersion strengthened lead is made by rolling powder between rollers in known manner. The invention resides in the choice of parameters to give optimum results. The powder size has a maximum value of 250 microns with a mean between 50 and 80 microns, and not more than 10 percent of the powder by volume has a particle size below 10 microns.

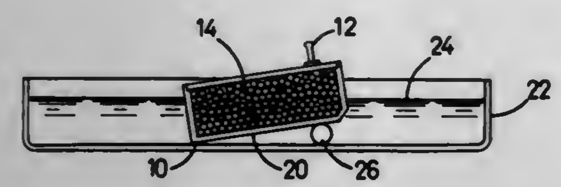
3,608,028
METHOD OF MAKING SINTERED AND COMPRISED THERMOPLASTIC PEARLS

Andre Paymal, Clermont, France, assignor to Compagnie de Saint-Gobain, Neuilly sur Seine, France
Filed Oct. 31, 1967, Ser. No. 679,412
Claims priority, application France, Nov. 3, 1966, 82,331
Int. Cl. B32b *5/28;* **B29d** *27/08*
U.S. Cl. 264—112 **6 Claims**

Strong structural materials of good insulating and fireproofing value are made from compressed polystyrene pearls and interstitial, hardened cementitious material.

3,608,029
PROCESS FOR ENCAPSULATING ELECTRONIC COMPONENTS

Arthur Joseph Hough, Shelton, Conn., assignor to Vitramon Incorporated, Monroe, Conn.
Filed Mar. 12, 1969, Ser. No. 806,744
Int. Cl. B29C *6/02*
U.S. Cl. 264—112 **2 Claims**



The present invention relates to a process for encapsulating electronic components in protective casings. More particularly, the component is placed in the case and the space between the walls of the case and the component filled with mineral beads having a thermal coefficient of expansion approximating that of the component. Holes are then drilled in two sides of the case and the case is placed in a container of liquid epoxy. Capillary attraction forces the epoxy in through one set of holes in the case, driving air out through the other set. After the case is filled with epoxy and devoid of air, it can be baked to harden the epoxy.

3,608,030
METHOD OF PREPARING A TABLET DOSAGE-FORM FOR THE IMMUNIZATION OF THE INTESTINAL TRACT WITH LIVE VIRUS PREPARATIONS

Howard Tint, 1731 Tyson Road, Havertown, Pa.
Continuation of application Ser. No. 567,247, Aug. 31, 1966, now Patent No. 3,458,621. This application May 21, 1969, Ser. No. 826,670
Int. Cl. A61k *9/00, 27/00*
U.S. Cl. 264—113 **1 Claim**

A process for preparing an oral dosage-form suitable for the immunization of the intestinal tract with live virus preparations, which process comprises mixing live virus with a pharmaceutically acceptable excipient, compressing the resulting mixture into a coherent tablet, thereafter compressing a pharmaceutically acceptable excipient about the previously formed tablet in an encasing layer to form a coherent shell having a wall thickness of at least 0.03 inches, and finally completing covering the resulting composite tablet with an enteric coating. The oral dosage-form provided by the method assures the avoidance of undesirable release of live virus in the buccal cavity or the upper intestinal tract, which may result in direct infection in the upper respiratory areas.

ERRATUM

For Class 264—119 see:
Patent No. 3,607,500

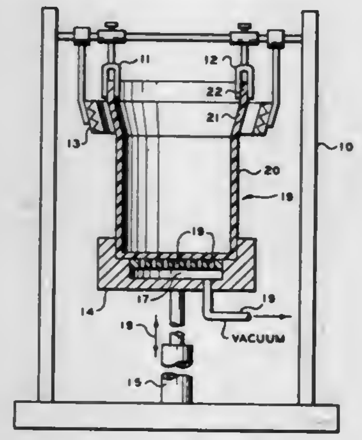
3,608,031
PRODUCTION OF EXPANDED OLEFIN POLYMER MOLDINGS

Fritz Stastny, 3 Ottweilerstrasse, Ludwigshafen, (Rhine); Rudolf Gaeth, 10 Weinbietstrasse, Limburgerhof, Pfalz; Hans-Georg Trieschmann, 23 Birkenweg, Hambach, Weinstrasse, and Johann Zizlsperger, 22 Carl-Bosch-Ring, Frankenthal, Pfalz, all of Germany
Filed May 19, 1967, Ser. No. 639,656
Claims priority, application Germany, May 27, 1966, P 16 69 648.3
Int. Cl. B29g *7/02;* **C08f** *47/08;* **C08g** *22/44*
U.S. Cl. 264—126 **4 Claims**

Production of moldings of expanded olefin polymers by mixing expanded particles of ethylene or propylene polymers with at least 0.3 gram/liter of said expanded particles of curable binders which contain less than 5 percent solvent based on the amount of binder, compressing the mixture by 5 percent to 70 percent of the bulk volume and curing the compressed mixture under pressure.

3,608,032
METHOD FOR MAKING A FLEXIBLE CONTAINER PORTION

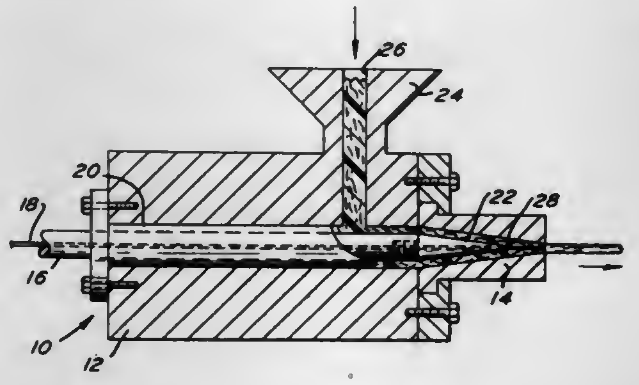
Harold D. Boultinghouse, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Mar. 27, 1969, Ser. No. 810,964
Int. Cl. B29c *17/03;* **B29d** *23/13*
U.S. Cl. 264—138 **7 Claims**



A method for forming an integral flexible closure for a container, said method comprising the steps of heating an upper cross-sectional portion of said container, stretching said heated portion to form a film, and permitting the stretched portion to cool.

3,608,033
PROCESS FOR PRODUCTION OF MOLDING COMPOSITIONS CONTAINING HIGH WEIGHT PERCENTAGE OF GLASS

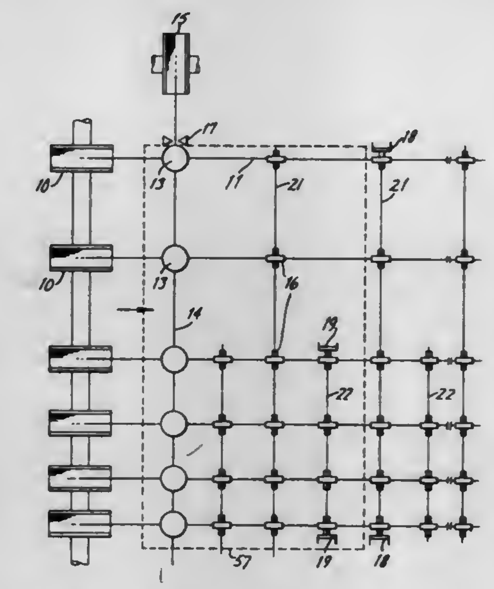
Norman T. Hall, Phoenixville, Pa., assignor to Liquid Nitrogen Processing Corporation, Malvern, Pa.
Filed June 17, 1969, Ser. No. 833,983
Int. Cl. B29c *17/14*
U.S. Cl. 264—141 **3 Claims**



Process for production of molding compositions containing high weight percentage of glass comprising feeding an extruded mixture of glass fibers and molten thermoplastic resin to a crosshead die, coating continuous glass roving with said mixture in said crosshead die, solidifying said molten thermoplastic while said thermoplastic is coated on said roving, and pelletizing the same into pellets containing between about 61 to 90 weight percent glass. The molding composition is in the form of such pellets which generally comprise right cylinders having a diameter of between three thirty-seconds and one-fourth inch and a height of between one-eighth to one-half inch.

3,608,034
PRODUCTION OF NETTING

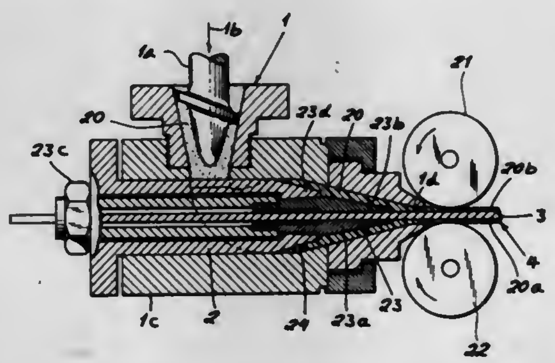
Anthony Bramley, Gosford, Kidlington, Oxford, and John F. Gilbert, Chalford, both of England, assignor to said Bramley by said Gilbert
Division of Ser. No. 458,591, May 25, 1965, Patent No. 3,501,366. Filed Nov. 24, 1969, Ser. No. 879,424. Claims priority, application Great Britain, May 29, 1964, 22379/64
Int. Cl. B29d *3/00;* **B29h** *9/00;* **D01d** *5/20*
U.S. Cl. 264—145 **3 Claims**



A method for producing netting is disclosed wherein a first plurality of flexible threads of plastic material are positioned in spaced parallel relationship. A second plurality of spaced, parallel and flexible threads extend transversely across the first threads. A plurality of small masses of plastic material are individually molded about the intersections of the two pluralities of threads and welded to the plastic material of each thread. Portions of some of the longitudinal threads are preferably electrically conductive and have exposed conductive surfaces to permit the netting to be used for electrified fencing.

3,608,035
METHOD OF MAKING SLIDE FASTENERS

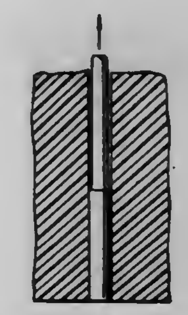
Alfons Frohlich, Essen, Germany, assignor to Firma Opti-Holding AG., Glarus, Switzerland
Division of Ser. No. 620,972, Mar. 6, 1967, Patent No. 3,490,098. Filed Aug. 1, 1969, Ser. No. 846,882
Int. Cl. B28b *11/16;* **B29d** *5/00;* **B29f** *3/10*
U.S. Cl. 264—146 **10 Claims**



Method of making slide-fastener coupling elements wherein a flat (metallic or Teflon) die strip, having laterally open cutouts along its longitudinal edges with a spacing corresponding to the spacing of the heads of the coupling element and corresponding configuration, is passed through an extruder and continuously encased in a synthetic resin which, when hardened is cut away along at least one broad surface of the die strip to release the latter. The die strip has laterally extending projections; a cruciform section, and may be used in pairs to form rows of coupling members on opposite sides of a web onto which the coupling elements are molded. Formations prevent lateral transverse dislocation of the coupling elements when they are interconnected by a slider, e.g. a pair of strips flanking the female coupling members, a central rib flanked by the head of the mating coupling member, or ridges formed in one of the coupling elements and fitting into the complementary part of the mating slide-fastener element. Apparatus for making the slide fastener including means for returning the die strip to the extrusion head, a worm type plastifying means for supplying the synthetic resin and endless bands for masking the fabric as it is advanced through the extrusion die.

3,608,036
MAKING PLASTIC SPINNERETTES

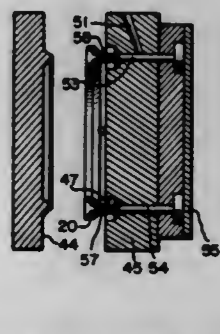
James Bruce Peeso, Jr., Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed June 16, 1969, Ser. No. 833,564
Int. Cl. B29c *17/02, 17/10*
U.S. Cl. 264—158 **3 Claims**



Spinnerettes are formed by casting and hardening plastic resin around an array of attenuable fibers, leaving one end of the fibers outside the casting. The fibers are thereafter extracted by applying a tensile force to their free ends to stretch the fibers and thus attenuate their cross-sectional dimensions. This causes the surfaces of the fibers to pull away from the cast resin and leave channels through the resin exactly conforming to the cross-sectional configuration of the fibers. Using this process spinnerettes can be formed as easily with precise noncircular holes as with circular holes.

3,608,037
METHOD FOR MAKING BEARING AND SEALING MEANS OR THE LIKE

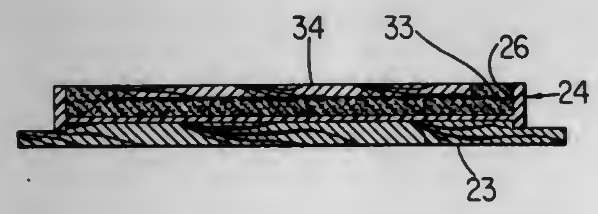
Orville F. Genz, Elmwood Park, Ill., assignor to Hydro Component Research and Development Co., Chicago, Ill.
Division of Ser. No. 643,236, June 2, 1967, Pat. No. 3,519,280. Filed July 23, 1969, Ser. No. 844,006
Int. Cl. B29f *1/14;* **B29d** *3/02*
U.S. Cl. 264—161 **1 Claim**



A method is disclosed for making an annular sealing ring utilizing a two section mold mating along noncritical surface portions of the ring and having knockout pins projecting through complementary channels to communicate with the mold cavity for ejecting the molded ring on disassembly of the mold. A thermoplastic material is injected into the mold through gate means leading to at least one of the channels. When the material has solidified, the mold is disassembled by actuating the knockout pins to eject the molded member and shear the thermoplastic material communicating with the channel through the gate means. The portion of the molded part formed by the extension of the material into the complementary channels is then broken away leaving the completed part.

3,608,038
METHOD OF MAKING A PRECAST DECORATIVE PANEL

Frank R. Smith, 3461 Lansdowne Drive, Lexington, Ky.
Division of Ser. No. 842,806, July 7, 1967, which is a continuation of application Ser. No. 711,147, Feb. 16, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 455,831, May 14, 1965, now abandoned. Feb. 19, 1970, Ser. No. 12,671
Int. Cl. B29d *3/02*
U.S. Cl. 264—162 **22 Claims**



A precast decorative panel is formed by filling a flexible mold to a selected level with an unset thermosetting resin and aggregates. After a nonrigid member, which is smaller than the receptacle, is placed on top of the mixture of resin and aggregates, a filler mold, which is smaller than the receptacle and substantially the same configuration so as to form a substantially uniform space therebetween, is disposed within the receptacle. This uniform space is filled with aggregates and an unset thermosetting resin. After the unset resin is partially cured to a soft gel, the filler mold is removed. Then, the partially cured resin is separated from the mold. This produces a panel having a textured top surface and a bottom surface with a drop edge extending therefrom along the entire periphery of the body of the panel.

3,608,039
PROCESS FOR THE HYDROGENATION OF AN OLEAGINOUS MATERIAL

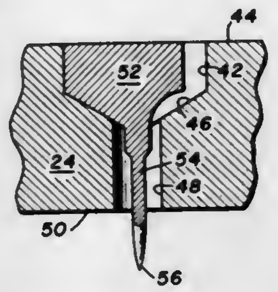
Philip N. Ross, Jr., and James B. Edwards, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio
Filed Oct. 15, 1968, Ser. No. 767,855
Int. Cl. B01k *1/00*
U.S. Cl. 204—167 **8 Claims**

A process for the catalytic hydrogenation of an unsaturated oleaginous material using a suspended particulate catalyst and an alternating current electric field to promote the hydrogenation is disclosed. A product of the process is useful as a salad oil.

3,608,040
SPINNERET WITH STREAM GUIDE

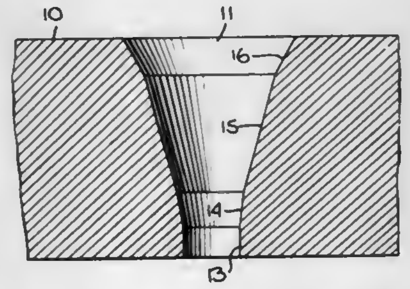
John M. Green, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Feb. 10, 1969, Ser. No. 797,933
Int. Cl. B28h *21/54;* **B29f** *3/00;* **D01d** *3/00*
U.S. Cl. 264—176 **6 Claims**

A stream guide finger is mounted coaxially within a spinneret capillary and extends downwardly beyond the capillary discharge opening, reducing the tendency of the molten stream to flick, bend or drip.



3,608,041
SPINNING PROCESS

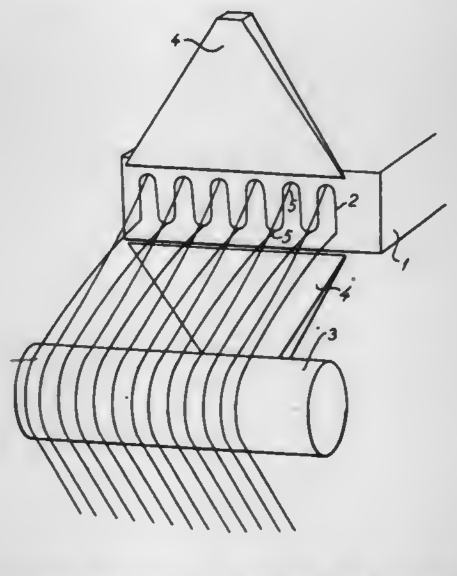
Joseph Germano Santangelo, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.
Division of Ser. No. 750,839, Aug. 7, 1968, abandoned, which is a continuation-in-part of application Ser. No. 336,683, Jan. 3, 1968, now Patent No. 3,537,135. Filed Dec. 17, 1969, Ser. No. 885,996
Int. Cl. B28b *3/20;* **D01f** *3/26*
U.S. Cl. 264—176 **11 Claims**



A method of spinning fiber-forming material comprising forming three frustoconical portions, each having an apex angle larger than the foregoing section, and including a cylindrical portion downstream, the frustoconical portions being divergent to the upstream end thereof, said method permitting the production of lower denier material at a lower drawdown with superior mechanical properties and being characterized by ease of mechanical production to minimize jet deposits and prolong jet life.

3,608,042
PROCESS FOR PRODUCING A FILM OF SPLITFIBRE FORMING POLYMERIC MATERIAL

Ole-Bendt Rasmussen, Topstykket 7, 3460 Birkerod, Denmark
Filed May 29, 1968, Ser. No. 733,033
Claims priority, application Great Britain, May 30, 1967, 24837/68
Int. Cl. B29d *7/24;* **B29h** *7/18;* **D01d** *5/24*
U.S. Cl. 264—177 R **8 Claims**



Splitfibre forming polymeric material is extruded through a pleated slot and is then drawn down into flat form while in substantially molten condition so as to produce transverse compression during longitudinal stretching.

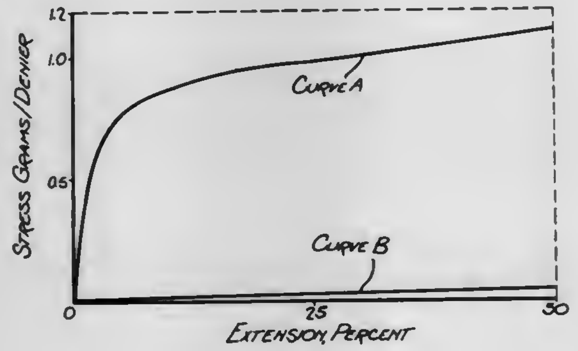
3,608,043
METHOD OF REGENERATING SPINNING BATHS

Cesare Renl, and Luigi Lugo, both of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy
Filed Dec. 16, 1968, Ser. No. 784,170
Claims priority, application Italy, Dec. 20, 1967, 24188-A/67
Int. Cl. B29h *19/00*
U.S. Cl. 264—179 **11 Claims**

Cumene/dimethylformamide/paraffin spinning baths used in the preparation of acrylonitrile copolymer thread are regenerated by (i) admixture with the largely paraffin liquid from the drawing bath (ii) water separation of a fraction of the mixture to give an aqueous dimethylformamide layer and a cumene/paraffin layer and (iii) fractionation of the layers and recombination of the components with a nonseparated fraction of the mixture to give the desired spinning bath composition. The paraffins and dimethylformamide not required are recycled to the drawing bath and preparation of the acrylonitrile spinning solution, respectively.

3,608,044
PROCESS FOR MELT SPINNING POLYOXYMETHYLENE FILAMENTS HAVING ELASTIC RECOVERY

Myron J. Coplan, Dedham; Howard I. Freeman, Sharon, and Joseph S. Panto, Dedham, all of Mass., assignors to Celanese Corporatisn, New York, N.Y.
Continuation-in-part of application Ser. No. 341,725, Jan. 31, 1964, now abandoned. This application Jan. 28, 1969, Ser. No. 816,136
Int. Cl. D01d *5/12;* **D01f** *3/10*
U.S. Cl. 264—210 **4 Claims**



A process for producing filamentary material of an oxymethylene polymer having an elastic recovery at 70° F. of at least about 70 percent when subjected to a strain of up to 50 percent.

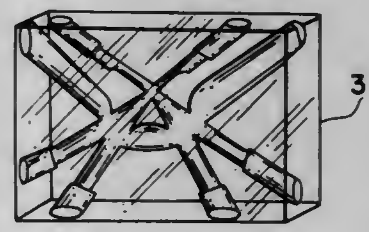
3,608,045
MANUFACTURE OF MORE DYEABLE REGENERATED CELLULOSE FILAMENTS

Bryan A. Toms, Leamington Spa, England, assignor to Courtaulds Limited, London, England
Filed Dec. 11, 1968, Ser. No. 783,098
Claims priority, application Great Britain, Dec. 13, 1967, 56592/67
Int. Cl. D01f *3/12*
U.S. Cl. 264—194 **7 Claims**

Regenerated cellulose filaments of enhanced dyeability made by extruding and regenerating a viscose mixed with an aqueous solution of an aminoethyl cellulose containing at least 2 percent nitrogen.

3,608,046
TECHNIQUE OF DUPLICATING FRAGILE CORE

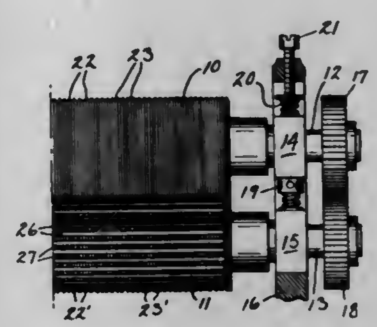
Albert R. Philips, and Richard F. Hellbaum, both of Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 30, 1968, Ser. No. 763,684
Int. Cl. B29c *1/02, 1/06, 1/08*
U.S. Cl. 264—221 **3 Claims**



A method of fabricating individual and complete fluid circuit components by the construction of temporary one-shot disposable dies which are used to produce the fragile core or pattern.

3,608,047
METHOD OF MANUFACTURING EMBOSSED PAPER PRODUCTS

Robert B. Wiggins, Green Bay, Wis., assignor to Fort Howard Paper Company
Division of Ser. No. 622,993, Mar. 3, 1967, Pat. No. 3,418,925. Filed Mar. 8, 1968, Ser. No. 711,676
Int. Cl. B29d *7/14*
U.S. Cl. 264—286 **2 Claims**

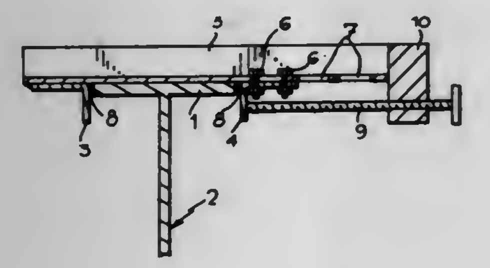


A method for continuously embossing a pattern in a paper web. A pair of parallel rollers having a nip therebetween provided. The rollers are biased together while the web is between the rollers. Circumferentially alternating strips having an embossing pattern and axial relief grooves at least coextensive in length with the width of the paper web are provided in the outer periphery of one of the rollers. An interengaging embossing pattern is provided in the other roller. The biasing pressure is intermittently relieved between the rotating rollers when the axial grooves are rotated to a position at the nip between the rollers thereby causing the rollers to jump together by the biasing pressure. The impact of the movement is absorbed by the paper web to set the pattern in the paper web.

3,608,048
METHOD FOR MANUFACTURING A PREBENT GIRDER EMBEDDED IN CONCRETE

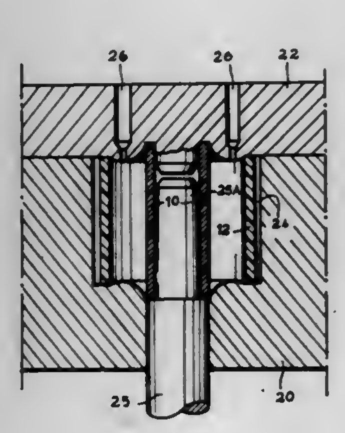
Abraham Lipski, Uccle, Belgium, assignor to Procedes Nouveaux De Construction, "Preflex" Societe Anonyme, Saint-Gilles, Belgium
Filed Aug. 11, 1969, Ser. No. 848,791
Claims priority, application Belgium, Aug. 19, 1968, 62,396
Int. Cl. B28b *23/06*
U.S. Cl. 264—228 **3 Claims**

Method for manufacturing a prebent girder embedded in concrete wherein the rigid metal joist of said girder is prebent, the joist is maintained prebent and the tension flange of said joist is embedded in a mass of concrete. Before the prebending, a rigid metal structure, constituted essentially, on the one hand, by longitudinal elements arranged against the edges of said compressed flange and, on the other hand, by transverse connection elements, is temporarily applied to the compressed flange of the joist, said structure acting to avoid lateral buckling of the compressed flange.



3,608,049
PROCESS FOR MANUFACTURING A RESILIENT MOUNTING ELEMENT

Corrado Tavella, Milan, Italy, assignor to Societa Applicazioni Gomma Antivibranti "Saga" S.p.A., Milan, Italy
Filed July 24, 1968, Ser. No. 747,325
Claims priority, application Italy, Sept. 29, 1967, 21,055-A/67
Int. Cl. B23p *11/02, 19/02;* **B29c** *25/00;* **B29h** *9/11;* **F16f** *1/38*
U.S. Cl. 264—229 **2 Claims**

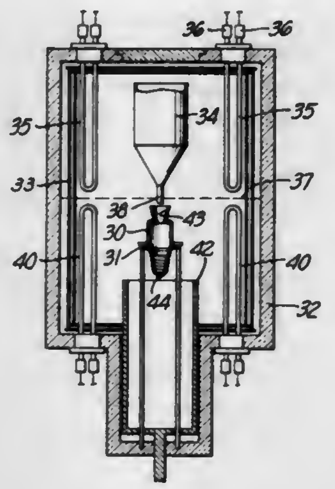


A method for manufacturing a resilient mounting element having a vulcanized rubber sleeve interposed between two cylindrical bushings. Inner and outer cylindrical bushings are coaxially positioned within a cylindrical mold cavity. The outer bushing is made of a resilient plastic having a relatively high tensile strength and modulus of elasticity and has a diameter somewhat smaller than the diameter of the mold cavity. Rubber is injected under pressure between the bushings to cause a controlled resilient increase in the diameter of the outer bushing to force the outer bushing against the mold cavity wall. The injection pressure is maintained while the rubber is vulcanized and the pressure is then released. The outer bushing then resiliently returns toward its original diameter, thereby compensating in part for the shrinking strains in the rubber.

3,608,050
PRODUCTION OF SINGLE CRYSTAL SAPPHIRE BY CAREFULLY CONTROLLED COOLING FROM A MELT OF ALUMINA

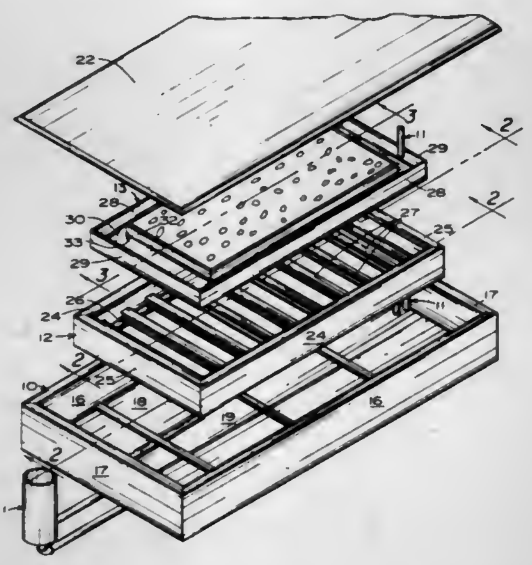
Justice N. Carman, Tarzana, and Herman G. McKnight, Northridge, both of Calif., assignors to Union Carbide Corporation
Filed Sept. 12, 1969, Ser. No. 864,270
Int. Cl. C04b *35/10, 35/60*
U.S. Cl. 264—332 **20 Claims**

A charge of alumina is placed in a mold and heated in a vacuum or an inert gas atmosphere to melt the charge. The melt is then cooled in a generally upward direction to solidify and crystallize the melt at a rate that the generally vertical, downward temperature gradient in the crystallizing zone is less than 25° C. per millimeter. After all of the melt has crystallized the single crystal is uniformly cooled and removed from the mold. Special methods of making the mold and removing the mold are also disclosed.



3,608,051
WAX MOLD CASTING OF CONCRETE

Ralph K. Scott, Kennewick, Wash., assignor to Columbia Fabricators, Inc., Kennewick, Wash.
Filed Mar. 7, 1969, Ser. No. 805,178
Int. Cl. B28b *23/00*
U.S. Cl. 264—261 **6 Claims**

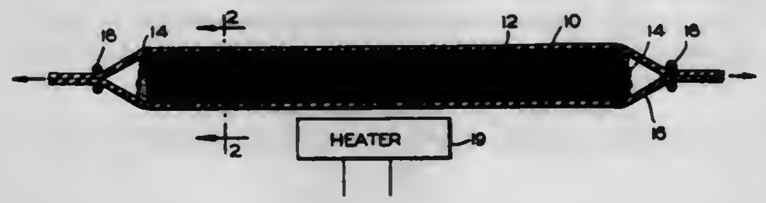


A process to cast at least part of the peripheral surface of a concrete structural element against a wax mold which may also serve as a matrix to position form or surface elements to be embedded in the concrete. The initial mold is established from liquid wax, the wax allowed to set, and the mold removed from the cast formed after setting of the concrete by hot water or steam which also serves to cure the concrete. The process allows simple mold formation for and removal from complex concrete structural forms, especially those having embedded surface elements and undercut surfaces. Apparatus is disclosed to conveniently carry out the process.

3,608,052
METHOD FOR FABRICATING FIBER REINFORCED ARTICLES

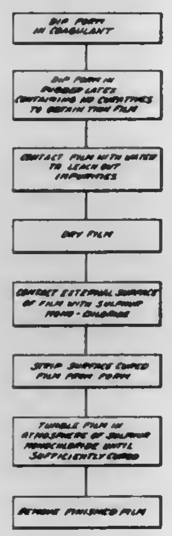
Kenneth M. Gunn, Chesterfield, Va., assignor to Texaco, Inc., New York, N.Y.
Continuation of application Ser. No. 660,781, Aug. 15, 1969, now abandoned. This application Feb. 12, 1970, Ser. No. 10,064
Int. Cl. B29c *15/00;* **B29d** *3/02;* **B29g** *7/00*
U.S. Cl. 264—295 **8 Claims**

A method for fabricating fiber reinforced articles. A plurality of elongated fibers are formed into a bundle and impregnated with a resin matrix material. The impregnated bundle is encapsulated in a resilient tube and longitudinal tension is applied to the tube to align and consolidate the fibers in the bundle while the resin cures, after which the tube is removed from the bundle.



3,608,053
CURED LATEX ARTICLE AND METHOD OF MAKING SAME

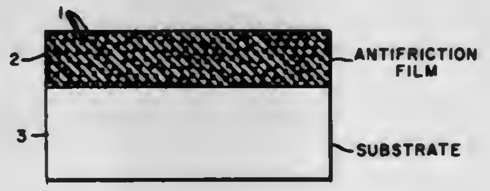
Armand J. Agostinelli, East Haven, Conn., assignor to Dart Industries, Inc., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 720,853, Apr. 12, 1968, now abandoned. This application Oct. 30, 1969, Ser. No. 872,659
Int. Cl. B29h *3/04*
U.S. Cl. 264—306 **7 Claims**


DIP FORM IN COAGULANT
DIP FORM IN RUBBER LATEX CONTAINING NO CURATIVES TO OBTAIN THIN FILM
CONTACT FILM WITH WATER TO LEACH OUT IMPURITIES
DRY FILM
CONTACT EXTERNAL SURFACE OF FILM WITH SULFUR MONO-CHLORIDE
STRIP SURFACE CURED FILM FROM FORM
TUMBLE FILM IN ATMOSPHERE OF SULFUR MONOCHLORIDE UNTIL SUFFICIENTLY CURED
REMOVE FINISHED FILM

A method for making rubber latex articles such as surgeon's gloves which are hyperallergenic and which permit improved epidermal perception through the article. The method comprises curing the inside and outside surfaces of a coagulated latex film by contacting the surfaces with sulfur monochloride until the film is cured sufficiently so the film will recover its original shape when the film is stretched and released.

3,608,054
CAST LUBRICATING FILMS AND COMPOSITES THEREOF

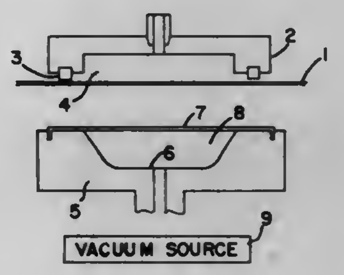
William M. Alvino, Penn Hills, Pittsburgh, and James H. Freeman, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 29, 1968, Ser. No. 724,728
Int. Cl. B44d *1/36, 5/08*
U.S. Cl. 264—309 **6 Claims**



An antifriction high temperature composite is formed of a metal or other support or substrate and a cast thin lubricating film. The thin film has a plastic matrix containing a multiplicity of dispersed small discrete solid lubricant filler particles. The plastic is either an aromatic polyamide-imide or an aromatic polyimide and the filler is a finely divided solid lubricant such as MoS_2.

3,608,055
METHOD OF SHAPING PLASTIC SHEET MATERIAL

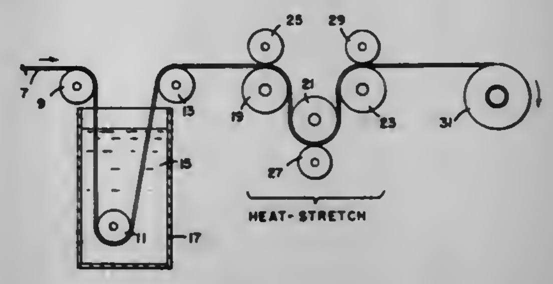
Florren E. Long, LaGrange, Ill., assignor to Continental Can Company Inc., New York, N.Y.
Filed Dec. 9, 1968, Ser. No. 782,046
Int. Cl. B29c *1/04, 7/00, 17/04*
U.S. Cl. 264—316 **5 Claims**



A method of drawing a formable material by vacuum drawing in which a flexible diaphragm is placed below and next to the formable sheet material. A vacuum is applied to the underside of the flexible diaphragm to draw it and the formable sheet into a female die. The formed sheet is then withdrawn from contact with the diaphragm.

3,608,056
STEAM RETICULATION OF FOAMED PLASTIC SHEETING

Dorsey C. Nelson, Springfield, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Jan. 29, 1969, Ser. No. 795,125
Int. Cl. B29d *7/22, 7/24, 27/00*
U.S. Cl. 264—321 **10 Claims**



Reticulation of foamed or cellular materials by applying water onto such material, converting the water to steam and confining the steam to passage through the material whereby membranous portions of the material are ruptured under the pressure created as the water expands during its conversion into steam.

3,608,057
PROCESS FOR MAKING CONTACT LENSES

Harris J. Bixler, Lexington, and Mary Ann Kendrick, Cambridge, both of Mass., assignors to Amicon Corporation, Lexington, Mass.
Filed Oct. 3, 1967, Ser. No. 672,467
Int. Cl. B29b *3/00;* **B29c** *25/00;* **C08f** *45/34, 45/36, 45/44, 45/46*
U.S. Cl. 264—322 **4 Claims**

A process for making an article, and the articles formed thereby from an ionically cross-linked polymer; said process comprising the essential steps of forming a composition comprising a said polymer and a nonvolatile organic plasticizer therefor, forming said article by molding and/or machining steps, leaching said plasticizer from the formed article, and replacing it with water or an aqueous solution. The process is particularly useful in the manufacture of a novel contact lens because it results in articles of unexpectedly good color characteristics and a high water content which had never before been achieved.

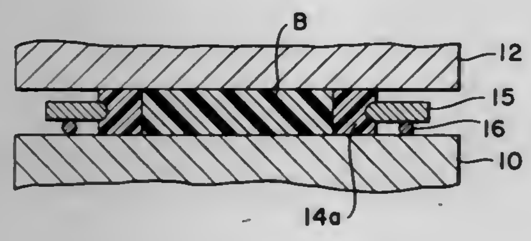
3,608,058
METHOD FOR MANUFACTURE OF VOID-FREE AND WARP-FREE SLAB STOCK

Paul M. Coffman, Cherry Hill, N.J., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of application Ser. No. 633,673, Apr. 19, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 524,743, Feb. 3, 1966, now abandoned. This application Sept. 11, 1969, Ser. No. 857,176

Int. Cl. B29c *1/02*

U.S. Cl. 264—313 **4 Claims**



Void-free slabs or billets of thermoplastic polymer are produced by cooling polymer melt in a mold under pressure while keeping part of the melt in contact with a heat-insulating deformable surface of the mold cavity.

3,608,059
HEAT-RELAXING CELLULOSE TRIACETATE FILM SLOWLY THROUGH THE RANGE 180° C.–220° C.

Billy R. Dotson; Marilyn A. Twomey, and Robert F. Williams, Jr., all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1970, Ser. No. 440

Int. Cl. B29c *25/00*

U.S. Cl. 264—345 **3 Claims**

It has been found that highly crystallized cellulose triacetate films or sheets having improved dimensional stability at temperatures as high as 240°–250° C. can be manufactured by very slowly raising the temperature of the films or sheets through the temperature region of from about 180° C. to about 220° C. while the films or sheets are maintained under practically no restraint.

3,608,060
METHOD OF MAKING A FOAMED ALUMINA SHAPE OR CATALYST SUPPORT

Harry E. Osment, and Raymond L. Williams, both of Baton Rouge, La., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sept. 20, 1968, Ser. No. 761,283

Int. Cl. C04b *21/02;* **B01j** *11/60*

U.S. Cl. 264—42 **10 Claims**

A hydrated alumina which has been calcined to reduce its loss on ignition to below 12 percent and which is capable of at least partial rehydration is mixed with water and a blowing agent to form a slurry. The slurry is heated to below 100° C. to activate the blowing agent causing bubbles to form in the slurry. The slurry is then poured into a mold and heated to cause the alumina to rehydrate stabilizing the foamed body which is then activated at 350°–700° C.

3,608,061
RADIOPAQUE ESOPHAGEAL MARSHMALLOW BOLUS

Edmund F. McNally, 46-44 Hanford St., Douglaston, N.Y.

Filed Aug. 21, 1968, Ser. No. 754,462

Int. Cl. A61k *27/08*

U.S. Cl. 424—4 **3 Claims**

A radiopaque esophageal bolus which comprises a marshmallow containing a radiopaque material in an amount sufficient to render the bolus opaque when exposed to X-rays or roentgen rays.

3,608,062
SHAPED ARTICLES WITH LONG-TERM VAPOUR EMISSION

Franz Alfes, Krefeld; Wolfgang Behrenz, Cologne-Stammheim; Karl Raichle, Krefeld-Bochum, and Kurt Weirauch, Krefeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 17, 1968, Ser. No. 784,488

Claims priority, application Germany, Jan. 16, 1968, P 16 94 240.8

Int. Cl. A61k *24/12*

U.S. Cl. 424—22 **9 Claims**

Shaped articles having long term vapor emission comprising a thermosetting resin produced from an unsaturated polyester and a vinyl monomer copolymerizable therewith, containing an effective amount of 0,0-dimethyl-0-(2,2-dichlorovinyl)-phosphoric acid ester as pesticidally, e.g. insecticidally and/or acaricidally, active compound, in a ratio by weight of active compound to resin of e.g. about 0.25–2 : 1, and also containing a solid filler, and optionally a liquid filler.

3,608,063
MOLECULAR DRUG ENTRAPMENT PROCESS AND COMPOSITIONS

Gilbert S. Banker, School of Pharmacy, Purdue University, Lafayette, Ind.

Continuation-in-part of application Ser. No. 757,142, Sept. 3, 1968. This application Aug. 15, 1969, Ser. No. 850,664

Int. Cl. A61k *27/12*

U.S. Cl. 424—22 **10 Claims**

Pharmaceutical compositions are prepared by combining in the presence of water and a carboxylic acid a polymer having acidic or basic functionality with a pharmaceutically active material having respectively basic or acidic functionality, coagulating or otherwise separating the product produced and then formulating the product by conventional techniques into suitable dosage forms. The resulting products are characterized by possessing unique sustained-release, enteric or delayed-release properties.

3,608,064
MILK-BUFFERED ASPIRIN

Anthony H. Lamb, 66 King St., Hillside, N.J.

Filed Oct. 7, 1969, Ser. No. 864,486

Int. Cl. A61j *3/07, 3/10*

U.S. Cl. 424—36 **7 Claims**

A mixture of aspirin and powdered milk.

3,608,065
AEROSOL COMPOSITION CONTAINING A VASOCONSTRICTOR

Myron J. Lover, Mountainside, and Maria C. Rodon, Elizabeth, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sept. 11, 1969, Ser. No. 857,229

Int. Cl. A61k *27/00*

U.S. Cl. 424—45 **2 Claims**

An aerosol composition containing phenylephrine as the vasoconstrictor is made exceptionally uniform by using dipropylene glycol as a cosolvent.

3,608,066
PHARMACEUTICAL PREPARATION BASED ON BACTERIAL ANTIGENS

Paul-Robert Illartein, la Chapelle-St-Mesmin, France, assignor to Societe en nom collectif "Science Union et Cie Societe Francaise de Recherche Medicale," Surresues, France

Filed June 16, 1969, Ser. No. 833,719

Claims priority, application France, June 19, 1968, 155,603

Int. Cl. A61k *13/00*

U.S. Cl. 424—46 **10 Claims**

A pharmaceutical preparation for the treatment of infections of the respiratory tract, consisting of, in the desiccated and finely micronized state, lyophilized killed micro-organisms and their lyzates, selected from specific micro-organisms previously recognized to be responsible for such kind of infection, and also micro-organisms not previously recognized to be responsible for such kind of infection, and administered by inhalation in aerosol form.

3,608,067
DENTIFRICE COMPOSITIONS CONTAINING INSOLUBLE SALTS OF ALKYLENE PHOSPHONIC ACIDS

Riyad R. Irani, Mentor, Ohio, assignor to Monsanto Company, St. Louis, Mo.

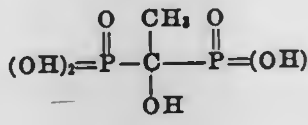
Filed Feb. 6, 1969, Ser. No. 797,242

Claims priority, application Trinidad And Tobago, Mar. 8, 1968, 25/68

Int. Cl. A61k *7/16*

U.S. Cl. 424—49 **3 Claims**

Dentifrice composition containing as the primary polishing agent a substantially water-insoluble salt of an alkylene phosphonic acid such as the calcium salt of an alkylene diphosphonic acid having the formula, e.g.



$$(OH)_2{=}\overset{\overset{O}{\|}}{P}-\underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}}-\overset{\overset{O}{\|}}{P}{=}(OH)_2$$

3,608,068
FLAVOR COMPOSITION

George H. Fuller, Colonia, and Stephen Klisch, Somerset, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 20, 1969, Ser. No. 809,035

Int. Cl. A61k *7/16*

U.S. Cl. 424—49 **5 Claims**

A flavor composition which simulates the flavor of chloroform. The composition contains methylene chloride a nontoxic perfluoro saturated hydrocarbon. The flavor composition is particularly suitable for use in an oral preparation.

3,608,069
SIALAGOGUE

George Herbert Fuller, Colonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 20, 1969, Ser. No. 809,019

Int. Cl. A61k *7/16*

U.S. Cl. 424—52 **17 Claims**

A sialagogue composition particularly suitable for use in an oral preparation. The sialagogue contains perillartine as a sweetener and methylene chloride as a flavoring agent. The methylene chloride may be used in mixture with a nontoxic perfluoro saturated hydrocarbon.

3,608,070
NEW SURGICAL DRESSING

Lucien Nouvel, 91 Ave. der Ternes, Paris, XVII°, France

Filed Oct. 13, 1969, Ser. No. 866,028

Int. Cl. A61b *17/04;* **A61k** *15/00;* **A61l** *15/00*

U.S. Cl. 424—80 **5 Claims**

The dressing excipient is composed essentially of vinyl pyrrolidone-vinylacetate copolymer which is soluble in a lower aqueous alcohol and which is capable of giving a film on the skin; a thixotropic agent of a triglyceride of hydroxylated fatty acids having 12–24 carbon atoms, preferably 12-hydroxystearic acid glyceride; a solvent for the resin, which fairly rapidly dries on the skin, namely aqueous alcohol; and a plasticizer of polyoxyethylene-glycol and/or acetoglycerides.

3,608,071
MANUFACTURING ADSORBED VACCINES

Edgar Relyveld, Paris; Marcel Raynaud, Versaille; Andre Turpin, Paris, and Monique Digeon, Paris, all of France, assignors to Institut Pasteur, Paris, France

Filed Sept. 20, 1968, Ser. No. 761,278

Claims priority, application France, Sept. 26, 1967, 122284

Int. Cl. A61k *27/00*

U.S. Cl. 424—88 **7 Claims**

A method has been found, which makes it possible to prepare a composition containing one or more vaccines adsorbed on an appropriate substrate. The method comprises introducing one or several antigens into an aqueous solution of dibasic sodium phosphate having preferably a concentration of 0.01 M to 0.5 M, adding to the mixture thus formed an amount of calcium chloride in aqueous solution, preferably substantially equivalent to that of the phosphate, and adjusting the pH of the mixture to a value close to 7, preferably about 6.8 to 7. A precipitate forms, which adsorbs the antigens, and it is recovered. The best concentration of the calcium chloride solution is in the range of 0.01 M to 0.5 M.

3,608,072
FISH TOXICANT COMPOSITIONS AND METHOD OF USING THEM

Bernard L. Berger, La Crosse, Wis.

Filed Mar. 21, 1969, Ser. No. 809,372

Int. Cl. A01n *9/02, 9/36, 23/00*

U.S. Cl. 424—121 **2 Claims**

Undesirable fish are killed by exposing them to an aqueous solution or dispersion of a toxicant composition comprising a combination of antimycin A and naled.

3,608,073
EMULSION OF PILOCARPINE FOR OPHTHALMIC USE

Russell E. Phares, Jr., and Hans H. Kaspar, both of Sunnyvale, Calif., assignors to Barnes-Hind Pharmaceuticals, Inc.

Filed July 16, 1968, Ser. No. 745,175

Int. Cl. A61k *27/00*

U.S. Cl. 424—168 **5 Claims**

An easy to apply, stable and effective form of pilocarpine is provided by an oil-in-water emulsion of pilocarpine.

3,608,074
PHARMACEUTICAL COMPOSITIONS AND METHOD OF MAKING THE SAME

Yves Rocher, 41 Ave. Foch, Paris, France,

Division of Ser. No. 431,710, Feb. 10, 1965, Pat. No. 3,464,972. Filed Feb. 29, 1968, Ser. No. 709,494

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 **2 Claims**

Humans afflicted with hemorrhoids or rosacea are treated by topical application of an ointment comprising as the active ingredients, pure saponins obtained from the root of *Ficaria ranunculus.*

3,608,075
COMPOSITIONS AND METHODS OF TREATING THE MENOPAUSAL SYNDROME

William L. Glen, Baie D'Urfe, Quebec, Canada, and Max Gahwyler, Darien, Conn., assignors to American Home Products Corporation, New York, N.Y.

Filed July 28, 1969, Ser. No. 845,488

Int. Cl. A61k *17/06*

U.S. Cl. 424—238 **10 Claims**

A method and composition for treatment of the menopausal syndrome in women utilizing, as the treatment agent, a composition containing sodium 17β-dihydroequilin sulfate as the sole estrogenic agent. Sodium 17β-dihydroequilin sulfate may be administered orally or parenterally in the usual dosage forms and adverse side effects are virtually absent at effective dose levels.

3,608,076

USE OF STEROID DERIVATIVES AS ANTIFERTILITY AGENTS

Milton David Heller, New City; John Anthony Coppola, Suffern, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Filed Oct. 13, 1969, Ser. No. 865,961
Int. Cl. A61k *27/00*
U.S. Cl. 424—241 **4 Claims**

Derivatives of certain 16α, 17α-dihydroxysteroids of the pregnane series are described. These steroids are useful for controlling fertility in warmblooded female animals.

3,608,077

STABILIZATION OF METAL STEROID ALCOHOL SULFATES

Robert Ginsig, Mexico City, Mexico, assignor to Syntex Corporation Panama Republic of Panama
Filed Nov. 13, 1969, Ser. No. 876,592
Int. Cl. A61k *27/00*
U.S. Cl. 424—243 **13 Claims**

A stabilized synthetic alkali metal estrogen sulfate mixture containing one or more synthetic alkali metal estrogen sulfates and urea. The mixture increases the stability of the estrogen sulfate component thereby increasing shelf life and pharmaceutical usefulness.

3,608,078

1-SULFAMOYLHEXAMETHYLENIMINE AS AN ANALEPTIC AGENT

John H. Gogerty, Dover; William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
Filed Nov. 21, 1969, Ser. No. 878,907
Int. Cl. A61u *27/00*
U.S. Cl. 424—244 **4 Claims**

1-Sulfamoylhexamethylenimine is useful as an analeptic agent at dosages of from about 3.5 to 350 mg. i.v. in large animals.

3,608,079

THIOURACIL-CARBOXYLIC ACIDS FOR TREATMENT OF VIRUSES

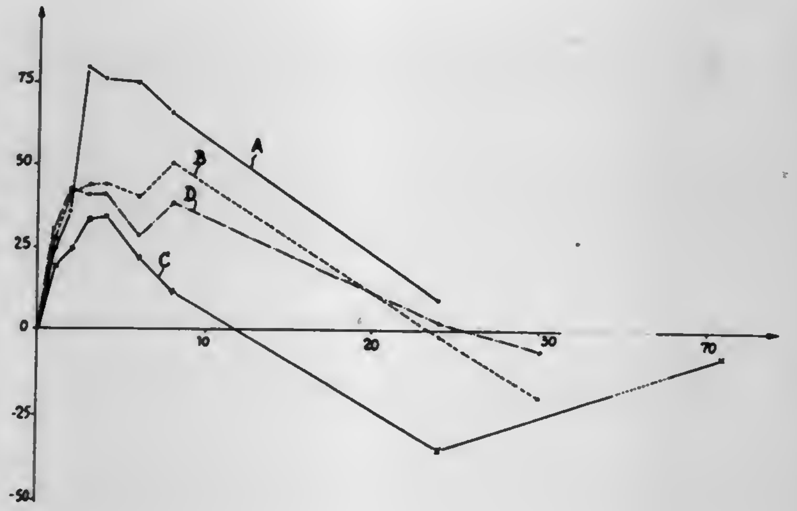
Hermann Moor, Binningen, Switzerland, assignor to Chemofarma A. G., Basel-Landschaft, Switzerland
Filed Apr. 18, 1968, Ser. No. 722,183
Claims priority, application Great Britain, Apr. 19, 1967, 18,102/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **5 Claims**

Pharmaceutical compositions comprising 2-thiouracil-4-carboxylic acid and uracil-4-carboxylic acid and their nontoxic salts or lower alkyl esters. These compositions are effective in providing a nonspecific activity against virus warts, Molluscum contagiosum, Condylomata acuminata, Herpes simplex, and Herpes zoster.

3,608,080

PROCESS FOR THE TREATMENT OF HYPERUREMIA OF NEPHRITIS

Francis Albert Kirsch, 64, Rue de Prony, 75 Paris, France
Filed Mar. 18, 1968, Ser. No. 713,802
Claims priority, application France, Mar. 20, 1967, 99,444
Int. Cl. A61k *27/00*
U.S. Cl. 424—253 **1 Claim**



Process for the treatment of hyperuremia of nephritis comprising administering to a patient 2–30 grams per 24 hours of sarcosyluric acid.

3,608,081

METHOD OF TREATING PSEUDOMONAS INFECTIONS

Raymond Curry Erickson, Metuchen, and Gennaro John Miraglia, East Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed Nov. 17, 1969, Ser. No. 877,479
Int. Cl. A61k *21/00*
U.S. Cl. 424—271 **5 Claims**

A particularly effective method of treating infections caused by Pseudomonas organisms is by treatment with 6-(α-ureidophenyacetamido) penicillanic acid or a salt or lower alkyl ester thereof.

3,608,082

METHOD OF TREATING FUNGUS INFECTIONS WITH 2-AMINO-5-(1-METHYL-5-NITRO-2-IMIDAZOLYL)-1,3,4-OXADIAZOLE

Gunnar Sigurd Redin, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed June 23, 1969, Ser. No. 835,799
Int. Cl. A61k *27/00*
U.S. Cl. 424—272 **2 Claims**

The method of use and compositions containing 2-amino-5-(1-methyl-5-nitro-2-imidazoles)-1,3,4-oxadiazoles in warm-blooded animals, is described. This compound is useful as an antifungal agent.

3,608,083

VITAMIN E POWDER

Raymond Howard Bunnell, Branchville, and Marco Alfred Cannalonga, Fort Lee, both of N.J., assignors to Hoffmann La Roche Inc., Nutley, N.J.
Filed June 5, 1968, Ser. No. 734,540
Int. Cl. A61k *15/10*
U.S. Cl. 424—284 **4 Claims**

High potency vitamin E powders, suitable for use in tablets and capsules are produced by spray drying an emulsion of a

vitamin E active compound and a gelatin hydrolysate having very low Bloom.

3,608,084

HALOGENATED ALIPHATIC NITRILES FOR CONTROLLING THE GROWTH OF AEROBACTER BACTERIA IN INDUSTRIAL WATER SYSTEMS

Joseph Matt, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
Filed June 19, 1968, Ser. No. 738,120
Int. Cl. A01n *9/20*
U.S. Cl. 424—304 **7 Claims**

The growth and reproduction of Aerobacter bacteria in industrial aqueous systems is prevented by treating such systems with small amounts of certain halogenated aliphatic nitriles.

3,608,085

GRAIN PRESERVATIVE COMPOSITION AND A METHOD OF USING THE SAME

Thomas H. Papworth, New Orleans, La., assignor to Grain Conditioners, Inc., New Orleans, La.
Filed Jan. 18, 1967, Ser. No. 610,029
Int. Cl. A01n *9/02, 9/24*
U.S. Cl. 424—317 **2 Claims**

A grain preservative means and method is provided for preserving stored grain for long periods of time. The preservative comprises at least one of a fatty acid, an anhydride of a fatty acid or an aldehyde of a fatty acid in combination with at least one chlorine substituted methane or ethane compound.

3,608,086

TREATMENT OF DERMATOLOGIC DISEASES EMPLOYING ALUMINUM PROPIONATE ALUMINUM DIPROPIONATE AND CERTAIN DOUBLE ACID SALTS THEREOF

Alfred Halpern, Great Neck, N.Y., assignor to Synergistics, Yonkers, N.Y.
Division of Ser. No. 683,415, June 27, 1967, Pat. No. 3,449,391, which is a continuation-in-part of application Ser. No. 287,170, May 24, 1963, now abandoned, which is a continuation-in-part of application Ser. No. 108,809, May 9, 1961, now abandoned. Divided and this application Nov. 1, 1968, Ser. No. 795,131
Int. Cl. A61k *27/00*
U.S. Cl. 424—317 **19 Claims**

Double acid salts of aluminum propionate and aluminum dipropionate prepared with acetic acid, lactic acid, citric acid and tartaric acid, which are suitable for use in treating dermatologic disease.

3,608,087

FEED COMPOSITIONS

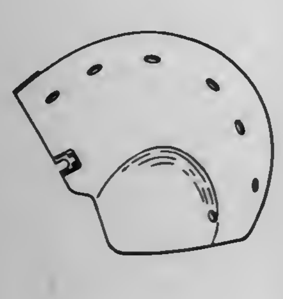
Arthur A. Patchett; Dale R. Hoff, Cranford, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co. Inc., Rahway, N.J.
Filed June 21, 1968, Ser. No. 738,801
Int. Cl. A61k *27/00*
U.S. Cl. 424—320 **5 Claims**

The disclosure relates to methods and compositions for controlling the formation of methane in rumen fermentation through the use of compounds containing halogen bonded to carbon which is in turn attached directly to a functional group. Preferred compounds are amides, alcohols, ketones, sulfones, sulfoxides, carboxylic acids, amines, sulfonamides and phosphonic acid derivatives. The disclosure also relates to novel compounds including N-(2-hydroxypropyl) derivatives of di- and trihaloamides and the N-(2-hydroxyethyl) derivatives of trihaloacetamides.

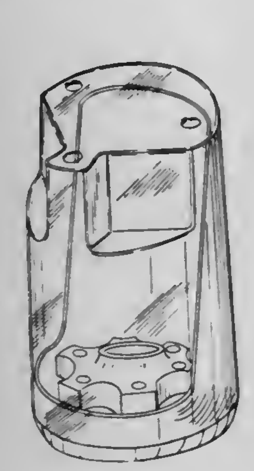
DESIGNS

SEPTEMBER 21, 1971

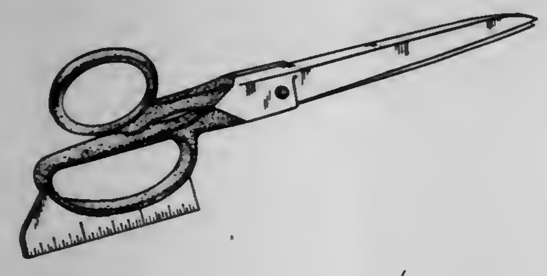
221,923
DIVER'S HELMET
Richard F. Jones, Santa Barbara, Calif., assignor to Agonie Engineering, Santa Barbara, Calif.
Filed June 15, 1970, Ser. No. 23,496
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—231



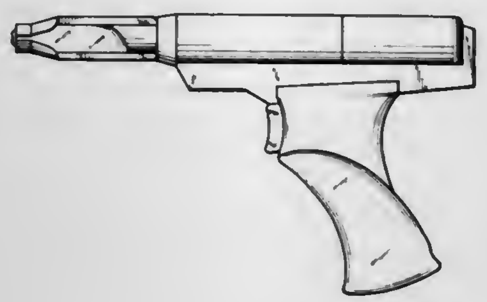
221,924
HOUSING FOR AUTOMATIC TOOTHBRUSH OR THE LIKE
Salvatore P. Aurelio, Chicago Heights, and Efrem M. Ostrowsky, Highland Park, Ill., assignors to Sona Stream Corporation, Peotone, Ill.
Filed Mar. 20, 1970, Ser. No. 21,996
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—16



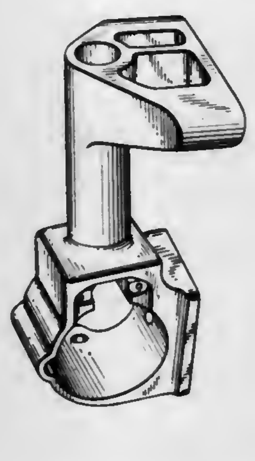
221,925
COMBINED SHEARS AND MEASURING RULE
Walter K. Fogg, 45 Kensington St., Feeding Hills, Mass. 01030
Filed June 3, 1970, Ser. No. 23,291
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—55



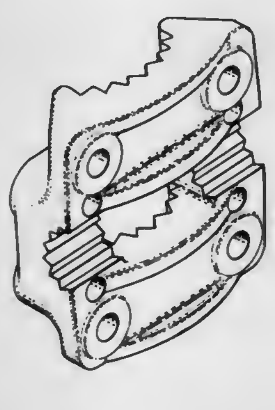
221,926
STRAP APPLYING TOOL
Paul Farkas, Fair Lawn, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed July 7, 1970, Ser. No. 23,852
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



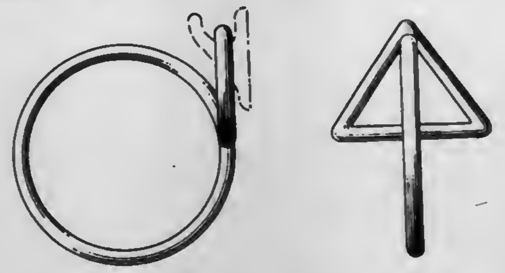
221,927
SUPPORT BRACKET FOR AUTOMOBILE THEFT GUARD
Lucien Charles Hippolyte Juy, 75 Rue General Fauconnet, Dijon, France
Filed July 30, 1969, Ser. No. 18,469
Claims priority, application France Apr. 8, 1969
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—113



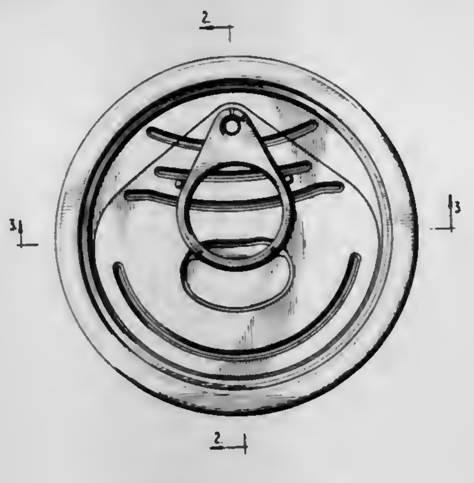
221,928
ANTENNA MOUNTING BRACKET
Bruno Zucconi, Alameda, Calif.
(1970 Republic Ave., San Leandro, Calif. 94577)
Filed Oct. 23, 1969, Ser. No. 19,681
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—234



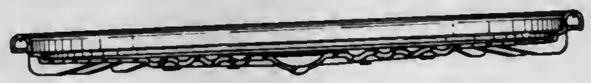
221,929
CLOTHES HANGER SUPPORT FOR AN AUTOMOBILE
Richard N. Allen, 2809 Cherokee Ave., Columbus, Ga. 31906
Filed Apr. 27, 1970, Ser. No. 22,679
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



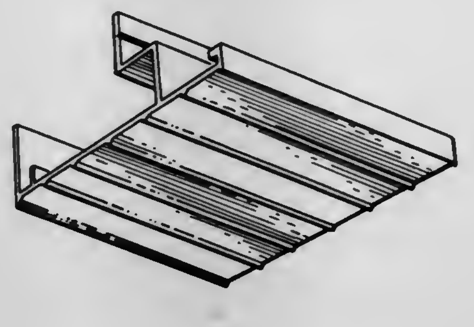
221,930
END CLOSURE FOR A CONTAINER
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation
Filed Sept. 18, 1970, Ser. No. 25,059
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—255



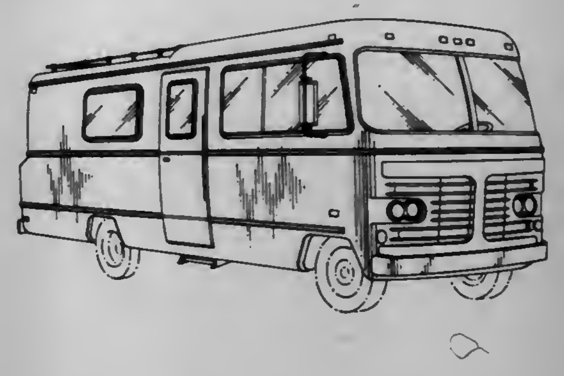
221,931
CONTAINER CLOSURE
Ralph V. Bardell, deceased, late of Homewood, Ill., by Mary G. Bardell, executor, Homewood, Ill.
Filed Apr. 28, 1970, Ser. No. 22,694
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—267



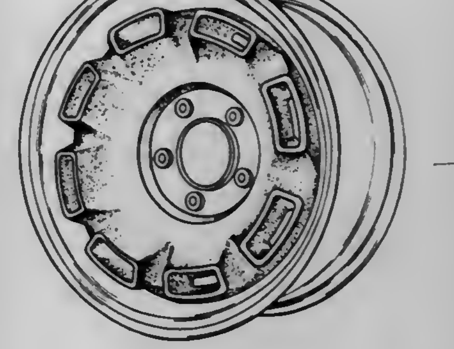
221,932
EXTRUDED FASCIA MEMBER
Irvine Kimmel, 2375 NW. 75th St., Miami, Fla. 33147
Filed Aug. 17, 1970, Ser. No. 24,544
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



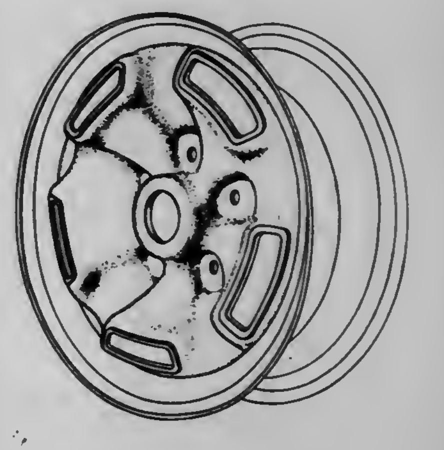
221,933
MOTOR HOME BODY
Stanley A. McKenney II, Tulsa, Okla., assignor to Avco Corporation, Tulsa, Okla.
Filed May 6, 1970, Ser. No. 22,839
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



221,934
WHEEL
John A. Main, East Lansing, and Millard F. Harty, Jr., Bloomfield Hills, Mich., assignors to Motor Wheel Corporation, Lansing, Mich.
Filed Apr. 23, 1970, Ser. No. 22,592
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—30

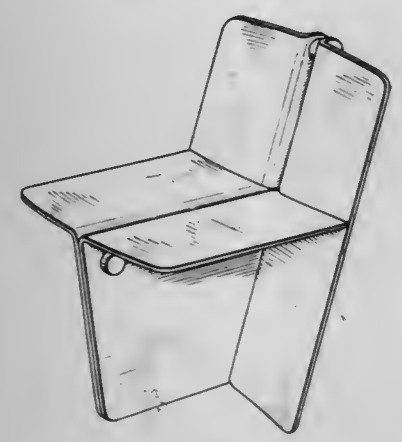


221,935
WHEEL
Millard F. Harty, Jr., Bloomfield Hills, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Filed May 26, 1970, Ser. No. 23,160
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—30



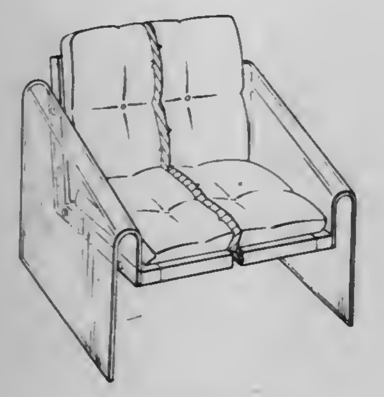
221,936
CHAIR

Jeffery R. Fear, 473 Brunswick Ave.,
Toronto 4, Ontario, Canada
Filed Apr. 8, 1970, Ser. No. 22,330
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1



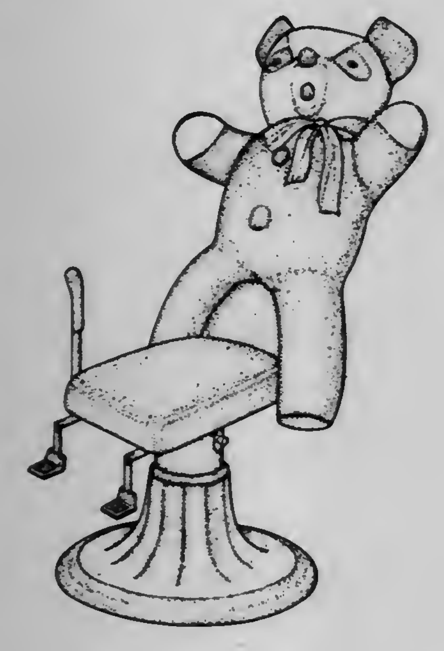
221,937
CHAIR OR SIMILAR ARTICLE

Sidney Gibson, Suite 110, 57 Godstone Road,
Willowdale, Ontario, Canada
Filed Apr. 8, 1970, Ser. No. 22,331
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



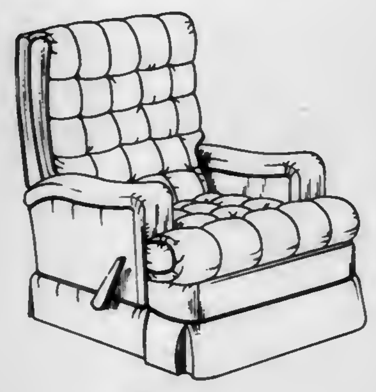
221,938
EXAMINATION TABLE

Anthony D. Valente, 5 Cedar Court,
Copiague, N.Y. 11726
Filed Jan. 14, 1970, Ser. No. 20,911
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—3



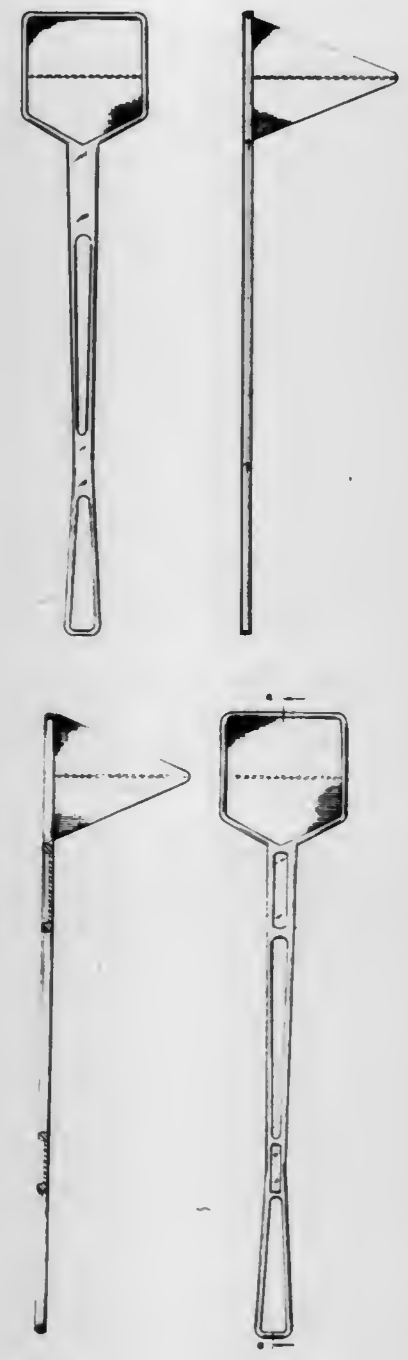
221,939
CHAIR

Morris F. Fisher, Carmel, Ind., assignor to Mohasco
Industries, Inc., Amsterdam, N.Y.
Filed Nov. 21, 1969, Ser. No. 20,219
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—11



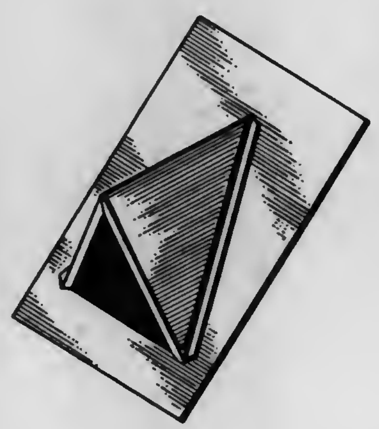
221,940
FISH NET

Monte L. Levin, New York, N.Y., assignor to
Metaframe Corporation, Maywood, N.J.
Filed Mar. 18, 1970, Ser. No. 21,944
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—22



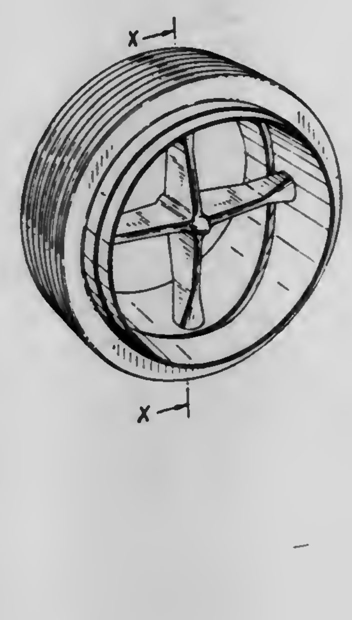
221,941
COMBINED PIPE FLASHING AND SNOW DEFLECTOR UNIT OR SIMILAR ARTICLE

Herman G. Murphy, P.O. Box 446,
Incline Village, Nev. 89450
Filed Apr. 8, 1970, Ser. No. 22,311
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42



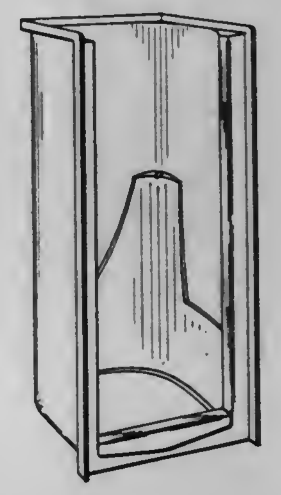
221,942
PIPE COUPLING

Horace Percival Halling, Leverstock Green, England, assignor to Avica Equipment Limited, Hemel Hempstead, Hertfordshire, England
Filed July 7, 1969, Ser. No. 18,064
Claims priority, application Great Britain Jan. 8, 1969
Term of patent 7 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



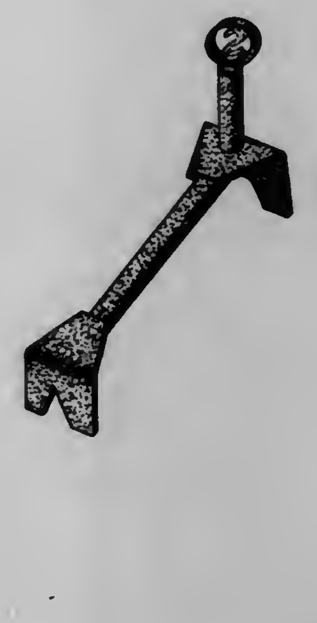
221,943
SHOWER STALL

Merritt W. Seymour, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation
Original design application Mar. 29, 1968, Ser. No. 11,199, now Patent No. 215,289, dated Sept. 23, 1969. Divided and this application Oct. 11, 1968, Ser. No. 14,373
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57

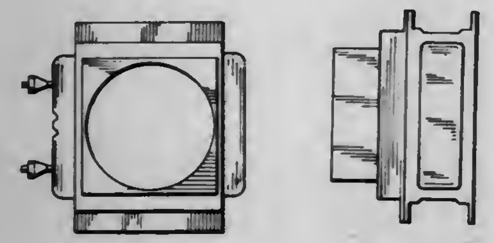


221,944
ANDIRON OR THE LIKE

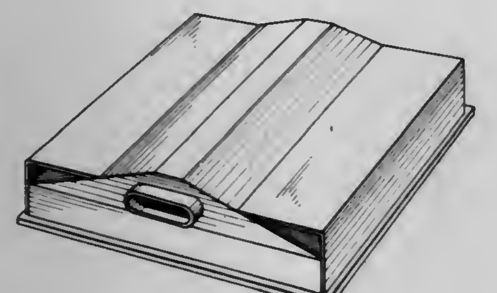
Carl Coleman Strickland, Wendell, N.C. 27591
Filed Jan. 30, 1970, Ser. No. 21,168
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—102

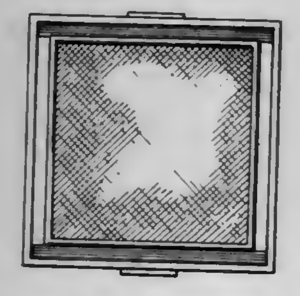


221,945
HEAT EXCHANGER
Mario L. Carangelo, North Haven, Conn., assignor to The G & O Manufacturing Company, New Haven, Conn.
Filed Nov. 20, 1969, Ser. No. 20,207
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127

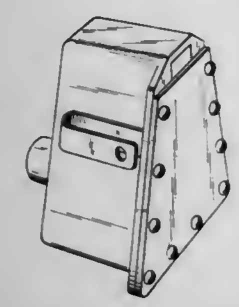


221,946
COMBINED LIGHTING AND VENTILATING FIXTURE
Robert E. Garrett and Leon D. Dame, both of 1544 W. 8th St., Los Angeles, Calif. 90017
Filed Mar. 23, 1970, Ser. No. 22,005
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—140

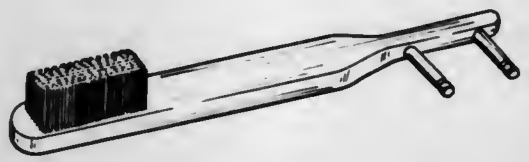




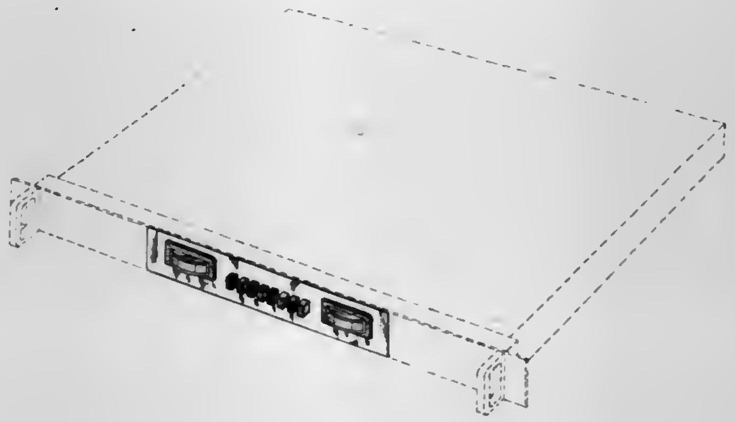
221,947
PESTICIDE VAPORIZER
Edward C. Geiger, 500 E. 7th St., Lansdale, Pa. 19446
Filed Feb. 20, 1970, Ser. No. 21,557
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—148



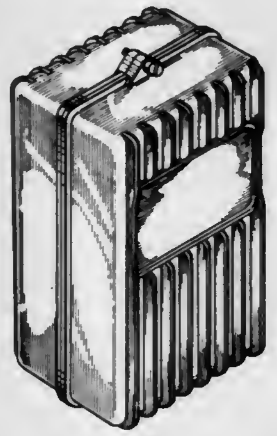
221,948
DENTAL FLOSS HOLDER
Thomas P. Centofanti, 15631 Fairfield, Livonia, Mich. 48154
Filed Mar. 6, 1970, Ser. No. 21,764
Term of patent 7 years
Int. Cl. D24—*03;* D4—*02*
U.S. Cl. D24—1



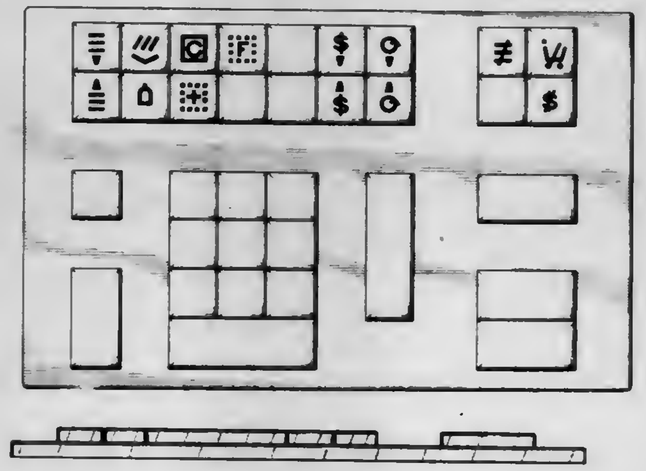
221,949
POWER SUPPLY METERING PANEL
Edward Brenner, Commack, Marvin Price, South Ozone Park, and Benjamin Shmurak, Lynbrook, N.Y., assignors to Lambda Electronics Corporation, Huntington, N.Y.
Filed Nov. 3, 1970, Ser. No. 25,797
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D26—1



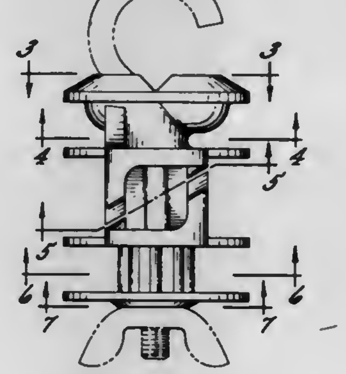
221,950
HOUSING FOR A VEHICLE IGNITION SYSTEM
Paul F. Eidinger, 2923 Florence St., Berkeley, Calif. 94705
Filed Mar. 19, 1970, Ser. No. 21,974
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—5



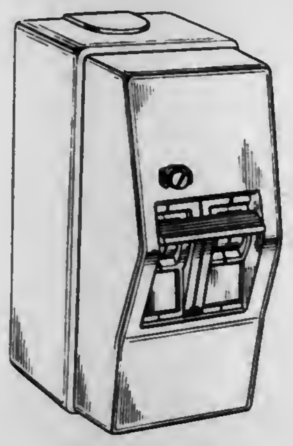
221,951
KEYBOARD FOR A COMPUTER OR SIMILAR ARTICLE
James Thomas Kindley, Maple Shade, N.J., assignor to RCA Corporation
Continuation-in-part of design application Ser. No. 20,662, Dec. 29, 1969. This application May 19, 1970, Ser. No. 23,059
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



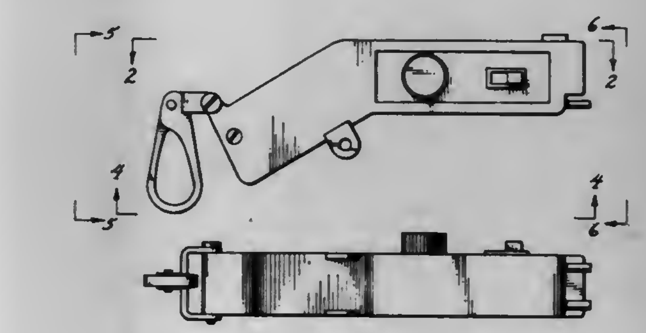
221,952
ELECTRIC FENCE INSULATOR
Fredric C. Muntwyler, Sr., Palos Park, Ill., assignor to Wire Machinery Inc., Chicago, Ill.
Filed Nov. 4, 1969, Ser. No. 19,943
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—10



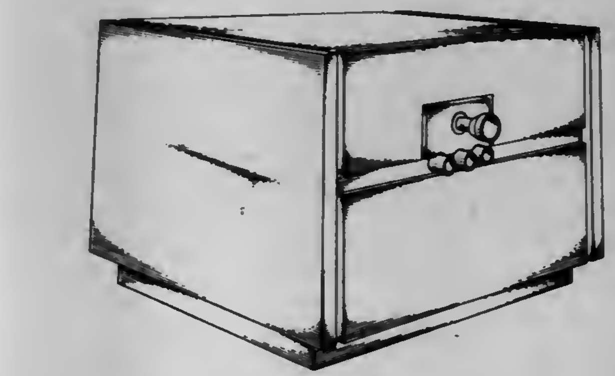
221,953
CIRCUIT BREAKER OR THE LIKE
Giuseppe Zecca, Via Monte Tabor 16, Varese, Italy
Filed June 16, 1970, Ser. No. 23,520
Claims priority, application Italy Jan. 10, 1970
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

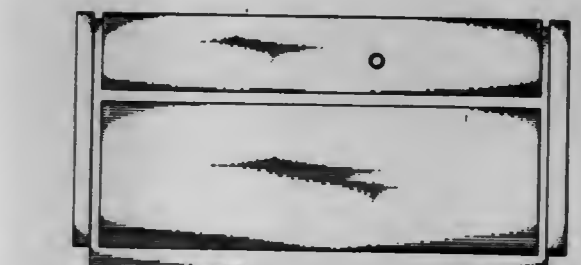


221,954
AUDIO AMPLIFIER FOR TELEPHONE HANDSET
John A. Stratman, West Hollywood, Fla., assignor to Lumidor Products Corporation, Miami, Fla.
Filed Nov. 12, 1969, Ser. No. 20,036
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

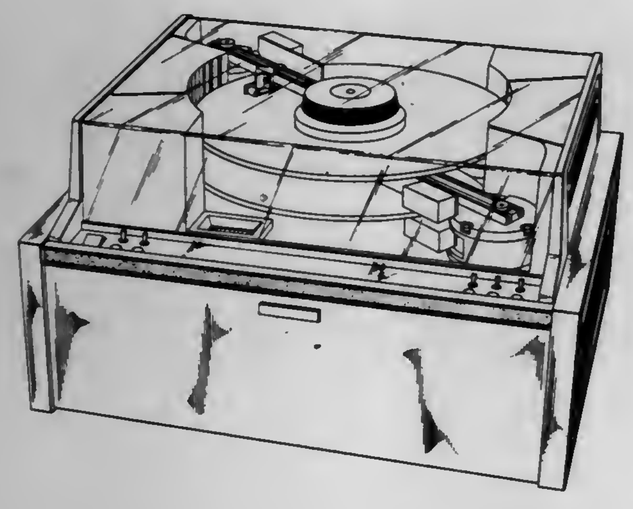


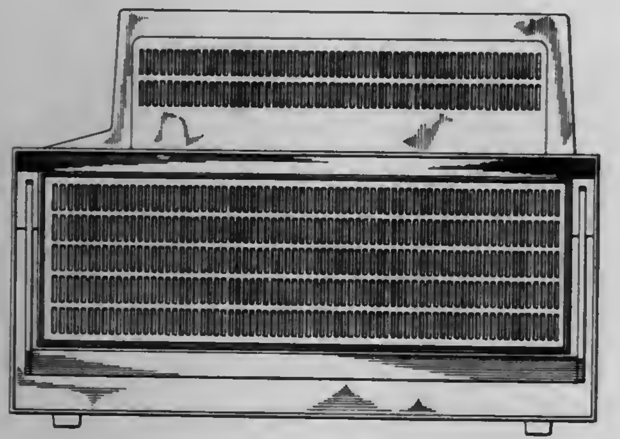
221,955
LASER OR SIMILAR APPARATUS
Edward D. Lucey, Los Gatos, Calif., assignor to Sylvania Electric Products, Inc.
Filed May 4, 1970, Ser. No. 22,989
Term of patent 14 years
Int. Cl. D14—*04*
U.S. Cl. D26—14



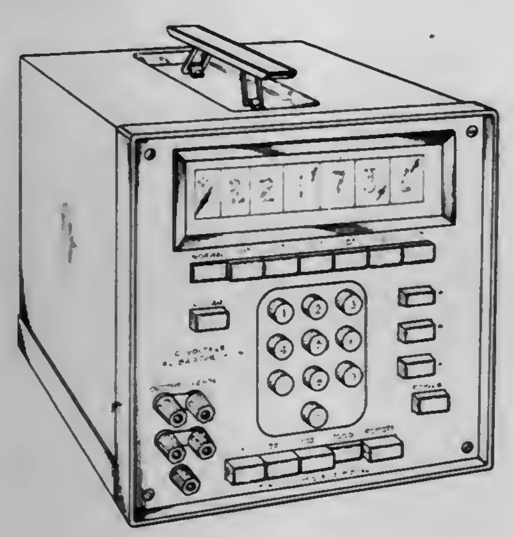


221,956
MAGNETIC DISC TRANSDUCING MACHINE
Hari Matsuda, Evanston, Ill., and Robert W. Bornschlegel, Mountain View, Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed May 4, 1970, Ser. No. 22,790
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

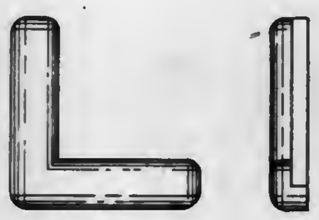




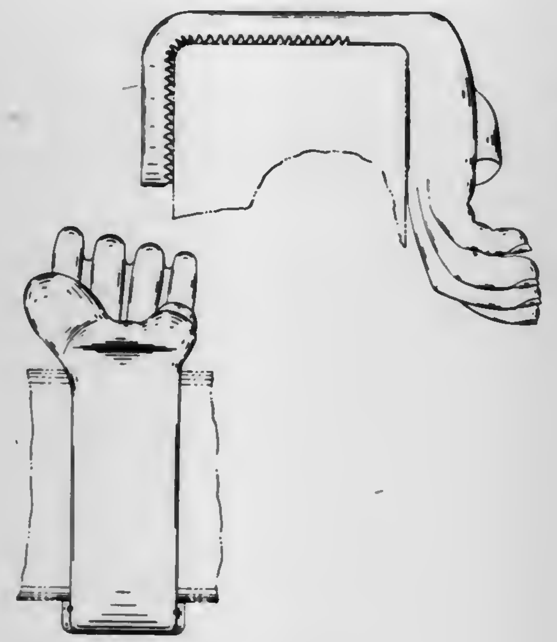
221,957
DIGITAL POWER SUPPLY
Robert E. C. Smyth, Centerport, N.Y., assignor to Digital Apparatus Corporation, Deer Park, N.Y.
Filed Jan. 12, 1970, Ser. No. 20,873
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



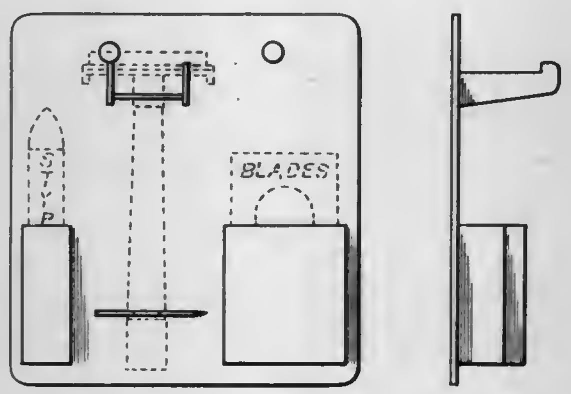
221,958
CORNER GUARD FOR FURNITURE OR THE LIKE
Benjamin Finebaum, Memphis, Tenn., assignor to Creativity Unlimited Corp., Memphis, Tenn.
Filed Mar. 17, 1969, Ser. No. 16,262
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D33—1



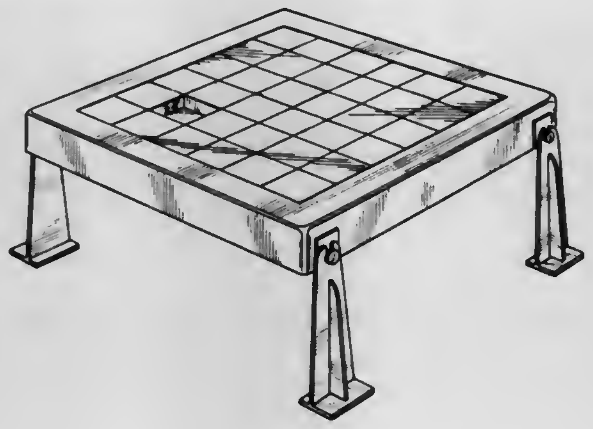
221,959
HOLDER FOR WASHING POTS AND PANS
David Liftman, 15 Beede Ave., Lynn, Mass. 01902
Filed June 5, 1970, Ser. No. 23,324
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—17



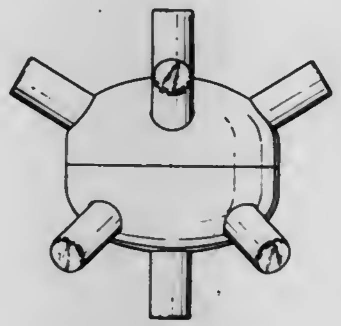
221,960
SHAVING CADDY
John C. Stephenson, 1257 Armacost Ave., Los Angeles, Calif. 90025
Filed Apr. 13, 1970, Ser. No. 22,415
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—23



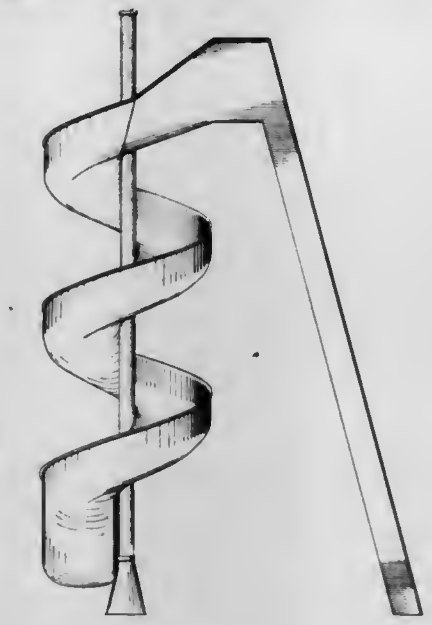
221,961
GAME BOARD
Joseph E. Mitchell, 435 Orleana Ave., Long Beach, Calif. 90814
Filed Apr. 7, 1969, Ser. No. 16,612
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



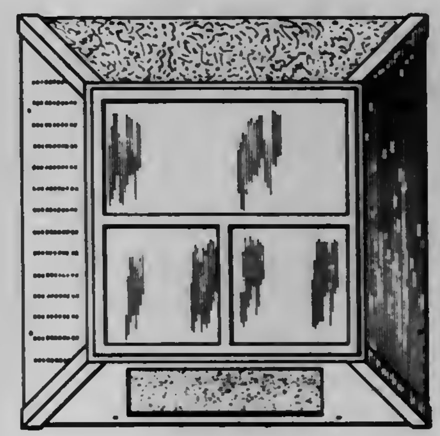
221,962
FINGER MANIPULATIVE TOY OR SIMILAR ARTICLE
Jorma Vennola, Helsinki, Finland, assignor to Trendon Limited, Old Malton, England
Filed Oct. 10, 1969, Ser. No. 19,505
Claims priority, application Great Britain June 16, 1969
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



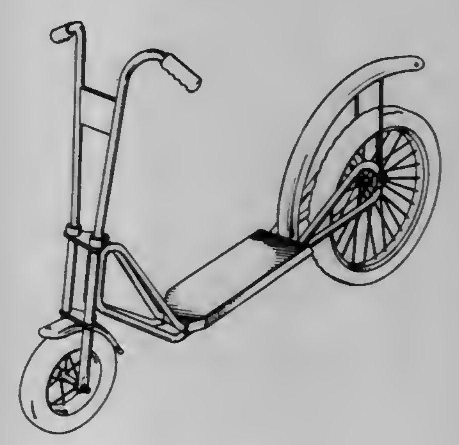
221,963
SLIDE
Steven A. Henning, Anderson, Ind., assignor to American Playground Device Co., Anderson, Ind.
Filed Apr. 23, 1970, Ser. No. 22,610
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



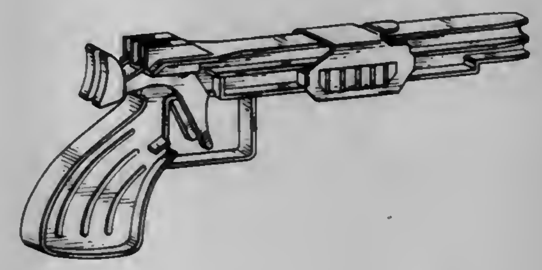
221,964
CHILD'S PLAY CHEST
Merrill L. Hassenfeld, Providence, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Mar. 16, 1970, Ser. No. 21,924
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



221,965
SCOOTER
Francis C. La Jeunesse, 1196 Boulevard Way, Walnut Creek, Calif. 94595
Filed Mar. 18, 1970, Ser. No. 21,961
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15



221,966
TOY GUN
James L. Howe, Temperance, Mich.
(7485 Apache Trail, Toledo, Ohio 43612)
Filed Apr. 1, 1970, Ser. No. 22,167
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

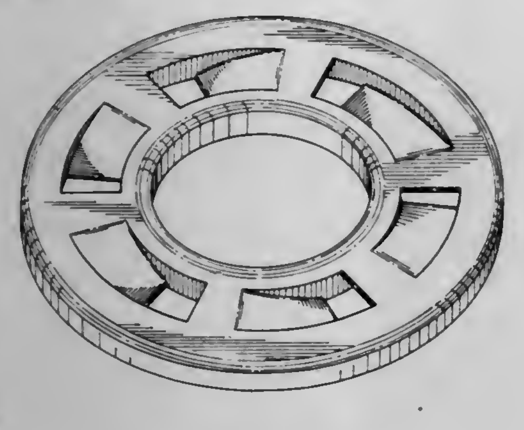


221,967

CIRCULAR BOOMERANG

William G. Sheard, 29295 Lansing Drive,
Westlake, Ohio 44145
Filed May 8, 1970, Ser. No. 22,884
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D34—15

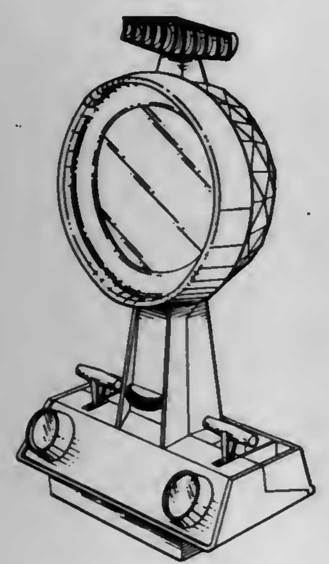


221,968

VISUAL DISPLAY TOY

Robert Fieldhouse, Bramhope, near Leeds, England, assignor to Denys Fisher Toys Limited, Boston Spa, Yorkshire, England
Filed June 25, 1970, Ser. No. 23,657
Claims priority, application Great Britain May 6, 1970
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15

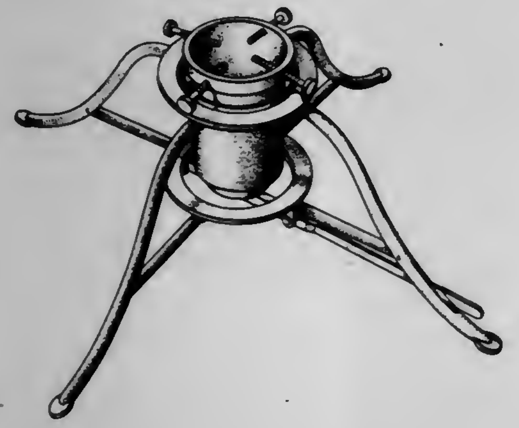


221,969

CHRISTMAS TREE STAND

Robert W. De Vries, Grand Rapids, Mich., assignor to Wolverine Industries, Inc., Grand Rapids, Mich.
Filed Mar. 30, 1970, Ser. No. 22,096
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D35—3

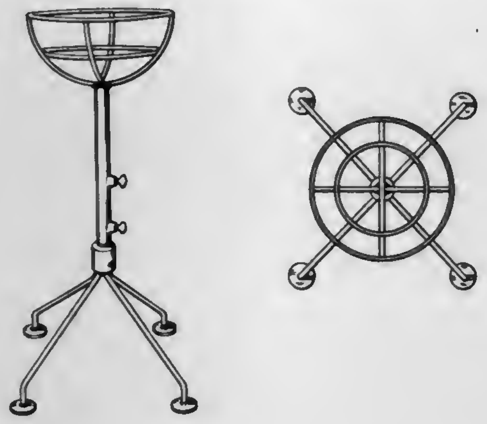


221,970

EXTENSIBLE FLOWER STAND

Samuel P. Kelly, 806 Grand Ave.,
Fort Worth, Tex. 76106
Filed Aug. 28, 1970, Ser. No. 24,743
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D35—3

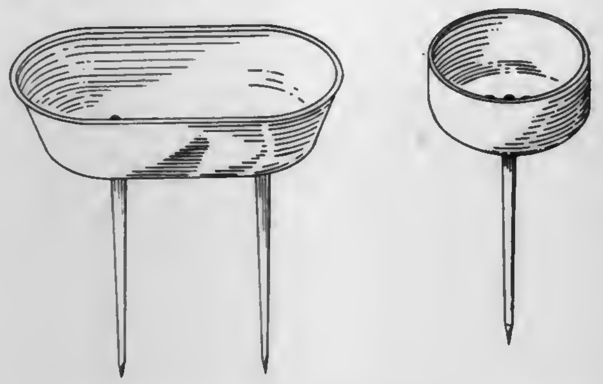


221,971

FLOWER URN

Charles J. Terrell, 740 Van Deman St.,
Washington Court House, Ohio 43160
Filed Sept. 3, 1970, Ser. No. 24,827
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D35—3

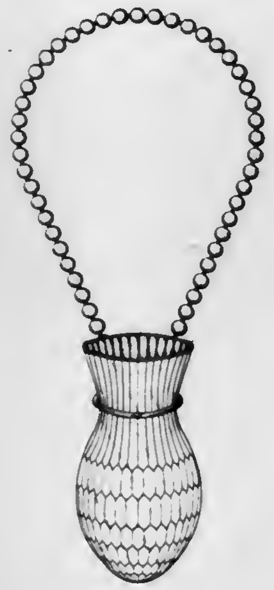


221,972

COMBINED TUMBLER AND SUPPORTING NECKLACE THEREFOR

Edward T. Kennedy, Wheeling, W. Va., assignor to Fostoria Glass Company, Moundsville, W. Va.
Continuation-in-part of design application Ser. No. 19,668, Oct. 22, 1969. This application June 9, 1970, Ser. No. 23,389
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D36—8

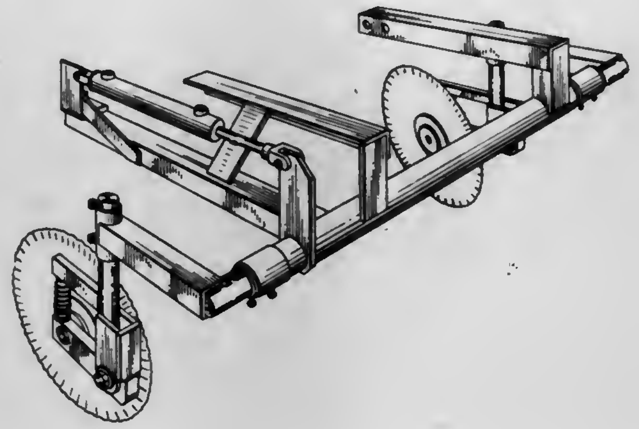


221,973

PEANUT VINE CUTTER OR THE LIKE

Louis C. Johnson, Box 49, Pendleton, N.C. 27862
Filed Sept. 8, 1969, Ser. No. 19,051
Term of patent 14 years
Int. Cl. D15—*03*

U.S. Cl. D40—1

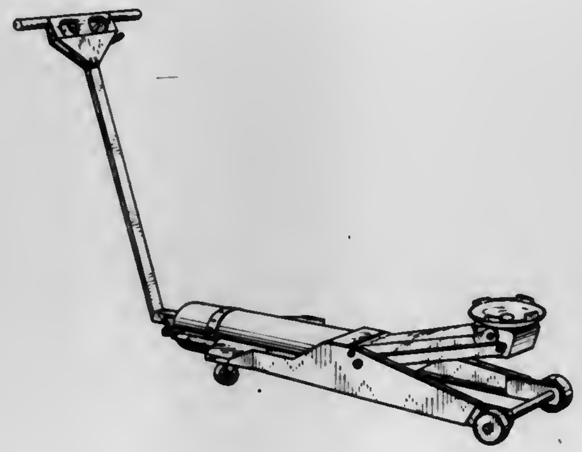


221,974

VEHICLE LIFT

Gary L. Kincaid, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.
Filed Mar. 23, 1970, Ser. No. 22,025
Term of patent 14 years
Int. Cl. D12—*05*

U.S. Cl. D41—1

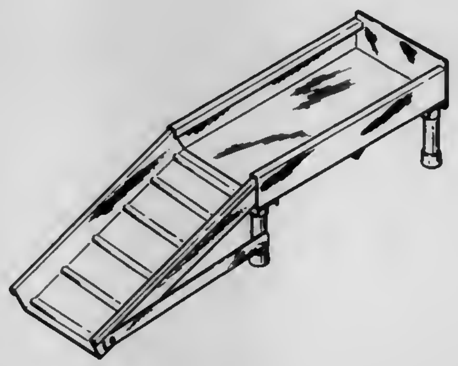


221,975

CAR WHEEL SUPPORT

Guy I. Nellis, 4861 Cale Redonda, Phoenix, Ariz. 85018, and Eugene E. Wiesenhofer, Scottsdale, Ariz.; said Wiesenhofer assignor to said Nellis
Filed Apr. 15, 1970, Ser. No. 22,440
Term of patent 14 years
Int. Cl. D12—*05*

U.S. Cl. D41—1

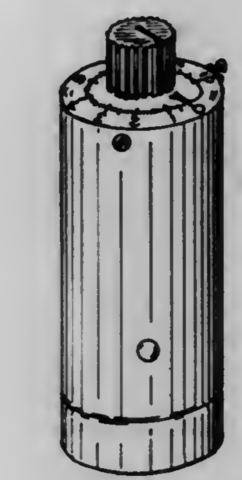


221,976

TIMER

Larry G. Stolarczyk, Raton, N. Mex., assignor to A.R.F. Products, Incorporated, Raton, N. Mex.
Filed Jan. 26, 1970, Ser. No. 21,072
Term of patent 14 years
Int. Cl. D10—*03*

U.S. Cl. D42—7

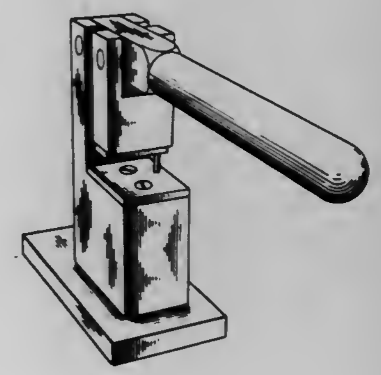


221,977

NUTCRACKER

Maurice M. Pike, 1827 E. Home Ave.,
Fresno, Calif. 93703
Filed July 15, 1970, Ser. No. 23,959
Term of patent 14 years
Int. Cl. D7—*04*

U.S. Cl. D44—1

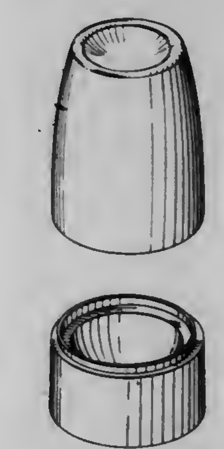


221,978

EGG CUP

Robert Daenen, Erembodegem, Belgium, and James B. Swett, Barrington, R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed May 1, 1970, Ser. No. 22,771
Term of patent 14 years
Int. Cl. D7—*01*

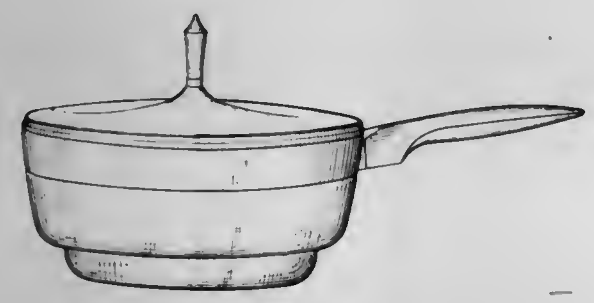
U.S. Cl. D44—9



221,979

CHAFING DISH

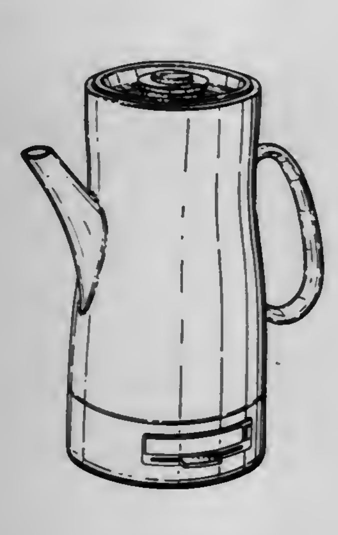
Alfred W. Madl, Glendale, Wis., assignor to John Oster Manufacturing Co., Milwaukee, Wis.
Filed July 15, 1970, Ser. No. 23,957
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—15



221,980

PERCOLATOR

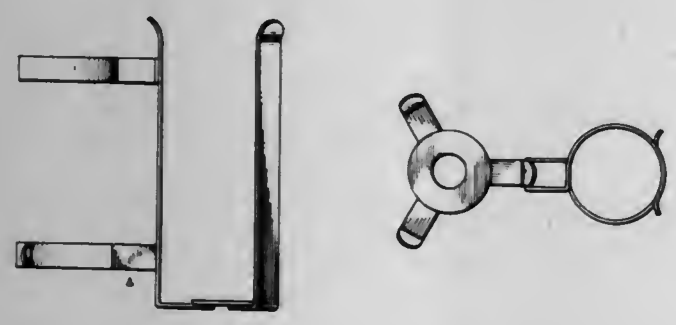
John Armstrong, Watford, England, assignor to British Domestic Appliances Limited, Peterborough, England
Filed Dec. 22, 1969, Ser. No. 20,757
Claims priority, application Great Britain June 20, 1969
Term of patent 3½ years
Int. Cl. D7—*02*
U.S. Cl. D44—26



221,981

CANDLE HOLDER

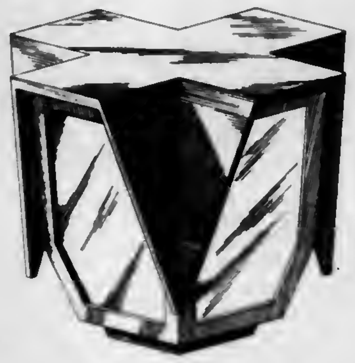
William R. Small, Santa Fe Springs, Calif., assignor of fractional part interest to Edna Mildred Small, Santa Fe Springs, Calif.
Filed Jan. 30, 1970, Ser. No. 21,159
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—2



221,982

LIGHTING FIXTURE

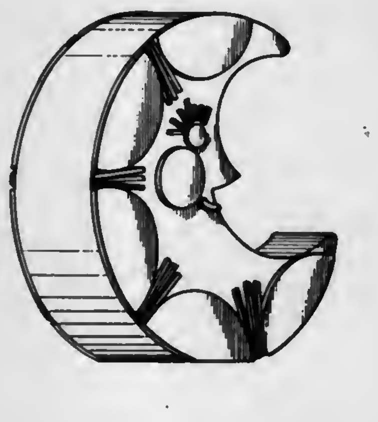
Robert H. R. Little, Gettysburg, Pa., assignor to Hadco Products, Inc., Littlestown, Pa.
Filed July 24, 1970, Ser. No. 24,106
Term of patent 14 years
Int. Cl. D26—*02, 03*
U.S. Cl. D48—4



221,983

TABLE LAMP

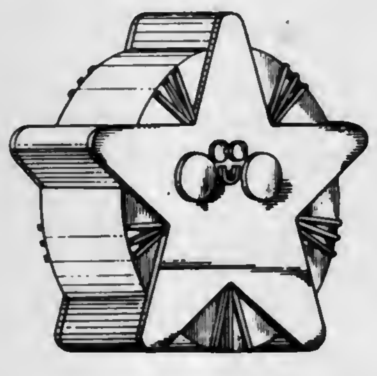
Donald R. Kracke, 5620 Whitecliff Drive, Palos Verdes Peninsula, Calif. 90274
Filed July 27, 1970, Ser. No. 24,142
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



221,984

TABLE LAMP

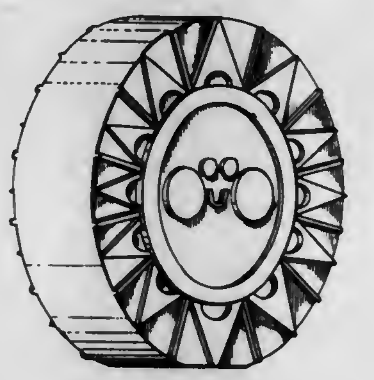
Donald R. Kracke, 5620 Whitecliff Ave., Palos Verdes Peninsula, Calif. 90274
Filed July 27, 1970, Ser. No. 24,145
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



221,985

TABLE LAMP

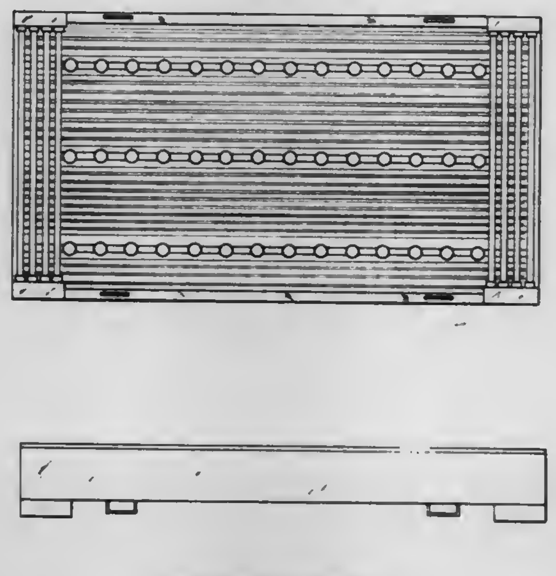
Donald R. Kracke, 5620 Whitecliff Drive, Palos Verdes Peninsula, Calif. 90274
Filed July 27, 1970, Ser. No. 24,146
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



221,986

LIGHTING FIXTURE

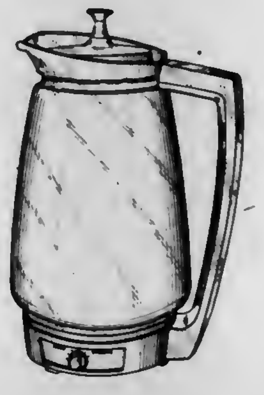
Richard H. Taylor, Winnipeg, Manitoba, Canada, assignor to Controlled Environments Ltd., Winnipeg, Manitoba, Canada
Filed Nov. 17, 1969, Ser. No. 20,140
Claims priority, application Canada Oct. 10, 1969
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23



221,987

COFFEE MAKER

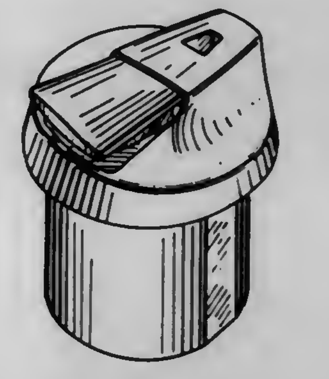
Gene Schugart, Chicago, and Richard B. Hall, Glen Ellyn, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed July 6, 1970, Ser. No. 23,836
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—26



221,988

CIGARETTE LIGHTER

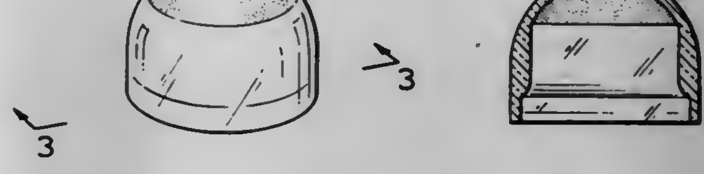
David Eberhart, Bound Brook, N.J., assignor to Ronson Corporation, Woodbridge, N.J.
Filed May 20, 1970, Ser. No. 23,094
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



221,989

LENS FOR BOAT ANCHOR LIGHT

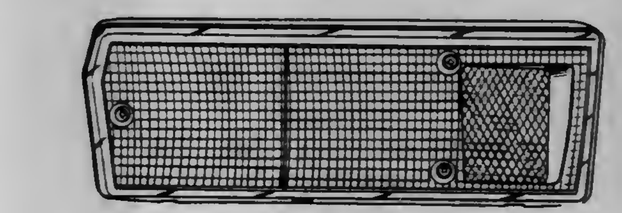
Hugo Magi, Etobicoke, Ontario, Canada, assignor to Aqua-Marine Mfg. Limited, Toronto, Ontario, Canada
Filed Mar. 10, 1969, Ser. No. 16,161
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D48—32



221,990

TAIL LAMP FOR AUTOMOBILE VEHICLES

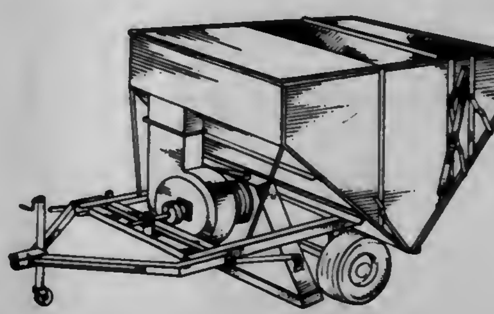
Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France
Filed Oct. 31, 1969, Ser. No. 19,875
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D48—32



221,991

TURF VACUUMING DEVICE

William S. Jensen, Rolling Hills Estates, Calif., assignor to Turf-Vac Corporation, Long Beach, Calif.
Filed Jan. 26, 1970, Ser. No. 21,097
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D49—9.1

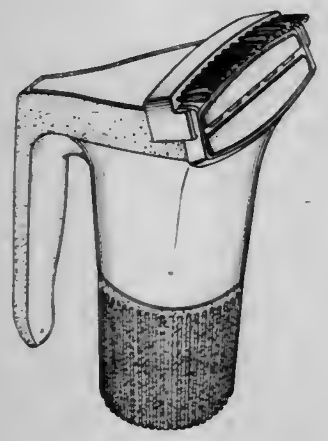


221,992
STEAM GENERATING APPLIANCE

Bernard B. Bluestein, Des Plaines, and Douglas G. Long, Lombard, Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed July 13, 1970, Ser. No. 23,919
Term of patent 14 years
Int. Cl. D7—*05*; D15—*05*

U.S. Cl. D49—13

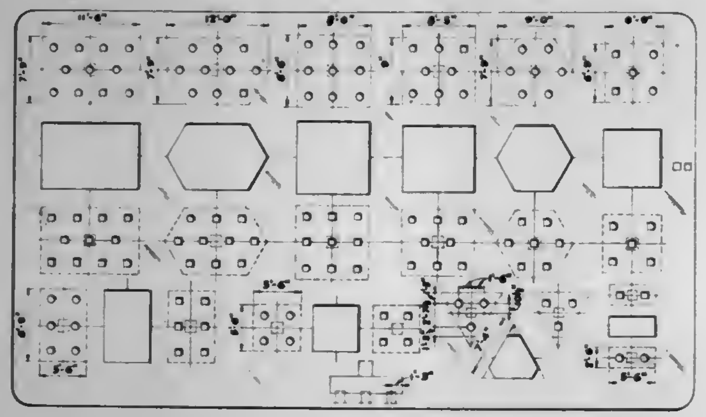


221,993
PILECAP TEMPLATE

Robert J. Crawford, 7019 Altair Parkway, Sacramento, Calif. 95823

Filed Feb. 9, 1970, Ser. No. 21,335
Term of patent 3½ years
Int. Cl. D10—*99*

U.S. Cl. D52—6

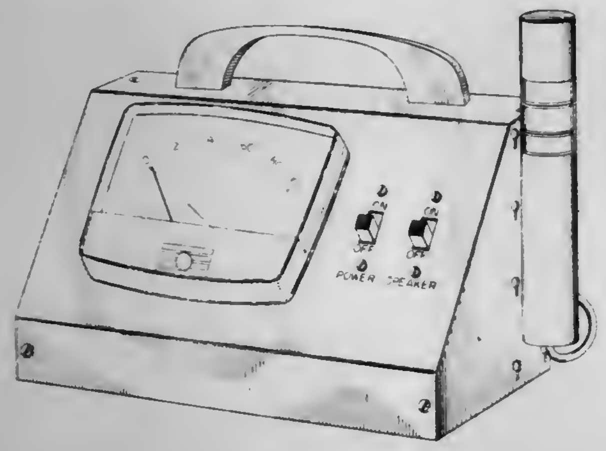


221,994
NUCLEAR RATE METER

Wayne J. Gemmill, Warwick, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 12, 1970, Ser. No. 21,869
Term of patent 14 years
Int. Cl. D10—*11*

U.S. Cl. D52—6

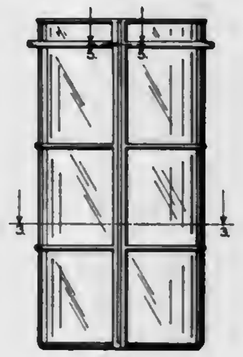


221,995
MOLD FOR TEST CYLINDERS

James W. Rudicil, 504 S. 15th St., Blue Springs, Mo.

Filed May 13, 1970, Ser. No. 22,957
Term of patent 14 years
Int. Cl. D8—*99*

U.S. Cl. D54—8

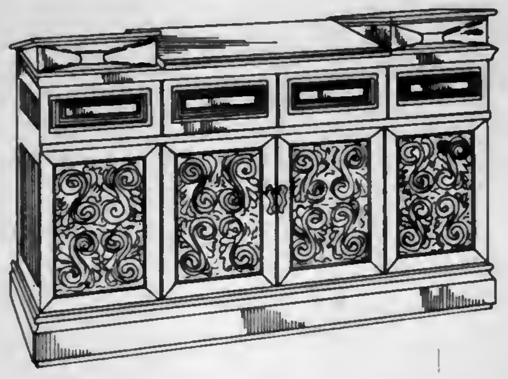


221,996
CABINET FOR A STEREO PHONOGRAPH OR SIMILAR ARTICLE

Daniel J. Domin, Deerfield, and Thomas E. Duvall, Morton Grove, Ill., assignors to TMA Company, Wheeling, Ill.

Filed Aug. 10, 1970, Ser. No. 24,412
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D56—4

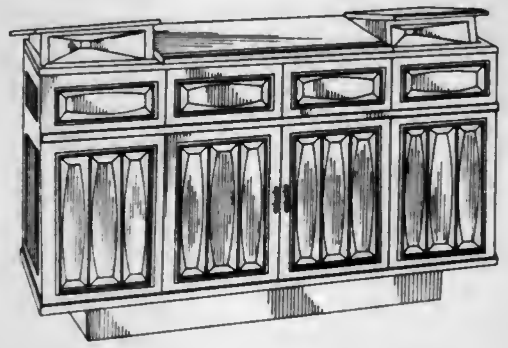


221,997
CABINET FOR A STEREO PHONOGRAPH OR SIMILAR ARTICLE

Daniel J. Domin, Deerfield, and Thomas E. Duvall, Morton Grove, Ill., assignors to TMA Company, Wheeling, Ill.

Filed Aug. 10, 1970, Ser. No. 24,413
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D56—4

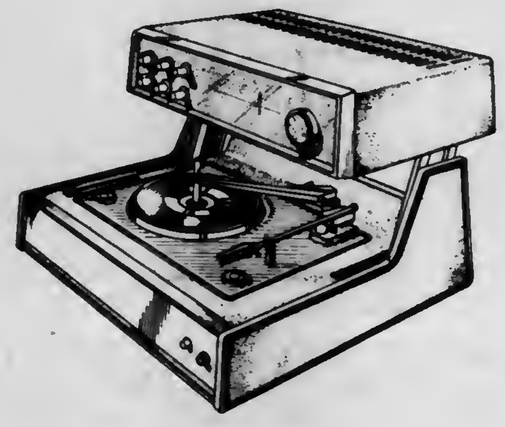


221,998
COMBINED RECORD PLAYER AND RADIO-AMPLIFIER OR SIMILAR ARTICLE

Hideo Wada, Chigasaki, Sukeyoshi Nashinoki, Yokohama, and Itsuo Kato and Tsutomu Murakami, Tokyo, Japan; said Nashinoki and Kato assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 14, 1970, Ser. No. 24,960
Claims priority, application Japan Mar. 13, 1970
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D56—4

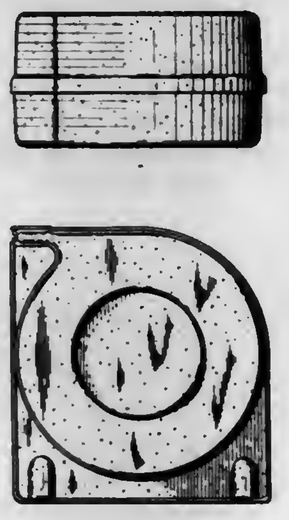


221,999
FILM CASSETTE

Max Steinberg, Lake Success, Arthur Elian, Great Neck, Louis Verrone, Pearl River, and Roger Klingenberg, Stony Point, N.Y., assignors to Apex Photoletter Composing, Inc., Great Neck, N.Y.

Filed June 29, 1970, Ser. No. 23,704
Term of patent 14 years
Int. Cl. D16—*99*; D14—*02*

U.S. Cl. D61—1

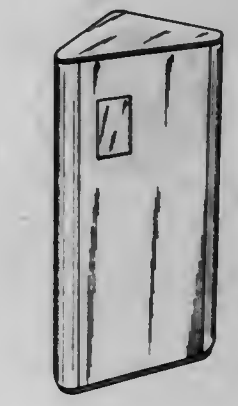


222,000
SAFE FOR VALUABLES OR THE LIKE

Marco Zanuso, Milan, Italy, assignor to Parma Antonio & Figli S.A.S., Saronno, Varese, Italy

Filed Apr. 28, 1970, Ser. No. 22,687
Claims priority, application Italy Jan. 23, 1970
Term of patent 3½ years
Int. Cl. D31

U.S. Cl. D69—1

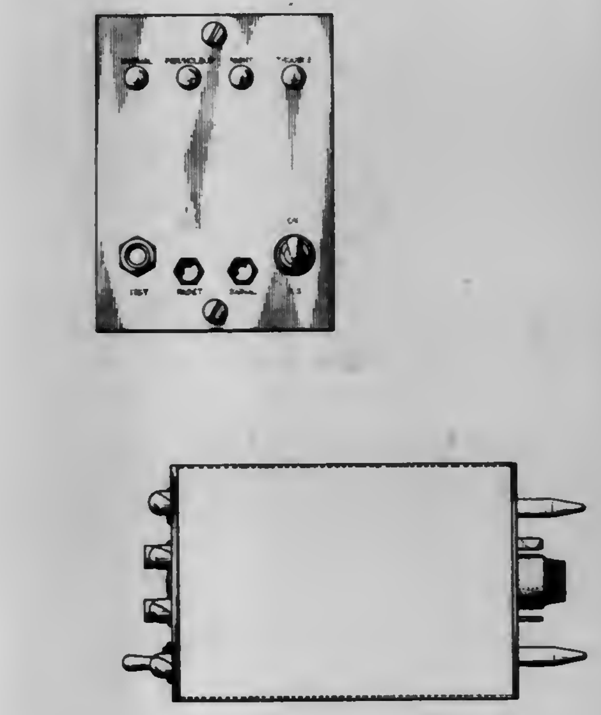


222,001
SUPPORT HOUSING FOR ELECTRONIC ALARM UNIT

James F. Pinkham, Kensington, Md., assignor to Multra-Guard, Inc., Rockville, Md.

Filed Feb. 5, 1970, Ser. No. 21,294
Term of patent 14 years
Int. Cl. D29—*99*

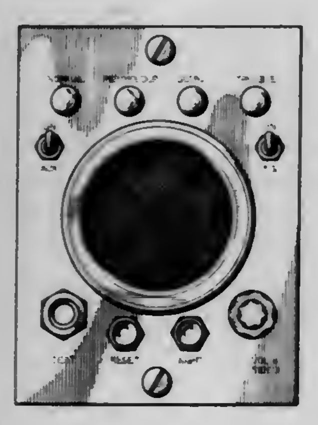
U.S. Cl. D72—1



222,002
SUPPORT HOUSING FOR SECURITY ALARM UNIT

James F. Pinkham, Kensington, Md., assignor to
Multra-Guard, Inc., Rockville, Md.
Filed Feb. 5, 1970, Ser. No. 21,295
Term of patent 14 years
Int. Cl. D29—*99*

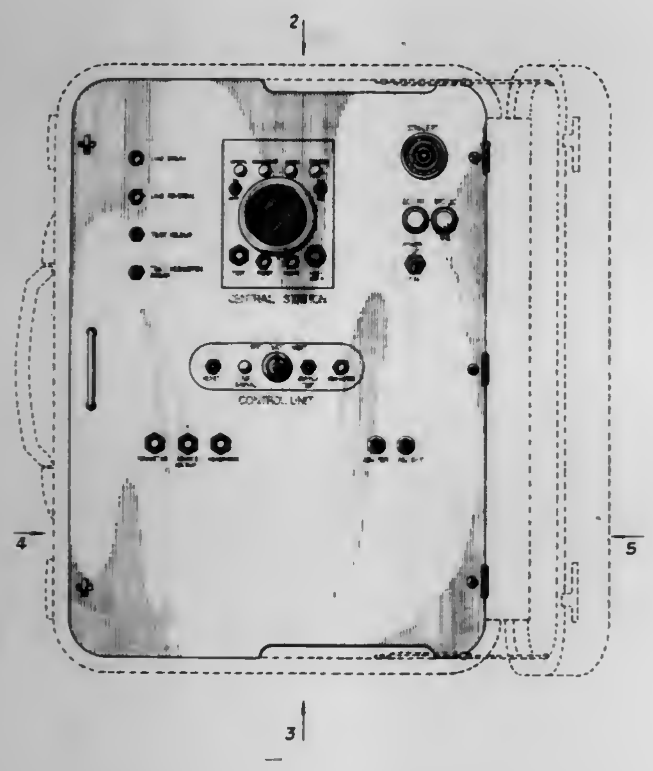
U.S. Cl. D72—1



222,003
INDICATOR PANEL FOR A SECURITY ALARM SYSTEM PORTABLE DEMONSTRATOR UNIT

James F. Pinkham, Kensington, Md., assignor to
Multra-Guard, Inc., Rockville, Md.
Filed Feb. 5, 1970, Ser. No. 21,296
Term of patent 14 years
Int. Cl. D29—*99*

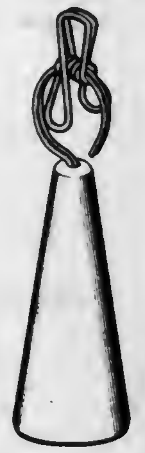
U.S. Cl. D72—1



222,004
HOLDER FOR MEMOS, CARDS OR THE LIKE

Venita R. Jensen, 9110 Rayford Ave.,
Los Angeles, Calif. 90045
Filed Jan. 30, 1970, Ser. No. 21,167
Term of patent 7 years
Int. Cl. D19—*02*

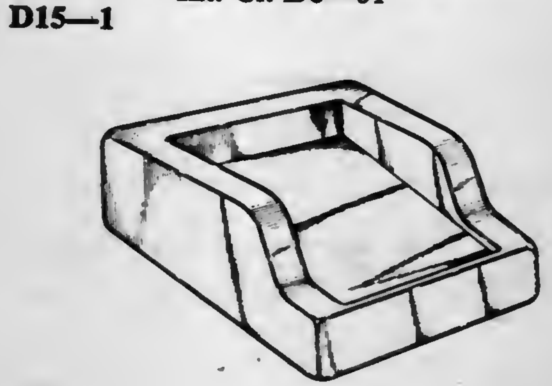
U.S. Cl. D74—1



222,005
COMBINED ARMREST AND TRAY FOR PASSENGER PLANES

Arthur F. Kelly, Los Angeles, Calif., assignor to Western Air Lines, Inc., Los Angeles, Calif.
Filed Jan. 23, 1970, Ser. No. 21,055
Term of patent 14 years
Int. Cl. D6—*01*

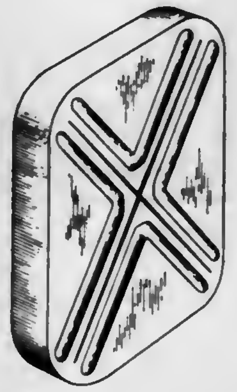
U.S. Cl. D15—1



222,006
END CLOSURE FOR A NEWSPAPER DELIVERY TUBE

Paul H. Pennell, North Jackson, Ohio, assignor to Elastomeric Products Inc., North Jackson, Ohio
Filed May 6, 1970, Ser. No. 22,830
Term of patent 14 years
Int. Cl. D31

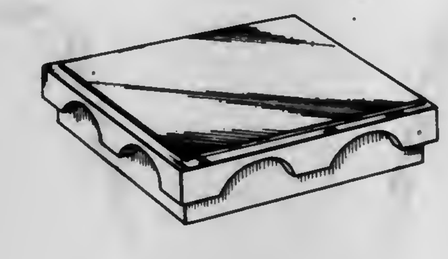
U.S. Cl. D74—9



222,007
PILLOW DISPLAY STAND

James T. Peterson, Prospect Heights, Ill., assignor to
Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Dec. 15, 1969, Ser. No. 20,490
Term of patent 14 years
Int. Cl. D6—*06*

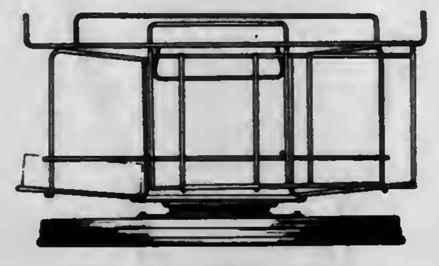
U.S. Cl. D80—9

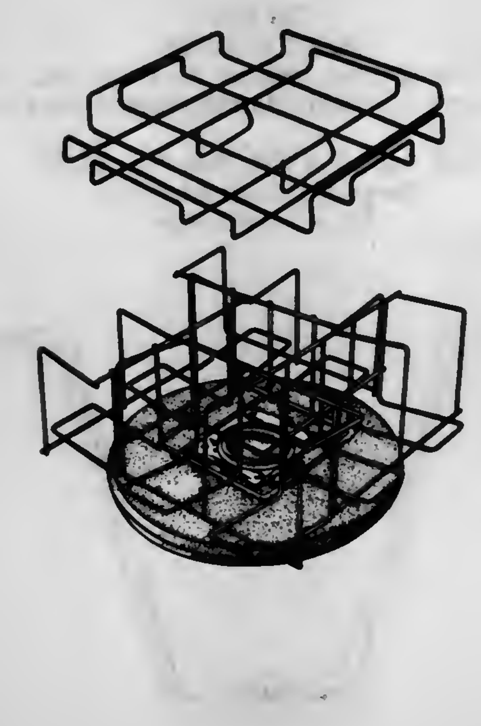


222,008
ROTATABLE STORAGE AND DISPLAY STAND FOR TAPE OR FILM CARTRIDGES OR THE LIKE

Henry V. Ivory, Chatham, N.J., assignor to
Boorum & Pease Company, Brooklyn, N.Y.
Filed Nov. 3, 1969, Ser. No. 19,906
Term of patent 14 years
Int. Cl. D6—*01*

U.S. Cl. D80—10

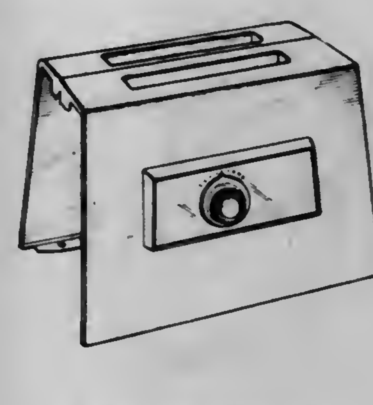




222,009
TOASTER SHELL

John E. Reed, Glen Ellyn, and Julian R. Haynes, Hinsdale, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Oct. 14, 1969, Ser. No. 19,550
Term of patent 14 years
Int. Cl. D7—*04*

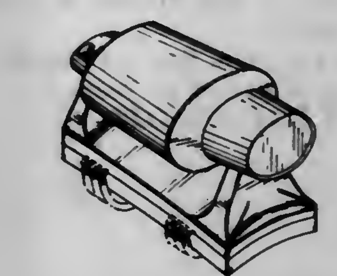
U.S. Cl. D81—10

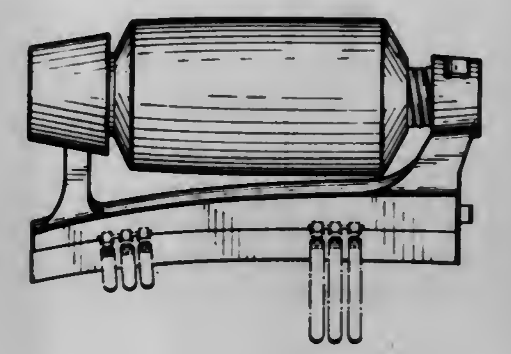


222,010
HOUSING FOR A MASSAGER

Alfred W. Madl, Glendale, Wis., assignor to John Oster Manufacturing Co., Milwaukee, Wis.
Filed July 16, 1970, Ser. No. 23,979
Term of patent 14 years
Int. Cl. D24—*99*

U.S. Cl. D83—1

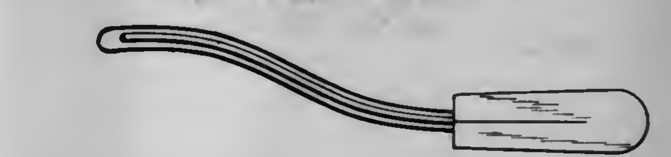


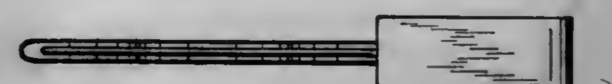


222,011
VAGINAL CLEANSING DEVICE

John B. Fansler, Wayzata, John A. Hay, Maple Plain, Patrick J. Kelley, Eden Prairie, and Glen J. Einess, Minneapolis, Minn., assignors to Fuller Laboratories Inc., Eden Prairie, Minn.
Filed Apr. 22, 1970, Ser. No. 22,562
Term of patent 14 years
Int. Cl. D24—*99*; D7—*99*

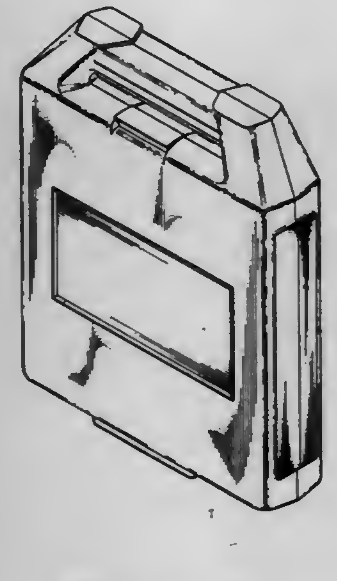
U.S. Cl. D83—12





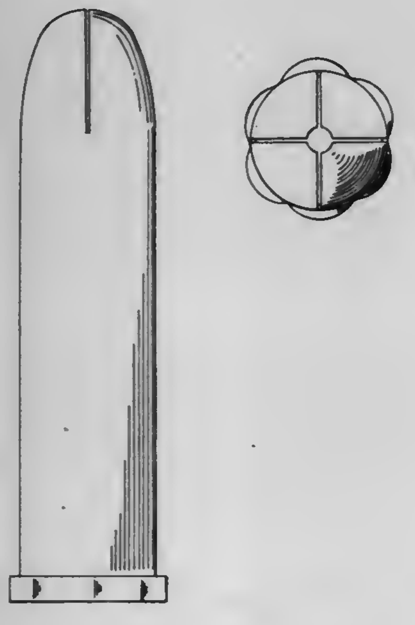
222,012
MAGNETIC TAPE REEL CASE

James E. Harris, Auburn, Ala., assignor to Ampex Corporation, Redwood City, Calif.
Filed June 19, 1970, Ser. No. 23,569
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



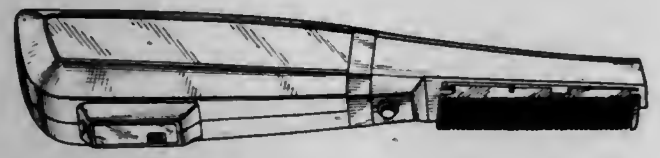
222,013
OUTER TUBE FOR A TAMPON INSERTER

Alfred R. Thomas, Wyoming, and Darrel D. Koxx, Greenhills, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 18, 1970, Ser. No. 21,492
Term of patent 14 years
Int. Cl. D24—*99*; D28—*01*
U.S. Cl. D83—12



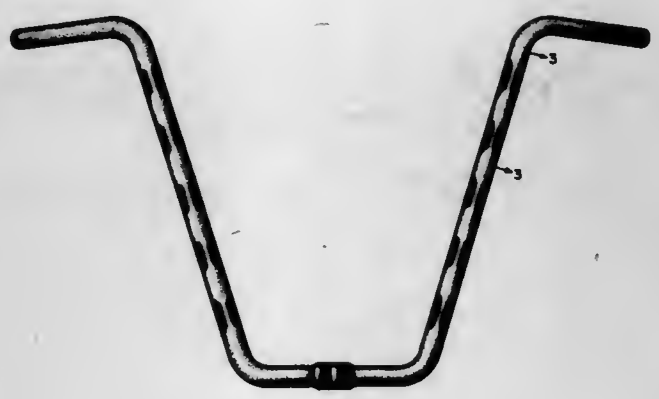
222,014
ELECTRICALLY HEATED COMB

Norman A. Steinkamp, Chicago Heights, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 13, 1970, Ser. No. 23,931
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



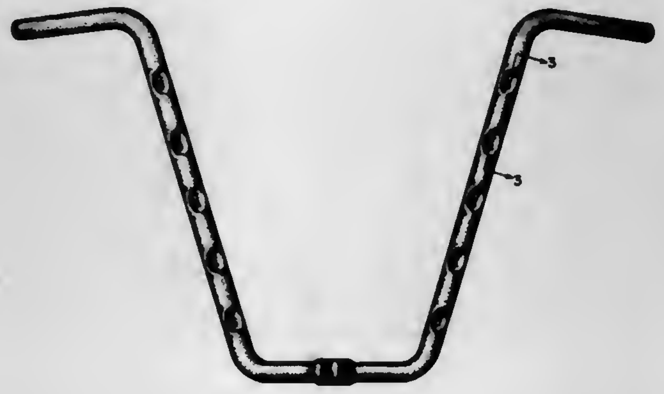
222,015
HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,289
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11



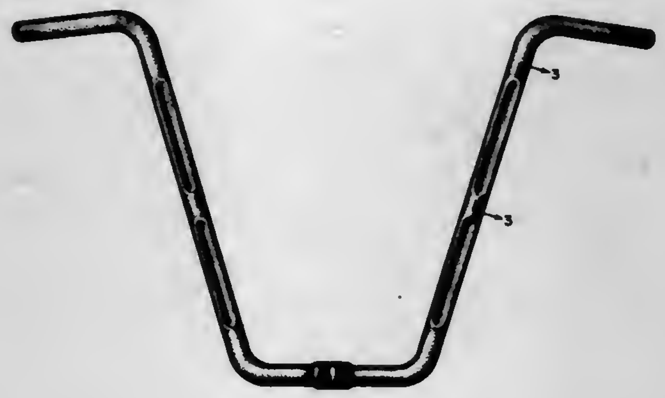
222,016
HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,290
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11



222,017
HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,291
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11



222,018
HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,292
Term of patent 14 years
Int. Cl. D12—*14*
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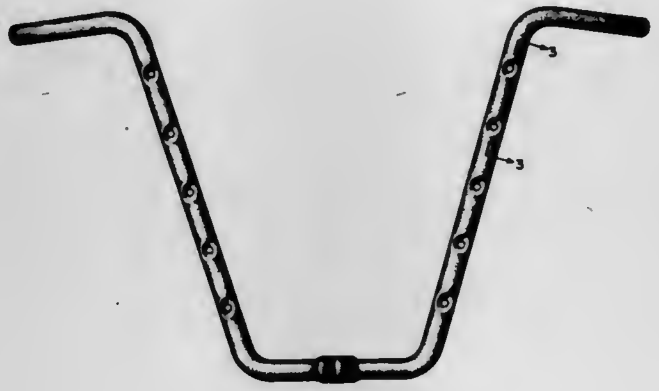
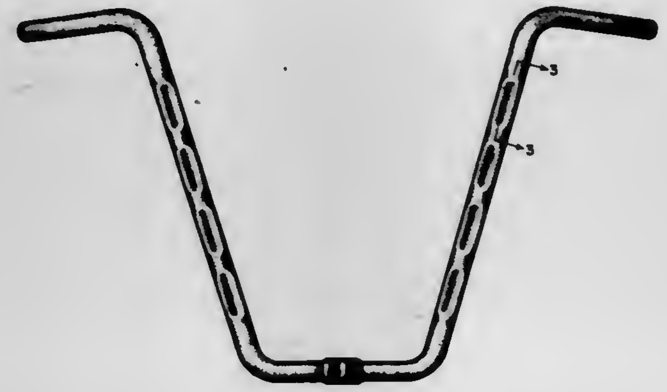


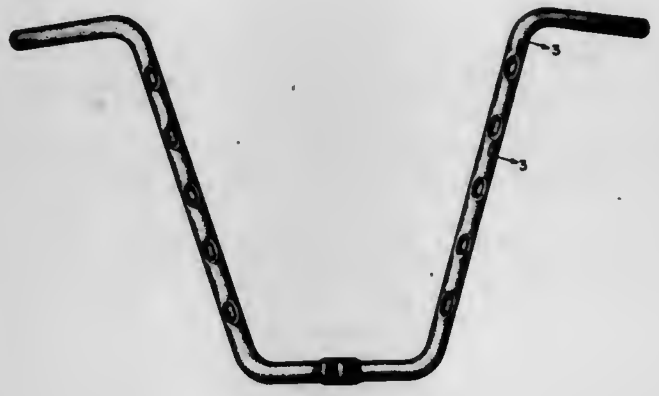
222,019
HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,293
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11



222,020
HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,294
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11



222,021
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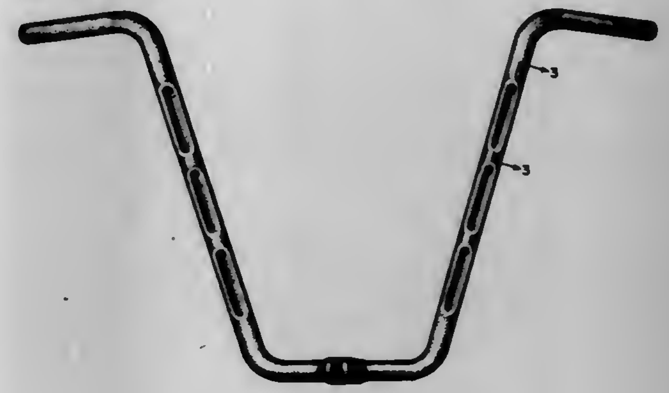
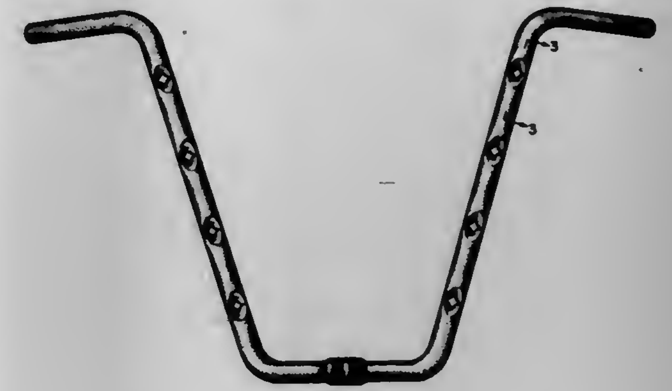
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,295
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11



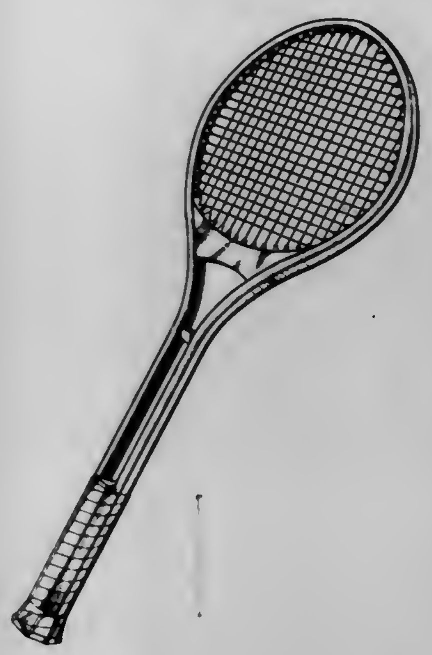
222,022
HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 6, 1970, Ser. No. 22,296
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11



222,023
RACKET

Peter A. Latham, Newburyport, and Paul E. Brefka, Southboro, Mass. (both of 39 Commercial Wharf, Boston, Mass. 02110)
Filed Oct. 8, 1970, Ser. No. 25,393
Term of patent 14 yeras
Int. Cl. D21—*02*
U.S. Cl. D34—5



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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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- AB Tetro Pak: *See—*
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Champaneria, Ashok J., T. P. Doherty, and R. R. Moneymaker. Trilobal nylon filaments containing poly(alkylene ether). T890,011, 9–21–71, Cl. 161—174.
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  Rogers, Fulton F., Jr., and Kirk. T890,006.
  Seever, Larry E. T890,004.
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Folzenlogen, Paul D., W. C. Watkins, and H. J. Hagemeyer, Jr. Chlorinated carboxyl group containing rubbers. T890,007, 9–21–71, Cl. 260—78.4.
Frazier, Alva W. Stabilization of polyphosphate fertilizer solutions by fluorides or fluosilicates. T890,010, 9–21–71, Cl. 71—34.
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Lawrence, Ray H. Apparatus for blow molding undercut articles. T890,013, 9–21–71, Cl. 18—5.
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McKenney, Stanley A., II, to Avco Corp. Motor home body. 221,933, 9-21-71, Cl. D14—3.

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Mitchell, Joseph E. Game board. 221,961, 9-21-71, Cl. D34—5.

Mohasco Industries, Inc. : *See—*
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Motor Wheel Corp. : *See—*
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Muntwyler, Fredric C., Sr., to Wire Machinery Inc. Electric fence insulator. 221,952, 9-21-71, Cl. D26—10.

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Steinberg, Max, A. Elian, L. Verrone, and R. Klingenberg, to Apex Photoletter Composing, Inc. Film cassette. 221,999, 9-21-71, Cl. D61—1.

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Sylvania Electric Products, Inc. : *See—*
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Domin, Daniel J., and Duvall. 221,997.

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DEFENSIVE PUBLICATIONS APPLICATIONS

(Notice of Dec. 16, 1969, 869 O.G. 687)

11 : T890,008
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PATENT OFFICE NOTICES

PRESIDENTIAL DOCUMENTS, TITLE 3— THE PRESIDENT

MEMORANDUM OF AUGUST 23, 1971

Government Patent Policy

Memorandum for Heads of Executive Departments and Agencies

THE WHITE HOUSE,
Washington, August 23, 1971.

On October 10, 1963, President Kennedy forwarded to the Heads of Executive Departments and Agencies a Memorandum and Statement of Government Patent Policy for their guidance in determining the disposition of rights to inventions made under Government-sponsored grants and contracts. On the basis of the knowledge and experience then available, this Statement first established Government-wide objectives and criteria, within existing legislative constraints, for the allocation of rights to inventions between the Government and its contractors.

It was recognized that actual experience under the Policy could indicate the need for revision or modification, Accordingly, a Patent Advisory Panel was established under the Federal Council for Science and Technology for the purpose of assisting the agencies in implementing the Policy, acquiring data on the agencies' operations under the Policy, and making recommendations regarding the utilization of Government-owned patents. In December 1965, the Federal Council established the Committee on Government Patent Policy to assess how this Policy was working in practice, and to acquire and analyze additional information that could contribute to the reaffirmation or modification of the Policy.

The efforts of both the Committee and the Panel have provided increased knowledge of the effects of Government patent policy on the public interest. More specifically, the studies and experience over the past 7 years have indicated that:

(a) A single presumption of ownership of patent rights to Government-sponsored inventions either in the Government or in its contractors is not a satisfactory basis for Government patent policy, and that a flexible, Government-wide policy best serves the public interest;

(b) The commerical utilization of Government-sponsored inventions, the participation of industry in Government research and development programs, and commercial competition can be influenced by the following factors: the mission of the contracting agency; the purpose and nature of the contract; the commercial applicability and market potential of the invention; the extent to which the invention is developed by the contracting agency; the promotional activities of the contracting agency; the commercial orientation of the contractor and the extent of his privately financed research in the related technology; and the size, nature and research orientation of the pertinent industry;

(c) In general, the above factors are reflected in the basic principles of the 1963 Presidential Policy Statement.

Based on the results of the studies and experience gained under the 1963 Policy Statement certain improvements in the Policy have been recommended which would provide (1) agency heads with additional authority to permit contractors to obtain greater rights to inventions where necessary to achieve utilization or where equitable circumstances would justify such allocation of rights, (2) additional guidance to the agencies in promoting the utilization of Government-sponsored inventions, (3) clarification of the rights of States and municipal governments in inventions in which the Federal Government acquires a license, and (4) a more definitive data base for evaluating the administration and effectiveness of the Policy and the feasibility and desirability of further refinement or modification of the Policy.

I have approved the above recommendations and have attached a revised Statement of Government Patent Policy for your guidance. As with the 1963 Policy Statement, the Federal Council shall make a continuing effort to record, monitor and evaluate the effects of this Policy Statement. A Committee on Government Patent Policy, operating under the aegis of the Federal Council for Science and Technology, shall assist the Federal Council in these matters.

This memorandum and statement of policy shall be published in the Federal Register.

RICHARD NIXON.

STATEMENT OF GOVERNMENT PATENT POLICY

BASIC CONSIDERATIONS

A. The Government expends large sums for the conduct of research and development which results in a considerable number of inventions and discoveries.

B. The inventions in scientific and technological fields resulting from work performed under Government contracts constitute a valuable national resource.

C. The use and practice of these inventions and discoveries should stimulate inventors, meet the needs of the Government, recognize the equities of the contractor, and serve the public interest.

D. The public interest in a dynamic and efficient economy requires that efforts be made to encourage the expeditious development and civilian use of these inventions. Both the need for incentives to draw forth private initiatives to this end, and the need to promote healthy competition in industry must be weighed in the disposition of patent rights under Government contracts. Where exclusive rights are acquired by the contractor, he remains subject to the provisions of the antitrust laws.

E. The public interest is also served by sharing of benefits of Government-financed research and development with foreign countries to a degree consistent with our international programs and with the objectives of U.S. Foreign policy.

F. There is growing importance attaching to the acquisition of foreign patent rights in furtherance of the interests of U.S. industry and the Government.

G. The prudent administration of Government research and development calls for a Government-wide policy on the disposition of inventions made under Government contracts reflecting common principles and objectives, to the extent consistent with the missions of the respective agencies. The policy must recognize the need for flexibility to accommodate special situations.

POLICY

SECTION 1. The following basic policy is established for all Government agencies with respect to inventions or discoveries made in the course of or under any contract of any Government agency, subject to specific statutes governing the disposition of patent rights of certain Government agencies.

(a) Where

(1) a principal purpose of the contract is to create, develop or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulations; or

(2) a principal purpose of the contract is for exploration into fields which directly concern the public health, public safety, or public welfare; or

(3) the contract is in a field of science or technology in which there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field, and the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position; or

(4) the services of the contractor are

(i) for the operation of a Government-owned research or production facility; or

(ii) for coordinating and directing the work of others,

the Government shall normally acquire or reserve the right to acquire the principal or exclusive rights throughout the world in and to any inventions made in the course of or under the contract.

In exceptional circumstances the contractor may acquire greater rights than a nonexclusive license at the time of contracting where the head of the department or agency certifies that such action will best serve the public interest. Greater rights may also be acquired by the contractor after the invention has been identified where the head of the department or agency determines that the acquisition of such greater rights is consistent with the intent of this Section 1(a) and is either a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application or that the Government's contribution to the invention is small compared to that of the contractor. Where an identified invention made in the course of or under the contract is not a primary object of the contract, greater rights may also be acquired by the contractor under the criteria of Section 1(c).

(b) In other situations, where the purpose of the contract is to build upon existing knowledge or technology, to develop information, products, processes, or methods for use by the Government, and the work called for by the contract is in a field of Technology in which the contractor has acquired technical competence (demonstrated by factors such as know-how, experience, and patent position) directly related to an area in which the contractor has an established nongovernmental commercial position, the contractor shall normally acquire the principal or exclusive rights throughout the world in and to any resulting inventions.

(c) Where the commercial interests of the contractor are not sufficiently established to be covered by the criteria specified in Section 1(b) above, the determination of rights shall be made by the agency after the invention has been identified, in a manner deemed most likely to serve the public interest as expressed in this policy statement, taking particularly into account the intentions of the contractor to bring the invention to the point of commercial application and the guidelines of Section 1(a) hereof, provided that the agency may prescribe by regulation special situations where the public interest in the availability of the inventions would best be served by permitting the contractor to acquire at the time of contracting greater rights than a nonexclusive license.

(d) In the situations specified in Sections 1(b) and 1(c), when two or more potential contractors are judged to have presented proposals of equivalent merit, willingness to grant the Government principal or exclusive rights in resulting inventions will be an additional factor in the evaluation of the proposals.

(e) Where the principal or exclusive rights in an invention remain in the contractor, he should agree to provide written reports at reasonable intervals, when requested by the Government, on the commercial use that is being made or is intended to be made of inventions made under Governmental contracts.

(f) Where the principal or exclusive rights in an invention remain in the contractor, unless the contractor, his licensee, or his assignee has taken effective steps within three years after a patent issues on the invention to bring the invention to the point of practical application or has made the invention available for licensing royalty-free or on terms that are reasonable in the circumstances, or can show cause why he should retain the principal or exclusive rights for a further period of time, the Government shall have the right to reqire the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable under the circumstances.

(g) Where the principal or exclusive rights to an invention are acquired by the contractor, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by governmental regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the contract.

(h) Whenever the principal or exclusive rights in an invention remain in the contractor, the Government shall normally acquire, in addition to the rights set forth in Sections 1(e), 1(f), and 1(g),

(1) at least a nonexclusive, nontransferable, paid-up license to make, use, and sell the invention throughout the world by or on behalf of the Government of the United States (including any Government agency) and States and domestic municipal governments, unless the agency head determines that it would not be in the public interest to acquire the license for the States and domestic municipal governments; and

(2) the right to sublicense any foreign government pursuant to any existing or future treaty or agreement if the agency head determines it would be in the national interest to acquire this right; and

(3) the principal or exclusive rights to the invention in any country in which the contractor does not elect to secure a patent.

(i) Whenever the principal or exclusive rights in an invention are acquired by the Government, there may be reserved to the contractor a revocable or irrevocable nonexclusive royalty-free license for the practice of the invention throughout the world; an agency may reserve the right to revoke such license so that it might grant an exclusive license when it determines that some degree of exclusivity may be necessary to encourage further development and commercialization of the invention. Where the Government has a right to acquire the principal or exclusive rights to an invention and does not elect to secure a patent in a foreign country, the Government may permit the contractor to acquire such rights in any foreign country in which he elects to secure a patent, subject to the Government's rights set forth in Section 1(h).

SEC. 2. Under regulations prescribed by the Administrator of General Services, Government-owned patents shall be made available and the technological advances covered thereby brought into being in the shortest time possible through dedication or licensing, either exclusive or non-exclusive, and shall be listed in official Government publications or otherwise.

SEC. 3. The Federal Council for Science and Technology in consultation with the Department of Justice shall prepare at least annually a report concerning the effectiveness of this policy, including recommendations for revision or modification as necessary in light of the practices and determinations of the agencies in the disposition of patent rights under their contracts. The Federal Council for Science and Technology shall continue to

(a) develop by mutual consultation and coordination with the agencies common guidelines for the implementation of this policy, consistent with existing statutes, and to provide overall guidance as to disposition of inventions and patents in which the Government has any right or interest; and

(b) acquire data from the Government agencies on the disposition of patent rights to inventions resulting from federally financed research and development and on the use and practice of such inventions to serve as bases for policy review and development; and

(c) make recommendations for advancing the use and exploitation of Government-owned domestic and foreign patents.

Each agency shall record the basis for its actions with respect to inventions and appropriate contracts under this statement.

SEC. 4. Definitions: As used in this policy statement, the stated terms in singular and plural are defined as follows for the purposes hereof:

(a) *Government agency*—includes any executive department, independent commission, board, office, agency, administration, authority, Government corporation, or other Government establishment of the executive branch of the Government of the United States of America.

(b) *States*—means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam and the Trust Territory of the Pacific Islands.

(c) *Invention, or Invention or discovery*—includes any art, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the Patent Laws of the United States of America or any foreign country.

(d) *Contractor*—means any individual, partnership, public or private corporation, association, institution, or other entity which is a party to the contract.

(e) *Contract*—means any actual or proposed contract, agreement, grant, or other arrangement, or subcontract entered into with or for the benefit of the Government where a purpose of the contract is the conduct of experimental, developmental, or research work.

(f) *Made*—when used in relation to any invention or discovery means the conception or first actual reduction to practice of such invention in the course of or under the contract.

(g) *To the point of practical application*—means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

[FR Doc. 71-12623; Filed 8-25-71; 10:41 am]

36 F.R. 16887-16892; Aug. 26, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,050,067, D. M. Caplan, FLEXIBLE HOSE; **3,194,705**, same, METHOD AND APPARATUS FOR MAKING REINFORCED CORRUGATED HOSE, filed May 24, 1971, D.C. Colo. (Denver), Doc. C-3138, *H. K. Porter Company, Inc.* v. *The Gates Rubber Company*. Same, filed May 26, 1971, D.C., S.D. Ohio (Dayton), Doc. C-4059, *H. K. Porter Co., Inc.* v. *Dayco Corporation*. Same, filed May 27, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. C.A. 71-501, *Dayco Corporation* v. *H. K. Porter Company, Inc.* Same, filed May 27, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. C.A. 71-495, *The Gates Rubber Company* v. *H. K. Porter Company, Inc.*

3,061,812, A. Z. Rachwalski, PULSE TYPE DEPTH SOUNDER; **D. 189,914**, Emerson and Curtis, INDICATING DEVICE, filed Sept. 22, 1967, D.C. Del. (Wilmington), Doc. 3406, *Jetronic Industries Inc.* v. *Raytheon Company*. Stipulation for dismissal under Rule 41 without prejudice, Apr. 2, 1971.

3,103,666, A. R. Bone, TAG ATTACHING APPARATUS, filed May 25, 1971, D.C., S.D.N.Y., Doc. 71-C-2333, *Dennison Manufacturing Company* v. *Ben Clements & Sons, Inc.*

3,104,699, Wolf, Holland and Sharp, OVERHEAD DOOR CONSTRUCTION; **3,169,612**, same; **D. 194,094**, Wolf and Holland, OVERHEAD GARAGE DOOR, filed Mar. 1, 1967, D.C.N.J. (Trenton), Doc. 224-67, *Frantz Manufacturing Company* v. *Ridge Nassau Corporation*. Consent order of dismissal without prejudice, May 4, 1971.

3,129,927, A. D. Mast, MIXING APPARATUS FOR FLUENT MATERIAL, filed June 3, 1971, D.C., E.D. Pa. (Philadelphia), Doc. CA-71-1353, *Feedmobile, Inc.* v. *Portable Mills, Inc.*

3,141,105, J. S. Courtney-Pratt, CATHODE RAY TUBE WITH COMPOSITE MULTIPLE CLASS FIBRE FACE, filed Apr. 9, 1971, U.S. Ct. of Cl., Doc. 293-71, *American Optical Corporation* v. *The United States*.

3,141,872, Natta, Pino and Mazzanti, POLYMERIZATION CATALYST AND STEREOSPECIFIC POLYMERIZATION OF PROPYLENE THEREWITH, filed Oct. 13, 1970, D.C., W.D. Tex. (Pecos), Doc. MO-70-CA-85, *Montecatini Edison S.p.A.* v. *Dart Industries Inc.* This action as to defendant Dart Industries Inc., was transferred to U.S. District Court of Delaware, June 8, 1971. Defendant El Paso Products was severed therefrom and action against it stayed pending final determination of suit against defendant Dart Industries Inc. in the District of Delaware, June 11, 1971.

3,161,997, G. W. Balz, FINISHING AND POLISHING METHOD; **3,161,998**, same, FINISHING APPARATUS AND METHOD, filed May 7, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1108, *Roto-Finish Company* v. *Eltramatic Equipment Co.*

3,161,998. (See 3,161,997.)

3,168,763, W. B. Gilbert, SOLID CORE DOOR, filed Apr. 30, 1971, D.C., E.D. Mich. (Detroit), Doc. 36428, *Lifetime Doors, Inc.* v. *Walled Lake Door Company*.

3,169,612. (See 3,104,699.)

3,171,507. (See 3,275,724.)

3,194,705. (See 3,050,087.)

3,239,952, Lange and Lange, SKI BOOT; **3,419,974**, same, filed Apr. 20, 1971, D.C. Colo. (Denver), Doc. C-3047, *The Lange Co.* v. *Pepi's Sport's, Inc.*

3,251,016, Manetti and Brugger, ELECTRON TUBE SOCKETS; **3,543,098**, Simovits, Jr., Dumas and Manetti, ELECTRON TUBE SOCKET ASSEMBLY, filed Apr. 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c813, *American Plasticraft Co.* v. *Permonite Mfg. Co.*

3,253,741, Russell and Anderson, CAR WASH DEVICE; **3,389,860**, H. L. Null, AUTOMOTIVE VEHICLE WASH SYSTEMS, filed Aug. 28, 1968, D.C.N.J. (Newark), Doc. 879-68, *Bernardi Bros., Inc.* v. *Pride Manufacturing, Inc. et al.* Order of dismissal of action, May 24, 1971.

3,275,724, J. G. Klingel, METHOD OF AUTOCLAVING CONCRETE BLOCKS, **3,171,507**, same, MUFFLER FOR FIRED HEATER AUTOCLAVE SYSTEM; **3,423,805**, same, AUTOCLAVING APPARATUS, filed Dec. 5, 1966, D.C., W.D.N.Y. (Buffalo), Doc. C-1966-214, *Struthers Scientific and International Corp.* v. *Rappl & Hoenig Co., Inc.* Judgment restraining defendant from further infringing, May 20, 1971.

3,277,417, E. C. Rechel, INDUCTOR AND METHOD OF MANUFACTURE; **3,373,390**, E. D. Rechel, ELECTRICAL INDUCTANCE AND METHOD, filed Mar. 25, 1971, D.C. Mass. (Boston), Doc. C.A. 71-742-C, *Edwin C. Rechel* v. *Robert E. Tuller and Coil Winding Devices, Inc.*

3,358,088, R. A. Gault, ELECTROMECHANICAL TRANSDUCER, filed May 5, 1971, D.C., S.D.N.Y., Doc. 71-C-1991, *CTS Corporation* v. *Becker Electronics Mfg. Corp.*

3,373,390. (See 3,277,417.)

3,389,860. (See 3,253,741.)

3,419,974. (See 3,239,252.)

3,423,805. (See 3,275,724.)

3,543,098. (See 3,251,016.)

D. 189,914. (See 3,061,812.)

D. 194,094. (See 3,104,699.)

Certificates of Correction for the Week of Sept. 28, 1971

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Patents Available for Licensing

DEPARTMENT OF AGRICULTURE

Pursuant to 7 CFR 19.3 (35 FR 7493), the Administrator of the Agricultural Research Service, U.S. Department of Agriculture has determined that certain Department inventions shall be made available for exclusive licensing under the provisions of Government Patent Policy (28 FR 10943) and 7 CFR 19.5 (35 FR 7493). Notice is hereby given that the following Department inventions are available for exclusive licensing:

3,522,238. ACIDIFIED ETHYLENIMINE MODIFIED CEREAL FLOURS, John C. Rankin and Charles R. Russell.

3,373,175. CONJUGATION OF VEGETABLE OILS VIA IRON TRICARBONYL COMPLEX, Edwin N. Frankel.

3,392,177. CONJUGATION OF VEGETABLE OILS VIA IRON TRICARBONYL COMPLEX AND DECOMPOSITION THEREOF BY CARBON MONOXIDE, Edwin N. Frankel.

3,175,928. ANHYDROUS HCl MODIFICATION OF FLOUR, Earl B. Lancaster and Edward L. Griffin, Jr.

3,073,724. PROCESS FOR PREPARING IMPROVED SIZING AGENTS FROM CEREAL FLOURS, John C. Rankin, Charles R. Russell, and John H. Samalik, Sr.

3,515,678. SELECTIVE HYDROGENATION OF SOYBEAN OIL WITH SUPPORTED COPPER CATALYSTS, Sambasivarao Koritala.

3,153,597. POLYMERIC DIALDEHYDE-PROTEIN ADHESIVES AND WOOD LAMINATES THEREWITH, Francis B. Weakley and Charles L. Mehltretter.

3,329,518. PROTEIN GLUE FOR SOUTHERN PINE PLYWOOD, Francis B. Weakley and Charles L. Mehltretter.

3,192,239. PROCESS FOR ADDITION OF ARYLTHIOLS, PHENOLS, AND PHENYL ETHERS TO UNSATURATED FATTY ACIDS, Waldo C. Ault and Abner Eisner.

3,293,237. PROCESS OF SOLUBILIZING NATIVE COLLAGEN BY REACTING SAID COLLAGEN WITH A STOICHIOMETRIC AMOUNT OF MINERAL ACID, Charles J. W. Wiegand.

3,393,214. BENZHYDRYL ESTERS OF DIMER ACID, Winfred E. Parker, Hogan B. Knight, Ronald E. Koos, and Waldo C. Ault.

3,498,737. PROCESS FOR PRODUCING SCULPTURED LACE FROM FLAT LACE, Helen M. Robinson, Albert S. Cooper, Jr., Wilson A. Reeves, and Milton J. Hoffman.

2,979,374. FIBROUS TEXTILE CELLULOSIC PHOSPHONOMETHYL ETHERS, George L. Drake, Jr., Wilson A. Reeves, and John D. Guthrie.

3,503,998. REACTION PRODUCTS OF DIAMINES AND MONOACID CHLORIDE OF MALEOPIMARIC ACID, Walter H. Schuller and Ray V. Lawrence.

3,489,074. HELICAL PUMPING SYSTEM, D. F. Farkas, and M. E. Lazar.

3,391,986. PROCESS FOR SHRINKPROOFING ANIMAL FIBERS, W. J. Thorsen.

3,522,211. POLYIMIDE-POLYAMIDES FROM MALEOPIMARIC ACID DERIVATIVES, Walter H. Schuller and Ray V. Lawrence.

AVAILABILITY OF INVENTIONS PREVIOUSLY ADVERTISED

The following inventions, advertised 36 F.R. 1919, Feb. 3, 1971, remain available for exclusive licensing: 3,165,508; 3,377,302; 3,414,530; 3,425,971; 3,160,552; 3,385,719; 3,205,130; 3,084,094; and 3,431,116.

Applicants for exclusive licenses will have a period of 60 days from date of publication (36 FR 17515, Sept. 1, 1971) in which to file information as required by Sec. 19.6 Application for Licenses, 7 CFR (35 F.R. 7493). Also, applicants should examine all other Sections published under Part 19, Licensing Department Inventions. Applications should be mailed to the Administrator, Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C., 20250.

T. W. EDMINSTER,
Administrator, Agricultural Research Service.

Aug. 27, 1971.

Disclaimers

3,296,848.—*Alfred M. Murphy* and *Carl M. Filak*, Chester, and *Thomas P. Long*, Henrico County, Va. METHOD AND APPARATUS FOR EXTRUDING TUBULAR MEMBERS FROM SOLID BILLETS OR THE LIKE. Patent dated Jan. 10, 1967. Disclaimer filed July 2, 1971, by the assignee, *Reynolds Metals Company*.

Hereby enters this disclaimer to claim 1 of said patent.

3,373,257.—*Lynn H. Matthias*, Fox Point Village, and *Roy E. Wilson*, Milwaukee, Wis. FLUID DAMPED ELECTRIC SWITCH ACTUATOR. Patent dated Mar. 12, 1968. Disclaimer filed Jan. 29, 1971, by the assignee, *Allen-Bradley Company*.

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

3,494,352.—*Ronald D. Russo*, East Rutherford, and *James C. Halligan*, Rodburn, N.J. APPARATUS FOR TAKING MULTIPLE SAMPLES. Patent dated Feb. 10, 1970. Disclaimer filed Aug. 20, 1971, by the assignee, *Becton, Dickinson and Company*.

Hereby disclaims the portion of the term of the patent subsequent to Sept. 30, 1986.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 7, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-05-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-09-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-20-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-03-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-01-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	12-29-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-31-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-14-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-21-70
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-14-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	8-17-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-06-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	5-15-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-04-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	9-14-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	7-27-70

Expiration of patents: The patents within the range of numbers indicated below expire during September 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,688,133 to 2,690,559, inclusive
Plant Patents	Numbers 1,300 to 1,307, inclusive

PATENTS

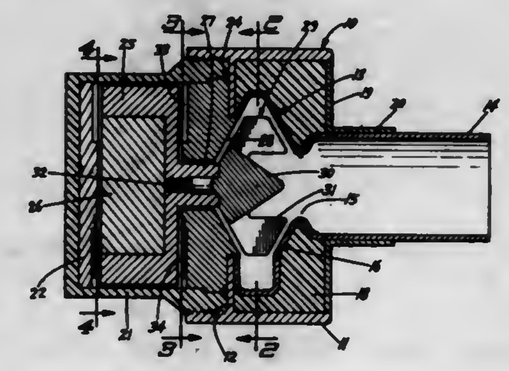
GRANTED SEPTEMBER 28, 1971

GENERAL AND MECHANICAL

3,608,088
IMPLANTABLE BLOOD PUMP

Frank D. Dorman, St. Paul, Eugene F. Bernstein, Minneapolis, and Perry L. Blackshear, Mahtomedi, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

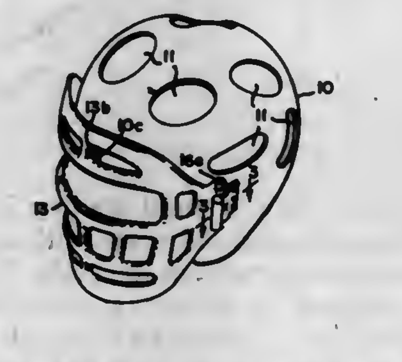
Filed Apr. 17, 1969, Ser. No. 816,952
Int. Cl. A61f *1/24;* **F04b** *17/00, 35/04*
U.S. Cl. 3—1 5 Claims



A centrifugal blood pump and method of pumping blood to provide assistance to a failing heart. The pump is intended to be implanted and is provided with a magnetic drive system which permits a synchronous magnetic coupling with an outside power unit with no wires or tubes through the skin. The pump has but a single moving part. It is lubricated by the pumped blood and provides an indefinite lifetime of service-free performance.

3,608,089
BASEBALL CATCHER'S MASK

Peter A. Abbatelli, 833 Nectarine,
Sunnyvale, Calif. 94087
Filed Nov. 13, 1969, Ser. No. 876,437
Int. Cl. A42b *1/08*
U.S. Cl. 2—9 5 Claims

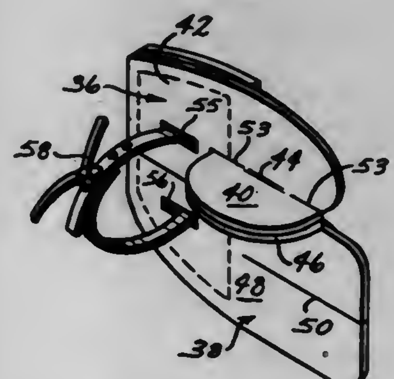


A baseball catcher's protective mask and helmet. The helmet which is to fit over the wearer's head is provided with resilient clips attached to the outside thereof for gripping side portions of the mask in detachable manner so that the mask may be removed from the helmet by gripping the bottom of the mask and pulling it forward.

3,608,090
ARCHER'S TAB

Jack K. Wilson, Norman E. Wilson, and Robert S. Wilson, all of Box 33–H, Springfield, Mo. 65804
Filed Jan. 13, 1970, Ser. No. 2,570
Int. Cl. A41d *19/00*
U.S. Cl. 2—21 8 Claims

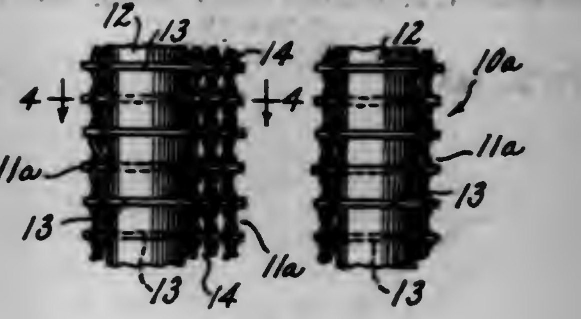
An archer's tab is provided for use with a bow having a bowstring adapted to receive the nock end of an arrow. The tab includes a flexible finger covering adapted to overlie the portions of an archer's fingers which grasp the bowstring. There is a slot in the covering and means are provided for securing the covering to the archer's hand in a predetermined position with the slot in registered alignment with the space between two of the archer's fingers. A pair of flaps are on opposite sides of the slot and are adapted to protrude between the archer's two fingers. Slits are provided in each flap so that it will not crumple when the archer bends his fingers.



3,608,091
THERMAL FABRICS AND GARMENTS

Mark W. Olson, Allendale, N.J., and Neal A. Truslow, Winnsboro, S.C., assignors to Uniroyal, Inc., New York, N.Y.

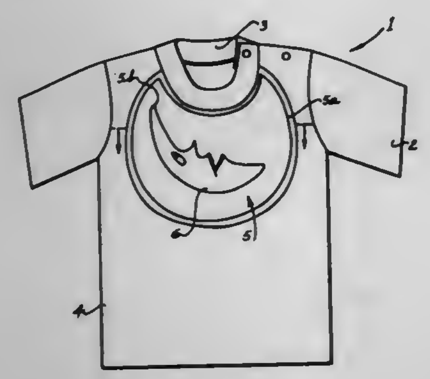
Filed Apr. 26, 1968, Ser. No. 724,492
Int. Cl. A62b *17/00*
U.S. Cl. 2—2.1 10 Claims



A fabric construction suited for use in making thermal garments to supply heat to or remove heat from the body of the wearer. The fabric includes woven yarn sections separated by parallel, flexible, plastic fluid-conducting tubes extending in the warp direction, the warp yarns being non-stretchable, and the weft or filling yarns preferably being stretchable and passing over and under each length of tubing in an alternating sequence. When embodied in a garment, the fabric is arranged with the warp yarns and the tubes extending along, and with the filling yarns encircling, the respective body portions which they cover, the use of stretchable filling yarns thereby making the garment adaptable to being worn by persons of different girths. Suitable headers are provided in the garment structure to enable a pump carried by the wearer to circulate the thermal (heating or cooling) fluid through the tubing and an associated thermal conditioning device.

3,608,092
INFANT'S GARMENT BIB

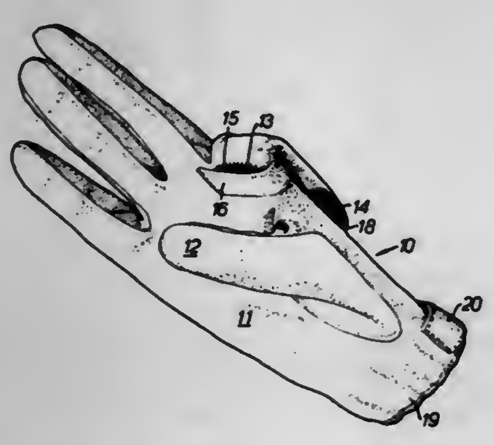
Michael A. Taranto, Demerest, N.J., assignor to Glen Designs Incorporated, Englewood, N.J.
Filed Dec. 24, 1969, Ser. No. 887,967
Int. Cl. A41d *13/04*
U.S. Cl. 2—49R **8 Claims**



An infant's garment bib comprises a garment portion for clothing at least the torso of an infant and having a neck opening and a front side. A bib portion is located on the front side surrounding in part the neck opening and being integral with the garment portion. The bib portion is composed of at least two layers of material superimposed upon one another with the layer closest to the garment portion constituting a padding material of foam, fibrous sliver or the like. The layers are adhered to one another and to the garment portion along certain lines which define the contour lines of a raised three-dimensional padded resilient appliqué.

3,608,093
SHOOTING GLOVE

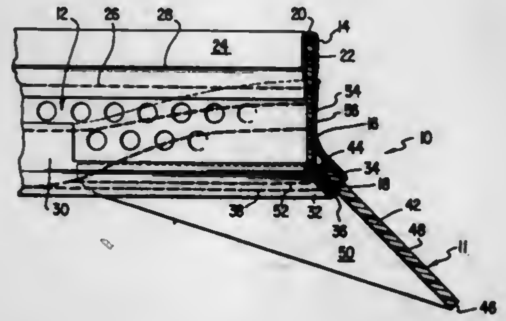
Edna M. Kirby, Walsall, England, assignor to Tarantella (Edna Kirby Limited), Walsall, England
Filed Sept. 19, 1969, Ser. No. 859,355
Claims priority, application Great Britain, July 17, 1969, 35,964/69
Int. Cl. A41d *19/00*
U.S. Cl. 2—163 **2 Claims**



A glove, which is primarily a shooting glove, provided with a finger aperture at the root end of a finger stall on the palm side of the glove and of such size that the wearer can withdraw his finger from the finger stall and extend it through the aperture so that it protrudes to the outside of the glove. Means being provided to retain the empty finger stall in a folded position on the back of the glove. Thus the wearer can obtain trigger sensitivity whilst still wearing a glove having finger stalls.

3,608,094
UNITARY CAP VISOR

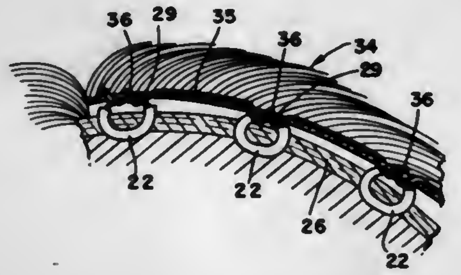
Paul G. Gallin, 729 Broadway,
New York, N.Y. 10003
Continuation-in-part of abandoned application Ser. No. 682,225, Nov. 13, 1967. This application Jan. 16, 1969, Ser. No. 814,214
Int. Cl. A42b *1/06, 5/00*
U.S. Cl. 2—209.3 **4 Claims**



A hat construction for hats of the military type, including a visor, the visor being of unitary form and being constructed of plastic material.

3,608,095
METHOD OF FIXING HAIR PIECES TO SCALPS

Robert J. Barry, Cedar Grove, N.J., assignor to Federal Tool Engineering Co., Cedar Grove, N.J.
Filed Mar. 5, 1970, Ser. No. 16,666
Int. Cl. A61f *1/00;* **A61b** *17/00*
U.S. Cl. 3—1 **7 Claims**

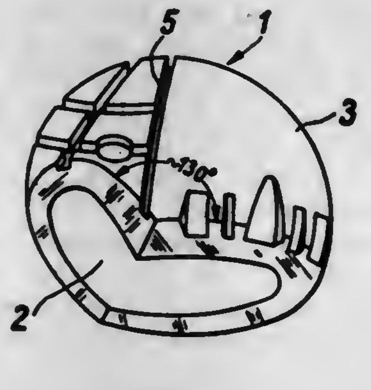


A sterile needle with a small trailing Teflon tube extension is forced through the scalp with end portions of the Teflon tube projecting from the scalp. The Teflon tube extension is adapted to receive a weldable wire which need not be sterilized. The needle is cut off and discarded and the wire is threaded through the Teflon tube now anchored in the scalp and the ends of the wire are welded and trimmed to produce a closed loop or ring to which the hair piece may be anchored by a lacing wire or another ring.

3,608,096
HIP JOINT SOCKET FOR ARTIFICIAL HIPS

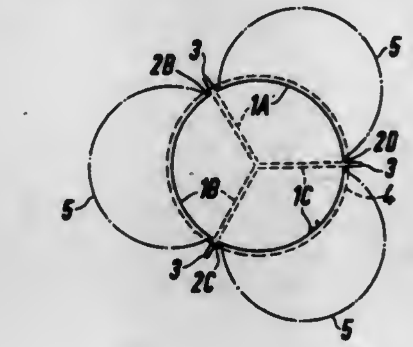
Waldemar Link, Hamburg, Germany, assignor to Waldemar Link, Hamburg, Germany
Filed Jan. 23, 1970, Ser. No. 5,177
Int. Cl. A61f *1/24, 5/04*
U.S. Cl. 3—1 **5 Claims**

A hip joint socket for artificial hips comprises a substantially hemispherical plastic shell in which a likewise substantially hemispherical cavity is provided. The cavity is situated eccentrically in respect to the shell and adapted to accommodate the spherical upper end of an artificial thigh. The free edge of the hip joint socket, owing to an oblique cut made in a portion of the shell, is situated in two planes forming an obtuse angle with each other.



3,608,097
NON-RETURN VALVES PARTICULARLY AS PROSTHETICS

Brian John Bellhouse, The Ridings, Islip, near Oxford, Oxfordshire, England; and Francis Hewitt Bellhouse, 34 Hill Rise; and Kenneth Grant Reid, Marlborough Crescent, both of Old Woodstock, Oxfordshire, England
Filed Jan. 3, 1969, Ser. No. 788,743
Claims priority, application Great Britain, June 28, 1968, 30,888/68
Int. Cl. A61f *1/22;* **F16k** *15/14*
U.S. Cl. 3—1 **9 Claims**

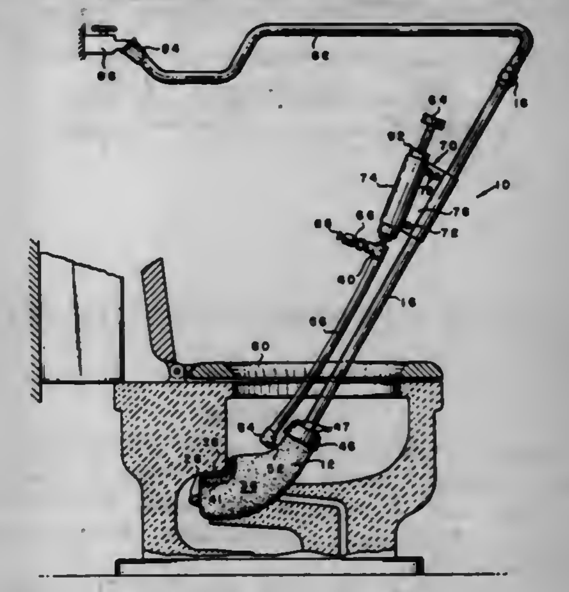


A check-valve which is particularly though not solely applicable as a prosthesis in cardiac surgery: it concerns a valve which has plural cusp-like pliable elements which are associated with a duct formation such as to afford a fluid-dynamic pressure effect tending to close the valve the arrangement of the valve being such as to minimize turbulence when fluid flows through it. The cusps are supported by a rigid frame having three upstanding posts spaced about 120° apart and form a substantially cylindrical opening when the valve is at rest. The cusps are moved to the closed position when reversal of fluid flow occurs through the valve.

3,608,098
DEVICE FOR UNCLOGGING DRAINS OR THE LIKE

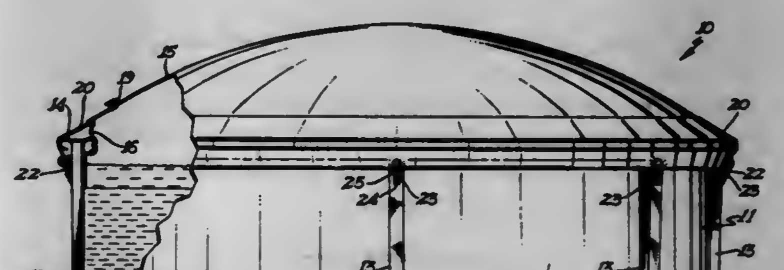
Albert Andrisani, 77 S. Park St., Reno, Nev. 89502
Filed May 25, 1970, Ser. No. 40,193
Int. Cl. E03d *11/00*
U.S. Cl. 4—256 **6 Claims**

A device for unclogging drains or the like which includes an elongated, hollow handle portion and an inflatable member connected to a terminal of the handle portion. The inflatable member includes a flexible strip which constitutes a former which may be longitudinally bent to selectively adjust the inflatable member to a rectilinear or curvilinear shape. A water conduit in communication with the hollow handle portion extends longitudinally through the inflatable member, and terminates in a nozzle having an outlet orifice. A source of pneumatic pressure inflates the inflatable member to seal the drain opening. A water source directs water through the handle portion, inflatable member and nozzle to exert hydraulic pressure on obstructions in the drain line.



3,608,099
SWIMMING POOL COVER

Arvel L. Wall, Helena, Ark., assignor to Domain Industries, Inc., New Richmond, Wis.
Filed Oct. 20, 1969, Ser. No. 867,801
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.12 **3 Claims**

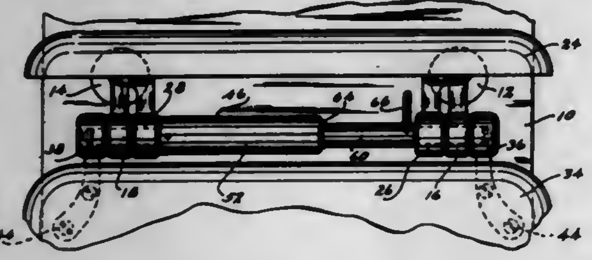


An inflatable swimming pool cover includes an air impervious flexible sheet which corresponds in shape and size to the swimming pool surface and is provided with an air impervious annular flap secured to the peripheral edge portions thereof. The flap is adapted to extend below the pool surface and cooperates with the sheet to entrap air between the sheet and the pool surface so that the swimming pool cover is supported by the entrapped air. An annular skirt is secured to the peripheral portions of the sheet and extends outwardly therefrom for attachment to the exterior portions of the swimming pool to retain the inflatable cover in covering relation with respect to the swimming pool.

3,608,100
COLLAPSIBLE TOILET-SEAT TRUNNION PIN

Constance M. Trost, 4350 N. 25th St., Milwaukee, Wis. 53209
Filed Mar. 18, 1970, Ser. No. 20,676
Int. Cl. A47k *13/12*
U.S. Cl. 4—236 **4 Claims**

A collapsible trunnion pin to serve as a replacement for the original pin customarily provided with toilet seat assemblies. This trunnion pin permits convenient dis-assembly of the seat and cover from the bowl fittings so that the surrounding areas of the bowl and seat may be easily cleaned.

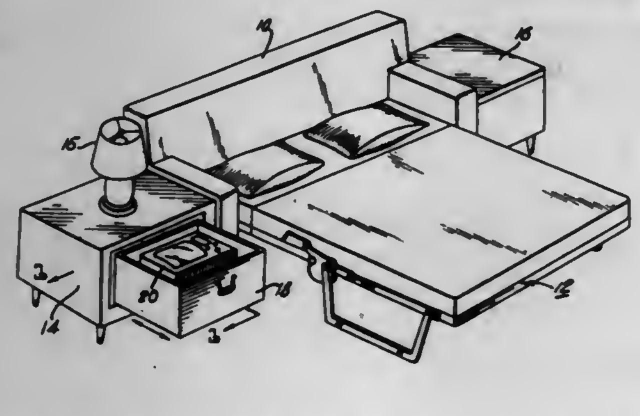


3,608,101

INTEGRATED SOFA-BED AND TELEVISION UNIT

Bernard Castro, Lloyd's Harbor, John J. Barabas, New Rochelle, and Joseph A. Brindisi, Uniondale, N.Y., assignors to Castro Convertibles Corporation, New Hyde Park, N.Y.

Filed Jan. 16, 1969, Ser. No. 791,700
Int. Cl. A47c *13/38, 17/08*
U.S. Cl. 5—2 **6 Claims**



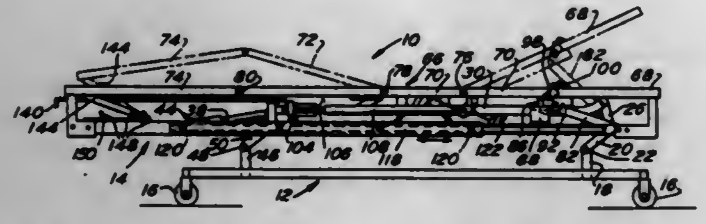
A retractable television set is mounted in a drawer which slides in and out of a cabinet which is attached to one end of a sofa-bed. The drawer can be pulled out towards the front of the sofa, the same direction in which the bed opens out. The television set is swivel-mounted so as to be viewable by either a person sitting on the sofa, or by a person lying on the bed.

3,608,102

HOSPITAL BED

Robert Goodman, 5325 Westminster Ave., Philadelphia, Pa. 19131

Filed June 27, 1969, Ser. No. 837,274
Int. Cl. A61g *7/10*
U.S. Cl. 5—63 **9 Claims**



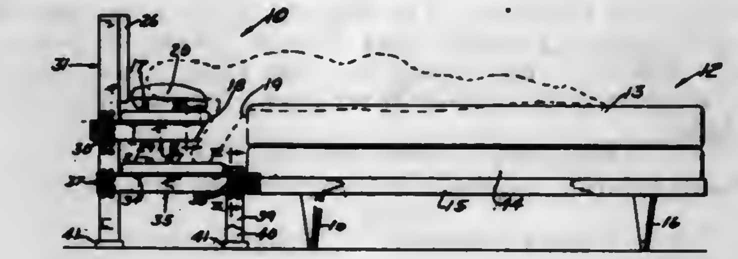
A hospital bed having a supporting base frame and an upper frame which is vertically movable relative to the base frame by means of motor-actuated linkage. The linkage consists of two sets of links, each of which may be separately actuated to raise or lower the corresponding end of the upper frame, or both of which can be simultaneously actuated to raise the entire upper frame at one time. The upper frame supports a bed-spring assembly including a head section, a seat section, a knee section and a foot section, the head and knee sections being pivotally connected to the stationery seat section, and the foot section being pivotally connected to the knee section. The head and knee sections may be separately raised or lowered into and out of inclined positions. The head section is also provided with means for detachably connecting it to a slide on the upper frame. When the head section is attached to the slide, if the head section is pivoted upwardly, it moves the entire bed-spring assembly toward the front of the bed, and when it is lowered, it moves the entire bed-spring assembly toward the foot of the bed. When the head section is detached from the slide, it pivots up and down without affecting the horizontal position of the bed-spring assembly.

3,608,103

DEVICE FOR USE WITH A BED

Wan Sun Seid, 900 N. LaSalle St., Chicago, Ill. 60602

Filed Aug. 2, 1968, Ser. No. 749,781
Int. Cl. E03d *9/04;* **A47c** *21/00*
U.S. Cl. 5—72 **9 Claims**



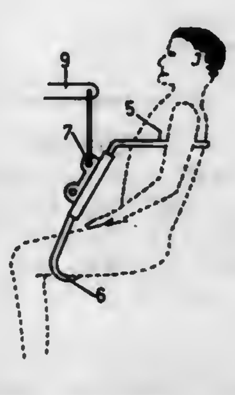
Device for use with a bed including a head support platform on a first pair of brackets adjustably supported on a first pair of vertical posts and an elbow support platform on a second pair of brackets adjustably supported by the first pair of vertical posts and a second pair of vertical posts which are adjustably secured to one end of a bed frame. The head support platform has an upper surface at approximately the same level as the upper surface of the mattress and has an edge spaced from one end of the mattress to allow a person's arms to extend downwardly and to allow his elbows to rest on the elbow support platform.

3,608,104

CARRYING ASSEMBLY FOR DISABLED OR DISEASED PERSONS, AND LIFTING DEVICE FOR SUCH AN ASSEMBLY

Gerardus Wilhelmus van Geryen, Eindhovenscheweg 56, Valkenswaard, Netherlands

Filed Mar. 4, 1969, Ser. No. 804,211
Claims priority, application Netherlands, Mar. 6, 1968, 6803205
Int. Cl. E03d *9/04, 11/10*
U.S. Cl. 5—83 **7 Claims**



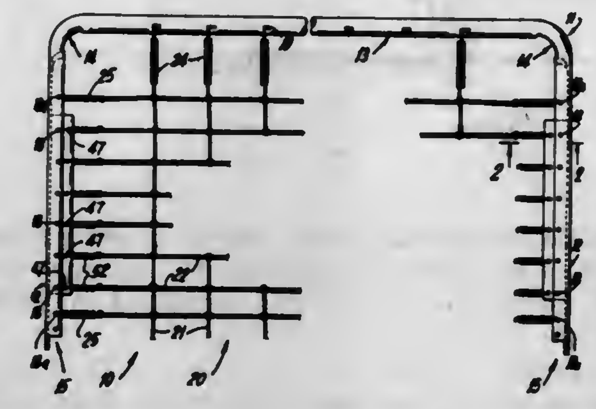
A carrying device for persons who are disabled or ill, including a plurality of hooking members for supporting a person under the arms and behind the shoulders, and under the thighs, which hooking members are self-closing under the weight of the person to be lifted and which may be placed in position for use by the person himself, either when sitting in a wheelchair or lying in bed; and a lifting device for such carrying means, adapted to be operated by the person who is disabled and is to be lifted, and including means for preventing undesired rotational movements of the carrying device around substantially vertical axes during the lifting of such a person.

3,608,105

FOOT SECTION OF A COLLAPSIBLE PULL-OUT BED

William R. Flatford, Atlantic Highlands, N.J., assignor to Super Sagless Spring Corporation, Bayonne, N.J.

Filed Apr. 16, 1969, Ser. No. 822,846
Int. Cl. A47c *23/08*
U.S. Cl. 5—232 **16 Claims**



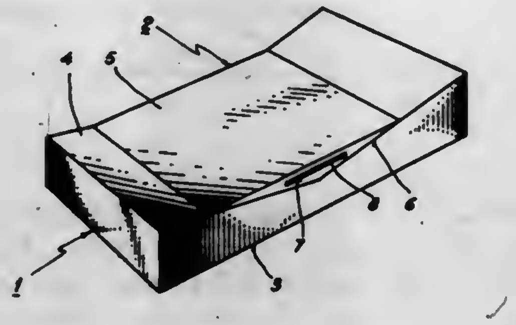
A number of the transverse wires of the mattress supporting spring fabric, instead of being attached by coil tension springs directly to the side rails of the frame of the foot section, are attached to angle shaped side members hinged to and underlying the angle shaped parallel side rails of the frame. Said angle shaped members are swingable inwardly to relax the springs and make for a softer seat. The top flanges of the frame stop angular movement of said angle shaped means upwardly and outwardly to keep the mattress from crowning in the middle.

3,608,106

MATTRESS FOR CLINICAL AND OTHER PURPOSES

Ramon Ordeix Parramon, Barcelona, Spain, assignor to Fabricacion Espanola de Colchones Anatomicos, Sociedad Anonima, Barcelona, Spain

Filed Feb. 12, 1969, Ser. No. 798,604
Claims priority, application Spain, Feb. 21, 1968, 350,735
Int. Cl. A47c *23/00;* **A61g** *7/04*
U.S. Cl. 5—345 **8 Claims**



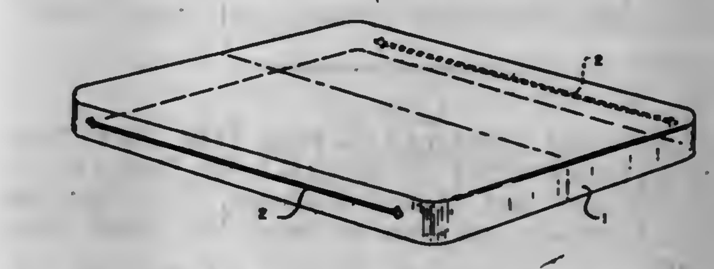
A mattress comprising a lower slab with a flat base and two upper inclined surfaces sloping from the extremities towards the center and an upper slab with a flat top and two lower inclined surfaces sloping from the center towards the extremities, the upper slab being shorter than the lower slab and the inclined surfaces of the upper slab corresponding to those of the lower slab.

3,608,107

MATTRESS SPRING WITH ADJUSTABLE FIRMNESS

Boris Kentor, 6536 Darlington Road 15217, and Theodore E. Anthony, Sr., 208 Rebecca Square 15209, both of Pittsburgh, Pa.

Filed Sept. 24, 1969, Ser. No. 860,644
Int. Cl. A47c *23/04, 25/00*
U.S. Cl. 5—351 **8 Claims**



An adjustable coil spring having a top and bottom plate. A plunger depending from the top plate extends into a hollow cylinder mounted to the bottom plate. The cylinder includes a vertical slot and a plurality of recesses and the plunger includes an extending pin which is adapted to ride along the slot and engage one of the recesses for selective control of the spring. Rotation of the cylinder or a plurality of cylinders controls the recess adapted for engagement.

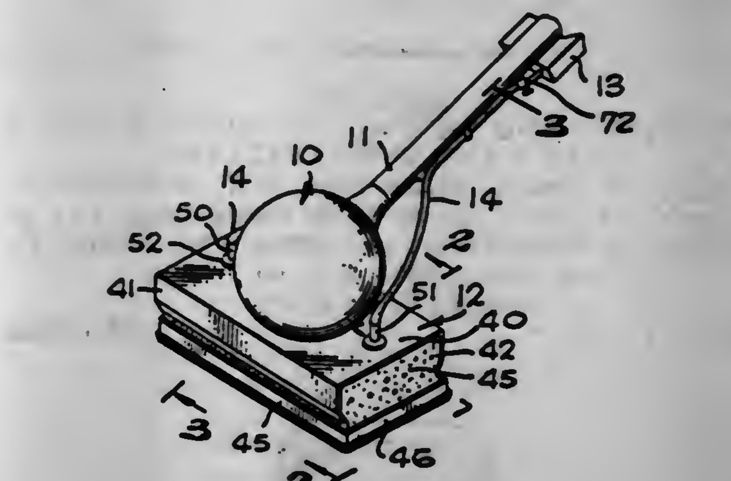
3,608,108

MATERIAL CONDITIONING BY ACOUSTIC ENERGY

Harold T. Sawyer, Pacific Palisades, Calif., assignor of fractional part interest to Vernon D. Beehler, Los Angeles, Calif.

Continuation-in-part of applications Ser. No. 631,736, Apr. 18, 1967, now Patent No. 3,507,695, dated Apr. 21, 1970, and Ser. No. 642,077, May 29, 1967, now Patent No. 3,497,898, dated Mar. 3, 1970, both applications being continuations-in-part of application Ser. No. 480,310, Aug. 17, 1965, now Patent No. 3,357,033, dated Dec. 12, 1967. This application June 11, 1969, Ser. No. 832,180

Int. Cl. B05c *8/04;* **D06p** *7/00*
U.S. Cl. 8—147 **7 Claims**



Sinusoidal vibration is generated by the revolving movement of a motor mass about its eccentric bearing and mounted in a resilient shell and passed through a single bracket to a pedestal on the shell. The pedestal is in alignment with a line perpendicular to the surface of the material to be conditioned and radial with respect to the motor mass. A tool holder on the pedestal is designed to vibrate at near its own natural frequency in the low sonic range and matched to the forcing frequency of the motor mass. A hollow tool is also designed to vibrate at near its own frequency. A conditioning liquid, such as cleaning fluid or dye, feeds into the hollow tool and with the motor providing the forcing frequency a compressional sound wave is set up in the tool holder and transmitted in a direction perpendicular to the surface through a cellular foam material into the tool, there setting the conditioning liquid into a state of intense cavitation energy, thus causing it to foam as it is driven outwardly through perforations in the tool to the material to be conditioned. The foam continues to be cavitated which subjects the fibers of the material to a transitory vacuum and alternate pressure exposure that frees the fibers of all foreign matter.

3,608,109
PROCESS AND APPARATUS FOR THE CONTINUOUS TREATMENT OF TEXTILE MATERIALS

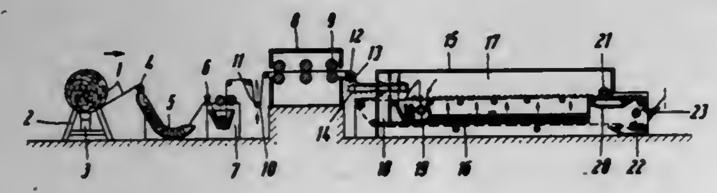
Heinz Fleissner and Gerold Fleissner, Frankfurt am Main, Germany, assignors to Vepa AG, Basel, Switzerland

Original application May 15, 1968, Ser. No. 729,178, now Patent No. 3,529,447, dated Sept. 22, 1970. Divided and this application July 30, 1969, Ser. No. 871,144

Claims priority, application Germany, May 24, 1967, V 33,698

Int. Cl. D06c *1/08*

U.S. Cl. 8—149.1 **11 Claims**



The present disclosure is directed to a continuous process for pad dyeing, printing or bleaching textile materials which comprises impregnating the material to be treated with the treatment liquor, and rapidly and uniformly heating-up and setting the material in a treatment chamber with a gaseous or vaporous treatment medium, said treatment medium penetrating the textile material in an upward direction so that the textile material at least partially rests on a steam or gas cushion hereby ensuring proper material shrinkage.

The present disclosure is also directed to an apparatus for performing the above process.

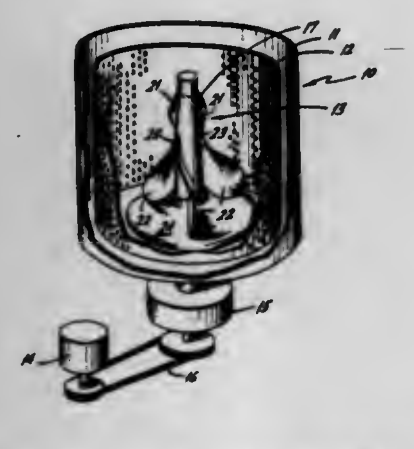
3,608,110
APPARATUS AND METHOD OF OSCILLATING A FLEX-VANE TYPE AGITATOR

James R. Hubbard, Moorestown, N.J., and Elmer C. Vanderslice and John B. Reid, Philadelphia, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Mar. 9, 1970, Ser. No. 17,598

Int. Cl. D06f *17/08*

U.S. Cl. 8—159 **10 Claims**



A vertical axis washing machine including a tub, a selectively rotatable basket in the tub, and a rotationally oscillatable agitator within the basket and including vanes of a flexible material having a relatively low modulus of elasticity. Drive means provides short strokes, high-frequency oscillation of the agitator.

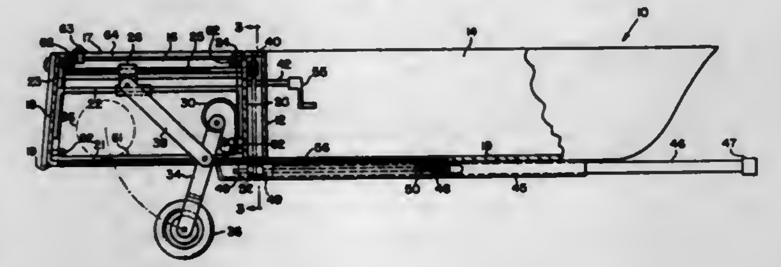
3,608,111
BOAT WITH RETRACTABLE TRAILER WHEELS AND HITCH

Robert B. Herden, 428 Woodland Lane, Webster, N.Y. 14580

Filed Oct. 8, 1969, Ser. No. 864,834

Int. Cl. B63c *13/00*

U.S. Cl. 9—1T **10 Claims**



Mounted in a hollow wheel well or housing formed in the back of an outboard type boat, for example, are two, parallel, horizontal drive screws connected to a common drive shaft. Two conventional trailer wheels are connected by collapsible linkages to two drive blocks mounted to reciprocate in opposite directions on the drive screws to shift the wheels into and out of the wheel well through openings in the bottom thereof. A conventional trailer hitch is mounted on the forward end of a retractable beam that reciprocates in and out of a housing on the bottom of the boat. The beam is connected to the drive shaft by a third drive screw which advances or retracts the beam in unison with the trailer wheels. Slidable covers are provided for closing the wheel openings in the wheel well, when the wheels are retracted.

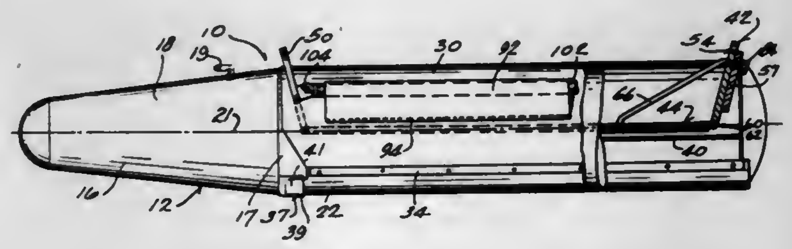
3,608,112
COLLAPSIBLE BOAT

Finn T. Irgens, Milwaukeee, Wis., assignor to Outboard Marine Corporation, Milwaukee, Wis.

Filed May 26, 1969, Ser. No. 827,851

Int. Cl. B63b *7/08*

U.S. Cl. 9—2 **16 Claims**



Disclosed herein is a collapsible boat which includes a pair of inflatable pontoons carried in sleeves. Each sleeve has an upper flexible portion and a lower rigid shell which forms a planing surface. The sleeves are interconnected by a flexible web, and are maintained in spaced parallel relation by a frame assembly which is nested between and secured to the pontoons. The frame assembly includes a bow plate, floorboard and transom adapted to carry an outboard motor. The boat can be disassembled and arranged in a compact, narrow generally cylindrical package with the rigid surfaces of the sleeves forming the outer covers for the package.

ERRATUM

For Class 9—314 see:
Patent No. 3,608,114

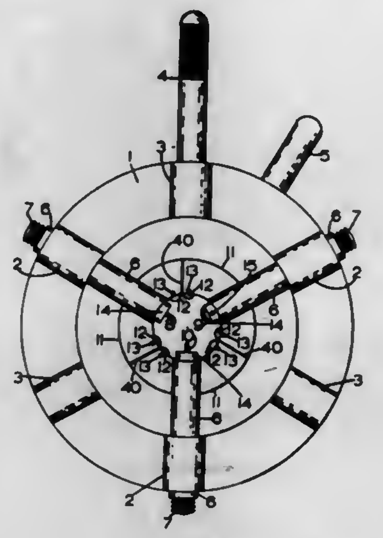
3,608,113
PORTABLE LATHE, TOOL AND DIE DEVICE

Ervin R. Rish, 1815 8th St., and Fredrick Darell Davis, 406 Rocky Lane, both of Cayce, S.C. 29033

Filed Sept. 4, 1969, Ser. No. 855,095

Int. Cl. B23g *5/00, 5/08, 1/28*

U.S. Cl. 10—110 **4 Claims**



A lathe, tool and die device comprising a primary or carrier ring and nested therein a cam ring whereby the cam ring and the carrier ring can be relatively rotated. The carrier ring further provides a plurality of angularly spaced work bosses, and each of said work bosses is adapted to support a working tool so that when the carrier ring and cam ring are relatively rotated, the working tool holder and thereby the working tool may be converged or diverged about a surface upon which work is to be performed.

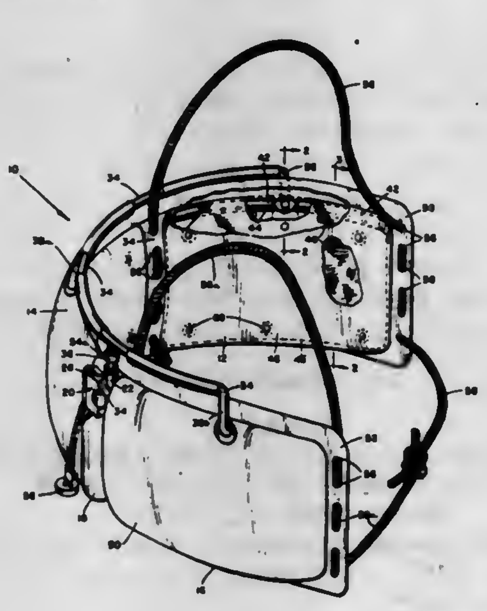
3,608,114
INFLATABLE STRUCTURE DEVICE AND METHOD OF INFLATING SAME

William J. Middleton, Felton, and Edward A. Polite, Dover, Del., assignors to ILC Industries, Inc., Dover, Del.

Filed Jan. 6, 1970, Ser. No. 969

Int. Cl. B63c *9/18*

U.S. Cl. 9—314 **6 Claims**



A structure device that is inflatable by vaporization of an inflating material, which includes a bladder having positioned therein a wicking means for dispersing the inflating material as a liquid upon entrance to the bladder to increase the speed of inflating of the structure and a method for inflating the structure, particularly where low-pressure inflating materials are used.

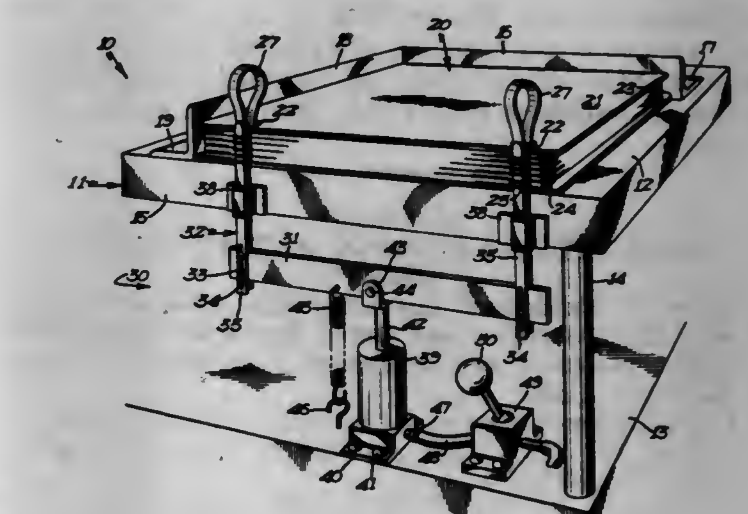
3,608,115
APPARATUS FOR MAKING ALBUMS

Tien S. Chou, Minneapolis, Minn., and Edward L. Libby, Hollywood Hills, Fla., assignors to The Holes-Webway Co., St. Cloud, Minn.

Continuation-in-part of application Ser. No. 774,971, Nov. 12, 1968. This application May 18, 1970, Ser. No. 38,057

Int. Cl. B42c *19/00*

U.S. Cl. 11—1R **10 Claims**



A plurality of album pages are bound to the front and rear album covers by means of a pair of straps which are threaded through slots in the covers and hinge elements on the pages. The pages and covers are positioned on a support so that the hinge elements on the pages are arranged in a pair of registering rows, and a pair of strap engaging members are extended through the recesses defined by the hinge elements to engage one end of each strap, the other end of each strap being secured to one cover. The strap engaging members are then simultaneously shifted in a return direction to simultaneously pull one end of each strap through the hinge elements, the straps then being secured to the other cover.

3,608,116
METHOD AND APPARATUS FOR VACUUM MOLDING BOOK BINDINGS

William H. Abildgaard, Los Altos Hills, and Charles T. Groswith III, Palo Alto, Calif., and Hans L. Melgaard, Mound, Minn., assignors to Abildgaard Laboratories Inc., Mountain View, Calif.

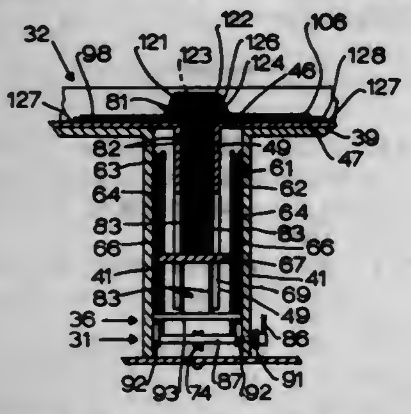
Filed June 16, 1969, Ser. No. 833,382

Int. Cl. B42c *19/00, 15/00;* **B42d** *1/00;* **H05b** *1/00*

U.S. Cl. 11—1R **14 Claims**

Vacuum molding apparatus for books comprises a base having a support to hold in assembled position the book pages and book covers and a cap fitting over the spine and a cover containing a heating means and a flexible membrane. The book covers and spine are softened by heat and a vacuum is drawn within the apparatus to cause the membrane to be forced tightly against the spine of the book and the covers, thereby molding as a unit the spine and covers and joining the same to the pages. Means may be provided to avoid formation of fillets where the covers join the spine.

The method involves softening the thermoplastic book covers and spine by application of heat and simultaneously applying a vacuum on the inside of a flexible membrane so that atmospheric pressure forces the membrane against the covers and spine, molding the same together and joining the spine to the edges of the pages. By use of a prepared casting release paper, simulated grain may be embossed in the covers and various legends and ornamentation applied. The molding of the cover may laminate various layers of plastic of different thickness, colors, etc. The edges of the covers are rounded during molding. Panels or imbedded inserts may be formed in the covers or spine.



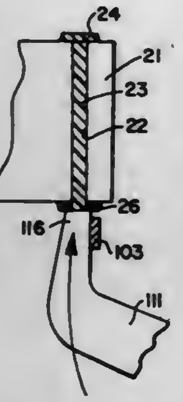
3,608,117
MACHINE FOR BINDING AND PUNCHING SHEETS

William H. Abildgaard, Los Altos Hills, Charles T. Groswith III, Los Altos, and Dalny Travaglio, Kensington, Calif., assignors to Abildgaard Laboratories, Mountain View, Calif.

Continuation-in-part of application Ser. No. 799,045, Feb. 13, 1969. This application Nov. 10, 1969, Ser. No. 875,126

Int. Cl. B42b *5/08;* **B42d** *1/06;* **B42c** *19/00*

U.S. Cl. 11—1 **10 Claims**



An office-type machine is provided for first punching holes in sheets and then binding the sheets to form a book. Used with the machine are two plastic strips, one having longitudinally spaced upstanding studs and the other having holes corresponding in spacing to the studs. The machine has a punch to prepare the sheets. Punched sheets are positioned in the machine on top of the second strip and the studs of the first strip are inserted through the holes in the paper and the holes in the second strip. The strips with the paper therebetween are compressed together. Excess lengths of the studs are cut off by hot blades and rivet-like heads are formed on the severed ends of the studs by heading arms which strike the molten ends of the studs and lock the strips and interposed sheets in assembled position.

3,608,118
APPARATUS FOR ASSEMBLING ARTICLES OF COMMERCE

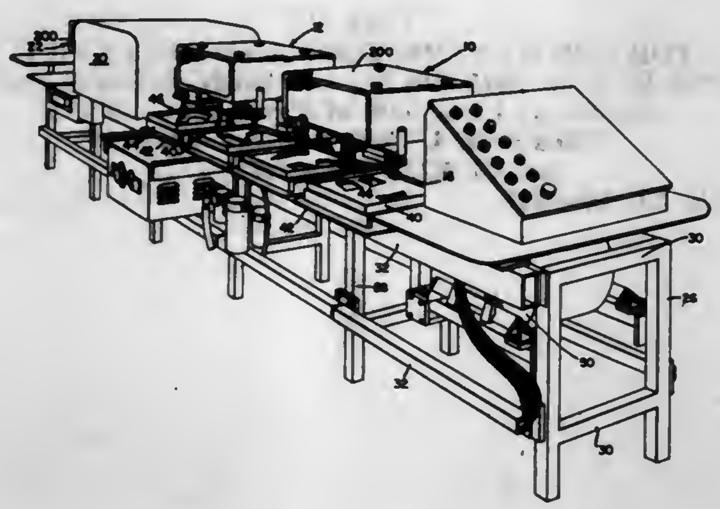
Frederick J. Rex, Jr., North Reading, Adelbert W. Rockwell, Jr., Gloucester, and Leo A. Crowell, Hamilton, Mass., assignors to USM Corporation, Boston, Mass.

Filed May 26, 1969, Ser. No. 827,713

Int. Cl. A43d

U.S. Cl. 12—1 **10 Claims**

Apparatus for assembling a multiple component article of commerce, particularly a shoe upper, comprising an intermittently translated conveyor belt, means for precisely locating components of the article relative to the conveyor belt, means for accurately depositing the components at a predetermined position on the conveyor belt and means for retaining the components on the belt during the period of assembly.



3,608,119
TRUCK FOR TELESCOPING AIRPORT JETTY

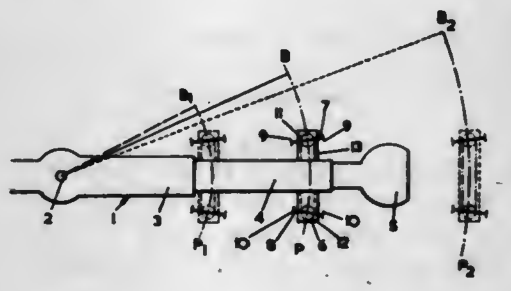
Nicolaas Gradus Jan Willem van Marle, Dordrecht, Netherlands, assignor to Aviolanda Maatschappij voor Vliegtuigbouw N.V., Papendrecht, Netherlands

Filed Mar. 21, 1969, Ser. No. 809,208

Claims priority, application Netherlands, Mar. 22, 1968, 6804096

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **1 Claim**



A truck for a telescoping airport jetty pivotable about a vertical axis, said truck having at least two substructures steerable about vertical axes and each including at least one road wheel or road wheel assembly, wherein the substructures of the truck are coupled to be steered at all times through the same angle and in the same sense of rotation, the angular position of the axes of rotation of the road wheels being such that, when the substructures are adjusted for true pivoting movement of the jetty, the axes of rotation of the road wheels slightly converge in the direction of the pivoting axis of the jetty.

3,608,120
PAINT ROLLER CLEANING APPARATUS

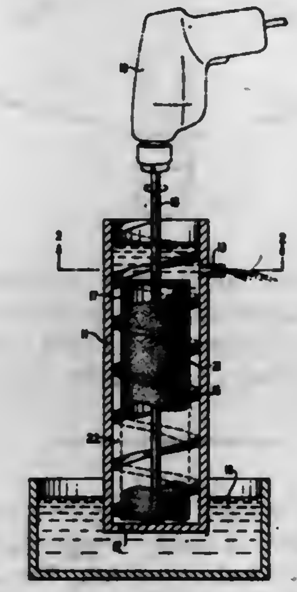
Edwin N. Seiler, 80 Hunterdon Blvd., Murray Hill, N.J. 07974

Continuation-in-part of application Ser. No. 813,424, Apr. 4, 1969. This application Oct. 17, 1969, Ser. No. 868,290

Int. Cl. A46b *17/06*

U.S. Cl. 15—1 **12 Claims**

A paint roller cleaning device comprises a hollow cylinder having a helical projection extending from the inner surface of the cylinder. A paint roller to be cleaned is contained within the cylinder and is rotated by an electric motor or the like. One end of the cylinder extends into a pool of cleaning fluid, and as the roller is rotated, fluid is sucked into the device through one aperture and expelled through another aperture at the opposite end. As the roller rotates, the helical projection compresses it to squeeze residual paint from it as it is being washed by the cleaning fluid. Methods for making such apparatus are described.



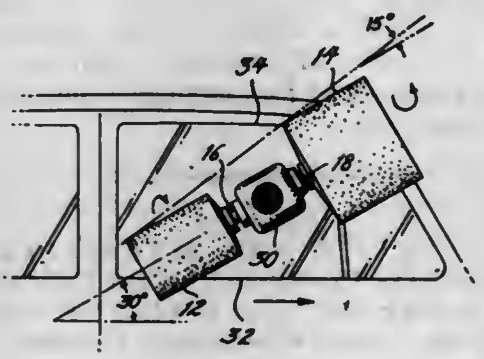
3,608,121
VEHICLE WASHER

Courtland N. Smith, Jr., Glen Ridge, and Sherman L. Larson, Palmyra, N.J., assignors to Sherman Car Wash Equipment Co., Palmyra, N.J.

Filed Mar. 10, 1969, Ser. No. 805,401

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 **3 Claims**



A vehicle washing system having a rotating brush that is angularly displaced with respect to the direction of motion of the vehicle.

3,608,122
CONDUIT CLEANING APPARATUS

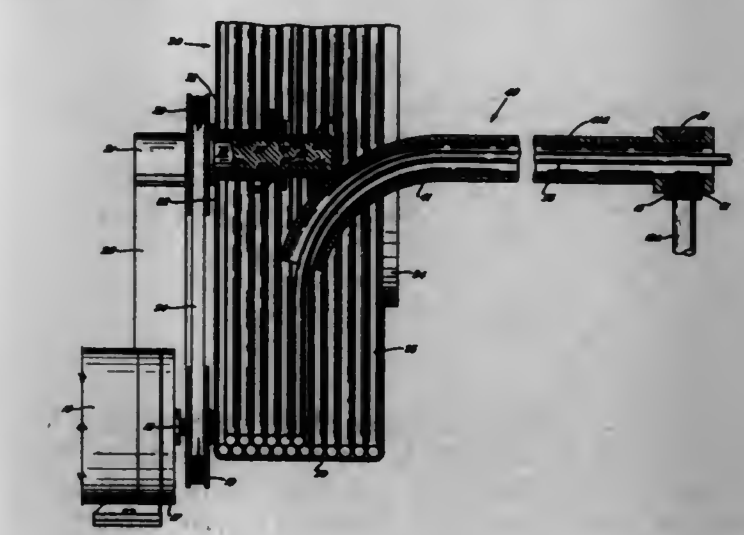
Troy L. Ratliff, 1317 N. Bewley St., Santa Ana, Calif. 92703

Filed Dec. 10, 1969, Ser. No. 883,935

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.3SN **12 Claims**

Conduit cleaning apparatus comprising: a supporting frame; a hollow stub shaft mounted on said supporting frame; a motor and pulley for rotating the stub shaft about its longitudinal axis; a reel adapted for carrying cable, the reel including a cylindrical, hollow hub positionable on the stub shaft and rotatable therewith; and a guide tube, the guide tube including: a substantially straight portion which extends into the stub shaft and restrains axial movement of the reel relative to the stub shaft and which locks the hub of the reel to the stub shaft for rotation therewith; a hollow, arcuate portion for guiding the cable out of the reel, the straight portion being connected adjacent one end of the arcuate portion; and means for releasably securing the other end of the arcuate portion to the supporting frame.



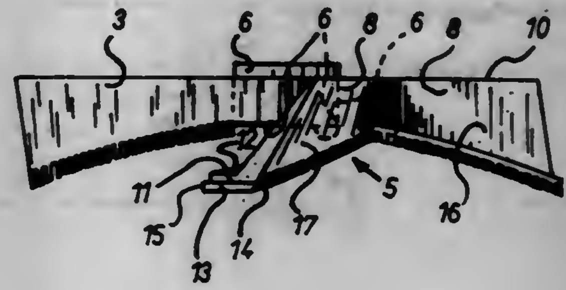
3,608,123
HEADLIGHT WIPER

Patrick Champigny, 4454 Levesque Blvd., E., Laval, Quebec, Canada

Filed Apr. 30, 1970, Ser. No. 33,380

Int. Cl. B60s *1/44*

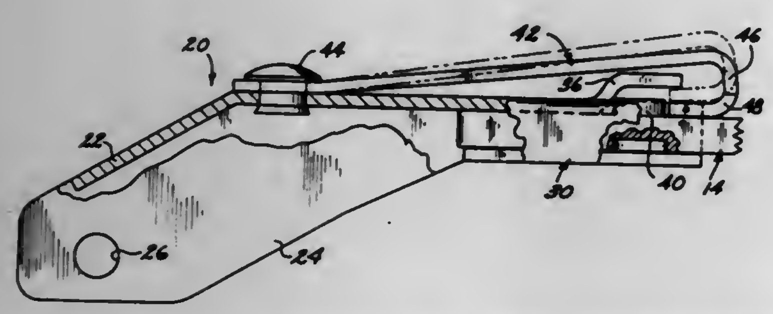
U.S. Cl. 15—250.22 **8 Claims**



An air-driven rotary wiper for removing dirt from an automobile headlight lens comprising a spindle adapted to be attached to the lens, and an air propeller freely rotatable on the spindle and longitudinally displaceable thereon, said propeller having longitudinally curved vanes defining a downstream curved concave surface which is downwardly and rearwardly inclined, each vane having its edge nearer the headlight lens, provided with a series of straight lens contacting wiping blades, each inclined relative to their circular path, so that successive blades along the vane will move in overlapping circular paths to completely clean the lens while moving the same radially outwardly of the lens. The wiper starts to rotate at low automobile speed despite friction of the blades with the lens surface and the blades are applied to the lens surface with a force increasing with the speed of the vehicle, so that efficient cleaning is achieved and a maximum wiper speed is obtained.

3,608,124
CLIP FOR WINDSHIELD WIPER BLADE

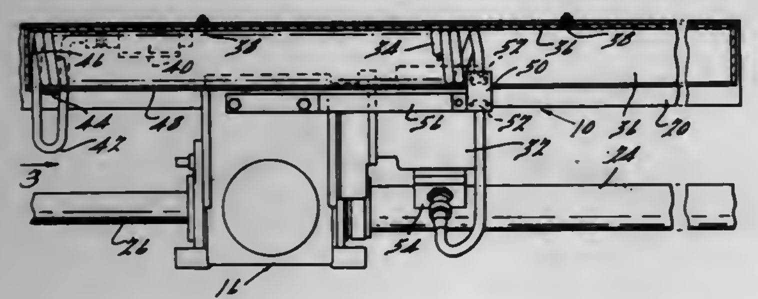
Lester C. Morton, Antrim, Northern Ireland, assignor to National Distillers and Chemical Corporation, New York, N.Y.
Filed Apr. 28, 1970, Ser. No. 32,681
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **10 Claims**



A clip for a windshield wiper blade, comprising a first portion which is adapted to be pivotally secured to a windshield wiper blade, and a second portion having an elongated section adapted to slideably receive therein one end of an actuating arm that is connected at its other end to the drive mechanism for the blade. An external flexible and resilient spring member is secured to the clip and its outer end is adapted to extend over the elongated section in blocking relation to a portion of the arm to retain the arm within clip section. The spring member may be manually lifted out of blocking relation to the arm when it is desired to disconnect the arm from the wiper blade.

3,608,125
POWER SUPPLY FOR SOOT BLOWERS

John E. Nelson, Lancaster, Ohio, assignor to Diamond Power Specialty Corporation
Filed June 16, 1969, Ser. No. 833,462
Int. Cl. F23j *3/02*
U.S. Cl. 15—317 **10 Claims**

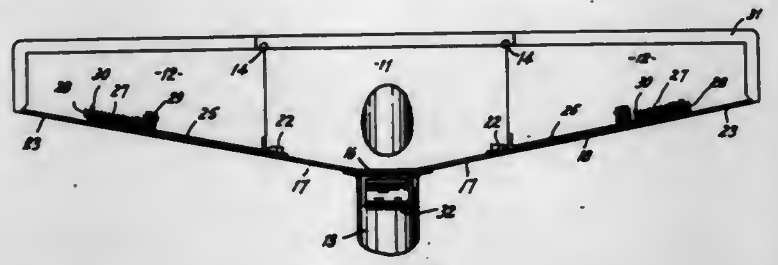


A soot blower having a motor driven carriage mounted for travel along a frame including an elongated guide disposed adjacent to the path of travel of the carriage in which a helically wound conductor is disposed for supplying power to the carriage and which conductor is extensible between a substantially nested compact condition and an open expanded condition in response to the movement of the carriage.

3,608,126
NOZZLE FOR A SUCTION CLEANER

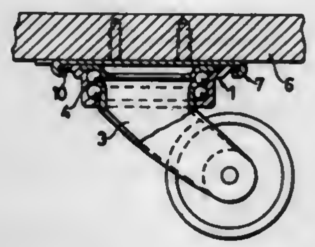
Eelco Tacoma, 20 Elgon Hill, Willeton, Western Australia, Australia, and Ian Crichton Miller, 9 Beverley Terrace, South Guildford, Western Australia, Australia
Filed Apr. 28, 1969, Ser. No. 819,601
Int. Cl. A47l *9/02*
U.S. Cl. 15—418 **6 Claims**

A nozzle for a suction cleaner in which the effective width of the nozzle can be readily reduced to enable normally inaccessible areas to be cleaned said nozzle comprising a central section having a tubular spigot adapted to be connected to said suction cleaner and a pair of wing extensions disposed one on each side of the central section, characterised in that said wing sections are pivotally mounted on said central section so that they can be folded from a position in alignment with said central section to a position inclined thereto to thereby reduce the width of said nozzle.



3,608,127
CASTER WHEEL ARRANGEMENT

Gunnar Erik Werner Lewin, Viggbyholm, Sweden, assignor to AB Lyckeaborgs Bruk, Torskors, Sweden
Filed Nov. 20, 1967, Ser. No. 684,160
Claims priority, application Sweden, Dec. 2, 1966, 16,521/66; June 2, 1967, 7,736/67; June 30, 1967, 9,906/67
Int. Cl. B60b *33/00*
U.S. Cl. 16—30 **5 Claims**



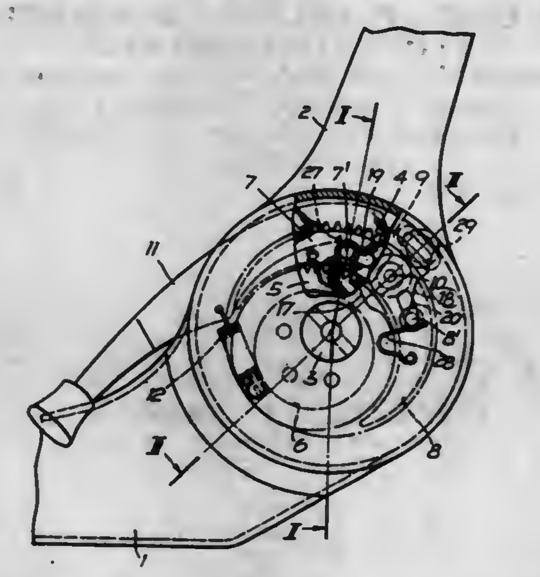
A caster wheel device which is rapidly mountable on and demountable from an object has a locking member secured to the object, a mounting plate engageable with the locking member and forming a part of the caster wheel device and a wheel fork element rotatably mounted in the mounting plate.

3,608,128
ADJUSTING DEVICE FOR RELEASABLY HOLDING A PAIR OF COMPONENTS AT A SELECTED POSITION ONE RELATIVE TO THE OTHER

Eberhard Faust, Stuttgart-Degerloch, Germany, assignor to Recaro AG, Glarus, Switzerland
Filed Sept. 16, 1968, Ser. No. 759,861
Claims priority, application Germany, Aug. 12, 1968, P 16 80 262.3
Int. Cl. E05d *11/10*
U.S. Cl. 16—146 **14 Claims**

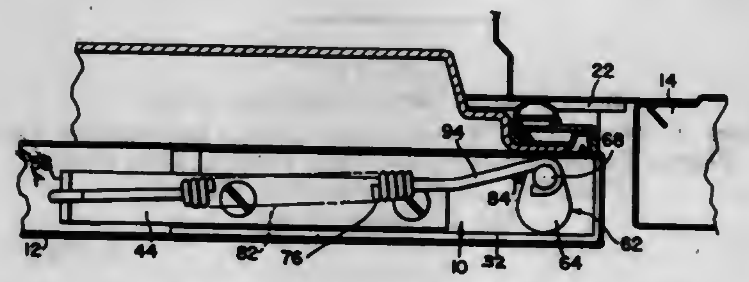
An adjusting device to be used, for example, to releasably hold the backrest of an automobile seat at an adjusted angular position with respect to a lower seat portion, thereof. The device includes a pair of components one of which is movable relative to the other and is to be fixed at an adjusted position with respect to the other component. A pair of lock means coact with these components for releasably holding them in a selected position one with respect to the other. One of the lock means is movable to and from a locking position with respect to the other lock means, and a manually operable means coacts with this one lock means for displacing it between locking and unlocking positions. However, this one lock

means is capable of automatically returning from its unlocking position to its locking position, independently of the manually operable means, in response to a speed of movement of one of the components relative to the other which is greater than a predetermined speed. Therefore, if, when the one lock means is in its unlocking position, one of the components should suddenly move at high speed relative to the other, the one lock means will automatically reassume its locking position to prevent the high-speed movement of the one component.



3,608,129
CAM HINGE ASSEMBLY

John A. Heyer, William H. Wright, and William J. Stahler, Plymouth Meeting, Pa., assignors to Victory Metal Manufacturing Corporation, Plymouth Meeting, Pa.
Filed June 9, 1969, Ser. No. 831,496
Int. Cl. E05f *1/12*
U.S. Cl. 16—190 **8 Claims**

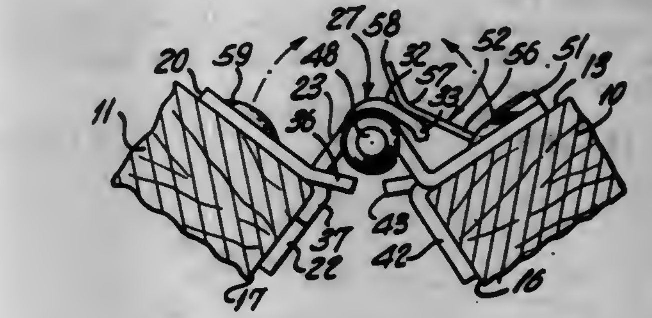


A cam hinge assembly suitable for both retaining a door in the open position and also for automatically closing the door, comprising a housing having a floor and at least one flange extending at right angles above the said floor, a stationary cam assembly pivotally associated with the said housing floor and provided with a spring engaging lug, portions of the said cam assembly binding against the said flange when the door is rotated to the over-open position and a coil spring operatively connected to the said cam assembly at the said lug, the said spring acting to rotate the said door about a cam assembly pivot to thereby bias the door either to its closed position or to its over-open position.

3,608,130
HINGE DEVICE

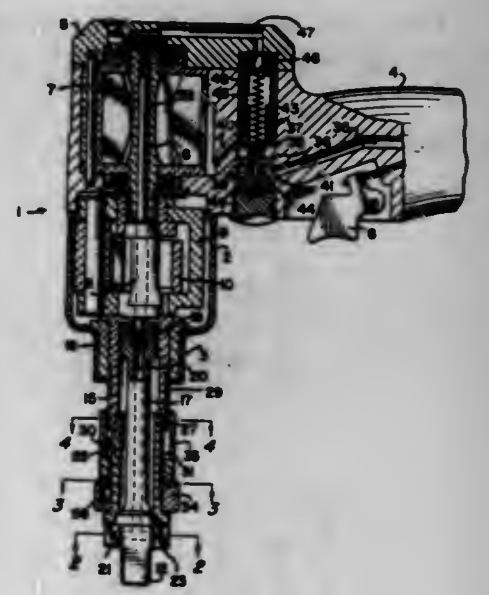
Jack Rudnick, Bronx, N.Y., assignor to Paniflex Corporation, Bronx, N.Y.
Filed Sept. 22, 1965, Ser. No. 489,212
Int. Cl. E05d *11/08*
U.S. Cl. 16—142 **3 Claims**

A hinge includes a pair of hinge plates having pin coupled interdigitated knuckles formed on rearwardly directed panels located along the hinge plate inner edges. A cam member includes a first leg projecting rearwardly from the inner edge of one hinge plate and terminating in a transversely projecting second leg having an end face located a distance from the hinge pin greater than the radial distance therefrom of the second leg. A leaf spring member is mounted on the second hinge plate and terminates in a leg extending outwardly at an angle to the main section of the leaf spring and bearing on the cam end face when the hinge plates are coplanar. Stop elements are provided to limit the closing of the hinge plates to a coplanar position and staggered apertured coupling tabs project forwardly from the hinge plate inner edges.



3,608,131
TORQUE CONTROL IMPACT WRENCH

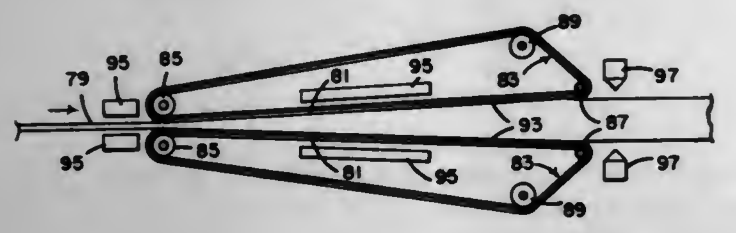
Hanns Hornschuch, Easton, Pa., and Reginald W. Pauley, Belle Mead, and Leo Kramer, Skillman, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,152
Int. Cl. B25b *19/00*
U.S. Cl. 173—12 **11 Claims**



A rotary impact wrench containing a motor, a rotary impact mechanism, and a spindle adapted to drive a fastener. A resilient torsion bar is mounted either between the motor and the impact mechanism or the impact mechanism and the spindle and includes a member for preloading or prewinding the torsion bar so that it does not wind up further until after the torque on the torsion bar exceeds a selected value. A shut-off valve in the wrench is connected to a hollow passage extending through the torsion bar and terminating in an exit port which is normally closed by the preloading means and is opened when the torsion bar winds up further in response to the rise of torque on the torsion bar above the selected value of torque, resulting in creating a fluid signal which causes the valve to shut off the power supply to the wrench motor.

3,608,132
APPARATUS FOR MAKING ORIENTED, FOAMED ARTICLES

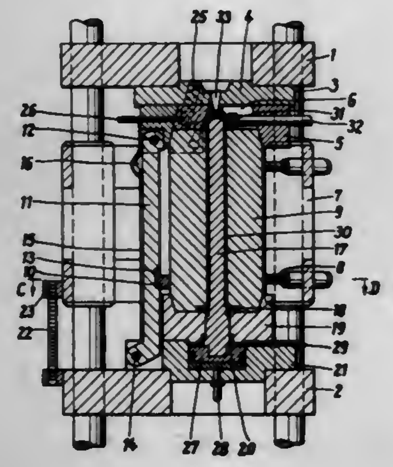
Dorsey C. Nelson, Springfield, and Theodore H. Fairbanks, Liverpool, Pa., assignors to FMC Corporation, Philadelphia, Pa.
Original application Oct. 10, 1967, Ser. No. 674,185, now Patent No. 3,530,761. Divided and this application Aug. 5, 1970, Ser. No. 61,061
Int. Cl. B29d *27/04*
U.S. Cl. 18—1FB **4 Claims**



Apparatus for gripping the opposite sides of a foamed article of polymeric material and urge such sides away from each other to effect stretching and orientation of the molecules of the polymeric material in the direction of the article thickness.

3,608,133
MOLD SYSTEM FOR THE PRODUCTION OF ELONGATED HOLLOW INJECTION-MOLDED ARTICLES

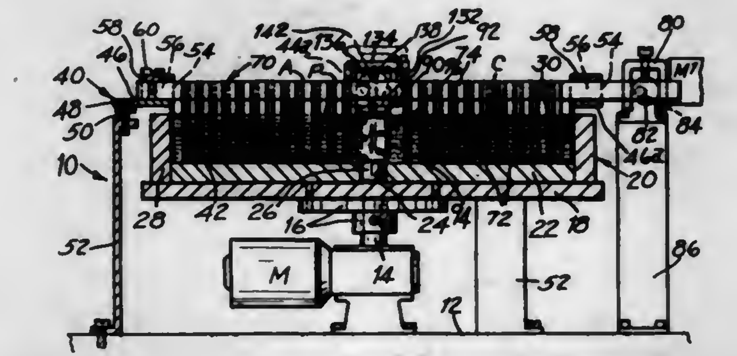
Wilhelm Cyriax and Rainer Schutt, Kottingbrunn, near Vienna, Lower Austria, assignors to Battenfeld Maschinenfabriken GmbH Meinerzhagen, Westphalia, Germany
Filed Oct. 28, 1968, Ser. No. 771,063
Claims priority, application Germany, Nov. 3, 1967, P 16 29 720.4
Int. Cl. B29c *11/00*
U.S. Cl. 18—2RM **1 Claim**



An apparatus for producing long sleeve-like injection-molded articles of uniform cross-section, wherein the article is held by its extenral periphery and by its injector end, in a first mold section in the form of a cavitated body. A core plug, which defines the internal periphery of the molded article, projects through the second mold section into the first. The core plug is first withdrawn from the article, held at two opposite ends in the mold sections and subsequently the second mold section is withdrawn from the article held in the first mold section, finally the article being released by opening the first mold section.

3,608,134
MOLDING APPARATUS FOR ORIENTING ELONGATED PARTICLES

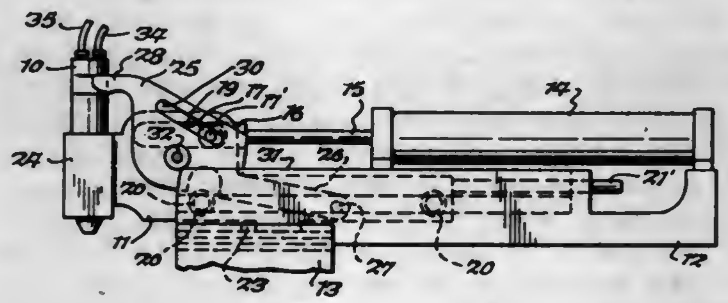
Arnold M. Cook, Holden, Mass., assignor to Norton Company, Worcester, Mass.
Filed Feb. 10, 1969, Ser. No. 798,002
Int. Cl. B29c *1/00*
U.S. Cl. 18—5M **11 Claims**



A mixture of bond material and elongated abrasive particles and/or reinforcing fibers is placed in a rotatable mold and the mixture is leveled and combed with radially extending combs of uniformly spaced horizontally and vertically extending elements. The combing elements are effective to contact and position the particles and/or fibers in the uncured mix with their long axes parallel and extending radially, circumferentially of, or perpendicular to a given axis so that when the mix is fired or the bond is otherwise activated, the elongated elements will be selectively positioned with respect to a working surface of the completed abrasive tool.

3,608,135
BLOW MOLDING MECHANISM

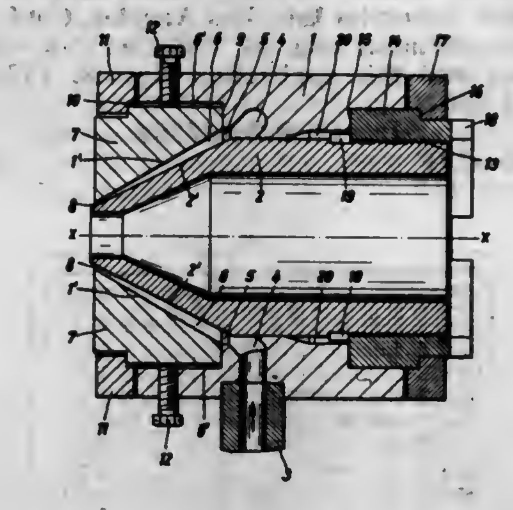
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Filed Feb. 5, 1969, Ser. No. 796,833
Int. Cl. B29d *23/03*
U.S. Cl. 18—5BA **6 Claims**



A nozzle carrier movable along a first axis between extended and retracted positions, and a blow nozzle carried by the carrier and movable relative thereto along a second axis into and out of blowing position. The nozzle is connected to the drive through a force multiplying mechanism of increasing ratio as the nozzle approaches blowing position. For top blowing, the carrier and a sectional mold are mounted on a mold support for movement in a generally horizontal plane laterally of the extrusion axis, the extended position of the carrier positioning the nozzle for movement into the top of the mold.

3,608,136
EXTRUSION HEAD WITH RING NOZZLE OF ADJUSTABLE WIDTH ALONG A PORTION OF CIRCUMFERENCE

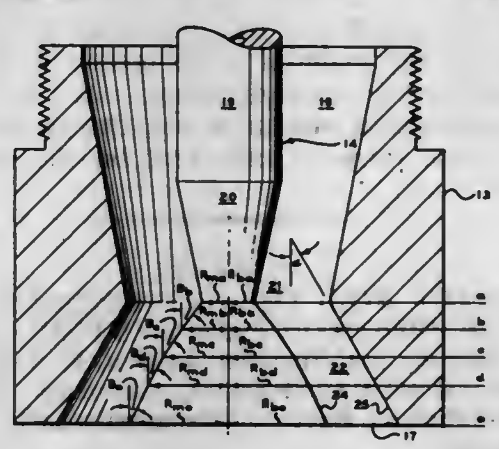
Hans Tripptrap, Dusseldorf, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Sept. 6, 1968, Ser. No. 757,941
Claims priority, application Germany, Sept. 8, 1967, P 17 04 850.9
Int. Cl. B29f *3/00*
U.S. Cl. 18—13H **3 Claims**



An extrusion head has a casing with a ring nozzle that forms a part of an annular space between the forward end of a mandrel and a surface in the casing. The width of a portion of the circumference of the annular space is adjustable, thereby to vary the thickness of the hollow extruded material encasing an elongated workpiece.

3,608,137
NONPARALLEL LAND DIE

Newton R. Wilson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Apr. 9, 1969, Ser. No. 814,678
Int. Cl. B29d *23/04*
U.S. Cl. 18—14G **2 Claims**

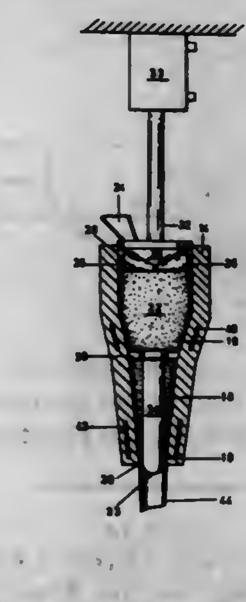


An extrusion die for use in a blow molding apparatus. The die is in the form of a diverging annular opening defined by a pair of nonparallel land areas.

3,608,138
APPARATUS FOR ROLLING AND FORMING ARTICLES

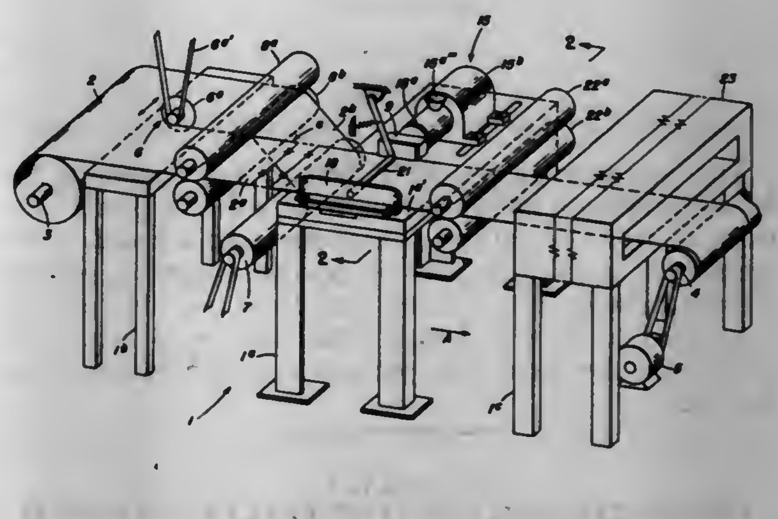
Jacob Marcovitch, Johannesburg, Transvaal, Republic of South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein
Continuation-in-part of application Ser. No. 615,613, Feb. 13, 1967, now Patent No. 3,533,259. This application Dec. 22, 1969, Ser. No. 886,994
Claims priority, application Republic of South Africa, Feb. 14, 1966, 66/804
Int. Cl. B29f *3/012*
U.S. Cl. 18—12R **11 Claims**

An extruder for continuously extruding articles is provided. The extruder has a body with a nozzle, an open end and conduits joining the open end and the nozzle. The material to be extruded is contained within the extruder body. A number of rollers are received in the open end of the extruder body and roll on the surface of the material. Backing means are also provided against which the rollers roll.



3,608,139
EDGE COVERING APPARATUS

Dale S. Wahlstrom, Mishawaka, Ind., assignor to United States Rubber Company, New York, N.Y.
Original application Feb. 13, 1967, Ser. No. 615,805, now Patent No. 3,491,176, dated Jan. 20, 1970. Divided and this application July 8, 1969, Ser. No. 858,224
Int. Cl. B29f *3/00;* **B29d** *7/22, 29/00*
U.S. Cl. 18—4P **16 Claims**

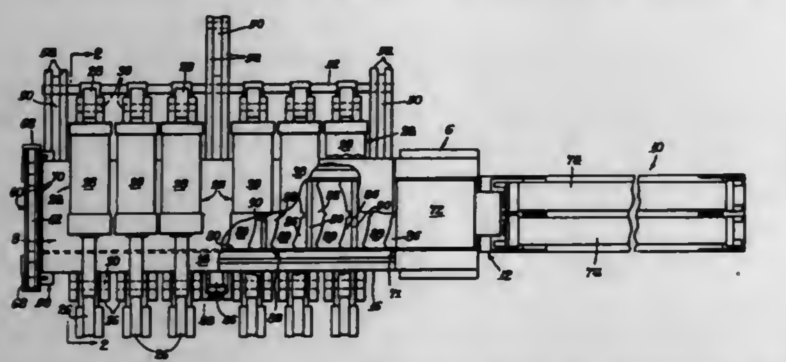


A method and apparatus for simultaneously forming and applying a cover layer of plastic material to an exposed edge of a belt or the like.

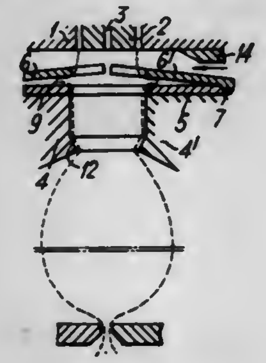
3,608,140
APPARATUS FOR MAKING BRAKE SHOES

Edward Ratcliffe, Mont St. Hilaire, Quebec, Canada, assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Jan. 23, 1969, Ser. No. 793,432
Int. Cl. B30b *11/06*
U.S. Cl. 18—17R **5 Claims**

A heated brake shoe press has a longitudinal open end cavity defined by a base and cover. One end of the cavity may be closed by a movable platen. A movable plunger projects into the other end of the cavity and is slideably engaged with the cavity throughout its length. Inserts and liners are slideably engaged in the cavity in a given order and define a plurality of molding cavities that are fillable with moldable material. The heat, and the pressure exerted by the plunger configures the material in the molding cavities to a shape defined by the inserts and liners. After forming, the platen may be moved to an open position and the inserts and configured material may be pushed out of the cavity by the plunger.

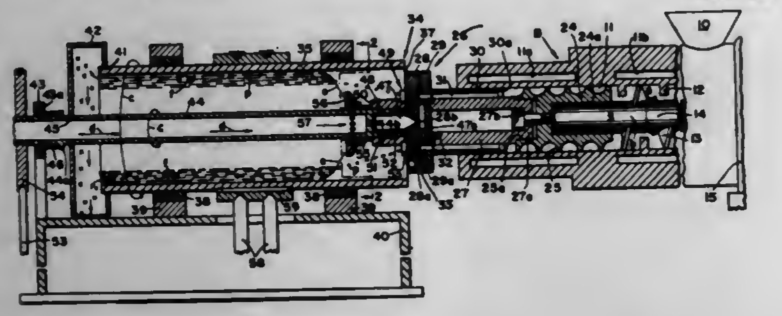


3,608,141
APPARATUS FOR BLOW EXTRUSION
Pierre-Henri Gallay, Neuilly, France, assignor to Mecaplast S.A., Geneva, Switzerland
Original application Aug. 2, 1967, Ser. No. 657,923, now Patent No. 3,548,044. Divided and this application Nov. 6, 1969, Ser. No. 870,815
Claims priority, application France, Aug. 6, 1966, 72,156
Int. Cl. B29c *17/07;* **B29d** *23/03*
U.S. Cl. 18—5BE **4 Claims**



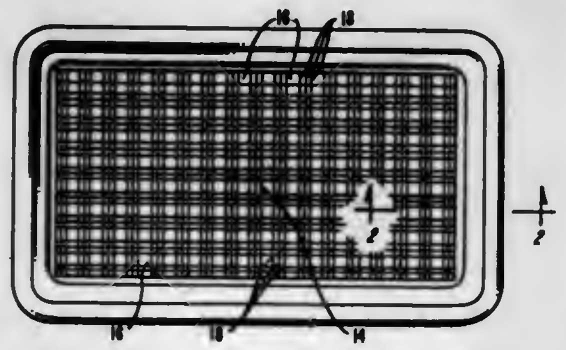
The invention relates to a method and apparatus for blow-extruding a hollow article from a thermoplastic material in which a parison is extruded into a mold. Light pressure is applied to said parison to expand a portion thereof between the extruder and mold and this portion is gripped to form a flange, which serves to locate the parison on the mold. The parison is then blown to form the body.

3,608,142
APPARATUS FOR COOLING PELLETS SEVERED FROM EXTRUDED PLASTIC STRANDS
Richard W. Miller, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Filed July 10, 1968, Ser. No. 743,783
Int. Cl. B29f *3/00*
U.S. Cl. 18—12 **7 Claims**



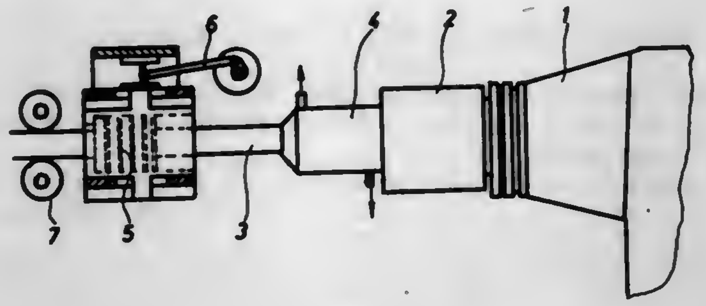
Pelletizing apparatus including a barrel with a mixer shaft therein, a die with axially extending ports for extruding strands of plastic or other extrudable material therethrough, a rotary knife assembly which cuts the strands into pellets, and a rotating pellet collecting housing to which liquid is supplied in a manner to form a centrifugally maintained pellet collecting coolant annulus moving as a stream in a spiral path away from the die.

3,608,143
APPARATUS FOR MAKING FORMED PRODUCTS
Frank C. Schutz, Downey, Calif., assignor to Dart Industries Inc., Los Angeles, Calif.
Original application Aug. 14, 1967, Ser. No. 660,421. Divided and this application Apr. 8, 1970, Ser. No. 31,036
Int. Cl. B29c *17/04*
U.S. Cl. 18—19F **3 Claims**



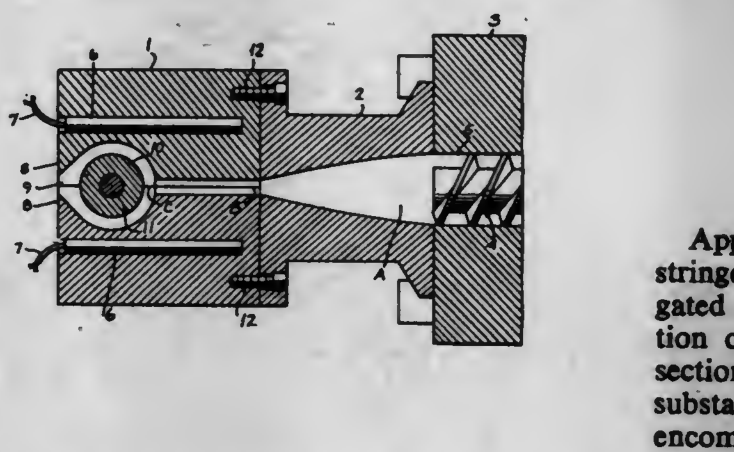
A means and method for making embossed thermoformed articles particularly adapted for use in forming embossed articles, such as meat trays, and various containers, or packages of material such as foamed styrene plastic or equivalent thermo-plastic material, whereby a vacuum or negative pressure is applied through a perforate mold member at an article forming surface of the mold member so as to vacuum form an embossed surface on the article being manufactured, and particularly during a time when the temperature of the article being formed is sufficient to permit the forming of the material, but insufficient to cause degradation of the cell structure of said material; a die means of the invention, being perforate or made of porous material, permits uniform application of vacuum or negative pressure to an embossed article forming surface of the die means of the invention.

3,608,144
APPARATUS FOR THE CONTINUOUS PRODUCTION OF PRECISION PROFILES FROM PLASTICS
Walter Damsky and Siegfried Joisten, Krefeld, and Janos Sajben, Krefeld-Gartenstadt, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 1, 1968, Ser. No. 725,771
Claims priority, application Germany, May 5, 1967, F 52,322
Int. Cl. B29f *3/00*
U.S. Cl. 18—12R **7 Claims**



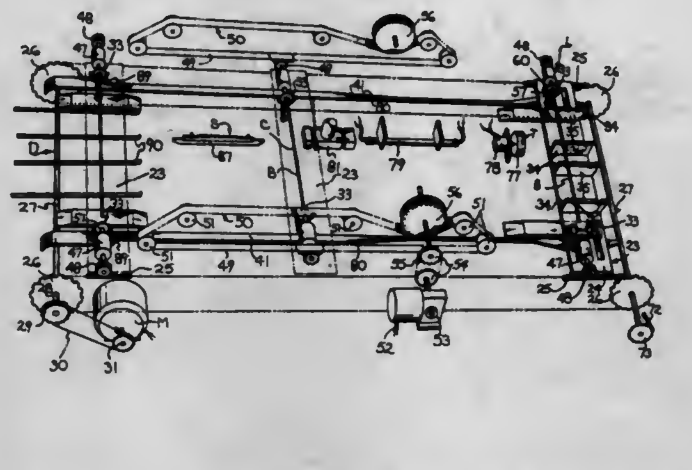
Apparatus for producing a plastic extruded article having a precision cross-sectional profile. The apparatus comprises an extruder having a fusion section, a cooling section and a die section. The die section imparts to the extrusion a predetermined cross-sectional profile greater than that ultimately desired. Also included is a cavity cutting tool provided with a plurality of spaced cutting units, positioned adjacent the extruder so as to embrace the extrusion in its path leaving the extruder, and to cut down the oversized profile to the desired precision profile.

3,608,145
APPARATUS FOR MAKING A PLASTIC EXTRUDATE HAVING UNBLOWN OUTER PORTION AND INTEGRAL BLOWN PORTION
Robert F. Baker and Ebon P. Weaver, Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.
Filed July 15, 1969, Ser. No. 841,900
Int. Cl. B29d *27/04*
U.S. Cl. 18—12F **6 Claims**



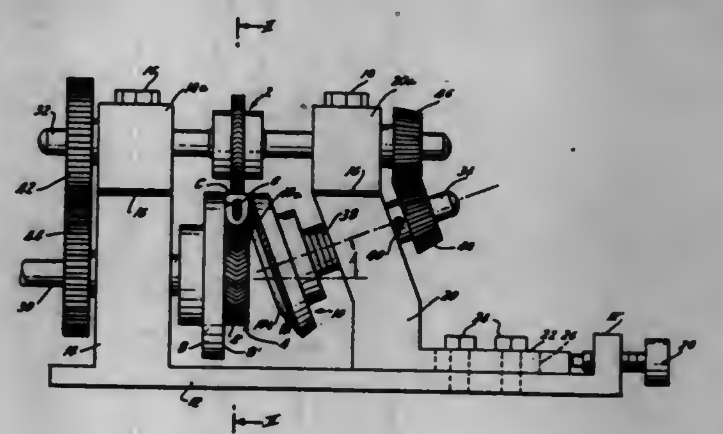
A die and method for plastic extrusion are disclosed herein in which a heater element within the die is maintained at a temperature above the decomposition temperature of a blowing agent incorporated in a plastic melt to be extruded, and the body and exit orifice of the die are maintained at a temperature below the decomposition temperature of the blowing agent.

3,608,146
APPARATUS FOR FORMING PLASTIC TUBULAR ARTICLES
Russell Eugene Dunipace, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 22, 1968, Ser. No. 723,351
Int. Cl. B29c *17/02, 17/10, 17/14*
U.S. Cl. 18—19TM **9 Claims**



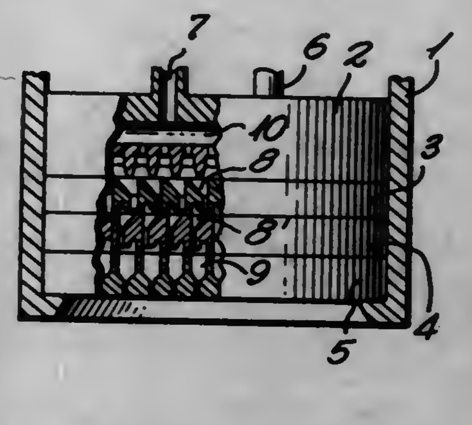
The present disclosure relates to apparatus and method for conveying and transforming tubular thermoplastic blanks into tubular pipets, medicine droppers, burette points, ampuls, and the like, while advancing continuously along a prescribed path. The disclosure has particular utility in forming disposable pipets made of thermoplastic material such as polystyrene and the like.

3,608,147
APPARATUS FOR FORMING INTERLOCKABLE SLIDE FASTENER STRINGERS FROM A COILED FILAMENT
Walter O. Galonska, Great Neck, N.Y., assignor to Henry Rogers, New York, N.Y.
Filed Jan. 23, 1969, Ser. No. 793,362
Int. Cl. B29c *3/00, 15/00, 17/02*
U.S. Cl. 18—19C **12 Claims**



Apparatus for forming interlockable slide fastener stringers wherein a filament loosely coiled over an elongated rod-shaped mandrel is moved in longitudinal direction over an elongated mandrel portion having a cross section larger than the remainder of the mandrel and a substantially oval outline by rotating pressure roll means encompassing the mandrel and the coil thereon in the region of the enlarged mandrel portion, and wherein the pressure roll means and the mandrel portion of enlarged cross section are arranged relative to each other in such a manner so as to deform the coil to provide interlocking heads on the convolutions tthereof adapted to interlock with the heads of a second corresponding coil.

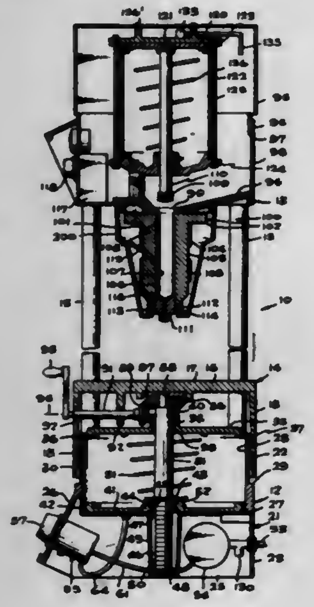
3,608,148
APPARATUS FOR SPINNING A MILTIFILAMENT YARN
Robert Sluijters, Arnhem, Netherlands, assignor to American Enka Corporation, Enka, N.C.
Filed Feb. 20, 1967, Ser. No. 617,186
Claims priority, application Netherlands, Feb. 25, 1965, 6602465
Int. Cl. D01d *3/00*
U.S. Cl. 18—85C **1 Claim**



Improved apparatus for producing layered multi-component filaments comprising spinneret means, mixing means immediately upstream of said spinneret means, feed means for introducing spinning masses through filtration means into said mixing means, said mixing means dividing and increasing the component layers prior to terminating into the extrusion orifices of said spinneret means.

3,608,149
INJECTION MOLDING MACHINE

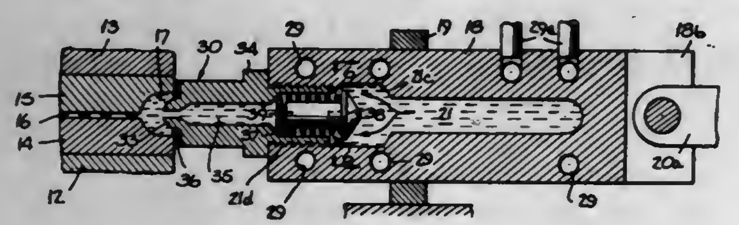
Philip R. Morgan, Monrovia, Calif., assignor to Morgan Industries, Inc., Los Angeles, Calif.
Filed Nov. 6, 1968, Ser. No. 773,736
Int. Cl. B22d *33/04;* **D01b** *1/10*
U.S. Cl. 18—30LA **6 Claims**



An injection molding machine having a base, an injection head spaced above the base and supported on vertical columns, and a table mounted to move upwardly and downwardly along the columns to clamp a die between the table and the head in injecting position. The table is actuable vertically by a piston and cylinder mechanism within the base, to clamp the die against the injection head, and is adjustable vertically relative to the actuating piston by adjustment of a table supporting screw which extends through and threadedly and adjustably engages the piston.

3,608,150
INJECTION MOLDING OF LIQUID THERMOSETTING RESINS

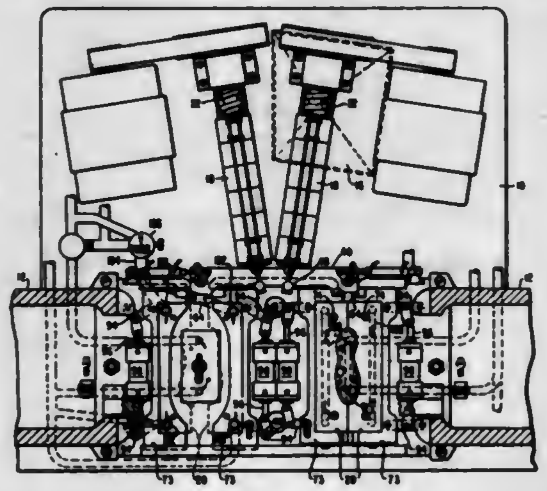
Leon Laufer, Bayside, and Steve Noto, Brooklyn, N.Y., assignors to Daniel Machlin, Far Rockaway, N.Y.
Filed Jan. 22, 1969, Ser. No. 793,098
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **23 Claims**



The instant application discloses a novel injection mold sprue and nozzle combination which enables a trouble-free injection molding of quick-curing liquid thermosetting resins to be achieved. The combination is characterized by the provision of a mold sprue which is in the form of a recess considerably larger than the nose of the nozzle to be juxtaposed thereto and defines a hiatus between the discharge end of the nozzle bore and the inlet end of the mold runner system, thereby contrasting with conventional arrangements which are characterized by a flush and tight nozzle to mold fit to bring the nozzle bore and the mold runner system into abutting and directly communicating end to end relation. The depth of that part of the sprue which is not occupied by the nozzle must exceed the depth of the runner system. Thus, since the resin filling the sprue gels inwardly from the walls thereof, the injection pressure can be released and the nozzle separated from the mold before the gelation of the resin in the sprue is completed, thereby avoiding the possibility of the resin gelling back into the nozzle. A check valve is provided in the nozzle system to inhibit after-dribble of resin as well as aspiration of air into the resin supply upon release of the injection pressure.

3,608,151
MOLD COUPLING FOR SOLE INJECTING MACHINES

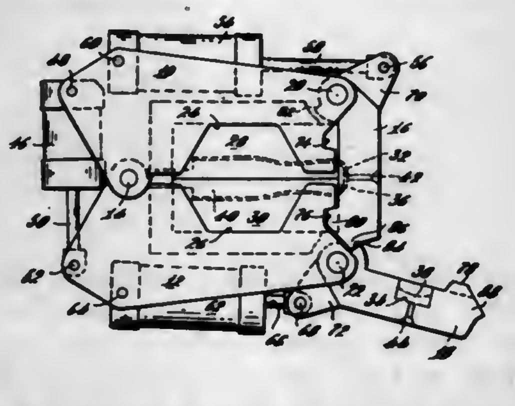
Oscar H. Cloutier, North Conway, N.H., and Ernest F. Huber, Jr., Beverly, and Wallace W. Ingves, Reading, Mass., assignors to New England Merchants National Bank of Boston, Boston, Mass.
Original application June 12, 1968, Ser. No. 736,308. Divided and this application July 28, 1969, Ser. No. 845,199
Int. Cl. B29f *1/00*
U.S. Cl. 18—30US **10 Claims**



A shoe bottoming machine having a divided mold ring with interface grooves between its halves to form an injecting sprue, so arranged that a block on a plasticizing pump for forcing elastomer into the mold ring is releasably engaged to form a coupling with keys on the mold ring halves whenever they are brought together to form a molding cavity. The keys are supported on parts of a two-part carrier and the block is connected through a distributing manifold between the pump and the block in a manner to enable release of a sprue plug while attached to a molded shoe bottom from the mold ring when the mold ring parts are separated.

3,608,152
MOLD CARRIER FOR INJECTION OR VULCANIZING MOLDS

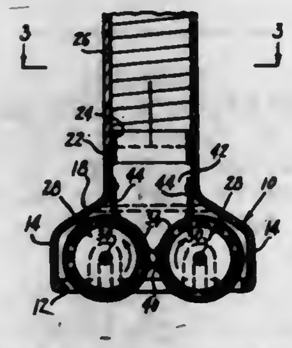
Lothar Fink, Baden, and Friedrich Koch, Achim, near Bremen, Germany, assignors to Desma-Werke Gesellschaft mit beschrankter Haftung, Bremen, Germany
Filed May 18, 1970, Ser. No. 38,293
Int. Cl. B29c *1/00;* **B29f** *1/12;* **B29h** *7/08*
U.S. Cl. 18—43 **8 Claims**



A mold carrier comprising two side parts pivotally connected at one end for movement of the parts toward and from each other and third and fourth end parts pivotally connected to the respective opposite ends of the side parts which are alternatively engageable with the ends of the two side parts to provide an enclosure for holding the component parts of a mold assembly clamped together. There are shoulders on each of the end parts engageable with notches on the side parts by means of which each end part when disposed across the ends of the side parts is adapted to hold the side parts clamped together, while the other end part is disposed in a lateral, inoperative position. There is a cylinder and piston assembly including a piston rod operably connected to the side parts to move them toward and away from each other and cylinder and piston assemblies including rods connecting the side and end parts for moving the end parts into and out of engagement with the side parts. Additionally, there are auxiliary locking means comprising at each side a link pivotally connected to the end of the piston rod at that side and a latch plate pivotally connected to the side part having a notch at one end adapted to engage the pivot connecting the link to the piston rod by extension of the latter to move the adjacent ends of the lever and latch plate beyond the line of centers of these pivots to a locking position whereupon the cylinder may be exhausted without unlocking the parts.

3,608,153
DEVICE FOR REMOVING WOOL FROM SHEEP

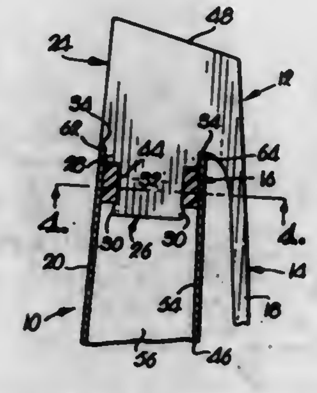
Dale L. Berrett, Calistoga, Calif.
(Rte. 1, Arrington, Tenn. 37014)
Filed May 21, 1969, Ser. No. 826,396
Int. Cl. C14b *19/00*
U.S. Cl. 19—2 **1 Claim**



Oppositely rotating grooved rollers pull from the sheep, wool which has been rendered loose or brittle, for example, by the administration to the sheep of certain chemicals now in use, and the rollers supply the wool to a flexible pipe leading to a source of vacuum for collecting the wool.

3,608,154
CLIP FOR WRITING INSTRUMENT AND METHOD OF ATTACHING SAME

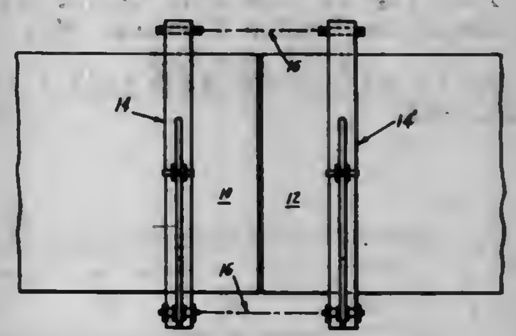
George O. Ira, Prairie Village, Kans., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.
Filed Oct. 7, 1969, Ser. No. 864,471
Int. Cl. B43k *25/00*
U.S. Cl. 24—11F **8 Claims**



A clip assembly for attachment to the hollow cap of a writing instrument, such as a pen or pencil, the clip assembly including a clip having a base portion and a resilient shank portion, there being a projection on the base portion which extends through an opening in the normally upper end of the cap, the projection being engaged by a resilient retainer ring which is frictionally fitted within the hollow cap, whereby the clip assembly is retained with respect to the cap.

3,608,155
QUICK-RELEASE BELT CLAMP

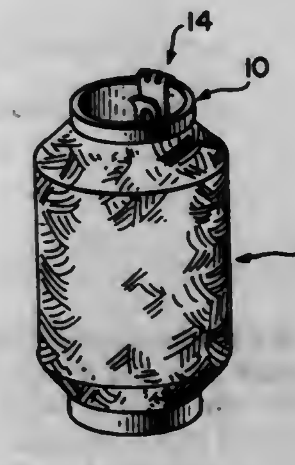
Virl Burgess, 6180 Lincoln Blvd., Oroville, Calif. 95965
Filed Oct. 16, 1969, Ser. No. 866,924
Int. Cl. F16g *3/00*
U.S. Cl. 24—32 **6 Claims**



A quick-release belt clamp assembly; generally usable in pairs to draw together terminal ends of conveyor belts or the like in which each clamp assembly comprises a pair of juxtapositionable clamp plates hingedly connected in spaced relation at one end, and in which a toggle-clamp is hinged at the other end of one of the plates and clampingly and detachably engageable over the other end of the other plate for releasably clamping the plates on a belt end; in which the toggle clamp includes an L-shaped lever including an antifriction roller and in which releasable lock means is provided to prevent accidental release of the belt-clamp assembly; and in which the assembly includes anchor means whereby pairs of cooperating assemblies, after being mounted on belt ends, can be readily drawn together.

3,608,156
LABEL HOLDING AND DISPENSING DEVICE

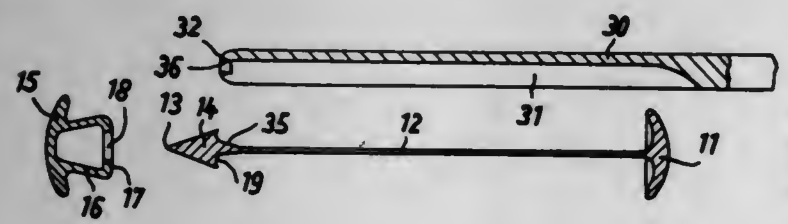
Gus Graham Ward, Fayetteville, N.C., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Apr. 22, 1969, Ser. No. 818,348
Int. Cl. A44b *21/00*
U.S. Cl. 24—81B **5 Claims**



The device is of one-piece construction and is formed of spring steel provided with a thermoplastic coating. The main body portion of the device has an attaching portion at one end thereof comprising a plurality of spaced resilient hook-shaped portions adapted to be connected to an associated spinning sleeve. A holding leg extends from the opposite end of the main body portion and is resiliently biased toward the main body portion for holding labels between the holding leg and the main body portion. This holding leg is provided with a slot so that a person's finger can engage the labels to dispense the labels, and the end of the holding leg extends laterally so as to permit the holding leg to be readily moved away from the main body portion.

3,608,157
DEVICE FOR BUTTON TUFTING CUSHIONS FOR CHAIRS AND MATTRESSES

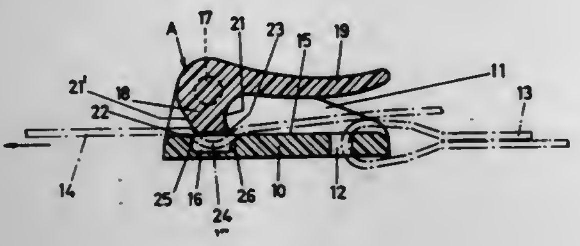
Otto Paul Molt, 7061 Haubersbronn,
Wurttemberg, Germany
Filed May 15, 1969, Ser. No. 824,813
Claims priority, application Germany, May 17, 1968,
P 17 60 443.2
Int. Cl. A41h *31/00;* A44b *1/12, 1/18*
U.S. Cl. 24—102T 14 Claims



Button tufting device for pads such as, for example, cushions, mattresses and the like articles consisting of an elongate flexible element having a tufting button integrally formed on one end thereof and a pointed headpiece integrally formed on the other end thereof moulded of suitable plastic material, and a companion button to be snapped on the headpiece in push-button like manner after the element had been pulled through the pad with the aid of a stiff needle or similar tool.

3,608,158
BUCKLE

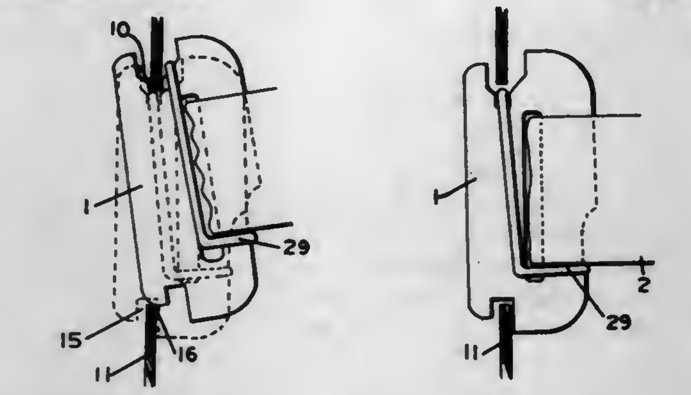
Sigurd Walter Bengtsson, 17 Bruksgatan,
414 51 Goteborg, Sweden
Filed Mar. 20, 1969, Ser. No. 808,810
Claims priority, application Sweden, Mar. 21, 1968,
3,811/68
Int. Cl. A44b *11/12*
U.S. Cl. 24—170 1 Claim



The buckle is for the interconnection of two band parts and has a base plate with side flanges, an opening and recess and a double arm lever pivotally mounted between side flanges. One band part is attached to said base through said opening and the other band part extends between said base and said arm whereby pivoting of said arm in one direction causes said second band part to be bent into said base recess with two spaced locking edges of said arm engaging said second band bent portion above side edges of said base recess to retain said second band part on said buckle.

3,608,159
END CONNECTOR MEMBER

Henry J. Brucker, Summit, N.J., assignor to Suburban Metal Industries Limited, Scarborough, Ontario, Canada
Filed May 5, 1970, Ser. No. 34,664
Claims priority, application Canada, June 3, 1969,
53,359
Int. Cl. A44b *17/00;* A44c *5/18*
U.S. Cl. 24—201 10 Claims

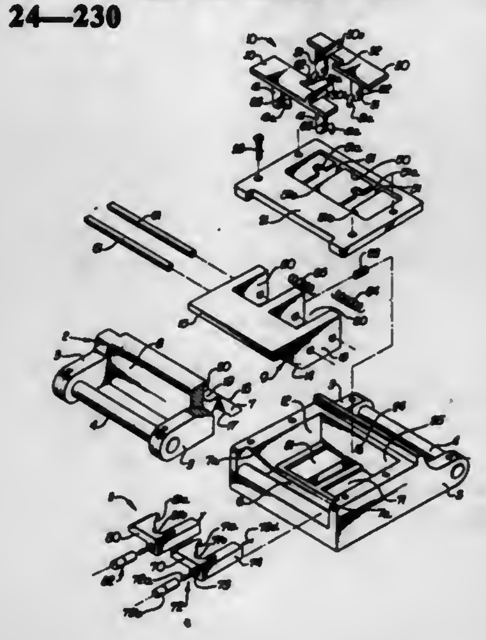


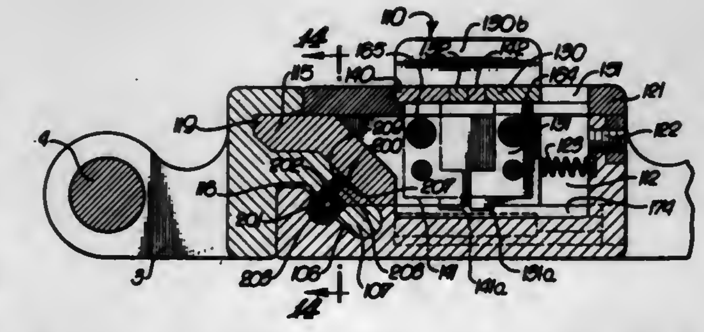
The invention relates generally to material handling equipment and in particular to an end connector for releasably securing a cargo supporting or restraining strap to an anchor member mounted, for example, on the inside wall of a truck or other cargo container.

The end connector is in the form of a metallic or like plate to which the strap is fastened in any desirable manner, and an adjustable wire keeper is loosely mounted on the plate, the keeper adapted to securely releasably lock the end connector to the anchor member.

3,608,160
AUTOMATIC CANOPY BUCKLE

Jan R. Coyle, 514 E. Ghent,
San Dimas, Calif. 91773
Filed Feb. 19, 1969, Ser. No. 800,398
Int. Cl. A44b *11/25*
U.S. Cl. 24—230 13 Claims

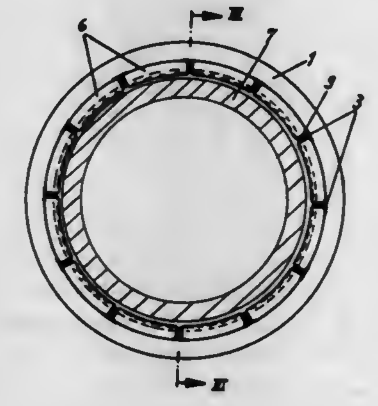




A failure safe buckle in which a lug of a male buckle part is captured in a recess of a female buckle part by a latch slide, the latch slide being releasably locked in a position overlying the recess and engaged with the lug, and in which the lock mechanism includes relatively movable parts biased to locking positions to lock the latch slide against movement, the relatively movable parts requiring simultaneous opposite movement to permit shifting of the latch slide to a position releasing the lug, and cams acting on such relatively movable parts to move the same in response to firing of explosive charges in the buckle. Such a buckle in which the explosive charges are ignited by closure of a remote switch.

3,608,161
CLAMPING MEANS FOR CLAMPING AND HOLDING HOLLOW BODIES PARTICULARLY TUBES

Erwin Kost, Osterath, and Bernhard Zeuch, Dusseldorf, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Apr. 29, 1970, Ser. No. 32,818
Claims priority, application Germany, May 2, 1969,
P 19 22 497.6
Int. Cl. B23b *31/30*
U.S. Cl. 24—263IH 6 Claims

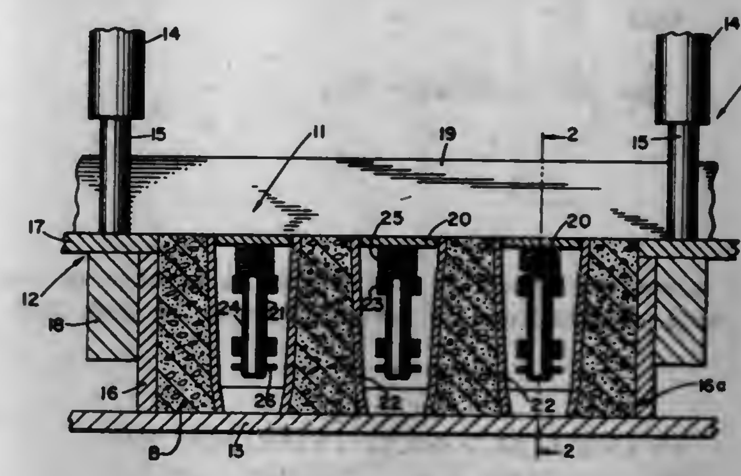


Clamping means for clamping and holding hollow bodies, such as tubes, against either inwardly or outwardly acting fluid pressure, comprising a cylindrical resilient sealing sleeve, a gripping member consisting of annularly arranged segmental clamping pieces of a material harder than that of the sealing sleeve, slightly spaced apart, supporting means being provided for holding the segmental sealing pieces in their annular position when the fluid pressure is released. The gaps between the segmental clamping pieces are each covered throughout its length by a plate, moulded in or stuck onto the sleeve material, each plate being given a T-shaped profile by the addition of a web extending perpendicularly from the plate into the gap.

3,608,162
VENTED CORE AND MOLD ASSEMBLY FOR CONCRETE BLOCK MOLDING MACHINES

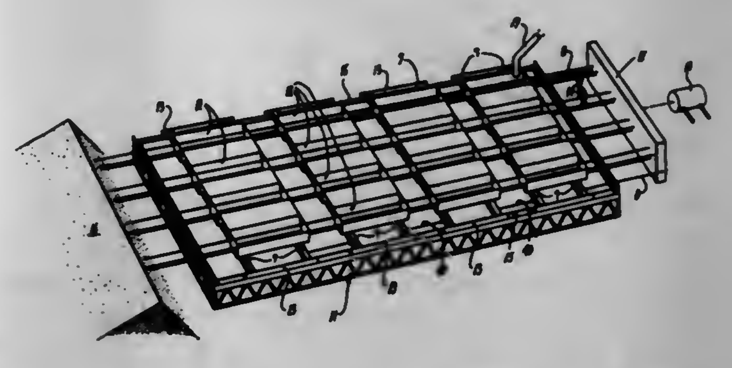
Charles A. Staton, Alpena, Mich., assignor to
Besser Company, Alpena, Mich.
Filed Dec. 13, 1968, Ser. No. 783,655
Int. Cl. B28b *7/18*
U.S. Cl. 25—41A 8 Claims

A vnted core and mold assembly for concrete block molding machines wherein a core plate which is vertically separable from a mold box supporting pallet has core shell covers fixed thereto which support core shells for relative vertical movement therewith, vertical separation of the core plate causing a vertical separation of the core cover plates and core shells which are restrained by the frictional resistance of the cementitious material in the mold box and the vacuum created by the withdrawal of the core shells to thus open up the tops of the core shells to atmospheric pressure and break the vacuum created.



3,608,163
APPARATUS FOR PRODUCTION OF PRESTRESSED MOLDED CONCRETE MEMBERS

Jon W. Harford, Petaluma, Calif., assignor to J. H. Pomeroy & Co., Inc., San Francisco, Calif.
Filed July 7, 1969, Ser. No. 840,140
Int. Cl. B28b *13/06*
U.S. Cl. 25—120 4 Claims

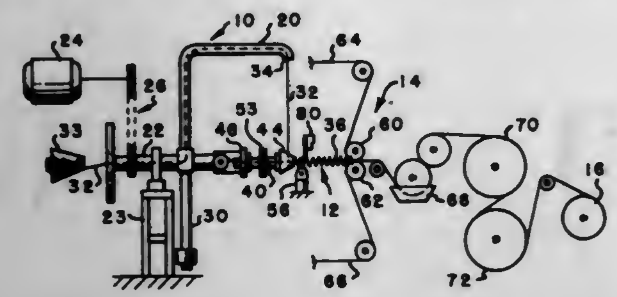


In the manufacture of pre-stressed molded concrete members a lifting machine characterized by a laterally extending rigid bar at each end which can be lowered into engagement with the projecting stubs of the cable ends extending out of the molded member. The means for elevating these two transversely extending rigid bars serves first to eliminate all slack from the hoisting means coupled to the bars. Thereafter, the bars are elevated evenly so as not to introduce a twisting moment to the molds or members.

3,608,164
APPARATUS FOR PRODUCING NONWOVEN FABRICS

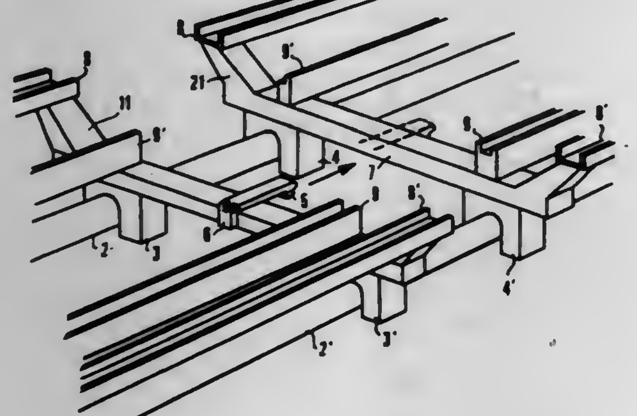
Milton M. Bolles, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Sept. 11, 1969, Ser. No. 857,037
Int. Cl. B32b *31/12*
U.S. Cl. 28—1CL 4 Claims

Apparatus for producing nonwoven net fabric comprising means for winding a continuous thread about spaced support members to form a plurality of thread sections therebetween and for advancing the sections in spaced, generally parallel relation to form a weft sheet which is subsequently combined with one or more warp thread sheets to form a composite nonwoven net fabric and control means for sensing the presence of thread sections in the weft sheet and for stopping the winding and advancing means in response to an absence of one or more sections from a spaced position in the weft sheet.



3,608,165
FRAME FOR A WARP TYING MACHINE

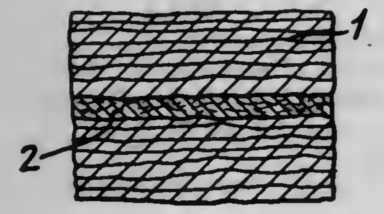
Alois Altenweger, Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland
Filed Oct. 3, 1969, Ser. No. 863,536
Claims priority, application Switzerland, Oct. 4, 1968, 14,915/68
Int. Cl. D03j *1/18;* **D02h** *11/00*
U.S. Cl. 28—49 **6 Claims**



The basic frame has at least two preparation and clamping units which serve to tie the respective end of a woven out warp and a new fresh warp together. These units are separately mounted on the basic frame to be removed one at a time so as to be consecutively placed behind each other to extend the guide path for the warp tying machine.

3,608,166
METHOD OF PRODUCING PADS OR MATS OF MINERAL FIBERS

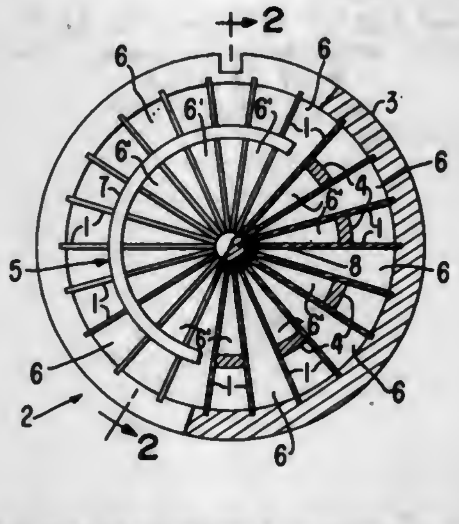
André Gruget, Meudon, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France
Filed Apr. 18, 1969, Ser. No. 817,430
Claims priority, application France, May 2, 1968, 150,268
Int. Cl. D04h *18/00*
U.S. Cl. 28—72.2R **5 Claims**



The production of a mat of glass fibers of improved structural integrity, cohesiveness, increased density, resilience and tractive resistance in longitudinal and transverse directions by combining with the mat a thin layer of connecting fibers having stretch and pliability characteristics greater than those of the glass fibers, and "needling" the combined mat with needles provided with barbs which entrain the connecting fibers into the mat in a transverse direction relative to the mat surfaces, which bind the glass fiber into a well integrated mat useful for thermal and acoustic insulation, structural members, laminates for fabric and other sheet material, packing plastic reinforcements, filters, and other industrial applications.

3,608,167
METHOD FOR FABRICATING A "RISING SUN" MAGNETRON ANODE

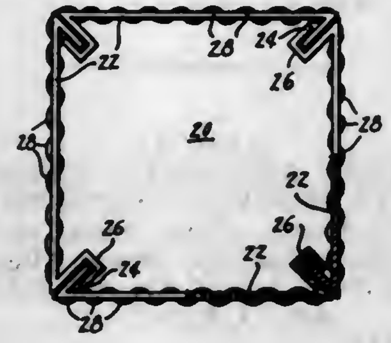
Leonard Safran and John B. Horrigan, Beverly, Mass., assignors to Varian Associates, Palo Alto, Calif.
Filed Nov. 12, 1969, Ser. No. 875,656
Int. Cl. H01j *9/00*
U.S. Cl. 29—25.14 **6 Claims**



A method for fabricating a molybednum "rising sun" magnetron anode is disclosed. In the method, the radial array of vanes is brazed intermediate an outer ring and an inner post. A spider structure having a ring shaped body with dependent axially directed leg portions is brazed to the vanes with the leg portions being located in every other space between adjacent vanes to form a rigid self jigging structure. Once brazed, the center post, adjacent vane tips and ring portion of the spider are removed to define a "rising sun" anode configuration.

3,608,168
SECTIONAL HOLLOW FILE CONSTRUCTION

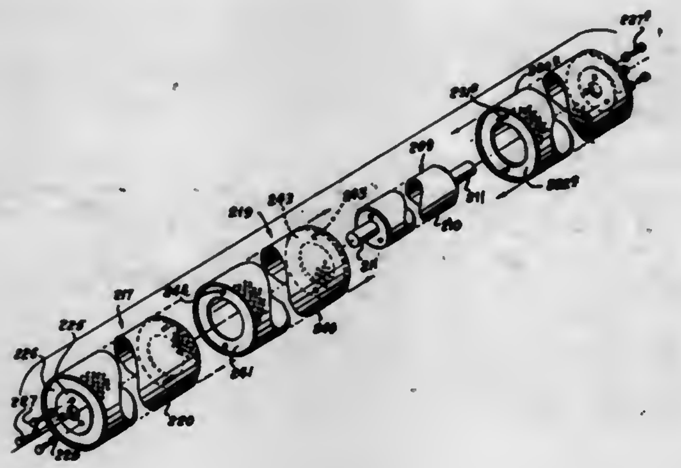
James A. Coon, 929 Drever St., West Sacramento, Calif. 95691, and Elwin Theobald, 4631 Solano Way, Fair Oaks, Calif. 95628
Filed Oct. 3, 1969, Ser. No. 863,607
Int. Cl. B23d *71/00*
U.S. Cl. 29—79 **10 Claims**



Various standardized shaped sections, each having a U shaped portion on one end and an angle formed on the opposite end for snapping together in constructing hollow files of a desired size and shape. Raised portions and projecting tabs at the section ends are two embodiments that prevent sliding when the sections are snapped together.

3,608,169
ROLLER STRUCTURE

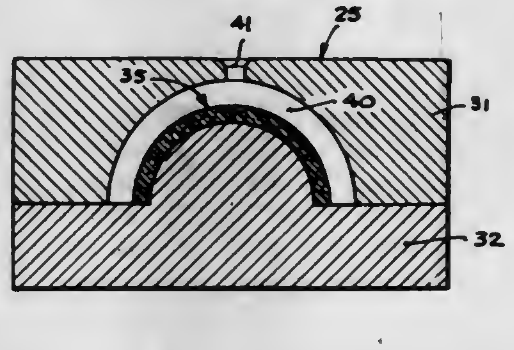
James W. Pace, 644 E. Arawe Circle, Irving, Tex. 75060
Original application June 28, 1967, Ser. No. 649,642, now Patent No. 3,440.842. Divided and this application Oct. 1. 1968, Ser. No. 798,491
Int. Cl. B60b *7/04*
U.S. Cl. 29—125 **4 Claims**



A perforated roll element is mounted on and spaced from a tubular support and comprises a plurality of perforated, annular sections which mate and are clamped together at their end portions.

3,608,170
METAL IMPREGNATED COMPOSITE CASTING METHOD

Hugo R. Larson, Ridgewood, N.J., Henry M. T. Harris, Meadville, Pa., and Jacob Nitz, Maple Heights, Ohio, assignors to Abex Corporation, New York, N.Y.
Filed Apr. 14, 1969, Ser. No. 815,819
Int. Cl. B21d *53/10;* **B22d** *23/00*
U.S. Cl. 29—149.5PM **6 Claims**

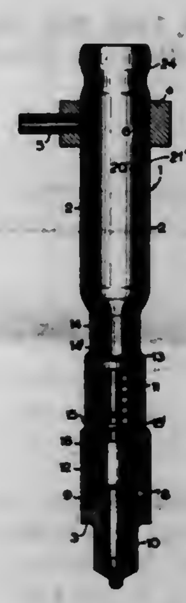


Composite metal-non-metal structures are obtained by first molding a porous perform of the non-metal in particulate form using a binder which will bond the particles by pyrolysis phenomenon. The preform is then transferred to a mold where it is thoroughly impregnated by molten metal.

3,608,171
METHOD OF MAKING FUEL INJECTION VALVE

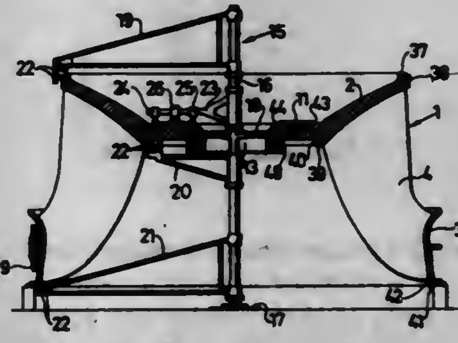
Gunther Stradtmann, Bamberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 16, 1969, Ser. No. 885,593
Claims priority, application Germany, Dec. 18, 1968, P 18 15 260.8
Int. Cl. B21k *1/20*
U.S. Cl. 29—156.7R **8 Claims**

There is described a fuel injection valve which is made in the following manner: two metal strips, one of which is provided on one face with parallel extending longitudinal grooves, are superposed in registry and with the grooved face covered. Thereupon the strips are bent as a unit to form a double-jacketed tubular body which is subsequently welded and cut into required lengths. Annular inlet and outlet grooves are provided in said body to communicate with internal longitudinal fuel channels formed by said longitudinal grooves. By means of rolling operations, the ends of said fuel channels are sealed and further, circumferentially reduced areas are provided in said valve body for positioning valve components therein.



3,608,172
METHOD AND DEVICE FOR THE MANUFACTURE OF FRANCIS TURBINE RUNNERS

Arne Herman Lindquist, Trollhattan, Sweden, assignor to Aktiebolaget Nohab, Trollhattan, Sweden
Filed Jan. 31, 1969, Ser. No. 795,545
Claims priority, application Sweden, Feb. 5, 1968, 1,479/68
Int. Cl. B21k *3/04;* **B23p** *15/02, 15/04*
U.S. Cl. 29—156.8R **12 Claims**

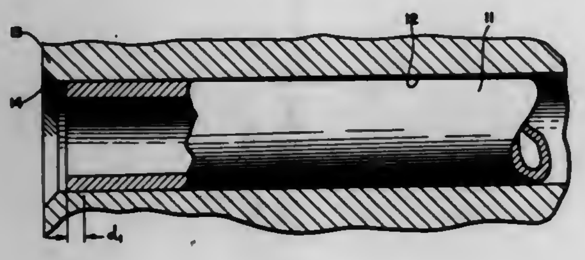


A re-finished and annealed Francis-type runner is finished by first machining a guide structure and surface on the hub of the runner to selected final dimensions. Such machining is effected by mounting the center shaft of a machine tool so that it is coaxial with the hub and the rim of the runner and so that the finishing tool carried by the machine tool is in coacting relationship with the guide structure and surface to be machined for finishing. This machine tool is then removed and a second machine tool is mounted on the guide structure and surface finished with the first machine tool. Correct location of the second machine tool is effected by utilizing the finished areas of the structure and the surface as reference areas. The second machine tool also mounts a finishing tool by means of which further guide structures and surfaces on the hub and the rim of the runner are machined to selected final dimensions whereupon the second machine tool is also removed.

3,608,173
METHOD FOR SECURING A TUBE IN A TUBESHEET

James F. Watson, La Jolla, and Stanley L. Koutz and Lawrence J. Hull, San Diego, Calif., assignors to Gulf Energy & Environmental Systems, Inc., San Diego, Calif.

Filed Nov. 19, 1968, Ser. No. 777,036
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*
U.S. Cl. 29—157.4 2 Claims

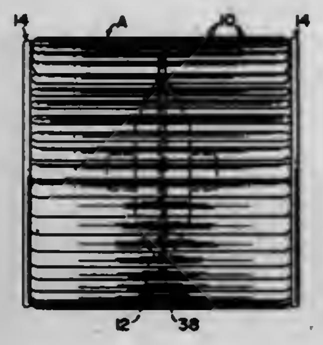


A method is described for securing a tube in a tube sheet. The tube is inserted in a hole in the tube sheet and is expanded with a taper into contact with the tube sheet. The tube is then bonded to the tube sheet at its end and is further expanded with a taper subsequent to bonding.

3,608,174
APPARATUS FOR ASSEMBLING CENTRIFUGAL BLOWERS

Harold L. Baker, Warrensville Heights, Ohio, assignor to Morrison Products, Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 649,616, June 28, 1967. This application Jan. 8, 1969, Ser. No. 789,675
Int. Cl. B21k *3/04;* **B23p** *15/02, 15/04*
U.S. Cl. 29—156.8 10 Claims



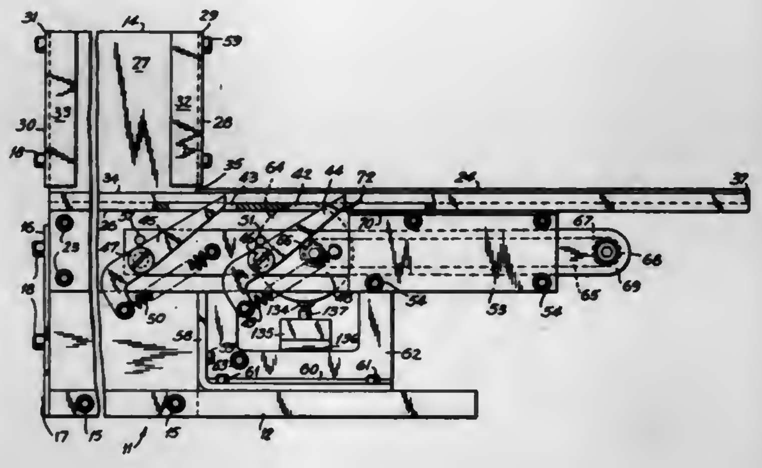
A centrifugal blower wheel is assembled by forming a blade strip into a cylinder around a central hub disc. The circular axial ends of the cylinder are positioned in channel-shaped circular end rings. An axial force is applied to the assembly and the end rings are simultaneously deformed into gripping engagement with the cylinder ends. The central hub disc has a bifurcated outer periphery which is deformed outwardly into engagement with notches in the blades subsequent to deformation of the end rings.

3,608,175
SYSTEM FOR THE STORAGE, TRANSPORTATION AND FEEDING OF ELECTRONIC COMPONENTS

Richard A. Lambrecht, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,436
Int. Cl. H05k *13/04*
U.S. Cl. 29—203B 18 Claims

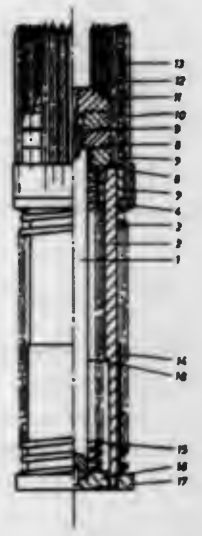
System for storage, transportation and feeding of electronic components onto hybrid circuit substrates including apparatus consisting of component carrying trays and tray handling apparatus, said trays having component holding means spaced along one surface thereof and a series of teeth spaced along the tray in predetermined relationship with the component holding means on the tray, said tray handling apparatus consisting of an open-bottomed magazine for containing a stacked plurality of said trays, a track extending from said magazine to a tray unloading station, a first tray progressing means operative to slidably actuate the lowermost tray out of the magazine, a second tray progressing means located between the magazine and the unloading station, said second tray progressing means operative to engage teeth on the tray for moving said tray intermittently along the track in increments equal to the spacing between the components on the tray and to position said components seriatim at the unloading station, and drive means for operating the two tray progressing means in synchronization with each other.



3,608,176
APPARATUS FOR MOUNTING COILS IN STATORS OF ELECTRIC MACHINES

Karl-Heinz Wieckhorst, 25 Klipperstrasse, Lubeck, Germany

Filed Apr. 24, 1969, Ser. No. 818,908
Claims priority, application Germany, Apr. 25, 1968, P 17 63 258.5
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 13 Claims

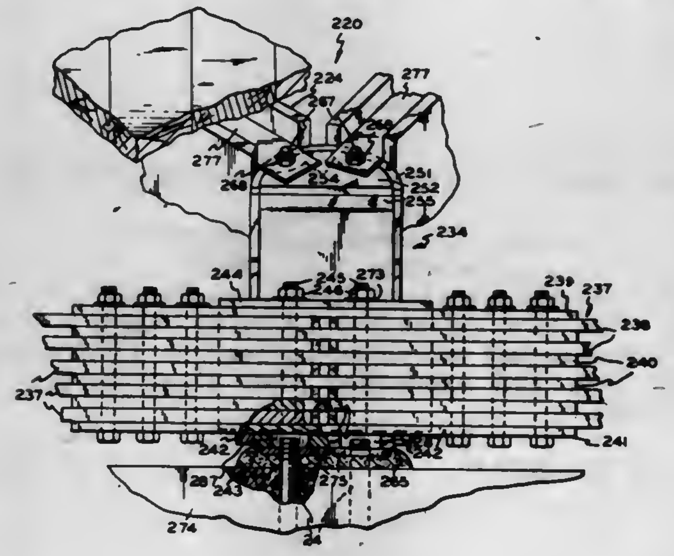


Prefabricated coils for a stator of an electric machine are placed on guide needles extending in parallel relation to each other and arranged in form of needle cages on two concentric pitch circles of different diameters, the pitch circle diameter of the outer needle cage which encircles the inner needle cage in the initial position is greater than the bore diameter of the stator while the diameter of the circle circumscribing the inner needle cage is smaller than the bore diameter of the stator, the needle cages being movably guided relative to each other and are shiftable by drive means coaxially to the axis of said stator in a direction towards the stator bore wherein the movement of the outer needle cage is limited by the needles of the outer cage engaging the teeth of the package of stator plates formed by the grooves when the inner needle cage is entering the stator bore and thereby drawing the coils in axial direction into the stator grooves.

3,608,177
METHOD OF ASSEMBLING A TENSION RING JOINT STRUCTURE

George R. Birkemeier and Hollis C. Scott, Portland, Oreg., assignors to Timber Structures, Inc., Portland, Oreg.

Original application May 17, 1968, Ser. No. 729,952, now Patent No. 3,540,174, dated Nov. 17, 1970. Divided and this application Nov. 3, 1969, Ser. No. 873,213
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 2 Claims



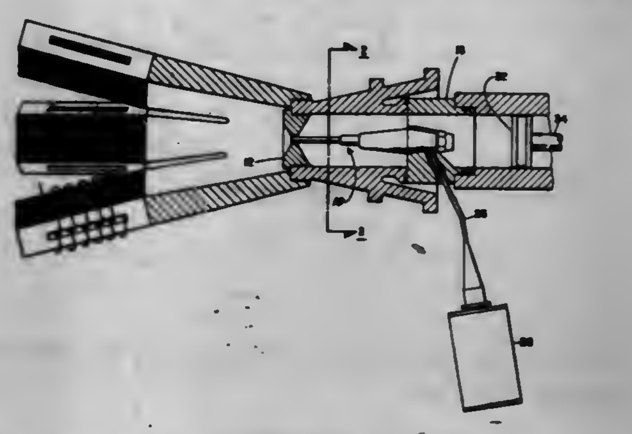
A dome structure **20** (FIGS. 1 to 5) includes beams connected together in triangles by joints **31** and **32** and connected to a tension ring by joints **34**. In each joint **31**, bolts pass through straps connected to the beams and pass through clearance notches in stiffener plates welded to a tube and pass through and bear laterally against the inner periphery of the tube. Each joint **34** is similarly connected to the beams, has a vertical plate **63** connected to a tension ring and a base plate splined for radial movement only relative to the supporting wall. Low friction facings on the base plate and a supporting plate on the wall permit easy radial sliding. A dome structure **120** (FIGS. 6 and 7) has a double tension ring assembly **131** and has joints **134** in which bolts connect the beam straps of stiffening plates and pass through and bear against close-fitting holes in the stiffening plates, which holes are spaced inwardly from the inside faces of tubes of the joints. In a dome structure **220** (FIGS. 8 and 10), a laminated tension ring is provided. In a dome structure **320** (FIGS. 11 and 12) a series of straps welded together in the same plane connect at least three beams to a joint, and shear plates also connect the beams to the joint.

3,608,178
PROCESS FOR PRODUCING ELONGATED OBJECTS FROM POWDERED METALS

Herbert Kartluke, Harold Lawrence McKaig, Jr., and William B. Tarpley, Jr., West Chester, Pa., assignors to Aeroprojects Incorporated, West Chester, Pa.

Filed Nov. 25, 1969, Ser. No. 879,643
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 12 Claims

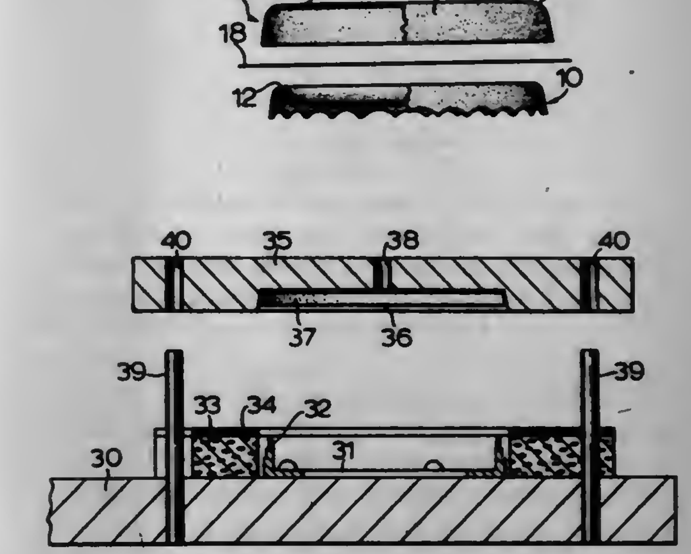
One or more powdered metals, elemental or alloy, are mixed with a plasticizer and binder. The mixture is extruded into solid or hollow shapes using an ultrasonically activated extruder. The shape is then dried and sintered. Thereafter, the sintered shape is cold worked, such as by drawing the shapes on an ultrasonically activated draw bench, to increase its density and mechanical properties.



3,608,179
METHOD AND APPARATUS FOR THE MANUFACTURE OF MIRRORS

Herbert Jeffree, Byfleet, Surrey, and George Y. Benzies, Woking, Surrey, England, assignors to British Aircraft Corporation Limited, London, England

Filed Jan. 24, 1969, Ser. No. 793,798
Claims priority, application Great Britain, Jan. 31, 1968, 4,974/68
Int. Cl. B23p *11/02*
U.S. Cl. 29—446 10 Claims



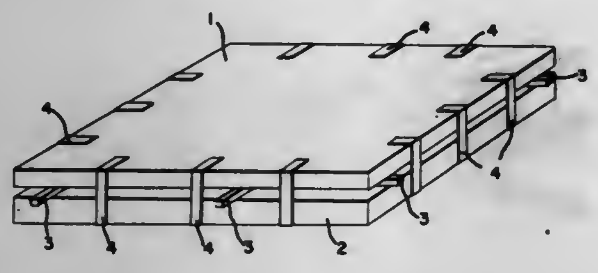
A method and apparatus are described for producing mirrors with a reflecting surface of a thin flexible reflecting material in which a sheet of the reflecting material is stretched over a backing member having a raised peripheral ridge by gripping an outer zone of the sheet and drawing it down around the backing member, and an outer ring is subsequently fitted over the peripheral ridge of the backing member so as to trap the sheet between the outer ring and the backing member.

3,608,180
COMPRESSED GAS STANDOFF FOR CLADDING

William F. Sharp, Jr., Bellmawr, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 707,522, Feb. 23, 1968. This application May 7, 1970, Ser. No. 35,437
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 5 Claims

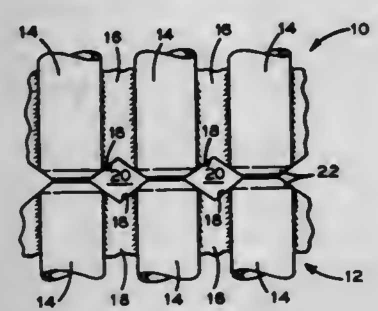
In the process for metallurgically bonding metal layers by arranging them in spaced relationship and then explosively causing them to collide progressively under bonding conditions, the improvement comprising supporting the



metal layers in such spaced relationship by means of an intervening inert gas.

3,608,181
FABRICATION OF PANEL WALLS

Nicholas G. Popov, Darien, Conn., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,714
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.1 **4 Claims**

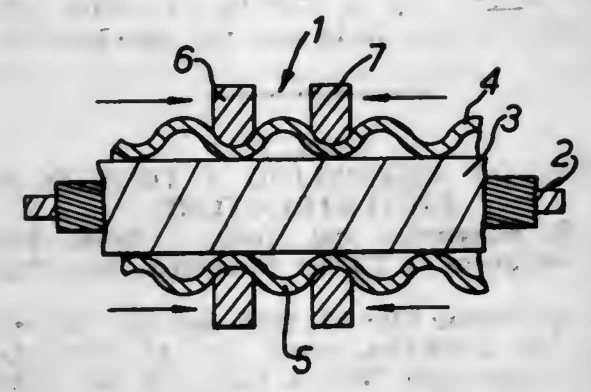


A method of joining two tube panels each including parallel, laterally adjacent tubes having their intertube spaces closed by metallic webs comprising, providing at one end of one of the tube panels notches in the webs extending to the associated tube ends, positioning the notched end of the panel in abutting planar relationship with the second panel so that corresponding tubes of the panels are in coaxial relation and corresponding webs are in opposing relation to form access openings for circumferential welding of the abutting tube ends, welding the abutting tube ends together circumferentially about the junction of the abutting tubes, and seal welding the ends of the corresponding webs to one another including closing the access openings with a metallic filler material.

3,608,182
METHOD OF FORMING ELECTRIC CABLE SHEATHS

Kenneth Edward Lawrence Hughes, Romsey, and James Arthur Francis Donelan, Alton, England, assignors to Pirelli General Cable Works Limited
Filed Apr. 11, 1969, Ser. No. 815,383
Claims priority, application Great Britain, Apr. 17, 1968, 18,084/68
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—482 **5 Claims**

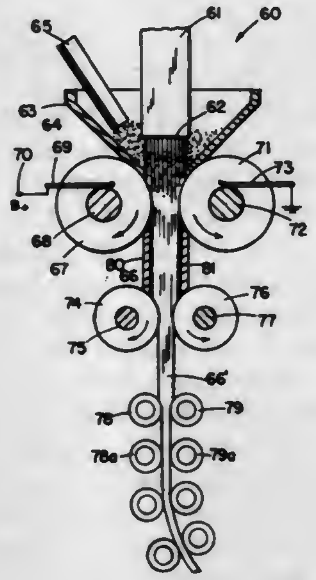
A method of forming a radially extending annular flange on a corrugated metal sheath of an electric cable comprises applying axially opposed compressive forces to the opposite side walls of a single corrugation crest of the corrugated sheath, thereby compressing the crest until the opposite side walls contact each other. The single corrugation crest is spaced from the ends of the sheath and lies between adjacent corrugation crests and any tendency of the sheath to shorten as a result of the compression step is balanced by a flattening of the adjacent corrugation crests, which may itself occur during the compression step or be purposefully effected in a pre-compression swaging step. The flange which results from the compression step provides a highly convenient land



to which a component, such as a joint end bell, may be welded, the end bell firstly being positioned with an annular flange thereon in abutment with the compressed corrugation crest.

3,608,183
METHOD OF FABRICATING A REINFORCED MATERIAL

Jerome H. Lemelson, 85 Rector St.,
Metuchen, N.J. 08840
Continuation-in-part of application Ser. No. 573,148, July 26, 1966, now Patent No. 3,437,783, which is a continuation-in-part of application Ser. No. 239,034, Nov. 20, 1962. This application Mar. 27, 1969, Ser. No. 814,885
Int. Cl. B23k *19/00*
U.S. Cl. 29—527.7 **10 Claims**

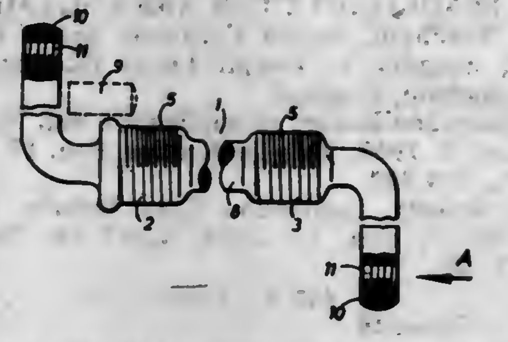


A method for producing a composite material and the improved material structure which is composed of a matrix and a plurality of reinforcing elements which are combined within said matrix to form a unitary structure therewith. The reinforcing elements may comprise metal wires, filaments or whiskers disposed within a ceramic matrix or substrate wherein the filaments serve to reinforce the matrix material.

The process involves continuously feeding a plurality of filaments and matrix material to a die and thereafter predeterminately forming a continuous shape thereof. In one form, the filaments or whiskers are continuously formed as they are fed to the die or mold employed to form the composite material; the filaments may also be fabricated of glass, ceramic, polymers or carbonized material which may be randomly or evenly dispersed within the matrix material.

3,608,184
CRANK FORMING METHOD

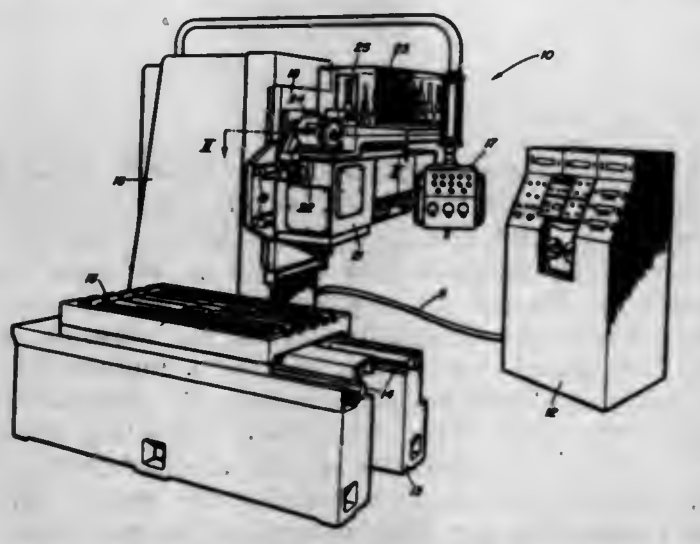
Alfred Thun, Ennepetal-Vorde, Germany, assignor to Alfred Thun & Co. G.m.b.H., Ennepetal-Altenvoerde, Germany
Filed Mar. 18, 1969, Ser. No. 808,151
Claims priority, application Germany, Mar. 21, 1969, P 17 52 015.9
Int. Cl. B23p *13/04*
U.S. Cl. 29—557 **7 Claims**



A method for making a bicycle tread crank from a rod includes the steps of forming a collar in the center of an elongated rod, subsequently forming threads on the collar, and subsequently bending the free ends of the rod in directions opposite to each other to form cranks.

3,608,185
MACHINE TOOL

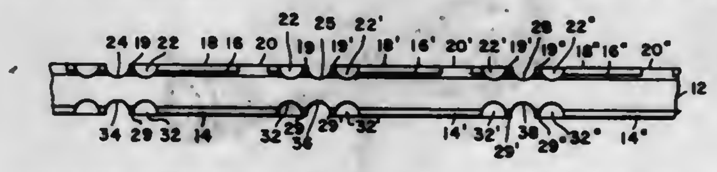
Stanley A. Pfister, Wilmington, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Apr. 10, 1969, Ser. No. 815,049
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **8 Claims**



This invention relates to a machine tool and, more particularly, to a numerically-controlled machining apparatus having tool-changing capability.

3,608,186
SEMICONDUCTOR DEVICE MANUFACTURE WITH JUNCTION PASSIVATION

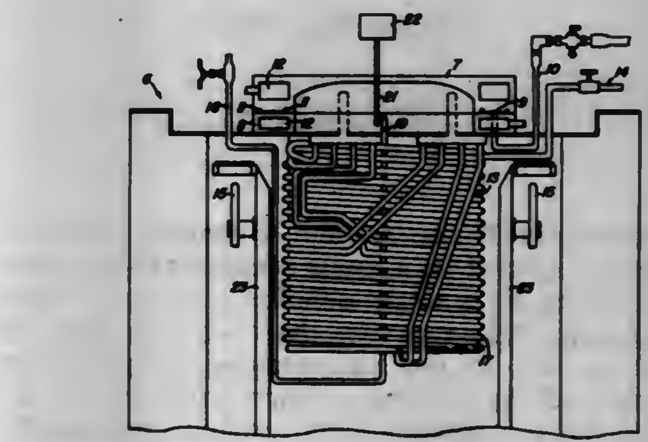
Jearld L. Hutson, P.O. Box 34235,
Dallas, Tex. 75234
Filed Oct. 30, 1969, Ser. No. 872,645
Int. Cl. B01j *17/00;* **H01l** *7/66*
U.S. Cl. 29—583 **8 Claims**



Junction passivated semiconductor devices and a method of manufacturing same in which a rectifying junction is formed in a semiconductor body, a plurality of spaced apart, continuous grooves are cut in a surface of the body that extend through the rectifying junction to form a plurality of devices each having a separate junction in which the plurality of separate junctions intersect the plurality of continuous grooves, respectively, along the entire length thereof, another groove is cut in the same surface of the body between adjacent ones of the plurality of grooves, the plurality of separate junctions are passivated at the surfaces of the plurality of grooves, and the plurality of devices are separated from the body along said another groove.

3,608,187
VACUUM BRAZING-GAS QUENCHING NON-FERROUS AND FERROUS ALLOYS

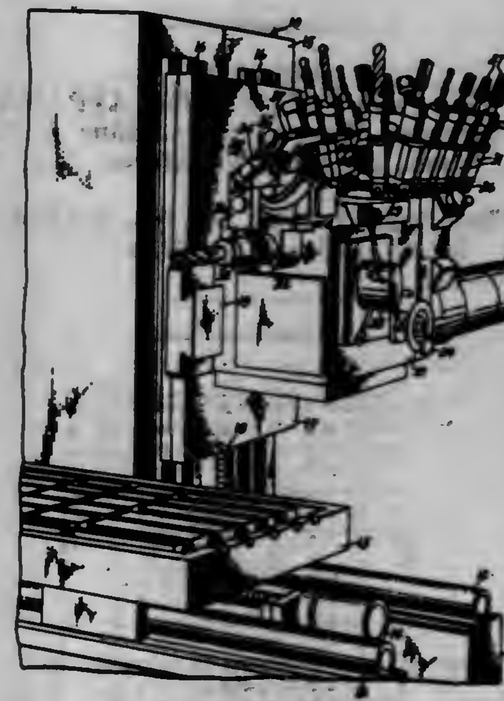
Paul K. Shutt, Jr., Aberdeen, Francis B. Gurtner, Baltimore, and Frank T. Kirk, Jr., Forest Hill, Md., assignors to the United States of America as represented by the Secretary of the Army
Filed Apr. 16, 1969, Ser. No. 816,697
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 **2 Claims**



The disclosure relates to the apparatus and method for joining metal parts together through the utilization of a vacuum brazing-gas quenching technique.

3,608,188
MACHINE TOOL

William B. Seidel, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Jan. 22, 1969, Ser. No. 792,925
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **12 Claims**

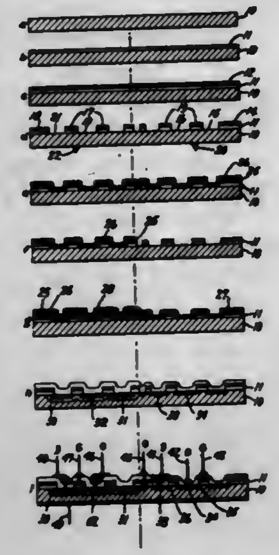


This invention has to do with a machine tool and, more particularly, a machine tool having a tool changing capability, wherein an interchanger is provided for transferring a tool from a tool rack to a work spindle and wherein the tool located in the tool rack for transfer is at a right angle to the axis of the spindle.

3,608,189

METHOD OF MAKING COMPLEMENTARY FIELD-EFFECT TRANSISTORS BY SINGLE STEP DIFFUSION

Peter V. Gray, Scotia, N.Y., assignor to General Electric Company
Filed Jan. 7, 1970, Ser. No. 1,110
Int. Cl. B01j *17/00;* **H01g** *13/00*
U.S. Cl. 29—571 **10 Claims**

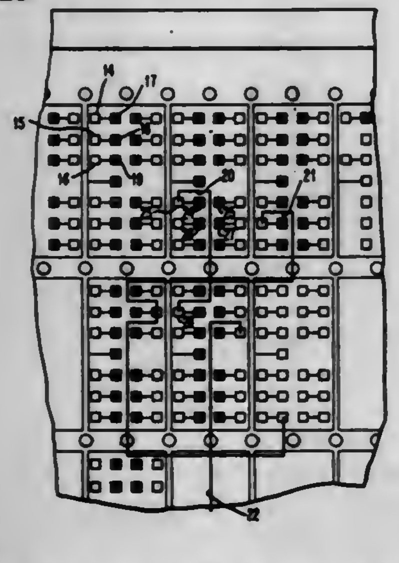


Complementary N-channel and P-channel field-effect transistors are formed on a single conductivity-type semiconductor wafer by a single diffusion step and a single patterning step which separates the N-channel from the P-channel devices. In one embodiment, complementary devices are made by forming an appropriate pattern in a conducting and an insulating film overlying a semiconductor wafer of a first conductivity type, depositing an opposite conductivity type inducing impurity-doped insulating film over the patterned wafer, depositing a first conductivity type inducing impurity-doped insulating film over the first film, removing the impurity-doped films from one portion of the wafer, depositing an opposite conductivity type inducing impurity-doped insulating film over the entire wafer, diffusing the impurities into the wafer to form source and drain regions for one transistor and source, drain and a channel region for the complementary transistor and forming electrical contacts to the source, drain and gate regions of both devices.

3,608,190

ROUTING PINS FOR WIRING APPARATUS

James J. Steranko, Weston, and Arthur J. Guidi, Jr., Medway, Mass., assignors to Inforex, Inc., Waltham, Mass.
Filed June 13, 1969, Ser. No. 833,084
Int. Cl. B41m *3/08;* **B23k** *1/00*
U.S. Cl. 29—625 **4 Claims**

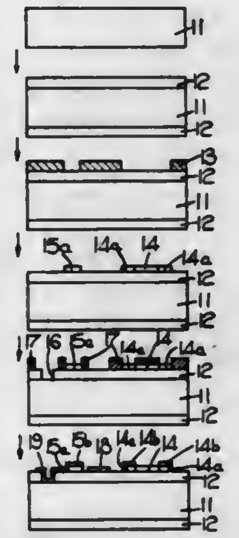


In the wiring of an electrical circuit on a circuit board having solder pads suitable for connection to circuit components, insulated wire passes through a solder head which is moved relative to the position of the board. A fixture has routing pins which protrude through holes in the circuit board so that the solder head can only move between rows of the routing pins. This prevents unintentionally bonding a wire to a pad.

3,608,191

SEMICONDUCTOR ARRANGEMENTS

Victor Needham, Balsall Common, near Coventry, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Continuation-in-part of application Ser. No. 750,204, Aug. 5, 1968. This application Feb. 17, 1969, Ser. No. 799,892
Claims priority, application Great Britain, Aug. 3, 1967, 35,748/67; Feb. 21, 1968, 8,347/68; Feb. 27, 1968, 9,391/68
Int. Cl. H05k *3/30*
U.S. Cl. 29—626 **9 Claims**

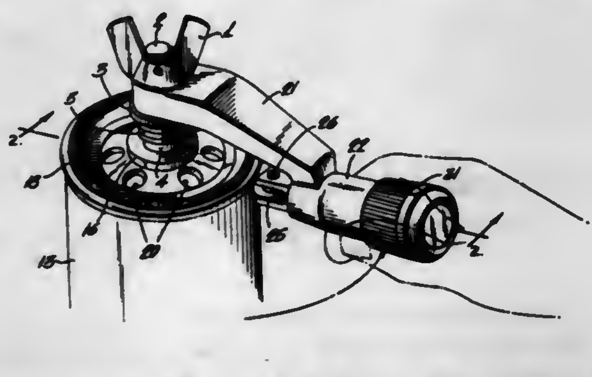


A semiconductor arrangement is disclosed which includes an anodised aluminium backing plate on which is deposited at least one area of conductive material. A semiconductor device is then secured to said area either directly or through the intermediary of the conductor. Alternatively, the aluminium can be the substrate of a thin film circuit, the circuit can be manufactured by anodising an aluminium plate, heating the plate to stress relieve the anodic layer, and finally depositing resistive and conductive components on the anodised aluminium and annealing the circuit to stabilise the resistor values. The components can then be secured to the circuit as necessary.

3,608,192

VARIABLE RADIUS ROTARY DISK CUTTER

William B. Hansel, Media, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Nov. 14, 1969, Ser. No. 876,678
Int. Cl. B67b *7/30*
U.S. Cl. 30—11 **5 Claims**

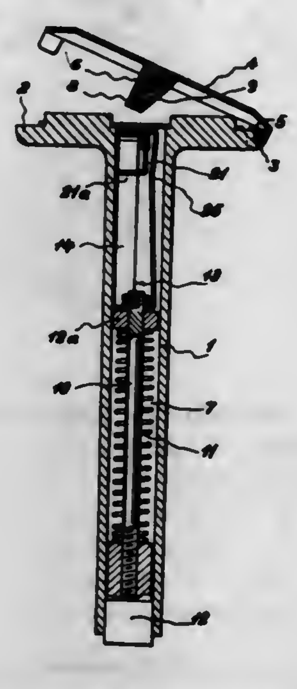


A tool for opening filters of the sealed "spin-on" type comprises a spindle carrying two sets of threads of different sizes adapted to mate respectively with threads provided in the bottom plates of two unlike filters, and a radially-extending arm mounted for rotation about the spindle axis. The arm carries at its outer end a cutting wheel which can be manually moved toward or away from the spindle axis.

3,608,193

RAZOR WITH AUTOMATIC CLAMPING MECHANISM

Jose Bassat Jerusalmi, Barcelona, Spain, assignor to Bassat S.A., Barcelona, Spain
Filed May 2, 1969, Ser. No. 821,213
Claims priority, application Spain, May 2, 1968, 138,923
Int. Cl. B26b *21/14*
U.S. Cl. 30—58 **14 Claims**

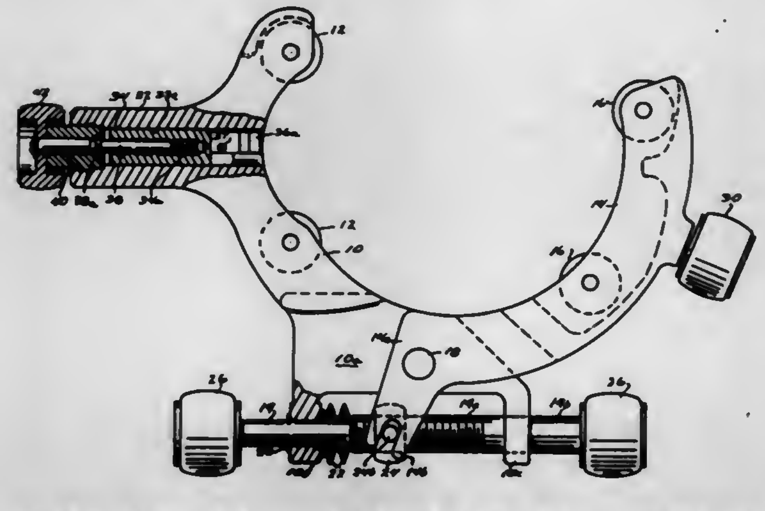


This disclosure provides a razor having an automatic clamping mechanism for attaching a top member to a body member. This clamping mechanism comprises an assembly which includes a downwardly extending projection fixedly mounted to the bottom of the top member. The downwardly extending projection has a widened latching portion at the bottom thereof. Means are located within a longitudinal recess of the body member to clamp the widened latching portion when the downwardly extending projection is urged into the top end of the longitudinal recess.

3,608,194

PLASTIC PIPE CUTTER

Floyd Y. Miller, Elyria, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.
Filed Jan. 28, 1969, Ser. No. 794,614
Int. Cl. B23d *21/08, 21/10*
U.S. Cl. 30—94 **1 Claim**

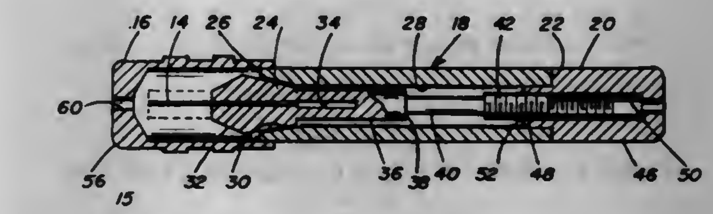


A pair of arcuate cutter frames which carry rollers for engagement with the periphery of a pipe are hingedly connected to each other. Screw and spring means is connected to the frames adjacent the hinge to swing the two frames toward each other and into engagement with the pipe to be cut. One of the frames has a guide in which a holder that carries a cutter bit or blade is slidably mounted. Screw means is provided to adjust the cutter bit or wheel into engagement with the pipe. The pipe is cut by rotating the tool around the pipe and advancing the cutter bit or blade into the pipe.

3,608,195

KNIFE WITH REMOVABLE BLADE

Ralph Levin, 402 Knickerbocker Ave., Brooklyn, N.Y. 11237
Filed Mar. 19, 1969, Ser. No. 808,610
Int. Cl. B26b *29/02*
U.S. Cl. 30—162 **5 Claims**

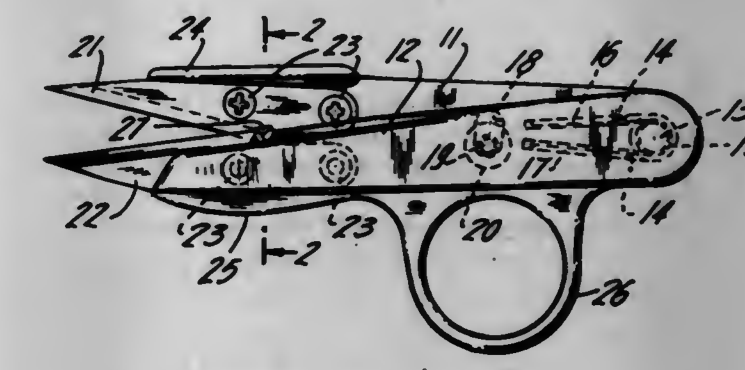


A knife comprising a blade-retaining member a blade removably mounted in said retaining member and a cap provided to exposably shield said blade removably mounted in said retaining member.

3,608,196

THREAD CLIP OR SNIP

Richard R. Wiss, Short Hills, N.J., assignor to J. Wiss & Sons Co., Essex, N.J.
Filed July 17, 1969, Ser. No. 842,465
Int. Cl. B26b *13/04*
U.S. Cl. 30—253 **3 Claims**



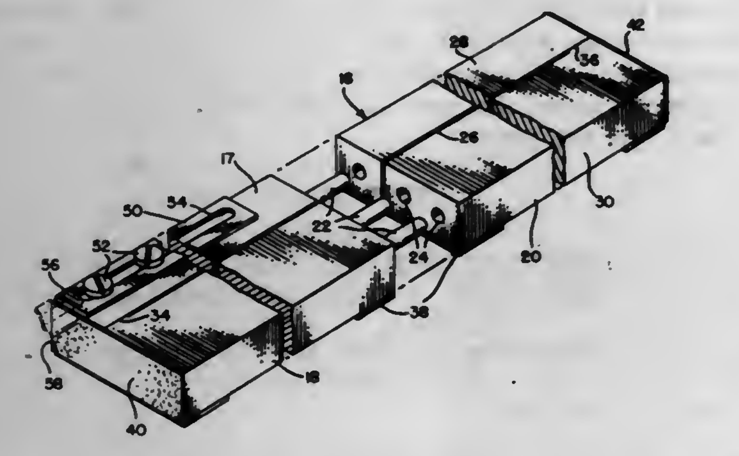
A thread clip or snip consisting of handle members made of plastic with inserted cutting blades. The handle members have finger rests or pads above or adjacent the blades and have a torsion spring inserted around the pivot for opening of blades. A plastic stop on one of the handle members is provided for limiting the closing stroke of, or regulating the point opening between the blades.

3,608,197

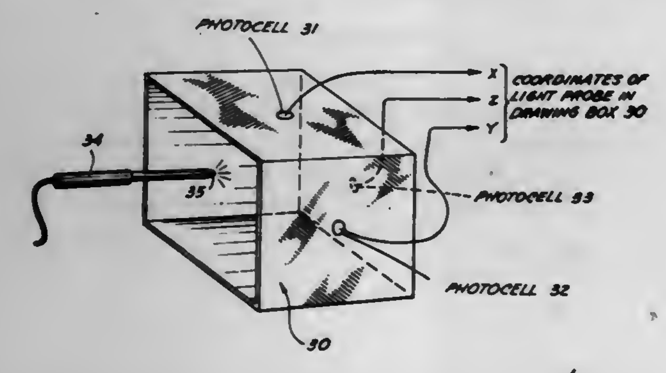
CARPET KNIFE AND GUIDE

David Lloyd McIvor, 5812 Appoline, Dearborn, Mich. 48126, and Richard Alvin Robinson, 15489 Lexington, Redford, Mich. 48239
Filed July 17, 1968, Ser. No. 745,513
Int. Cl. B26b *3/08*
U.S. Cl. 30—294 **4 Claims**

A device for guiding the cutting of two carpets requiring a seam at a doorway between two rooms. An adjustable carpet knife slides in a slot in the device to cut each carpet to a predetermined depth and along an identical line relative to the doorjambs. The device may consist of two sections which fit in the ordinary toolbox.



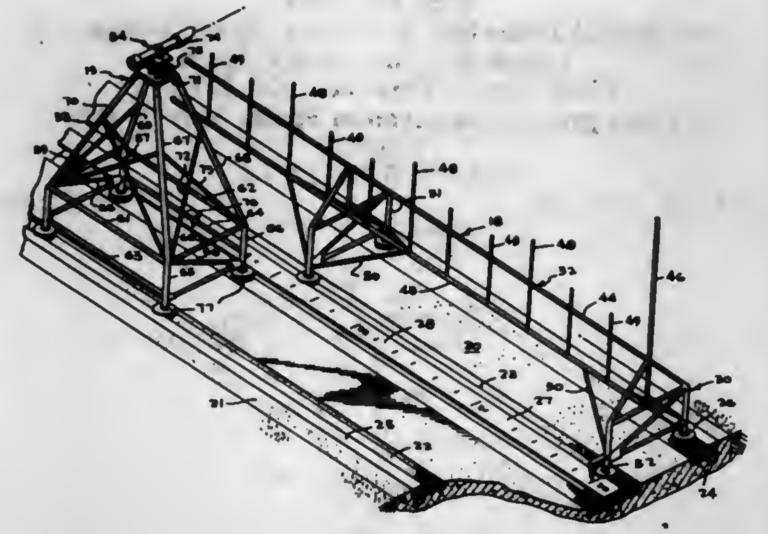
3,608,198
THREE-DIMENSIONAL PROJECTOR AND VIEWER
Russell W. Ludwick III and Robert E. Ludwick, both of 1401 Vista Del Mar, Fullerton, Calif. 92631
Filed July 28, 1969, Ser. No. 845,255
Int. Cl. B43l *13/00*
U.S. Cl. 33—1M **3 Claims**



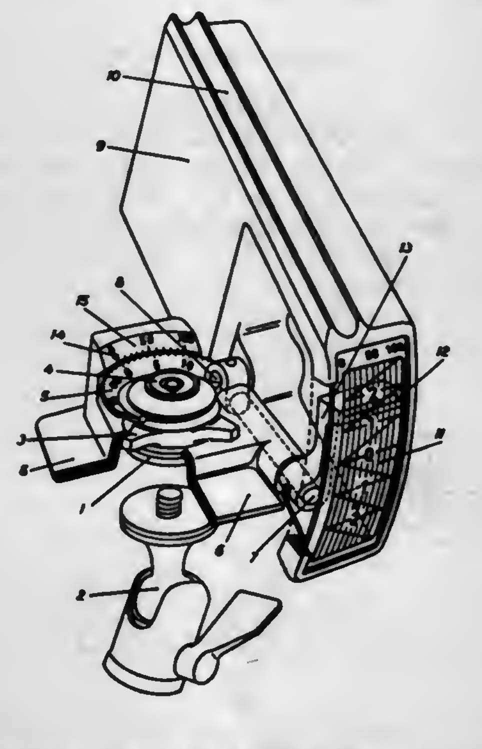
The invention is directed to a system for directly producing images on two transparent viewing plates and for projecting the images to the eye of a viewer in a manner which causes a three dimensional effect. The images are produced by tracing the image to be projected with a light probe. Photocells mounted in the sides of a cube provide an electrical output which indicates the position of the probe in three dimensions. A double plotter transforms the signals into points or lines on a transparent recording medium. For re-creating the initial three dimensional image for viewing, the two substantially identical images are focussed onto a viewing lens by means of two parallel focussing lenses. Each focussing lens receive only one of the recorded images which it directs and superimposes on the viewing lens. The eyes of the viewer see the two superimposed images and combine them to form a composite image having depth.

3,608,199
LOCATING AND MEASURING DEVICE FOR A FOOTBALL PLAYING FIELD
John C. Hunt, 1306 Holcomb, San Angelo, Tex. 76901
Filed Dec. 4, 1969, Ser. No. 881,995
Int. Cl. G01c *15/12*
U.S. Cl. 33—46F **10 Claims**

A locating and measuring device adapted for use with a football playing field generally including a pair of guide means disposed parallel to a side line of the playing field, a yardage scale disposed parallel and between the guide means, a first carrier member mounted on one of the guide means and freely movable therealong, a sighting device mounted on such carrier means, having a sighting axis disposed in a vertical plane disposed perpendicular to the guide means, a pointer disposed on the carrier means having a marker cooperable with the scale for indicating the location of the ball on the playing field viewed through the sighting means, a second carrier means mounted on the second guide means and freely movable therealong independently of the first carrier means, and the second carrier means having a pair of longitudinally spaced pointers with markers cooperable with the scale, the markers being spaced ten yards apart.

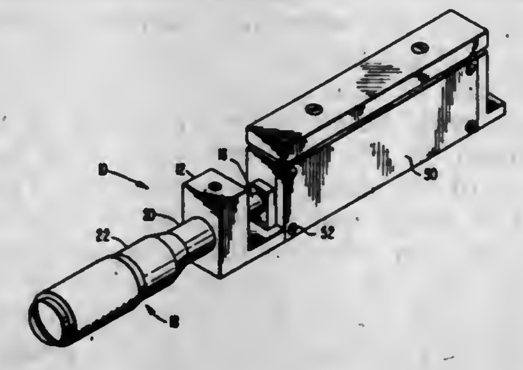


3,608,200
INSTRUMENTS FOR MAKING ANGULAR MEASUREMENTS
Gunther W. H. Knochenhauer, Stockholm, and John Bernhard Wenell, Stocksund, Sweden, assignors to System Paulin AB, Stockholm, Sweden
Filed Mar. 3, 1969, Ser. No. 803,647
Int. Cl. G01c *1/00*
U.S. Cl. 33—69 **5 Claims**



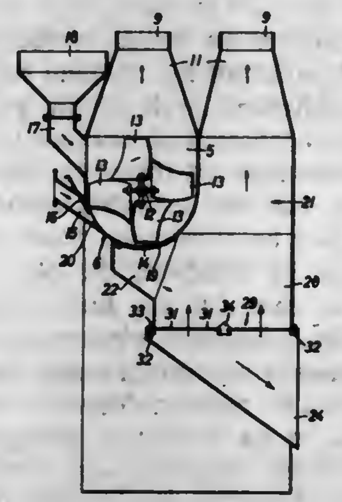
An instrument for making angular measurements comprises sighting means for determining vertical angles pivoted to a mounting which turns on a vertical axis having a graduation for determining horizontal angles. The sighting means is associated with a box-shaped protective casing which can be rotated about an axis parallel to the vertical plane through the line of sight so as to serve as a protection for the graduated scales, indexes and bearing means. Besides, the end wall of the casing facing the observer is provided with a graduated scale for vertical angles.

3,608,201
RIGHT ANGLE MICROMETER
Otto R. Butsch, New Albany, Ohio, assignor to Reliance Electric Company, Columbus, Ohio
Filed Mar. 19, 1969, Ser. No. 808,395
Int. Cl. G01b *5/14*
U.S. Cl. 33—162 **7 Claims**



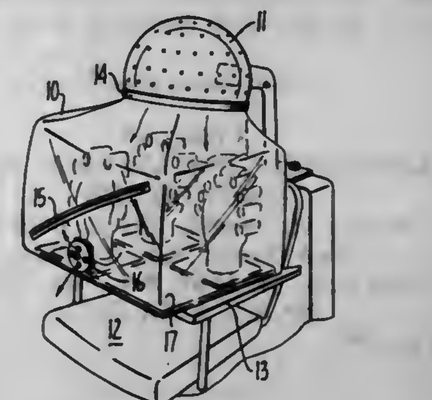
Disclosed is a micrometer spindle and a bar mounted for reciprocating movement on a frame. A pair of blocks are carried by the frame for movement in a direction at right angles to the direction of movement of the spindle and bar. Cam surfaces on the blocks and bar engage one another whereby movement of the bar in one direction by threading action of the micrometer spindle moves the blocks outwardly at right angles to the spindle. A spring biases the blocks for inward movement in following engagement with the cam surfaces carried by the bar. A measuring plate connects between the blocks and indicia carried by the micrometer spindle and thimble measure the displacement of the plate at right angles to the axis of the spindle.

3,608,202
DEVICE FOR BATCH ROASTING AND COOLING PARTICULATE MATERIAL
Hans Ulrich Arndt and Peter Rossi, Mulheim (Ruhr), Germany, assignors to Maschinenfabrik Ferd. Gothot G.m.b.H., Mulheim (Ruhr), Germany
Filed Mar. 7, 1969, Ser. No. 805,252
Claims priority, application Germany, Mar. 7, 1968, P 17 29 425.6
Int. Cl. F26b *11/12, 19/00*
U.S. Cl. 34—66 **16 Claims**



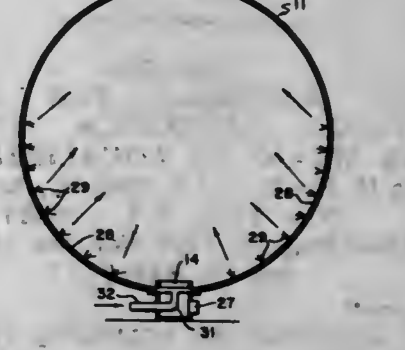
Method of batch roasting and cooling coffee, cocoa beans, peanuts and like particulate material, wherein the material being roasted is exposed to a hot and a cool air flow, includes mechanically and pneumatically raising the roasting material from the bottom of a stationary roasting chamber and revolving it, exposing the revolving roasting material to a gas flow travelling in the same direction as the revolving roasting material, and then passing the roasting material into a cooling chamber; and device for carrying out the method.

3,608,203
WIG DRYING APPARATUS
Leon F. Willat, 12 Sky Road, Mill Valley, Calif. 94941
Filed Dec. 11, 1969, Ser. No. 884,161
Int. Cl. F26b *19/00*
U.S. Cl. 34—91 **6 Claims**



An attachment for hair driers having a semi-spherical drying hood. Apparatus to be used with a conventional hair drier for drying one or several wigs at the same time comprising a flexible, transparent enclosure having an opening for receiving the hood of a hair drier, means for securing the opening of said enclosure about the hood of a hair drier without allowing substantial air leakage, a rigid platform disposed within the transparent enclosure, and a valve mounted in a wall of the enclosure, said valve being adjustable to control the rate of drying while maintaining a back pressure sufficient to support the enclosure in an inflated condition under various conditions of pressure and air temperature.

3,608,204
VESSEL FOR STORING GRAIN
Robert Barry Ashby, 8925 Falling Creek Court, Annandale, Va. 22003
Filed Apr. 23, 1969, Ser. No. 827,452
Int. Cl. F23b *19/00*
U.S. Cl. 34—218 **13 Claims**



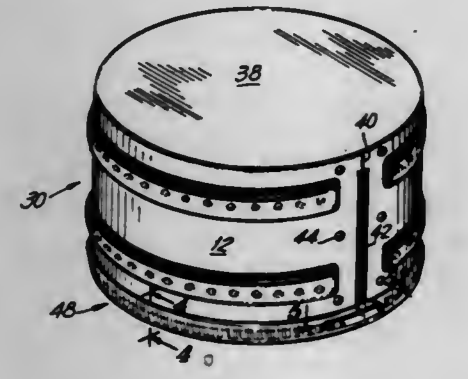
A method of storing grain comprising the steps of placing harvested grain directly in a storage vessel; passing drying air throughout said mass of grain in said vessel to remove moisture therefrom; passing a fumigant throughout said mass of grain stored in said vessel; and sealing said vessel with said grain therein.

The storage vessel is spheroid in shape and fabricated on site. The vessel is formed of vertically extending meridianal ribs to which is attached a wire mesh. The ribs and wire mesh are encased in an inner core of a sprayed elastomeric coating of urethane or similar foam. An interior and exterior coating of an epoxy resin is applied to the inner foam core to provide a sealed vessel. A sealed grain loading port is provided at the top while a discharge port and gas intake opening is formed in the base. The entire vessel is rigidly mounted on its vertical axis on a supporting base.

The exterior epoxy coating may include suitable coloring pigmentations for heat reflection as well as fungicides and pesticides to completely protect the stored grain. Means are provided for dispersing air into the base and throughout the vessel to accelerate drying and fumigation. A safety port may be mounted in the top or sidewalls for removing test specimens and for providing pressure plugs to relieve any determined pressure build up within the vessel.

3,608,205
FLUID-DISTRIBUTING DEVICE, SUCH AS A HAIR DRYER

Sidney H. Magid, 201 E. 66th St.,
New York, N.Y. 10021
Filed Feb. 14, 1969, Ser. No. 799,433
Int. Cl. A45d *20/24*
U.S. Cl. 34—99 **9 Claims**

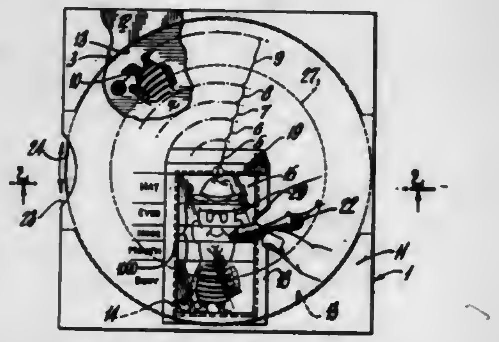


A device, which is adapted to direct a fluid to a given space. The device includes a flexible sheet structure to one side of which a given fluid is to be directed. A manifold is situated next to the sheet structure, for receiving the fluid before the latter reaches the given space. Communication is provided between the interior of the manifold and the given space, so that fluid will flow from the interior of the manifold to the latter space. When the device is a hair dryer, the sheet structure will define a bonnet adapted to receive a body of hair in its interior, and the manifold will receive hot air to be directed to the interior of the bonnet as a result of a communication provided between the sheet structure and the manifold.

3,608,206
EXHIBITOR ASSEMBLY FOR IMPRINTING OBSERVABLE MARKINGS ON DISPLAY PLANAR MEANS BY LOCALIZED PRESSURE

Philip H. Knott, 315 E. 86th St., Apt. 2N E.,
New York, N.Y. 10028
Filed May 21, 1970, Ser. No. 39,236
Int. Cl. B43l *1/12*
U.S. Cl. 35—26 **12 Claims**

Exhibitor assemblies for imprinting observable markings of a decorative, informative or amusing nature. Rigid carrier structure supports all of the elements of each assembly, which may be portable. In each a depressible, flexible, planar display means, either in the form of a sheet or a flat envelope loaded with a layer of viscous liquid or paste, is supported laterally in a temporarily guided position for observation of its outer face. This planar display structure is of a distinctive coloration and removable from its lateral guided position to effect removal from the assembly of observable markings that are developed on its outer face by operation of the assembly. The planar display structure has either a temporary or permanent opacity which will hide to an effective degree at a reasonable distance of observation any underlying surface or element. Planar backing means has a surface of contrastingly different coloration underlying and substantially hidden by the planar display structure with a minute space normally intervening them. For example, the planar display structure is of a seeming white hue and the underlying backing surface is black. The carrier structure movably supports a pressure-localizing member, which may be located below the backing means or outward of the planar display structure, but in both cases a lands-bearing face thereof faces toward the planar display structure, and when this member is outward of the latter it is of see through character so that the outer display face may be observed therethrough. A plurality of pressure-localizing, raised lands are carried in relatively spaced relation on this member surface with their faces directed toward the planar display structure. These lands faces differ in design and some or all of them are complementary to each other so that composite images developed from the use of a chosen number of them will include individual images thereof that supplement each other in a desired arrangement. When the pressure-localizing member is located below the backing surface it underlies the backing means and the latter is a flexible web so that pressure applied by any suitable means, such as a rubbing instrument or ram, to a localized portion of the outer face of the planar display structure will flex the latter and the web together over the face of any one of the pressure-localizing lands that underlies the web in alignment with the locality of the applied pressure. When the pressure-localizing land is located outward of the planar display structure any land thereof is used as the means of applying the pressure to the outer face of the former, to flex the planar display structure locally against the backing surface that is held firmly. In either case the planar display structure may become windowed in the shape of the face of each such employed land to develop on the former an image of the latter in a color matching the coloration of the backing surface. Successive operations with different lands of the pressure-localizing member develop an observable composite image of a plurality of such markings on the outer face of the planar display structure that are desirably associated with each other, and this may be eliminated from the assembly for reuse of the latter by removing the planar display structure and, in the case of the fluid-contained envelope smoothing out the contained windowed viscous fluid.

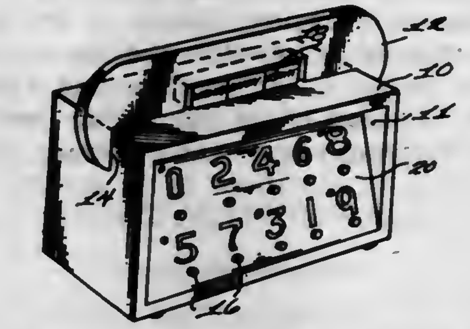


The pressure-localizing member may be a lands-bearing rotary disk, or one or more slides with each of the latter slidably mounted in an individual elongated channel.

The planar display structure and contrasting backing surface may be a Magic Slate sub-assembly of either the temporary adhering sheet form or the mobile paste envelope form that are both described in line 19 of column 1 to line 34 of column 2 of the Knott U.S. Pat. No. 3,279,100 of Oct. 18, 1966.

3,608,207
TEACHING APPARATUS

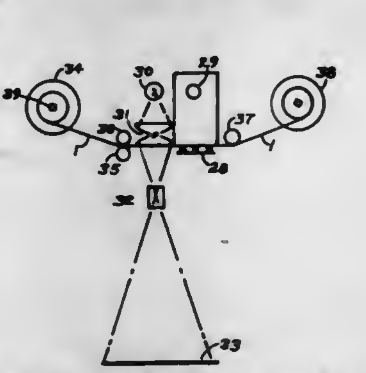
James D. Bissell, Rte. 1, Pfafftown, N.C. 27040
Filed July 8, 1969, Ser. No. 839,867
Int. Cl. G09b *7/02*
U.S. Cl. 35—9R **13 Claims**



Teaching apparatus for taking advantage of the psychological factor of reward in teaching so as to make the learning process a pleasant game playing experience wherein the apparatus includes an instructor's position and one or more student positions. The instructor's position and each of the student positions are provided with a plurality of buttons over which identical overlays may be placed wherein the overlays contain a plurality of colors, shapes, numbers, letters, words etc. which represent answers to questions. The apparatus is provided with ready-right/wrong circuitry so that the instructor initially asks the students a question and presses the appropriate button on his panel to indicate the correct answer. When this occurs the ready light is lighted at each of the student positions and the students then press the button which they believe corresponds to the correct answer to the question. If the correct button is pushed the "right" light will be lighted at the student console and if the wrong answer is selected the wrong light will be lighted.

3,608,208
TEACHING MACHINE

Fred W. Willardson, R.D. 8, Lexington, Ohio 44904
Filed June 18, 1969, Ser. No. 834,382
Int. Cl. G09b *5/02*
U.S. Cl. 35—9R **6 Claims**

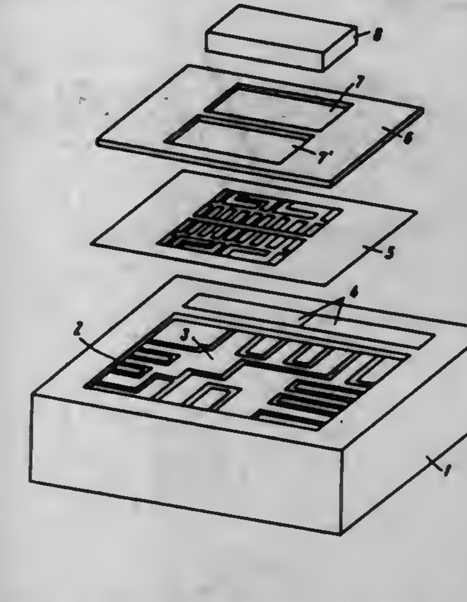


A teaching machine having improved means to move a film from a first viewing position to one of a plurality of possible second viewing positions wherein the means to move the film includes means, dependent on an operator's response while in the first viewing position, to stop the film in a second viewing position corresponding to said response.

3,608,209
EDUCATIONAL GAME

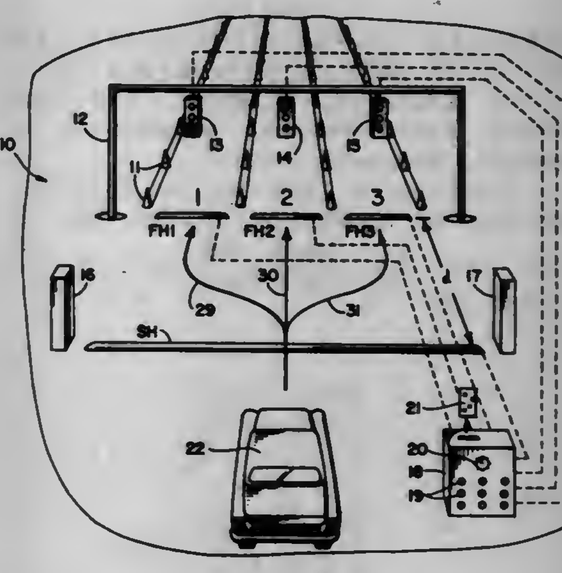
Udo Schnelle, Frankfurt am Main, Germany, assignor to Franckh'sche Verlagshandlung W. Keller & Co., Stuttgart, Germany
Filed Oct. 14, 1969, Ser. No. 866,193
Claims priority, application Germany, Oct. 15, 1968, G 68 02 334
Int. Cl. G09b *7/00*
U.S. Cl. 35—9D **35 Claims**

An educational game composed of a plurality of teaching elements, preferably in the form of building blocks with symbols on one surface and conductors on the opposite surface, insertable into a defined area of a frame in a box containing a circuit card and a circuit board in electrical contact with each other. The circuit board is fixed in the box, but the circuit card can be replaced with a different one. Lamps are provided to indicate whether the blocks are properly arranged. A relay causes the circuit for the correct signal lamp to open if there is a current in the circuit for the error signal lamp. A relay can also be provided to open the correct signal lamp circuit unless the error signal lamp has been actuated at some time since the previous correct answer.



3,608,210
TRAFFIC HAZARD SIMULATOR

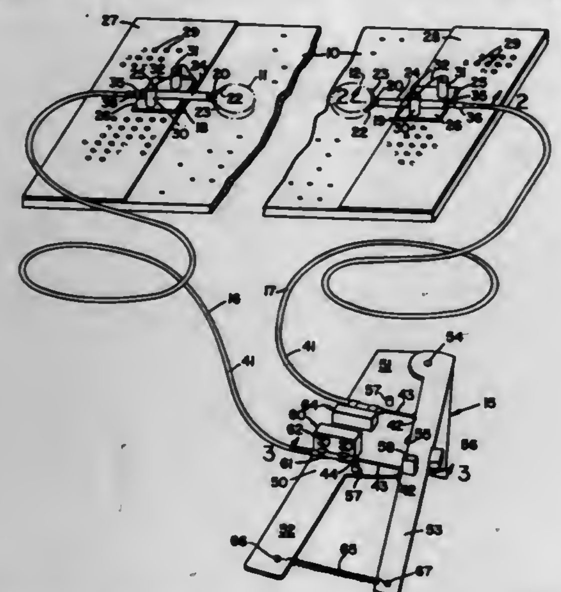
Paul Henry O'Shea, Newport Beach, Calif., assignor to California Automotive Research
Filed Oct. 23, 1969, Ser. No. 868,739
Int. Cl. G09b *9/04*
U.S. Cl. 35—11 **10 Claims**



A system for testing the driving ability of an automobile driver includes the provision of a plurality of traffic lanes with associated traffic signal red, orange, and green lights. Preselected lights may be programmed to operate in response to closing of an actuating switch so that there is provided an indication as to which lanes are open or closed to traffic. The actuating switch is disposed at a given distance from the entrance areas of the lanes and may take the form of a hose type switch so that an approaching car energizes the signal lights when at a given distance from the lanes. The driver of the car must then make a decision as to which lane is open, if any, within the time period determined by his speed and the said given distance.

3,608,211
LAUNCHING DEVICE

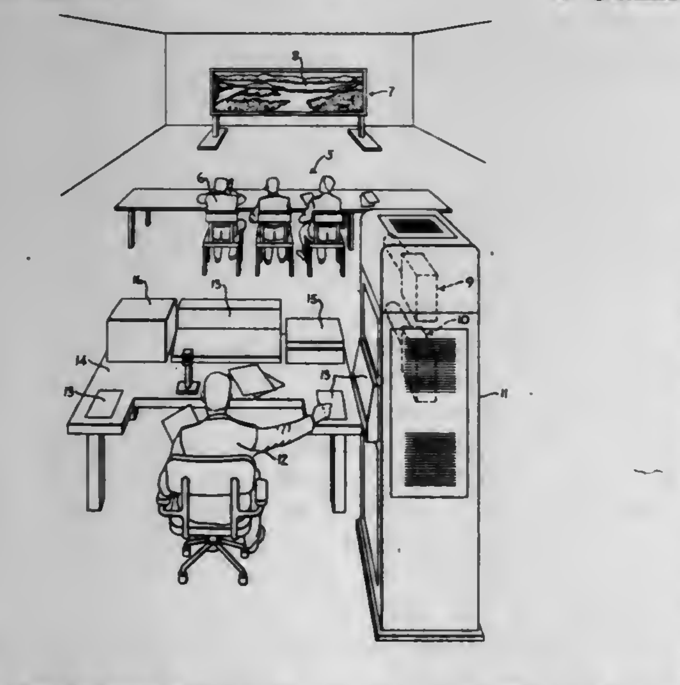
Herman Y. Carr, Somerville, N.J., assignor to Paul A. Stokstad, doing business as Pasco Scientific, San Leandro, Calif.
Filed Feb. 2, 1970, Ser. No. 7,637
Int. Cl. G09b *23/08*
U.S. Cl. 35—19R **10 Claims**



A launching device for demonstrating collision principles. Each of a plurality of pushers has a direction-controlling tube and a firing rod slidable inside said tube, with a direction-controlling bumper on its outer end. Each pusher has a corresponding cable having a stationary outer flexible tube and a flexible rod slidable inside engaging the firing rod at one end and a plunger extending beyond the other end of said tube. An initiator has a stationary member to which the plunger ends of all the flexible tubes are secured and a trigger lever pivoted to the stationary member and engaging the plungers, the distances of the plungers from the pivot relative to each other determining the relative launching speeds.

3,608,212
BATTLEFIELD CONDITIONS SIMULATOR FOR ARTILLERY FIRE CONTROLLER TRAINEES

Erik Goran Lenneryd, Bromma, and Karl Reidar Trumstedt, Taby, Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Dec. 1, 1969, Ser. No. 881,219
Claims priority, application Sweden, Dec. 3, 1968, 16,367/68
Int. Cl. F41g *3/26*
U.S. Cl. 35—25 **6 Claims**



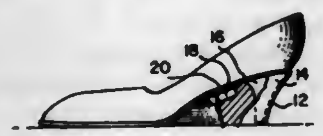
On a battlefield panorama, images of artillery projectile explosions are projected at the locations they would attain if fired from a gun laid according to fire controller's orders, and of appearance that takes account of any intervening elevations in the depicted terrain. Location of each explosion is computed by comparing terrain elevation signals from a three-dimensional memory unit, taken along the track of the assumed projectile, with a signal corresponding to changing altitude of the projectile in the final portion of its trajector; and the explosion image projector is swung to the location and elevation thus determined. Selection of an appropriate image is made in response to comparison of an explosion elevation signal with signals for elevations of the depicted terrain between the burst point and the fire controller's post.

ERRATUM

For Class 35—39 see:
Patent No. 3,608,214

3,608,213
CONVERSION HEEL

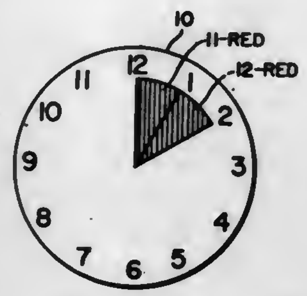
Ivan Amdi Jensen, 12 Wilk Drive, Fords, N.J. 08863
Filed Jan. 30, 1970, Ser. No. 7,051
Int. Cl. A43b *21/00*
U.S. Cl. 36—34R **5 Claims**



A conversion heel device which permits heeled shoes to be transformed into flat wedge heel shoes including a chamber to accommodate the high heel of the shoe being converted and a means to fasten the heel in place.

3,608,214
TEACHING AID AND METHOD

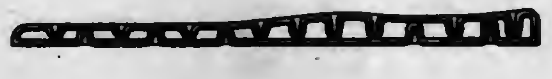
Patricia M. Rancati, 3304 Rumson Road, Cleveland Heights, Ohio 44118
Filed July 11, 1969, Ser. No. 840,965
Int. Cl. G09b *19/12*
U.S. Cl. 35—39 **5 Claims**



This invention relates to a device and method for teaching the reading of time. It includes a disc having indicia circumferentially spaced about the periphery of one face to designate increments of time. The indicia differ from each other by shape and in a selected manner other than shape and such that the differences can be independently sensed by the human senses of sight and touch. There is also provided a plurality of sets of indicators each shaped as a sector of the disc face with each set differing from the other sets in the same manner as the indicia differ from each other, whereby the sets of indicators each relate to a different indicia on the disc face respectively. Initially, the passage of time is indicated by successively applying the sector indicators of a selected set to the clock face between successive indicia; the sector set corresponding to a selected one of the indicia for identification by at least one feature selected from the group consisting of color and texture. Thereafter, the sectored indicator sets are replaced by corresponding sets of pairs of linear indicators, viz, corresponding to the same color and/or texture of the sectorial indicators and selected indicia; the pair of a selected set being selectively positioned about the disc face to indicate the passage of time. Finally, the disc is replaced by a disc having indicia that do not differ from each other in the selected manner and a pair of linear indicators are selectively positioned about the face of the disc to indicate the passage of time; the latter arrangement corresponding to a standard clock face.

3,608,215
FOOTWEAR

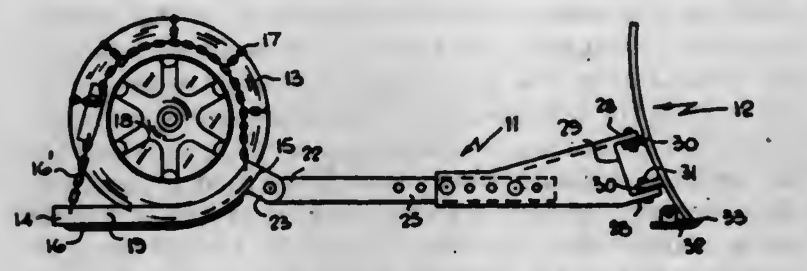
Tatsuo Fukuoka, 3, 3-Ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Japan
Filed Sept. 16, 1969, Ser. No. 858,389
Claims priority, application Japan, June 14, 1969, 44/56,298, 44/56,299, 44/56,300, 44/56,301, 44/56,302
Int. Cl. A43b *13/20*
U.S. Cl. 36—29 **8 Claims**



A hollow main body is provided for use as a wedge type sandal or as a sole or insole of a shoe. The main body is integrally formed of plastic and is provided with a hollow internal chamber surrounded by an upper wall, side walls and a lower wall. The upper wall is preferably thinner than the side walls and lower wall, and the hollow chamber provides a comfortable cushion effect to the wearer. The main body may be formed by blow molding, splash molding, or the like.

3,608,216
SNOW PLOW ATTACHMENT FOR REAR WHEEL DRIVE VEHICLES

Clovis H. Prescott, Box 4–322, R.R. 3, Winnipeg, Manitoba, Canada
Continuation-in-part of applications Ser. No. 766,733, Oct. 11, 1968, and Ser. No. 877,113, Nov. 17, 1969. This application Mar. 20, 1970, Ser. No. 21,408
Int. Cl. E01h *5/06*
U.S. Cl. 37—42R **10 Claims**

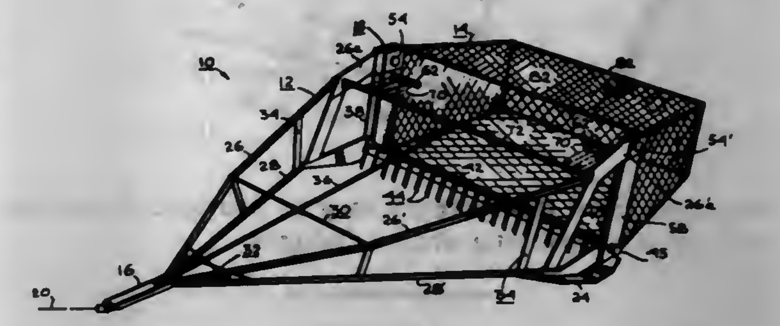


A snow plow attachment for vehicles and comprises a plowing blade held on a pair of side beams which are adjustable in length to varying inclination of the blade. The beams are in turn secured by horizontal pivots to pans or trays upon which the front wheels of the vehicle engage and chains hold the trays to the wheels so that when the wheels are turned, the snow plow also turns.

3,608,217
OYSTER DREDGING SYSTEM

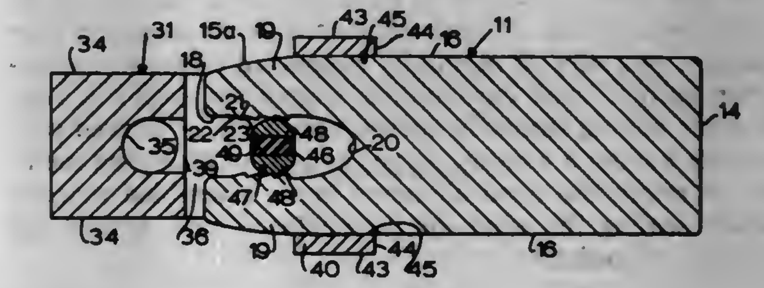
Charles J. Voisin, Sr., Star Route, Box 200, Theriot, La. 70397
Filed Feb. 28, 1969, Ser. No. 803,345
Int. Cl. E02f *5/00*
U.S. Cl. 37—55 **10 Claims**

An improved oyster dredging arrangement comprising an oyster dredge and an oyster dredge dumping and launching structure. The oyster dredge is dragged along the ocean bottom and oysters are scooped into a basket portion thereof. When the basket is full the oyster dredge is pulled over the oyster dredge dumping structure and cooperative means are provided on the dumping structure and the basket so that continued pulling up of the oyster dredge automatically opens the basket to allow the contents thereof to fall by gravity onto the deck of the boat. When the dredge is empty and tension relaxed on the hoisting means the oyster dredge is launched overboard by the oyster dredge dumping and launching structure so the process may be repeated.



3,608,218
SNAP-TYPE RESILIENT RETAINER FOR EXCAVATING TEETH

Walter L. Sturgeon, Los Altos, Calif., assignor to Pengo Corporation, Sunnyvale, Calif.
Filed Mar. 24, 1969, Ser. No. 809,702
Int. Cl. E02f *9/28*
U.S. Cl. 37—142A **4 Claims**

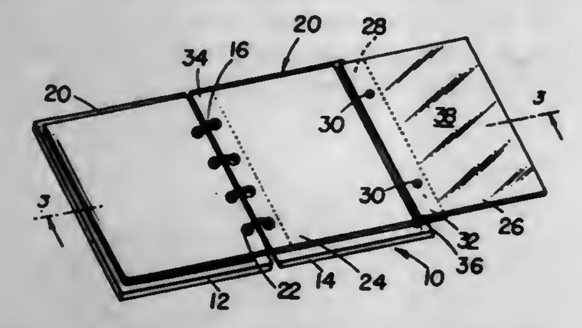


A retainer for an excavating tooth formed with a slot extending forwardly from the proximal end to divide the tooth into two generally rectangular cross-section prongs. The tooth is received in a holder having a rectangular recess which fits around the exterior of the tooth. The retainer is a three-part pin having a resilient core and hard faces on either side. The retainer fits through aligned holes in the top and bottom of the holder and between the prongs. Buttress-type projections on the facing edges of the prongs are engaged by the retainer to prevent withdrawal of the tooth while the retainer is in position. The shape of the projections permits the tooth to be driven into place while the retainer is in place in the holder.

3,608,219
BOOK FOR HOLDING TRANSPARENCIES FOR VIEWING AND STORAGE

Max Verebay, Jamaica, N.Y., assignor to Visionetics, Inc., Long Island City, N.Y.
Filed May 19, 1969, Ser. No. 825,831
Int. Cl. G09f *11/06*
U.S. Cl. 40—102 **4 Claims**

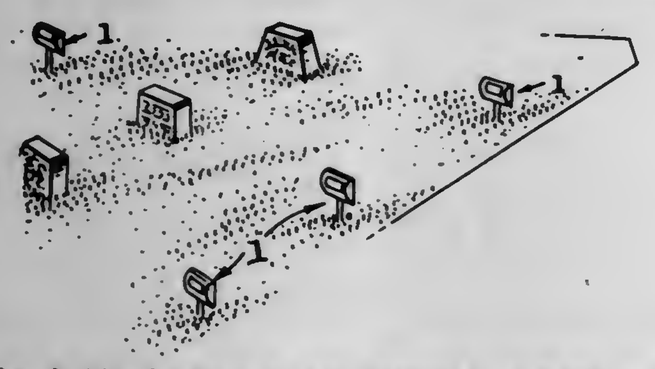
Means for holding transparencies for viewing and storage comprising a book interleaved in a manner such that said transparencies may be selectively viewed either individually or simultaneously in any number in any desired



sequence. Each transparency may be provided, if desired, with an accompanying written dialogue.

3,608,220
GRAVE MARKER

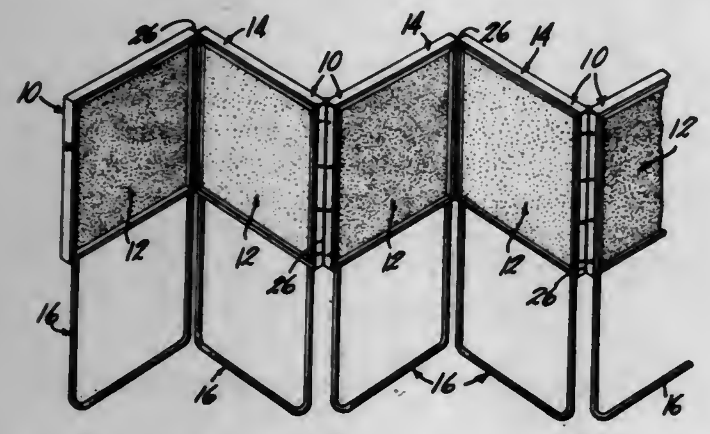
James W. Fryrear, Nevada, Mo., assignor to The W. F. Norman Sheet Metal Mfg. Co., Nevada, Mo.
Filed June 15, 1970, Ser. No. 45,960
Int. Cl. G09f *1/00*
U.S. Cl. 40—125H **13 Claims**



A sign holder includes a head assembly adapted to be supported upon an upright member with the assembly providing a plurality of manually connected elements including a vertically curved card holder snap-fitted within a base member having similarly curved side walls. A curved cover plate having a window serves as a front clamping member to retain the head elements in an assembled manner tightly sealing the edges of the enclosed card against the entrance of moisture.

3,608,221
DISPLAY PANEL

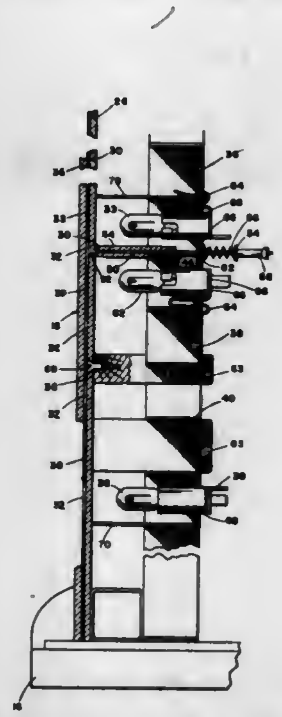
William J. Harris, Alpine, N.J., assignor to Museum Planning, Inc., New York, N.Y.
Filed Dec. 8, 1969, Ser. No. 882,977
Int. Cl. G09f *7/00*
U.S. Cl. 40—125H **7 Claims**



A free-standing, collapsible display structure, comprises a plurality of panel units, each of which includes a panel board element carried in a peripheral supporting frame composed of lengths of extrusions formed with a longitudinal channel for carrying end portions of the panel units and for slidably receiving supporting legs. Flanges extending from the supporting frame form a groove for retaining display materials on the surfaces of the panel board elements. The several panel units are hinged together in an accordion-like fashion, permitting the structure to be collapsed so that the several units are in surface-to-surface relation but permitting the structure to be extended into a free-standing configuration in which the units are at an appropriate angular relation to each other. Hinge fasteners are received in longitudinal cavities formed in the frame members.

3,608,222
BACK LIGHTED PANEL

John H. Koch, P.O. Box 11, Williamsville, N.Y. 14221
Filed Oct. 22, 1968, Ser. No. 769,694
Int. Cl. G09f *13/06*
U.S. Cl. 40—130E **3 Claims**

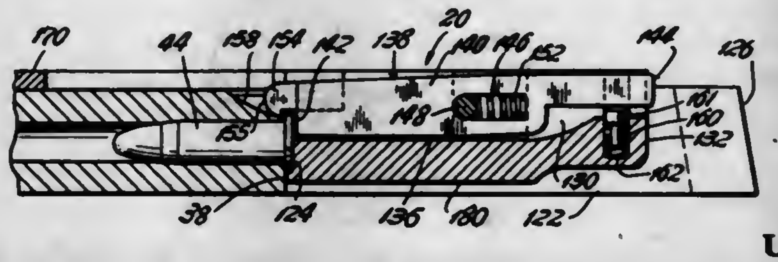


A back lighted panel having a cellular or "egg crate" structure supported on and spaced from a front translucent display panel or face in a manner substantially precluding shadows or other interruptions in the illustrative matter applied to or provided on the front display face. Removable support members are provided which may be disposed at substantially any desired spacing in the cellular structure for engaging the front face to facilitate retaining the cellular structure in the spaced relation with respect thereto and for substantially precluding warping or distortion of the front face. In addition, inserts are provided for the cellular structure which may be utilized to facilitate the channeling of light onto the illustration face in a more facile manner than heretofore possible. Furthermore, illustration inserts are provided which may in and of themselves be utilized in combination with the cellular structure and the translucent face for building or constructing a lighted illustrative system on the said illustration face.

3,608,223
FIRING PIN AND EXTRACTOR MECHANISM FOR FIREARMS

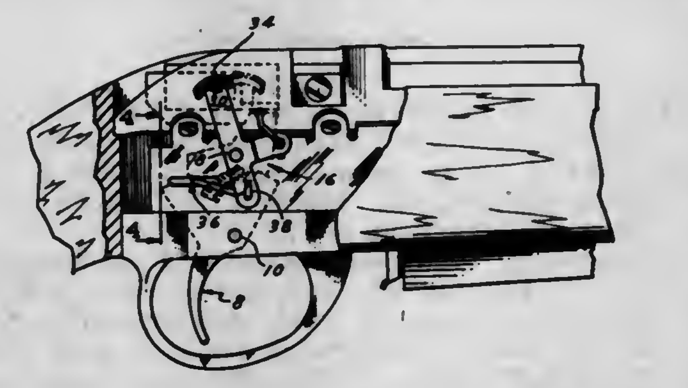
Ralf E. Dieckmann, Stratford, Conn., assignor to Bridgeport Firearms Company, Monroe, Conn.
Filed Nov. 8, 1968, Ser. No. 774,325
Int. Cl. F41c *15/00*
U.S. Cl. 42—25R **6 Claims**

A firing and extracting mechanism for semi-automatic and automatic firearms in which a single unitary element performs both firing and extracting functions in sequence in conjunction with movement of the bolt on which the element is carried. The element is mounted on the bolt for compound movement relative thereto, both longitudinally of the bolt and pivotally thereof about an axis transverse to the longitudinal axis of the bolt so that a firing portion of the element can engage the rear face of a cartridge for firing it and an extractor portion can engage the rim of the cartridge for extracting it from the firing chamber.



3,608,224
SEAR-TRIGGER SAFETY MECHANISM FOR FIREARMS

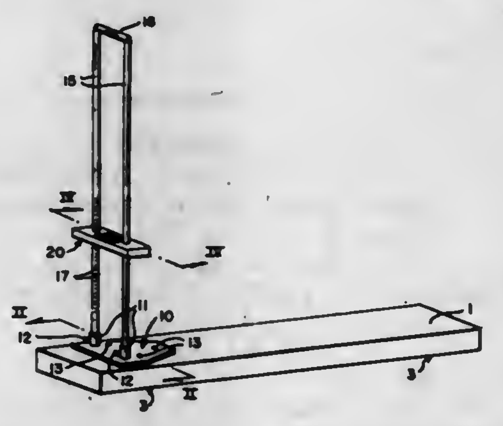
Carl B. Hildebrandt, Springfield, Mass., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Dec. 19, 1969, Ser. No. 886,716
Int. Cl. F41c *17/00, 17/08*
U.S. Cl. 42—70C **6 Claims**



Safety mechanism for firearms having a trigger and sear combination in which the trigger has a portion engaged in a notch of the sear when the trigger is in its rest position. The trigger and sear are each pivotable for release of the trigger from the notch of the sear and include spaced opposed portions movable toward each other on said release of the trigger. A safety which has a portion movable between the spaced opposed portions of the trigger and sear and which is in compression therebetween when an attempt is made to pull the trigger.

3,608,225
PORTABLE GUN SUPPORT

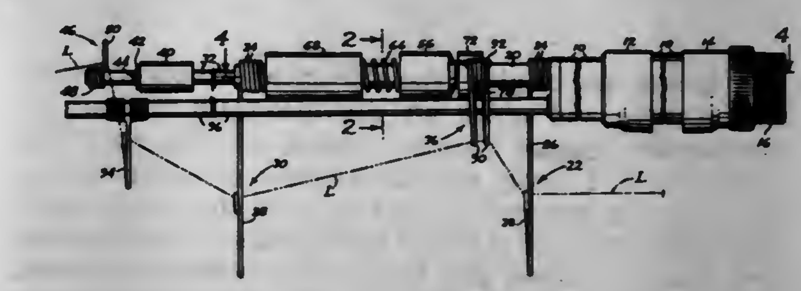
Benjamin Manuel, 112 Arch St., Pittsburgh, Pa. 15212
Filed Feb. 25, 1970, Ser. No. 13,877
Int. Cl. F41c *29/00*
U.S. Cl. 42—94 **6 Claims**



A portable gun support having a rectangular base, a removable support plate having attached thereto a pair of upright support rods with a barrel support member extending therebetween and adjustable along a portion of the length of said support rods.

3,608,226
FISHHOOK SETTING MECHANISM FOR FISHING RODS

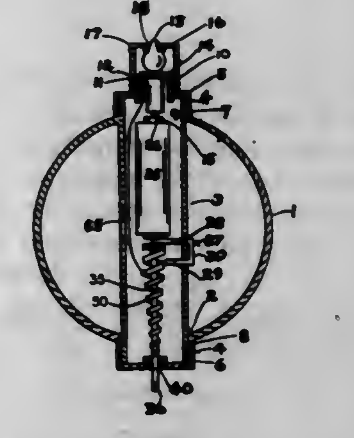
Russell M. Stanley, Rte. 1, Box 576, Lebanon, Oreg. 97355
Filed June 24, 1969, Ser. No. 836,028
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **13 Claims**



An elongated fishing line retractor rod is movable relative to a guide tube longitudinally forward, against the tension of a resilient retractor member, to a set position secured releasably by a lock interengaging a tube and a rod. In the set position a fishing line extends forward from a reel through a fixed eyelet, and then through a laterally offset and movable trigger eyelet, thence through at least one more fixed eyelet and around a retractor pin on the forward end of the retractor rod and thence through other fishing rod eyelets. When a fish pulls on the line, the portion thereof extending between the spaced fixed eyelets tends to straighten, moving the laterally offset trigger eyelet toward alignment with the fixed eyelets. The trigger eyelet thus release the lock and the retractor rod and pin is pulled resiliently rearward thereby pulling rearward on the fishing line sufficiently to set the hook in the fish.

3,608,227
ILLUMINATED FISHING FLOAT

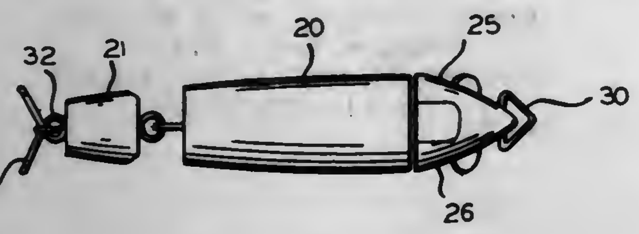
Robert H. Adams, 826 Calle-Francita, Tucson, Ariz. 82706
Filed May 26, 1969, Ser. No. 827,520
Int. Cl. A01k *93/00*
U.S. Cl. 43—17 **7 Claims**



A battery powered fishing float having a bulb which is actuated by a bite or strike on the fishing line and a simple and inexpensive switch which makes or breaks the circuit through the use of a unique U-shaped, battery support and contact member. The light is off except when there is a bite or pressure on the line. Consequently, the device can be used for day or night fishing without appreciable drain on the battery.

3,608,228
FISHING LURE

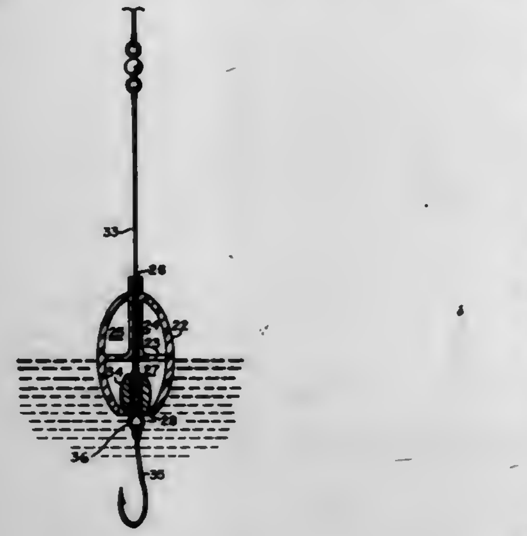
Roy W. Borresen, 447 Lowell, Glen Ellyn, Ill. 60137, and Robert J. Meier, 2805 E. Hickory Drive, Wonder Lake, Ill. 60097
Filed Mar. 24, 1969, Ser. No. 809,647
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **4 Claims**



A fishing lure of plug type comprised of hollow detachable sections and which are provided with facilities for illuminating means. Various weights may be positioned within the lure cavity and varied types of deflecting surfaces may be attached to the lure body to control movement and action of the lure in the water. The head section is wedge-shaped and formed of translucent material to provide a prismatic effect for the illumination means to form eye-simulating circular illuminated areas on each side of the head section.

3,608,229
FISHING BOBBER FOR VARIABLE DEPTH FISHING

Cecil Ross, 3206 Locke Lane, Austin, Tex. 78704
Filed Apr. 21, 1969, Ser. No. 817,895
Int. Cl. A01k *93/00, 95/00*
U.S. Cl. 43—43.14 **1 Claim**

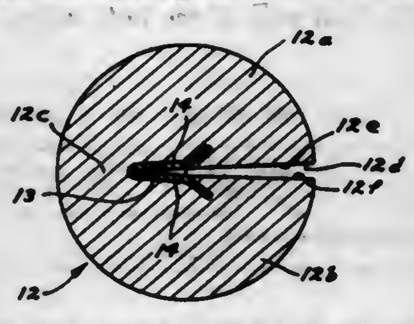


An improved fishing bobber adapted for fishing over a variable range of depth, having one sealed air tight compartment providing flotation capability to support a fish hook and sinker at a shallow depth. A second chamber having an opening therein gradually fills with water so that with the weight of the sinker the bobber will slowly sink through a range of depth, thereby permitting the fisherman to fish for a variety of fish at different levels with a single cast of the line.

3,608,230
SINKER FOR FISHING LINES

Joseph Hribar, 1600 N. Broadway, Joliet, Ill. 60435
Filed May 19, 1969, Ser. No. 825,635
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.89 **5 Claims**

This disclosure relates generally to fishing line sinkers and more particularly to an improved split type sinker having a line-receiving slot which divides a major portion of the sinker into two segments which have cushioning and line gripping inserts interposed therebetween and which permit the sinker to be tightly clamped in the desired position onto the fishing line without damaging the line; and this disclosure also relates to the method and apparatus for making such sinkers.



3,608,231
POUR DEPRESSANT COMPOSITION

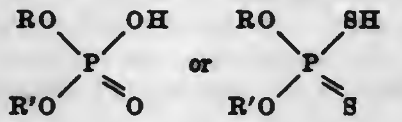
William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 688,672, Dec. 7, 1967. This application Apr. 15, 1969, Ser. No. 816,373
Int. Cl. C10l *1/18*
U.S. Cl. 44—62 **4 Claims**

Pour depressant composition comprising a cracked and oxidized ethylene-propylene-dicyclopentadiene - terpolymer and mineral oil compositions containing same.

3,608,232
GASOLINE COMPOSITION CONTAINING VANADIUM SALTS OF PHOSPHORUS COMPOUNDS

Frederick L. Voelz, Orland Park, and Walter F. Schoen, South Holland, Ill., assignors to Atlantic Richfield Company, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 427,078, Jan. 21, 1965, and Ser. Nos. 470,598 and 470,628, both July 8, 1965, said application Ser. No. 427,078 being a continuation-in-part of application Ser. No. 306,273, Sept. 3, 1963. This application Apr. 23, 1968, Ser. No. 723,580
Int. Cl. C01l *1/26*
U.S. Cl. 44—69 **22 Claims**

A gasoline composition consisting essentially of a hydrocarbon gasoline, an anti-knock quantity of a tetra-lower-alkyl lead compound, and a gasoline-soluble vanadium or chromium salt of a phosphorus compound having the formula

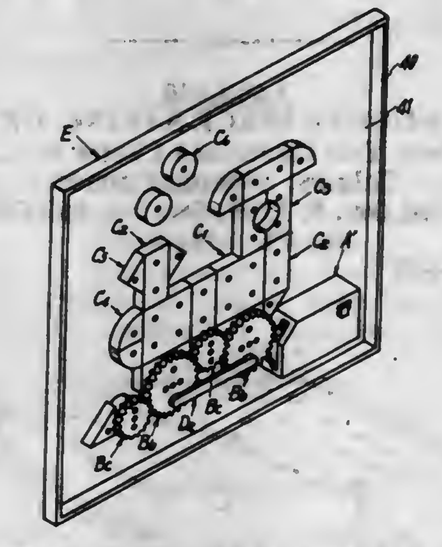


wherein R is a hydrocarbon radical of up to 30 carbon atoms, R' is selected from the group consisting of hydrogen and R, S is sulfur and O is oxygen. The amount of metal salt added is sufficient to provide about 0.002 to 0.8 milligram atoms, preferably about 0.025 to 0.3 milligram atoms, of the selected metal per gallon of gasoline. A gasoline soluble non-metallic auxiliary phosphorus compound can be added to the composition to provide additional beneficial effects.

3,608,233
TOY CONSTRUCTION SET

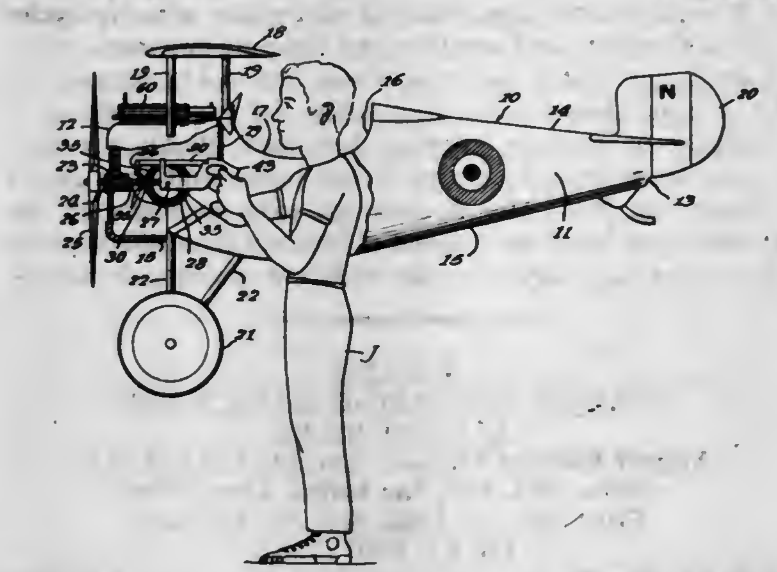
Masaru Aoki, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed July 22, 1970, Ser. No. 57,047
Claims priority, application Japan, Nov. 24, 1969, 44/111,597
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **7 Claims**

A toy construction set which comprises a variety of construction elements adapted to be assembled into a toy assembly of the desired type having a stationary portion and an operative portion. The construction elements include magnet-equipped elements adapted to be magnetically held on a magnetizable surface in assembled relationship. The magnet-equipped elements include a power means for operating the operative portion of the toy to be assembled.



3,608,234
TOY AIRCRAFT VEHICLE

Richard C. Davidson, 6241 S. Paulina Ave., Chicago, Ill. 60636
Filed Dec. 29, 1969, Ser. No. 888,680
Int. Cl. A63h *1/32*
U.S. Cl. 46—47 **4 Claims**

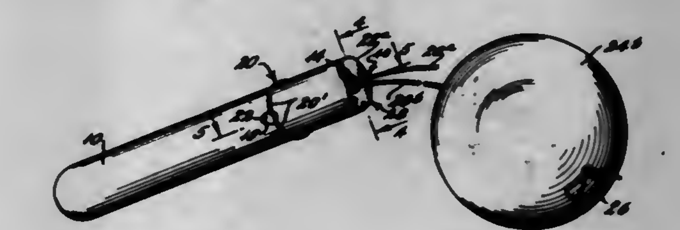


A juvenile toy aircraft for simulating aircraft flying for juvenile operators having a light-weight fuselage body shell including an open lower end, a cut-out portion in the upper surface of the body shell, the undersurface of the cut-out portion adapted for seatment upon the shoulders of the juvenile operator along opposed lateral edges thereof, wing structure mounted on the upper surface of the body shell, tail structure mounted on the body shell adjacent the rear end thereof, a propeller, first hand-actuated means associated with the propeller for impelling the propeller, a simulated gun structure mounted on the body shell, and second hand-actuated means for providing simulated gun sounds whereby the juvenile operator may mount the toy aircraft vehicle on his shoulders to simulate aircraft flying.

3,608,235
WHIRLING SKILL TOY

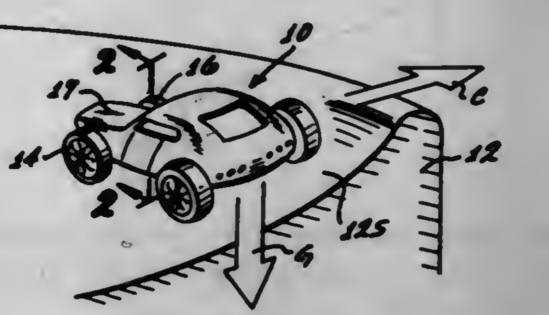
George G. Harton, 1624 Robinson Ave., Conway, Ark. 72032
Filed June 12, 1969, Ser. No. 832,604
Int. Cl. A63h *1/32*
U.S. Cl. 46—51 **9 Claims**

A toy including a cylindrical impelling and controlling handle adapted to be held substantially horizontally in the hand and pointed generally away from the body of the operator, the outermost end of the handle having a longitudinally extending open bore with two equilength cords or the like fixedly secured therein, each cord having an identical weighted ball, preferably rubber, tethered or securely attached to its free end, the said outermost end of the handle being provided with a substantially annular cam-like cord position deflecting surface thereon obliquely disposed with respect to the controller handle axis, whereby when equal and opposite circular or orbital movements are imparted to the tethered balls by manual oscillation or manipulation of the controller handle in a generally vertical plane and responsive to their momentum, gravity and longitudinal positional control effected mechanically by the generally annular camming or deflecting surface on the end of the handle, such balls with be caused to freely pass each other during their rotary orbital movements maintained by the operator's skill in correlating the rate of rotation of the tethered balls with the rate and extent of up-and-down oscillatory movement he imparts to the impelling and position controller handle.



3,608,236
STEERABLE TOY VEHICLE

Janos Beny, Manhattan Beach, and John G. Tomkinson, Palos Verdes Peninsula, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Sept. 3, 1969, Ser. No. 854,890
Int. Cl. A63h *17/36*
U.S. Cl. 46—213 **6 Claims**

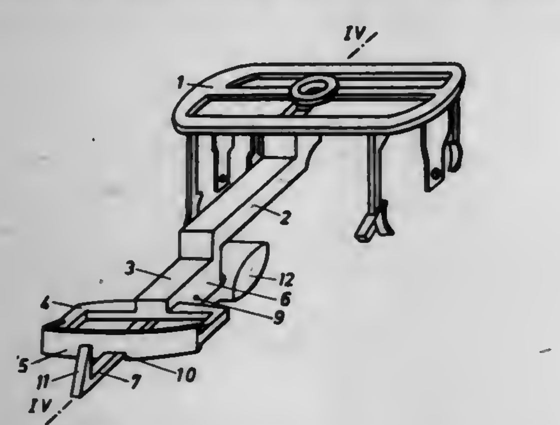


A toy vehicle with front wheels that tend to steer it around banked curves, wherein the wheels are rotatably mounted on their axle in a manner to permit wobbling of the wheels by up to about 20° from the straight-away direction.

3,608,237
TOY RAILROAD CAR WITH COUPLING MOUNTED ON A SWIVELLY MOUNTED TRUCK

Wolfgang Richter, Nuremberg, Germany, assignor to Ernst Paul Lehmann Patentwerk, Nuremberg, Germany
Filed Oct. 9, 1968, Ser. No. 766,075
Claims priority, application Germany, Oct. 13, 1967, P 16 03 422.3
Int. Cl. A63h *19/18*
U.S. Cl. 46—216 **7 Claims**

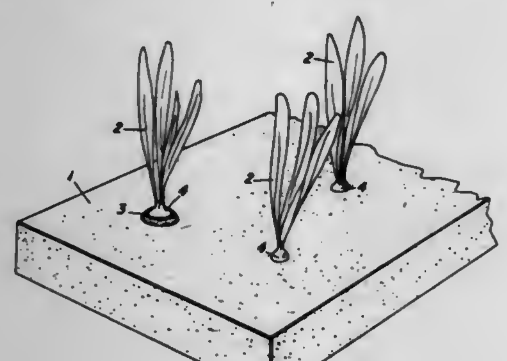
A coupling for the vehicles of toy and model railways comprising a hook at one end of a vehicle for engaging a stirrup of another vehicle at the opposite end thereof in which said hook is pivotally mounted and deflectable downwardly against the force of a counter-weight, spring and such like tending to restore it to its normal undeflected position; the hook preferably being associated with a stirrup having a curved extremity as a buffer bar co-operating with a like curved extremity of the engaged



stirrup and the said parts conveniently being made of plastics material. The coupling is mounted on a wheel truck swivelly connected to the vehicle so that, on impact, it can automatically couple cars on curved as well as straight track sections.

3,608,238
PLANT CULTURE

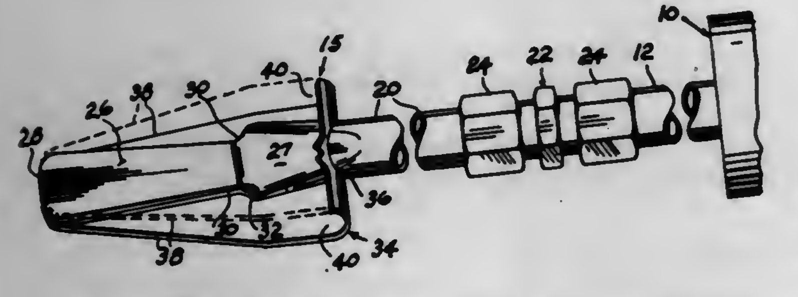
Franz Gottfried Reuter, Lemfoerde, Hannover, Germany, assignor to Elise Erika Reuter, Lemfoerde, Hannover, Germany
Filed Jan. 27, 1969, Ser. No. 794,280
Int. Cl. A01g *31/00, 9/02*
U.S. Cl. 47—1.2 **7 Claims**



The plants are embedded in a polyurethane foamable matrix foaming a polyurethane reaction mixture about the roots of the plant.

3,608,239
TREE POISON INJECTOR NOZZLE

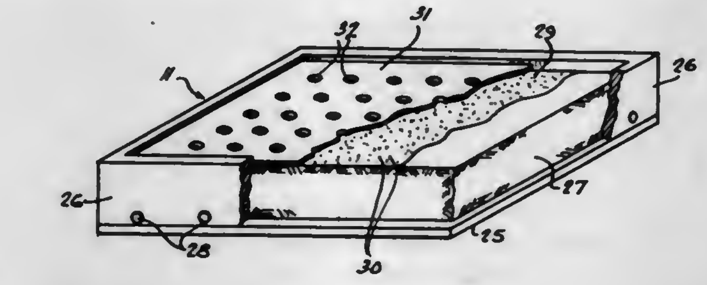
Clayton T. Tucker, 3100 Vickie Drive, Oklahoma City, Okla. 73115
Filed Dec. 16, 1968, Ser. No. 783,964
Int. Cl. B05b *1/28;* **B27k** *3/02*
U.S. Cl. 47—57.5 **1 Claim**



A tree killing poison injector nozzle comprising a tube having a wedge-shaped end portion for entering a cut formed in a tree. The opposing sides of the wedge-shaped end are cut away to define an opening at each of its sides. A poison directing guard, surrounding the tube, forms laterally open channels lying in the plane of the wedge-shaped end.

3,608,240
GREENHOUSE SPACE-SAVING DEVICE

Poon Yull Gunn, 204 Centre St. S., Calgary, Alberta, Canada
Filed Oct. 1, 1969, Ser. No. 862,666
Int. Cl. A01g *9/02*
U.S. Cl. 47—58 **4 Claims**

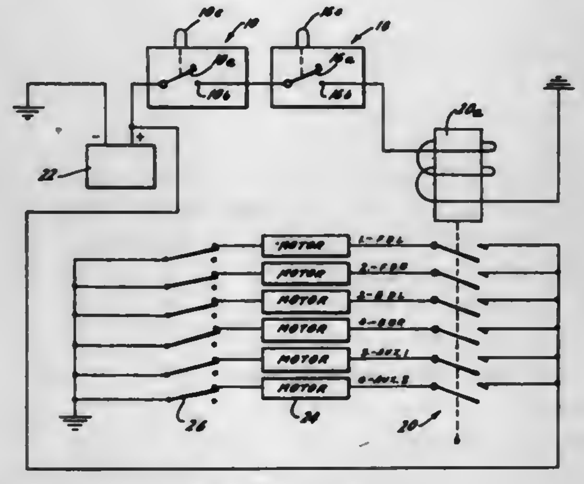


A method and apparatus for growing plants in stacked trays in a greenhouse. Perforated trays are slanted downwardly in alternate directions, successively. Liquid nutrients supplied to the top tray flow down tier after tier. Alternatively, easy flow is achieved by using a modified form of tray having outwardly and upwardly slanting sides with side holes inclined downwardly and outwardly.

A method and apparatus for successive growing cycles which eliminate soil aeration and cleaning between cycles. A multi-perforated paper layer over the soil is surmounted by a rigid layer having an array of holes defining a plurality of discrete growing locations. Plants are harvested from these locations. Fresh paper and rigid layers replace the first. The discrete growing locations in the second rigid layer are located differently from the first set. Successive rigid layers define different growing locations.

3,608,241
WINDOW OPERATING DEVICE FOR AUTOMOBILES

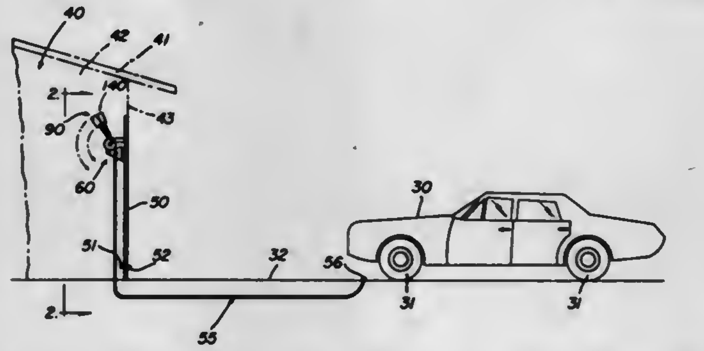
Miguel Rodrigo Mazure, Avenida Central 671, Oficina 504–505, San Isidro, Lima, Peru
Filed Apr. 16, 1969, Ser. No. 816,629
Int. Cl. B60j *1/08*
U.S. Cl. 49—72 **4 Claims**



An arrangement by which the windows of a car become automatically closed when the driver prepares to leave the automobile. A circuit closure to the window driving motors of the automobile is realized when the driver opens the door on his side and actuates the security latch. The circuit closure is formed through a switch actuated by the door and a switch actuated by the security latch. The switch actuated by the door becomes closed when the door is opened, and the switch actuated by the security latch becomes also closed when the latch is actuated for the purpose of securing the door. The windows of the automobile become thereby closed before the driver closes the door and leaves the car.

3,608,242
DOOR-OPERATING MECHANISM

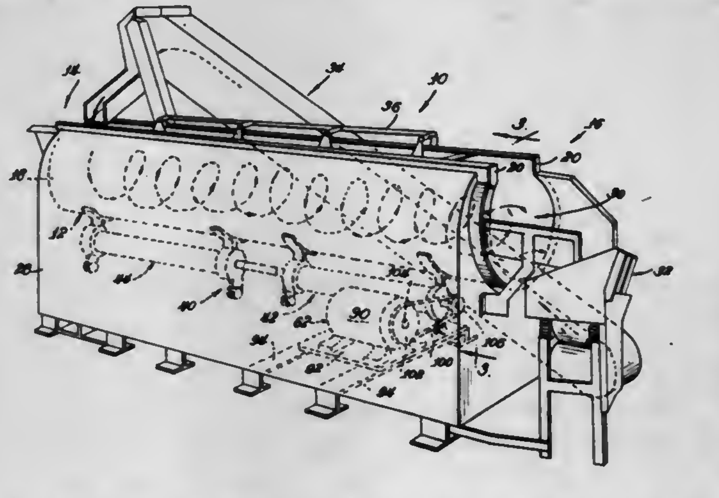
Donald F. Braun, 26 Gwynne St., Mount Waverley, Victoria, Australia
Continuation of application Ser. No. 733,856, June 3, 1968. This application Mar. 3, 1970, Ser. No. 16,231
Claims priority, application Australia, June 6, 1967, 22,758/67
Int. Cl. E05f *15/04*
U.S. Cl. 49—280 **50 Claims**



The door-operating mechanism is for use in sequentially manually opening then automatically closing then automatically opening and then manually closing a door that is arranged to be urged toward its closed position by gravity, the mechanism comprising a first latch mechanism having a first condition for holding the door in its open position and having a second condition for releasing the door, a door-opening weight connectable to the door for automatically pivoting the door from its closed position to its open position, a second latch mechanism having a first condition for connecting the door-opening weight to the door and having a second condition for holding the weight free of the door, an actuator for selectively operating the first and second latch mechanisms, and a selector for selectively rendering the actuator operable to change the condition of only one of the first and second latch mechanisms at one time.

3,608,243
VIBRATORY FINISHING MACHINE OF CONTINUOUS-FLOW TYPE

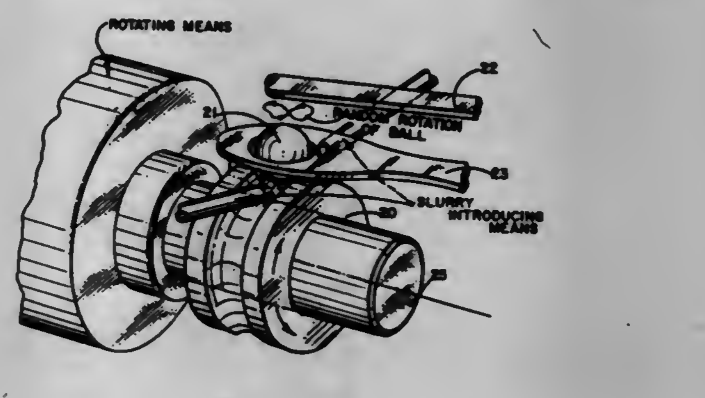
Achille K. Ferrara, Addison, Ill., assignor to Ultramatic Equipment Co., Addison, Ill.
Filed Feb. 25, 1969, Ser. No. 802,070
Int. Cl. B24b *19/00*
U.S. Cl. 51—7 **11 Claims**



In a vibratory finishing machine, an elongated trough is vibrated so as to impart generally orbital movement to the contents about an axis disposed in a horizontal plane and oriented at a predetermined angle with respect to a vertical plane comprising the longitudinal axis of the trough.

3,608,244
CROSS RACEWAY LAPPING OF BALL BEARINGS

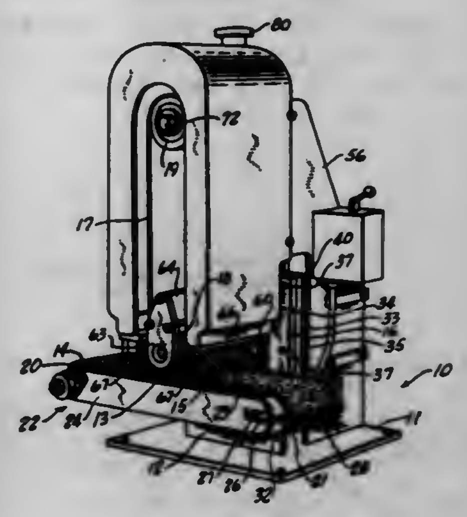
John F. Robinson, Newport Beach, Calif., assignor to North American Rockwell Corporation
Filed July 22, 1968, Ser. No. 746,575
Int. Cl. B24b *5/16*
U.S. Cl. 51—105R **5 Claims**



A method and apparatus for randomly lapping a ball bearing race and removing the deviations from a smooth cross race curvature wherein the bearing race is rotated about its nominal center, a conforming ball in a slurry of fine abrasives is rotated in a highly random manner in the race thus transferring the uniform radius and finish of the ball to the bearing race surface.

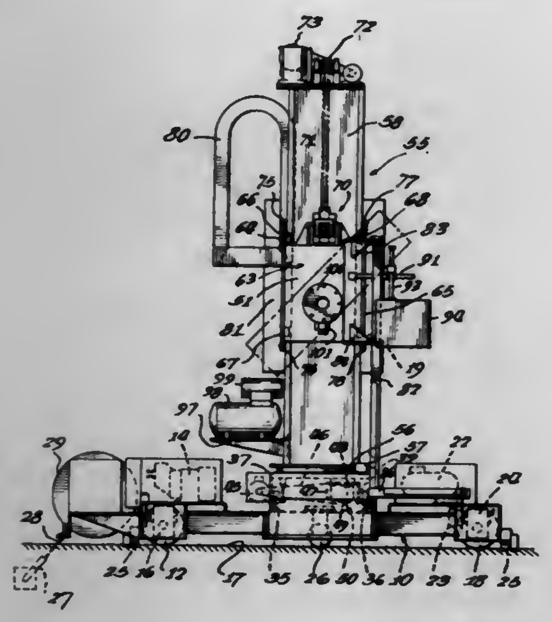
3,608,245
BELT SANDING MACHINE

Raymond G. Fair, Jr., and Cecil D. Brotherton, Minneapolis, Minn., assignors to Timesavers Sanders, Inc., Minneapolis, Minn.
Filed Sept. 4, 1969, Ser. No. 855,196
Int. Cl. B24b *21/18, 21/04*
U.S. Cl. 51—135 **3 Claims**



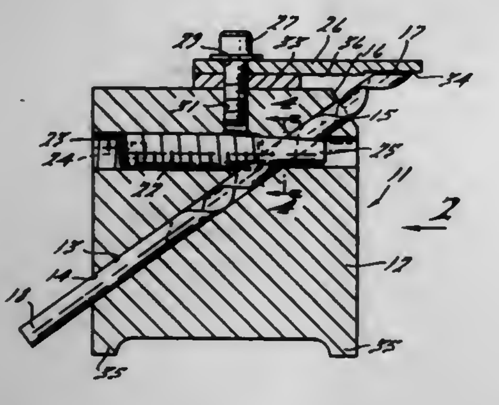
The idler drum of a belt sanding machine is supported cantilever style from an upright wall of the machine frame at a location a distance above a power driven contact drum, both for vertical motion relative to the contact drum and for tilting motion about a horizontal axis disposed close to said wall. The bed along which articles to be sanded are advanced under the contact drum, is mounted on a slide unit which is constrained to vertical adjusting motion along rails provided by the opposite side edges of the upright frame wall. A plain endless conveyor belt on the bed can be replaced by an abrasive belt of the same type and size provided for the contact and idler drums.

3,608,246
AUTOMATIC GRINDING MACHINE FOR GRINDING LONGITUDINAL EXTERNAL WELDS ON CYLINDERS
John Breckbill McCormack, Chicago, and Chester Arthur Harris, Jr., Western Springs, Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed July 3, 1969, Ser. No. 838,734
Int. Cl. B24b *21/00*
U.S. Cl. 51—135 **25 Claims**



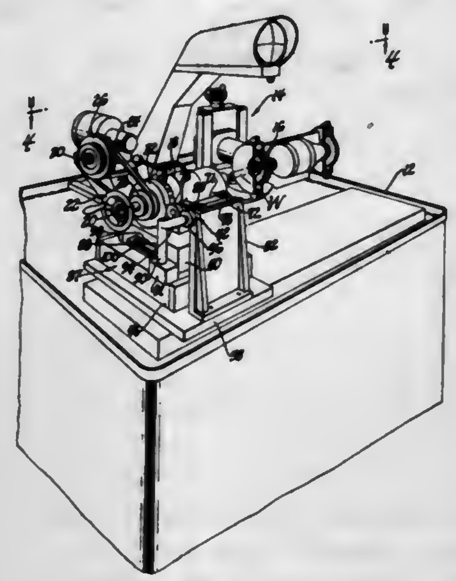
A grinding machine for grinding longitudinal external welds on large cylindrical metallic bodies. It grinds welds smooth adjusting automatically to changes in surface contour as grinding progresses from one end of the weld to the other end. Sensing probes cause the grinding means to rotate to effect grinding tangential to the cylindrical body.

3,608,247
GRINDING JIG
William O. Mueller, Detroit, Mich., assignor to Hans Sickinger Co., Pontiac, Mich.
Filed May 15, 1969, Ser. No. 824,939
Int. Cl. B24b *3/24*
U.S. Cl. 51—219 **9 Claims**



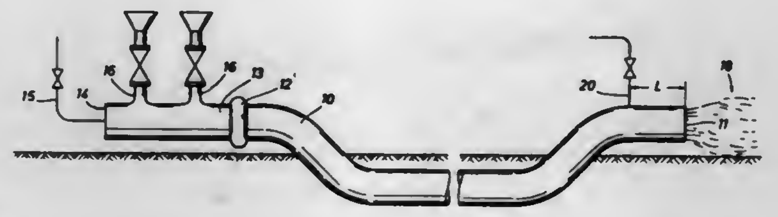
A method and means for regrinding single fluted drills, used to drill holes in stacks of loose leaf filler paper, in a manner which will maintain the proper cutting edge on the drill. The method includes feeding the drill along an inclined helical path a predetermined distance past a point at which the leading face is parallel to the plane of action of a grinder, locking the drill in place, and grinding the drill face down said predetermined distance. The means for carrying out the method comprises a jig having a plurality of inclined drill supporting holes, a combined guiding and locking screw for each drill, and a locating plate pivotally mounted on the jig.

3,608,248
FORM RELIEVING APPARATUS
Raymond F. Nixon, Bloomfield Hills, and Addison S. Prout, Orchard Lake, Mich., assignors to Omark-Winslow Aerospace Tool Co., Arcadia, Calif.
Filed Feb. 4, 1969, Ser. No. 796,442
Int. Cl. B24b *19/00, 47/10*
U.S. Cl. 51—225 **13 Claims**



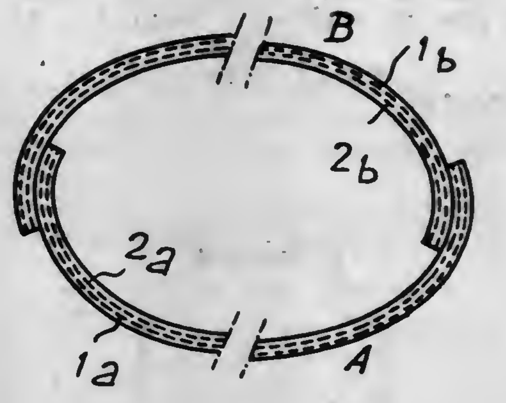
Form relieving apparatus including a workpiece supporting carriage non-rotatably and rectilinearly movably mounted on a base, and actuating means operable to reciprocate the carriage relative to the base along either selected one of two transverse paths or along any selected path extending between the transverse paths and through the intersection thereof. The actuating means includes adjustment means for selectively varying the distance moved by the carriage along its selected path. The actuating means comprises a pair of levers engaged with the carriage each operable to move the carriage along one of the transverse paths. The levers are operated by a rotatable cam mounted on the carriage.

3,608,249
METHOD FOR PREVENTING FIRES DURING PIPELINE SANDBLASTING OPERATIONS
Lester C. Sullivan, Houston, Tex., assignor to Trunkline Gas Company, Houston, Tex.
Filed Aug. 3, 1970, Ser. No. 60,277
Int. Cl. B08b *9/02;* **B24b** *1/00;* **B24c** *1/00*
U.S. Cl. 51—321 **5 Claims**



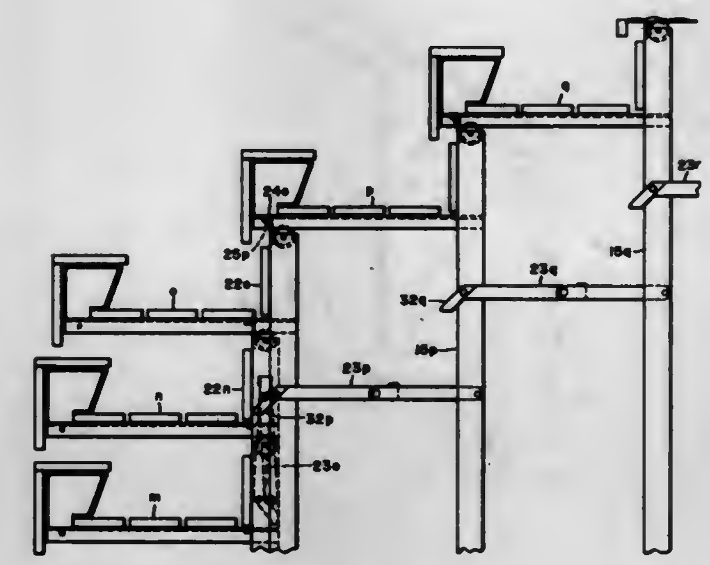
When sandblasting a pipeline, a liquid, such as water, is injected into the gas and sand mixture adjacent the outlet of the line. This provides a ground connection for the sand and other solid particles carried by the gas stream to discharge any static electrical charge that may build up on these particles as they travel through the line before the gas stream with the particles enters the atmosphere.

3,608,250
INFLATABLE STRUCTURAL MEMBERS
Roger Eugene Ducrocq, Clermont-Ferrand, France, assignor to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France
Filed July 22, 1969, Ser. No. 843,641
Claims priority, application France, July 24, 1968, 160,498
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **3 Claims**



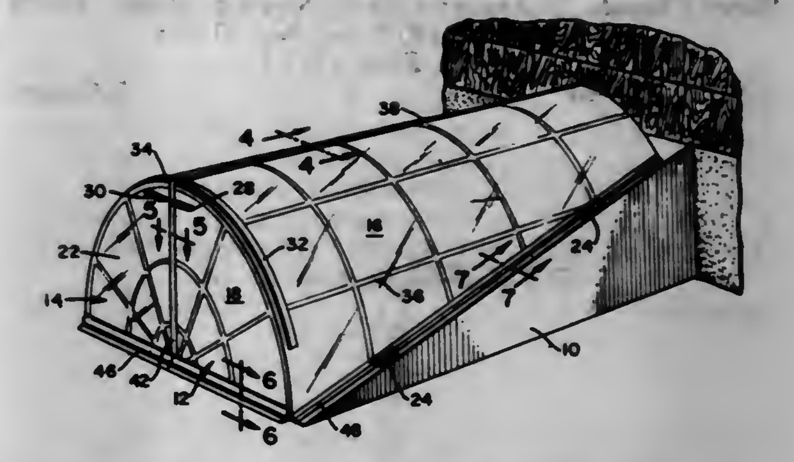
This invention relates to inflatable members that can be used as structures or as supports for structures and a member comprises at least two parts having different extension characteristics, each of these parts being made of an elastic material reinforced by at least two layers formed of mutually parallel elements which are superimposed and crossed symmetrically relatively to the longitudinal direction of the member so that the angle formed by one of the elements of one of the parts is different from the angle formed by the elements of the other part.

3,608,251
UPPER ROW LOCK LINKAGE
Robert T. Scaggs, Urbana, Ill., assignor to American Seating Company, Grand Rapids, Mich.
Filed June 12, 1970, Ser. No. 45,799
Int. Cl. E04h *3/12*
U.S. Cl. 52—9 **6 Claims**



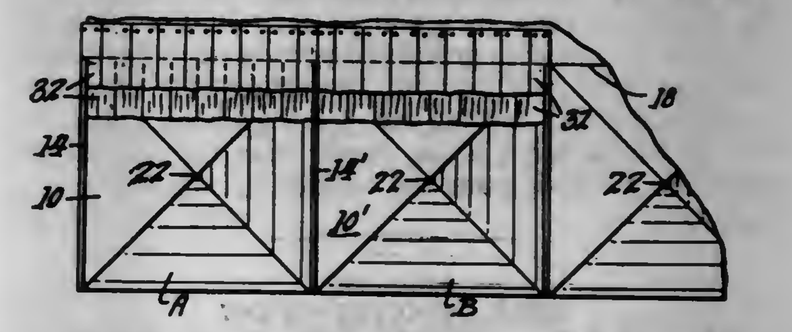
The upper rows particularly of post-supported telescoping platforms, such as bleachers and the like, are automatically locked and braced by linkage between the posts when the posts are opened to expanded position and automatically unlocked as the platforms are moved one by one to closed position.

3,608,252
COMBINATION HATCHWAY-HOTHOUSE
Joseph R. Bisson, 3 Valley Crest Drive, West Hartford, Conn. 06110
Filed Nov. 5, 1969, Ser. No. 874,243
Int. Cl. E02d *29/14;* **E04b** *7/16*
U.S. Cl. 52—19 **8 Claims**



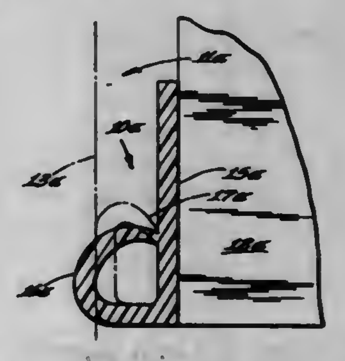
Greenhouse structure of at least partially arcuate cross-sectional shape which opens to either side along the top center line. The structure is transparent, preferably comprised of molded plastic and may be substituted for building hatchway doors.

3,608,253
SNOW AND ICE BELT FOR ROOFS
George R. Theriault, 580 S. Main St., Orange, Mass. 01364
Filed Oct. 16, 1969, Ser. No. 866,871
Int. Cl. E04b *7/16;* **E04d** *3/40, 13/06*
U.S. Cl. 52—24 **2 Claims**



A series of interlocking sheets adapted to be arranged on the roof of a building adjacent the eaves, said sheets having the property of expanding and contracting under conditions of heat and cold.

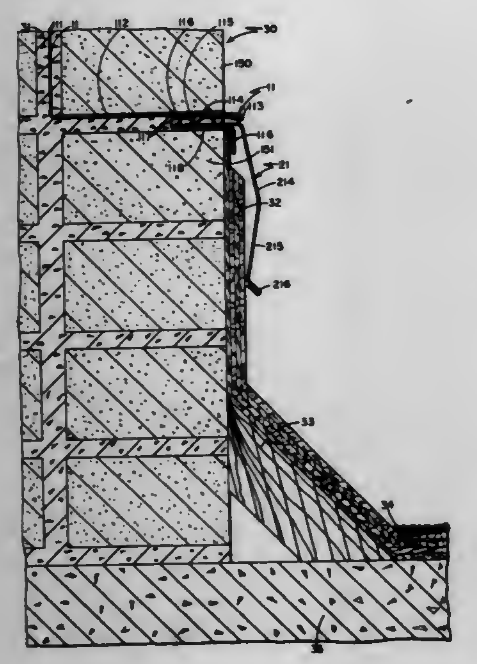
3,608,254
SELF ADJUSTING FILLER STRIP FOR WALL GAP
Lawrence R. Sklamberg, 704 S. Lyman Ave., Oak Park, Ill. 60302, and Lewis R. Rozenoff, 1654 Jarvis Ave., Chicago, Ill. 60626
Filed Apr. 24, 1969, Ser. No. 819,008
Int. Cl. E06b *7/16*
U.S. Cl. 52—27 **7 Claims**



For use with a wall gap present in the mounting of wall cabinets, panels and the like, an elongated yieldable filler strip having a hollow bulge portion resiliently and wedgingly deformable rearwardly in the gap from being wedged between the surfaces defining the gap.

3,608,255
FLASHING CAP RECEIVER

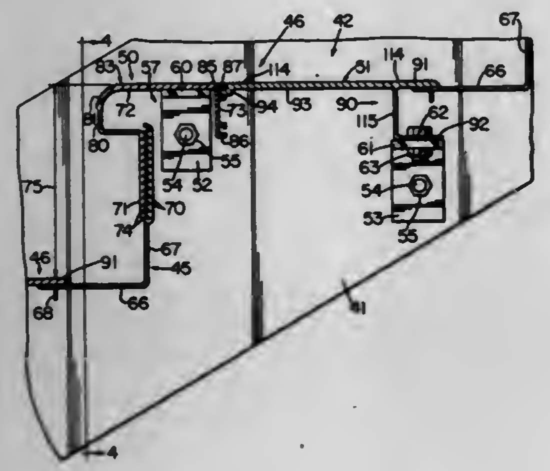
Harry Chomes, 29 Jameson Road, Newton, Mass. 02158
Filed Apr. 10, 1970, Ser. No. 27,206
Int. Cl. E04d *13/14*
U.S. Cl. 52—61 3 Claims



A flashing cap receiver is described which has a receiving chamber formed by a pair of horizontal portions one of which has a median protrusion portion extending toward the other horizontal portion. The chamber is adapted to receive and hold a flashing cap member having a bent over end lip whose width is no greater than the distance between the protrusion and the back of the chamber.

3,608,256
STEP CONSTRUCTION

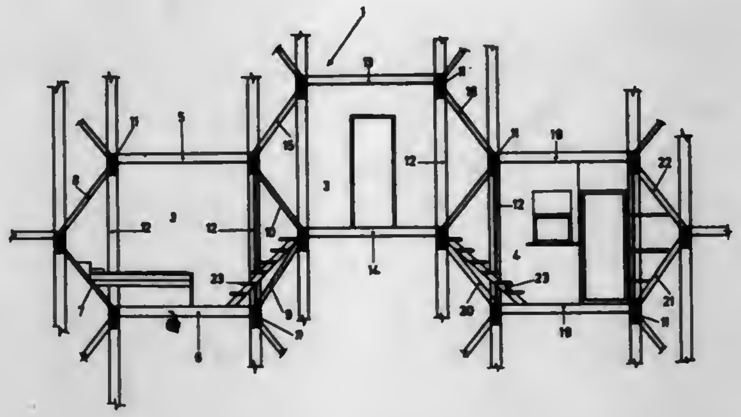
Henry J. Jefferys, Manakin Sabot, Va., assignor to Reynolds Metals Company, Richmond, Va.
Original application Dec. 1, 1967, Ser. No. 687,174, now Patent No. 3,499,254, dated Mar. 10, 1970. Divided and this application Oct. 15, 1969, Ser. No. 870,871
Int. Cl. E04f *11/00*
U.S. Cl. 52—182 22 Claims



This disclosure relates to a step assembly having a riser which is adjustable and a tread comprised of a tread nosing and a reversible tread pan which defines a horizontal surface in one of its positions and provides an integral pan-like mold for receiving a step-forming material in its reversed position.

3,608,257
ASSEMBLY OF HEXAGONAL MODULES

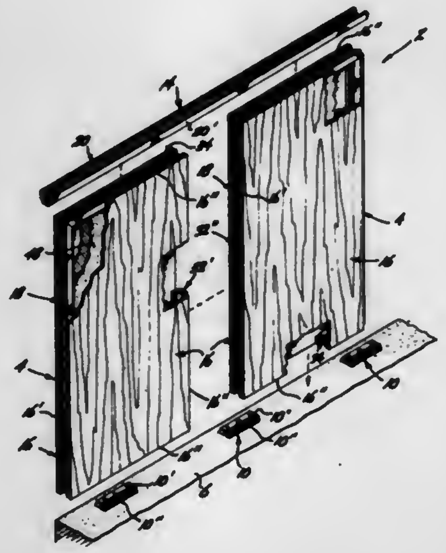
Francisco Fernandez-Castanys Lopez and Emilio Gonzalez Espinosa de los Monteros, both of 2 Muelle de Heredia, Malaga, Spain
Filed Jan. 23, 1968, Ser. No. 699,827
Claims priority, application Spain, Jan. 23, 1967, 335,954
Int. Cl. E04h *1/00*
U.S. Cl. 52—236 2 Claims



A dwelling contains the rooms in honeycomb arrangement so that the inclined upper half walls of one room are available as inclined floor space in adjoining rooms of a higher level.

3,608,258
REMOVABLE MULTIPANELED WALL CONSTRUCTION

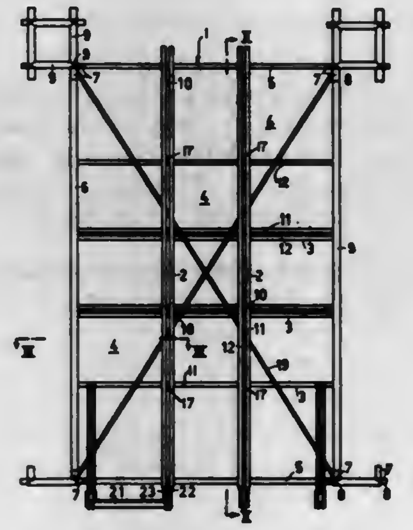
Virgil E. Spratt, Edmonds, Wash., assignor to Unilith Enterprises, Inc., Seattle, Wash.
Filed Apr. 17, 1969, Ser. No. 816,896
Int. Cl. E04b *2/18, 2/74;* E04c *1/10*
U.S. Cl. 52—241 5 Claims



A hollow double-walled building panel is disclosed which is adapted to be marginally interconnected with one or more other such panels to form a rigid but readily removable wall construction of the same. The panel comprises a pair of flat, parallel wall members which are registered opposite one another with a clearance therebetween; and pairs of elongated framing members which are interposed in the clearance between the wall members along the opposite edge portions of the panel. At least one pair of the framing members are similarly oriented in the panel and have matching convexo-concave bodies in transverse planes thereof, the relatively raised and recessed male and female faces of which complementally jam lock with one another from one panel to the next, and project relatively outwardly and inwardly from the adjacent edges of the wall members, respectively, so that the panels can be jam locked in abutting edge-to-edge relationship with one another, along the joints therebetween.

3,608,259
FLOOR SKELETON FOR RESISTANCE FRAME

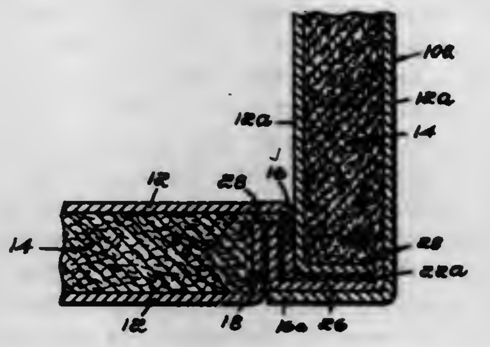
Jean Iwens, 1 Avenue Edouard Lacomble, and Andre De Poerck, 49 Rue Pere Eudore, Devroye, both of Etterbeek, Belgium
Filed Apr. 7, 1969, Ser. No. 814,124
Claims priority, application Belgium, Apr. 10, 1968, 713,483
Int. Cl. E04b *1/24;* E04c *3/04*
U.S. Cl. 52—263 4 Claims



A floor framing skeleton comprising a structural unit having two layers of beams framed by four bearing girders. The beams of one layer are supported by two of the girders and the beams of the other layer support the other girders.

3,608,260
ACOUSTICAL PANEL ASSEMBLY

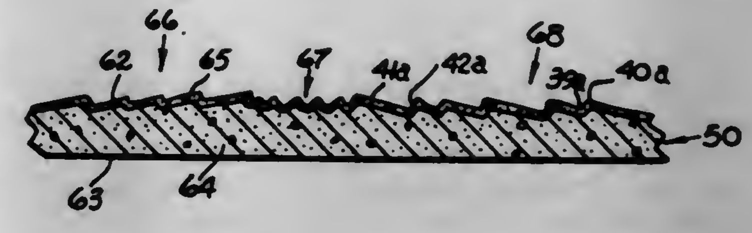
Alan Eckel, Carlisle, and Oliver C. Eckel, Weston, Mass., assignors to Eckel Industries, Inc., Cambridge, Mass.
Filed May 21, 1969, Ser. No. 826,351
Int. Cl. E04b *1/348, 2/08*
U.S. Cl. 52—284 1 Claim



Acoustical panels carry extensions or joiners at each of two opposite sides which are spaced from the main body of the panel and extend alternately downward and upward, said spaces providing receiving recesses open at the top and bottom respectively, that joiners of the nearest adjacent panel enter. At corners of the assembly separate right angle joiners extend into recesses each panel provides thereby connecting the corner panels.

3,608,261
SHEET COVERING MEMBERS FOR BUILDING SURFACES

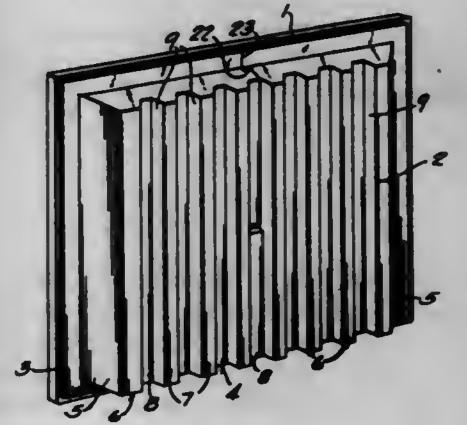
Clayton V. French, Somerville, Stanley E. Jastremski, Bound Brook, James E. Neal, North Plainfield, Norman S. Greiner, Somerville, Paul L. Earle, Martinsville, and Fred T. Randolph, Somerville, N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Continuation of application Ser. No. 598,772, Dec. 2, 1966. This application Mar. 28, 1969, Ser. No. 812,963
Int. Cl. B44f *9/02;* E04c *2/04*
U.S. Cl. 52—316 11 Claims



This invention relates to sheet covering members for building surfaces and especially to asbestos-cement shingles and strips for roofing and siding. The covering members each comprise a base member and a denser veneer covering on said base. The covering members can be textured to simulate a natural wood grain.

3,608,262
SPLICE JOINT DOOR LINER PANEL

Robert J. Smith, Lansing, Mich., assignor to The General Tire & Rubber Company, Akron, Ohio
Filed May 1, 1969, Ser. No. 820,956
Int. Cl. E04d *1/08;* E04c *2/16*
U.S. Cl. 52—524 8 Claims



A door liner, such as one which would be used in a railroad refrigerator car, is formed of two half panels which are joined in a lap joint splice along a center line of the liner. Along the center line, the half panels have opposing matching half-ribs extending from opposing ends to meet at the midpoint on the line, where the ribs are offset to provide opposing, matching, underlying webs extending to opposite ends of the center line. Complementary splice slots disposed at the offsets permit interlocking of the half panels so that the half rib of the first panel overlaps the matching underlying web of the second panel and the matching rib of the second panel overlaps the underlying web of the first panel.

3,608,263

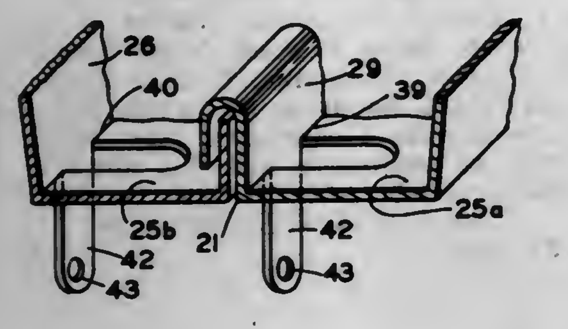
HANGER TABS FOR SHEET METAL DECKING SECTIONS

Rodney W. Gartner, Coraopolis, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Nov. 13, 1969, Ser. No. 876,444

Int. Cl. E04b *5/38, 5/55*

U.S. Cl. 52—588 **4 Claims**



Hanger tabs for sheet metal decking are provided in the form of bendable tabs formed from the sheet metal itself by means of U-shaped slots. The tabs, when in use, constitute a downward extension of an upstanding wall of the deck and are disconnected from horizontal strips of the deck.

3,608,264

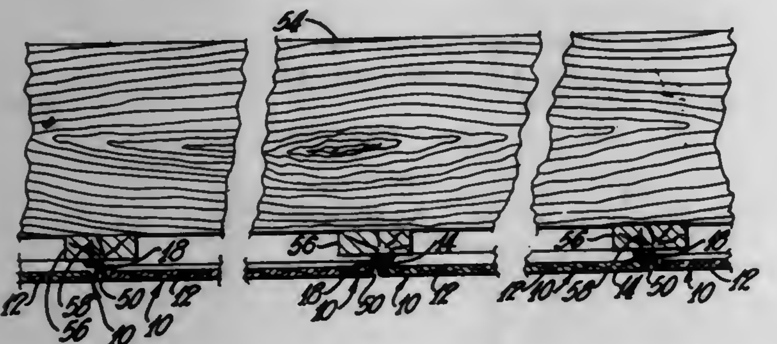
MOLDED FIBROUS SURFACING UNIT

Isaac Palmer Jones, Granville, Daniel A. McCartan, and Jared R. Kies, Newark, and Merritt W. Seymour, Toledo, Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation of application Ser. No. 661,914, Aug. 21, 1967. This application Sept. 4, 1969, Ser. No. 856,900

Int. Cl. E04b *5/54;* **E04c** *2/10;* **E04f** *13/16*

U.S. Cl. 52—593 **14 Claims**



This invention embraces a molded fibrous surfacing unit, tile or panel and method of producing same wherein a mass of fibers, such as glass fibers, impregnated with a binder is compressed and shaped during the compressing operation to provide configurations for interengagement with adjacent units in assembly, the configurations being of a character providing alignment of the units in assembly and facilitating the securing of the units to a support means.

3,608,265

GLAZING UNIT AND METHOD OF MAKING SAME

Gérard Meunier, Jumet, Belgium, assignor to Glaverbel, S.A., Watermael-Boitsfort, Belgium

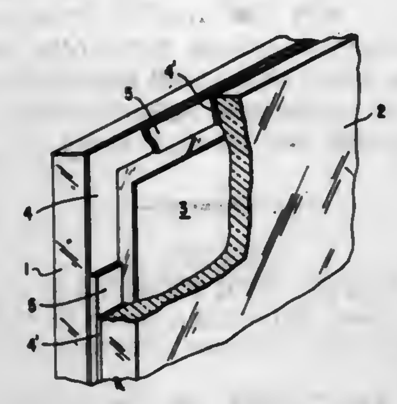
Filed Jan. 11, 1965, Ser. No. 424,580

Claims priority, application Luxembourg, Mar. 11, 1964, 45,630

Int. Cl. E06b *3/66*

U.S. Cl. 52—616 **13 Claims**

The present invention relates to a novel glazing unit and to a method of manufacture thereof, and is particularly concerned with a glazing unit of the type in which two glass sheets are assembled in parallel spaced relation to form the unit.



Glazing units of the nature referred to are known, and are generally provided for the purpose of reducing to a minimum the transfer of heat through the glazing unit.

3,608,266

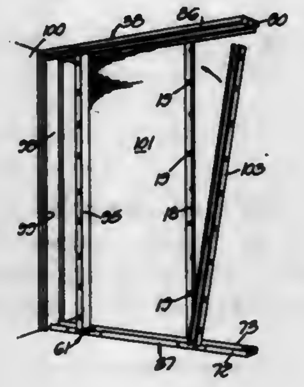
METHOD AND APPARATUS FOR CONSTRUCTING REMOVABLE PARTITION WALLS

David M. Satkin, Hidden Hills, Gene B. Helvie, Newport Beach, and Charles J. Tillotson, Sepulveda, Calif., assignors to Architectural Partitions, Los Angeles, Calif.

Filed July 31, 1969, Ser. No. 846,379

Int. Cl. E06b *3/64;* **E04b** *2/76*

U.S. Cl. 52—741 **7 Claims**



A wall structure in which channel-shaped studs are supported in spaced relationship by channel ceiling and floor runners, the parallel legs of the studs providing side surfaces having laterally spaced pairs of slots at longitudinally spaced intervals, wall forming panels being removably mounted on the studs with marginal hook members. The panels are delivered to the construction site with the hook members coplanar with the inner surface of the panels. The hooks are then bent at the site into inwardly projecting position to extend into one longtudinal set of the slots of the slot pairs on the studs, the hook members of the other adjacent wall panel being arranged to extend into the other set of the slots of the slot pairs. The studs rest upon floor wedges which lock the studs into registry with a ceiling runner which thus becomes the reference point for vertical alignment of the wall panels. The wall structure is assembled by wedging a first stud in vertical alignment in registry with the ceiling runner, hanging a first wall panel from the stud, placing a second stud askew between wall and ceiling runners and rotating or twisting the stud into final position by engaging the unattached marginal hooks of the first panel in the slots of the stud and then lifting the stud against the ceiling runner and wedging the stud in that reference position, which relates the hooks and the stud in final engagement. Succeeding wall panels are hung and succeeding studs put in place in like manner, while the panels of the other wall face are attached during or after the construction of the first wall face.

3,608,267

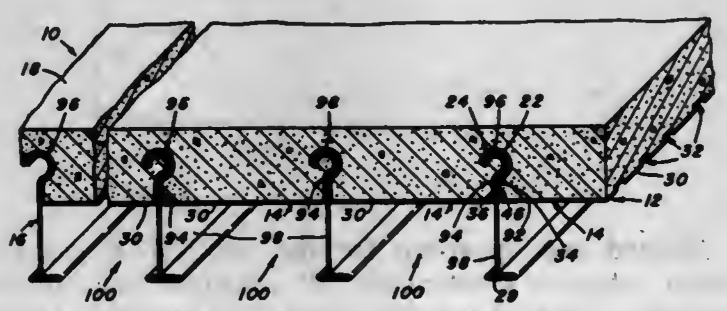
FLOOR STRUCTURE AND BUILDING CONSTRUCTION PANEL THEREFOR

Bernard E. Curran, Sewickley, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Original application Oct. 9, 1968, Ser. No. 766,048. Divided and this application May 13, 1970, Ser. No. 36,916

Int. Cl. E04b *5/40, 5/36*

U.S. Cl. 52—332 **9 Claims**



An improved floor structure assembled from concrete and building construction panels of unique design. The panels are assembled in side-by-side interengaged relation. The upside of the assembled panels presents a plurality of troughs having deformations and keying elements associated therewith. The overlying concrete is united with the panels as a composite floor structure capable of developing improved load-carrying capacities. The underside of the assembled panels presents a plurality of channels which may be adapted to provide any one of a variety of finished ceiling arrangements.

3,608,268

METHOD FOR PRODUCING THIN-WALLED, COLLAPSIBLE CONTAINERS OR PACKAGES

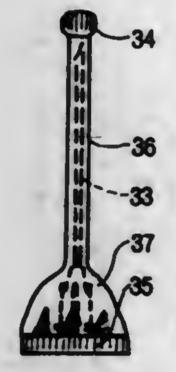
Erik Lauritzen, Gentofte, Denmark, assignor to Niels Bay-Schmith, Mosebakken, Virum, Denmark

Filed June 3, 1968, Ser. No. 733,926

Claims priority, application Denmark, June 7, 1967, 2,988/67

Int. Cl. B65b *43/00;* **B29c** *17/00*

U.S. Cl. 53—29 **7 Claims**



A method for producing thin-walled, collapsible packages each having a protruding, relatively thick-walled tubular body for holding a hypodermic needle by: (a) inflating an intermediate part of a stiff tubular blank of thermoplastic material in heated condition to a small wall-thickness, usually less than 1/100 inch, while the adjacent blank parts are not inflated to any substantial degree, (b) cutting the inflated part transversely, (c) inserting the needle portion of the hypodermic into the adjacent blank part, and (d) heat-sealing the opposite ends of the package. The degree of inflation and the shape of the resulting package may be controlled by inflating in a mould cavity, or by heating the blank only along the longitudinal parts which are to be inflated.

3,608,269

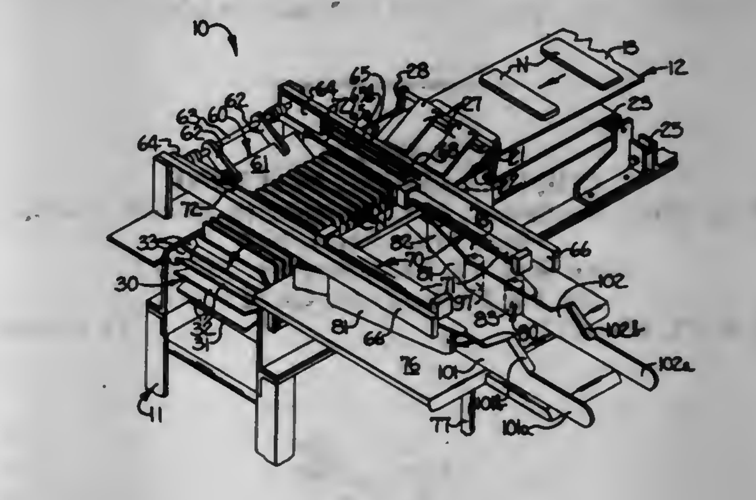
APPARATUS FOR HANDLING AND PACKAGING INDIVIDUAL ARTICLES

Graves T. Gore, Ware Shoals, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Sept. 24, 1969, Ser. No. 860,619

Int. Cl. B65b *57/10*

U.S. Cl. 53—62 **8 Claims**



A feeding conveyor successively feeds individual articles along a predetermined path to an accumulating conveyor in series with the feeding conveyor. The accumulating conveyor includes side-by-side article receiving compartments and is successively advanced in timed relationship to the feeding conveyor to sequentially receive articles therefrom. After a predetermined number of articles have accumulated on the accumulating conveyor, they are simultaneously ejected from the compartments in side-by-side relation transverse to the path of advancement of the accumulating conveyor. Preferably, the apparatus includes a pair of spaced apart cooperating guide conveyors having portions converging from the accumulating conveyor for receiving the articles upon ejection, maintaining the articles in side-by-side relation, advancing the articles and compressing the articles. In addition, package aligning members communicate with the guide conveyors for aligning and holding an article receiving package relative to the ejected articles.

3,608,270

MACHINE FOR PACKAGING ROD SHAPED ARTICLES

Willy Rudszinat, Dassendorf, Otto Erdmann, Hamburg-Bergedorf, and Wolfgang Zausch, Hamburg, Germany, assignors to Hauni-Werke Koerber & Co. K.G., Hamburg-Bergedorf, Germany

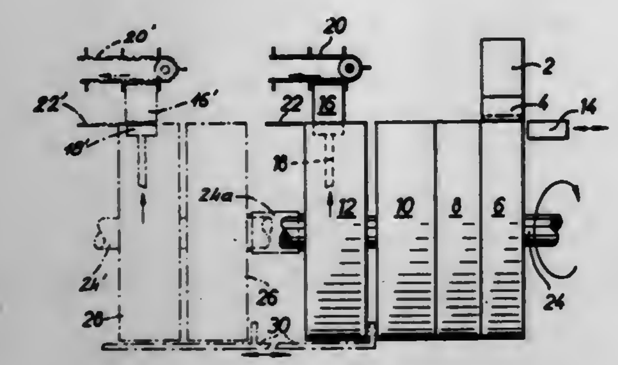
Continuation-in-part of application Ser. No. 582,106, Sept. 26, 1966. This application May 26, 1969, Ser. No. 827,808

Claims priority, application Germany, Oct. 12, 1965, H 57,397

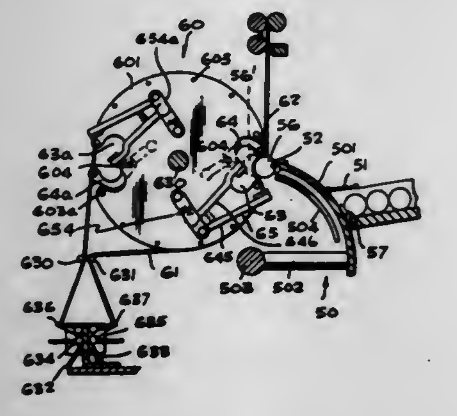
Int. Cl. B65b *19/04, 19/24, 63/02*

U.S. Cl. 53—124E **64 Claims**

Cigarettes or like rod-shaped smoking articles are introduced into and sealed in packs by withdrawing them from a magazine, moving the thus withdrawn articles sideways and assembling moving articles into block-shaped groups, converting blanks of sheet material into open-ended packs which accommodate groups of articles, and sealing the open ends of successive packs.



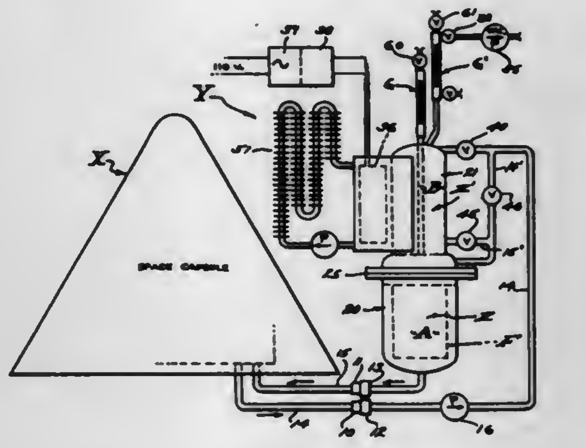
3,608,271
COIN WRAPPING MACHINE
Peter Pilat, Rockaway, N.J., assignor to Broach Systems, Inc., Little Ferry, N.J.
Filed Sept. 12, 1968, Ser. No. 759,322
Int. Cl. B65b *11/34;* G07d *9/00*
U.S. Cl. 53—212 18 Claims



A machine is disclosed preferably for wrapping coins, and includes a conveyor and inclined plate means for assembling a plurality of coins on edge adjacent one another to form a roll of loose coins, and means for moving the roll of loose coins away from the area where the coins were assembled. Coin wrapping means are provided for receiving the roll of loose coins and thereafter wrapping a sheet of film material around the loose coins. This coin wrapping means includes a wrapping head having at least one cavity therein, an extensible belt substantially surrounding the head, means for placing the sheet between the belt and the loose roll of coins, means for urging the roll of coins against the sheet and into the cavity, and means for rotating the wrapping head relative to the belt after receiving the coin roll to wrap the sheet around the coin roll.

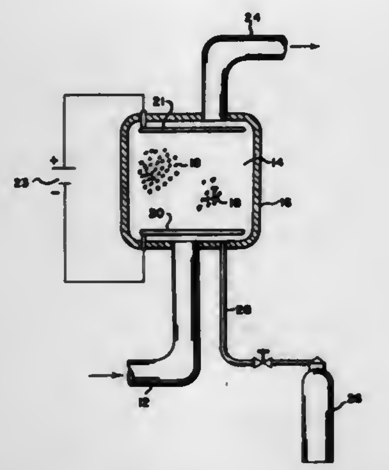
The machine may also include a gripping means for holding the roll of loose coins at its end as the coins move as a roll into the wrapping head, means operatively coupled to the gripping means for separating the gripping means from the roll of coins after the coin roll has been urged against the sheet and belt into the cavity, and jaw means pivotally located on the wrapping head for holding the roll within the cavity. Once the coin roll has been wrapped a heat sealing means may be provided to seal the film about the coin roll.

3,608,272
GAS FROM LIQUID SEPARATION METHOD AND APPARATUS
Leonard J. Di Peri, 18325 Lahey St., Northridge, Calif. 91324, and Kenneth H. Brown, Fullerton, Calif. (15005 SE. Robinett Court, Milwaukie, Oreg. 97222)
Filed Dec. 16, 1968, Ser. No. 783,850
Int. Cl. B01d *19/00, 51/08*
U.S. Cl. 55—15 9 Claims



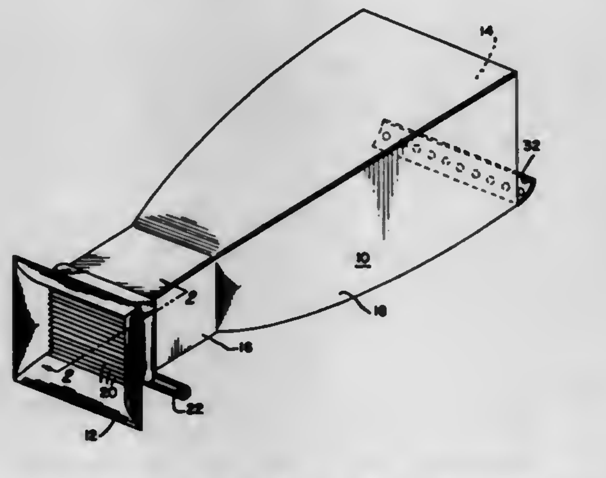
Method and apparatus for the removal of gas from liquid, whereby substantially all absorbed and entrained gases are liberated and eliminated from hydraulic systems and preferably closed systems and the like; providing for the circulation of primary hydraulic system fluid with complementary hydraulic system fluid, and with the provision of a surface tension device that collects dimensionally large entrained gas bubbles; providing for separation from circulation of a body of fluid to be batch processed and replaced into circulation for commingling in said primary-complementary systems, and with the provision of vacuumization and sonic energy application to be applied to said separated batch of fluid whereby gas liberation therein is stimulated and the time required therefor reduced to a practical minimum; and providing for repeated batching and commingling until saturation becomes insignificantly small and acceptable as may be prescribed.

3,608,273
APPARATUS AND PROCESS FOR DESORPTION OF FILTER BEDS BY ELECTRIC CURRENT
Bela M. Fabuss, Winchester, and Wilson C. Du Bois, Tyngsboro, Mass., assignors to Lowell Technological Institute Research Foundation, Lowell, Mass.
Filed Jan. 15, 1969, Ser. No. 791,339
Int. Cl. B01d *53/02*
U.S. Cl. 55—74 7 Claims



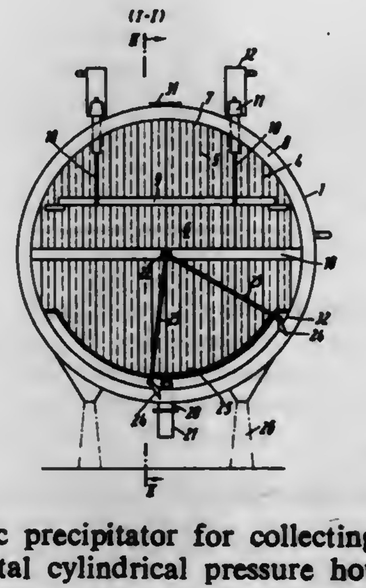
Apparatus for use in adsorption of contaminants from fluid streams, said apparatus comprising a particulate adsorbent which is sufficiently conductive to be susceptible to direct heating by an electrical resistance heating means for periodically heating the contaminant-laden adsorbent to a temperature effective to free it of the contaminants and thereby prepare it for further use without need of removing it from said apparatus.

3,608,274
APPARATUS AND METHOD FOR PUMPING AND CLEANING A FLUID
Valentin Stingelin, Geneva, Switzerland, and Jules L. Dussourd, Princeton, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.
Filed Jan. 27, 1969, Ser. No. 794,025
Int. Cl. B01d *47/00*
U.S. Cl. 55—84 14 Claims



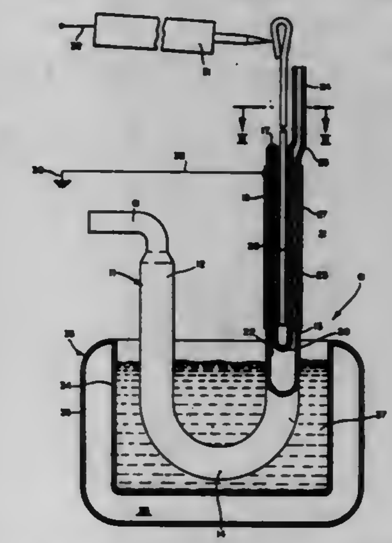
A method, and apparatus for the practice thereof, involving the use of a conduit open at both ends for conducting a moving, polluted fluid, such as gas, therethrough. The conduit has an inlet, mixing section along its length, and an outlet, expansion section of generally diverging cross-section. Atomizers or spray jets are arranged within the inlet to finely spray a fluid, more dense than the polluted fluid, such as a liquid, in uniform distribution into the mixing section, at a velocity which approximates and a direction which is the same as that of the polluted fluid.

3,608,275
ELECTROSTATIC PRECIPITATOR
Jean Wiemer, Oberhochstadt, and Franz Hauss, Frankfurt, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Germany
Filed Nov. 20, 1969, Ser. No. 878,505
Claims priority, application Germany, Jan. 7, 1969, P 19 00 526.6
Int. Cl. B03c *3/76*
U.S. Cl. 55—112 7 Claims



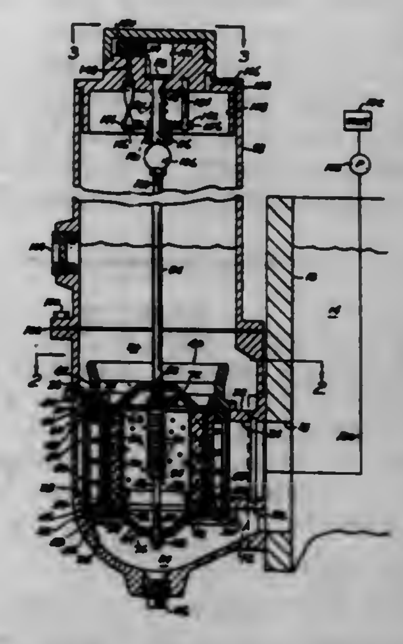
An electrostatic precipitator for collecting dust, comprising a horizontal cylindrical pressure housing having a gas inlet at one end, a gas outlet at the other and a dust discharge opening in the bottom, plate-like collecting electrodes therebetween and defining parallel horizontal gas passages between the inlet and outlet, and charging electrodes between the collecting electrodes, and means for removing the collected dust from the housing.

3,608,276
GAS CHROMATOGRAPHY COLLECTOR
James L. Bloomer, Philadelphia, Pa., assignor to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.
Filed Dec. 24, 1968, Ser. No. 786,664
Int. Cl. B03c *3/01*
U.S. Cl. 55—126 6 Claims



An apparatus is provided for collecting small samples from gases by chromatographic techniques by precipitating the desired sample from a gas containing the desired sample.

3,608,277
RESERVOIR FILTER AND INDICATOR
Nils O. Rosaen, Bloomfield Hills, Borje O. Rosaen, Ann Arbor, and Oscar E. Rosaen, Grosse Pointe Farms, Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Application Aug. 1, 1966, Ser. No. 519,488, now Patent No. 3,440,802, which is a continuation-in-part of application Ser. No. 522,773, Jan. 24, 1966. Divided and this application Jan. 28, 1969, Ser. No. 794,612
The portion of the term of the patent subsequent to Apr. 29, 1986, has been disclaimed and dedicated to the Public
Int. Cl. B01d *19/00*
U.S. Cl. 55—199 2 Claims

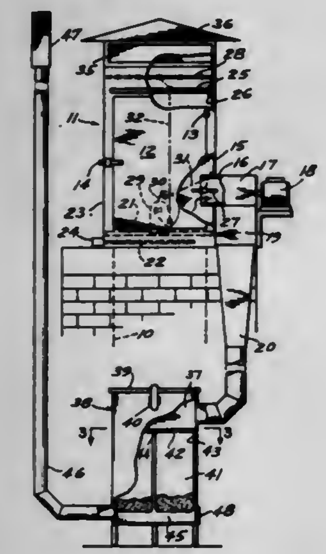


A filter device is adapted to be mounted to the exterior of a sidewall of a fluid reservoir and includes a housing section having a fluid inlet connected with the reservoir and a fluid outlet. The housing section defines a filter chamber fluidly intermediate the inlet and the outlet and disposed below the fluid level of the reservoir. A tubular section extends upwardly from the housing section and a filter element is vertically slidably disposed in the filter chamber. A rod extending upwardly from the filter element provides a means for withdrawing the filter element upwardly from the filter chamber.

3,608,278

APPARATUS FOR FILTERING AND COLLECTING SOLID MATTER FROM A SMOKE FLOW

Saul Greenspan, 1335 E. 38th St.,
Brooklyn, N.Y. 11210
Continuation-in-part of application Ser. No. 604,364, Dec. 23, 1966. This application July 22, 1969, Ser. No. 843,310
Int. Cl. B01d *46/04, 46/10, 46/86*
U.S. Cl. 55—212 **9 Claims**



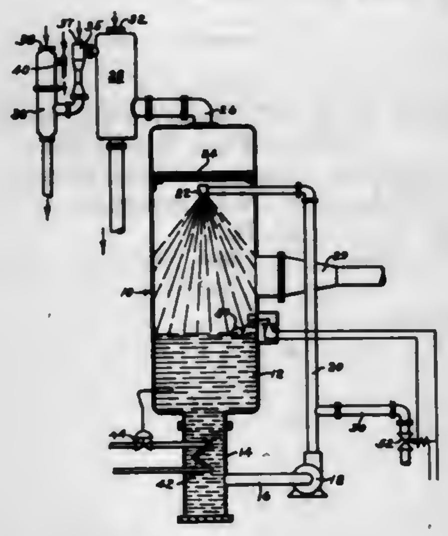
A device having a housing fitted upon a chimney or other smoke outlet, the housing containing a heater or burner, a grate and one or more smoke filters past which the outgoing smoke flows. A suction blower exerts suction in a direction transverse to the smoke flow to thereby draw off any solid material such as soot, residue, flakes, ashes or the like created by the combustion or incineration and entrained in the smoke. The suction causes the solid material to be delivered into a collection chamber to which the outlet of the blower is connected. The heater or burner reduces large particles of the solid material to smaller size to enable them to be readily carried off by the exerted suction. Suitable louver and damper means are further providing for increasing efficiency of forced circulation as is apparatus for making the forced flow direction reversible and alternating the direction thereof as a means of self-cleansing of the filters of the system.

3,608,279

APPARATUS FOR SEPARATING FATTY ACID DISTILLATES FROM VEGETABLE OILS BY SELECTIVE CONDENSATION AND TEMPERATURE CONTROL

Richard W. West, Irwin, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Filed July 24, 1964, Ser. No. 384,935
Int. Cl. B01d *3/34*
U.S. Cl. 55—219 **3 Claims**

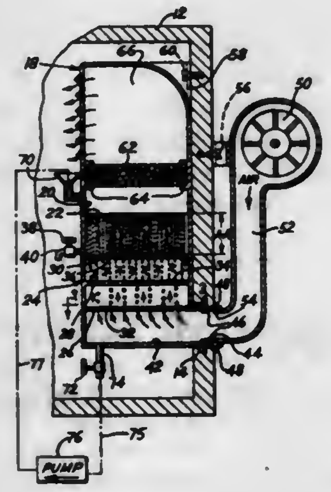
Apparatus for separating a condensable constituent from a vaporous mixture by passing liquid in heat transfer relation with the vaporous mixture in a vessel under pressure enabling the desired constituent only to be condensed, wherein the liquid is previously recovered condensate flowing in a separate circuit subject to temperature control by an automatically controlled heat exchanger located within the vessel.



3,608,280

MICROWAVE ENERGY SHIELDING SYSTEM

Robert B. Martin, Mishawaka, Ind., assignor to The Bendix Corporation
Filed Mar. 26, 1969, Ser. No. 810,571
Int. Cl. B01d *47/00*
U.S. Cl. 55—222 **7 Claims**



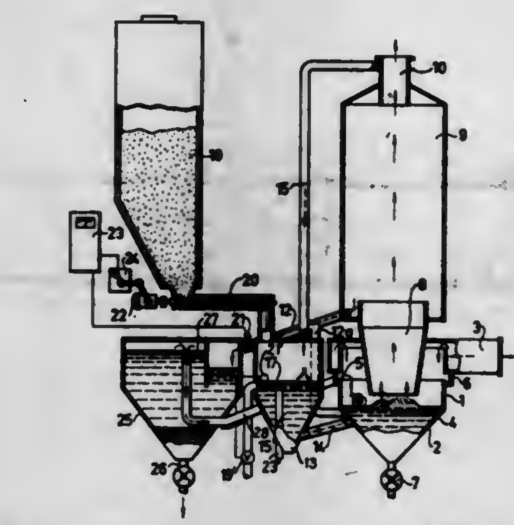
A microwave energy shielding system for use in an opening through which fresh air is supplied to personnel and sensitive testing equipment operating within the confines of an enclosure. The shielding system passes the required air flow through an ionized solution to attenuate microwave energy in the air prior to passing through the opening in the enclosure to eliminate the effect of any outside micro frequency on the test being performed by the equipment.

3,608,281

APPARATUS FOR CLEANSING FLUE GASES

Karl-Axel Göran Gustavsson, Enkoping, Sweden, assignor to Aktiebolaget Bahco, Stockholm, Sweden
Continuation of abandoned application Ser. No. 763,424, Sept. 27, 1968. This application June 19, 1970, Ser. No. 48,928
Claims priority, application Sweden, Oct. 19, 1967, 14,347/67
Int. Cl. B01f *3/04*
U.S. Cl. 55—228 **6 Claims**

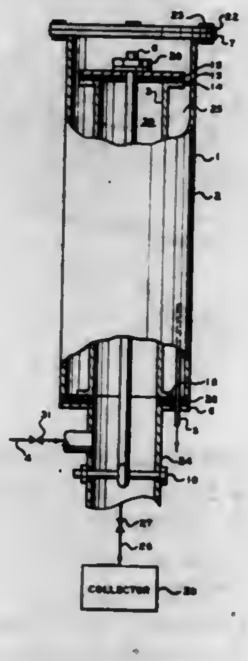
The invention relates to an apparatus for purifying the gases to remove sulphur dioxide. The apparatus comprises a container for a body of treatment liquid and is provided with a gas inlet so arranged that the gas is caused to flow substantially at right angles to the surface of the liquid therein. A treatment passage extends substantially vertically upwards from the liquid surface in the container, so that the gas after contact with the liquid flows substantially linearly therethrough entraining droplets of liquid. The container communicates below the liquid level with an equalizing tank having means for introducing alkali thereinto to maintain the treatment liquid at a suitable alkalinity and with means for introducing fresh water. The equalizing tank also has means to maintain the liquid level therein constant whereby the liquid level in the treatment container adjusts automatically to variations in the rate of gas supplied thereto.



3,608,282

FILTERING SYSTEMS

Otis E. Ririe, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 13, 1968, Ser. No. 783,653
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **4 Claims**

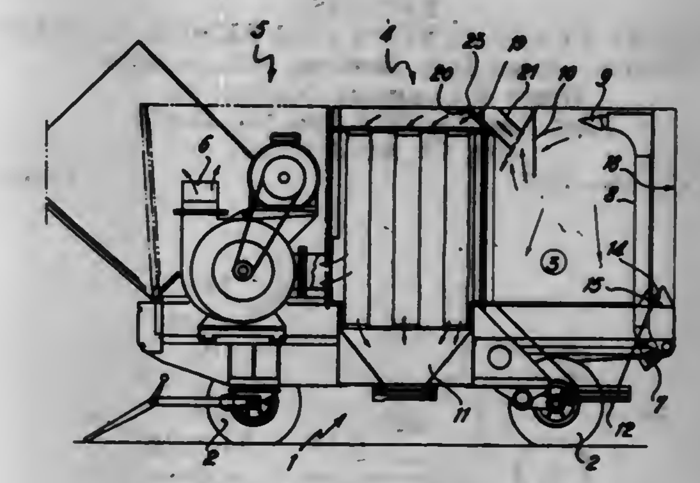


An apparatus for separating particulate matter from a fluid stream which involves means for passing the fluid stream through a filter, means reversing the flow of the fluid to remove the matter from the filter and permitting the removed matter to pass into porous collecting means.

3,608,283

MOBILE SUCTION CLEANERS FOR PULVERULENT MATERIAL

Bernard J. Huglo, Amiens, France, assignor to Manutair, Amiens, France
Filed Oct. 29, 1968, Ser. No. 771,438
Claims priority, application France, Nov. 10, 1967, 127,716
Int. Cl. B01d *46/10*
U.S. Cl. 55—315 **5 Claims**

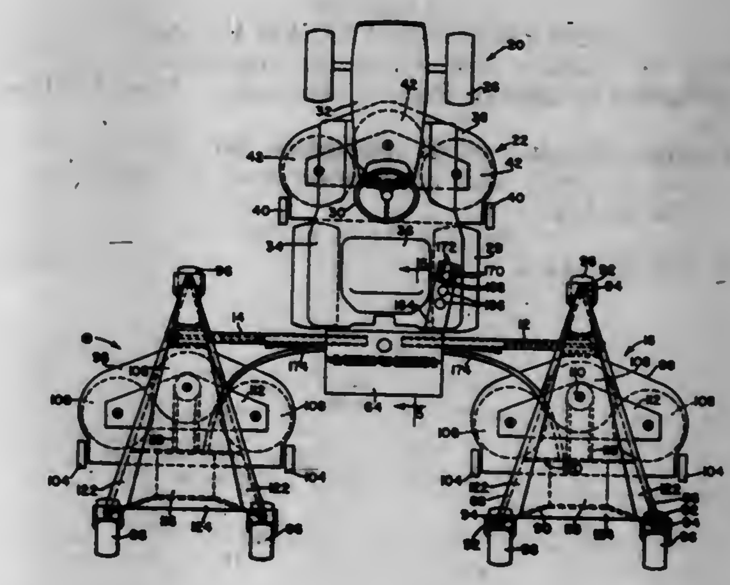


A mobile cleaning apparatus is provided for the cleaning of air containing pulverulent material, particularly dust. The apparatus includes a mobile carriage on which is mounted a separation container, a filtration container and suction means for inducing a flow of polluted air through both containers in order to purify it, the separation container being pivotably mounted on the carriage and detachable therefrom to facilitate its emptying. A connection for air flow from the separation container to the filtration container is completed when the separation container is supported in place on the carriage.

3,608,284

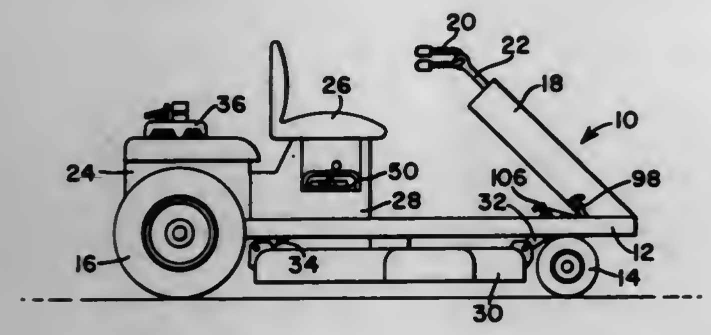
GANG MOWER

Leon Paul Erdman, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.
Filed Apr. 9, 1970, Ser. No. 26,984
Int. Cl. A01d *75/30*
U.S. Cl. 56—6 **16 Claims**



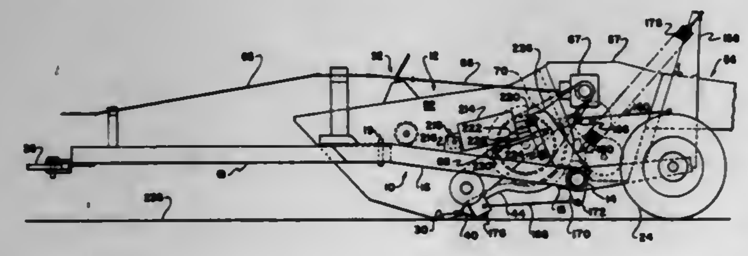
A gang mower assembly is connected to a lawn and garden tractor having a rotary mower suspended therebeneath and includes a draft frame rigidly connected to the rear of the tractor, a pair of transversely extending draft tubes pivotally connected to the opposite sides of the draft frame for vertical pivoting movement and a pair of wheeled rotary mower units articulately connected to the draft tubes for vertical pivoting movement about the draft tubes and rocking movement about fore-and-aft extending axes. The mower assemblies are slidable along the draft tubes and power means are provided to move the mower assemblies between extending working positions and retracted transport positions.

3,608,285
NEUTRAL START SYSTEM FOR RIDING MOWERS
Martin Adolph Berk, Horicon, Wis., assignor to
Deere & Company, Moline, Ill.
Filed Apr. 15, 1970, Ser. No. 28,674
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.2 **5 Claims**



A neutral start electrical system prevents the engine on a riding mower from starting unless the mower is disengaged and the vehicle drive is disengaged. This system is based on a switch in the engine ignition circuit which normally completes the ignition circuit through an auxiliary circuit, but which removes the auxiliary circuit from the ignition circuit when the engine is running. The auxiliary circuit includes first and second addtional switches in series with each other. The first additional switch is responsive to a condition of the clutch for the vehicle drive and is open when the vehicle drive is engaged. The second additional switch is responsive to a condition of the clutch for the mower drive and is open when the mower drive is engaged. The neutral start electrical system provides an open ignition circuit if an attempt is made to start the engine while either the vehicle clutch or mower clutch is engaged to thereby prevent starting of the engine.

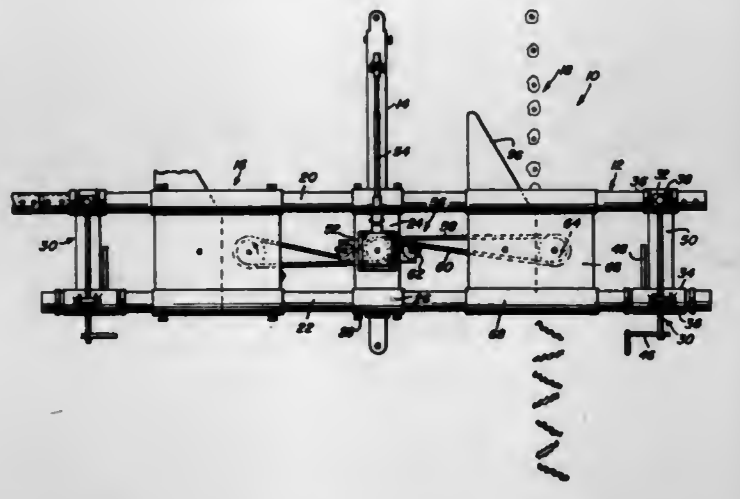
3,608,286
MOWER-CONDITIONER FRAME
Henry N. Lausch and Bruce D. Schwalm, Leola, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Continuation-in-part of application Ser. No. 864,062, Oct. 6, 1969. This application Aug. 17, 1970, Ser. No. 64,276
Int. Cl. A01d *41/04*
U.S. Cl. 56—14.4 **8 Claims**



A frame for a mower-conditioner having a reel, cutting means, a consolidating auger, and conditioning rolls.

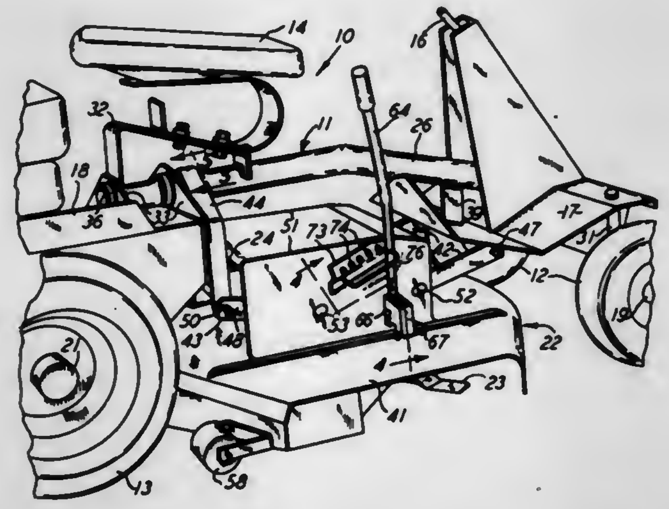
In this frame the main lateral structure is a single member passing beneath the machine in a depression formed by a space between the auger housing and the lower conditioning roll.

3,608,287
COMBINATION CUTTER AND CONDITIONER FOR ROW FORAGE
Glenton G. Gaertner, Rte. 2, Box 78,
La Grange, Tex. 78945
Filed May 6, 1969, Ser. No. 822,138
Int. Cl. A01d *41/08*
U.S. Cl. 56—13.7 **8 Claims**



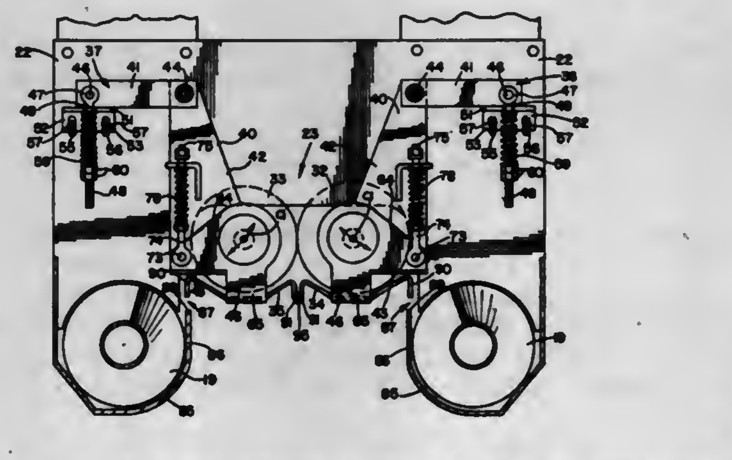
Standing stalks of plants are crushed and cut by vertical roller assemblies on a moving frame to cut and condition crops in one operation. Vertically elongated crimping elements on the rollers intermesh to engage the stalks while cutter blades on the lower ends of the rollers cut the stalks.

3,608,288
TRACTOR WITH A FLOTATIONALLY MOUNTED MOWER
Sherman C. Heth and Vernon R. Kaufman, Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.
Filed Apr. 23, 1970, Ser. No. 31,223
Int. Cl. A01d *35/26*
U.S. Cl. 56—15.8 **6 Claims**



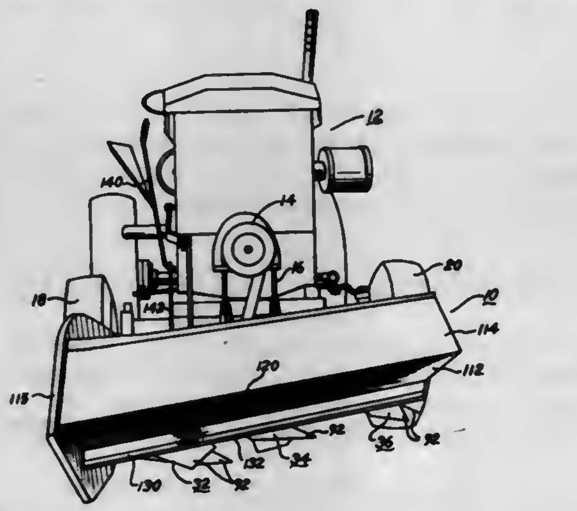
Tractor with a flotationally mounted mower and with the tractor having a frame piece and a front axle assembly and a rear axle assembly with a traction unit. The front axle and rear axle are pivotal relative to each other and in the plane transverse to the fore-and-aft direction of the tractor, by virtue of the tractor frame piece being pivotal relative to the traction unit and rear axle assembly. A rotary type lawn mower is suspended below the tractor frame piece, and the mower floats so that it can move up and down relative to vertically adjusted positions and relative to irregularities in the ground being traversed by the tractor. Rigid type link members suspend the mower from the frame piece, and a pair of links extends forwardly of the mower for the suspension, and a pair of links extends rearwardly of the mower for the suspension. Also, a yoke is affixed to the frame piece and connects to the pair of rearwardly extending link members so that the yoke pivots in the transverse plane along with the pivot of the frame piece and thereby positively positions the mower transverse of the fore-and-aft direction and in response to the mower meeting rises in the ground being traversed. Adjusting mechanism is connected to the mower support links so that the mower can be adjustably raised and lowered in selected set positions. Also, ground engaging wheels are provided on the mower for engaging the ground, depending upon relative height of the mower to the ground.

3,608,289
COTTON HARVESTER
James M. Francis, Bettendorf, Iowa, assignor to International Harvester Company, Chicago, Ill.
Filed May 11, 1970, Ser. No. 36,236
Int. Cl. A01d *45/20*
U.S. Cl. 56—33 **10 Claims**



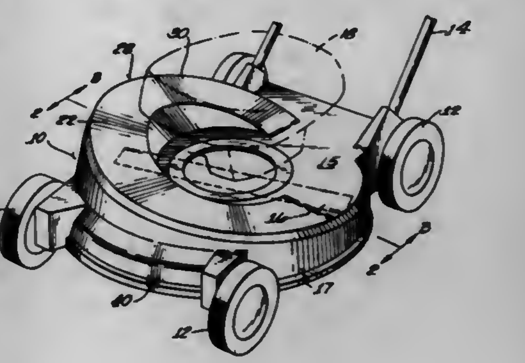
A cotton harvester having a pair of plant stripper rollers, each having adjacent underposed stripper sheets coacting to provide cotton stripping action, each sheet having a surface for doffing and catching repeating cotton and mounted to move in conjunction with its respective stripper roller such that the sheet is yieldably movable relative to that roller to maintain a substantially constant clearance therewith.

3,608,290
WEED AND BRUSH CUTTING APPARATUS
Harry A. Robinson, Elkhart, Ind.
(P.O. Box 321, Avilla, Ind. 46710)
Filed May 16, 1969, Ser. No. 825,364
Int. Cl. A01d *57/26*
U.S. Cl. 56—192 **10 Claims**



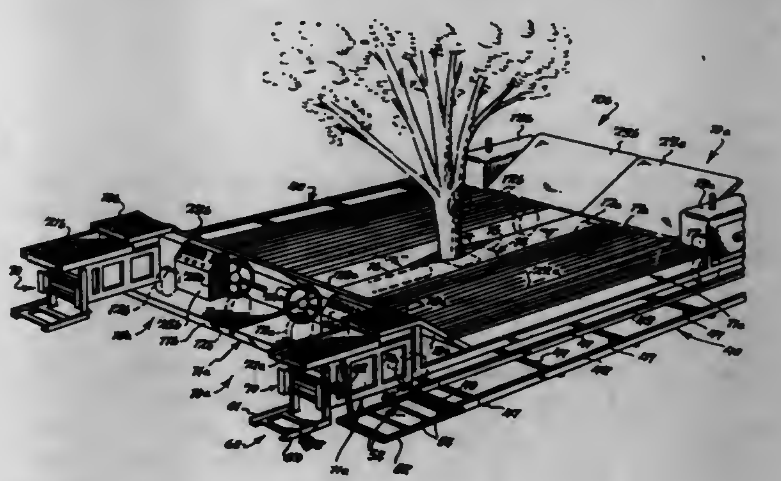
A weed and brush cutting apparatus having one or more horizontally rotatable cutters mounted beneath a supporting body, and an angularly disposed pusher extending forwardly beyond the cutters for pushing the weeds and brush forward prior to the cutting operation. A conveyor means is disposed above and adjacent to the cutter blades for receiving the cut material and moving the material to one side of the apparatus. The apparatus is normally mounted on the front of a tractor or other vehicle which provides the power for driving the weed and brush cutting apparatus.

3,608,291
CHUTELESS ROTARY MOWER HOUSING
Earl H. Kidd, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Jan. 3, 1969, Ser. No. 788,803
Int. Cl. A01d *55/18*
U.S. Cl. 56—320.1 **4 Claims**



A rotary mower housing having a top wall including a cutting and lifting portion, a compressing portion and a mulching portion in circumferential series in the direction of blade rotation. In addition, the housing has a sidewall deflector extending downwardly and outwardly from the housing sidewall.

3,608,292
COLLECTION SYSTEM FOR HARVESTING MACHINES
James L. Perry, 4025 Hartland Road,
Gasport, N.Y. 14067
Filed Jan. 20, 1970, Ser. No. 4,281
Int. Cl. A01g *19/06*
U.S. Cl. 56—329 **14 Claims**

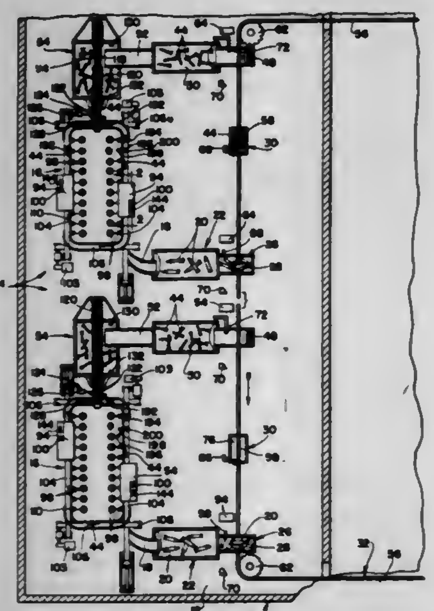


A crop collection system for harvesting machines of the type having shaker means carried by an ambulatory frame and including conveying means in the frame for receiving removed crops and transporting them to a point of collection relative to the frame. A plurality of crop receiving bins or receptacles are carried with the machine frame by means of a conveyor attached to one side of the fame which moves the bins, one at a time, toward the point of crop collection. A bin carrying means pivotally mounted on the machine frame and moved by means of an hydraulic cylinder elevates a bin to where the open end thereof is in communication with the point of crop collection and gradually lowers the bin as it is filled. The bins are placed on the carrying means one at a time by a clamping means pivotally connecting to the carrying means and including movable jaws operatively connecting to an hydraulic cylinder. The clamping means is moved toward the conveyor to grip a bin and returned, with the bin, so as to place the bin on the carrying means.

3,608,293

SPINNING AND WINDING SYSTEM

Charles W. Brouwer, East Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Oct. 21, 1969, Ser. No. 868,041
Int. Cl. B65h *54/02;* **D01h** *9/02, 15/00*
U.S. Cl. 57—34R **18 Claims**



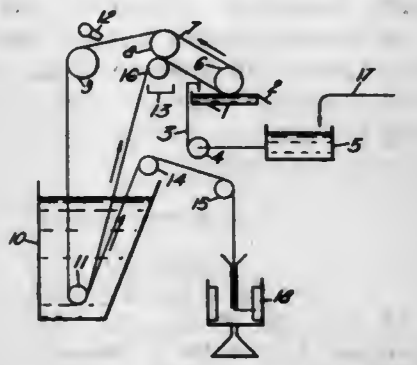
An automatic spinning and winding system for handling different types of bobbins and including a self-tending spinning system for filling empty bobbins with yarn, and a self-tending winding system for winding the yarn from the filled bobbins onto yarn packages. The filled bobbins from the spinning system are stored and are automatically separated into substantially equal batches which are delivered to the winding system responsive to demand of the winding system for filled bobbins. Empty bobbins from the winding system are stripped of residual yarn, and are automatically returned to the spinning system responsive to demand of the spinning system for bobbins. The spinning and winding system may concurrently handle and keep separate different types of bobbins.

3,608,294

APPARATUS FOR PRODUCING COHERENT BODIES FROM ASBESTOS DISPERSIONS

William K. Donaldson, 23 Cringle Drive, Cheadle, Cheshire, England; and Werner Wilke, Schillerstrasse 34; and Hans Fetzer, Emil-Kostweg 5, both of Schwabisch Hall, Germany
Application Apr. 14, 1969, Ser. No. 839,748, which is a continuation-in-part of application Ser. No. 510,246, Nov. 29, 1965. Divided and this application June 9, 1969, Ser. No. 831,783
Claims priority, application Great Britain, Dec. 4, 1964, 49,445/64; May 7, 1965, 19,469/65; Austria, May 3, 1966, A 4,176/66; Dec. 23, 1966, A 11,853/66
Int. Cl. D02g *3/06, 3/20*
U.S. Cl. 57—35 **5 Claims**

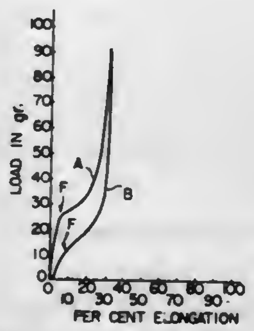
An apparatus for producing asbestos yarn from an aqueous dispersion of asbestos fibers comprises supply means for the dispersion with a dispensing device for shaping the dispersion into a travelling film strip onto the surface of a movable carrier structure. As the surface travels past the outlet of the dispensing device, it entrains the dispersion. Applicator means are provided for covering the surface of the carrier structure with coagulating agent so that the entrained dispersion coagulates to a film strip material while in contact with the carrier surface. The strip, after separation from the carrier surface reaches a pot-spinning device or other twisting means which is located downstream of the carrier surface and twists the coagulated film strip to yarn.



3,608,295

HIGHLY ELASTICIZED FIBROUS COMPOSITE AND A METHOD FOR MANUFACTURING THE SAME

Tohru Kitazawa, Osaka-shi, Osaka, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 28, 1969, Ser. No. 819,913
Claims priority, application Japan, May 6, 1968, 43/29,935
Int. Cl. D02g *3/04, 3/32, 3/36*
U.S. Cl. 57—140BY **30 Claims**



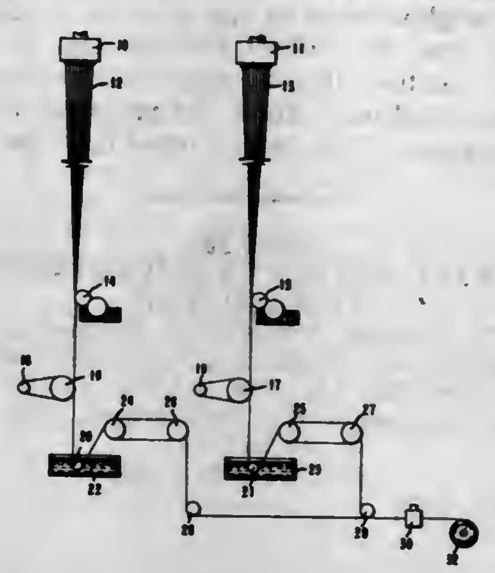
A method for manufacturing a highly elasticized fibrous composite by uniting polypivalolactone components with other componental fibers and thermally treating thus obtained composite yarn at a temperature high enough to elasticize the polypivalolactone component. The thermal treatment may take place before and after formation of fabrics from the composite yarns. Necessary content ratio of the polypivalolactone component does not exceed 25% by weight.

3,608,296

POLYESTER YARN WITH SILK-LIKE APPEARANCE

Robert Edward Taylor, Camden, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 564,905, July 13, 1966. This application Oct. 28, 1969, Ser. No. 871,418
Int. Cl. D02g *1/18, 3/04, 3/24*
U.S. Cl. 57—140BY **4 Claims**

A silk-like appearance is provided in fabric by polyester yarn prepared by melt-spinning bright polymer containing surface-modifying agent through non-round spinneret orifices to produce rough-surfaced filaments of different cross-sections, and drawing the filaments to 0.75–1.50 denier with a part being subjected to conditions different from other filaments to impart differential shrinkability. Alternatively a different polymer composition is used in part of the filaments to impart differential shrinkability.



3,608,297

SYNTHETIC FILAMENT YARN

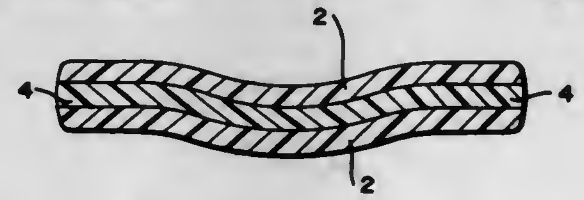
Malcolm Carnie Cobb, Anthony Charles Davis, and Kazimierz Wiktor Mieszkis, Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 19, 1969, Ser. No. 826,017
Claims priority, application Great Britain, May 24, 1968, 24,933/68
Int. Cl. D02g *3/04, 3/22*
U.S. Cl. 57—140 **8 Claims**

A yarn comprising a blend of not less than 70% of delustered filaments and not more than 30% of bright filaments wherein the delustred filaments contain not less than 0.7% by weight of a delustrant (TiO_2) and the bright filaments contain less than 0.3% of said delustrant.

3,608,298

PEARLESCENT YARN

Peter J. Schoots, Nieuwendam, Netherlands, assignor to Lurex N.V., Amsterdam, Netherlands
Filed Mar. 25, 1969, Ser. No. 810,173
Int. Cl. D02g *3/06*
U.S. Cl. 57—140R **8 Claims**



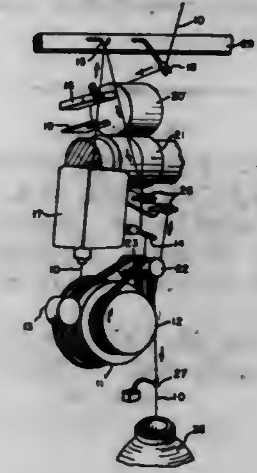
Colored pearlescent yarns are obtained by laminating polyester films using an adhesive containing a pearlescent material and a suitable coloring pigment. The resulting yarns provide non-toxic pearlescent materials which may be based on toxic lead salts and which materials have a high degree of luster.

3,608,299

PROCESS FOR PRODUCING TORQUE STRETCH YARNS

Alfred H. Dugas, Martinsville, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 15, 1970, Ser. No. 28,583
Int. Cl. D02g *3/02*
U.S. Cl. 57—157F **8 Claims**

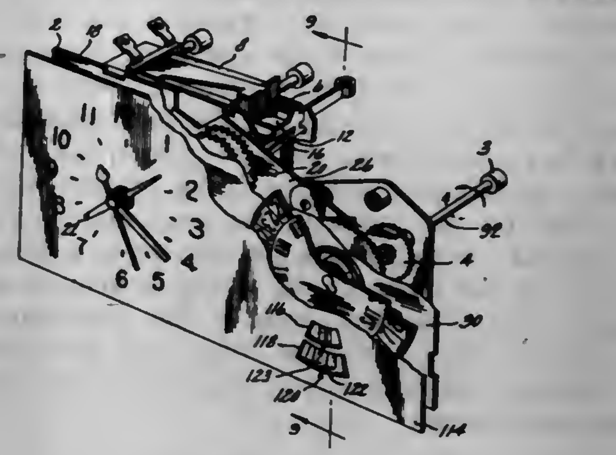
A process is disclosed for producing uniform torque stretch yarns useful for knitting stretch-apparel, such as ladies' sheer hosiery. Yarn is false-twisted with a fluid-torque jet device and the twist is heat-set in a jet of heated fluid. Continuous high speed operation of the process, in combination with a drawing operation, is illustrated for providing high levels of set-twist in low denier yarn.



3,608,300

CALENDAR CLOCK

William C. Wingler, Southboro, Mass., assignor to General Electric Company
Filed Apr. 6, 1970, Ser. No. 25,756
Int. Cl. G04b *19/24*
U.S. Cl. 58—5 **9 Claims**

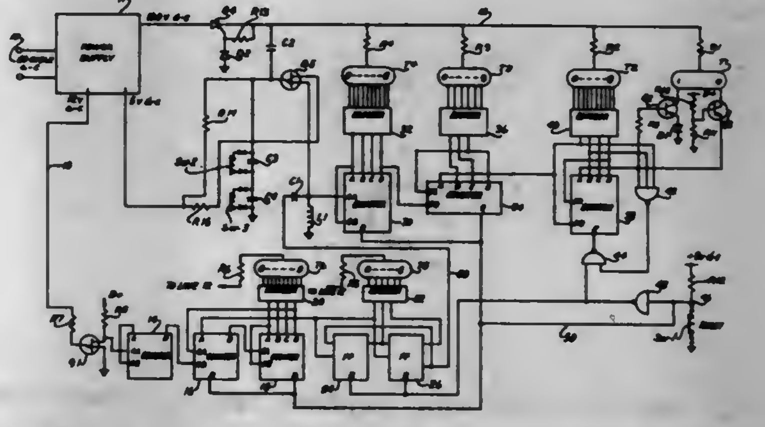


A calendar clock wherein a day and date mechanism is uniquely constructed and mounted between a front plate and a base plate of a clock.

3,608,301

DIGITAL CLOCK HAVING AUTOMATIC INDICATION OF POWER FAILURE

Harry R. Loewengart, New York, N.Y., assignor to Quasar Microsystems, Inc., Brentwood, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,275
Int. Cl. G04c *3/00*
U.S. Cl. 58—23A **15 Claims**

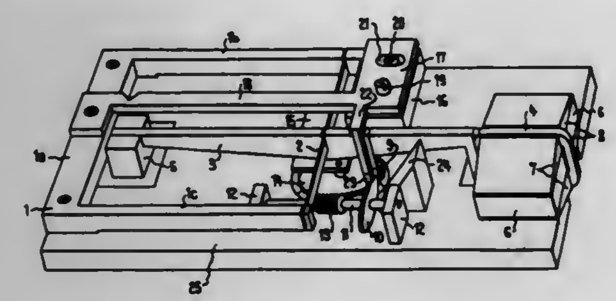


In an electrically operated timepiece means are provided to detect the failure of the electrical power supply, and to thereupon disable the time indication. That indication remains disabled even after the electrical power is restored, and is only re-enabled when the timepiece is reset to the correct time.

3,608,302
ELECTROMAGNETIC MICROMOTOR FOR AN ELECTRONIC WATCH

Andre Cachin, Saint-Imier, Switzerland, assignor to Compagnie des Montres Longines, Francillon S.A., Saint-Imier, and Bernard Golay S.A., Lausanne Vaud, Switzerland

Filed May 28, 1970, Ser. No. 41,181
Claims priority, application Switzerland, June 13, 1969, 9,045/69
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **3 Claims**

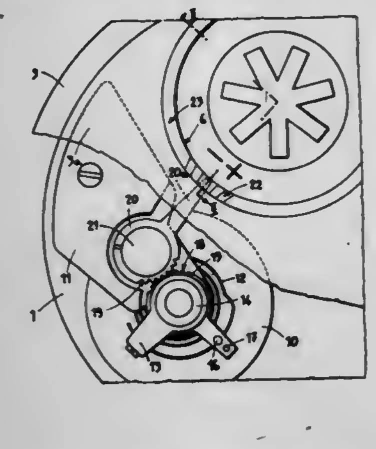


An electromagnetic micromotor for an electronic watch, vibrating at an acoustical frequency and adapted to be controlled by a very stable oscillator. The micromotor comprises an elastic portion connected with an oscillating mass portion carrying an impulse pawl cooperating with a ratchet wheel driving the gear-train of the watch, a stop pawl, cooperating with the same ratchet wheel, being mounted on the frame of the micromotor. The ratchet wheel and the said pawls are situated in a plane perpendicular to the plane of the watch movement and an inclined mirror renders possible the observation of the motion of the said ratchet wheel and of the said pawls through an optical axis perpendicular to the plane of the watch movement.

3,608,303
ELECTRIC WATCH WITH BALANCE-WHEEL AND HAIRSPRING

Jean Schaad, Gorgier, Switzerland, assignor to Voumard Machines Co. S.A., Hauterive, Neuchatel, Switzerland

Filed July 14, 1970, Ser. No. 54,692
Claims priority, application Switzerland, July 15, 1969, 10,764/69
Int. Cl. G04c *3/04*
U.S. Cl. 58—28R **1 Claim**

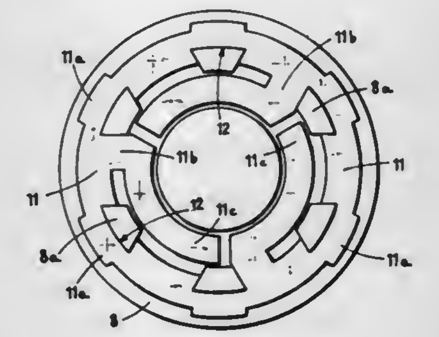


An electric watch with regulator, balance-wheel and hairspring comprising a watch casing having a back in which is provided an aperture covered with a removable cap, in which a source of current can be put in place and removed through the aperture, characterized by a control member for the regulator having its end situated in the immediate neighborhood of the edge of the aperture in such a way that the control member can be reachable through the aperture, thereby permitting adjusting operations to be carried out without the necessity of disassembling the elements of the casing other than the cap.

3,608,304
WATCH BATTERY COMPARTMENT CLOSURE CAP

Jean Schaad, Gorgier, Switzerland, assignor to Voumard Machines Co. S.A., Hauterive, Neuchatel, Switzerland

Filed July 14, 1970, Ser. No. 54,693
Claims priority, application Switzerland, July 15, 1969, 10,763/69
Int. Cl. G04b *37/08*
U.S. Cl. 58—23B **2 Claims**

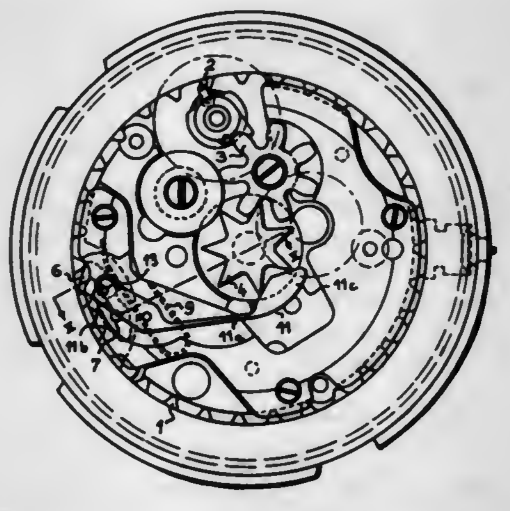


A cap for closing the battery compartment of an electric watch comprising two sections one comprising the closure disc and the second comprising a bayonet fitting engagement disc.

3,608,305
COORDINATED COMBINED RELEASABLE DAY AND DATE JUMPER MECHANISM FOR CALENDAR TIMEPIECES

Georges Bullat, Fontainemelon, Switzerland, assignor to Fabrique d'Horlogerie de Fontainemelon S.A., Fontainemelon, Switzerland

Filed Mar. 31, 1970, Ser. No. 24,065
Claims priority, application Switzerland, Apr. 28, 1969, 6,398/69
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **2 Claims**

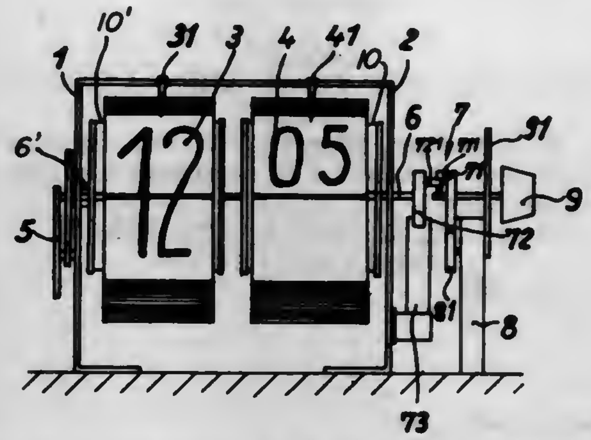


A calendar timepiece has a toothed day ring and a star wheel carrying means for indicating days of the week, and comprises a first jumper lever urged into engagement with the teeth of the date ring by a jumper spring and a pivotally mounted second jumper. The second jumper has an elastically deformable first arm terminating in a jumper beak engaging in the teeth of the star wheel and a second arm kinematically solid with the first jumper lever.

3,608,306
PLANE INDICATOR SETTING ARRANGEMENT

Claus-Christian Cobarg, Steinbach, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 22, 1969, Ser. No. 859,643
Claims priority, application Germany, Sept. 23, 1968, P 17 98 304.9
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 **9 Claims**

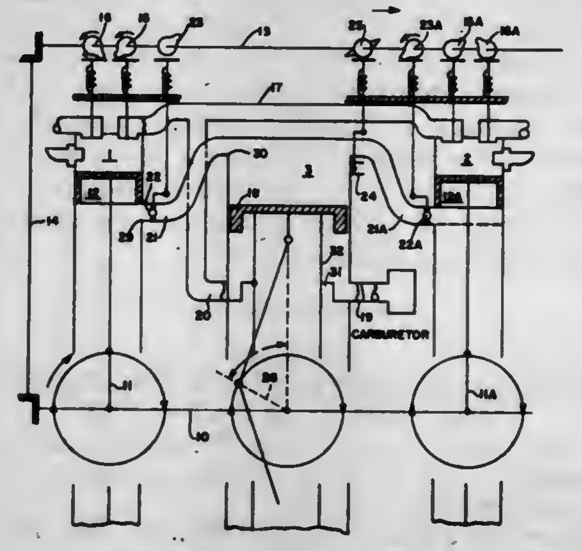


A setting arrangement for plane or leaf indicators used in conjunction with clocks to present a digital display of the time. The leaf or plane indicators are mounted on a drum which is driven from the clock mechanism, through a coupling with coupling pins. The coupling pins are mounted on gears of the coupling. One of the gears is mounted on a shaft to which a setting or adjustment knob is secured. By rotating the knob, it is possible to adjust the instant of contact between the coupling pins, and thereby the engagement of coupling. A scale surrounds the setting knob for realizing accurate settings of the indicator. Setting of the knob may be in the forward or reverse direction, and a blocking mechanism becomes operational when the reverse rotation of the knob exceeds a predetermined limit.

3,608,307
COMPOUND INTERNAL COMBUSTION ENGINE WITH RE-EXPANSION CYLINDER

Edwin J. Strom, R.R. 1, Wellington, British Columbia, Canada

Filed May 7, 1969, Ser. No. 822,554
Int. Cl. F01b *73/00*
U.S. Cl. 60—15 **6 Claims**

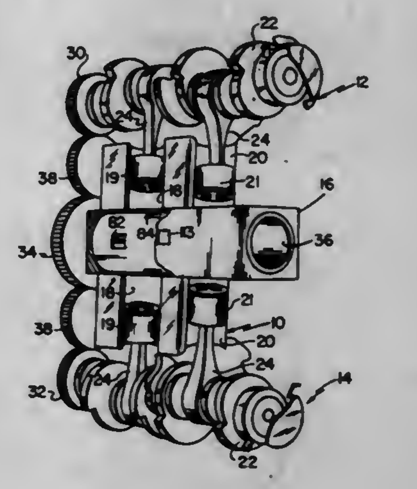


An internal combustion engine which uses partially expanded gases from the power stroke of the internal combustion cylinder to operate a double acting expansion cylinder to provide additional power to the crank shaft using the opposite portion of the expansion cylinder piston as a supercharger and providing timing means to control the flow of gases through communicating ports to obtain the maximum power, two internal combustion cylinders being used with one expansion cylinder to obtain maximum power.

3,608,308
EXTERNAL COMBUSTION CHAMBER ENGINE

Charles C. Cary and John P. Moussouris, Cambridge, Mass., assignors to Moca Systems, Inc., Chelmsford, Mass.

Filed Dec. 11, 1969, Ser. No. 884,076
Int. Cl. F02g *3/00*
U.S. Cl. 60—39.63 **24 Claims**

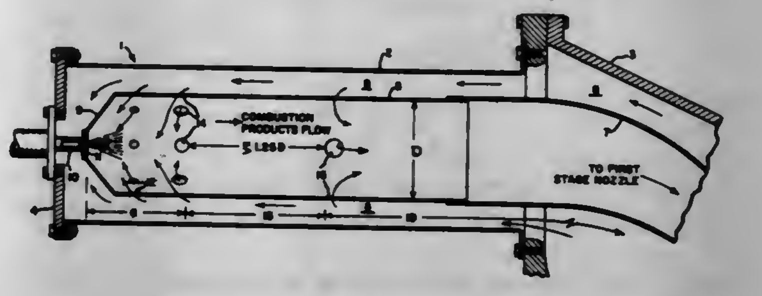


In a motor including two cylinders, a reciprocating piston within each cylinder and porting extending from each cylinder to a valving surface, a rotor having an outer valving surface, an interior chamber, and at least two ducts extending from the chamber and terminating in ports at the rotor valving surface. In one preferred aspect, the interior chamber is a combustion chamber and a fuel line extends from without the rotor to within the chamber. In another preferred aspect, the rotor includes three axially-spaced interior chambers and a pair of ducts extends from each chamber, each duct terminating at the rotor valving surface in a port and the ports of each pair being symmetrically positioned.

3,608,309
LOW SMOKE COMBUSTION SYSTEM

William E. Hill, Scotia, and Milton B. Hilt, Edward P. Hopkins, and Robert H. Johnson, Schenectady, N.Y., assignors to General Electric Company

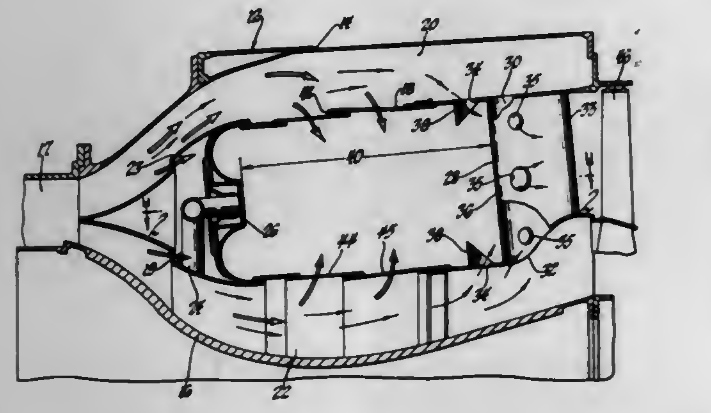
Filed May 21, 1970, Ser. No. 39,332
Int. Cl. F02c *3/24;* **F23r** *1/10*
U.S. Cl. 60—39.65 **4 Claims**



A combustion system for a gas turbine which produces a smokeless exhaust stack is constructed such that the combustion reaction zone will operate with a lean fuel-air mixture. The lean combustion zone is stabilized by a vortex generated around the centerline of the liner, creating gas flow patterns that cause strong back flow in the combustion reaction zone. This vortical flow also sweeps out the fuel-rich pockets, thus facilitating complete combustion. A thermal soaking region with no air holes in the liner is provided downstream of the last row of combustion air holes having an axial length of at least 1.25D wherein that soot which may be formed in the combustion process is consumed by a very fast chemical reaction. The temperature throughout the soaking region is maintained sufficiently high to induce such a reaction. Axially downstream of this region, tempering air is added to the combustion products such that they are cooled sufficiently in order to enter the first stage nozzle at the desired temperature.

3,608,310
TURBINE STATOR-COMBUSTOR STRUCTURE

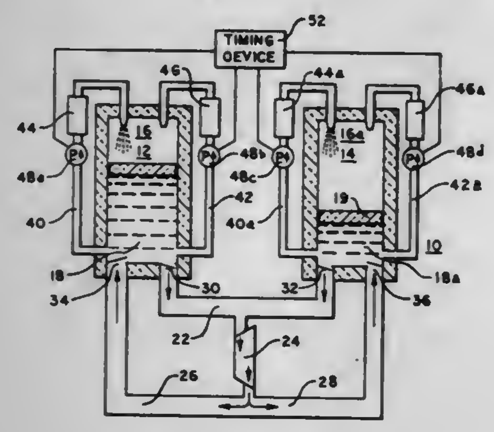
John M. Vaught, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 27, 1966, Ser. No. 560,658
Int. Cl. F02c *7/12*
U.S. Cl. 60—39.66 3 Claims



A turbine stator-combustor structure in which the turbine stator vanes are integrated into an annular combustor resulting in a much shorter combination. The stator vanes are convection and film cooled while impingement cooling of the leading edges is also provided.

3,608,311
ENGINE

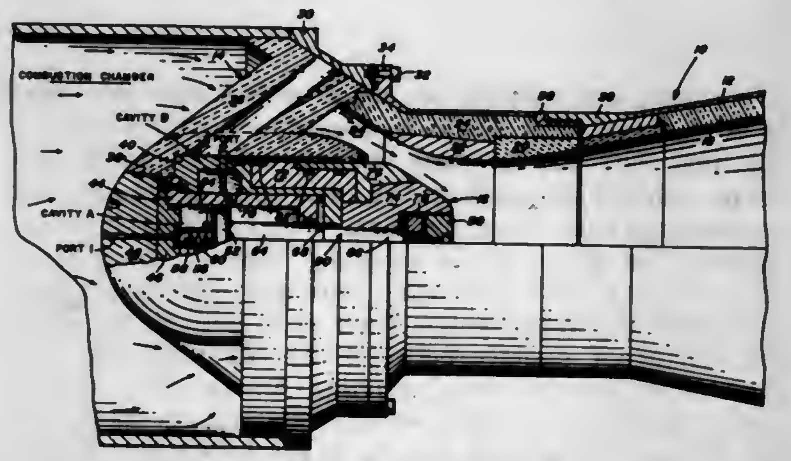
John F. Roesel, Jr., Rte. 2, Box 281–M, Upper Manatee River Road, Bradenton, Fla. 33505
Filed Apr. 17, 1970, Ser. No. 29,601
Int. Cl. F01d *15/08;* F04b *17/00*
U.S. Cl. 60—108 14 Claims



In a heat engine where heat is applied to a working fluid contained in a chamber to expand the fluid, removing the heat source while allowing the fluid to expand further, applying cooling while compressing the working fluid and removing the cooling while further compressing the fluid, said fluid during said expansion being applied to utilization means to perform work, the improvement therein comprising: having at least two chambers which contain a liquid and a gas section; hot and cold lines connecting the liquid sections to the gas sections, including pumping means, heating and cooling means in the respective lines; forward and return flow passages communicating between said liquid sections across one-way valves which allow flow into the forward flow passage and out of the return flow passage, and a work area in series between the forward and return passages; and, timer means coupled to said hot and cold lines to sequentially allow hot and cool liquid to flow from liquid to gas sections to cause gas expansion and compression resulting in a flow of liquid out of at least one chamber into said forward passage and/or out of said return passage into at least one chamber across said work area.

3,608,312
SELF-ACTUATED DUAL AREA ANNULAR NOZZLE

Louis E. Miltenberger, Ridgeley, W. Va., assignor to the United States of America as represented by the Secretary of the Navy
Filed Oct. 22, 1969, Ser. No. 868,657
Int. Cl. B63h *11/00*
U.S. Cl. 60—204 2 Claims



An annular nozzle having a movable pintle and check valve assembly which is self-actuated to change the throat area from a maximum to a minimum and provide dual thrust levels. During boost operation, chamber gases pressurize a first cavity in the front of the pintle and as the boost propellant burns, exhaust gas flows through the annular throat passage of the nozzle and the resulting expanding gas pressure on the rear or supersonic section of the pintle exceeds the pressure in the first cavity and holds the pintle in a retracted position to provide a maximum throat area for the boost operation. Subsequent to boost termination, the pressure on the rear section of the pintle decreases and is exceeded by the high pressure of the gases confined in the first cavity by means of the check valve. This pressure differential forces the pintle to an extended position and is thereby self-actuated to provide a minimum throat area throughout the sustain phase of rocket motor operation.

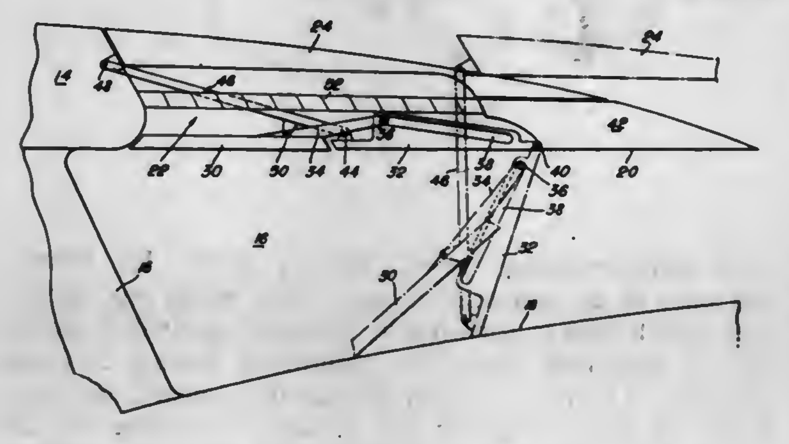
3,608,313
HYDRAZINE DECOMPOSITION PROCESS USING MOLYBDENUM CATALYST

Eugene D. Guth, Palos Verdes Peninsula, and Jack L. Blumenthal, Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.
No Drawing. Filed Dec. 16, 1966, Ser. No. 602,115
Int. Cl. C06d *5/04*
U.S. Cl. 60—219 6 Claims

This invention relates to a process for the spontaneous catalytic decomposition of rocket propellants containing hydrazine or mixtures of hydrazine and hydrazine nitrate. The catalyst used in this invention retains its activity after exposure to the propellant flame environment thereby permitting multiple starts of a rocket engine. The catalyst consists of molybdenum metal coated on a high surface area support body such as alumina. Iron, nickel, copper, iridium, or ruthenium may be included as co-catalyst metals.

3,608,314
THRUST REVERSER

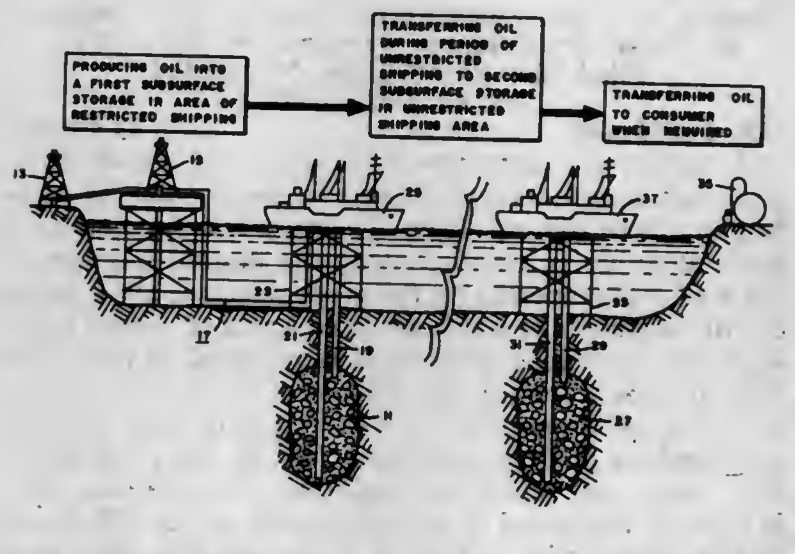
Rowan Herbert Colley, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Filed Aug. 25, 1969, Ser. No. 852,833
Claims priority, application Great Britain, Aug. 30, 1968, 41,554/68
Int. Cl. F02k *1/20, 3/06*
U.S. Cl. 60—226 11 Claims



A thrust reverser for a gas turbine engine comprises an annular duct adapted to have gases from the engine pass therethrough and defined by radially inner and radially outer walls, the radially outer wall having a circumferentially extending opening, a plurality of angularly spaced apart flaps movable between a first position in which they close the said opening and a second position in which they extend across and at least partially close the annular duct to the rear of the opening, each flap comprising front and rear flap portions, the front flap portion being folded in front of the rear flap portion in the annular duct when the flaps are in the second position.

3,608,315
METHOD OF PRODUCING OIL IN RESTRICTED SHIPPING AREAS

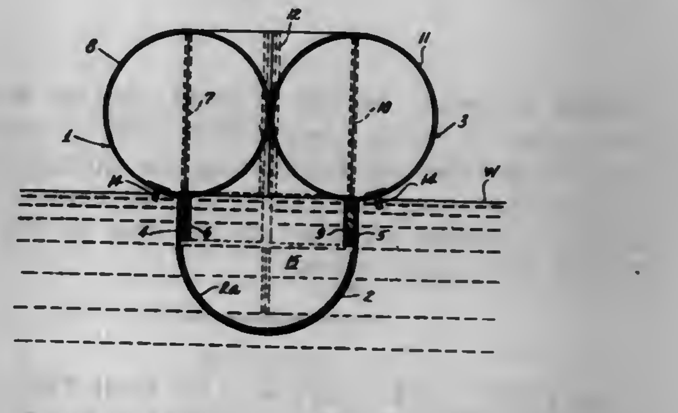
Robert Wilson, Dallas, Tex., assignor to Atlantic Richfield Company, Philadelphia, Pa.
Filed Nov. 24, 1967, Ser. No. 685,541
Int. Cl. B65g *5/00;* E21f *15/00*
U.S. Cl. 61—.5 22 Claims


PRODUCING OIL INTO A FIRST SUBSURFACE STORAGE IN AREA OF RESTRICTED SHIPPING
TRANSFERRING OIL DURING PERIOD OF UNRESTRICTED SHIPPING TO SECOND SUBSURFACE STORAGE IN UNRESTRICTED SHIPPING AREA
TRANSFERRING OIL TO CONSUMER WHEN REQUIRED

Two large subsurface storage reservoirs, preferably underwater, are used to assist in producing and transporting crude oil from restricted shipping areas. In one area where shipping is restricted during a major portion of the year, crude oil is produced into a first large subsurface storage facility. During a period when shipping is unrestricted, the oil in the first subsurface storage facility is transferred by water transporting means to a second large subsurface storage facility in an unrestricted shipping area. Thereafter, the oil in the second subsurface storage facility is transferred to the consumer whenever required by the consumer. The subsurface storage reservoirs may be in a chimney created by nuclear explosion.

3,608,316
BUOYANT BARRIER AND METHOD FOR INSTALLING THE SAME

James E. Manuel, Belle Terre, N.Y., assignor to Versatech Corporation, Nesconset, N.Y.
Filed Sept. 15, 1969, Ser. No. 857,792
Int. Cl. E02b *15/04*
U.S. Cl. 61—1F 20 Claims

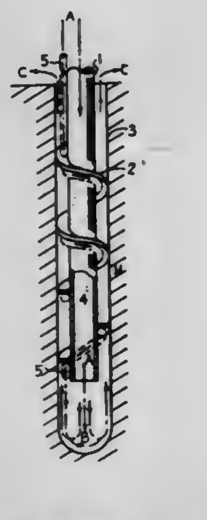


A buoyant barrier is provided, as well as a method for installing the same, which makes it possible to establish the barrier to confine an oil spill at a remote location in a relatively short time after the spill has occurred. The barrier structure can be of flexible sheet material and is provided in light weight packaged form, ready for delivery by air, the structure being such that very high rates of deployment onto the surface of a body of water are practical. In its packaged form, the barrier structure is completely free of weights. In deployed form, the weight of the structure is supported by air-inflated buoyancy chambers, and the structure is stabilized by a chamber or chambers filled with water from the body of water on which the structure is deployed.

3,608,317
FORMATION AND BACKFILL OF CAVITIES IN SOIL BY JETTING

Richard E. Landau, 717 Cornwell Ave., West Hempstead, N.Y. 11552
Continuation-in-part of application Ser. No. 616,753, Feb. 13, 1967. This application Aug. 6, 1969, Ser. No. 848,113
Int. Cl. E02b *11/00;* E02d *5/34*
U.S. Cl. 61—11 9 Claims

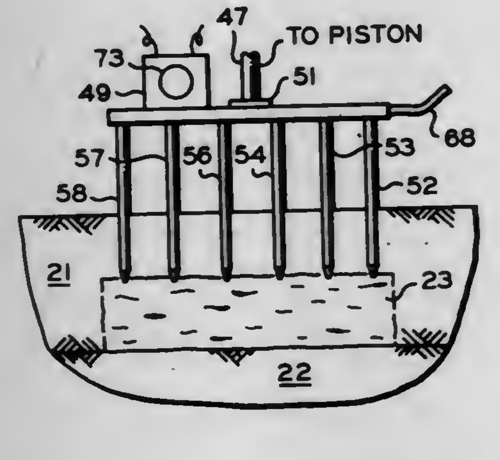
Fluid jetting techniques are applied to the formation and backfill of cavities formed in material, with the invention encompassing both the method and apparatus to accomplish the indicated results. The apparatus utilizes a vaned or fluted device that permits directing a sufficiently high velocity fluid stream to be directed into the material to develope the desired cavity, with the fluid and material removed passing as effluent through the path or paths provided by the vanes or flutes. By suitably sizing the vanes or flutes, the effluent velocity can be controlled relative the velocity of the fluid directed into the material. Where external vanes or flutes are utilized, the final shape of the formed cavity can be trimmed to conform to the



dimensions of the vane or flute extremities. Where liquid is used in forming the cavity, such liquid effluent as may result from the cavity forming operation may be at least partly purged from the cavity by introducing additional fluid to displace the fluid within the cavity to the extent desired. Granular backfill material may be deposited in the cavity by using compressible fluid to maintain the flow of particles by introducing the compressible fluid in a manner so as to minimize contact between particles, thereby avoiding clogging of the flow of the granular backfill entering the cavity.

3,608,318
METHOD AND APPARATUS FOR INJECTING RELATIVELY WATER-IMPERVIOUS DIKES IN RELATIVELY PERMEABLE EARTH FORMATIONS, AND FORMING EARTH-FILLED TANKS AND CANALS THEREWITH

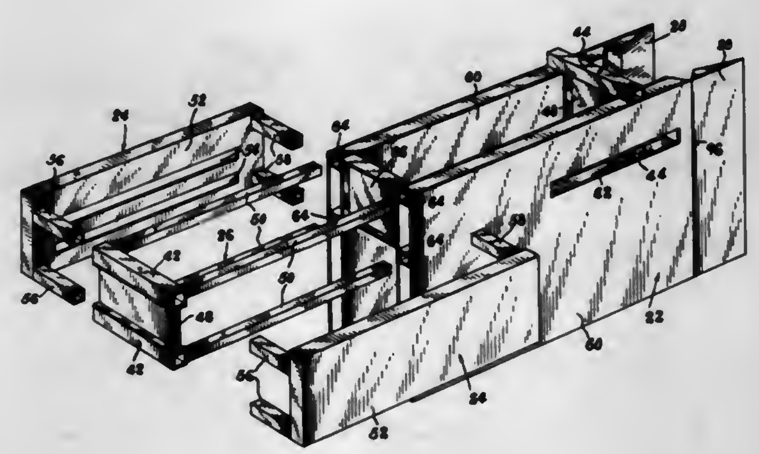
Dale F. Levy and Homer L. Draper, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed May 12, 1969, Ser. No. 823,546
Int. Cl. E02d *3/12*
U.S. Cl. 61—36 **7 Claims**



This invention is a process of and apparatus for forming walls, dikes or subterranean tanks or canals in loose unconsolidated soil by inserting a pipe or plurality of pipes into the loose soil and then injecting a liquid comprising molten asphalt or asphalt-water emulsion, or other liquid which will harden into a solid, through the pipe or pipes as they are withdrawn to form walls or dikes in the soil. These walls or dikes can be used to form subterranean tanks or canals. If desired, the liquid can be injected from the pipes through check valves permitting the liquid to emerge but preventing its return to the interior of the pipe. Two forms of apparatus are shown, one injecting through vertical or slanted moving pipes and the other injecting through a rotating semi-circular pipe.

3,608,319
SELF-PROPELLING, TRENCH SHORING DEVICE

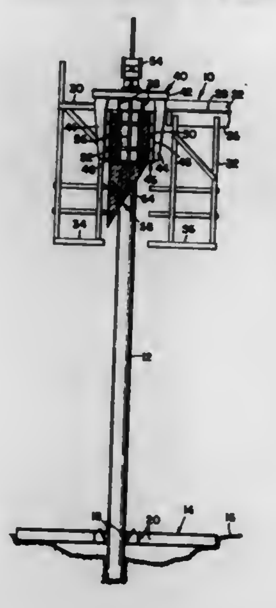
Matthew P. Quitadamo, Jr., 81 Grand Ave., Englewood, N.J. 07631
Filed Aug. 25, 1970, Ser. No. 66,829
Int. Cl. E21d *5/00*
U.S. Cl. 61—41A **6 Claims**



A self-propelling, trench shoring device for shoring the sides of an excavated trench while laying pipe therein and which moves forward to the next excavated section as the previous section is completed having a frame member, a pair of side panels movable toward and away from the frame member and means for moving the side panels between a first position when they are close to the frame member and a second position when they are spaced from the frame member and pressure is exerted on the sides of the excavated trench to support the same, a longitudinal member movable between a first position when its longitudinal dimension is substantially coincident with the frame and a second position when it is rearward of the frame, the longitudinal member being moved to the second position while the side panels are in the second position to move the frame to the next excavated section; the side panels being moved to the first position and the longitudinal member being moved forward so that it is in the first position preparatory to moving the side panels to the second position in the next excavated section, the frame being provided at its front with a pair of vertical steering vanes and a lateral steering vane for aiding in the positioning of the device as it moves from section to section.

3,608,320
METHOD AND APPARATUS FOR CONSTRUCTING A CONCRETE WALL STRUCTURE IN OPEN WATER

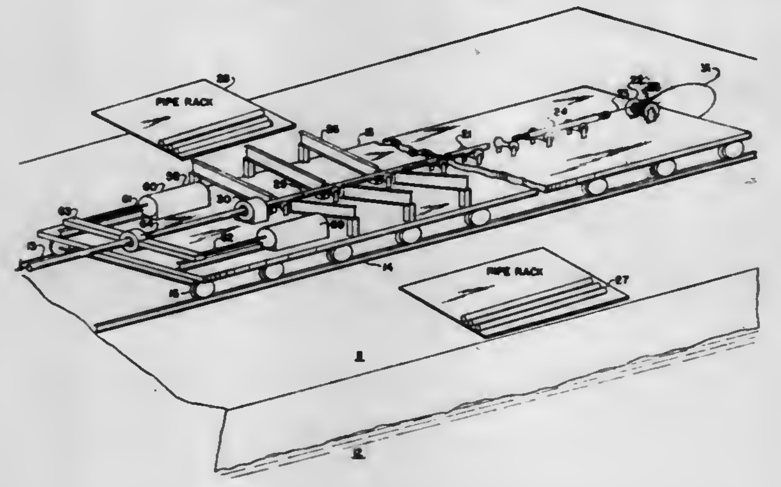
Andrew M. Filak, Palos Verdes Estates, Calif., assignor to Norse Development Corporation, Rye, N.Y.
Filed Mar. 13, 1970, Ser. No. 19,296
Int. Cl. E02d *5/40*
U.S. Cl. 61—46 **13 Claims**



A method and apparatus for constructing a wall structure such as a concrete caisson in open water by slipforming from the top down. To carry out the method a guide structure is installed along the desired location of the wall and supported by the guide structure are a series of yoke members to which are fixed a pair of spaced apart slipforms. Hydraulic lowering jacks mounted on top of the yoke members control vertical jack rods, the lower ends of which are connected to a base retaining shoe. Pouring and finishing platforms are supported by the guide structure above and below the slipforms. The retaining shoe is initially connected to the lower edge of the slip forms and in constructing a caisson, is located just above the highwater line. The first pour fills the retaining shoe and when it has solidified, the jacks lower it evenly below the slipforms. As pouring and slipforming continues the shoe soon enters the water and the weight on the jacks is reduced by the water displaced. When the retaining shoe reaches the bottom, water may be applied through passages formed in the shoe to provide jet outlets along its inner and outer surfaces. The water jets aid in helping the shoe to penetrate into the ocean or lake floor to provide a firm footing for the wall or caisson.

3,608,321
APPARATUS AND METHOD FOR LAYING PIPELINE UNDERWATER

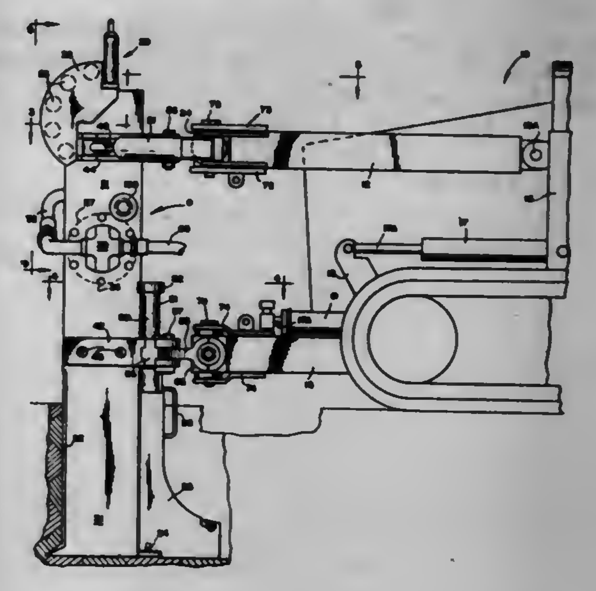
Thomas W. G. Richardson, Jr., and Dean P. Hemphill, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Filed Nov. 25, 1968, Ser. No. 779,320
Int. Cl. B63b *35/04*
U.S. Cl. 61—72.3 **13 Claims**



Apparatus and method for laying a pipeline underwater from a floatable platform which is adapted to assemble and lay pipeline therefrom. The platform includes at least one trolley mounted for substantially horizontal movement along the platform. The pipeline is selectively held in a steady state relative to the carriage when the floatable platform is standing. A constant restraining force is applied on the trolley to apply a constant tension on the pipeline during vessel surge and to take up relative movement between the trolley and the floatable platform. A constant tension is maintained on the pipeline when the pipeline is released relative to the trolley as the movable platform is moved to effect paying out of the pipeline.

3,608,322
FRONT MOUNTED CABLE LAYING ASSEMBLY

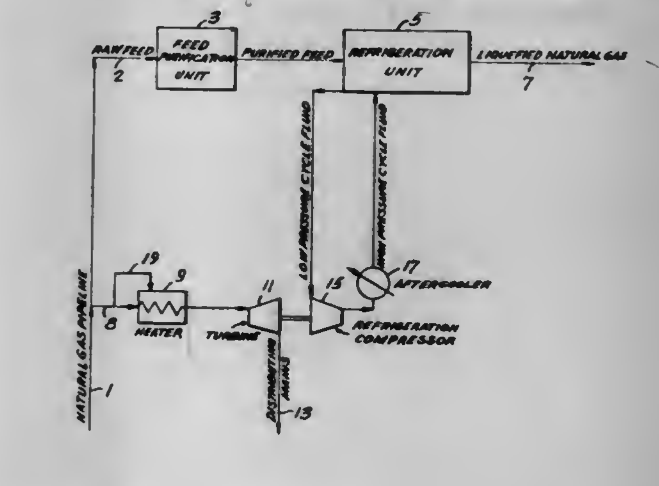
Frank R. Kinnan and Kenneth G. Bright, Camas Valley, Oreg., assignors to Henkels and McCoy, Inc., Blue Bell, Pa.
Filed July 25, 1969, Ser. No. 846,653
Int. Cl. F16l *1/00;* **E02f** *5/18;* **A01b** *11/00*
U.S. Cl. 61—72.6 **5 Claims**



A cable laying assembly is disclosed mounted on the forward end of a prime mover for advancement through the ground to deposit a continuous cable or conduit in a kerf cut by a blade element of the assembly. The blade is detachably carried by parallelogram type linkage. Shock absorbing components isolate the prime mover from vibratory motion of the plow. Steering cylinders move the blade about an upright axis while lifting cylinders vertically position the plow assembly. A vibratory unit is mounted in a laterally offset manner from the blade. Trailing rearwardly of the blade is a cable shoe structure of a design permitting easy removal of a continuous cable from the cable shoe and ultimately from the entire cable plow assembly.

3,608,323
NATURAL GAS LIQUEFACTION PROCESS

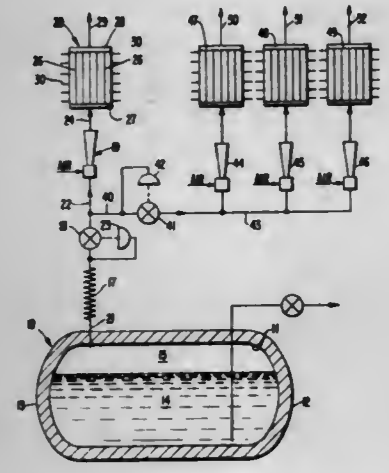
Claude Salama, Montreal, Quebec, Canada, assignor to Canadian Liquid Air Ltd.-Air Liquide Canada LTEE, Montreal, Quebec, Canada
Filed Nov. 20, 1967, Ser. No. 684,369
Claims priority, application Canada, Jan. 31, 1967, 981,719
Int. Cl. F25j *1/00*
U.S. Cl. 62—9 **6 Claims**



The invention relates to a process and apparatus for liquefying natural gas. The gas stream from a main distribution line is divided into two streams. One stream is heated, then expanded through an expansion turbine to be distributed at a lower pressure. The power from the expansion turbine is used to operate a refrigeration system which liquefies the other gas stream.

3,608,324
METHOD AND APPARATUS FOR STORING NORMALLY GASEOUS HAZARDOUS MATERIAL IN LIQUID PHASE

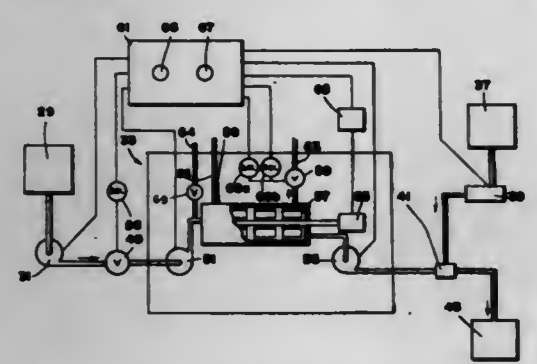
Alan H. Singleton, Emmaus, Pa., and Edward G. Biskis, Omaha, Nebr., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed June 4, 1969, Ser. No. 830,397
Int. Cl. F17c *13/00*
U.S. Cl. 62—48 **11 Claims**



Method and apparatus for safe venting of vapors of normally gaseous hazardous material stored in liquid phase in an insulated container under low pressure and temperature. Hazardous vapor is withdrawn from the container at times when the internal container pressure exceeds a predetermined value and fed to a zone containing a catalyst to oxidize the vapor to a harmless gas which is vented to the atmosphere. In the event the container insulation fails causing rapid vaporization of stored liquid, a large quantity of hazardous vapor is withdrawn when the internal container pressure exceeds a higher predetermined value and fed to a catalytic zone of greater capacity which may include a plurality of catalytic units. The invention is disclosed in the environment of liquefied carbon monoxide and hazardous vapors thereof being oxidized catalytically to harmless carbon dioxide.

3,608,325
METHOD AND APPARATUS FOR STOPPING ICE CREAM FREEZERS

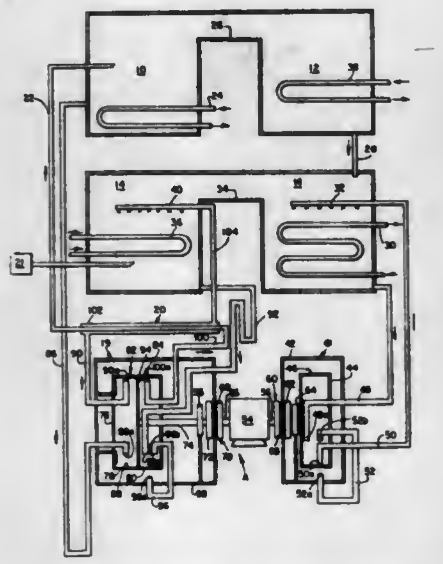
Walter L. Hock, Skokie, Ill., assignor to Kraftco Corporation, New York, N.Y.
Filed Sept. 8, 1969, Ser. No. 855,985
Int. Cl. A23g *5/00*
U.S. Cl. 62—70 **6 Claims**



A method and apparatus are provided to simultaneously shut down various pieces of equipment in the freezing section of an ice cream manufacturing line and to sequentially shut down other pieces of equipment after a predetermined time has elapsed.

3,608,326
ABSORPTION REFRIGERATION SYSTEM

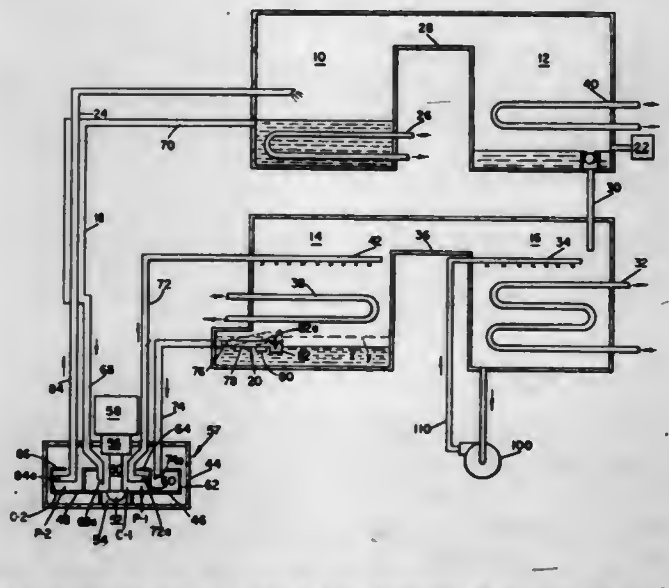
Louis H. Leonard, Jr., De Witt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,775
Int. Cl. F25b *15/06*
U.S. Cl. 62—101 **5 Claims**



An absorption refrigeration system employing in combination a flash-type solution heat exchanger and a sensible-type solution heat exchanger, the flash-type heat exchanger incorporating therein a plurality of scoop pumps providing relatively high velocity forced flow of both strong and weak absorbent solution to and from the generator, to provide good solution heat transfer efficiencies within the system. The strong and weak solutions are pumped in counterflow relation through a sensible-type heat exchanger communicating with the flash-type heat exchanger. The sensible-type heat exchanger may be located interiorly or exteriorly of the flash-type heat exchanger.

3,608,327
ABSORPTION REFRIGERATION SYSTEM

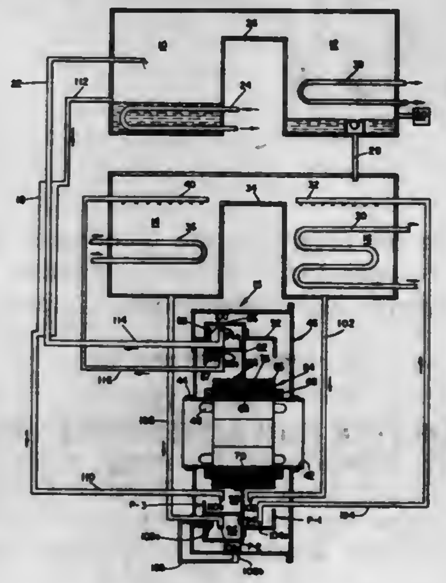
Louis H. Leonard, Jr., De Witt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,774
Int. Cl. F25b *15/06*
U.S. Cl. 62—141 **5 Claims**



An absorption refrigeration system wherein there is provided fluid transfer apparatus preferably taking the form of a stationary housing mounting therein a plurality of pump means desirably of the scoop type for circulating absorbent solution through the system. The pump means communicates with the absorber and has in association therewith fluid flow control means located in the absorber and responsive to changes in the liquid level and density in the absorber to vary the volume of solution flowing to the pump, thereby controlling the volume of solution transferred to the generator for reconcentration under varying machine conditions.

3,608,328
ABSORPTION REFRIGERATION SYSTEM

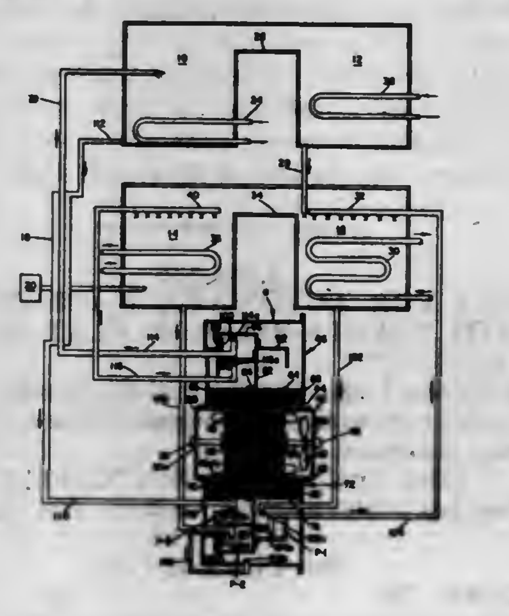
Vance A. Osborne, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,767
Int. Cl. F25b *15/06;* **H02k** *7/00*
U.S. Cl. 62—476 **1 Claim**



An absorption refrigeration system wherein there is provided fluid transfer apparatus having a stationary hermetic nonferromagnetic housing encasing rotor means to which is connected for rotation in unison therewith pump means for circulating absorbent solution through the system, the rotor means being supported in magnetically inductive relation with a stator located exteriorly of the hermetic housing. The laminations of the rotor means have embedded therein a plurality of circumferentially spaced carbon conductor rods cast or pressed in integral relation with carbon shorting rings at the opposite ends thereof which also function as bearing means for the rotor.

3,608,329
ABSORPTION REFRIGERATION SYSTEM

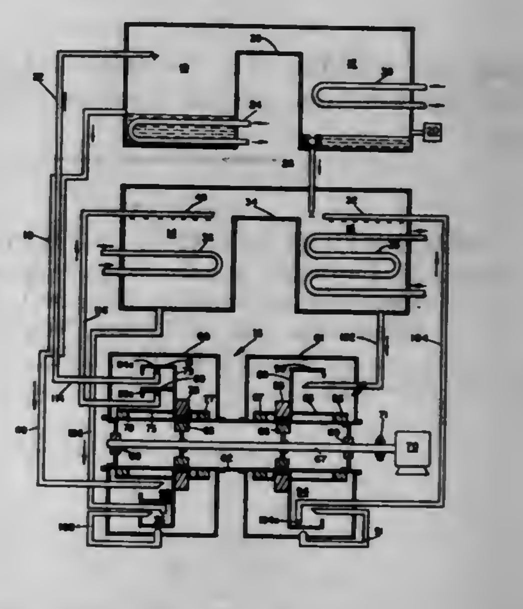
William W. Bell, Jr., Marcellus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,768
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **6 Claims**



An absorption refrigeration system wherein there is provided fluid transfer apparatus comprising a stationary hermetic housing having a cylindrical nonferromagnetic wall encasing annular rotor means within the housing about which a rotatable scoop pump pan is connected for rotation therewith for circulating absorbent solution through the system. The rotor is supported in magnetically inductive relation through the nonferromagnetic housing wall with an annular stator located exteriorly of the hermetic housing. A second rotor is provided within the cylindrical stator for driving a fan for cooling the stator. The scoop pump includes sections for pumping strong solution to the absorber, weak solution to the generator, and refrigerant to the evaporator.

3,608,330
ABSORPTION REFRIGERATION SYSTEM

Louis H. Leonard, Jr., De Witt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,770
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **3 Claims**

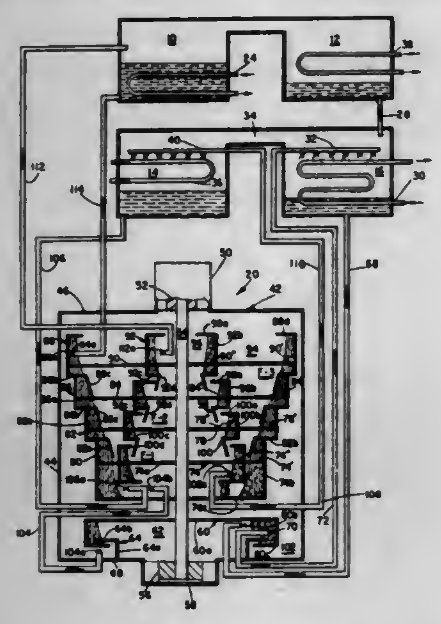


An absorption refrigeration system having a generator, a condenser, an evaporator, an absorber, and a fluid transfer apparatus for pumping liquids in the system. The fluid transfer apparatus includes a plurality of spaced housings sealingly secured to the exterior surface of a cylindrical nonferromagnetic wall. One or more scoop pump pans are rotatably mounted within each of the housings for rotation about the nonferromagnetic wall. An annular magnetic coupling member is secured to the rotor member within each housing. A second annular magnetic coupling member is mounted exteriorly of each housing in coupling relation with the annular magnet therein and is attached to an external electric motor to drive the scoop pump pans within the housings.

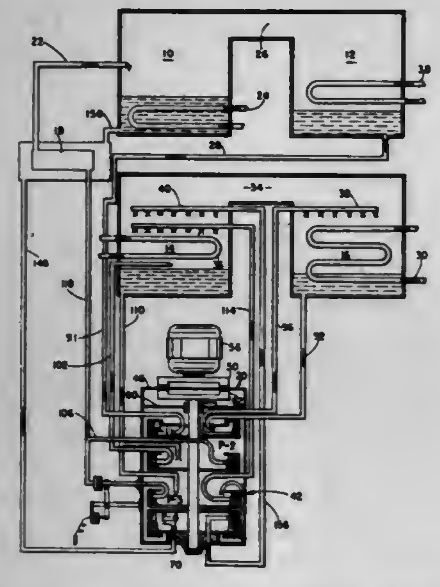
3,608,331
ABSORPTION REFRIGERATION SYSTEM

Louis H. Leonard, Jr., De Witt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,776
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **7 Claims**

An absorption refrigeration system wherein there is provided in communication with the absorber and generator, fluid conditioning apparatus in the form of a hermetic housing supporting therein a plurality of rotatable flash chambers, one of which receives relatively cool weak absorbent solution from the absorber, and another of the chambers having directed thereto relatively hot strong absorbent solution from the generator, the two solutions being centrifugally impelled outwardly so as to transfer the solutions through the apparatus by means of scoop pumps, the strong solution being successively flash cooled and the resulting flash vapors absorbed by the weak solution, whereby the weak solution is heated, diluted, and transferred to the generator and strong solution is concentrated, cooled, and transferred to the absorber.



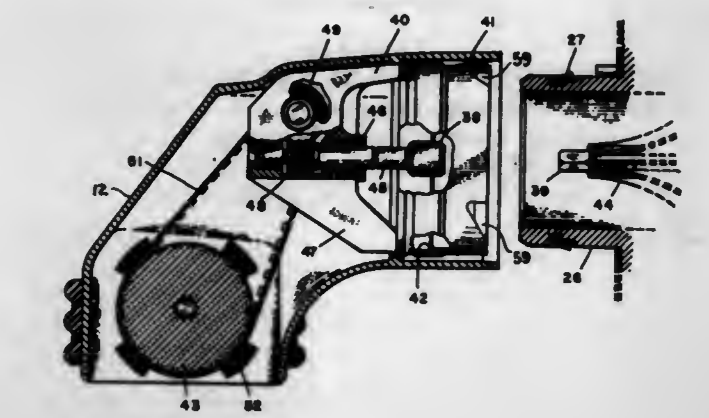
3,608,332
ABSORPTION REFRIGERATION SYSTEM
Louis H. Leonard, Jr., De Witt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,777
Int. Cl. F25b *15/06*
U.S. Cl. 62—476 **5 Claims**



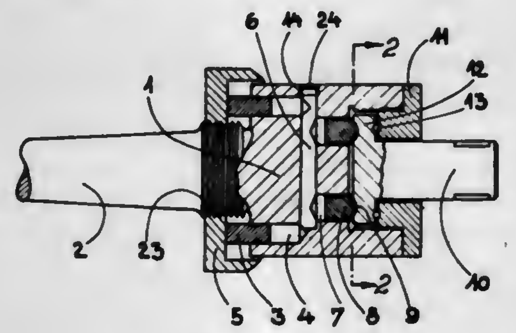
An absorption refrigeration system wherein there is provided in communication with the evaporator, absorber, generator and condenser fluid handling apparatus in the form of a hermetic housing mounting therein a rotatively driven shaft member journaled at opposite ends in bearing means and supporting a plurality of scoop pumps for effecting, among other functions, circulation of refrigerant and absorbent solution through the system, purging, and machine capacity control.

3,608,333
VACUUM CLEANER AND POWER UNIT
Wilbur-Webb Selley, Maitland, and Richard H. Schaffer, Orlando, Fla., assignors to Bison Manufacturing Company, Inc., Orlando, Fla.
Filed June 20, 1968, Ser. No. 738,595
Int. Cl. F16d *1/00*
U.S. Cl. 64—4 **2 Claims**

A power unit usable as the principal ingredient of a vacuum cleaner, or as a means for driving certain accessories in rotation, employing an electric motor as the source of rotation. Our power unit possesses a number of novel features, including an improved brush driving means, a resilient ring for receiving and securing to the unit, components to be operated or driven in rotation, a power take-off arrangement, and various other improvements.



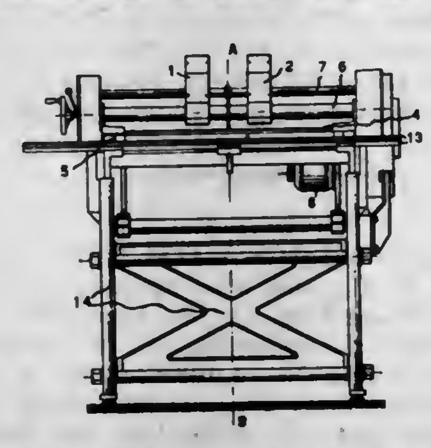
3,608,334
DEVICE FOR LIMITING TORQUE
Karl Zinner, Nuremberg, Germany, assignor to Richard Glimpel, Lauf an der Pegnitz, Germany
Filed July 8, 1969, Ser. No. 839,901
Claims priority, application Germany, July 9, 1968, P 17 52 741.2
Int. Cl. F16d *7/00, 43/20*
U.S. Cl. 64—29 **11 Claims**



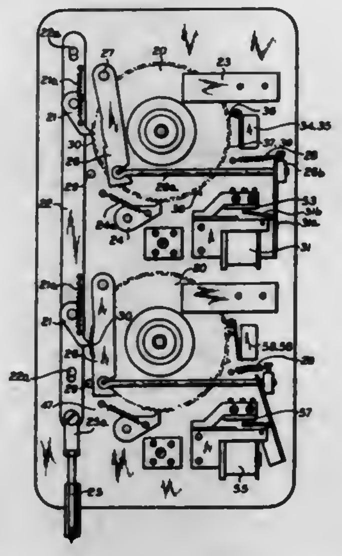
Thread-cutting devices, machine tools and torque wrenches require a torque limiting device to avoid the danger of overload; this invention relates to a fluid operated clutch mechanism, wherein the fluid has a compressible component such as air in a mixture with a hydraulic fluid. At least one operating piston is moved by the fluid, by movement of a torque limit setting device, either radially or axially to engage a secondary member so that torque is transmitted up to the desired limit at which point the resilience of the fluid permits the piston to disengage from the secondary member so that the clutch slips.

3,608,335
DEVICE FOR AUTOMATIC NARROWING ON BOTH NEEDLE-BEDS OF FLAT KNITTING MACHINES
Berardi Ercole, Lugo, and Versetti Giancarlo, Caravaggio, Italy, assignors to Societa responsabilita limitata Fimma, Faenza, Ravenna, Italy
Filed Apr. 10, 1969, Ser. No. 814,944
Claims priority, application Italy, Apr. 12, 1968, 31,051/68
Int. Cl. D04b *7/10*
U.S. Cl. 66—70 **4 Claims**

A device for automatic narrowing on both needle-beds of flat knitting machines which consists in reducing in number of the knitting needles by selectively operating the forward needles. The needles slide up and down in their grooves by pushing their butts in the appropriate direction. During the operation, only the transfer needles are on the forward needle-bed and only normal needles are on the rear needle-bed. This device is particularly adapted to the manufacture of double-jersey knitted fabric.



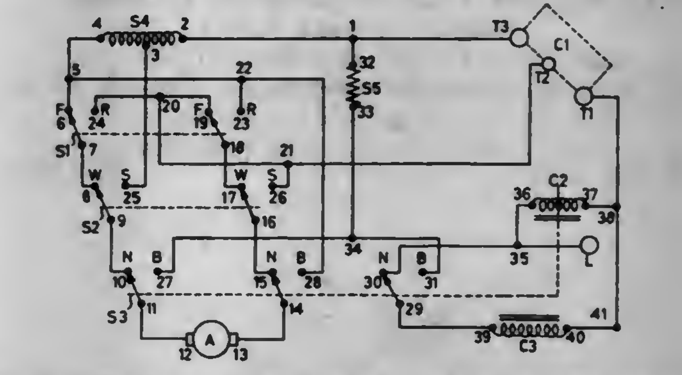
3,608,336
TIMING CONTROL DEVICES
Raymond Henry Phillips, Birstall, Leicester, England, assignor to The Bentley Engineering Company Limited, Leicester, England
Continuation-in-part of abandoned application Ser. No. 432,987, Feb. 16, 1965. This application Apr. 10, 1969, Ser. No. 815,141
Int. Cl. D04b *15/00*
U.S. Cl. 66—155 **5 Claims**



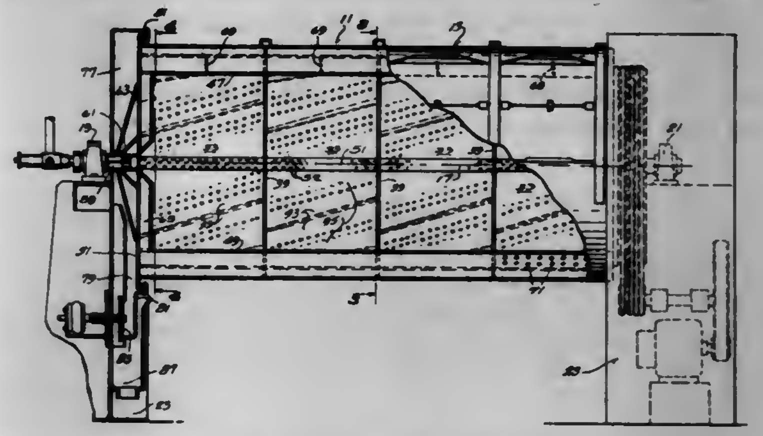
A timing control device suitable for arresting over continuously adjustable periods, the racking of a control chain of a knitting machine wherein one or more rack wheels each with a setting dial and associated racking means and bluffing means is adapted to control by cam projections and micro switches the bluffing and freeing of racking means for the control chain or like control member. Each of said rack wheels is adjustable as to its starting setting over a continuous range indicated on the associated dial and its bluffing means is released electromagnetically from a main control.

3,608,337
LOCKING DEVICE
Robert Neville Redfearn and Harry Dawson Watkin, Huyton, Liverpool, England, assignors to Fisher-Bendix Limited, Kirkby, near Liverpool, Lancashire, England
Filed Oct. 28, 1969, Ser. No. 871,892
Claims priority, application Great Britain, Oct. 31, 1968, 51.696/68, 51,697/68; Feb. 26, 1969, 10,363/69
Int. Cl. D06f *37/42*
U.S. Cl. 68—12R **9 Claims**

An electrically driven apparatus housed in a cabinet or casing with a door has an electrically operated door latch which is held locked by the voltage developed by the motor during braking of the apparatus. A regenerative braking resistor is provided, in laundry equipment this may be the water heating element. Various switching arrangements are described.

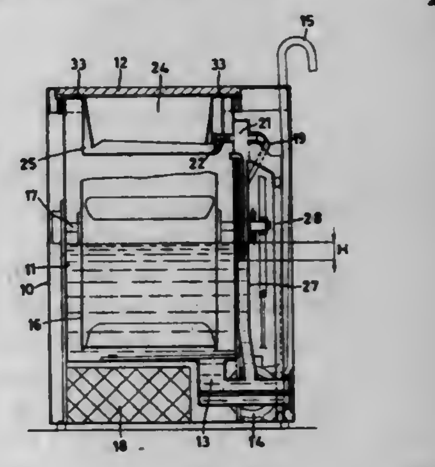


3,608,338
WASHING MACHINE
William C. Lutzen, Wauwatosa, Wis., assignor to Ludell Mfg. Co., Milwaukee, Wis.
Filed Feb. 26, 1970, Ser. No. 14,452
Int. Cl. D06f *37/06, 37/08*
U.S. Cl. 68—145 **6 Claims**



Disclosed herein is a washing machine comprising an outer shell together with an inner liner and skew members located between the liner and the outer shell whereby to effect both axial and circumferential circulation of fluids in a laundry-free area and elsewhere within the shell in response to shell rotation.

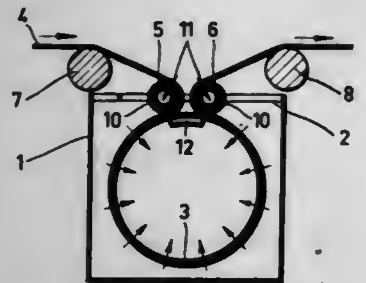
3,608,339
ANTIFOAM SEAL FOR WASHING MACHINES
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy
Filed July 11, 1969, Ser. No. 841,095
Claims priority, application Italy, Oct. 2, 1968, 21,979/68
Int. Cl. D06f *39/08*
U.S. Cl. 68—208 **2 Claims**



A washing machine in which any foam tending to overflow from the washing tub is conveyed through conduit means such as to pass the foam through a water body in which it dissolves.

3,608,340
APPARATUS FOR THE WET-TREATMENT OF LIQUID-PERMEABLE MATERIALS

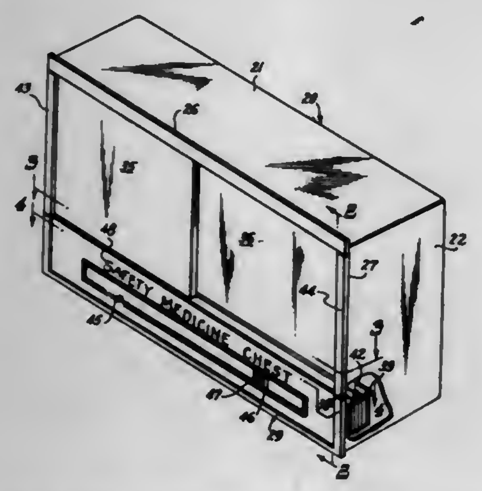
Heinz Fleissner, Frankfurt am Main, Germany, assignor to Vepa AG
Filed Dec. 1, 1967, Ser. No. 687,320
Claims priority, application Germany, Dec. 3, 1966, V 32,473
Int. Cl. B05c *3/132, 3/178, 8/04*
U.S. Cl. 68—19.1 **16 Claims**



The present disclosure relates an apparatus for the wet-treatment, preferably for washing and impregnating liquid-permeable materials which can be stressed in the lengthwise direction. More particularly, the present disclosure is directed to an apparatus for washing and impregnating textile materials wherein during the treatment process, advantageously after the material has been wet-treated, said material is vacuum extracted to draw off particles which have floated onto the textile material during said treatment process.

3,608,341
SAFETY MEDICINE CHEST

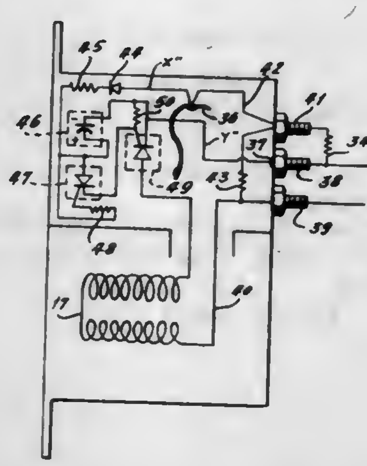
Charles S. Galtz, Pittsburgh, Pa., assignor to Namir Industries, Inc., Pittsburgh, Pa.
Filed July 6, 1970, Ser. No. 52,649
Int. Cl. F05b *65/08, 37/00*
U.S. Cl. 70—95 **12 Claims**



A safety medicine chest, which can be made entirely from plastic, to prevent unauthorized entry by children, including a cabinet having overlapping sliding doors with a latch member centrally located to prevent opening of either door until a lock apparatus is operated. The lock apparatus includes a plurality of elongated tumbler members extending across the chest in a chamber at the lower front portion of the chest, the tumblers being designed to permit the latch member to be pushed downwardly and out of conflict with the motion of the doors only when they have been placed in predetermined relative locations. The tumblers are actuated by a slide member which is operable from the front of the chest by a slide member which protrudes through a lower front panel on the chest and is linearly movable across the front of the chest. The slide protrudes through an elongated slot above which words are imprinted or embossed. The permutation for properly locating the tumblers is arrived at by spelling a word, moving the slide sequentially to various letters in the legend adjacent the slot. The final position locates the slide member itself adjacent the latch carrying member without moving a tumbler, the slide constituting the final tumbler. Portions of the device which move relative to each other are ratcheted to prevent picking the lock. By using a word for the combination, opening by one who cannot spell, or who does not know the key word, is prevented.

3,608,342
ELECTRIC DOOR LOCK WITH TIME DELAY

Jonathon H. Katz, Clayton, Mo., assignor to C. Hager & Sons Hinge Mfg. Co., St. Louis, Mo.
Continuation-in-part of application Ser. No. 499,674, Oct. 21, 1965, now Patent No. 3,408,838, and a continuation of application Ser. No. 641,309, May 25, 1967. This application Oct. 27, 1969, Ser. No. 869,944
Int. Cl. E05b *39/04, 49/02*
U.S. Cl. 70—271 **26 Claims**



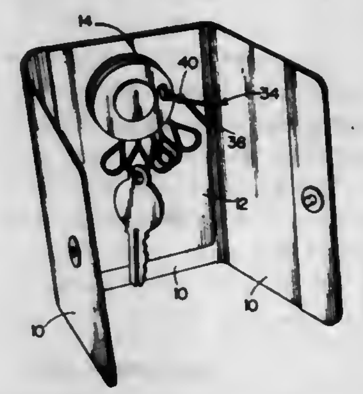
An electric lock device for opening an electrically releasable latch means upon insertion of a key into a key slot in the lock cylinder. A time delay including a silicon controlled rectifier and a capacitor-resistance series is used to prevent picking of the lock. The cylinder arrangement comprises electrically conducting pins having insulative bands such that when no key is in the lock, a circuit is completed through the pins and there is not sufficient current through the time delay circuit to activate the latch. When the key is inserted, the insulative bands interrupt the lock circuit so that current flows through the SCR, capacitor-resistance circuit of the time delay, thus when the SCR is triggered, sufficient current passes through the latch to open the latch.

A modification provides a variable time delay and utilizes resistors connected in parallel combinations by different location of the pins. Different keys disconnect different pins and thus cause different time delays to occur before the charge on the capacitor triggers the SCR and opens the latch. This time delay depends on the number of resistors connected into the circuit by the insertion of a particular key. A second SCR is used in the circuit to form a pulsating output. This circuit is termed a relaxation oscillator. A circuit is also used to identify different keys by use of an identification circuit including Wheatstone bridge circuits, having resistors proportional in value as those used in the lock cylinder assembly, to control a neon readout device.

3,608,343
KEY RETAINER

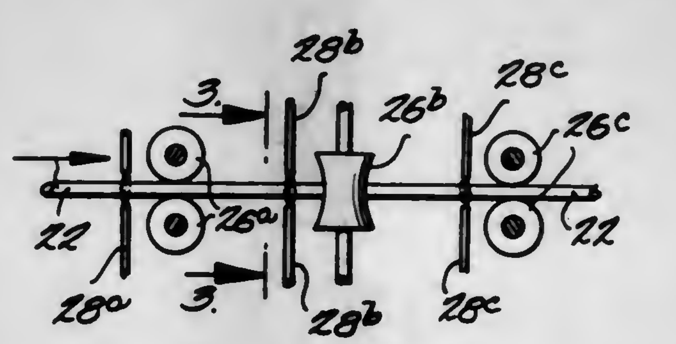
Yoel Y. Kimel, 249 Upland Road, Newtonville, Mass. 02160
Filed June 22, 1970, Ser. No. 48,049
Int. Cl. A47g *29/10*
U.S. Cl. 70—456R **9 Claims**

A key retainer having a circular hub with a peripheral sidewall. The sidewall includes one or more slots which receive and retain one or more key hooks. The sidewall and slots are arranged so that the key hooks may be positioned at any location about the periphery of the hub in carousel fashion. The hooks may be attached and detached by simple manipulation of the hooks through a specially formed slot in the hub. In one embodiment of the device, the hooks are slideable along and within an annular slot in the sidewall. In another embodiment of the device, the sidewall itself is rotatable about the hub.



3,608,344
PROCESS FOR HOT WORKING OF COPPER

Paul R. Schwan, South Bend, Ind., assignor to Van Straaten Chemical Company, Chicago, Ill.
Filed May 14, 1969, Ser. No. 824,550
Int. Cl. B21b *9/00, 45/02*
U.S. Cl. 72—38 **5 Claims**



This improvement in the art of hot working copper and copper alloys in the presence of an oxygen-containing environment to minimize or eliminate the problems associated with oxide formation on the surface thereof at elevated temperatures comprises contacting the stock substantially continuously during the hot working thereof with an aqueous solution containing ammonium chloride.

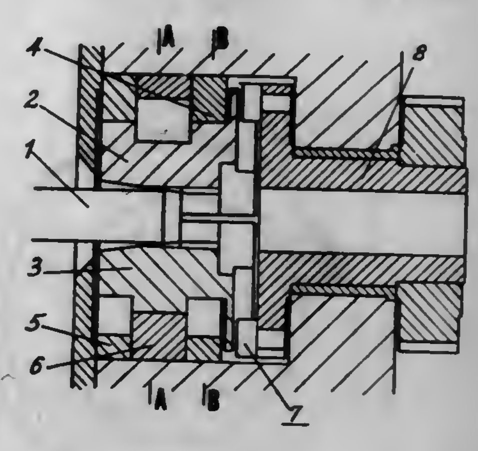
3,608,345
PROCESS FOR IMPACT EXTRUSION OF ALUMINUM ALLOYS

Henri Bouchereau, Clermont-Ferrand, and Marc Anagnostidis, Chamalieres, France, assignors to Societe Metallurgique de Gerzat, Paris, France
No Drawing. Filed Nov. 1, 1967, Ser. No. 679,627
Claims priority, application France, Nov. 15, 1966, 83,570
Int. Cl. B21c *23/20, 23/24, 23/30, 23/32, 23/18*
U.S. Cl. 72—47 **6 Claims**

A process for the inverse wire drawing by shock of aluminum alloys without the adherence of particles of metal on the stamped member by precoating the surfaces of the bloom coming in contact with the stamped member with zinc whereby the operation can be carried out substantially continuously without the formations of striations, cracks or gouges in the surfaces contacted by the stamp.

3,608,346
METHOD OF PRODUCING METAL OBJECTS HAVING ROTATIONAL SMOOTH OR TOOTHED SURFACES, AND DEVICE FOR PUTTING THE METHOD INTO EFFECT

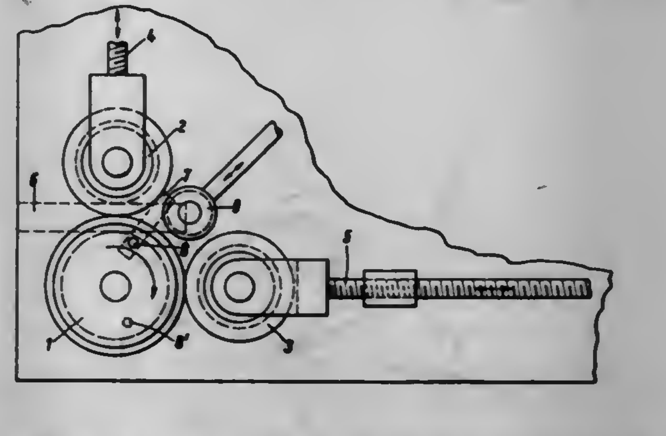
Zdzislaw Marciniak, Warsaw, Poland, assignor to Politechnika Warszawska, Warsaw, Poland
Filed Feb. 4, 1969, Ser. No. 796,451
Claims priority, application Poland, Feb. 6, 1968, P 118,921
Int. Cl. B21j *5/12, 7/16*
U.S. Cl. 72—76 **4 Claims**



A method and apparatus for producing metal objects having a rotational surface of a specific configuration by means of exerting pressure on the object in at least two radial directions by tools having shaping surfaces which are rolled in the circumferential direction along the object to be treated. The objects are plastically shaped in a cyclical manner with a plurality of successively repeated cycles to produce the individual segment of rotary surface or segment of inner toothing whose theoretical rolling surface, together with its prolongation beyond the tool, forms a cylindrical surface which is internally tangential to the cylindrical rolling surface of the tooth being worked. For each successive phase of each cycle, the object being worked is axially shifted by a feed quantity within the time when the object is out of contact with the tools.

3,608,347
PROCESS AND APPARATUS FOR MANUFACTURING RINGS

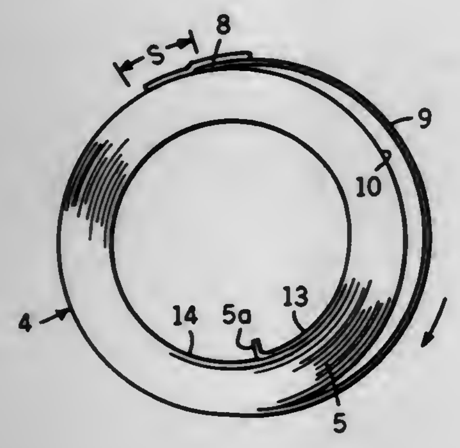
Werner Kemminer, Ahle, near Bunde, Germany
Filed Sept. 17, 1968, Ser. No. 760,190
Int. Cl. B21f *3/04*
U.S. Cl. 72—142 **5 Claims**



A process and apparatus for producing continuously a spiral, cylindrical package by winding a flat iron band. The diameter of the formed cylindrical package corresponds substantially to the exterior diameter of the formed spiral rings. The flat iron band is wound around a circular support while being guided by circular rotatable means upwardly around the circular support. These circular rotatable guiding means bear against the flat iron band in the area where the band begins its run around the circular support in a tangential direction and in an area on the circular support removed approximately 90° therefrom.

3,608,348
WOUND MAGNETIC CORE AND METHOD OF FORMING SAME

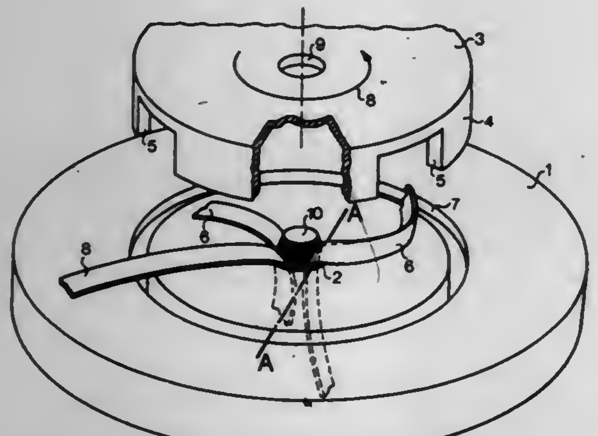
John B. McKee, Glendale, Mo., assignor to Wagner Electric Corporation, Newark, N.Y.
Filed July 7, 1969, Ser. No. 839,300
Int. Cl. B21c *47/02*
U.S. Cl. 72—146 **12 Claims**



A wound core having a plurality of turns of magnetic strip material with a predetermined amount of looseness between the superposed turns, and at least one space between adjacent superposed turns having a degree of looseness predeterminately greater than that between the other turns. The superposed turns of said wound core are rotated in one direction to obtain the predetermined looseness and then rotated in the other direction to redistribute a portion of said looseness into a desired section of the core.

3,608,349
METHOD AND APPARATUS FOR WINDING SPIRAL SPRINGS

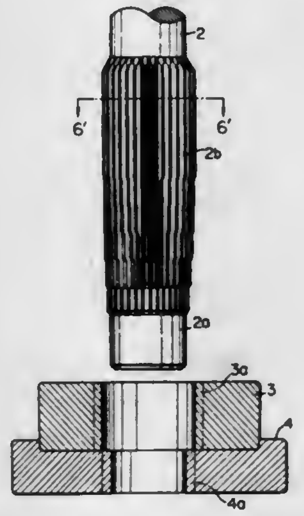
Rudolf Greiner, Allmengasse 41A, CH–4900, Langenthal, Switzerland, and Walter Schweizer and Lothar Kiesewetter, Berlin, Germany; said Schweizer and Kiesewetter assignors to said Greiner
Filed Dec. 18, 1969, Ser. No. 886,203
Claims priority, application Switzerland, Jan. 27, 1969, 1,171/69
Int. Cl. B21d *11/06, 11/10;* **B21f** *3/08*
U.S. Cl. 72—146 **16 Claims**



Method and apparatus for winding a spiral spring assembly from a plurality of lengths of spring metal bands, characterized that the band lengths are supplied through an opening contained in a base plate, each of the bands being twisted or bent about an inclined axis toward an edgewise-supported position normal to the winding face of the base plate. The leading portion of the band is then guided through an axial slit in a winding drum arranged concentrically about the supply opening, so that upon rotation of the drum relative to the base plate, the bands are wound upon themselves to form a convolute spring assembly. The bands are symmetrically discharged from the supply opening either axially or in a uniformly skewed manner. In the latter case, depending on the characteristics of the metal from which the spring bands are formed, the drum is rotated either in the direction of skew or in a direction opposite to the direction of skew. Means are provided for locking the trailing portions of the bands in the supply opening during the winding operation.

3,608,350
APPARATUS AND METHOD FOR PRODUCING BLANKS FOR COMMUTATORS FOR MINIATURE ELECTRIC DEVICES

Terumoto Yamaguchi, 10f 55 Ikeura, Ikeura-cho, Ango-shi, Aichi-ken, Japan
Continuation-in-part of application Ser. No. 575,778, Aug. 29, 1966. This application Mar. 4, 1969, Ser. No. 804,104
Int. Cl. H01r *43/02*
U.S. Cl. 72—358 **3 Claims**

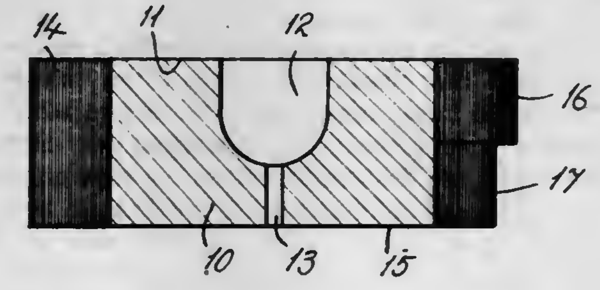


The present method and apparatus is for producing commutator blanks for miniature electric devices wherein a tube blank made of materials having good electrical conductivity is fed into a die having a number of grooves corresponding to the number of bridge pieces of the commutator and pressed by means of a punch provided with a number of teeth similar to that of the commutator bars or segments whose adjoining bars or segments are connected together by bridge pieces.

3,608,351
REINFORCED MOULD AND METHOD AND APPARATUS FOR REINFORCING SAID MOULD

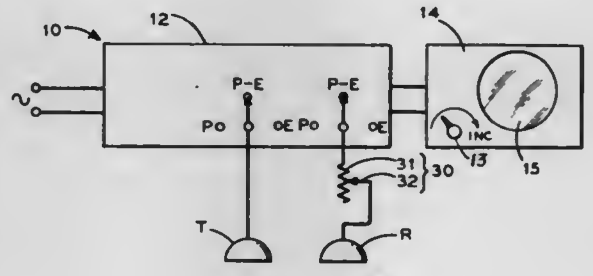
Per-Olof Strandell, Bockstigen 3, Nasbypark, Sweden
Filed Feb. 5, 1969, Ser. No. 796,852
Claims priority, application Sweden, Feb. 7, 1968, 1,619/68
Int. Cl. B21c *3/00*
U.S. Cl. 72—467 **7 Claims**

There is provided a mould which has been reinforced by means of a novel method and apparatus. The mould reinforcement comprises at least one winding of thin strip-like material of only some few tenths of a millimetre thick, and in which the whole of the bottom face of each successive turn of a winding of strip material is in abutment with the upper face of the preceding turn of said winding. In the case of moulds subjected to loads which vary along the length of the mould core, the novel method and apparatus permit differing degrees of reinforcement pre-tensioning corresponding to said load variations along the mould core.



3,608,352
ULTRASONIC TRANSDUCERS

Glenn A. Walton, Wadsworth, and Gilbert R. Forrer, Barberton, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Dec. 4, 1968, Ser. No. 780,955
Int. Cl. G01n *29/04*
U.S. Cl. 73—1R **2 Claims**

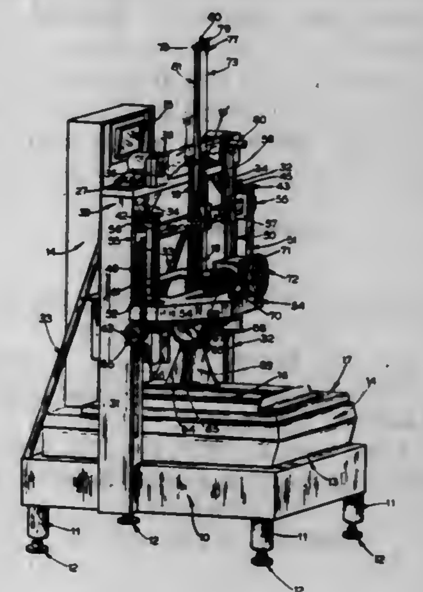


A method of calibrating an ultrasonic transducer to inspect a workpiece for flaws. The transducer to be calibrated is mounted on a metal block having a reference such as a cavity from which ultrasonic waves may be reflected. The transducer is energized to transmit a wave into the block and a reference signal obtained due to the wave being reflected from the obstacle. A second transducer is then mounted on the block and a signal obtained due to a wave being received by the second transducer. Both transducers are then mounted on the workpiece to be inspected and a signal is again obtained due to the wave being received by the second transducer. A comparison is made between the signals due to waves received by the second transducer to adjust the reference signal for inspecting the workpiece.

3,608,353
TESTING AND CHECKING DEVICES FOR FORCE MEASURING INSTRUMENTS

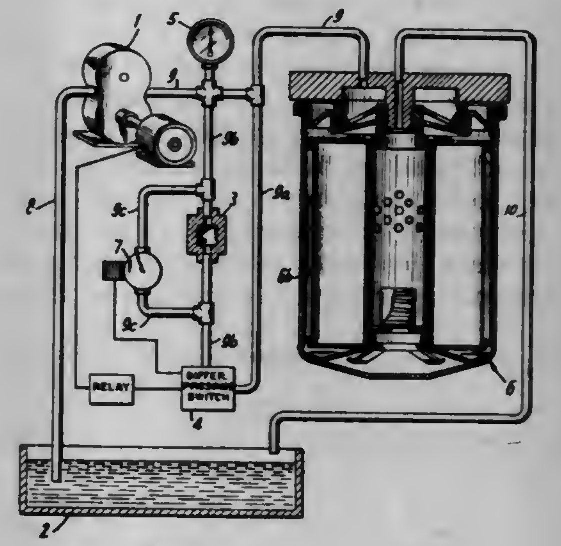
Kenneth R. Larson, Des Plaines, Ill., assignor to Snap-On Tools Corporation, Kenosha, Wis.
Filed Nov. 27, 1967, Ser. No. 685,883
Int. Cl. G01l *25/00*
U.S. Cl. 73—1C **4 Claims**

Calibrating apparatus for torque wrenches and other force measuring instruments. A framework supports a means for mounting a torque wrench alternately for either clockwise and counterclockwise application of force. A force is transmitted to the torque wrench handle through a gear reduction unit and a sprocket and chain transmission elements. The torque transmitted to the wrench is transmitted through additional linkage to a platform scale for comparison with the torque wrench reading. In addition a steel cable is provided between the force applying and measuring units which can be used for a variety of testing purposes.



3,608,354
APPARATUS AND METHOD FOR DETERMINING A STRUCTURAL FAILURE

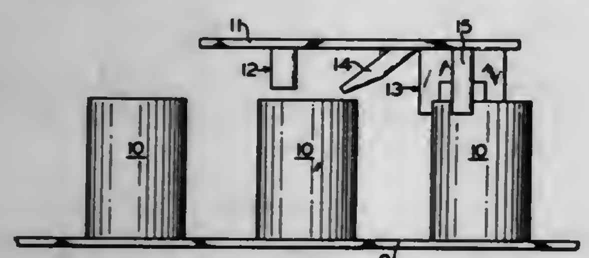
Albert J. Taylor, Plainfield, and Vernon M. Tull, deceased, late of Edison, N.J., by Gladys R. Tull, executrix, assignors to Purolator, Inc., Rahway, N.J.
Filed Jan. 7, 1970, Ser. No. 1,210
Int. Cl. G01m *3/26*
U.S. Cl. 73—37 **10 Claims**



Apparatus and method for determining a structural failure in an object wherein a change in fluid pressure in a pre-determined direction is sensed to indicate the failure. In a preferred embodiment, failure in the filter element of a fluid filter is determined by sensing a drop in the pressure of fluid flowed through the filter. A support is provided for a filter element and contaminated fluid is pumped from a reservoir to the filter element by means of a pump through a supply conduit. A drain conduit returns fluid from the filter to the reservoir. The pressure of the fluid before entering the filter is indicated on a suitable pressure gauge. A drop in pressure in the supply conduit is sensed by a differential pressure sensing device, having opposite sides connected to the supply conduit near the filter element support. One side of the sensing device is connected directly by a conduit to the supply conduit, while the other side is connected to the supply conduit by means of a second conduit which has unidirectional flow means interposed in the conduit. The latter means permits the free flow of fluid in a direction towards the sensing device, but resists flow of fluid in the opposite direction. Preferably, a solenoid actuated by-pass valve is provided in parallel with the aforesaid means. The sensing device is preferably a differential pressure switch which electrically controls the pump motor and solenoid valve when a pressure differential is sensed by the switch.

3,608,355
FLUIDIC MEANS FOR SENSING THE POSITION OF AN ARTICLE

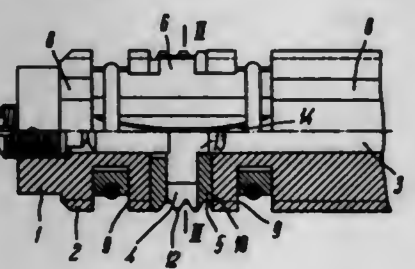
Christopher Roland Booth Harrison, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England
Filed Jan. 2, 1970, Ser. No. 207
Claims priority, application Great Britain, Jan. 22, 1969, 3,501/69
Int. Cl. G01m *19/00*
U.S. Cl. 73—37 **4 Claims**



Fluidic detector apparatus for sensing the presence or absence of an object or article, such as a lid on a container, by conveying a succession of containers along a prescribed course in which air jet detector devices having air jet streams emitting therefrom are so positioned as to have the jet streams from one of the detector devices sense the presence or absence of a lid on each of the containers and to produce respective characteristic impulses responsively to such presence or absence, and to have the jet streams of a second detector device sense the movement of each container passing therethrough to also produce an impulse responsively thereto, the apparatus being further characterized by a fluidic control portion acting responsively to the impulses from the two detector devices for correlating such impulses to produce a single control impulse which either effects continuing movement of the conveyor or a shut-down thereof, as the situation demands.

3,608,356
DEVICE FOR CHECKING THE PITCH DIAMETER OF A SCREW THREAD

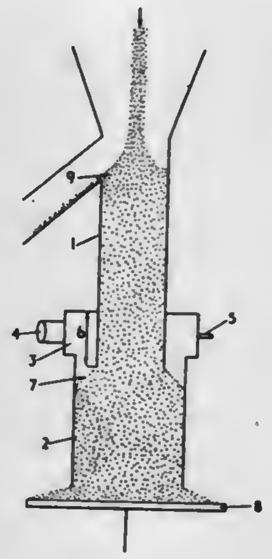
Max Solomonovich Rozovsky, Novobasmannaya ulitsa 14, kv. 32; Valeria Grigorievna Lapteva, Fryazevskaya ulitsa 32, korpus 3, kv. 9; and Oleg Prokofievich Fedosov, Novorgozhskaya ulitsa 5, kv. 93, all of Moscow, U.S.S.R.
Filed Mar. 24, 1970, Ser. No. 22,323
Int. Cl. G01b *13/12, 13/00*
U.S. Cl. 73—37.9 **1 Claim**



A device for checking the simple pitch effective diameter of internal and external threads measures a parameter of a fluid medium in the clearance between a thread being measured and a master thread. Included in the device is a holder with a master thread which matches and mates with the thread being measured. The holder has passages for the fluid medium and nozzles are arranged diametrically opposite each other on the flanks of a number of adjacent master thread ridges so that they end short of ridge crests. The nozzles are used to feed the fluid medium under pressure into the clearance between the master thread and the thread being measured. Shutters capable of moving radially with respect to the nozzles are contained in the device and are designed to close the clearance between the master thread and crests of the thread being measured. Fluid is discharged from the clearance between the thread being measured and the master thread and a parameter of the fluid which depends upon the amount of clearance between the flanks of the thread being measured and those of the master thread is measured.

3,608,357
MEASURING THE PERMEABILITY OF GRANULAR MATERIAL

Henry Gilbert Meunier, Liege, Belgium, assignor to Centre National de Recherches Metallurgiques, Brussels, Belgium
Filed Mar. 23, 1970, Ser. No. 21,818
Claims priority, application Belgium, Mar. 27, 1969, 730,607
Int. Cl. G01n *15/08*
U.S. Cl. 73—38 **8 Claims**

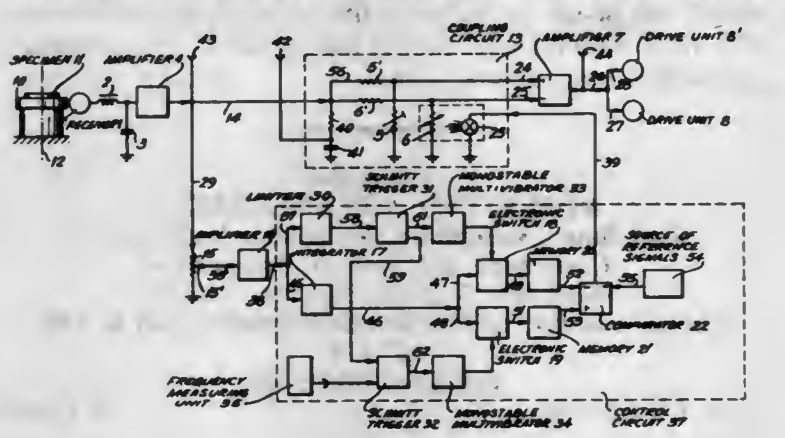


In measuring permeability of a granular material a first substantially vertical conduit discharges into a second substantially vertical conduit of greater cross-section. An overflow outlet maintains a constant head in the first conduit and the rate of flow of granular material from the second conduit is controlled. The first and second conduits are connected fluid-tightly by a chamber into which a fluid, such as air, is blown.

3,608,358
TESTING APPARATUS FOR DETERMINING THE MASS INERTIA MOMENT OF A SPECIMEN

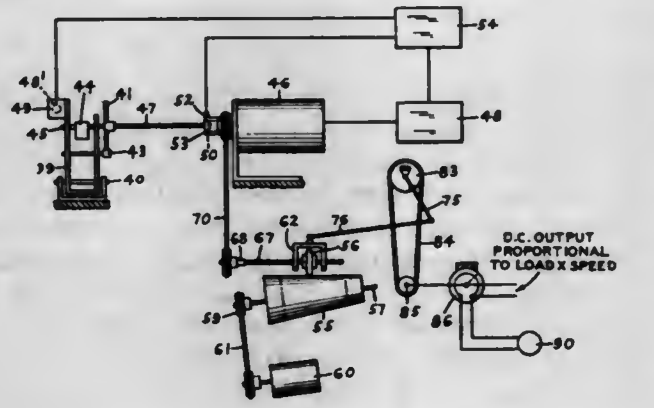
Paul Holdinghausen, Bickenbach, Karl Homilius, Nieder-Ramstadt, and Peter-Uwe Schlechter, Darmstadt, Germany, assignors to Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany
Filed May 6, 1969, Ser. No. 822,156
Claims priority, application Germany, Aug. 10, 1968, P 17 98 041.5
Int. Cl. G01m *1/12;* **G01n** *3/22*
U.S. Cl. 73—65 **7 Claims**

A receiver in operative proximity with a support rotatably supporting a specimen produces an output signal proportional to the angular velocity of the support and specimen. A signal proportional to the output signal is supplied to a drive for the support to apply to the support a torque corresponding to the angular velocity of the support and specimen. A control circuit connected between the receiver and the drive maintains the angle of oscillation of the support and specimen.



3,608,359
MASS MEASURING SYSTEM

John L. Christmann, Passaic, N.J., assignor to Merrick Scale Mfg. Company, Passaic, N.J.
Filed Nov. 12, 1969, Ser. No. 875,621
Int. Cl. G01g *11/04;* **G01h** *13/00*
U.S. Cl. 73—67.2 **11 Claims**

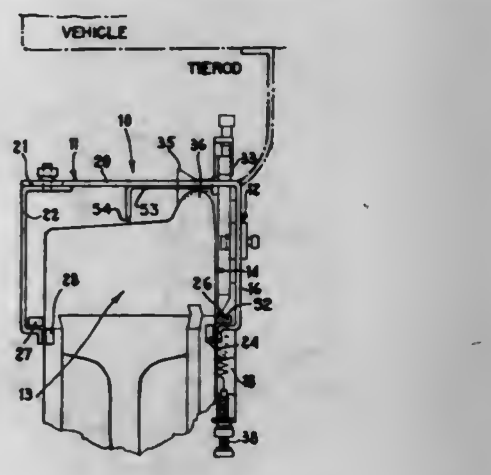


A continuously weighing conveyor is described in which a ninety degree phase angle lag is created between the resonant natural vibrating frequency of a conveyed material weight per foot called hereafter load and the frequency of a motor driven eccentric inducing the vibration and deviation of said phase angle from ninety degrees is detected by a phase sensitive network which automatically adjusts the motor speed for resonance. The speed of the motor is converted into a nonuniform linear motion and said nonuniform linear motion is transformed into rotary motion proportional to the load which actuates a potentiometer. The product of the load and the load conveyor speed representing the weight per time unit conveyed by the weighing conveyor is obtained by extending the voltage of a tachometer generator driven by the load conveyor across the potentiometer winding.

3,608,360
METHOD AND MEANS FOR CHECKING WHEEL SET TIRES IN ROLLING STOCK

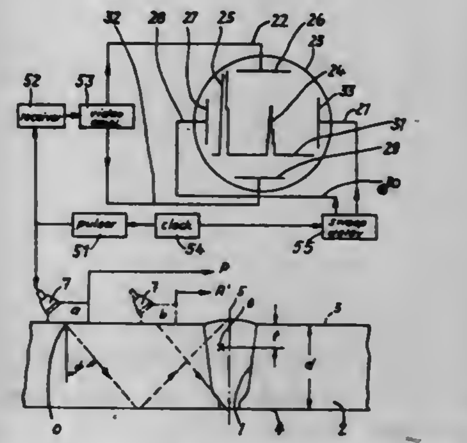
Giuseppe Pettinato, 3 Via Campo d'Arrigo, Florence, Italy
Filed Dec. 3, 1968, Ser. No. 780,825
Claims priority, application Italy, Dec. 7, 1967, 23,653/67
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 **9 Claims**

A method and means for checking wheel tires mounted on railway vehicles by means of supersonic waves, said method and means consisting of slidingly connecting a checking probe with the wheel tire and scanning the tire body during a slow rotational movement of the wheel, while the probe is kept stationary. Said scanning operation can be performed by slowly advancing the railway vehicle while the probe is secured thereto or to a small carriage following said railway vehicle. Further, the probe comprises a transducer element which position can be suitably adjusted in respect of the checked tire surface.



3,608,361
ULTRASONIC PULSE ECHO FLAW DETECTOR EMPLOYING A SPATIAL SCALE ARRANGEMENT ON THE SCREEN OF AN OSCILLOSCOPE

Joseph Krautkramer and Herbert Krautkramer, both of Luxemburger Str. 449, Cologne, Germany
Filed Oct. 11, 1968, Ser. No. 766,796
Claims priority, application Germany, Oct. 31, 1967, K 59,326
Int. Cl. G01n *24/04*
U.S. Cl. 73—67.7 **3 Claims**

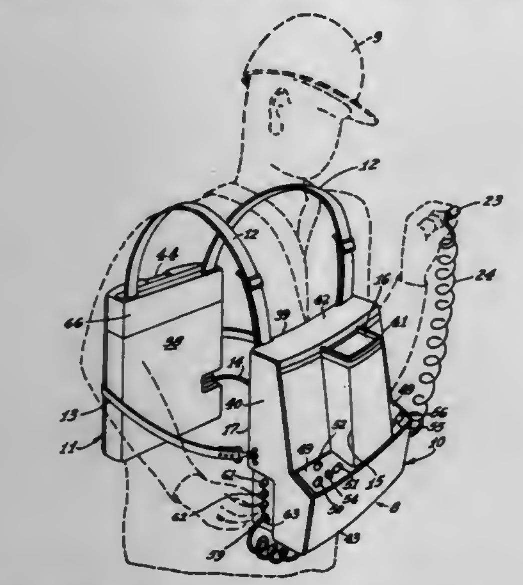


An ultrasonic method of determining flaw size and location is disclosed. In the method a graph arrangement is located in front of the screen of an oscilloscope of a pulse echo ultrasonic testing apparatus. By use of the graph the location and equivalent flaw size of a defective spot in a welding seam or other specimen is determined.

3,608,362
PORTABLE ELECTRONIC EQUIPMENT

George J. Chakar, Danbury, Conn., and Frederick L. Eberle, Hammond, and Bernard Ostrofsky, Gary, Ind.; said Chakar assignor to Automation Industries, Inc., Century City, Los Angeles, Calif.; said Eberle and Ostrofsky assignors to Standard Oil Company, Chicago, Ill.
Filed Apr. 3, 1969, Ser. No. 813,185
Int. Cl. G01n *24/00*
U.S. Cl. 73—67.8 **5 Claims**

A portable cathode ray oscilloscope type of equipment having a back pack containing a power supply and a chest pack containing operating controls and the display screen conveniently presented to the bearer for viewing and operation. The two packs are connected by shoulder straps



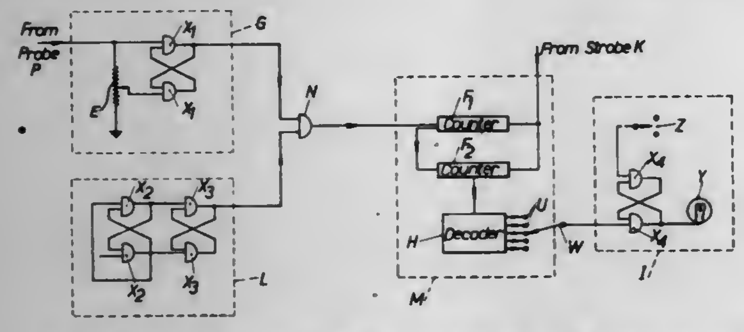
for carrying. The oscilloscope is mounted with the screen facing downward, and is viewed through a light shield and double reflecting means.

3,608,363

METHOD OF DETECTING THE PRESENCE OF FLAWS IN TUBES BY USING ULTRASONIC PULSES, AND APPARATUS FOR USE IN CARRYING OUT THE METHOD

Keith R. Whittington, Great Shelford, England, assignor to T. I. (Group Services) Limited, Birmingham, England

Filed Jan. 31, 1969, Ser. No. 795,580
Claims priority, application Great Britain, Feb. 2, 1968, 5,437/68
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **20 Claims**

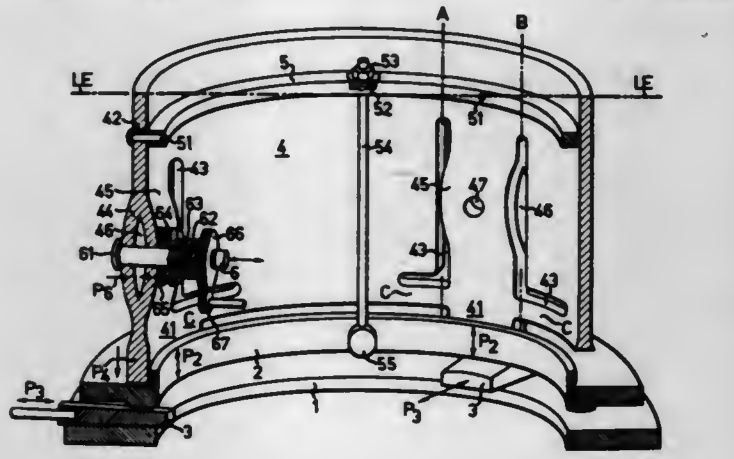


A method of detecting the presence of flaws in tubes by using ultrasonic pulses, and apparatus for carrying out the method. The ultrasonic pulses are emitted by an ultrasonic probe which also picks up the reflected ultrasonic pulses resulting from each transmitted pulse, the reflected ultrasonic pulses creating electrical signals in the probe. The invention makes use of the fact that at any reasonable amplitude level, the total width of the electrical pulse signals corresponding to the ultrasonic pulses reflected from the surfaces of a tube, remains substantially constant irrespective of the thickness of the tube or the contours of its surface. The presence or absence of a flaw at a test point in the tube may therefore be determined by measuring the total width of all electrical pulse signals occurring within a time interval which is sufficient to include the electrical pulse signals caused by the first reflected ultrasonic pulses of a single initial ultrasonic pulse from the inner and outer surfaces of the tube. If this width is greater than the said constant total width of electrical pulse signals due to surface reflections alone, then it is presumed that a flaw is present in the tube at that test point on the tube. The width of each electrical pulse signal is measured digitally by using it to gate a clock waveform and to count the resulting clock pulses. Clock pulses only pass to the counting unit when the amplitude of an electrical pulse signal is above a predetermined amplitude or trigger level which can be set so that only the larger flaws are detected. The time interval over which clock pulses are counted is controlled by a strobe signal.

3,608,364

ADJUSTING ARRANGEMENT

Karl Baur, Neuenburg, Switzerland, assignor to Contraves AG, Zurich, Switzerland
Filed July 3, 1968, Ser. No. 742,372
Claims priority, application Switzerland, July 6, 1967, 9,574/67
Int. Cl. G05d *3/00*
U.S. Cl. 73—88 **8 Claims**

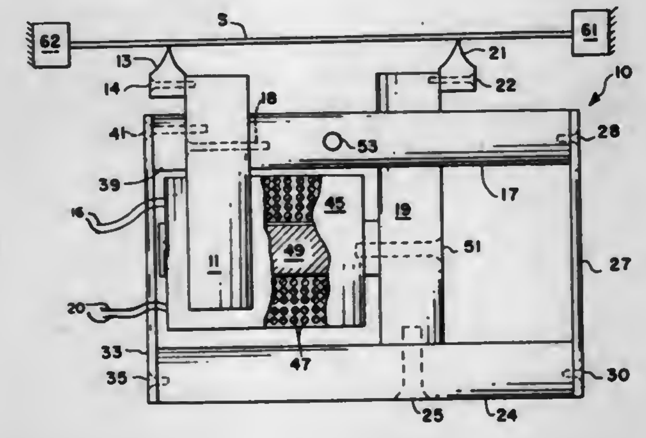


An adjusting device for effecting precision length adjustments. A stressable structural member has two spaced end sections an intermediate section integral with the end sections and split in the direction from one to the other of the end sections so that it is provided with a center gap of substantially lenticular cross-sectional configuration. A stressing arrangement serves to compress the intermediate section transversely of this gap to varying degrees, whereby the longitudinal extension of the member increases as the intermediate section is progressively compressed and decreases as the intermediate section is progressively relieved of compressive stress transversely of the gap.

3,608,365

EXTENSOMETER FRAME

Robert M. Baucom, Hampton, and George J. Heimerl, Yorktown, Va., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 23, 1969, Ser. No. 887,699
Int. Cl. G01b *7/24*
U.S. Cl. 73—88.5R **2 Claims**

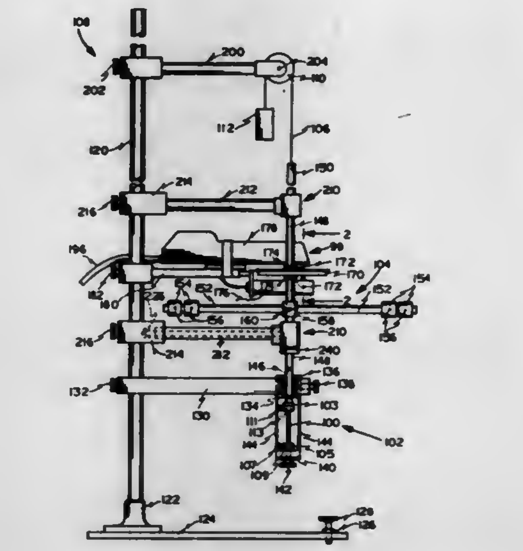


A transducer frame for accommodating a displacement transformer for continuous monitoring of extension of a specimen sample.

3,608,366

TORSION PENDULUM

Noboru Tokita, Wayne, and Randolph Scott, Paterson, N.J., assignors to Uniroyal, Inc., New York, N.Y.
Filed Aug. 25, 1969, Ser. No. 852,804
Int. Cl. G01n *3/32*
U.S. Cl. 73—99 **7 Claims**

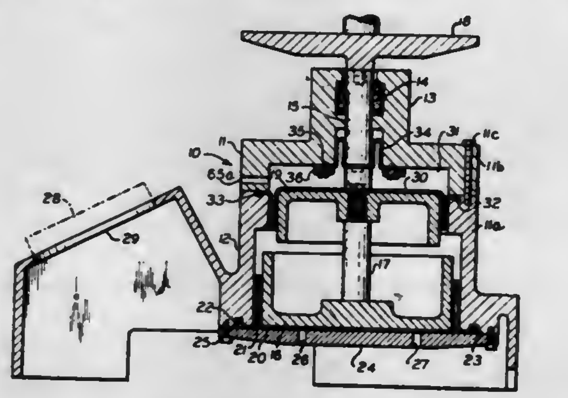


Torsion pendulum test apparatus in which a sample of material under test is used as the restoring element in an angular oscillation system. In contrast to earlier devices of this type, a counterbalance weight is employed to eliminate completely all vertical forces upon the sample; an angularly oscillating optical wedge and photoelectric system is used for sensing the amplitude of oscillation, and air bearings are used for stabilization. The device gives very accurate readings for determining dynamic mechanical properties and phase transition temperatures.

3,608,367

SOIL CONSOLIDATION APPARATUS

Reuben H. Karol, 261 S. Adelaide Ave., Highland Park, N.J. 08924
Filed Dec. 26, 1968, Ser. No. 786,914
Int. Cl. G01n *3/08*
U.S. Cl. 73—94 **4 Claims**



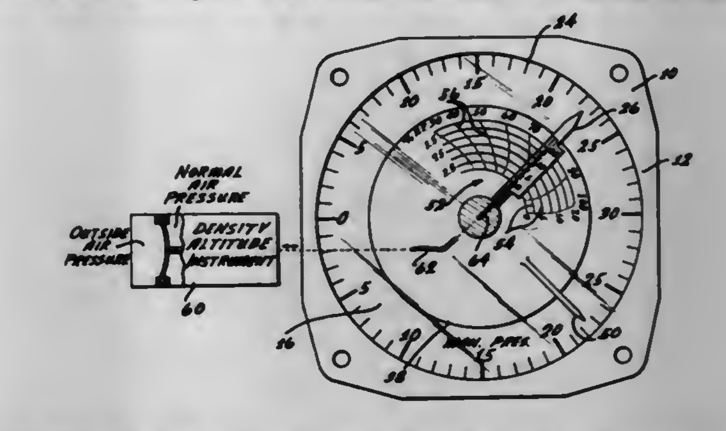
An apparatus employing a plurality of single-convolution diaphragms for accurately testing the consolidation of soil samples or the like. The diaphragms facilitate the use of selective net forces on the samples through diaphragm force differentials, or the incremental, integration of diaphragm forces in order to give accurate specimen loading.

3,608,368

INSTRUMENT FOR INDICATING HORSEPOWER OUTPUT OF AN ENGINE

Ernest N. Cuff, 451 Cedar Crest Ave., Claremont, Calif. 91711
Filed June 16, 1969, Ser. No. 833,379
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **4 Claims**

The invention is an instrument for indicating horsepower output of an engine particularly an aircraft engine in response to speed of the engine, manifold intake pressure and density altitude. The instrument is of a dial

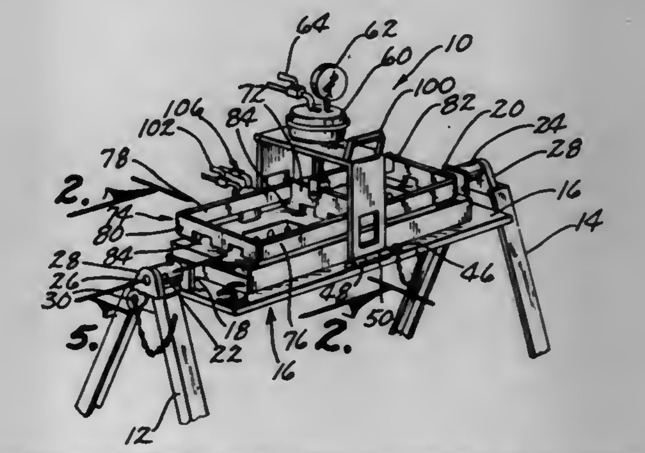


type with an indicating pointer which moves over a graduated chart scale on the dial so that percentage horsepower can be read directly.

3,608,369

ENGINE HEAD TEST STAND

Herbert O. Wilkinson, 614 E. 2nd, Ankeny, Iowa 50021
Filed Nov. 6, 1969, Ser. No. 874,442
Int. Cl. G01m *3/06*
U.S. Cl. 73—119R **8 Claims**



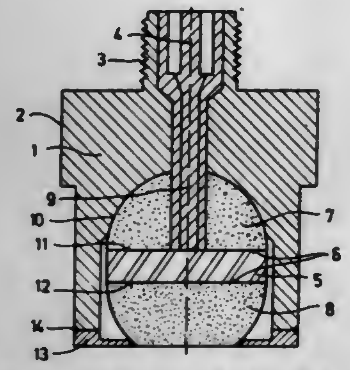
A support selectively rotatably connected to a ground engaging leg structure and having a pressure actuated hold-down means carried thereon for engaging the top side of an engine head. Upstanding sealing elements are provided on the support for sealing openings in the engine head while a liquid conduit is carried on the hold-down for sealingly engaging the inlet opening of the engine head when the pressure means is actuated. A pair of legs extend upwardly on opposite sides of the hold-down rectangular shaped frame and one leg is adapted to be locked to the support while a cross piece is connected to the opposite end of the leg for being pivotally connected to the other leg to permit the pressure means carried on the cross piece to be pivoted away from the top of the support to permit access onto and off of the support. An adapter plate may be placed on the support to selectively seal the bottom side of other engine heads.

3,608,370

MEASUREMENT TRANSDUCER

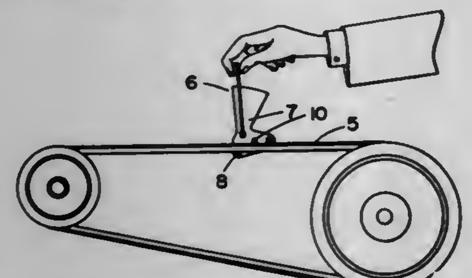
Kurt Vollenweider, Winterthur, and Hans C. Sonderegger, Neftenbach, Switzerland, assignors to Kistler Instruments AG, Winterthur, Switzerland
Filed Mar. 25, 1969, Ser. No. 810,253
Claims priority, application Switzerland, Mar. 25, 1968, 4.491/68
Int. Cl. G01l *1/16*
U.S. Cl. 73—141R **8 Claims**

The measuring transducer for measuring physical properties such as force, pressure and acceleration employs a spherically shaped force transmitting member disposed adjacent to the measuring element supported within the transducer housing. A ring-shaped diaphragm is provided to force bias the member and to permit rocking movement thereof in a direction depending upon the relative position of the bearing surface of the pressure transmitting member and the measuring element.



3,608,371
APPARATUS TO DETERMINE TENSION IN A FLEXIBLE STRAND

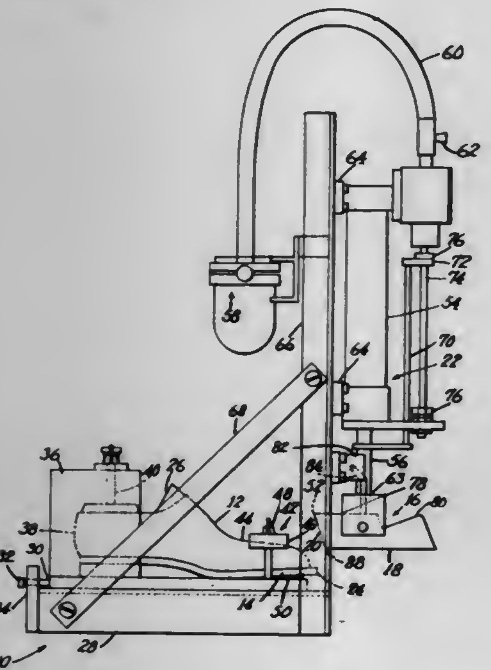
David L. Kessler, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed May 28, 1968, Ser. No. 732,595
Int. Cl. G01l *5/06*
U.S. Cl. 73—144 **6 Claims**



A tensiometer apparatus that measures strand tension of a belt, rope, wire, cable or the like, utilizing a method of torqueing and deflecting a segment of the strand to a standard reference angle.

3,608,372
TESTERS FOR SHOES

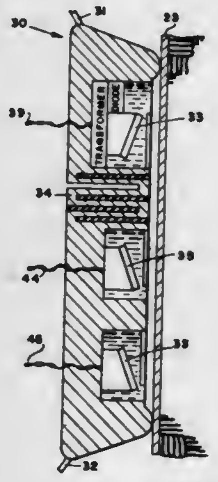
Emerson B. Hovey, Wayland, and David O. White, Lexington, Mass., assignors to USM Corporation, Flemington, N.J.
Filed May 15, 1970, Ser. No. 37,513
Int. Cl. G01n *3/36*
U.S. Cl. 73—150 **5 Claims**



A dynamic tester for determining resistance to cell-tearing separation of a resilient cellular elastomer outsole and a shoe upper at the toe portion of a shoe including a shoe holding device and a device for flexing edge extension portions of the outsole at the toe portion repeatedly in a direction to create separative stress.

3,608,373
METHOD AND WELL LOGGING APPARATUS HAVING ACOUSTIC AND NEUTRON PADS

Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Nov. 4, 1968, Ser. No. 772,894
Int. Cl. E21b *49/00*
U.S. Cl. 73—152 **6 Claims**



A well logging instrument adapted for traversing an earth borehole has a neutron pad member on one side of the instrument which is normally spring-forced into contact with the borehole wall during such a traversal. The instrument has on its opposite side an acoutic pad which is also normally spring-forced into contact with the borehole wall during such a traversal.

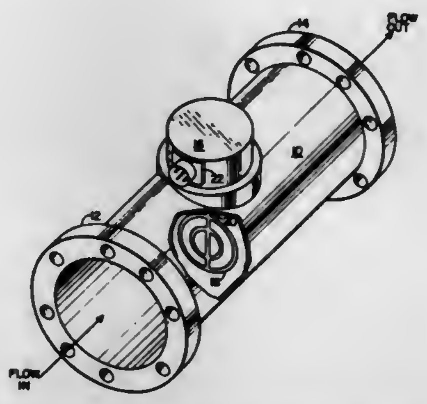
The acoustic pad has an acoustic transmitting transducer and a pair of acoustic receiving transducers for producing an acoustic time interval measurement. Each transducer is mounted on an acute angle from the longitudinal axis of the elongated instrument housing and is mounted in a fluid medium chosen to match the acute angle so that a steep rising wave front passes through the formation surrounding the borehole and produces a steep rising signal at the respective receivers, thereby permitting an accurate measurement of acoustic wave travel time from transmitter to first receiver and from first to second receiver.

The neutron pad, having a capsuled neutron source and an epithermal neutron detector, responds to variations in formation porosity and to the thickness and constituency of mud and mud cake intervening between the pad and the formation. The acoustic pad serves to indicate the extent of the effect on the neutron-derived porosity measurement due to the mud and mud cake and permits a corrected porosity to be derived and recorded.

3,608,374
MASS FLOWMETER

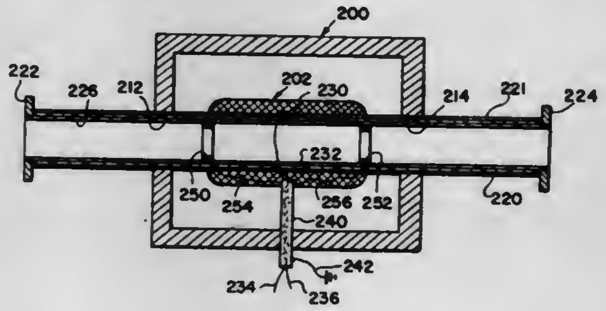
Charles E. Miller, Boulder, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 18, 1969, Ser. No. 808,135
Int. Cl. G01f *1/00*
U.S. Cl. 73—194B **16 Claims**

A flowmeter having an impact plate means, such as a vane, which is mounted in a fluid flow and oscillated. The vane is subject to a torque produced by the drag of the flow in the vane and the mass flow rate of the fluid is inferred by measuring the torque or its effect on various parameters of the motion of the vane.



3,608,375
ELECTROMAGNETIC FLOWMETER

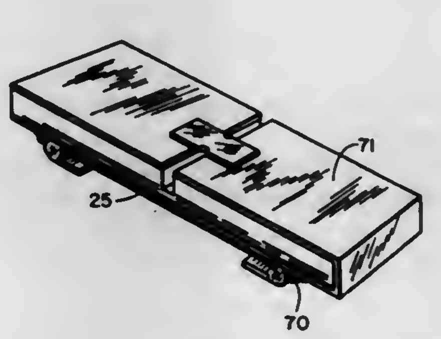
Vincent J. Cushing, 9804 Hillridge Drive, Kensington, Md. 20795
Filed Nov. 5, 1968, Ser. No. 773,386
Int. Cl. G01f *1/00;* **H01f** *15/02*
U.S. Cl. 73—194EM **1 Claim**



A tubular flow conduit includes a pair of detecting electrodes adjacent thereto, one of said electrodes being a high impedance electrode and another of said electrodes being a low impedance electrode. An electromagnet means is provided of unique construction for producing an alternating magnetic flux which is of substantially the same phase throughout a substantial region of the flowmeter so that the circuit loops within the flowmeter and including the high impedance electrode are threaded by susbtantially no magnetic flux which is coherent and phase-shifted relative to the magnetic flux which generates the flow signal in fluid flowing through the tubular means.

3,608,376
XERITRON

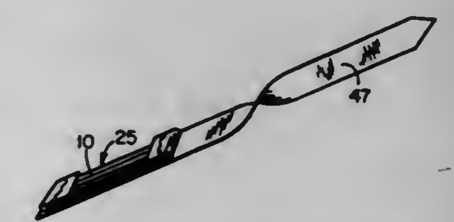
Ralph L. Fenner, Mill Valley, Calif., assignor to Hygrometrix, Inc.
Filed June 17, 1969, Ser. No. 834,092
Int. Cl. G01n *19/10, 27/00*
U.S. Cl. 73—336.5 **10 Claims**



A humidity sensitive element or chip to which an electrical strain gauge, or more specifically, a "pixie" transducer, is attached. While the chip is in the fully saturated state, it is mounted on the back of the pixie strain gauge as by soldering the ends thereto. While the strain gauge will resist bending, the xeric chip exerts a bending force upon it which effects its piezoresistive characteristics directly proportional to the force on the chip which, in turn, is directly proportional to the dryness of the environment in which the device is placed.

3,608,377
XEROMETER

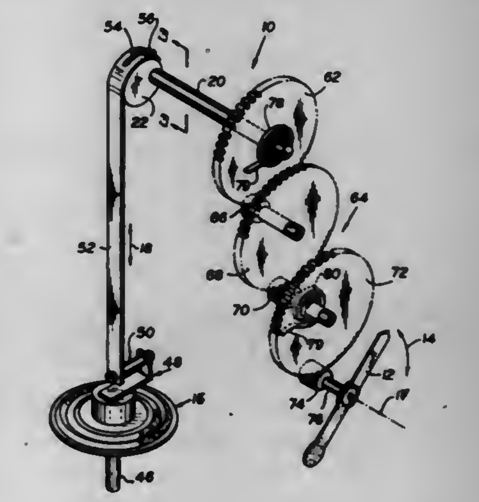
Ralph L. Fenner, Mill Valley, Calif., assignor to Hygrometrix, Inc.
Filed June 17, 1969, Ser. No. 834,093
Int. Cl. G01w *1/00;* **G01n** *19/10*
U.S. Cl. 73—337.5 **9 Claims**



A humidity sensing device called a xerometer, having a rib of a seed-throwing arm which forms the extension of a seed pod of a seed-throwing plant affixed to a suitable pin mounted on the face of a readable gauge and preferably is provided with a light-weight pointer, such as one of thin beryllium copper. In this form, the gauge markings extend through an angle of about one and one-third turns and the gauge face assumes the shape of a spiral. A preferred form of xerometer, however, utilizes a "chip" which comprises a resilient metal saddle, preferably formed of beryllium copper of a thickness of about one one-thousandth of an inch, and preferably carrying three of the spines rigidly connected thereto at their ends. When the vegetable fibers are dry, their warp force bends the metal plate to form an arc, the ends of which lie at an angle of about 60° with respect to each other. It should be noted that as the elements dry they exert a constant warp force upon the metal member, which causes it to bend in equal increments directly proportional to the relative humidity of the environment from the 100% humidity of the straight form to zero humidity.

3,608,378
PRESSURE RESPONSIVE INSTRUMENT

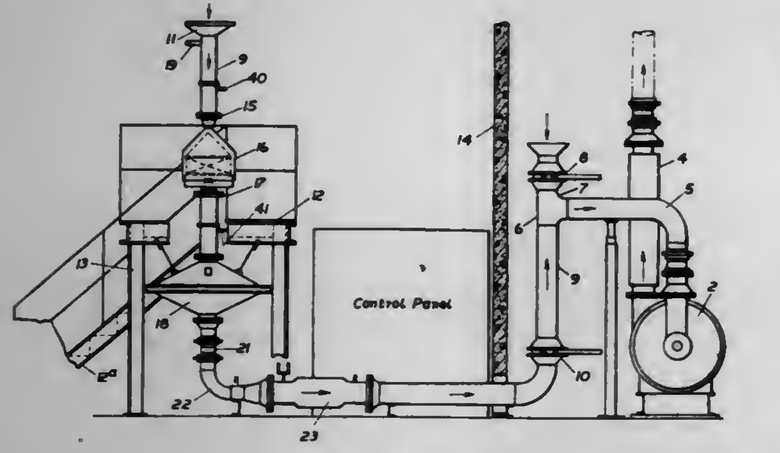
Edward Sowinski, % Instrument Craftsmen Corp., 41 Merritt Road, Farmingdale, N.Y. 11735
Filed Nov. 18, 1969, Ser. No. 877,683
Int. Cl. G01l *7/14, 19/04*
U.S. Cl. 73—393 **4 Claims**



An instrument responsive to ambient pressure changes in which a visual indication, such as a pointer, is urged through standardized rotational traverses for a particular pressure change, even though that pressure change might cause varying linear movements in a sensing diaphragm or bellows being used to operate the pointer. Included in the drive between the bellows and pointer is a rotatable driven member having a least a portion thereof which converts, as a function of its mounting, each linear movement input, even though of a varying nature, into rotational traverses of the same extent. Thus, the instrument is calibrated to the peculiarities in the expansion and contraction performance of the bellows.

3,608,379
AIR FILTER TESTING APPARATUS

Robert Brevko, Peters Township, Washington County, and John R. Mucka, McCandless Township, Allegheny County, Pa., assignors to Auburn Engineering, Inc., Pittsburgh, Pa.
Filed Nov. 14, 1968, Ser. No. 775,621
Int. Cl. G01f *15/00*
U.S. Cl. 73—432PS **10 Claims**

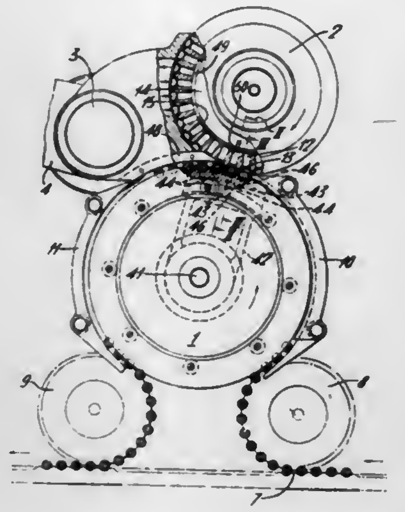


An improvement in air filter testing apparatus in which a measured amount of dust is drawn into a test filter at a controlled rate of the dust-laden air into the test filter is disclosed. Dust is drawn by an aspirator through a nozzle from an annular trough rotated at a predetermined speed and supplied to air flowing into the test filter. Air from the test filter is then drawn through an absolute filter. At the end of the test, the weight of dust on the air filter is compared to the weight of dust on the absolute filter and measured against the known weight of dust supplied to the apparatus to determine the performance of the air filter. Variable manual and automatic controls provide required programming and protection of the system against overload.

3,608,380
TESTING OF ROD-LIKE ARTICLES, SUCH AS CIGARETTES

Douglas W. B. Muir, Biggar, Scotland, and Eryk Stefan Doerman and Robert James Hayward, London, England, assignors to Molins Machine Company Limited, London, England
Filed Jan. 30, 1969, Ser. No. 795,279
Int. Cl. G01m *3/26*
U.S. Cl. 73—45.1 **10 Claims**

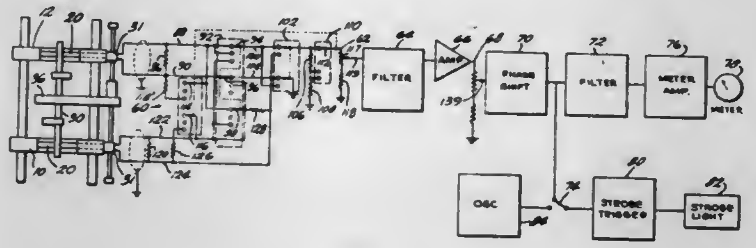
Wrappings of cigarettes and similar articles are tested by creating a pressure differential radially across each wrapping to detect whether or not the wrapping is leaky. The cigarettes are carried in flutes in a carrier drum past co-operating closure drum which encloses the cigarettes in the flutes at a testing point between the two drums, at which point the two drums define a chamber around the cigarettes terminated at the ends of the cigarettes by seal portions defined partly by each of the drums to restrict



communication between the interior and exterior of a cigarette via the open ends of the cigarette wrapping.

3,608,381
BALANCING MACHINE WITH DIRECT READOUT

Gordon E. Hines, Ann Arbor, Mich., assignor to Balance Technology, Inc., Ann Arbor, Mich.
Filed July 28, 1969, Ser. No. 845,250
Int. Cl. G01m *1/08*
U.S. Cl. 73—462 **15 Claims**

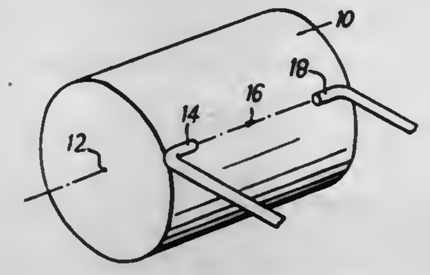


A balancing machine wherein the translation of bearing carriers in response to vibration of a test part supported on the carriers is detected by pickups to develop two test signals that are processed to provide a direct indication of the weight to be added in a given correction plane at a given correction radius. The signal processing circuit includes a selector switch to select a signal from each pickup individually or the sum of the signals from both pickups. There is a meter scale switch to select full scale meter deflections depending upon the weight range of the part under test. The selected signals are also processed through a correction radius potentiometer and also a part weight potentiometer that are calibrated directly in inches and pounds, respectively, so that the meter directly reads the weight that has to be added at a given correction radius.

3,608,382
FLUIDIC SPEED SENSORS

John William Leathers, Taplow, England, assignor to British Telecommunications Research Limited, Taplow, England
Filed July 1, 1969, Ser. No. 838,249
Claims priority, application Great Britain, July 1, 1968, 31,329/68
Int. Cl. G01p *3/34*
U.S. Cl. 73—521 **8 Claims**

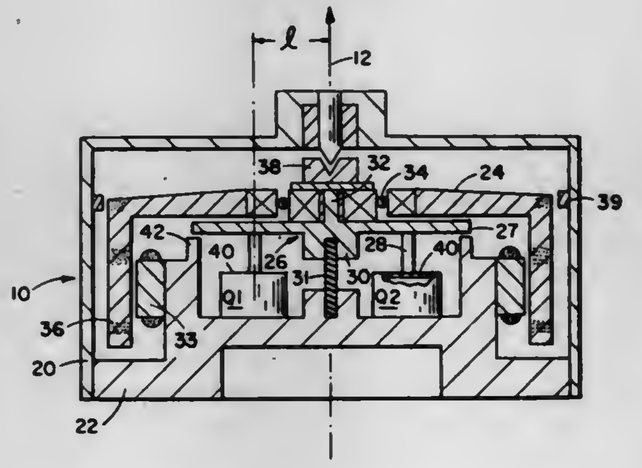
A jet of fluid is directed along the surface of a body whose spread of movement is to be measured in a direction which is parallel to the plane of such surface and perpendicular to the direction of movement. When the surface is moving, boundary layer interaction between the jet and the boundary layer of air or other fluid in contact with surface causes the jet to be deflected in the same direction as that of movement of the surface. A collector is disposed confronting the jet and, in accordance with whether the collector is aligned with the jet or whether it is displaced with respect to the jet in the direction of movement of the



surface, a maximum signal output is received when the surface is stationary or when it is moving at a predetermined speed. The effective thickness of the boundary layer may be increased by providing two parallel surfaces moving in the same direction and at the same speed. The jet is then directed between the two surfaces.

3,608,383
SINGLE AXIS RATE GYRO AND PIEZOTRANSISTOR ANGULAR RATE DETECTOR

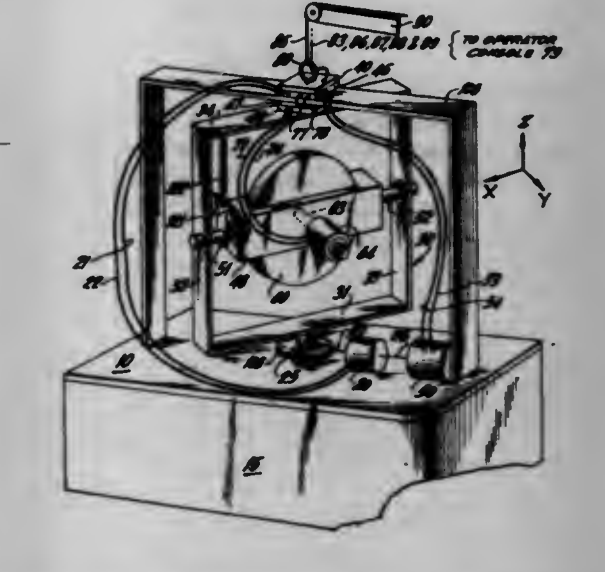
Joe S. Hunter and Little J. Little, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
Filed Feb. 4, 1970, Ser. No. 8,504
Int. Cl. G01c *19/18, 19/28*
U.S. Cl. 74—5.6 **4 Claims**



The single axis rate gyro has a piezotransistor pickoff for measuring angular rates of motion about a selected axis. Attitude deviation about the gyro sensitive axis develops corresponding stresses in a pair of piezotransistors arranged along the input axis. Output voltages are coupled from the transistor to a different amplifier when an angular rate occurs about the input axis. The output voltage from each transistor is proportional to the specific angular rate input. Error producing components of the output signal are canceled in the differential amplifier and a linear output component is doubled without amplification of unwanted signals. A pair of piezotransistors are fixed along the gyro input axis and are equally spaced on opposite sides of the spin axis. When an input angular rate occurs, a force transferring device responds to deviation between the spinning wheel and related support structure to place tension and compression on respective piezoelectrical components of the transistors, varying the voltage thereon and thereby changing the transistors output voltage. A current source maintains the transistors in a linear conductive state prior to receipt of stress forces and is adjustable to provide equal transistor output signals before stress is applied.

3,608,384
APPARATUS FOR ROTATIONALLY POSITIONING A SUPPORTED LOAD

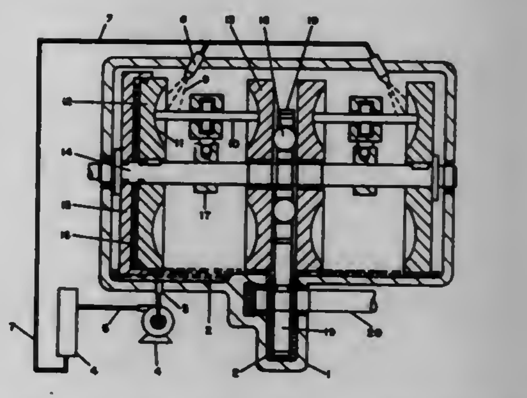
Robert Allen Hardin, Murray Hill, N.J., assignor to Skagit Corporation, Sedro-Woolley, Wash.
Filed Jan. 3, 1969, Ser. No. 788,885
Int. Cl. G01c *19/00*
U.S. Cl. 74—5.22 **3 Claims**



Apparatus for selectively horizontally orienting a freely swiveled cargo load, and for maintaining a desired horizontal position, employs a rotating flywheel attached to a load bearing platform by a mounting gimbal. Apparatus is provided to selectively rotate the spinning flywheel about a horizontal axis disposed along a diameter of the flywheel, thereby applying a torque in a desired direction about the vertical axis of the gimbal, platform and load. Thus, the load may be rotated in a horizontal plane to any desired orientation and, moreover, maintained in that position.

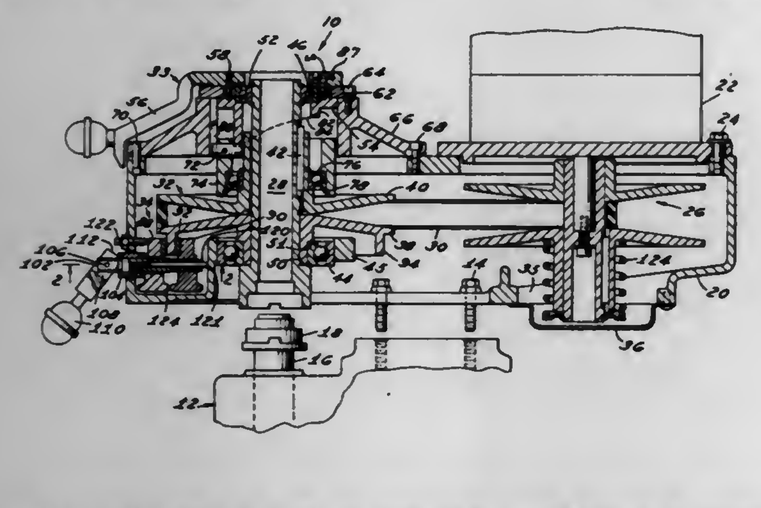
3,608,385
FRICTION DRIVE CONTAINING POLYOLEFIN FLUID

Irl N. Duling, West Chester, and Frederick P. Glazier, Thornton, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Continuation-in-part of application Ser. No. 679,833, Nov. 1, 1967. This application Jan. 24, 1969, Ser. No. 794,844
Int. Cl. F16h *15/08*
U.S. Cl. 74—200 **15 Claims**



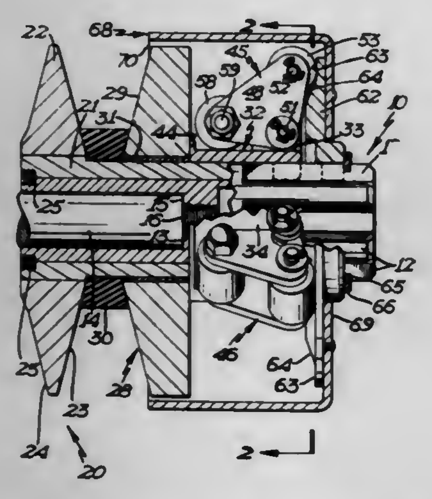
A friction drive machine comprises a power input member and a power output member in tractive rolling contact relationship and an oxidation-resistant fluid film between said members, said fluid comprising a polymeric reaction product of C_2–C_8 olefin, said polymer preferably having an average molecular weight of 170–1000 (e.g., 300–500). The choice of molecular weight is determined primarily by the desired viscosity characteristics of the fluid (including the effect of any other components, such as low VI naphthenes). For example, a poly-3-methyl-butene-1 oil (#31) or 361 average molecular weight has a KV at 210° F. of 5.47 cs., whereas an ethylene-propylene copolymer oil (#44) of 555 average molecular weight has a KV at 210° F. of 8.50 cs., and a polypropylene oil (#25) having a KV at 210° F. of 5.679 has an average molecular weight of 457. The polymeric reaction product is preferably hydrogenated to effectively eliminate olefinic unsaturation.

3,608,386
CAM OPERATED VARIABLE RATIO BELT DRIVE
John M. Pambid and Harold E. Wiggins, Clarkston, Mich., assignors to F. Jos. Lamb Co., Detroit, Mich.
Filed July 25, 1969, Ser. No. 844,888
Int. Cl. F16h *57/10, 55/52*
U.S. Cl. 74—230.17A **5 Claims**



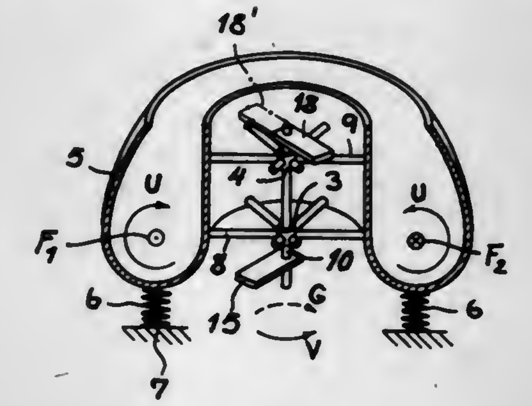
A power unit for use on machine tools having a motor flange-mounted on a housing with a self-adjusting pulley connected to a rotor shaft of the motor. The motor drives an output shaft of the power unit through a belt engaged between movable and fixed sheaves on the output shaft which provide a variable effective diameter pulley. The pulley on the output shaft is adjusted by a semi-circular cam and a cam follower connected to the movable sheave to control and vary the speed of rotation of the output shaft. Brake shoes actuated by a cam lever and a brake drum on a sheave of the output shaft selectively lock the output shaft against rotation.

3,608,387
CENTRIFUGALLY CONTROLLED, VARIABLE DIAMETER PULLEY
Anthony Fox, Bloomington, Minn.
(8306 Queen Ave. S., Minneapolis, Minn. 55431)
Filed Aug. 19, 1969, Ser. No. 851,279
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 **8 Claims**



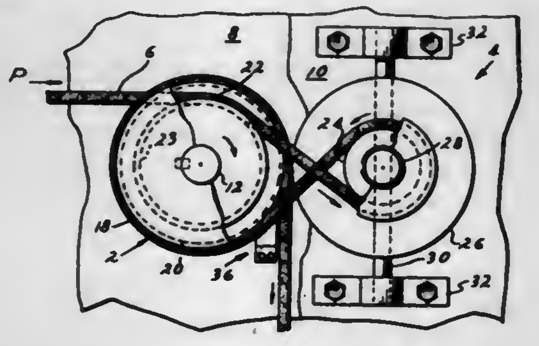
A centrifugally controlled, variable diameter, V-belt pulley designed to act as a torque converter, the pulley having pulley members with opposing inclined surfaces, one of which is fixed to a shaft and the other of which is nonrotatably and slidably secured to the shaft, a third member fixed to the shaft and having a bearing face, and a plurality of weighted triangular arms pivotally secured to a portion operatively connected to the slidable pulley member. Each of these arms carries a roller adapted to engage the bearing face of the third member. These arms are biased inwardly and when the pulley is rotated, the arms swing outwardly to force the rollers against the bearing surface and move the two pulley sections together.

3,608,388
REVERSIBLE WOBBLE DRIVE
Ernst Huber, Langernstrasse 30,
CH 8037 Zurich, Switzerland
Filed Apr. 13, 1970, Ser. No. 27,484
Claims priority, application Switzerland, Apr. 11, 1969, 5,639/69
Int. Cl. B06b *1/16*
U.S. Cl. 74—87 **6 Claims**



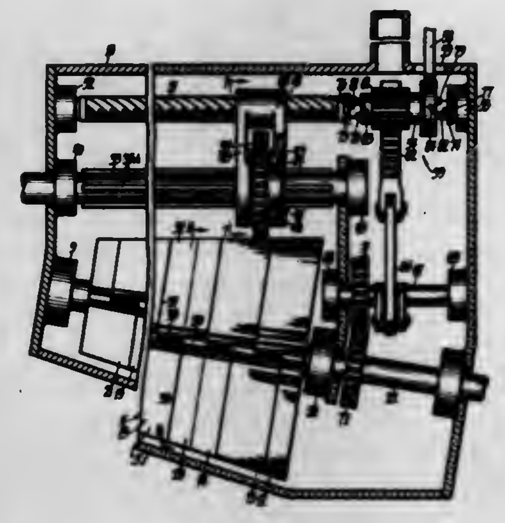
For imparting wobbling motion with reversible precession to a resiliently supported tumbling vessel, a generally upright impeller shaft is journaled in two bearings mechanically connected with the vessel at an upper and a lower level and is linked with the shaft of a reversible drive motor via two cascaded universal joints so as to exert independent thrusts upon the vessel through these bearings. The impeller shaft is eccentrically loaded by two weights secured to it near the two bearings, with the upper weight leading the lower weight by 90° in the direction of rotation. The upper weight is mounted on the shaft through a lost-motion coupling with 180° play whereby a reversal of shaft rotation causes this weight to swing into a diametrically opposite position.

3,608,389
LOAD RESPONSIVE GRIPPING DEVICE FOR FLEXIBLE CABLE DRIVES AND THE LIKE
George C. Christian, 8 Grinnell St.,
Greenfield, Mass. 01301
Filed Dec. 5, 1969, Ser. No. 882,477
Int. Cl. F16h *7/08, 7/10, 7/12*
U.S. Cl. 74—242.9 **7 Claims**



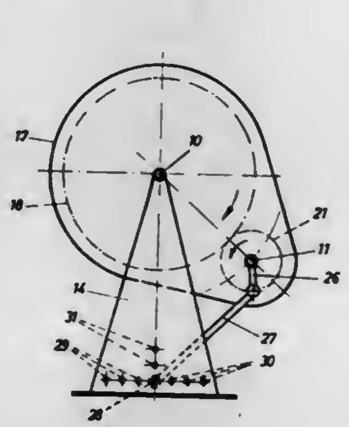
A device for driving a flexible cable, rope, belt, or the like, and gripping the same with a presssure proportionally related to the pulling force of the load imposed thereon, having a rotatable driving pulley and rotatable pressure applying roller, the pulley and roller being mounted for relative positional shifting movement, and, a lever engageable by the cable and responsive to the load of the pulling force thereon to cause the pressure roller to bear against the cable with a force proportionally related to the pulling load. The device may be used, for example, as a simplified and efficient driving means for a portable rope ski tow.

3,608,390
VARIABLE SPEED DRIVE
Arthur G. Barrett, 13 Virginia St.,
Newtown, Victoria, Australia
Filed Aug. 12, 1969, Ser. No. 849,398
Claims priority, application Australia, Aug. 12, 1968, 42,006/68
Int. Cl. F16h *3/08, 3/22*
U.S. Cl. 74—348 **11 Claims**



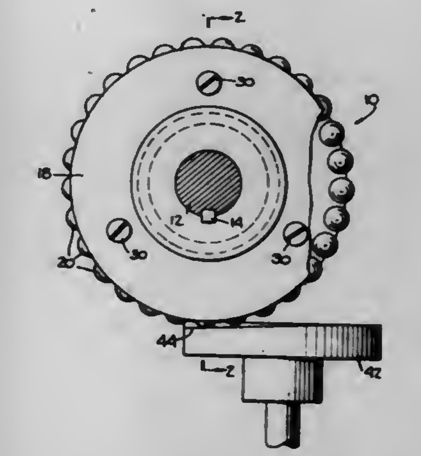
A variable speed ratio gear system utilizing a conical toothed member made up of an axial stack of gears with varying numbers of teeth, individual gears of the stack consisting of pairs of axially offset pairs, so that the peripheral interface line between adjacent gears has a portion extending generally lengthwise of the conical member.

3,608,391
STEPPING GEAR HAVING A VARIABLE SPEED RATIO
Gerd Rudolf Bargstedt, 2161 Drochtersen-Wischhafenersand, Germany
Filed Sept. 18, 1969, Ser. No. 859,115
Claims priority, application Germany, Sept. 18, 1968, P 17 75 744.7; July 3, 1969, P 19 33 721.4
Int. Cl. F16h *35/02, 37/12*
U.S. Cl. 74—394 **6 Claims**



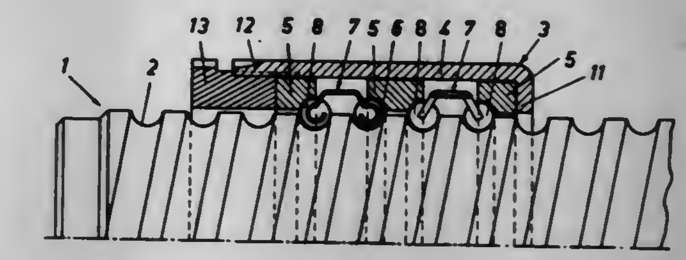
A stepping gear having a driving and a driven shaft with gear means therebetween, wherein at least one of the two said shafts is located in stationary bearings and one of the shafts is formed as or connected to a crank and wherein during rotation of the driving shaft a part of the gear means is adapted to be reciprocable, pivotable or rotatable in dependence upon the crank about the axle of another interconnected gear means, the rotation of the driven shaft being accelerated, decelerated or reversed thereby.

3,608,392
RIGHT ANGLE DRIVE
Jack J. Gilbert, Suffern, N.Y., assignor to Spyro Dynamics Corporation, Northvale, N.J.
Filed June 15, 1970, Ser. No. 46,306
Int. Cl. F16h *1/18, 55/06*
U.S. Cl. 74—424.5 **12 Claims**



A right angle drive comprising a driven gear having its teeth mounted for radial movement restrained by a resilient ring and driven by a mating gear engageable with said teeth.

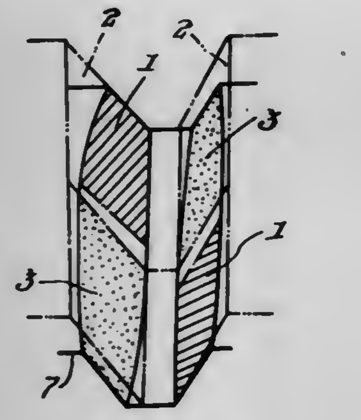
3,608,393
PLANETARY BALL SCREW MECHANISM
Sven Walter Nilsson, Partille, Sweden, assignor to SKF Industriele Handel-En Ontwikkeling Maatschappij NV, Amsterdam, Netherlands
Filed May 6, 1970, Ser. No. 35,221
Claims priority, application Sweden, May 6, 1969, 6,344/69
Int. Cl. F16h *1/20, 55/22*
U.S. Cl. 74—424.8 **11 Claims**



In a planetary ball screw mechanism of the type where the nut is provided with balls mounted in holders fitted between axially displaceable bearing rings, the holders are designed in such a manner they will each, together with the balls mounted therein, keep the adjacent bearing rings apart, which makes it possible to permit the main portion of the holder to extend outwards into the free space formed between said bearing rings. Hereby the clearance between the shaft and the nut may be kept at a minimum, whereby the grooves for the balls may be deep and suited to transfer high loads.

3,608,394
DOUBLE-THROATED WORM GEARING

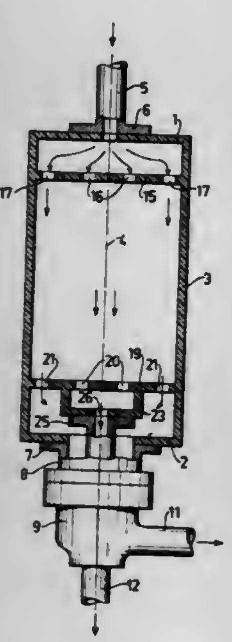
Shoichi Ishikawa, Yokohama, Japan, assignor to Kabushiki Kaisha Hasegawa Haguruma Tekkosho, Tokyo, Japan
Filed Feb. 4, 1970, Ser. No. 8,584
Claims priority, application Japan, Feb. 13, 1969, 44/10,090
Int. Cl. F16h *1/16, 55/04*
U.S. Cl. 74—425 **1 Claim**



A double-throated worm gearing having an increased load-carrying capacity and an improved transmission efficiency. The worm gears can be produced by a generating method in a continuous fashion with increased efficiency. Particularly, the throated worm wheel has tooth surfaces each including a curved contacting zone effectively engageable with the mating throated worm in addition to a planar contacting zone corresponding to a portion of the planar tooth surface of conventional forms of throated worm wheel.

3,608,395
DRUM ROTOR

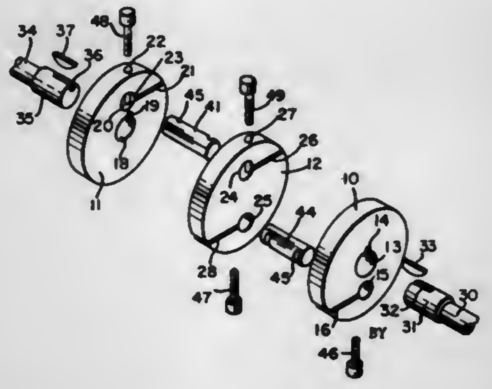
Gunnar Walter Brandt, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed June 17, 1968, Ser. No. 737,731
Claims priority, application Sweden, June 28, 1967, 9,556/67
Int. Cl. F16f *15/30;* **B04b** *7/00*
U.S. Cl. 74—572 **4 Claims**



Drum rotor having a rotation-symmetrical, preferably cylindrical mantle and at least one end wall attached thereto and being adapted to be rotated about its axis. The material in the end wall has a ratio between density and module of elasticity which is so much higher than the corresponding ratio for the mantle that the elongations in the mantle and the end wall in the juncture therebetween due to the centrifugal force are essentially equal.

3,608,396
SECTIONAL CRANKSHAFT

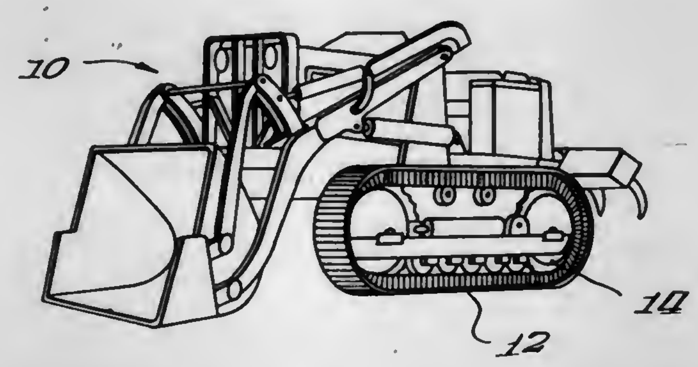
Arthur P. Bentley, Box 139, Boerne, Tex. 78006
Filed Feb. 2, 1970, Ser. No. 7,680
Int. Cl. F16c *3/10*
U.S. Cl. 74—597 **4 Claims**



This specification discloses a sectional crankshaft, which, in its simplest form, comprises two main shafts in axial alignment and with ends in spaced relation, a cap plate for each of said ends in the form of a heavy disc that is keyed to a shaft end, an intermediate disc of the same size and shape as said cap plates and a pair of crank pins disposed 180° apart with one pin connecting one cap plate to the intermediate disc and with its axis offset with respect to that of the shafts and the other pin connecting the other cap plate to the intermediate disc with its axis similarly offset.

3,608,397
TRANSMISSION CONTROL SYSTEM

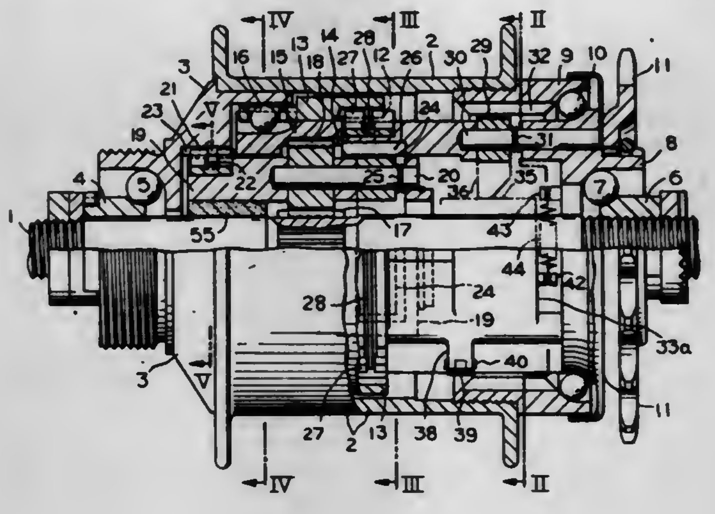
Robert G. Honeyager, Oak Creek, and James C. Rigney, Racine, Wis., assignors to J. I. Case Company
Filed June 30, 1969, Ser. No. 837,547
Int. Cl. F16h *37/06, 3/08;* **B62d** *11/00*
U.S. Cl. 74—665 **16 Claims**



A hydraulic control system for controlling actuation of a plurality of fluid operated friction devices forming part of a transmission for a vehicle with the system including speed and direction valves and a range valve engaged at all speeds. The system further includes a modulator valve which reduces the pressure of fluid supplied to the range valve to selectively control engagement of fluid couplings associated therewith. The modulating valve is designed for automatic operation during normal shifting of the speed and direction valves between neutral and engaged positions and alternatively manually operable at the discretion of the operator.

3,608,398
BICYCLE HUB HAVING A BUILT-IN THREE-STAGE SPEED CHANGE MECHANISM

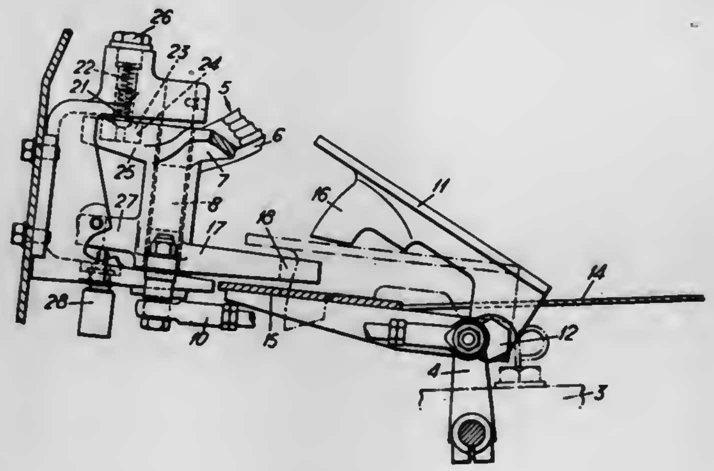
Takashi Segawa and Ryuichi Yamamoto, Osaka, Japan, assignors to Shimano Kogyo Kabushiki Kaisha, Sakai, Osaka, Japan
Filed Sept. 15, 1969, Ser. No. 857,745
Claims priority, application Japan, Sept. 24, 1968, 43/68,218; Sept. 27, 1968, 43/70,556
Int. Cl. F16h *5/42*
U.S. Cl. 74—752 **3 Claims**



A bicycle hub having a built-in three-stage speed change mechanism in which a high and a normal speed-ratio transmission ratchet gearing are arranged adjacent to each other, and an automatic speed-ratio control means is provided consisting of centrifugal governor weights oscillatable inwardly and outwardly around the axis of said hub in synchronism with each other according to the driving speed of the bicycle, said ratchet gearings being adapted to be automatically put into and out of engagement individually by the common speed-ratio control means upon oscillation thereof thereby effecting automatic three-stage speed change.

3,608,399
VEHICLE CONTROLS

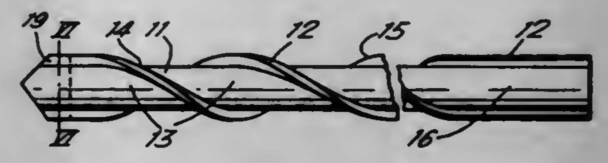
William Knight, Coventry, England, assignor to Coventry Climax Engines Limited, Coventry, England
Filed Mar. 27, 1970, Ser. No. 23,400
Claims priority, application Great Britain, Apr. 30, 1969, 21,997/69
Int. Cl. B60k *21/00*
U.S. Cl. 74—850 **6 Claims**



An industrial truck has a horizontally pivoted accelerator pedal to control the throttle of an I.C. engine by which the truck is powered and a vertically pivoted selector pedal which is linked to a hydraulic torque converter and which has three positions giving forward drive, reverse drive and neutral respectively. A rigid locking piece projects downwardly from the accelerator pedal and, upon movement of the accelerator pedal from an upper limiting position giving idling of the engine, engages a slotted arm which moves with the selector pedal and thereby locks the selector pedal.

3,608,400
METHOD FOR PRODUCING A TWIST DRILL OR A SIMILAR TOOL HAVING ONE OR MORE HELICAL FLUTES OR GROOVES AND A TOOL PRODUCED BY SAID METHOD

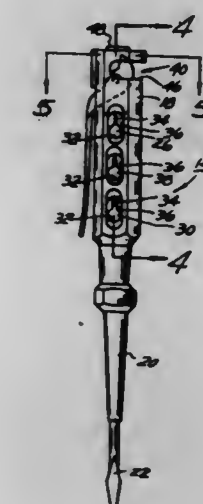
Louis Aackersberg Mortensen, Hillerodvej 1, DK–3480 Fredensborg, Petersholm, Denmark
Filed Aug. 22, 1969, Ser. No. 852,212
Int. Cl. B21k *5/02*
U.S. Cl. 76—108T **4 Claims**



A method, wherein a twist drill or a similar tool having one or more helical flutes or grooves is produced from a rod-shaped blank having a core with a substantially circular cross section from which one or more circumferentially spaced ridges or ribs extend radially and axially. When twisted, the core of the blank constitutes a columnar circularly cylindrical core of the tool, and in connection with the cylindrical surface of the core the side walls of the ridges or ribs define the flutes or grooves of the tool.

3,608,401
COMBINATION WIRE STRIPPING AND CUTTING DEVICE

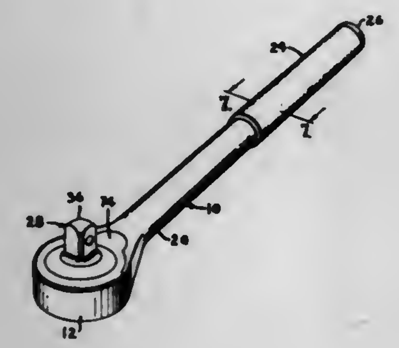
Marvin J. Freed, 330 S. Barrington 202, Los Angeles, Calif. 90049
Filed May 26, 1969, Ser. No. 827,796
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5R **1 Claim**



A wire stripping and cutting device confined in the handle portion of a tool comprising a plurality of apertures having sharpened inserts for stripping insulation from electrical wires of different gauges and including a pivoted wire cutting means disposed at one end with the handle portion thereof useful as a pocket clip for attachment of the device to a garment pocket.

3,608,402
RATCHET TOOL

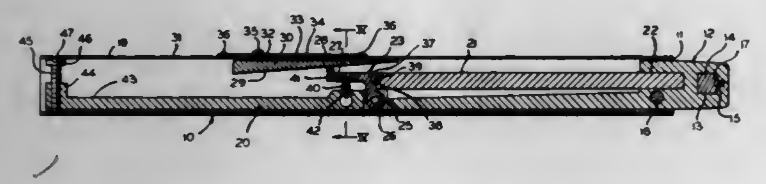
Marsdon P. Rainey, Shawnee Mission, Kans., assignor to Bradley and Wharton, Kansas City, Mo.
Filed Sept. 2, 1969, Ser. No. 854,378
Int. Cl. B25b *13/46*
U.S. Cl. 81—63.1 **9 Claims**



A ratchet tool having a rotatable handhold coupled with a shaft telescoped in a tubular handle. A rod of spring material offset radially from the shaft axis projects from the end of the shaft between a pair of interconnected wedges to move the latter to corresponding direction changing positions upon manual rotation of the handhold about its longitudinal axis.

3,608,403
AUTOMATIC TORQUE RELEASE WRENCH OF THE PRESET TYPE

Talmage O. Green, Glen Ellyn, Ill., assignor to Snap-On Tools Corporation, Kenosha, Wis.
Filed May 21, 1969, Ser. No. 826,578
Int. Cl. B25b *29/02*
U.S. Cl. 81—52.5 **12 Claims**

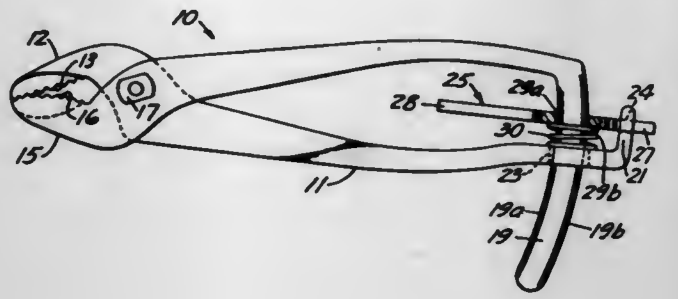


The structure embodies an elongated tubular handle member with a work engaging member projecting therefrom at one end to provide a transverse shank to which detachable sockets of various standard sizes are applied to turn fasteners to a predetermined torque load. Confronting primary and secondary flex beams are disposed in the tubular handle member for engagement with each other and the work engaging member. A spring urged trigger release is movably mounted to the primary flex beam in the region of its maximum flex responsive to resisting the torque load, and this trigger release is in the path of the secondary beam end to normally engage therewith until the trigger moves with the flex of both beams to engage the internal wall of the tubular handle member, thereby releasing its connection therewith when the load in the primary beam equals the combined bending load originally sustained by both primary and secondary beams.

When this occurs, the primary beam with its retained elasticity reserve, does not present a completely solid reaction should there be inadvertent over torqueing applied to the fastener or work engaging member after the trigger releases. The manual release of the handle member after the preset load has been applied, permits the spring to urge the trigger to again connect with the secondary beam for automatic resetting with the beams returning to their original straight line position relative to each other and the handle member. A calibrated wall sliding wedge provided on the handle member in the path of the trigger release member affords variable adjustment in the preset mechanism within a wide capacity range. An adjustment screw at the free end of the primary beam for engagement with the handle wall and accessible through an aperture therein, provides for accurate setting thereof by the user over an extended period of operation.

3,608,404
PLIERS

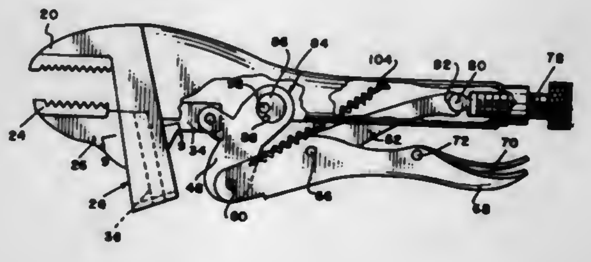
Walter L. Sarvie, R.R. 3, Alexandria, Minn. 56308
Original application Nov. 17, 1966, Ser. No. 595,107, now Patent No. 3,442,159. Divided and this application Jan. 2, 1969, Ser. No. 788,521
Int. Cl. B25b *7/14*
U.S. Cl. 81—323 **3 Claims**



A lock type pliers has an elongate lock engaging element affixed to the end of one handle to extend angularly therefrom. The lock engaging element projects through an opening in the adjacent end of the other handle. An apertured locking member is mounted on an extension of the apertured handle and is spring urged in a locking direction. The lock engaging element projects through and is engaged by the locking element, and is releasably locked thereby.

3,608,405
TOGGLE LINK HAND TOOL HAVING RECTILINEAR JAW MOVEMENT

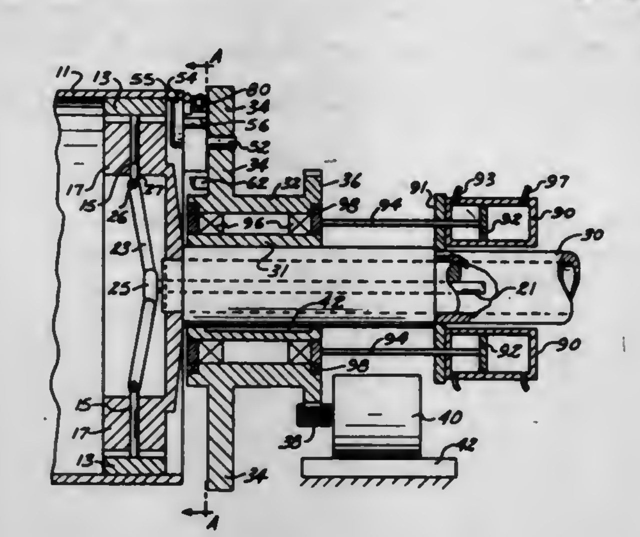
Charles C. Schmidt, Topeka, Kans., assignor to Mara, Inc., Topeka, Kans.
Filed Feb. 7, 1969, Ser. No. 797,632
Int. Cl. B25b *7/04, 7/12*
U.S. Cl. 81—356 **11 Claims**



A toggle link type hand tool including conventional means for adjustably positioning the toggle linkage as well as conventional means for releasing the toggle linkage from locking against a load gripped by the tool. The tool is characterized by the movable jaw being guided for straight line, nonrotating translation relative to the fixed jaw together with a bell crank lever means drivingly connecting the toggle linkage to the movable jaw. Inasmuch as the toggle linkage and the movable jaw respectively travel straight line and curvilinear paths relative to the fixed handle and jaw, the bell crank lever means has a fulcrum that is automatically movable to accommodate such different motions.

3,608,406
APPARATUS AND METHOD FOR FORMING PRECISION SURFACES ON ENDS OF PIPES AND ANALOGOUS ANNULAR SURFACES

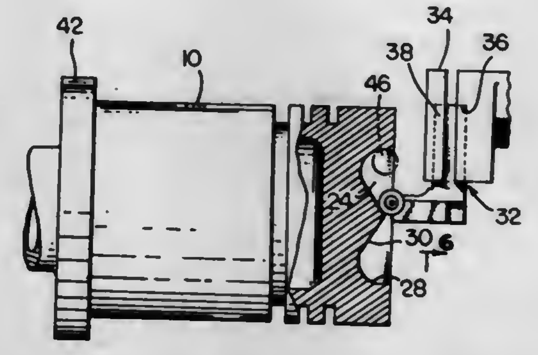
Joseph R. Paysinger, Eugene F. Sims, and Jerome W. Nelson, Houston, Tex., assignors to CRC-Crose International, Inc.
Filed July 9, 1968, Ser. No. 743,566
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 **8 Claims**



For forming precision shaped surfaces on the ends of large steel pipe and analogous annular structures, a rotating face plate is supported adjacent the end of the annular member and aligned with the end surface by means of an internal clamp which fits into the annular member. This holds the face plate in predetermined aligned position. Cutting tools are supported on holder elements which are resiliently mounted and include means for rolling contact with the internal surface of the annular member. In this way a true and uniform surface configuration is obtained on the pipe end, regardless of minor eccentricity or other deviations from a true circular form.

3,608,407
TOOL AND METHOD FOR PROCESSING PISTONS

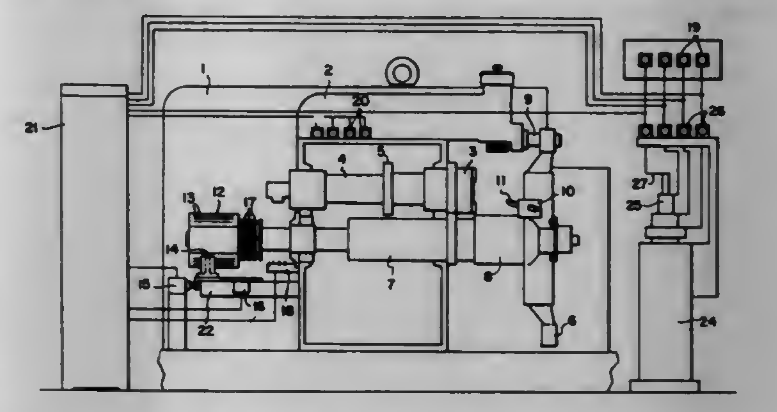
Thomas J. Hitzemann, 3319 Figel Ave., Fort Wayne, Ind. 46805
Filed Apr. 14, 1969, Ser. No. 815,824
Int. Cl. B23b *3/00;* **B26d** *1/00*
U.S. Cl. 82—1 **2 Claims**



In forming the working faces of pistons used in internal combustion engines, the profile of the piston face includes a concavely formed groove and a conical central portion. Previously, it was the practice to perform the machining operation in two steps, the first step was to remove a central boss on the piston and then a tool bit having a circular cutting edge was used to form the concave groove and finished profiling the conical central portion. In the present invention, I use a tool bit having polyfaced cutting edges in which there is combined with the circular cutting bit a second cutting bit which is transversely disposed with respect to the circular cutting bit and which removes sufficient metal in advance of the circular cutting bit so that the circular cutting bit can perform the finished machining operation forming the central conical portion on the piston. The forming operations take place simultaneously so that in this manner I can perform the entire machining operations in a single step with a single tool.

3,608,408
DEVICE FOR REGULATING A CAM-CONTROLLED MACHINE TOOL

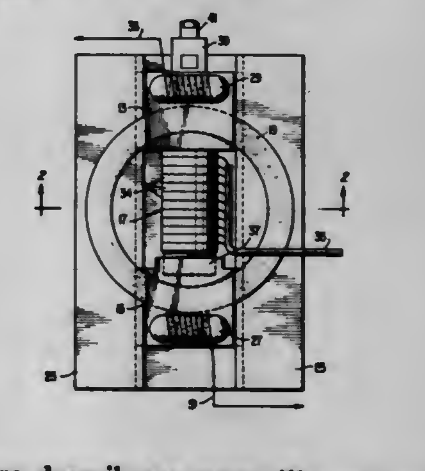
Franz Reiners, Post Berg, Erkelenz-Land, and Georg Walk, Rheydt, Germany, assignors to A. Monforts, Monchen-Gladbach, Germany
Filed Dec. 19, 1969, Ser. No. 886,666
Claims priority, application Germany, Dec. 21, 1968, P 18 16 401.7
Int. Cl. B23b *25/06*
U.S. Cl. 82—21 **4 Claims**



Device for regulating a cam-controlled machine tool includes measured value transmitter means connected to nominal value potentiometer means for transmitting a signal to the latter in accordance with a measured machining dimension of a control workpiece for automatically preadjusting the nominal value potentiometer means to fix the end position of the multitool-carrying turret of the machine tool, so that servomotor means operatively connected to the nominal value potentiometer means and to actual value potentiometer means which sense the actual axial position of a terminal switch relative to a control drum connected to the turret, are automatically actuable in response to a difference of the nominal and actual values for relatively displacing the terminal switch and control drum to adjustably displace the turret axially to its end position.

3,608,409
CATERPILLAR MICRO POSITIONER

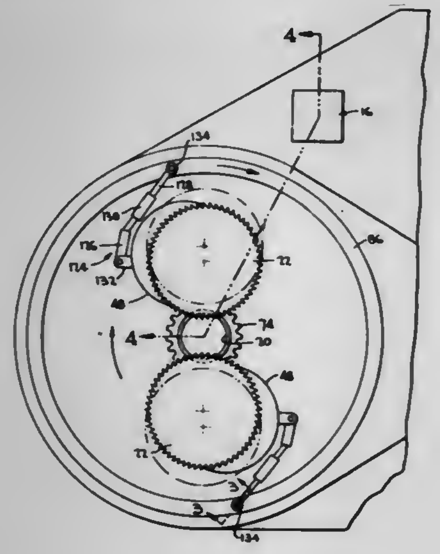
Ewald E. Schmidt, Lanham, Md., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 24, 1969, Ser. No. 860,493
Int. Cl. B23b *21/00*
U.S. Cl. 82—24R **1 Claim**



This disclosure describes a caterpillar micro positioner for use in an aspherical or other similar machine. The micro positioner includes front and rear sliding holders and an electromechanical or other incremental driver. The driver connects the front and rear sliding holders and incrementally moves one holder with respect to the other holder. An outwardly extending tool is attached to the front holder. Electromagnetic holding means are held in each of the sliding holders and alternately energized to hold one of the holders in a fixed position while the other holder is moved. In addition, a flex ring is provided and coupled to the front and rear holders so as to place the driver under compression, thereby eliminating slack or play from the various mechanical interconnections between the driver and the holders and from the driver per se.

3,608,410
ROTARY SEVERING METHOD AND APPARATUS

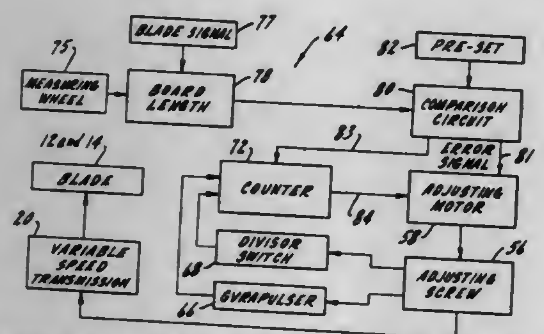
Raymond G. Brownstein, 300 Fountain Ave.,
Ellwood City, Pa. 16117
Original application Sept. 25, 1967, Ser. No. 670,195, now Patent No. 3,522,747. Divided and this application Feb. 3, 1970, Ser. No. 12,511
Int. Cl. B23b *1/00*
U.S. Cl. 82—47 **3 Claims**



A method and means for severing a longitudinally extending stationary workpiece wherein at least one movable severing element, such as a circular saw, is provided. The severing element is orbited about the longitudinal axis of the workpiece while being simultaneously rotated about its own axis of rotation. The rotating and orbiting severing element can be selectively displaced toward the stationary workpiece to contact and thereby sever the same.

3,608,411
LENGTH CONTROL METHOD AND APPARATUS

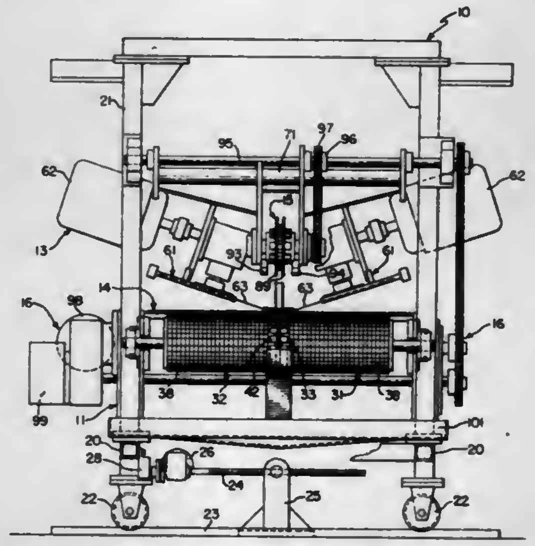
Robert W. Schmidt, 5744 W. 77th St.,
Oak Lawn, Ill. 60459
Filed Aug. 20, 1969, Ser. No. 851,582
Int. Cl. B23d *25/02*
U.S. Cl. 83—38 **12 Claims**



A method and apparatus for automatically and accurately controlling the length of cuts made on a continously running strip of feed stock. A comparison circuit receives information on the length of cut being made by a blade device, compares this with a pre-set length value, and produces an error signal if any length correction is required. The error signal actuates an adjusting motor to operate in the required direction and vary the speed ratio of a transmission through an adjusting mechanism to adjust the timed relationship of blade cut with respect to material feed rate. The adjusting motor is stopped when the length of cut is varied the required amount by a circuit which follows the non-linear curve of length of cut as a function of adjusting mechanism operation.

3,608,412
TREAD SLITTER

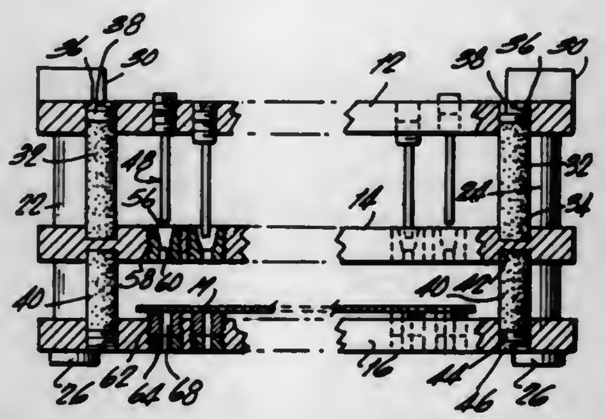
William D. Braden, Stow, and Leonard A. Vandale, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 19, 1970, Ser. No. 3,709
Int. Cl. B26d *1/20*
U.S. Cl. 83—107 **29 Claims**



A machine for separating a pair of sidewalls from an extruded piece of tread including the sidewalls. The machine has a feed conveyor for carrying the extruded tread to a cutter where the sidewalls are cut from the tread, and a number of discharge conveyors for removing the individual pieces of tread and sidewall from the machine after the cutting operation is completed. A mechanism is provided for engaging the tread moving on the feed conveyor, and guiding it through the cutter and on to the discharge conveyor. The cutter and guide mechanism are mounted on an overhead trackway and are retractable from the conveyors, if there is a malfunction of the machine.

3,608,413
HOLE PUNCHING DIE ARRANGEMENT

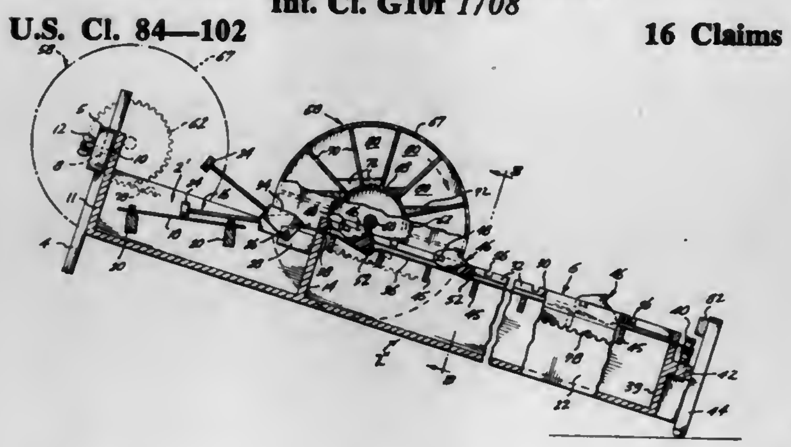
Domenic Borello, 142 Nyac Ave., Pelham, N.Y. 10803
Filed Sept. 11, 1969, Ser. No. 857,004
Int. Cl. B26d *7/02, 7/06, 7/26*
U.S. Cl. 83—133 **2 Claims**



A plurality of cooperating male and female hole punching members respectively mounted in upper and lower die plates with an intermediate die plate held by upper and lower sets of resilient means between the upper and lower die plates. By adjusting the relative forces exerted by the resilient means, during a power stroke the lower set yields first to allow the intermediate die plate to ease into holding engagement with the material during hole punching operation, and during the return stroke the upper set is first to cause withdrawal of the male punching members from the material while the material is still being held. As a consequence, numerous holes are effectively punched having little or no peripheral burrs.

3,608,414
MUSICAL DEVICE

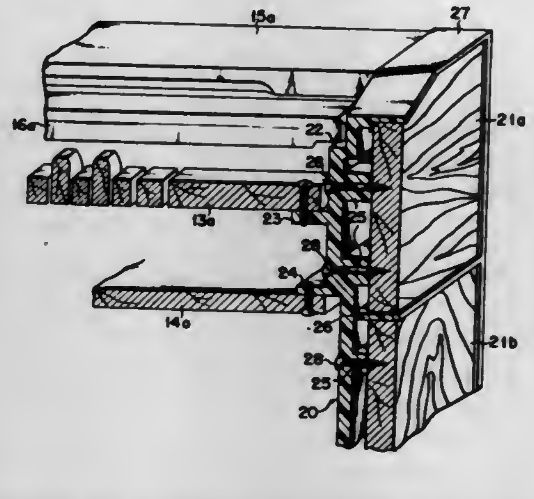
Curley H. Williams, 2205 2nd Ave.,
Seattle, Wash. 98121
Filed Feb. 4, 1970, Ser. No. 8,465
Int. Cl. G10f *1/08*
U.S. Cl. 84—102 **16 Claims**



A musical device is disclosed which includes a set of pressure operated actuators for producing the musical notes, which are supported on a frame in relatively staggered operative positions along the incline of a downwardly inclined face of the frame; and an activator which is manually releasably supported above the actuators on the frame, and responsive to gravitational force when released, to translate downwardly along an incline parallel to the face of the frame, in pressure-applicable engagement with the actuators, to operate the same, while rotating about an axis extending crosswise of the face.

3,608,415
HOUSING FOR A KEYBOARD MUSICAL INSTRUMENT

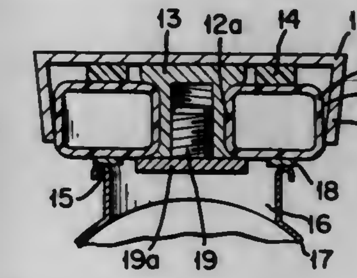
Shuji Muraki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed May 20, 1970, Ser. No. 39,033
Claims priority, application Japan, May 26, 1969, 44/48,261
Int. Cl. G10c *3/02*
U.S. Cl. 84—177 **4 Claims**



A housing for a keyboard musical instrument has a pair of side board assemblies each comprising of an inner board provided on its one side with projections supporting keyboards and a key bed, and an outer board fitted to the other side of the inner board with a predetermined space therebetween, the inner board being molded from plastics material integral with the projections. The housing becomes easy of assemblage and is imparted a sense of massiveness without increasing its substantial weight.

3,608,416
TONE HOLE COVERING ASSEMBLY FOR WOODWIND MUSICAL INSTRUMENTS

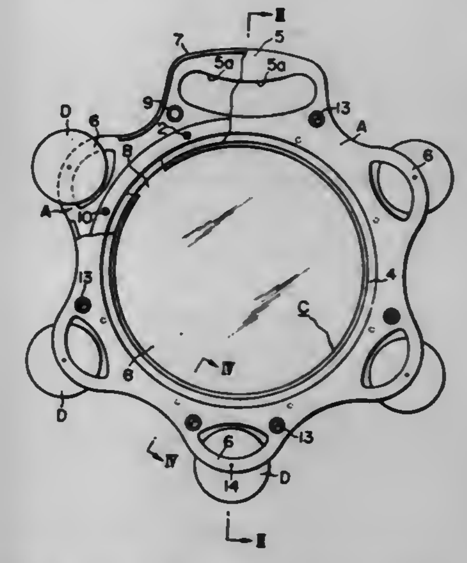
Akira Nagao, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed June 22, 1970, Ser. No. 48,383
Claims priority, application Japan, June 23, 1969, 44/49,213
Int. Cl. G10d *9/04*
U.S. Cl. 84—380 **3 Claims**



A tone hole covering assembly for a woodwind musical instrument comprising a pad cup and an enclosed, hollow pad received therein, the pad being filled with air compressed to a sufficient extent to cause the outer surface of the pad to contact the annular edge of a tone hole of the instrument in an airtight manner when the cup is operated to cover the tone hole.

3,608,417
TAMBOURINE

Yoshiyuki Koishikawa, 2365 Kawarada-cho,
Yokkaichi Mie Prefecture, Japan
Filed Mar. 26, 1970, Ser. No. 22,844
Claims priority, application Japan, Dec. 4, 1969, 44/114,676
Int. Cl. G10d *13/02*
U.S. Cl. 84—418 **9 Claims**



A tambourine made of a pair of synthetic resin front and back annular frames to be overlapped and affixed to one another so as to form a stepped or channel shape in cross-section area for clamping the skin with the help of a similar material skin-tensioning ring interposed between the internal peripheral edges of the respective frame pieces. The frame pieces are each provided with generally peripherally spaced projections and recesses respectively to be complementally engaged with those on the other opposed frame piece and are also provided with a hand grip portion. The frames also have recessed portions for fitting bells within the outer peripheral edges of said annular pieces. The skin or a sheet is provided with circumferentially spaced peripheral attaching holes to receive the aforementioned projections of the annular frame, and the skin is adapted to be tightly held between the respective annular pieces of said two frames. As a part of the tambourine assembly, the annular tightening piece has a stepped cross-section with an offset portion to tension the sheet while cooperating with the corresponding stepped portion or recessed channel between the frames, and further includes a suitable hand grip, and fastener means for tightly interconnecting the pair of frames.

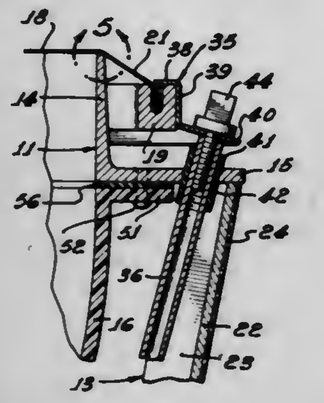
3,608,418
KETTLEDRUM

William H. Chaffee and Donald G. Canedy, Hinsdale, Ill., and Josephus B. Thompson, deceased, late of Covington, Ohio, by K. E. Stade, administrator, Covington, Ohio, assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed May 7, 1969, Ser. No. 823,539

Int. Cl. G10d *13/04*

U.S. Cl. 84—419 **26 Claims**



A kettledrum incorporating a ring which acts as a bridge over which the drumhead is stretched, as a means to mount the bowl in sealed and dependent relationship, as a means to minimize transmission of vibrations from the drumhead to the bowl, as a guide for pull rods which are utilized in changing the pitch of the drumhead, and as a protective element preventing any shifting of the counterhoop or flesh hoop despite rough handling of the instrument. The upper or bearing edge of such ring (which may be termed, for convenience, the "bridge ring") has a predetermined shape and thickness adapted to improve the quality of the generated sounds while at the same time preventing cutting of the drumhead. The indicated bridge ring is supported by combination guide and support struts the lower ends of which are connected to a base ring. Such base ring provides a mounting function and also serves to enclose and protect a spider and cover element through which drumhead-tuning forces are transmitted directly to the pull rods. The pull rods are associated with the counterhoop through screws adapted to permit very fast initial tuning of the instrument. The bowl is a flanged hemisphere devoid of holes and smooth on the inside, such hemisphere being formed by blowing a heated sheet of acrylic plastic or the like.

3,608,419
DRUMSTICK

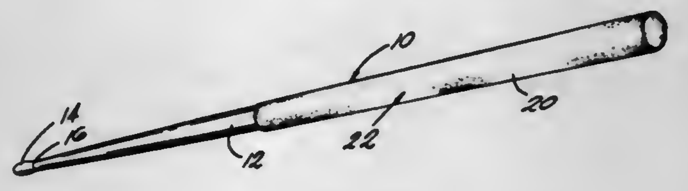
Michael F. Russell, 2451 Greenwood Road, Lapeer, Mich. 48446

Filed Jan. 15, 1970, Ser. No. 3,104

Int. Cl. B10d *13/00*

U.S. Cl. 84—422 **5 Claims**

A drumstick including an elongate body having a striking tip portion at one end thereof, grip means secured to and encompassing the body at a position spaced from the striking tip portion thereof, the grip means being comprised of a plurality of very fine, flexible, closely packed, relatively short nylon fibers projecting outwardly from the body in a direction generally normal to the surface of the body, the inner ends of the fibers being bonded to the body whereby the fibers form a soft, velvet-like seamless grip.



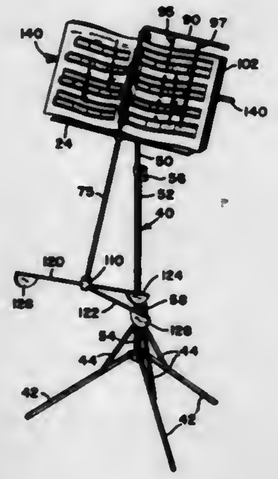
3,608,420
MUSIC PAGE TURNER

William V. Hazelett, 50 N. Hatfield St., Dayton, Ohio 45417

Filed June 20, 1969, Ser. No. 835,007

Int. Cl. G10g *7/00*

U.S. Cl. 84—516 **6 Claims**



A music rack is provided with a generally vertical shaft mounted for rotation on the standard. At one end of the shaft there is a gripping arm which extends horizontally above a book of music, the arm including a pair of downwardly extending members for engaging a page of music. At the other end of the shaft there is a series of outwardly protruding arms which the musician can manipulate with his knee to effect turning of the shaft, gripping arm, and page of music. The arms are arranged such that the musician may turn the page by using his knee to effect a 180° turn of the shaft.

3,608,421
MANUFACTURE OF ROD-LIKE ARTICLES HAVING CORES OF FLUENT MATERIALS

Trevor Rex Gibbon, Northrand, Transvaal, and Stephen Walters Kotze, Johannesburg, Transvaal, Republic of South Africa, assignors to African Explosives and Chemical Industries Limited, Johannesburg, Transvaal, Republic of South Africa

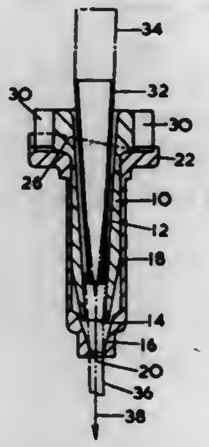
Filed Oct. 11, 1968, Ser. No. 766,810

Claims priority, application Republic of South Africa, Oct. 12, 1967, 67/6,088

Int. Cl. F42b *33/02;* **C06b** *21/02*

U.S. Cl. 86—1 **13 Claims**

Apparatus for manufacturing a rod-like article having a flexible tubular casing and a core of fluent material, the apparatus comprising a mandril and a first die aligned and spaced apart therefrom so as to define an annular passage therewith for forming a strip of flexible material into a tubular casing, the mandril being adapted to permit a fluent material to be fed into the tubular casing, a second die having an opening of cross-sectional area smaller than that of the first die and in alignment with the opening of the first die so as to permit the tubular casing to be displaced through the dies, and means for adjusting the spacing between the die openings; a method for manufacturing rod-like articles having a flexible tubular casing and a core of fluent material, using this apparatus is also disclosed.



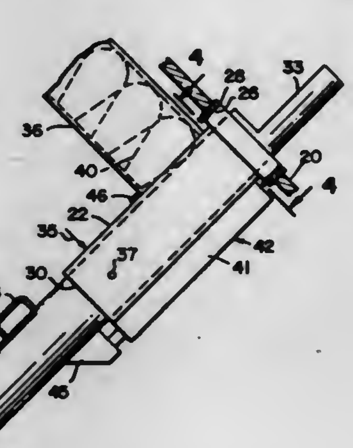
3,608,422
FRONT LOADING FIRING APPARATUS

Reginald Bretnor, Berkeley, Calif.
(P.O. Box 748, Jacksonville, Oreg. 97530)

Filed Dec. 16, 1968, Ser. No. 783,902

Int. Cl. F41f *1/06*

U.S. Cl. 89—1F **11 Claims**



A front loading automatic high angle firing apparatus for launching projectiles from enclosed positions.

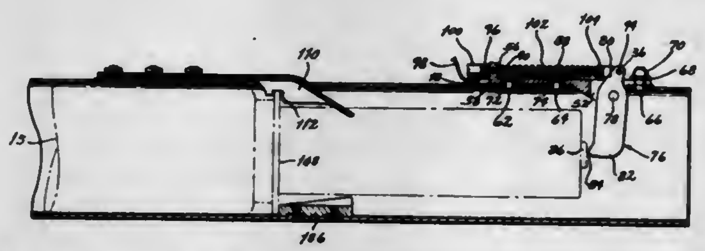
3,608,423
ELECTRICAL CONTACT ASSEMBLY FOR ROCKET LAUNCHERS

John J. Nash, Ferguson, Mo., assignor to Alsco, Inc., St. Louis, Mo.

Filed Oct. 23, 1968, Ser. No. 769,991

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.807 **4 Claims**



A spring-loaded electrical contact assembly for rocket launchers is comprised of an elongated striker arm bracket mounted upon a rocket-launching tube, a striker pivotally mounted to the bracket and having a portion extending within the launching tube and contacting the ignition cap of a rocket positioned therein, means for introducing electrical current to the striker, and spring means operatively connected to the bracket. The spring means yieldably urges the striker about its pivotal connection with the bracket so that a portion of the striker is yieldably held in electrical contact with the ignition cap of the rocket.

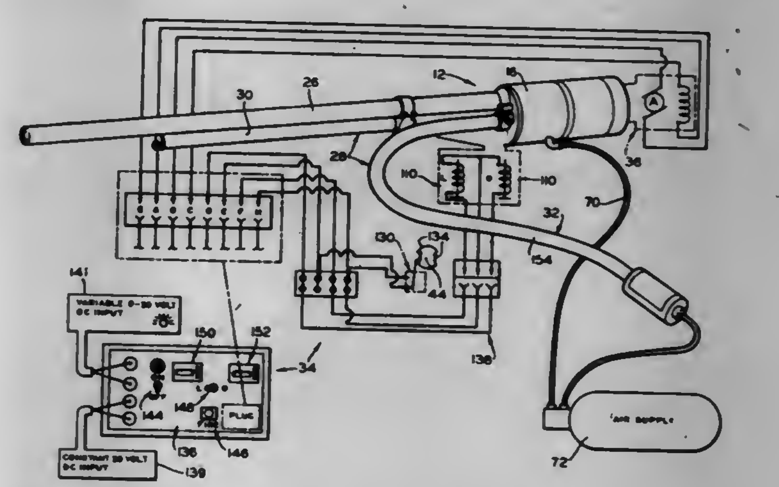
3,608,424
FEEDING MECHANISM OF AN AUTOMATIC CANNON FOR FIRING CASELESS AMMUNITION

Harold H. Wiese, Davenport, Iowa, assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 8, 1969, Ser. No. 864,849

Int. Cl. F41d *7/04*

U.S. Cl. 89—13R **11 Claims**



The feeding mechanism of an automatic cannon includes a four-chamber drum which is selectively driven in opposite directions by a reversible electric motor. A Geneva movement is operationally disposed between the motor and drum to provide intermittent rotation thereof for successively rotating each of the chambers to four stations including a firing station, an ejection station, and two loading stations oppositely disposed therebetween, and pausing momentarily at each station for loading and firing functions. A magazine is mounted at each loading station for registry with the chambers when respectively indexed thereat, and solenoid actuated gates control the passages of the rounds from the magazines to the chambers. An electrical system, through a microswitch actuated by the Geneva movement, controls the operation of the gates so as to feed the rounds from one magazine to the indexed one of the chambers when the drum is rotated in one direction and from the other magazine to the indexed chambers when the drum is rotated in the opposite direction.

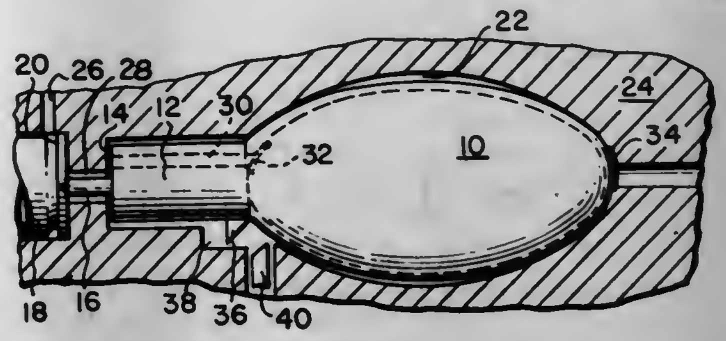
3,608,425
HIGH SPEED FIRING MECHANISM

Gilbert S. Jackson, West Hyattsville, Md., assignor to Jesse D. Steele, Chevy Chase, Violet Ann Ash, Rockville, and Nicholas J. Aquilino, Crofton, Md., fractional part interest to each

Filed Dec. 31, 1968, Ser. No. 788,223

Int. Cl. F41d *11/16*

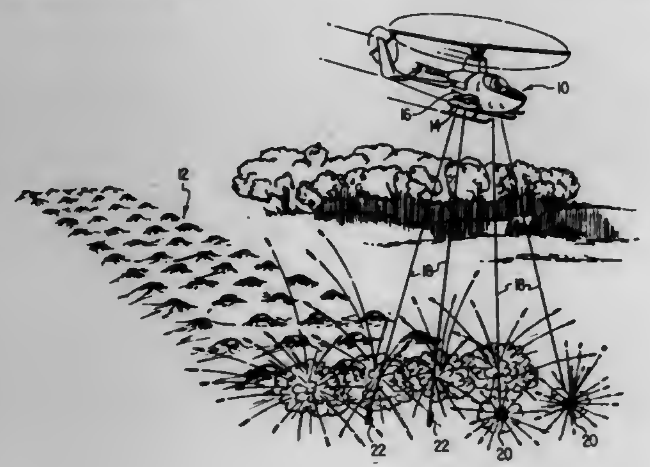
U.S. Cl. 89—27 **5 Claims**



A high speed actuator operable in response to generated gases including an actuator pin, a pressure responsive surface and a pressure responsive chamber whereby gas pressure against the pressure responsive surface creates a backward thrust and gas pressure buildup within the chamber creates a forward thrust.

3,608,426
DOWN-FIRE ARMAMENT POD FOR HELICOPTERS

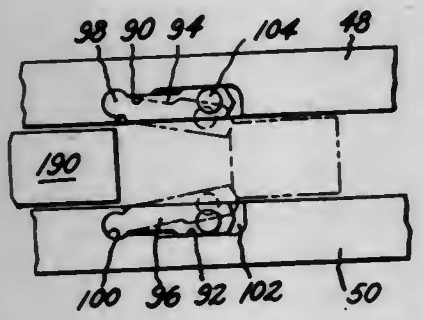
Lester L. Jackson, Jr., Towson, Md., assignor to Martin Marietta Corporation, New York, N.Y.
Filed Feb. 14, 1969, Ser. No. 799,294
Int. Cl. F41d *11/24*
U.S. Cl. 89—37.56 **3 Claims**

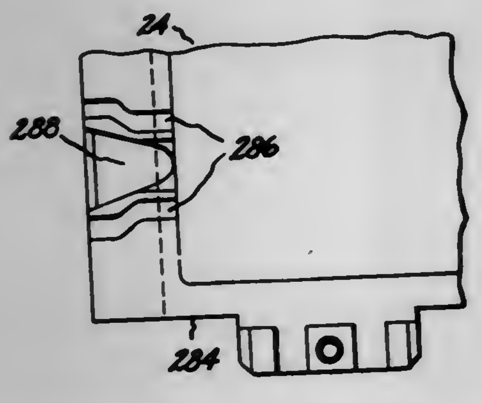


A down-fire armament pod for helicopter use carrying at least one pair of vertically oriented grenade launchers with limited roll axis and firing rate adjustment for complete saturation of a target area with fragmentation environment at differing helicopter altitudes and flight velocities.

3,608,427
BOLT LOCKING SYSTEM

Richard H. Colby, Hamden, Mass., assignor to General Electric Company
Filed Apr. 7, 1969, Ser. No. 814,083
Int. Cl. F41d *3/00*
U.S. Cl. 89—176 **4 Claims**

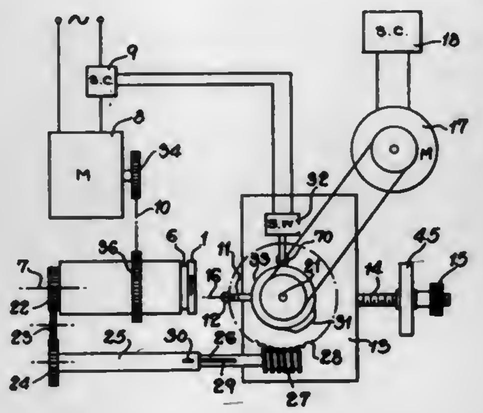




A machine gun is disclosed having a receiver, a barrel with an extension mounted for recoil movement in the receiver, a bolt having a web mounted for recoil movement in the receiver with a bolt head extending up therefrom into said barrel extension and a cartridge case ejection aperture therein, and locking lugs mounted in the barrel extension and controlled by the receiver for locking the bolt head.

3,608,428
SPIRAL GROOVE CUTTING APPARATUS

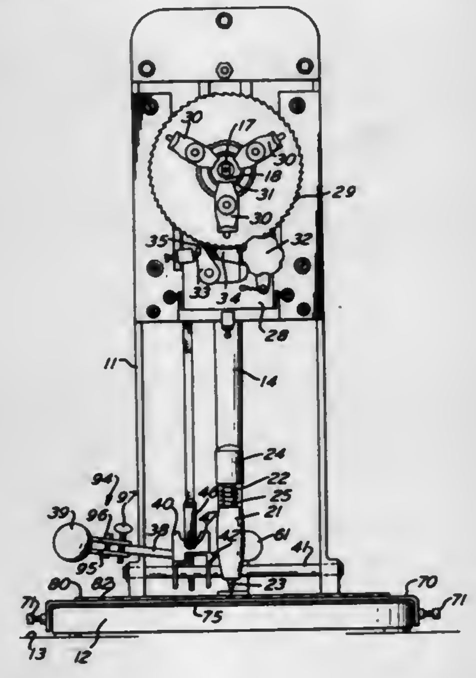
Jack J. Gilbert, Suffern, N.Y., assignor to Spyro Dynamics Corporation, Northvale, N.J.
Filed Mar. 4, 1970, Ser. No. 16,488
Int. Cl. B23f *1/06;* **B23c** *3/28*
U.S. Cl. 90—3 **7 Claims**



Apparatus for cutting a spiral groove of arcuate cross-section and varying in depth in accordance with a predetermined radius in a face gear blank comprising means for holding and rotating the blank, means for holding and rotating a cutting tool having an arcuate face around its own axis while turning it about an axis perpendicular thereto at a rate synchronized with the rotation of said blank and means for moving the tool into engagement with said blank.

3,608,429
ATTACHMENT KIT FOR COPYING MACHINE FOR ENGRAVING JEWELRY RINGS

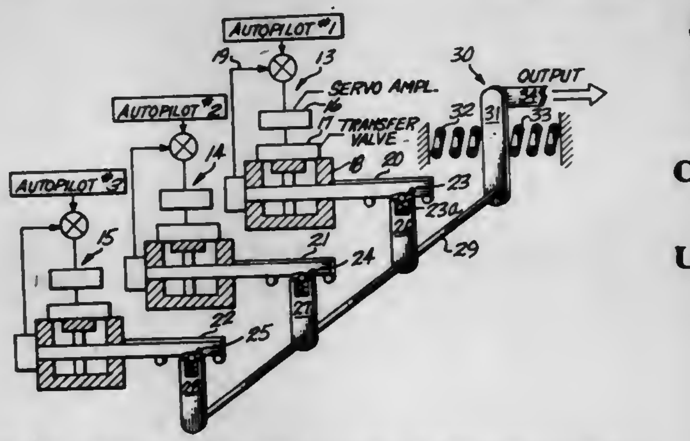
George Berlant, Bellerose, N.Y., assignor to New Hermes Engraving Corporation, New York, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,947
Int. Cl. B23c *1/16*
U.S. Cl. 90—13.1 **12 Claims**



An attachment kit for modifying a copying and engraving machine that utilizes a pattern carrier of a standard diameter so that it can copy indicia from a plurality of circular pattern carriers of different diameters. An adapter bracket properly positions the circular pattern carries so that they can be engaged by a tracing tool. Additionally, the attachment kit includes a locking member that cooperates with the locking member on the machine that normally engages the standard pattern carrier so that the non-standard pattern carriers can be locked in position so that the indicia thereon can be copied and engraved. Furthermore, the attachment kit includes a member that limits the spacing between engraved characters to a predetermined distance and a screw device that controls the depth of the engraving cut.

3,608,430
METHODS FOR FORMING AIRCRAFT REDUNDANT CONTROL SYSTEMS AND SYSTEMS FOR CARRYING OUT THE METHODS

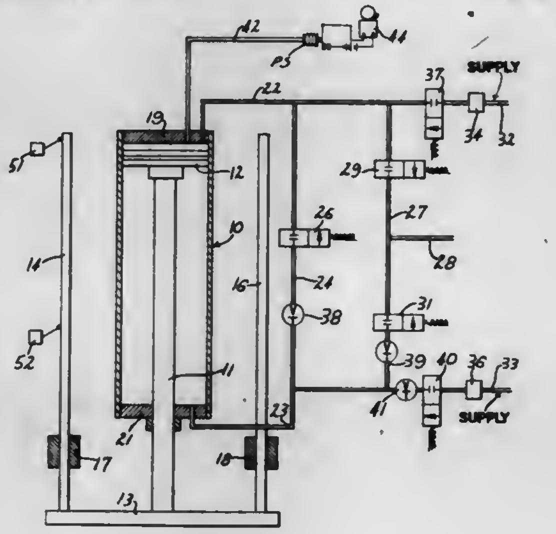
John P. Headlund, Bellevue, and Odd Justad, Issaquah, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed June 29, 1970, Ser. No. 50,616
Int. Cl. F01b *25/00;* **F15b** *11/16*
U.S. Cl. 91—1 **18 Claims**



Methods for forming dual and triple redundant control systems and systems for carrying out the methods are disclosed. The dual and triple redundant control systems, such as, but not limited to airplane autopilot control systems are set forth for mechanically combining the command outputs of the two or three independent autopilots and their servo units and detent connections between the servo units and a system output for providing an output signal representative of the mid-valued output between the other two outputs or between the other output and neutral. These systems are entirely mechanical, utilizing two or three spring loaded detents and a spring centering device.

3,608,431
CONTROL SYSTEM FOR THE RAM OF VERTICALLY DISPOSED FLUID PRESSURE CYLINDERS

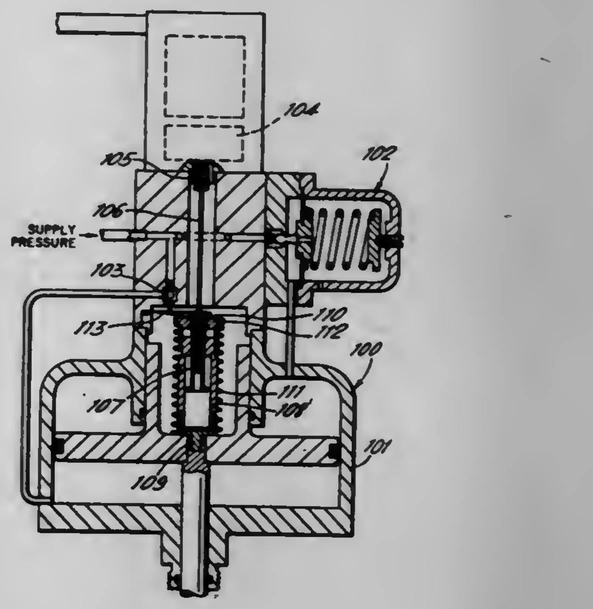
William C. Pease III, Columbus, Ga., assignor to Lummus Industries, Inc.
Filed July 14, 1969, Ser. No. 841,381
Int. Cl. F15b *11/15, 13/44, 13/16*
U.S. Cl. 91—361 **3 Claims**



A system for operating fluid pressure cylinders, particularly cylinders powered by compressible gases in which the cylinder is arranged vertically so that on its working stroke the ram of the cylinder moves downwardly. A control system for the cylinder interconnects the ends of the cylinder on the downward stroke of the ram so that the fluid under pressure in the lower end and which has been used to raise the ram flows into the upper end so that the ram falls downwardly by gravity. By thus interconnecting the ends of the cylinder at the time indicated the ram moves down, on its working stroke, without being connected to the source of gas under pressure. Further details include means to admit gas under pressure to the upper end of the cylinder when the interconnecting procedure is insufficient to cause the ram to complete its working stroke.

3,608,432
SERVOMECHANISMS INCLUDING ELECTRICAL STEPPER MOTORS

Peter Walton, Gloucester, England, assignor to Serck Industries Limited, Birmingham, England
Filed Feb. 14, 1969, Ser. No. 799,883
Claims priority, application Great Britain, Feb. 14, 1968, 7,186/68
Int. Cl. F15b *9/10, 15/17*
U.S. Cl. 91—380 **7 Claims**

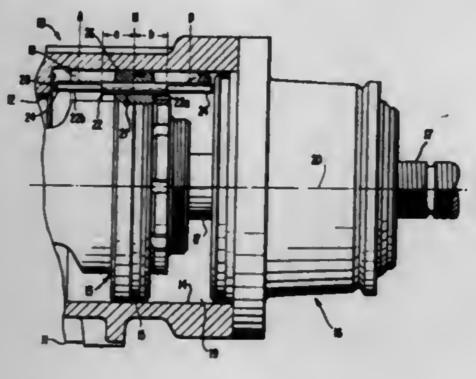


A servomechanism in which a feed back connection is provided between an output member and a control member. The feed back connection has a first part on the output member and a second part adapted to be displaced relative to the first part by a stepper motor unit and coupled to the control member by a coupling permitting continuing movement of the second part when the control member is at one end of its travel.

3,608,433
VALVE ARRANGEMENT IN THE WORKING PISTON OF A PRESSURE-MEDIUM OPERATING CYLINDER

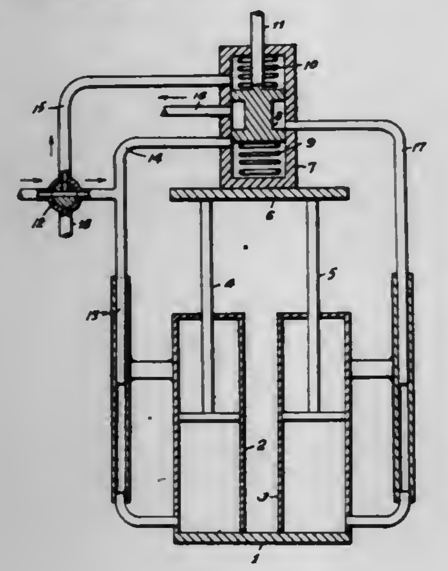
Dirk Buisman, Leichlingen, and Otto Lattner, Stuttgart-Bad, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Apr. 11, 1969, Ser. No. 815,307
Claims priority, application Germany, Apr. 13, 1968, P 17 50 263.5
Int. Cl. F15b *15/22*
U.S. Cl. 91—401 **18 Claims**

A valve mechanism arranged in an operating piston slidable within a cylinder, in which the operating piston is provided with a valve channel forming a guide portion, and a valve pin axially displaceable in the guide portion which includes a center section adapted to be guided and sealed pressure-tight in the guide portion and end sections of reduced cross section with respect to the center section.



3,608,434
DUAL AREA HYDRAULIC ACTUATOR

Benny M. Hillberry, West Lafayette, Ind., assignor to the United States of America as represented by the Secretary of the Army
Filed Jan. 13, 1970, Ser. No. 2,617
Int. Cl. F15b *11/16*
U.S. Cl. 91—411R **2 Claims**

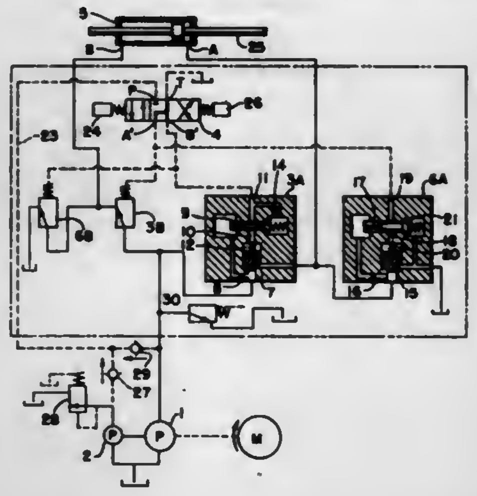


A plurality of fluid cylinders and pistons are connected to a source of fluid under pressure, and are cross-connected to one another through valving, such that the piston-cylinder arrangement is extended at a rapid rate of travel to push a force-exerting rod. When this rod meets a high resistance load a valve is shifted, automatically, to increase the force output while the piston-cylinder and rod advances at a reduced rate of travel.

3,608,435
PRESSURE CONTROLLED DIRECTIONAL SYSTEM

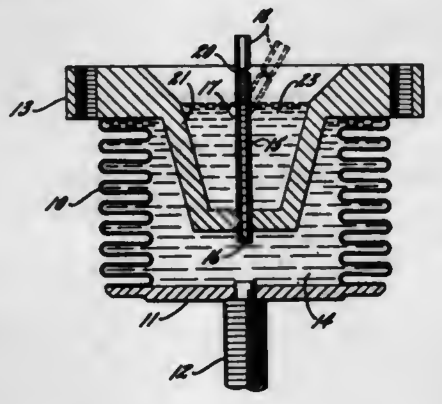
Raymond S. Conabee, Prospect Heights, and Melville E. Lawrence, Arlington Heights, Ill., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed June 30, 1969, Ser. No. 837,854
Int. Cl. F15b *11/08*
U.S. Cl. 91—454 **12 Claims**

A pressure controlled directional system for a hydraulic press motor characterized in the provision of a motor reversing valve assembly including two supply valves and two return valves which are closed when pilot pressure is conducted thereto and which are opened by fluid pressure when pilot pressure is vented therefrom, and a four-way pilot valve which selectively conducts pilot pressure to said valves and vents pilot pressure therefrom thus to actuate the press motor in opposite directions. The pilot valve is characterized in that it has a neutral position whereat all of said valves have pilot pressure vented therefrom so that they may open to conduct system pressure to the reservoir and whereat the pilot pressure inlet port thereof is blocked so that pilot pressure stands at the pilot valve preparatory to conduction to selected supply and return valves. The system herein is further characterized in that the supply and return valves are spring-biased against the direction of flow of fluid therethrough and in that it has a dual pump arrangement to provide for rapid actuation of the press motor in either direction by the conjoint flow of fluid from a high pressure-low volume pump and a low pressure-high volume pump.



3,608,436
BELLOWS DAMPER UNIT

Gerald F. Ostroot, St. Cloud, and Robert H. Torborg, Cold Spring, Minn., assignors to DeZurik Corporation, Sartell, Minn.
Filed May 2, 1968, Ser. No. 726,089
Int. Cl. F16j *3/00*
U.S. Cl. 92—34 **3 Claims**

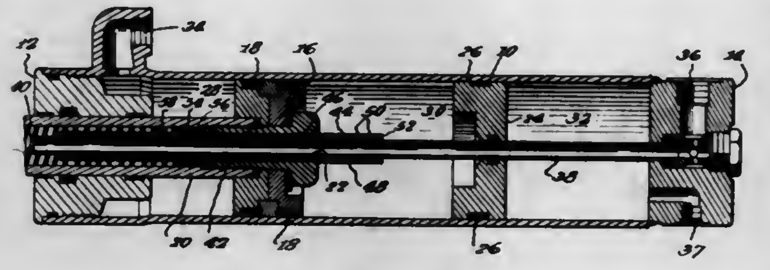


A liquid-filled force damper unit is described in which a spring metal bellows unit is vacuum-filled with damping fluid to eliminate all air bubbles, and provided with a frangible seal. The unit is assembled to a reservoir which is filled with damping fluid above the level of the seal, which is then broken off, and a relatively flexible reservoir diaphragm is added to allow the unit to be used in any position.

3,608,437
CUSHIONING DEVICE FOR HYDRAULIC MOTOR

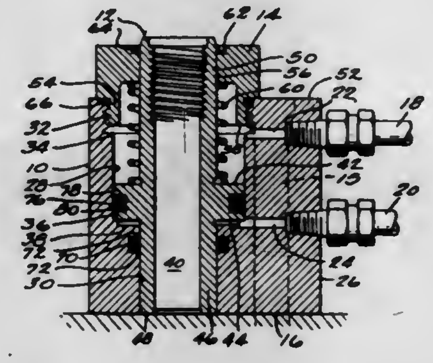
William E. Little, West Burlington, and Robert M. Barton, Burlington, Iowa, assignors to J. I. Case Company
Filed Dec. 30, 1969, Ser. No. 889,255
Int. Cl. F01b *11/02*
U.S. Cl. 92—85 **8 Claims**

A cushioning device in a hydraulic cylinder for decelerating the movement of a piston as it approaches the head of the cylinder. The cushioning device includes a flow control sleeve having a plurality of metering apertures therein, the sleeve being mounted on either the piston or the head and adapted to be slidably engaged by the surface of a bore formed in the piston as the piston approaches the head, the surface of the bore progressively closing the metering apertures to restrict the flow of fluid and decelerate the piston. The configuration of the flow control sleeve is such that it is readily adaptable for use in a cylinder having an adjustable head for varying the length of the cylinder to effect adjustment of the stroke of the piston.



3,608,438
RECTANGULAR BODY RAM

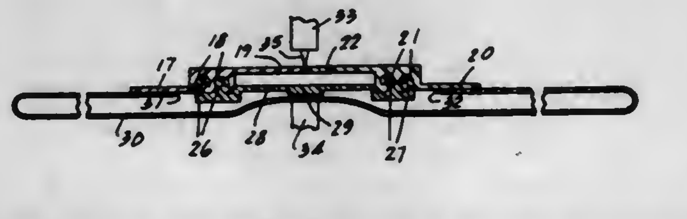
Vitas T. Thomas and Robert A. Lovdahl, Racine, Wis., assignors to Tomco, Inc., Racine, Wis.
Filed May 13, 1968, Ser. No. 728,859
The portion of the term of the patent subsequent to May 12, 1987, has been disclaimed
Int. Cl. F01b *31/00*
U.S. Cl. 92—163 **8 Claims**



Disclosed herein is a work holding assembly including a hydraulic device having a solid or hollow ram mounted for reciprocal motion within a rectangular housing with a piston head on said ram positioned in sealing engagement with a bore in the housing. Fluid flow passages in the walls of the housing enter the bore at points out of the path of motion of said piston head and a mounting surface is provided on the housing in a plane perpendicular to the axis of the ram.

3,608,439
METHOD OF MAKING A FLEXIBLE PILFER PROOF CLOSURE CONSTRUCTION FOR BAGS

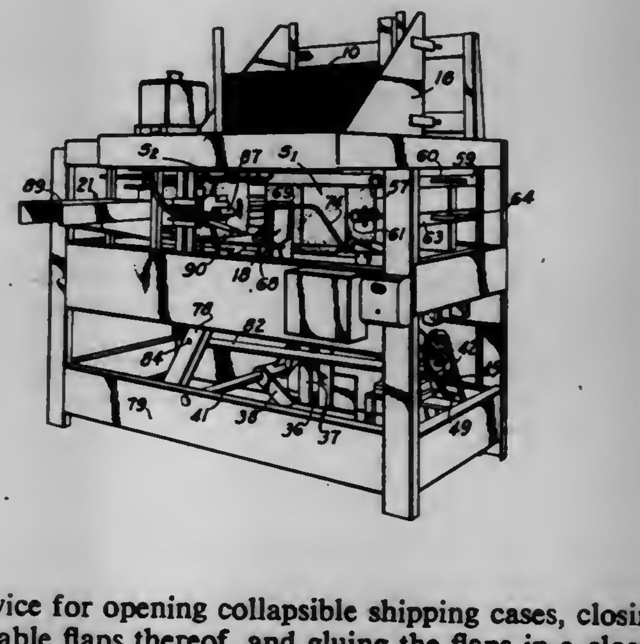
Steven Ausnit, 124 E. 61st St., New York, N.Y. 10021
Filed Feb. 18, 1970, Ser. No. 12,187
Int. Cl. B31b *49/04*
U.S. Cl. 93—35R **10 Claims**



Method of making bags each with a reclosable opening wherein a sheet of heat sealable material is formed into a split tube, and the split of the tube is covered with a closure strip which is subsequently secured thereto to form a closed tube, the closure strip containing three webs with interlocking rib and groove elements disposed on all three webs with said elements placed between the center of the strip and the extreme marginal edges, and containing two preformed tear lines between said interlocking elements and then having the webs of the closure strip heat sealed at the center of the closure strip and finally securing the tube in the heat sealed area.

3,608,440
MACHINE FOR OPENING SHIPPING CASES FROM THE FLAT

Donald G. Reichert, Tarpon Springs, and Earl Petrikin, St. Petersburg, Fla., assignors to ABC Packaging Machine Corporation, Largo, Fla.
Filed Sept. 17, 1969, Ser. No. 858,626
Int. Cl. B31b *1/62, 1/80, 5/02*
U.S. Cl. 93—36.3 **11 Claims**

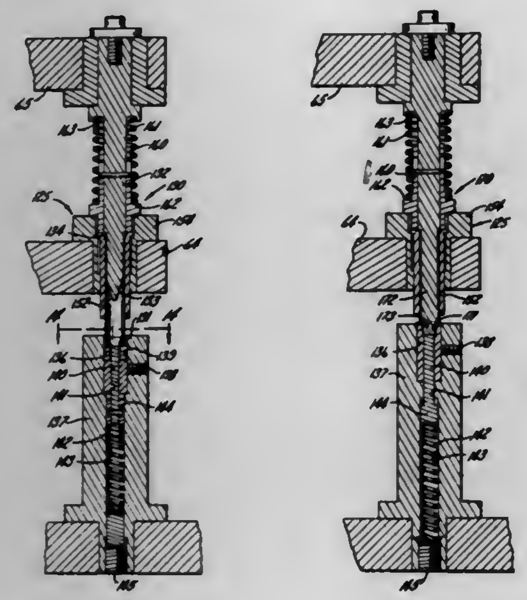


A device for opening collapsible shipping cases, closing the foldable flaps thereof, and gluing the flaps in a closed position including a magazine for receiving the cases in a flat, collapsed condition, a stripper for displacing cases individually from the magazine, a vacuum assembly for opening each case while vertically moving the same, a folding assembly for closing the end flaps of the opened case, an indexing assembly for advancing each opened case with the end flaps thereof folded closed, a glue applicator for applying adhesive to the closed end flaps, another folding assembly for closing the side flaps of each case over the glued end flaps thereof, and a sealing assembly for pressing the end and side flaps together in a closed position until the adhesive sets.

3,608,441
METHOD FOR FORMING INSIDE TAMPON APPLICATOR TUBES

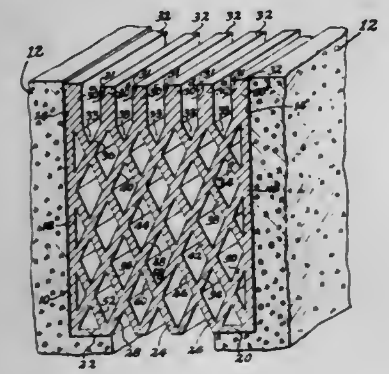
Carl W. Johnson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 3, 1969, Ser. No. 795,904
Int. Cl. B31f *7/00;* **B31b** *1/44, 1/94*
U.S. Cl. 93—94 FC **10 Claims**

Thin-walled paper tube blanks are supplied by a feeder mechanism to a tube orienting and loading station where they are individually and successively loaded in respective ones of a plurality of collets resiliently mounted on an indexable turntable to be acted on substantially simultaneously by a set of forming elements carried on a member reciprocally mounted to advance and retract to and from tube engaging positions during dwell periods of the turntable. The tubes are gently held by the collets with a very light force fitting action which prevents distortions to the tubes during the forming operations. One end of the tube is crimped and folded inwardly in the general shape of a truncated cone and the other end is formed with an inwardly rolled flange. The reciprocating member also carries an element for discharging the tubes from their respective collets at an unloading station.



3,608,442
SEALING MEMBER

William J. Berchou, Buffalo, and Freel F. Bryan, Williamsville, N.Y., assignors to Acme Highway Products Corporation, Buffalo, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,770
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **7 Claims**

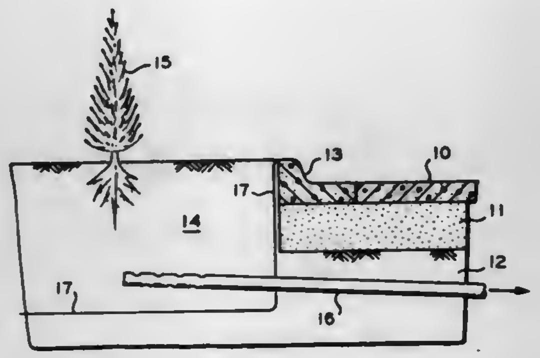


An elongated resilient sealing member comprising side walls, a bottom wall and a series of elongated tread members constituting a top wall. The interior of the seal is provided with a plurality of interconnected cross bars formed integrally with the walls to provide an internal truss structure. Spaces are provided between the tread members to allow movement of the tread members into such spaces during lateral compression of the side walls. In a preferred form the spacing between adjacent tread members approximates or exceeds the width of the tread members, and each intermediate tread member is connected to a pair of downwardly diverging cross bars each having a width approximately one-half that of the tread member.

3,608,443
PROTECTION OF ROADBEDS FROM WATER SEEPAGE

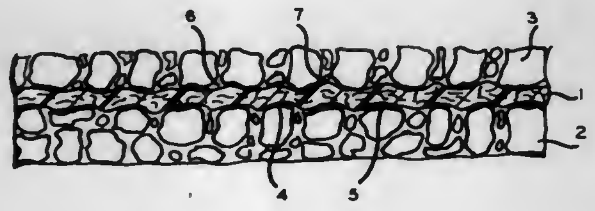
Duane W. Gagle and Homer L. Draper, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed May 26, 1969, Ser. No. 827,660
Int. Cl. E01c *9/00*
U.S. Cl. 94—22 **5 Claims**

An impermeable membrane is attached to the sides of the paving laid upon a roadbed and extends downwardly and outwardly underneath the soil adjoining the paving to prevent water from seeping into the roadbed. The membrane can extend down underneath several feet of earth and, in some instances, depending upon the contour of the adjoining soil it may be desirable to lay drain conduits underneath the road surface to drain any water which may seep underneath the lower part of the membrane and under the paving.



3,608,444
PAVEMENT LAYING OR PATCHING WITH AGGREGATE, FABRIC, AND ADHESIVE

Dale F. Levy and Richard J. Bennett, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed July 14, 1969, Ser. No. 841,427
Int. Cl. E01c *21/00*
U.S. Cl. 94—22 **1 Claim**

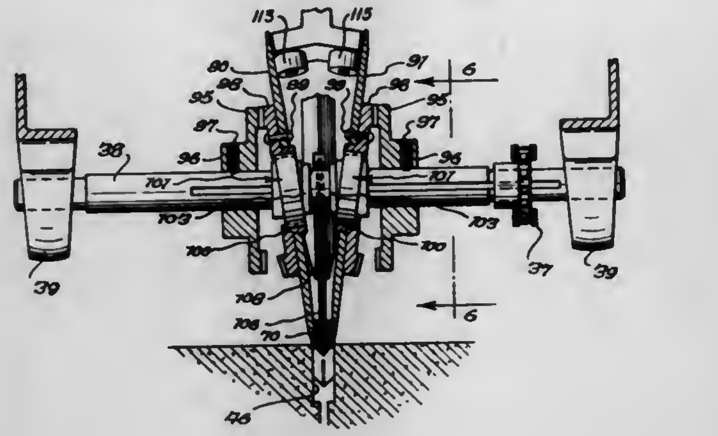


A fabric is laid upon a layer of intentionally rough surface of, say, aggregate or earth, adhesive, e.g., asphalt, is applied to wet the fabric and the aggregate or other surface and then the fabric is covered with additional aggregate in a manner to stress or stretch at least portions thereof between the interpositioned or interlocking pieces or points of the two layers of aggregate. The thus laid composite can be further covered with adhesive as by spraying and then rolled. In one embodiment, wrinking and bubbing of the fabric containing composite, as in a road surface or patch, is prevented. A fabric now preferred to be used and which has presented the wrinkling and bubbling problem is one made of a heat sealed nonwoven polyolefin fabric, e.g., polypropylene.

3,608,445
APPARATUS FOR INSERTING SEALS IN PAVEMENT GROOVES

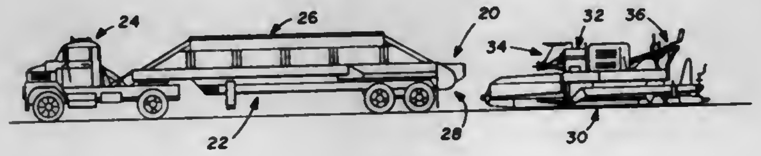
James F. Sharpe, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.
Filed June 9, 1969, Ser. No. 831,621
Int. Cl. E01c *23/09*
U.S. Cl. 94—39 **8 Claims**

This disclosure relates to apparatus for accurately inserting elastomeric sealing material in strip form into pavement grooves for the purpose of forming tight seals between adjacent slabs of pavement to exclude foreign material from the grooves and including a pair of rotary compression disks arranged at an angle to each other and which compress the sealing material laterally thereof while above the groove, and an inserting wheel which moves the sealing material from the compression disks into the groove.



3,608,446
MATERIAL DELIVERY SYSTEM

Robert Dale Plant, Murfreesboro, Ark., assignor to Arkansas Rock and Gravel Company, Murfreesboro, Ark.
Filed Aug. 22, 1969, Ser. No. 852,350
Int. Cl. E01c *19/00*
U.S. Cl. 94—39 **19 Claims**

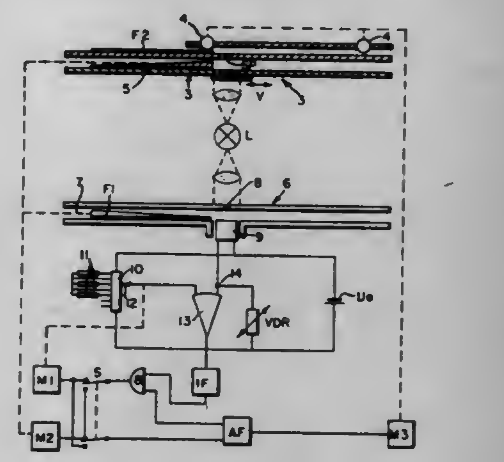


Hot asphalt transported to paving machines in a fleet of semi-trailers. Each trailer comprises a V-shaped hopper having bridging members extending across it for reducing asphalt packing in the hopper. Heat ducts extend through the structural members of each trailer for use in preheating the hopper. Each trailer includes a conveyor for unloading the asphalt from the hopper to a paving machine. During unloading, the conveyor is controlled from the paving machine. This assures the delivery of asphalt at the proper rate and prevents the unloading of asphalt when the trailer and the paving machine are separated.

3,608,447
APPARATUS AND PROCESS FOR PRODUCING PHOTOGRAPHIC DENSITY WEDGES

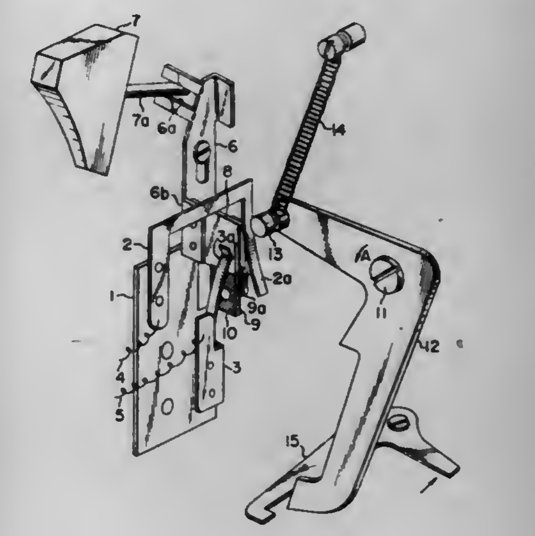
Karl-Heinz Furst, Gotzenhain, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 10, 1969, Ser. No. 883,790
Claims priority, application Germany, Dec. 19, 1968, P 18 15 583.4
Int. Cl. G03
U.S. Cl. 95—1 **4 Claims**

Apparatus and process for producing photographic density wedges by illumination of a film strip through an exposure wedge which is moved with the strip past an illumination slit and a densitometer with a linearization component. In one switch position, the wedge and strip are moved in synchronism with constant velocity, and in a second position only the strip moves at such velocity past the slit, and the position of the exposure wedge in front of the slit and the densitometer is controlled in accordance with the density produced on the first exposed sample.



3,608,448
EXPOSURE METER SWITCH FOR CAMERA

Tadayuki Imai, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Feb. 26, 1970, Ser. No. 14,287
Claims priority, application Japan, Feb. 27, 1969, 44/17,527
Int. Cl. G03b *17/00*
U.S. Cl. 95—10C **2 Claims**

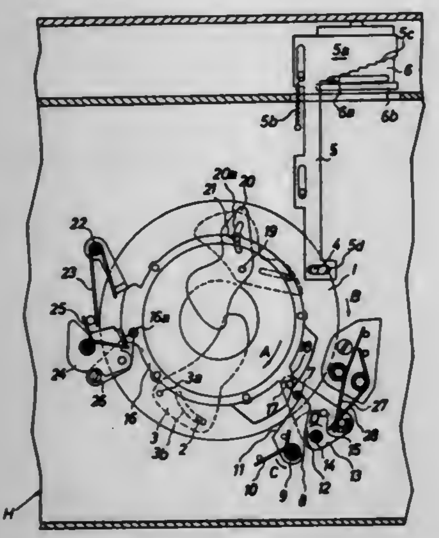


An exposure meter switch for cameras wherein a first switch which is opened or closed in response to the actuation of a selection member for selecting either an automatic exposure setting or a manual exposure setting and a second switch which is closed in response to the film winding and is automatically opened in response to the shutter release operation are connected in series to a circuit of an exposure meter.

3,608,449
EXPOSURE CONTROL FOR PHOTOGRAPHIC APPARATUS

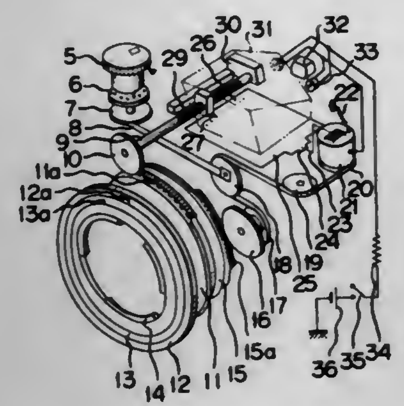
Gunter Fauth, Unterhaching, Horst Guthke, Munich, and Willi Schulz, Schwenningen (Neckar), Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed June 19, 1970, Ser. No. 47,808
Claims priority, application Germany, June 27, 1970, G 69 25 596.5
Int. Cl. G03b *7/14, 9/22, 9/62*
U.S. Cl. 95—10C **10 Claims**

An exposure control for still cameras wherein the needle of a moving-coil instrument is scanned by a movable scanning member which is coupled to a first ring for diaphragm vanes to adjust the aperture size as a function of scene brightness. The shutter blades are coupled to a second ring which can be propelled by an impeller to leave a starting position and to thereby open the blades for an interval of time which depends on the extent of movement of the second ring from its starting position. Such extent is determined by the first ring by way of a timer cam which is biased against a pin of the first ring and has a cam face extending into the path of movement of an arresting lever which is pivoted by the second ring.



3,608,450
SINGLE LENS REFLEX CAMERA WITH INTERCHANGEABLE LENS

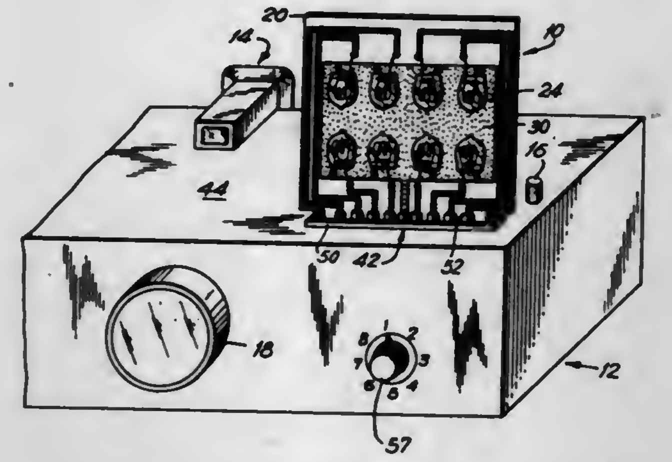
Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Feb. 6, 1969, Ser. No. 797,109
Claims priority, application Japan, Feb. 17, 1968, 43/11,621
Int. Cl. G03b *7/04, 9/02, 19/12*
U.S. Cl. 95—10C **5 Claims**



Apparatus for mounting interchangeable lenses on a single lens reflex camera with a built in exposure meter which measures the light that has passed through the photo taking lens. Two signal members connected to the lens are rotatable with the diaphragm ring of the lens. One of the signal members communicates directly with the F stop readout mechanism of the camera. The other signal member is displaced a predetermined distance from the first signal member to engage the exposure meter of the camera and thereby actuate mechanisms within the camera to compensate for the optical characteristics of each interchangeable lens. The F stop indicating mechanism in the camera and the mechanism to compensate the exposure meter work independently of each other.

3,608,451
STRUCTURE FOR EXPOSING PHOTOGRAPHIC FILM WITH FLASH ILLUMINATION

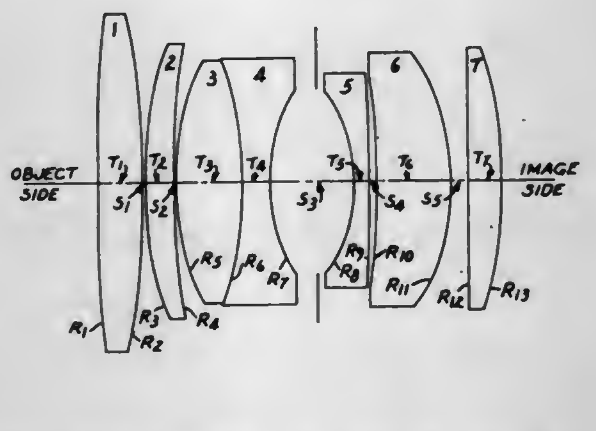
Lester S. Kelem, 1480 Rte. 46, Apt. 150A, Parsippany, N.J. 07054
Filed Sept. 18, 1969, Ser. No. 859,035
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5R **10 Claims**



A structure to be used with cameras for making flash exposures. The structure includes an electrically non-conductive sheet, such as a sheet of cardboard, in front of which a plurality of flashbulbs are located adjacent to a surface of this sheet. A plurality of conductors are carried by the sheet at this latter surface thereof and are electrically connected to the flashbulbs, respectively. Also, a light-reflecting coating is carried by this surface of the sheet between the latter and the bulbs so that as the latter become energized the light therefrom will be reflected by this coating. The coating itself is electrically conductive and is connected electrically with the bulbs to form part of the electrical circuits thereto.

3,608,452
2× CRT RECORD AND DISPLAY LENS

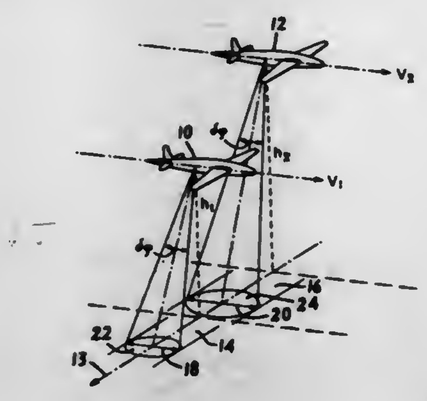
Lawrence H. Conrad, Rochester, N.Y., and David C. Gilkeson, North Oaks Village, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 16, 1968, Ser. No. 768,075
Int. Cl. C03b *29/00*
U.S. Cl. 95—12 **2 Claims**



A display-print module for viewing and recording images from a small cathode-ray tube. The module includes a fast, high resolution magnifying projection lens with a large relative aperture for use in projecting images from a cathode ray tube to a rear projection screen or film plane. The lens has a large element near the tube to gather light with good correction for the lens.

3,608,453
DEVICE FOR TERRAIN PHOTOGRAPHY BY MEANS OF SCANNING SYSTEMS

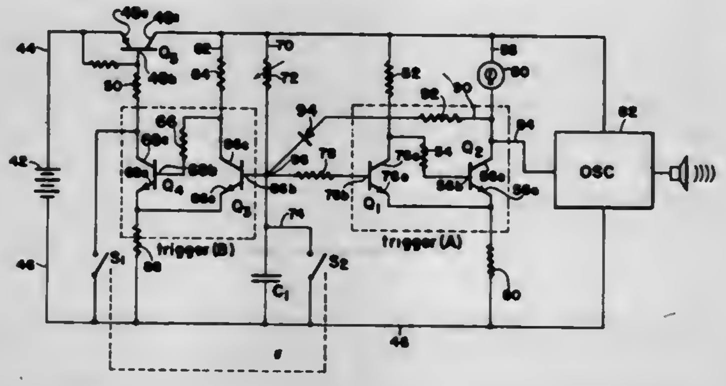
Huibert J. Dirksen, The Hague, and Arie N. de Jong, 's Gravenzande, Netherlands, assignors to Nederlandse Organisatie voor Toegepast-Natuurwetan-Schappelijk Onderzoek ten Behoeve van de Rijksverdediging, The Hague, Netherlands
Continuation of application Ser. No. 714,475, Mar. 20, 1968. This application July 1, 1970, Ser. No. 51,451
Claims priority, application Netherlands, Mar. 29, 1967, 6704503
Int. Cl. G03b *29/00*
U.S. Cl. 95—12.5 **6 Claims**



In airborne equipment for surveying terrain, in particular by infrared photography, which includes a mirror rotating at a constant speed to scan the terrain in a series of parallel strips extending transverse to the line of flight of the aircraft and apparatus for projecting the images thus obtained onto a moving film, the improvement of apparatus for varying the field of view of the scanning mechanism proportional to the v/h ratio of the aircraft so that the scanned terrain strips abut to yield a photographic reproduction of the terrain having no omitted portions and substantially no duplicated portions. Three embodiments of defocusing systems for carrying out the invention are described.

3,608,454
IMBIBITION INTERVAL TIMER AND ANNUNCIATOR

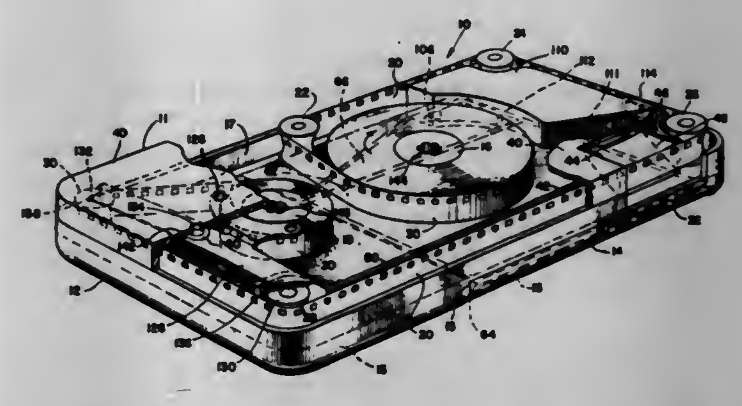
Edwin K. Shenk, Littleton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 27, 1968, Ser. No. 740,518
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 **20 Claims**



A timer-annunciator system for use with photographic cameras of the self-developing variety. The device functions to energize a warning light continuously during the film developing-imbibition process interval and to sound an audible alarm at the conclusion of the interval. Following the audible alarm, the electronic circuitry of the system is automatically de-activated.

3,608,455
SYSTEM FOR PROCESSING A STRIP OF PHOTOGRAPHIC MATERIAL

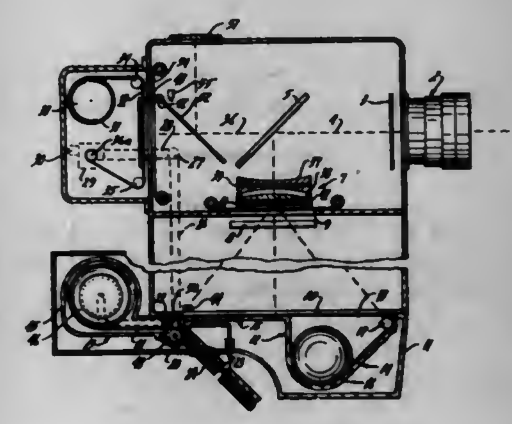
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 4, 1969, Ser. No. 813,469
Int. Cl. G03b *17/50;* **G03d** *13/08*
U.S. Cl. 95—13 **22 Claims**



A motion picture film processing system employing a dispensing container having an applicator through which processing fluid may be expressed onto a strip of exposed photographic material as the strip of material is drawn thereacross. Processing fluid is initially stored in a collapsible container having a weakened portion adapted to rupture responsive to a predetermined compressive force. A fluid feeding device communicates with a reservoir chamber of the dispensing container through an exit orifice provided in one of its walls and also has an entrance port connected to the weakened portion of the collapsible container. The reservoir chamber is at least equal in capacity to the collapsible container. This system can advantageously be employed in a compact multipurpose film handling cassette, having a removable cover plate adjacent the collapsible container-fluid feeding device, which is adapted to be mounted both within a camera and a unique processor-projector unit. With the aforesaid cover plate removed, a roller of the processor-projector unit progressively applies a compressive force against the entire length of the collapsible container-fluid feeding device assembly whereby the processing fluid is expelled from the collapsible container into the reservoir chamber of the dispensing container.

3,608,456
INSTANT DEVELOPED PRINT IN DUAL METHODS CAMERA

Allan H. Hauser, 12635 Gremoor Drive, Elm Grove, Wis. 53122
Filed May 28, 1969, Ser. No. 828,639
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 **4 Claims**

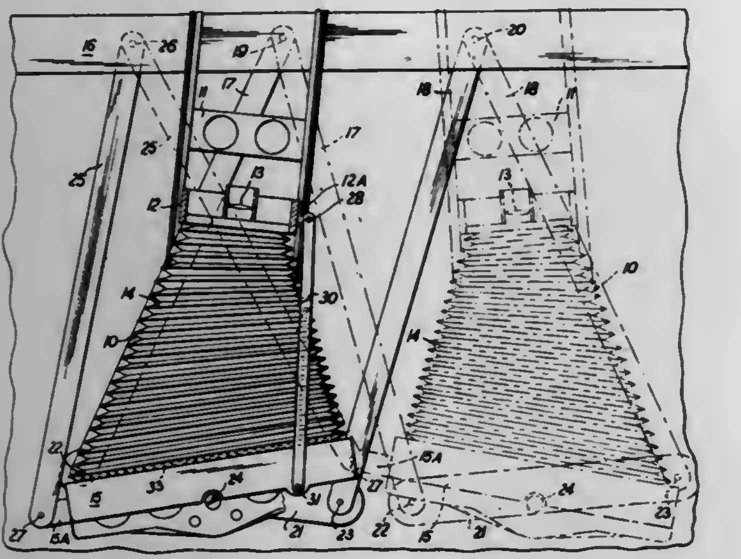


The disclosure includes a portrait camera having a beam splitter for directing the image of the subject onto a relatively small negative and simultaneously onto a substantially larger positive in combination. The negative film and the positive film are simultaneously moved through the camera in stepped relation for taking of sequential pictures. The positive film is held in a cartridge including a developing unit and is withdrawn through the developing unit. The developing unit includes a roll of a dry strip plastic and means to apply a developing liquid to the surface. The strip is driven past a pressure roller together with the positive film such that the developing liquid is applied to the positive film. A heater is energized to heat the film and developing liquid and thereby create a rapid, direct and in situ development of the positive print. This permits essential immediate viewing of the resulting proof picture for purposes of analysis of the subject, arrangement and the like. The developing liquid is selected such that the proof picture fades in a relatively short period.

3,608,457

PHOTOGRAPHIC APPARATUS

Hunter P. Barker, Larchmont, N.Y., assignor to Commercial Decal, Inc., Mount Vernon, N.Y.
Filed July 10, 1969, Ser. No. 840,659
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 **7 Claims**



A novel three-dimensional photographic apparatus which is light, compact and readily portable to a photographic location. The device comprises a camera and a mounting therefor, the mounting being designed to move the camera through an arc of a continuous radius while maintaining the optical axis of the camera lens at all times perpendicular to the vertical axis of the film.

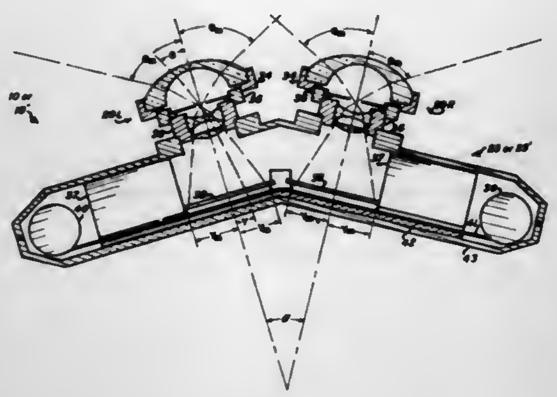
The camera is mounted on a carriage which is in turn mounted pivotally on a carriage mount which is linked by a series of lever arms to a supporting platform such that when moved through an arcuate path, the camera remains centered on its focus object throughout the movement. The linking means also maintains the optical axis of the camera lens perpendicular to the film throughout its arcuate movement on the supporting platform.

3,608,458

WIDE-ANGLE, STEREOSCOPIC, AND FISHEYE-TYPE CAMERA FOR SUBSTANTIALLY DISTORTION-FREE STEREOSCOPY

Harvey L. Ratliff, Jr., Waldorf, Md., assignor to Jetru Inc., Amarillo, Tex.
Continuation-in-part of application Ser. No. 343,841, Feb. 10, 1964. This application Dec. 10, 1968, Ser. No. 782 672
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 **7 Claims**

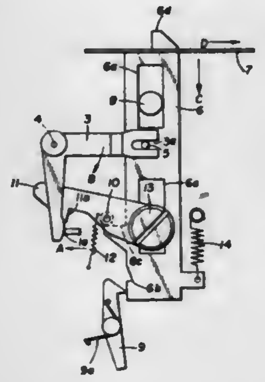
A wide-angle, stereoscopic, and fisheye-type camera for panoramic stereo re-creations utilizing fisheye lenses which preferably have diverging optical axes for taking pictures which when properly viewed enable substantially distortion-free wide-angle re-creations.



3,608,459

RELEASE BLOCKING DEVICE FOR PHOTOGRAPHIC CAMERAS

Helmut Ettischer, Ruit, Kreis Esslingen, and Alfred Trumpp, Stuttgart-Hedelfingen, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 21, 1968, Ser. No. 777,730
Claims priority, application Germany, Dec. 8, 1967, K 59,652
Int. Cl. G03b *19/04*
U.S. Cl. 95—31FL **5 Claims**



A release blocking device for photographic cameras or the like, in which a photographic film strip, perforated at predetermined intervals, is advanced stepwise along a predetermined path. A scanning member is arranged to engage and disengage successive perforations on the photographic film. At or during shutter actuation, the scanning member becomes disengaged from a perforation, thus permitting film transport to take place. At the same time, the scanning member releases a catch member for movement to a position in which it holds the shutter release in a locked position. Near the end of film transport, the scanning member is released toward the film whereupon, when it snaps into a succeeding perforation, the catch member is deactivated to unlock the shutter release.

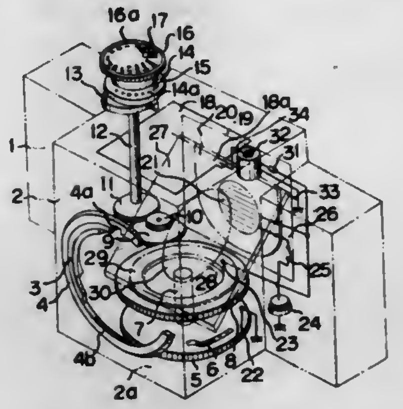
3,608,460

BUILT-IN EXPOSURE METER OF SINGLE LENS REFLEX CAMERA

Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Feb. 24, 1969, Ser. No. 801,433
Claims priority, application Japan, Feb. 29, 1968, 43/15,480
Int. Cl. G03b *7/00, 19/12*
U.S. Cl. 95—42 **5 Claims**

A single lens reflex camera having a built-in exposure meter and having the limited space due to the necessarily large housing for the rotatable mirror utilizes the space

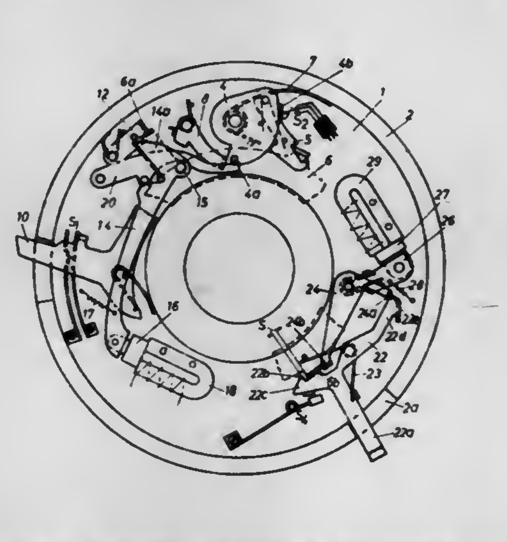
at the bottom of the camera, between the bottom wall of the camera and the bottom wall of the mirror housing, for the location of the variable resistor and its cooperable brush contact in the circuit of the exposure meter. The resistor and brush are each mounted on a gear. One gear is cooperable with the camera's stop setting member and the other gear is cooperable with the shutter speed setting member.



3,608,461

PHOTOGRAPHIC SHUTTER WITH ELECTRONIC TIMING DEVICE AND AN ELECTRONIC TIME CONTROL DEVICE FOR SELF-TIME PHOTOGRAPHS

Winfried Espig, Calmbach, Schwarzwald, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Schwarzwald, Germany
Filed July 22, 1968, Ser. No. 746,500
Claims priority, application Germany, July 26, 1967, P 15 97 358.7
Int. Cl. G03b *9/64*
U.S. Cl. 95—53.3 **9 Claims**

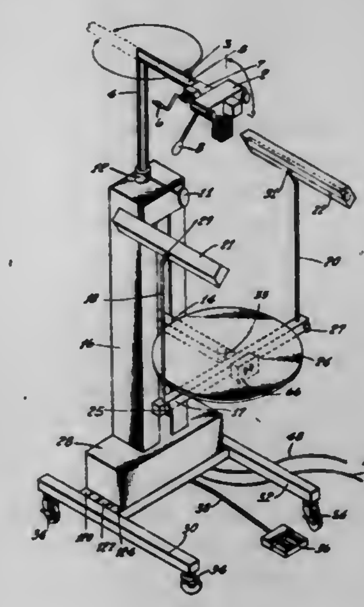


A photographic shutter having an electronic timing device including an exposure time control circuit with a battery and a branch with a shutter locking electromagnet. An electromagnetic open-time shutter lock for the shutter drive and an electronic delay device is connected to the shutter lock to temporarily lock the shutter action after release. The electronic delay device has a switching device operable at the end of the delay period to connect the electromagnet of the exposure time control circuit to the battery. The switching device is in the form of an electronic switch connected to the branch of the exposure time control circuit that includes the shutter locking electromagnet.

3,608,462

APPARATUS FOR USE IN RECORDING PATHOLOGICAL AND SURGICAL INFORMATION

David L. Groshong, Los Altos, Calif., assignor to Bruce W. Stilson, San Rafael, Calif., and Guy W. Shoup, New York, N.Y., fractional part interest to each
Filed Apr. 4, 1963, Ser. No. 270,614
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 **1 Claim**

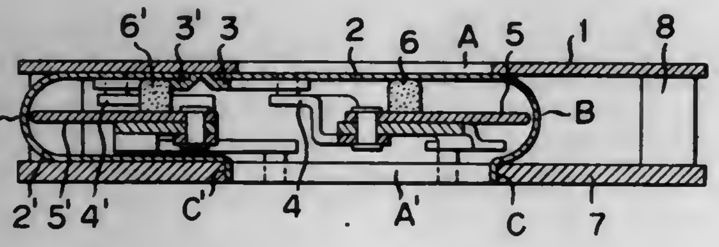


1. A camera stand for use in medical photography comprising a housing containing a vertically positioned receiving tube for a camera support arm on which is mounted a tripod head, said receiving tube having in it a thumbscrew and handle enabling positioning of the camera support arm at any elevation desired, said housing also containing a vertically positioned threaded rod, said threaded rod extending through an arm on which is mounted a camera object platform, the rotation of said threaded rod causing the vertical movement of said camera and object platform, said rotation being effected by a motor and drive assembly at the base of said housing controlled by a foot switch, with the distance from a camera on said tripod head to said camera object platform being measured by telemeter apparatus rigged in the camera stand.

3,608,463

CAMERA SHUTTER

Takeo Yamada, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed Dec. 9, 1968, Ser. No. 782,047
Claims priority, application Japan, Dec. 8, 1967, Dec. 8, 1967, Dec. 8, 1967, 42/78,515; 42/78,516; 42/78,517
Int. Cl. G03b *9/28*
U.S. Cl. 95—57 **8 Claims**

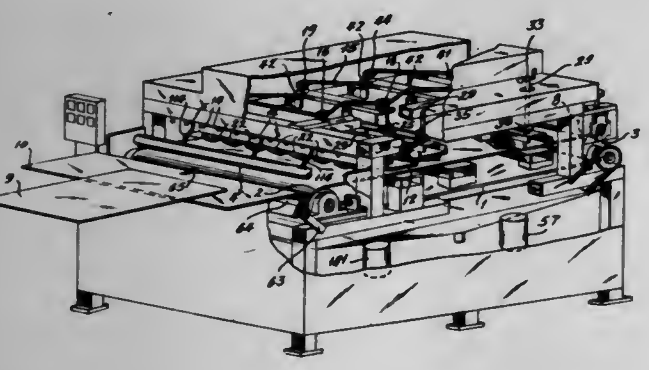


A high speed focal plane shutter employs two panels each having an exposure aperture. The panels are arranged in spaced parallel relationship. A pair of flexible curtains is disposed between the panels. Each curtain is U-shaped. One end of each curtain is fixed to one of the panels, or the first panel, and the other end of each curtain is connected to a mouthpiece movable between open and closed positions, that is, the positions where the exposure aperture is respectively uncovered and covered by the curtain. A pair of link mechanisms is provided for respectively moving the mouthpieces along the inner surface of the other or second panel to open and closed positions. Each link mechanism includes a driving lever and a driven lever pivotally connected to each other. One end of each driving lever is pivoted on the first panel and the other end is slidably connected to one end of a mouthpiece. One end of each driven lever is slidably connected to the first panel and the other end is pivoted to the opposite end of the mouthpiece.

3,608,464

APPARATUS FOR DEVELOPING LITHOGRAPHIC PLATES

Robert E. Harrell; Arthur E. Essmueller, and Roy C. Bax, all of St. Louis County, Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.
Filed May 14, 1968, Ser. No. 729,040
Int. Cl. G03d *5/00*
U.S. Cl. 95—89R **10 Claims**

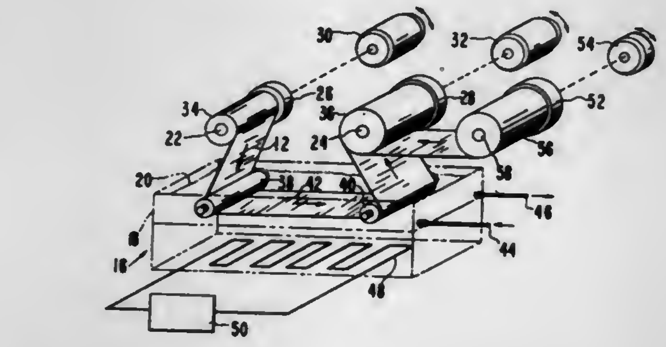


Apparatus for postexposure treatment of lighographic plates having an endless belt on which such a plate is transported successively to, through, and beyond, a development station, a washing station, and a preserving station. The plate is rubbed at some of the treating stations by a rubbing device after having treating liquid deposited thereon. The plate undergoing treatment is held fast on the endless belt by interfacial tension.

3,608,465

MAT FILM PRODUCT AND PROCESSING APPARATUS AND METHOD THEREFOR

Franklin K. Ching, Mt. View, and Harry N. Dieffenbach, Fremont, both of Calif., assignors to Mark Systems, Inc., Santa Clara, Calif.
Filed Sept. 17, 1968, Ser. No. 760,312
Int. Cl. G03b *9/00*
U.S. Cl. 95—89 R **6 Claims**

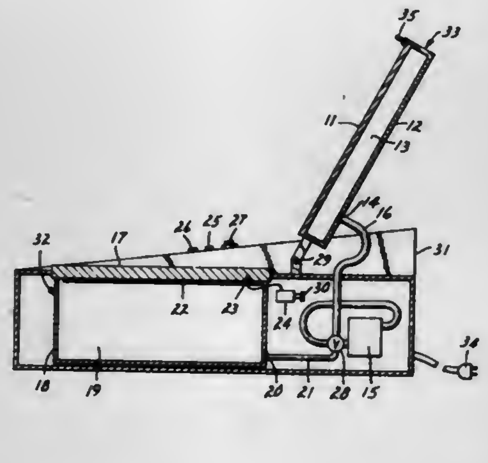


A mat film product of the Bimat type wherein the product, after it has been presoaked or imbibed, is provided with a protective cover film on the emulsion side thereof. Apparatus for utilizing the imbibed product in the processing of photographic film includes structure permitting the removal of the cover film from the product immediately before it engages the photographic film to be processed yet allows the same cover film to be again applied to the product after the film processing step has been completed. The method of handling the product includes applying the cover film after imbibing the product, removing the cover film before processing the photographic film, and applying the cover film to the product after the film processing step.

3,608,466

HEAT DEVELOPER

Richard Alan Devries, New Brighton, and David C. Dornberg, Mahtomedi, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 22, 1969, Ser. No. 852,230
Int. Cl. G03d *13/00*
U.S. Cl. 95—89 R **1 Claim**

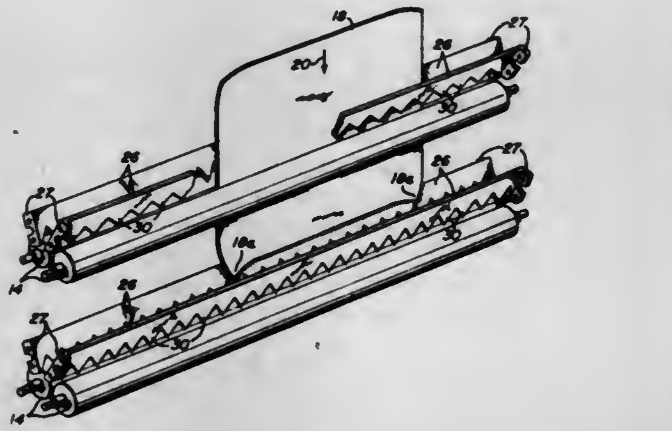


Apparatus for uniformly developing a light-exposed sheet of radiation-sensitive heat-developable film on a heating platen which assures uniform film contact with the heated surface and uniform heat transfer and development. The developer has a pivotably mounted transfer platen which initially receives the exposed sheet material and retains it thereon by use of an air pump. A valve mechanism controls the air pressure to the transfer platen and is operated to subsequently position the sheet material on a heating platen.

3,608,467

GUIDE MEMBER FOR SHEETS OF PHOTOGRAPHIC PRINT PAPER

Gerald Marvin Rouff, Dayton, Ohio, assignor to Technology Incorporated, Dayton, Ohio
Filed Apr. 9, 1969, Ser. No. 814,686
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **5 Claims**

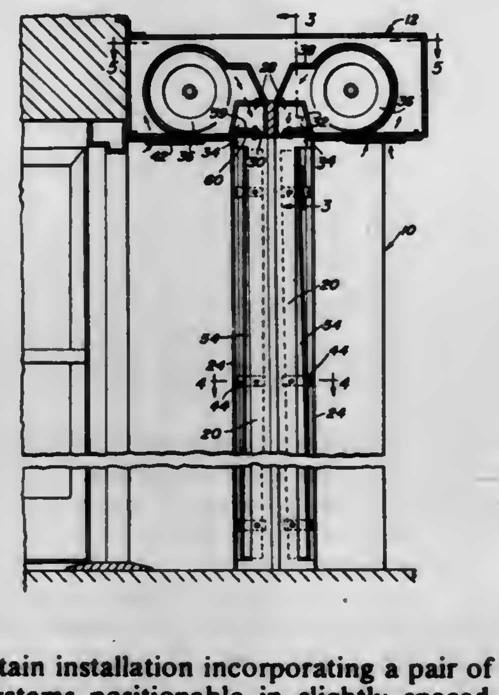


A guide member which guides a sheet of photographic print paper to a position between two juxtapositioned rotating rollers which move the sheet of paper through a liquid. The guide member has a part provided with spaced-apart portions which permit circulation of the liquid. The spaced-apart portions have converging surfaces so that they do not restrain the movement of the sheet of paper.

3,608,468

ADJUSTABLE AIR-CURTAIN SYSTEM

Cloise M. McClurkin, 1821 North St. S. E., Decatur, Ala.
Filed Aug. 15, 1969, Ser. No. 850,591
Int. Cl. F24f *9/00*
U.S. Cl. 98—36 **8 Claims**

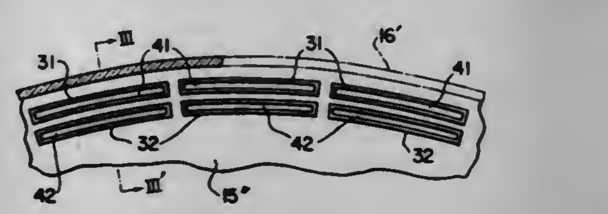


An air-curtain installation incorporating a pair of independent duct systems positionable in slightly spaced adjacent parallel orientation to each other and oriented so as to define two separate diverging air curtains. Each system includes its own power-driven blower and is supplied with air drawn solely from the side to which the corresponding curtain is directed. Each duct system also includes adjustable vanes or baffle plates utilized particularly along the vertical sides of the ducts so as to selectively vary the amount of air discharged thereby at the upper and lower end of the sides for an accommodation of varying temperature conditions. The entire system is preferably prefabricated into three basic units, a pair of opposed sidewalls incorporating the side duct portions therein, and an overhead blower housing incorporating the horizontal duct portions which interlock with the side duct portions upon an assembly of the three units.

3,608,469

APPARATUS FOR THE REMOVAL OF DEWDROPS FROM A DEWED PLATE MEMBER

Norio Mutoh, and Kenji Fuuikake, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyoto Chuo Kenkyusho, Nagoya-shi, Aichi-ken, Japan
Filed May 12, 1970, Ser. No. 36,537
Claims priority, application Japan, May 12, 1969, 44/44042
Int. Cl. B60l
U.S. Cl. 98—2.09 **2 Claims**

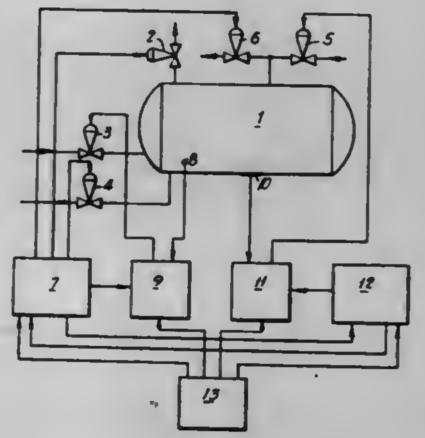


This invention relates to improvements in and relating to an apparatus for the removal of accumulated dewdrops on a plate member, such as automotive front or windshield glass, mirror surface, gauge board or the like, by use of a hot air-blast distributed over the dewed surface of the plate member. The apparatus according to this invention is characterized by the provision of a plurality of parallel rows of elongated blasting air-nozzle openings separated a lateral distance from each other, for the delivery of airblasts arranged in layers towards the glass surface.

3,608,470

SYSTEM FOR AUTOMATIC CONTROL OF PROCESS OF BOILING, VACUUM COOLING AND DEHYDRATION OF FOOD STUFFS

Vyacheslav Petrovich Zabiyakin, ulitsa Krasnokamennaya, 26b, kv. 2; Lev Ivanovich Abramian, pereulok Severny, 9, kv. 7; Alexander Pavlovich Anisimov, ulitsa Sergeeva, 27, kv. 2; Oleg Ivanovich Nikishin, pereulok Serverny, 5, kv. 15; Ljudmila Dmitrievna Saranova, Leninsky prospekt, 90, kv. 18, and Tatyana Konstantinovna Berends, Maly Kakovinsky pereulok, 6, kv. 9, Moscow, all of U.S.S.R.
Filed Nov. 3, 1969, Ser. No. 873,306
Int. Cl. A47d *27/00*
U.S. Cl. 99—246 **22 Claims**

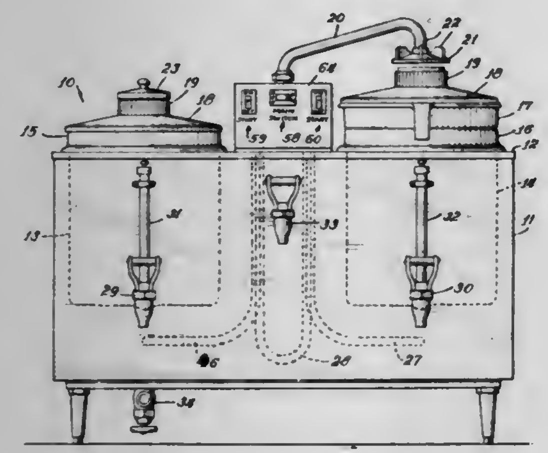


A system for automatic control of the processes of boiling, vacuum cooling, draining a condensate and dehydration of foodstuffs, preferably meat and fish in a chamber employed for treating the foodstuffs, comprises a control unit for sending control signals during time intervals, a circuit for prescribing the program of vacuum cooling and dehydration connected to the control unit, a unit for controlling the temperature of boiling the food stuffs connected to the control unit, an actuating mechanism controlled by the control unit and connecting the chamber with the atmosphere, an actuating mechanism for draining off condensate from the chamber controlled by the control unit and an actuating mechanism for controlling the temperature connected to the temperature control unit. The system is fully automatic and utilizes further control means for accomplishing the above-said function.

3,608,471
SAFETY START SWITCH SYSTEM FOR COFFEE URN HAVING A SWING SPOUT

John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed July 28, 1970, Ser. No. 58,927
Int. Cl. A47j *31/00*
U.S. Cl. 99—283 **3 Claims**

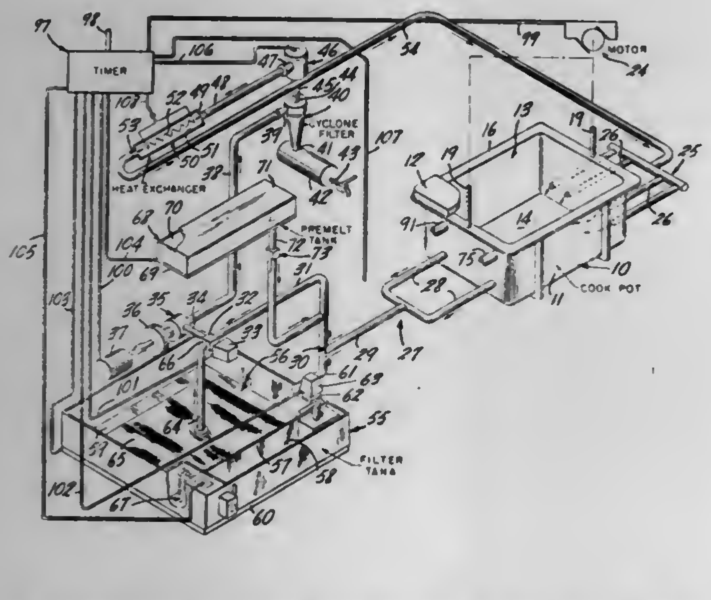


In order to encourage inspection of the position of a swing spout of a coffee urn to observe whether it is in position to discharge hot water into one or the other of a pair of coffeemaking receptacles, two series connected start switches are located on opposite sides of the swing spout, require simultaneous closure to start a pump to supply hot water to the swing spout, and are closed by the use of both hands of the operator.

3,608,472
PRESSURIZED COOKING SYSTEM

Arthur F. Pelster; William L. Parker, and Donald D. Modglin, all of Nashville, Tenn., assignors to Kentucky Fried Chicken Corporation, Louisville, Ky.

Filed June 5, 1969, Ser. No. 830,844
Int. Cl. A47j *27/62*
U.S. Cl. 99—327 **15 Claims**

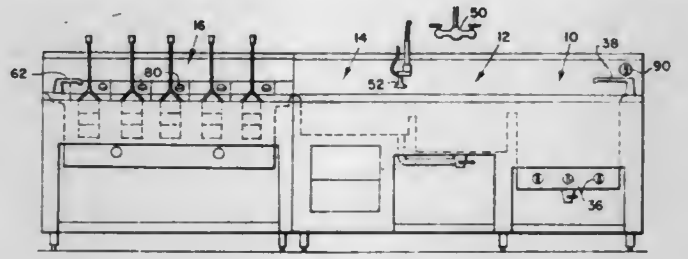


A pressurized cooking system for frying food, such as chicken parts, in a bath of hot liquid, such as fat. This system includes in a closed recirculating circuit a closable and sealable cooking pot chamber for removable reception of food pieces to be fried in the bath therein, a pump and heat exchanger means, with suitable piping connecting these units in series and isolating the interiors thereof and the circuit from the surrounding atmosphere during the cooking cycle. The recirculating liquified fat is pooled at elevated pressure in the cooking chamber to a limited elevation that permits the food for cooking to be immersed in the pooled bath while providing a liquid free head space thereabove. A valved steam vent is connected directly to this head space for venting steam to a point of lower pressure outside the system when the internal pressure in the cooking chamber increases beyond a predetermined maximum. A withdrawal section of the piping is connected to the cooking chamber below the surface of the bath pooled therein, and it has direct connection through one intake of a selector valve to the pump intake. This withdrawal section of the piping is also connected through a drain valve into a preferably heated filtering and storage tank. The selector valve also has another intake which is connected in an alternate position through a passage into the bottom of the filtering and storage tank. This tank serves initially, before a series of succeeding cooking cycles, as a source of liquified fat for the recirculating circuit to be delivered through filters in this tank nd the selector valve to the pump intake and also, after a cooking cycle is completed, as a receiver and storage of hot liquified fat that is drained from the cooking chamber. When the heat exchanger is of the electrically energized type its heat source heaters preferably are mounted in the hot liquified fat pumped therethrough. This heat exchanger is associated with a flow switch unit with the electrical circuit switch embodied therein being connected into the electrical circuit which energizes the heaters, so that if the flow is below a predetermined minimum or ceases this switch opens to shut off the energizing current to the heaters. The drain valve serves as a liquid blowdown valve.

3,608,473
APPARATUS FOR COOKING SPAGHETTI AND SIMILAR PASTES

Joseph J. Kearn, San Francisco; Jerome A. Solomon, Millbrae; Richard M. Pearson, San Mateo, and Henry B. Booth, Redwood City, all of Calif., assignors to Luigi's Spaghetti Shack, Inc., San Francisco, Calif.

Filed Dec. 1, 1969, Ser. No. 881,203
Int. Cl. A47l *27/12*
U.S. Cl. 99—336 **5 Claims**



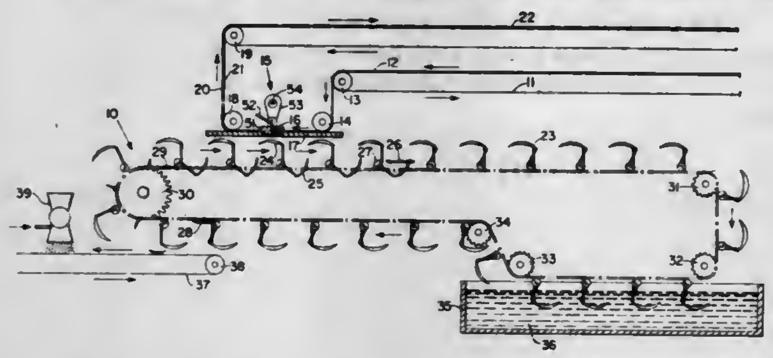
Apparatus for cooking pastes such as spaghetti in large quantities including a series of stationary tanks or vessels for retaining water and for processing paste and having metal baskets for holding the paste in the water and hinged with respect to the tanks to enable the quick transfer of the basket contents into an adjacent tank. A final cooking before serving is accomplished in one of several small baskets which are immersed in boiling water for an automatically timed brief period.

3,608,474
APPARATUS FOR PREPARING CHIP-TYPE PRODUCTS

Alexander L. Liepa, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 683,083, Oct. 31, 1967, abandoned, Continuation-in-part of application Ser. No. 569,278, Aug. 1, 1966. Filed July 14, 1969, Ser. No. 862,557
Int. Cl. A23
U.S. Cl. 99—353 **6 Claims**

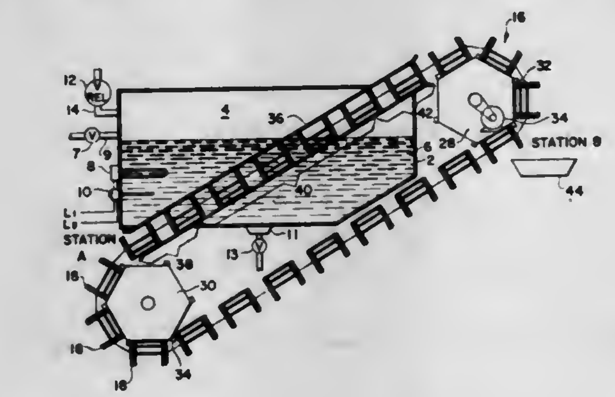
Method and apparatus for continuously preparing fried products from a sheet of edible dough including an infeed conveyor to carry the sheet of dough; a cutter for cutting pieces the desired size from the sheet; a shaper-molder utilizing movable, apertured mold halves to shape the cut pieces to the desired surface conformation and hold them during subsequent processing; and a reservoir containing a frying medium through which the shaped, restrained pieces are passed until they are fried to a crisp state. The fried objects assume a final shape defined by the shaper-molder.



3,608,475
APPARATUS FOR CONTINUOUSLY COOKING A PRODUCT

Douglas R. Scott, 24 Susquehana Court, Elkhart, Ind., and Kenneth G. Kreuter, 3309 S. Maine, Goshen, Ind.

Filed Apr. 2, 1970, Ser. No. 25,026
Int. Cl. A23b *3/00*
U.S. Cl. 99—362 **8 Claims**

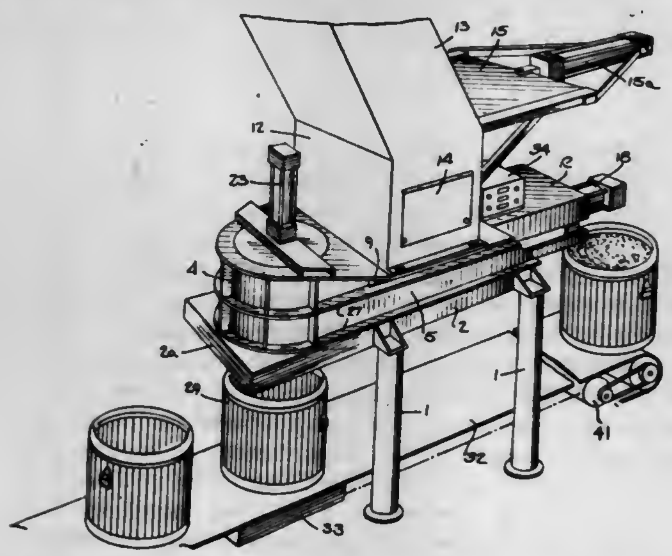


Apparatus for continuously cooking a product whereby the product is introduced into a pressurized chamber containing a heated liquid and its vapor, then moved sequentially first through the liquid, second through the vapor, and thence out of the chamber, with sealing means being provided for preventing the escape of the liquid or its vapor.

3,608,476
GARBAGE COMPACTOR

Howard Price, Kings Point, N.Y., and Seymour D. Wallick, Clifton, N.J., assignors to International Patents & Development Corporation, Kings Point, N.Y.

Filed June 27, 1969, Ser. No. 837,143
Int. Cl. B30b *13/00, 15/16*
U.S. Cl. 100—35 **19 Claims**

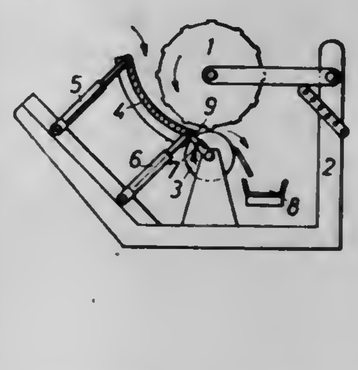


A garbage compactor has a compacting chamber into which garbage, including refuse is compacted by a ram, after which the garbage is ejected into a portable container. A hydraulic and electrical operating and control system permits the compactor to operate without constant attendance by an operator.

3,608,477
ROLL PRESS

Paul Weber, Karlsruhe-Waldstadt; Ignaz Daferner, Karlsruhe; Bertram Botsch, Karlsruhe, and Joachim Dittirch, Karlsruhe, all of Germany, assignors to Maschinenfabrik H. Geiger, Karlsruhe, Germany

Filed Mar. 27, 1969, Ser. No. 811,125
Claims priority, application Germany, Mar. 27, 1968, Oct. 12, 1968, Oct. 12, 1968, Jan. 18, 1969, P 17 52 050.2;P 18 02839.2;P 18 02 843.8;P 19 02 530.0
Int. Cl. B30b *3/02*
U.S. Cl. 100—156 **6 Claims**

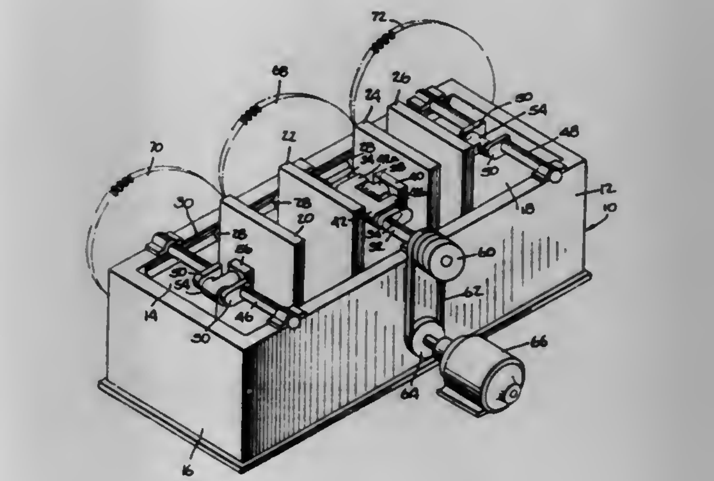


A roll press, particular for pressing raked material in sewage disposal plants, comprises an adjustable feed chute for guiding the material to be pressed into a wedge-shaped nip formed by an upper press roll and a portion of the chute.

3,608,478
HIGH-SPEED PRESS

Bernard L. Hoffman, Trenton, N.J., assignor to Frederick A. Krause Associates, Inc., Frenchtown, N.J.

Filed Apr. 16, 1970, Ser. No. 29,196
Int. Cl. B30b *15/04, 15/14*
U.S. Cl. 100—209 **8 Claims**



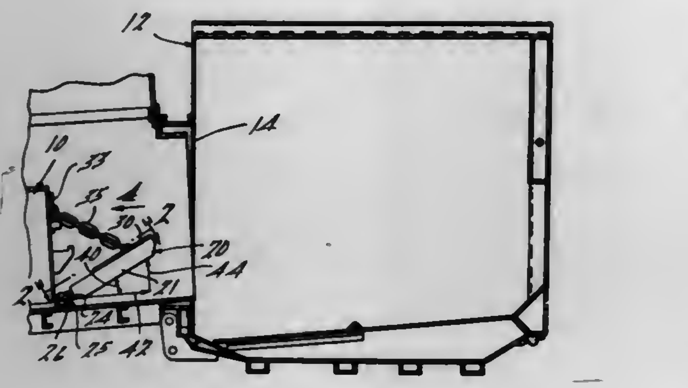
Press mechanisms comprising a frame mounting at least two pairs of press shoes which are actuated by crankarms; and mechanical or electrical synchronizing means for operating the press shoes in alternate sequence.

3,608,479
COMPACTION LOADING APPARATUS

Robert J. Pioch, Jackson, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed Feb. 3, 1969, Ser. No. 796,059
Int. Cl. B30b *15/06*
U.S. Cl. 100—229 **4 Claims**

Apparatus for loading and compacting material in a receptacle includes a ram moving in a rectilinear path and means for lifting the work as the ram moves into engagement with it, consisting of a rigid lifting member formed as a relatively flat rectangular frame pivoted to the front of the ram on a transverse horizontal axis and swingable upwardly from an

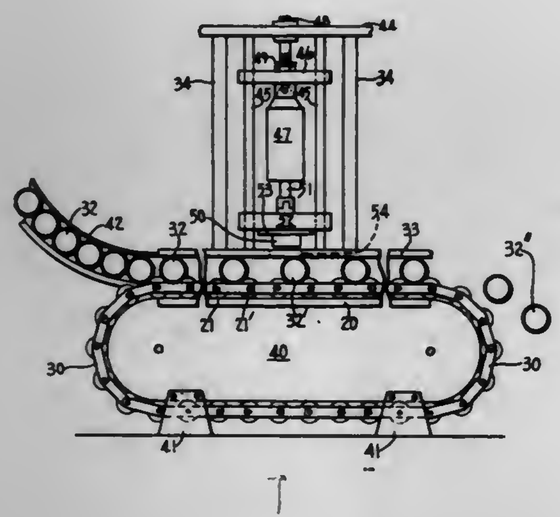


initial lowered position in which it inclines upwardly at a relatively small angle to a raised position to which it is urged by a resolution of the reactive forces between the ram and the work.

3,608,480
HOT STAMPING AND HEAT TRANSFER PRESS FOR ROLLABLE OBJECTS

Tony Sciame, Linden, N.J., assignor to Patent Development Corporation, Linden, N.J.

Continuation-in-part of application Ser. No. 689,224, Nov. 20, 1967, now abandoned , Continuation-in-part of application Ser. No. 553,397, May 27, 1966, now abandoned. This application Feb. 17, 1970, Ser. No. 12,065
Int. Cl. B44c *1/14;* **B41f** *17/22*
U.S. Cl. 101—7 **4 Claims**

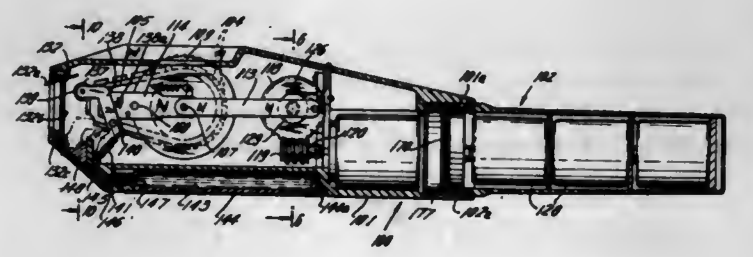


A press for hot stamping or heat-transferring an image upon a rollable object comprises a rigid bottom surface on which are rolled, in gripping relation, at least one pair of similar resilient spaced rollers carrying end-projecting shafts. The object is grippingly rolled between these rollers for imprinting the image thereon. A movable chain disposed on each side of the rolls has slotted bearings in which ride the projecting shaft ends, thus enabling the shaft ends to move vertically but not horizontally. A rigid unheated upper surface is disposed over the rollers in a manner to be capable of applying a vertical downward pressure on the rolled objects. A heated die is disposed within the upper surface, and a foil carrying thermoplastic ink or transfer is disposed between the object and the die for transferring the image onto the object as it is rolled under the die.

3,608,481
ELECTROMECHANICAL MARKING DEVICE

Howard Price, Kings Point, and Bela Szilagyi, Flushing, both of N.Y., assignors to International Patents & Development Corp.

Filed Aug. 16, 1968, Ser. No. 753,290
Int. Cl. B41j *1/20;* **B41k** *1/10, 1/40*
U.S. Cl. 101—108 **5 Claims**

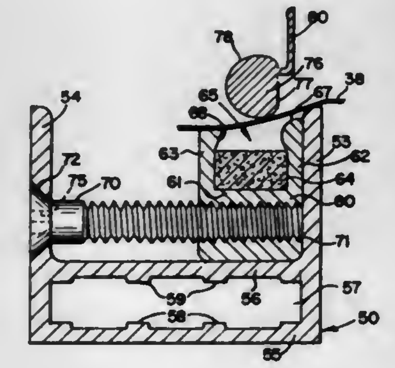


An electrically operated marking device for stamping articles repeatedly with preset characters. Marking of an article is accomplished be placing the marking device in contact with the article with slight pressure to close a switching contact. The closing of switch causes the marking device to apply an impression of the preset characters to the article.

3,608,482
LOCKING BAR FOR SCREEN-PRINTING FRAME

Henry J. Bubley, Deerfield, and Claude H. Oltra, Chicago, both of Ill., assignors to American Screen Process Equipment Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 752,023, Aug. 12, 1968. This application Oct. 31, 1969, Ser. No. 872,957
Int. Cl. B41l *13/02;* **B41f** *27/04*
U.S. Cl. 101—127.1 **3 Claims**

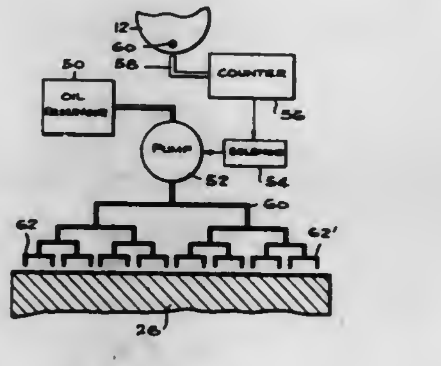


A screen-printing frame having a screen-tensioning arrangement including a frame supporting a channel member which receives a locking bar. The screen material is positioned over the channel and the locking bar inserted to force the screen into the channel where it is positively gripped. Means is provided to move the channel relative to the frame to provide for tensioning after the screen is securely gripped. The tension on the screen serves to move the locking bar into tighter engagement with the channel, thus increasing the grip on the screen. Resilient means is provided in the bottom of the channel to maintain the screen material in engagement with the locking bar during initial insertion and rotation of the bar to the locked position. The screen material may be easily removed and other screen material with or without an image installed.

3,608,483
INKING SYSTEM WITH MEANS FOR MILLING HYDROPHOBIC LIQUID INTO WATER MISCIBLE INK FILM

Bernard Kaminstein, Paramus, N.J., assignor to Inc. C. Olivette & C. S.p.A., Ivrea, Italy

Filed Mar. 14, 1969, Ser. No. 807,325
Int. Cl. B41f *7/32, 7/36*
U.S. Cl. 101—148 **2 Claims**

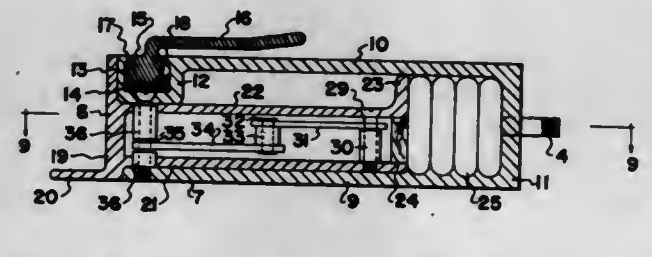


An inking system is provided for a duplicating master, of a type wherein the nonimage portions are selectively repellent to water- or glycol-based inks and the image portions accept water or glycol-based inks. The water-based ink is applied to the printing rollers of a printing press, in the usual manner. A small quantity of a hydrophobic liquid is dropped on one roller of the train of rollers of the printing press, ahead of the roller which directly applies ink to the printing master. This liquid is milled into the ink by the rolling action of the rollers. The end result is that the image areas of the printing master accept that water-based ink and the nonimage areas reject the water-based ink.

3,608,484
PNEUMATIC TENSIONING OF SCREEN STENCILS

Henry J. Bubley, Deerfield, and Claude H. Oltra, Chicago, both of Ill., assignors to American Screen Process Equipment Company, Chicago, Ill.

Filed Aug. 12, 1968, Ser. No. 751,916
Int. Cl. B41l *13/02;* **B41f** *27/04*
U.S. Cl. 101—127.1 **6 Claims**

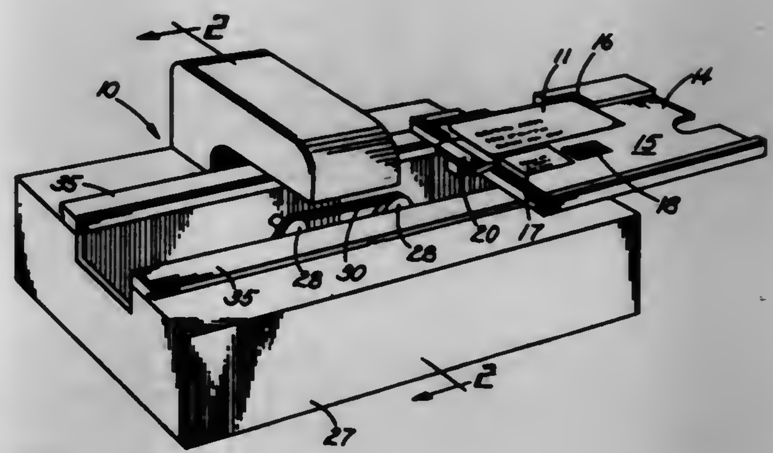


In the preparation of screen process stencils, a stencil frame is enclosed tightly by a pneumatically operated frame. The stencil screen is secured on two or four sides on the movable portions of the surrounding pneumatic tensioning frame. The pneumatic tensioning frame is then inflated uniformly with compressed air and extended to cause the screen to be tensioned uniformly in all directions. The screen is then tacked or stapled or otherwise fastened to the stencil frame and has the desired degree of stretch for stencil printing. The pneumatic tensioning frame comprises a plurality of pneumatically operated frame members having a fixed member engageable with the stencil frame and a movable member on which the stencil screen is secured for movement under pneumatic pressure. The pneumatic frame members are provided with a mechanical linkage for ensuring that the members maintain a parallel relation during movement under pneumatic pressure to prevent the frame from separating further at one end than at the other when only part of the frame is being used to tension a screen stencil. The movable portion of the pneumatic frame has a normal fabric locking arrangement comprising an elongated slot having a narrow necked opening and a rotatable cam lock bar for securing fabric in place.

3,608,485
CLIPBOARD DATA RECORDER

Erwin F. C. Schulze, Novelty, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Jan. 13, 1969, Ser. No. 790,785
Int. Cl. B41f *3/04*
U.S. Cl. 101—269 **1 Claim**

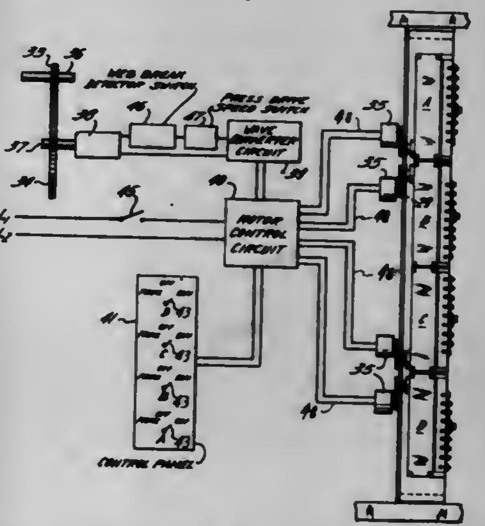


A printing machine with a separable portable tray and a roller platen. The tray has a clip to hold a form set by one edge and allow the other edge to extend without restraint. The tray serves as a common reference plane for a separable printing plate and variable data wheels both carried by the tray.

3,608,486
DRIVE MEANS FOR THE INKING MECHANISM OF A PRINTING MACHINE

John J. McDonald, Park Ridge, N.J., and Ralph L. Fusco, Commack, N.Y., assignors to R. Hoe & Co., Inc., New York, N.Y.

Filed Apr. 28, 1969, Ser. No. 819,847
Int. Cl. B41f *31/28*
U.S. Cl. 101—365 **13 Claims**



A mechanism for driving multiunit pumps of an inking mechanism in a printing machine using a signal-sending device to transmit electrical pulse signals, in response to rotation of the press drive shaft, to a motor control circuit, which in turn operates stepping motors to drive an ink pump including remote control means for selectively operating any such unit. An entire pumping unit can be electrically turned on or off to meet various pumping requirements as called for by different operating conditions.

3,608,487

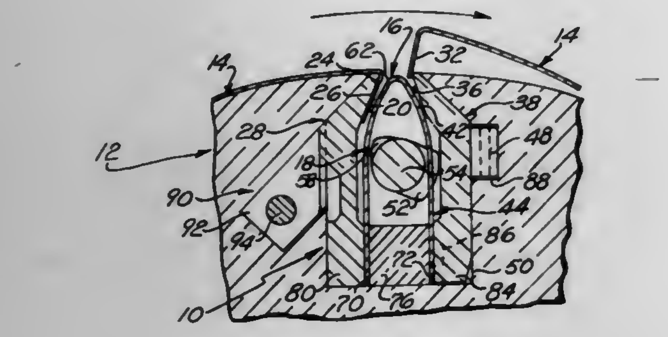
FLEXIBLE PLATE CLAMPING ASSEMBLY INCLUDING INWARDLY BOWED SPRING AND MOVABLE JAW

Hans J. Luehrs, Westerly, R.I., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Aug. 27, 1969, Ser. No. 853,305

Int. Cl. B41f *27/12*

U.S. Cl. 101—415.1 **13 Claims**



An improved clamp assembly for securing a printing plate or other printing element on a cylinder includes an inwardly bowed or bent spring element. A movable jaw presses the spring element toward a clamping surface to grip or clamp a leading end portion of the printing plate between the surface and one side of the spring element. A trailing end portion of the printing plate is gripped or clamped between the movable jaw and the opposite side of the spring element. To maintain a substantially constant tension in the printing plate and to compensate for elongation of the printing plate, a longitudinally extending wave spring presses the movable jaw toward the inwardly bowed spring element with a substantially constant predetermined force. A cam assembly is selectively operable to release the printing plate.

3,608,488

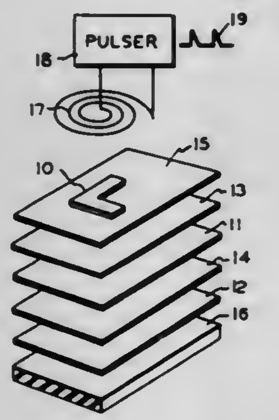
PRINTING AND REPRODUCING PROCESS

Alfred B. Levine, 2924 Terrace Drive, Chevy Chase, Md.

Division of Ser. No. 575,474, Aug. 26, 1966, Pat. No. 3,486,449, Continuation of application Ser. No. 304,176, Aug. 23, 1963, now abandoned. Filed May 25, 1970, Ser. No. 40,123

Int. Cl. B41m *5/00;* **B44b** *5/00;* **G01d** *15/12*

U.S. Cl. 101—426 **9 Claims**



An electrical process for simultaneously printing one or more copies of an image from a master applied in the form of a pattern of electrical conductors, e.g. a printed circuit, a pattern of magnetized areas, or a pattern of electrostatic charged areas wherein the patterns are operated upon by a remote electrical or magnetic field creating a force pattern on a pressure sensitive marking medium to transfer dye or color markings onto one copy or plural copies simultaneously. The force pattern may be amplified or enhanced by applying a current directly to the pattern of conductors to electrodynamically react with the field.

3,608,489

PLANOGRAPHIC PRINTING PLATE

John Henry Croker, Broxbourne, England, assignor to Gestetner Limited, London, England

Filed June 2, 1967, Ser. No. 643,066

Claims priority, application Great Britain, June 14, 1966, 26445/1966

Int. Cl. B41n *1/00, 3/00*

U.S. Cl. 101—462 **9 Claims**

Planographic printing plates capable of withstanding long printing runs are made by coating a support with a reaction product of a water-soluble urea- or melamine-formaldehyde resin and a water-soluble colloid containing free acid groups.

3,608,490

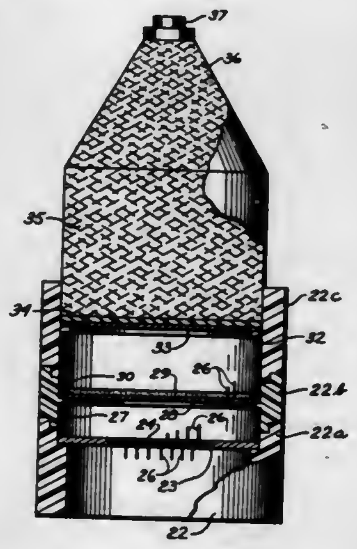
POROUS MATERIALS

John D. O'Keefe, Seal Beach, Calif., assignor to North American Rockwell Corporation

Filed Oct. 20, 1967, Ser. No. 676,819

Int. Cl. B23p *3/09*

U.S. Cl. 102—24 **4 Claims**



Energizing of materials having a high degree of porosity by passing a high energy shock therethrough is described. Much of the energy of the shock is inelastically converted to thermal energy of the porous material thereby greatly increasing its temperature and pressure. The hot, high pressure material is used for welding two solid bodies together in one embodiment and in another is employed to accelerate a plate to high velocity. Multiple layers of such porous material having low density alternating with high density layers with monotonic changes in thickness of both sets of layers provides an amplification of pressure of a shock for accelerating a plate to very high velocity.

3,608,491

TAMPING PLUG

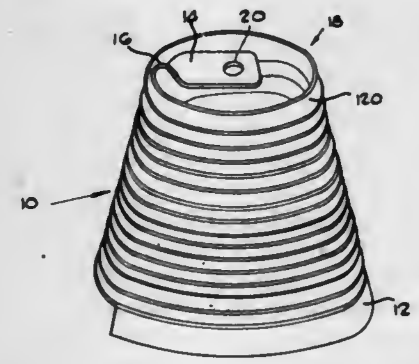
Vernon Jan Botes, Johannesburg, Republic of South Africa, assignor to Dunaplug (Proprietary) Limited, Pietersburg Transvaal Province, Republic of South Africa

Filed Dec. 26, 1968, Ser. No. 787,161

Claims priority, application South Africa, Dec. 27, 1967, 671-7731

Int. Cl. F42d *1/08*

U.S. Cl. 102—30 **10 Claims**



The invention provides for a plug for use in blasting holes, the plug consisting of substantially rectangular section

striplike material formed into a cone-shaped spiral member in which the convolutions overlap one another and having their larger faces diverging in the direction of the small end of the member.

3,608,492

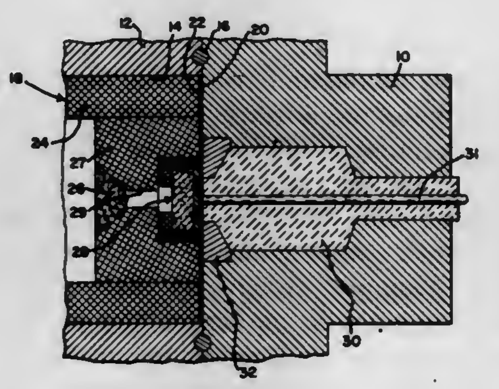
AMMUNITION HIGH-VOLTAGE ELECTRICAL IGNITION SYSTEM

James W. Mitchell, Philadelphia, Pa., assignor to General Electric Company

Filed Oct. 2, 1969, Ser. No. 863,076

Int. Cl. F42b *5/08, 5/18*

U.S. Cl. 102—38 **6 Claims**



An electrical ignition system for ammunition that utilizes two fixed electrical contacts in the bolt face; and a primer having an electrically conductive priming mix, and a consumable dielectric disc having two annular consumable conductors therethrough, the gap between the two conductors being significantly greater than twice any gap between the bolt face and the disc, the ignition system being completed and energized by a high-voltage power source of sufficient voltage to overcome any airgap between the cartridge and the bolt face.

3,608,493

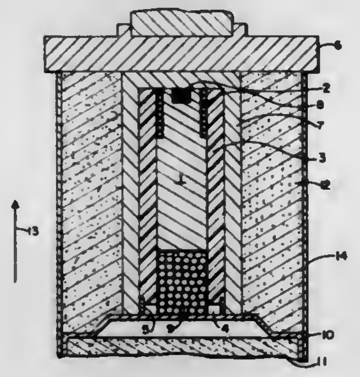
FUSE APPARATUS

Robert L. Aske, and Thomas E. Carlson, both of Hennepin, Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 10, 1969, Ser. No. 814,920

Int. Cl. F42c *15/28*

U.S. Cl. 102—78 **3 Claims**



A fluid barrier, delay arming, safing and arming mechanism utilizing a barrier material having flow characteristics to separate a detonator and acceptor explosive. The fuse is armed by causing the barrier material to flow out of its "safe" position between the detonator and acceptor explosive in a predetermined arming environment such as spin and/or setback. The invention provides a barrier material which may be used for safing as well as for determining a delay associated with arming.

3,608,494

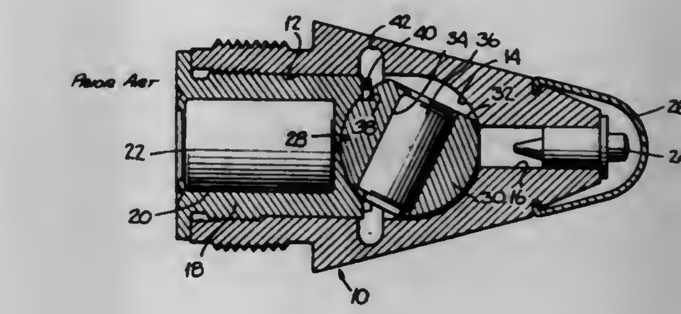
TIME DELAY FUSE

Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company

Filed Mar. 5, 1969, Ser. No. 804,443

Int. Cl. F42c *9/02, 7/00, 9/00*

U.S. Cl. 102—79 **5 Claims**



A time delay fuse has a ball rotor carrying the detonator charge in a bore along the axis of mass symmetry, and normally held safe, out of line by a detent clip. Release of the clip requires both adequate set back force and centrifugal force. Once the rotor has rotated into the armed, in-line disposition, it is interlocked in this disposition.

3,608,495

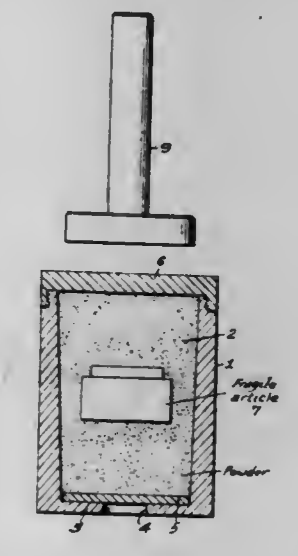
APPARATUS AND METHOD FOR ENCAPSULATING FRAGILE COMPONENTS

Baltzar Leo De Mare, Aberdeen, Md.

Filed June 23, 1969, Ser. No. 835,674

Int. Cl. B65d *85/42*

U.S. Cl. 102—92.6 **3 Claims**



A fragile article, such as an electronic component being used in a rocket or military projectile vehicle, is embedded in a powder to minimize vibrations, shock and heat effects and to render the packaged article easy of removal for inspection or replacement.

3,608,496

BALLAST TAMPING APPARATUS

Ludwig Schenkir, Perchtoldsdorf, and Josef Dultinger, Innsbruck, both of Austria, assignors to Franz Plasser Bahnbaumaschinen, Vienna, Austria

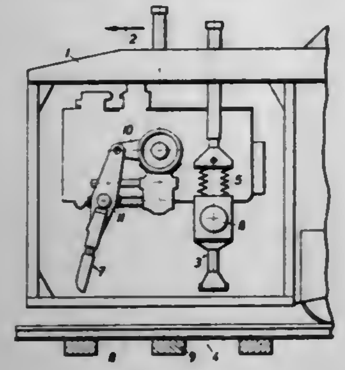
Filed June 6, 1969, Ser. No. 831,060

Claims priority, application Austria, June 11, 1968, Feb. 25, 1969, A5577/68;1908/68

Int. Cl. E01b *27/16*

U.S. Cl. 104—12 **3 Claims**

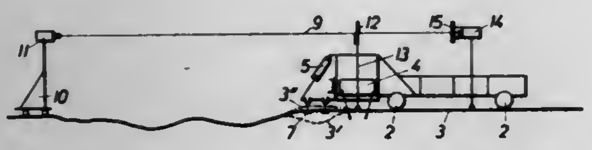
Solidly compacted ballast support for a railroad track is produced by simultaneously tamping the ballast under a tie



and the ballast surrounding the tie by two groups of tampers operating at the same time.

3,608,497
TAMPING AND LEVELLING MACHINE

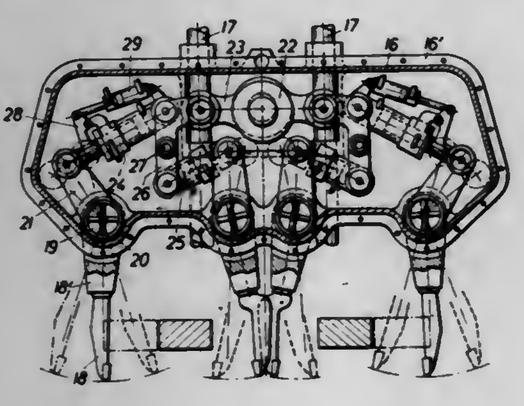
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria
Filed Feb. 25, 1969, Ser. No. 802,157
Claims priority, application Austria, Mar. 7, 1968, A2238/68
Int. Cl. E01b *27/17, 29/04*
U.S. Cl. 104—7 R **11 Claims**



In a mobile track tamping and levelling machine, the reference system includes a beam transmitter and a pair of beam receivers associated with one or both track rails. A pair of masking boards is associated with the receivers for masking a portion of the beam, the respective upper and lower edges of the boards facing towards each other and preferably being aligned. Fluid-operated track-lifting means is controlled by signals from the receivers which depend on the beam portion or intensity received thereby as the boards enter into the beam path during the track-lifting operation.

3,608,498
TRACK-TAMPING ASSEMBLY

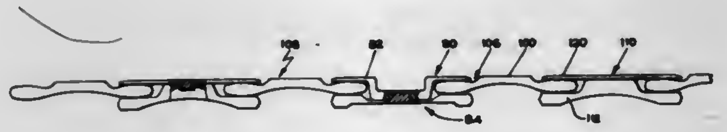
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria
Filed Apr. 28, 1969, Ser. No. 819,664
Claims priority, application Austria, Apr. 29, 1968, A4171/68
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **13 Claims**



A track-tamping assembly including a pair of opposed, vibratory and reciprocable tamping tools is mounted on a vertically adjustable carrier, and a transmission lever is mounted on the carrier independently of the tamping-tool-vibrating means to link the upper ends of the tamping tools to the vibrating means.

3,608,499
TOW CHAIN FOR CONVEYORS

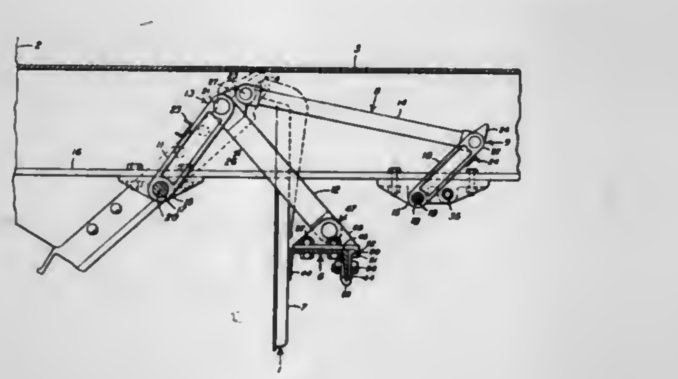
Robert Krammer, Farmington, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.
Filed July 18, 1969, Ser. No. 843,137
Int. Cl. F16g *13/06*
U.S. Cl. 104—172 C **25 Claims**



A chain of low silhouette having links forming a relatively smooth, continuous top surface except for certain spaced links which incorporate a recessed truck-pin-engaging notch. The links are joined by a vertical joining pin having opposed shoulders spaced from the ends of the pin which positively maintains the links assembled while the chain is in operation yet permits the chain to be easily and safely assembled or disassembled at any point in the chain. The combination provides a chain which can be operated in a shallow track within the floor. The links can be utilized to form a conventionally driven main chain. A slave chain can be driven from the main chain by either a freewheeling dog extending under both chains, engaged by both the driving chain and the slave chain, or by a dog welded to the underside of the slave chain and engaged by the underside of the main chain.

3,608,500
TANDEM TOGGLE HOPPER DOOR OPERATING MECHANISM

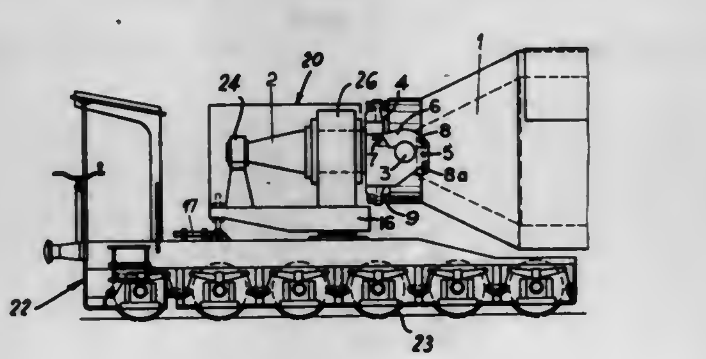
Walter L. Floehr, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Sept. 11, 1968, Ser. No. 758,927
Int. Cl. B61d *7/18;* **B11d** *7/26;* **B61d** *7/28*
U.S. Cl. 105—240 **14 Claims**



An operating mechanism for a hinged door or a railway hopper car having a manually or motor operated drive linkage providing in closed position a plurality of locks in tandem against opening of the door and in an opening operation a quick release permitting the door to swing open by gravity beyond a vertical position, while decreasing the resultant movement of an actuating member, the linkage conveniently being mountable on and swingable in a center sill of the car and for manual operation having an operating shaft fitted with one or more automatically releasing operating heads coacting with the reduced movement of the actuating member for preventing injury to an operator.

3,608,501
HOT METAL TANK CAR

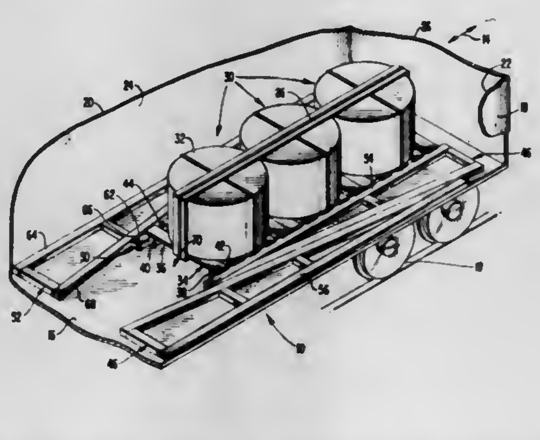
Werner Marxen, Duisburg, and Werner Trost, Duisburg-Wanheimerort, both of Germany, assignors to Demag AG, Duisburg, Germany
Filed Aug. 19, 1968, Ser. No. 753,686
Claims priority, application Germany, Oct. 19, 1967, D 54385
Int. Cl. B61d *5/04, 9/02, 9/08*
U.S. Cl. 105—270 **8 Claims**



An apparatus for holding and transporting a hot metal mixer tank in a metallurgical plant includes a platform car having wheels for running over a trackway and a support at each end for removably engaging a large hot metal mixer. The hot metal mixer tank is supported on axle or tilt axle mounted at each end of the carriage. Each pivot axle includes at least two arms which carry bearing shells on each side of the associated end of the mixing tank. The mixing tank carries transversely extending horizontal position pins which extend outwardly from each side and rest in the open top bearing shells. The tops of the shells may be closed by pivotal cover plates which are bolted in position when closed. The supporting pivot axles on the track car also carry upper and lower rigid extensions having adjustable back pressure bolt members which may be threaded inwardly or outwardly in order to provide a longitudinal bearing pressure against the end surface of the mixing tank when the latter is oriented in position on the bearing journals and the side bearing pins are locked in the open shell supports.

3,608,502
CONTROLLED-FLOATING LADING

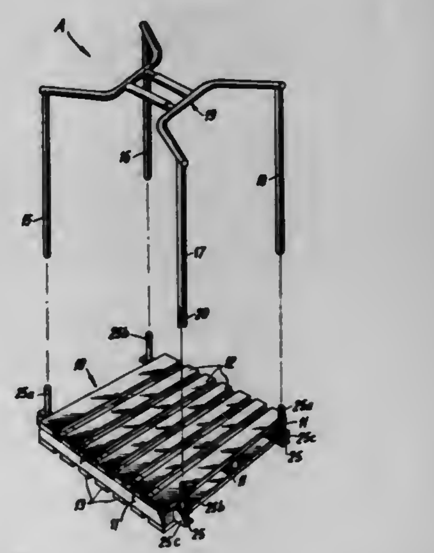
Hans F. Wegener, Michigan City, Ind., assignor to National Steel Corporation
Filed Dec. 26, 1968, Ser. No. 787,016
Int. Cl. B60p *7/16;* **B61d** *45/00*
U.S. Cl. 105—369 B **6 Claims**



Controlled-floating lading arrangement in which a wedge system blocks heavy lading against upstanding support surfaces in a freight conveyance. Shifting of the lading incident to quick stops or starts of the conveyance, which would snap rigid moorings, is permitted, but controlled within safe limits by friction between lading and wedges. The wedge system is adjustable for conveyances or loads of different sizes, and is reusable.

3,608,503
DETACHABLE MOUNTING DEVICE FOR PALLET-TIERING FRAMES

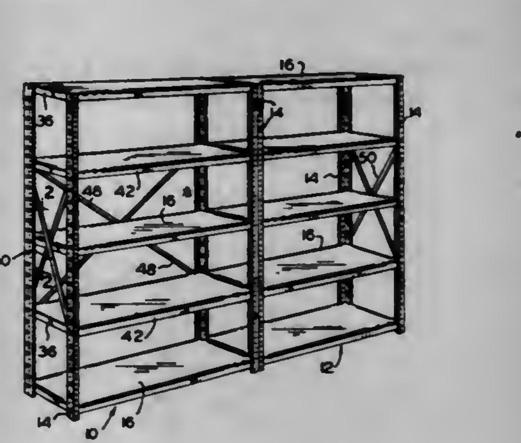
Robert L. Marchese, Flanders, N.J., assignor to Stor-Dynamics Corporation, Paterson, N.J.
Filed July 10, 1970, Ser. No. 53,748
Int. Cl. B65d *19/18*
U.S. Cl. 108—53 **5 Claims**



A pallet-tiering frame having two opposed pairs of spaced vertical posts carrying a top member therebetween at their upper ends is detachably mounted to a pallet by telescopically slidably engaging the vertical frame posts with guide rods secured to the opposite ends of each of a pair of elongated bar members which are slidably received between the deck boards of the pallet and positioned adjacent to the outer stringers thereof. Each pair of guide rods is spaced apart a distance approximately equal to the length of the pallet stringers so as to extend upwardly immediately adjacent the associated corners of the pallet and to restrain movement of the bar members when installed.

3,608,504
KNOCKDOWN SHELF STRUCTURE

Walter R. Peters, 3922 S.W. 55th Drive, Portland, Oreg.
Filed June 2, 1969, Ser. No. 829,671
Int. Cl. A47b *57/08*
U.S. Cl. 108—109 **1 Claim**

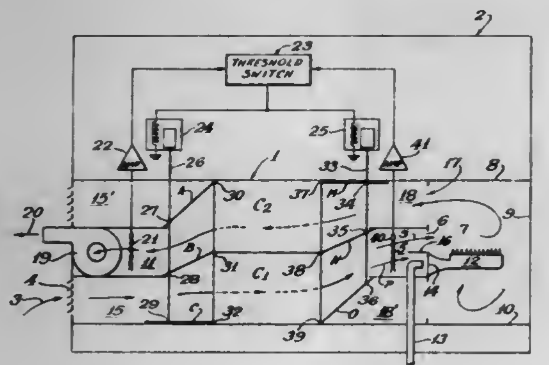


A plurality of sheet metal shelves are detachably connected at their corners to cornerposts made of metal members by shelf-supporting clips. A plurality of vertically extending and vertically spaced open-ended sockets are provided on the inner surface of one angle member of each post. The clips each have a downwardly extending lower end portion received in one of the sockets, an intermediate horizontal extending shelf-supporting portion and an upwardly extending shelf holding upper end portion. The shelves each have reinforcing flanges extending downwardly from a body portion of the shelf along the ends and side edges of the shelves and the end flanges extend behind and engage the shelf-holding end portions of the clips and rest on the intermediate portions of the clips. The end flanges have inwardly displaced portions providing horizontal clearance for the sockets to enable the shelves to be installed and removed.

3,608,505
APPLIANCES EMPLOYING CHECKER-BOX REGENERATORS

Robert B. Rosenberg, Evergreen Park; Jack Huebler, Deerfield, and Esher R. Kweller, Evanston, all of Ill., assignors to Institute of Gas Technology

Filed May 4, 1970, Ser. No. 34,332
Int. Cl. F23g *3/00;* F231 *9/04*
U.S. Cl. 110—8 A 10 Claims

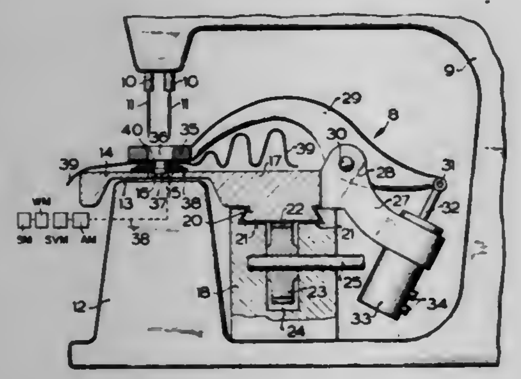


The application discloses improved checker-box-type regenerators in combination with gas-fired domestic or commercial appliances, such as home incinerators, cooking ovens, smooth top ranges, mangles and the like, employing single, double, and plenum-type heating or combustion chambers. The input ambient air is preheated as it passes through a checker-box, and is then ducted to the appliance. The hot exhaust air and gases pass countercurrent through another section of an adjacent checker-box and are thereby cooled. The cooled flue products may be vented directly into the room wherein the appliance is situated if desired, without technical or safety problems arising, codes permitting. The use of the regenerator is in accordance with a process in which the rate of heating in the appliance is controlled.

3,608,506
METHOD AND APPARATUS FOR AFFIXING A ZIP FASTENER TO A SUPPORTING ARTICLE

Friedrich Glindmeyer, Stolberg, Rheinland, Germany, assignor to Firma William Prym-Werke KG, Stolberg/Rheinland, Germany

Filed Sept. 9, 1969, Ser. No. 856,377
Claims priority, application Germany, Sept. 10, 1968, P 17 85 311.1
Int. Cl. D05b *3/04, 3/18*
U.S. Cl. 112—105 10 Claims

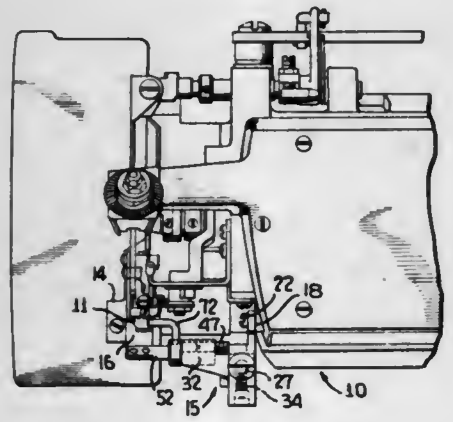


A method and an apparatus for affixing a zip fastener to a supporting article. A sewing machine is provided with a workpiece support on which an article and a zip fastener to be secured thereto may be placed. Holding means is provided for holding the zip fastener and the article in their desired relative positions during sewing, and moving means serves to move either the workpiece support with the article and zip fastener relative to the needle, or move the workpiece support and the holding means in unison, together with the zip fastener and article.

3,608,507
SHIRRING ATTACHMENT FOR SEWING MACHINES

Mario A. Cima, Buffalo Grove, and Stephen J. Stasiak, Woodridge, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.

Filed June 3, 1969, Ser. No. 830,048
Int. Cl. D05b *35/08*
U.S. Cl. 112—134 21 Claims

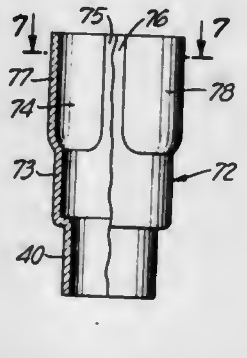


This disclosure relates to a shirring attachment for sewing machines equipped with differential feeding mechanisms, and includes a bracket pivotally carrying an arm which in turn carries a shirring blade, the arm and bracket having cooperative abutment means for locating the arm in operative and inoperative positions thereof, and biasing means for positively though releasably maintaining the abutment means in contacting engagement in both positions of the arm. The shirring blade is pivotally journaled to the arm for rotation of about a horizontal aXis, and cam and cam follower means are provided for automatically pivoting the shirring blade to an inoperative position upon the pivoting movement of the arm to its inoperative position.

3,608,508
METHOD OF MANUFACTURING LAMP SOCKET ASSEMBLIES

James N. Dupree, South El Monte, Calif., assignor to Western Indicator Co., Inc., South El Monte, Calif.

Division of Ser. No. 699,505, Jan. 22, 1968, Pat. No. 3,506,934.
Filed Jan. 12, 1970, Ser. No. 2,265
Int. Cl. B21d *53/36*
U.S. Cl. 113—119 2 Claims

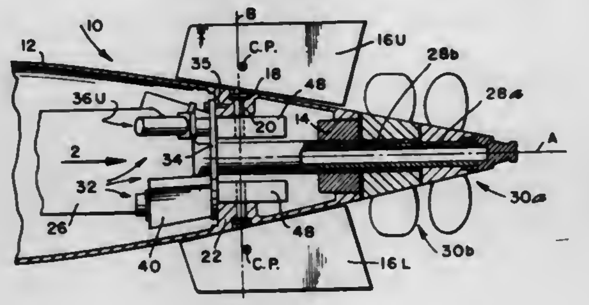


A lamp socket having a center conductor pin fixed in the insulator and socket sleeve. An additional terminal in the socket assembly adjacent the center pin for tying the wire going to the pin. A socket assembly including an illuminated panel, color filter and heat sink. A method of forming a socket sleeve for bayonet base lamps.

3,608,509
TORPEDO-STEERING CONTROL AND ROLL-STABILIZATION APPARATUS

John D. Brooks, San Gabriel, and Orrin W. Albert, Jr., Arcadia, both of Calif.

Filed Jan. 26, 1967, Ser. No. 612,305
Int. Cl. F42b *19/01, 19/06, 19/08*
U.S. Cl. 114—23 3 Claims

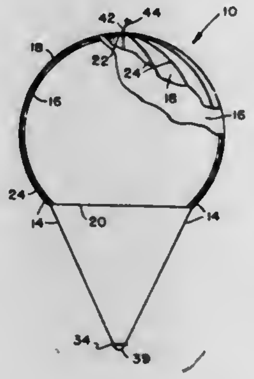


Torpedo-steering control and roll-stabilization apparatus comprising four bodily movable steering fins mounted in quadrature relationship around the tail cone with their fin shaft ends extending through the shell wall, and a unitary-actuator assembly for actuating the ends of the fin shafts. The frame of the actuator assembly is an annular ring adapted for transverse mounting across the interior of the shell ahead of the fins. The ring has a substantially square opening with the sides of the opening perpendicular to the fin shaft axes. Three upstanding lugs are affixed to the front face of the ring adjacent three of the sides of the opening. The upstanding lugs carry three identical fin actuators including a servomotor driven worm meshed with a worm wheel. The worm wheel has an aperture along its axis adapted to engage the inner ends of the fin shafts along its axis. The actuators are fastened to the lugs by adjustable means permitting alignment of the worm wheel aperture with the fin shaft prior to the actuator being secured in place. The bodily movable fins have integral fin shafts, with the fin shaft axis passing through the fin slightly ahead of the hydrodynamic center of pressure of the fin. Two diametrically opposite fins are driven independently by different actuators producing a combination joint deflection steering command and a differential deflection steering command to yield steering command and a differential deflection steering command to yield steering control in one steering plane, and yield roll control. The other steering fins are coupled by a yoke and driven by a deflection steering command yielding steering control in the other steering plane.

3,608,510
COLLAPSIBLE PONTOON

Gerrit De Vries, Altadena, Calif.

Filed Feb. 26, 1969, Ser. No. 802,529
Int. Cl. B63b *7/10*
U.S. Cl. 114—54 10 Claims

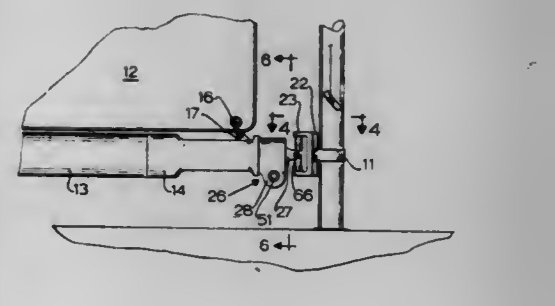


A collapsible pontoon including a flexible metal cage composed of a series of spaced-apart cables an inner inflatable gas-impervious bag disposed within the metal cage and capable upon inflation of tightly engaging the cables of said cage; and an intermediate separate porous fabric bag located between the metal cage and the inflatable bag for providing support for the inflatable bag in the spaces between the cables of said metal cage.

3,608,511
ROLLER REEF ACTUATING MECHANISM AND BRAKE

Bernard R. Katshen, c/o Famet Marine 745 2nd Ave., Redwood City, Calif.

Filed Jan. 23, 1970, Ser. No. 5,228
Int. Cl. B63h *9/04*
U.S. Cl. 114—106 7 Claims

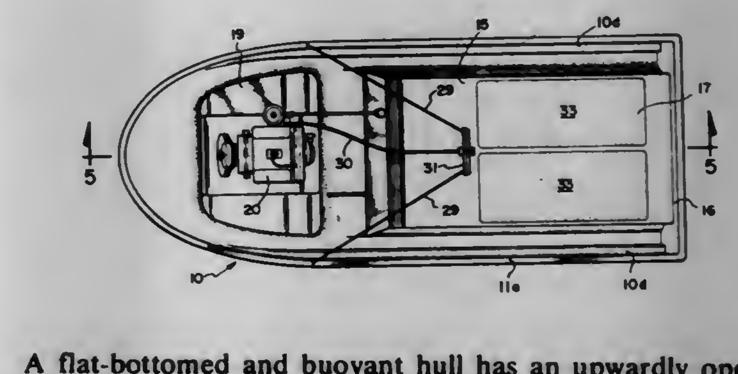


A sail may be reefed by geared roller reefing whereby the lower end of the sail is wrapped around a horizontal boom pivotally attached to a mast. A housing is attached to the mast by a universal joint connection. Within the housing is a spiral worm gear held in position by a snapring engaging grooves in housing and gear. A hexagonal shaft extends from the gear and is received in the "bottle" formed on the adjacent end of the boom. A worm in the housing is turned by a crank to turn the gear and thus the boom with a low ratio of about 11:1. The worm carries adjacent either end an O-ring which fits against a bore in the housing and the hole in a hollow nut which is threaded into the housing and the hole in a hollow nut which is threaded into the housing over the opposite end of the worm to hold the latter in place. The O-rings act as a brake to prevent reverse rotation of the boom which would otherwise occur because of the ratio and also to seal lubricant.

3,608,512
AQUAPLANE

James A. Thompson, Ogden, Utah, assignor to Warren P. Boardman, Ogden, Utah

Filed Jan. 26, 1970, Ser. No. 5,664
Int. Cl. A63c *15/04*
U.S. Cl. 115—70 6 Claims

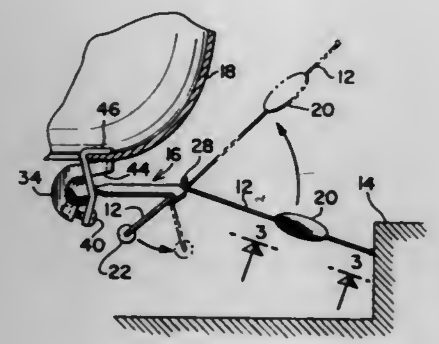


A flat-bottomed and buoyant hull has an upwardly open, longitudinally extending compartment open rearwardly at its stern, for accommodating a rider in standing position, and is provided with a pair of elongate, longitudinally extending fins of narrow, single formation laterally of and depending from the flat bottom. Each fin has its outer surface normal to the flat bottom of the hull and its inside surface merging arcuately into the flat bottom. The flat bottom is also preferably provided with longitudinally extending grooves intermediate the fins. Propulsion means is placed directly below the open rear end of the compartment between the fins, and a throttle-provided, flexible hand-hold extends toward the compartment from a forward anchorage to the hull, preferably at opposite lateral sides thereof.

3,608,513

CURB GUARD FEELER DEVICE

Leonard L. Gray, 10869 Aadasal Ave., Granada Hills, Calif.
Filed May 11, 1970, Ser. No. 36,247
Int. Cl. B60q
U.S. Cl. 116—28 **10 Claims**

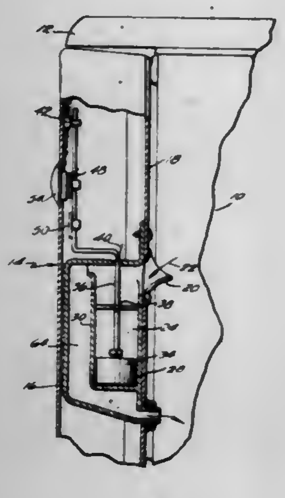


A curb guard feeler device for a vehicle having an elongated flexible feeler rod extending laterally from the vehicle. The feeler rod is provided with an airfoil member for aerodynamically elevating the rod from the rod surface when the vehicle is moving. A counterweight is provided to facilitate the elevating of the feeler rod from the road surface at low vehicle speeds. The feeler device is secured to a fender of the vehicle by means of a double action clamp which will position the feeler device at a suitable height with respect to the road surface and additionally will permit universal adjustment of the elongated rod and attached air foil member.

3,608,514

AUTOMATIC DISHWASHER INDICATOR FOR CLEANED OR SOILED DISHES THEREIN

Edward L. Dunn, 4495 Culbertson Ave., La Mesa, Calif.
Filed Apr. 3, 1969, Ser. No. 813,113
Int. Cl. G01f ***23/00***
U.S. Cl. 116—118 **1 Claim**

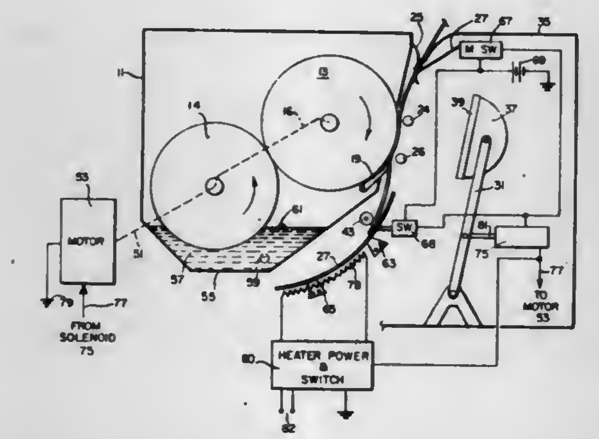


A two-state fluid tilt or position indicator in which a casing is provided with a midwall to catch dishwasher fluid during the dishwashing operation, and discharges such fluid caught within a first chamber of the casing into a second chamber, and said second chamber of the casing discharging the dishwasher fluid into the dishwasher chamber, or other exhaust means, when the door of the dishwasher is opened and tilt sufficiently forward to evacuate the fluid from said first chamber. Also provided is a float in the first chamber, the float having a stem with a diversity indication of discs thereon, and an indicator window so that one disk is presented through the window when the one chamber is containing the dishwasher fluid and the other disk is presented through the indicator window when said one chamber has been discharged of said fluid.

3,608,515

APPLICATOR FOR APPLYING PRESSURE SENSITIVE ADHESIVE AND OTHER COATING MATERIALS TO SHEET ITEMS

Philip E. Tobias, 1872, Watson Road, Pa.
Filed Dec. 4, 1968, Ser. No. 780,985
Int. Cl. B05c ***1/02, 11/16***
U.S. Cl. 118—2 **10 Claims**

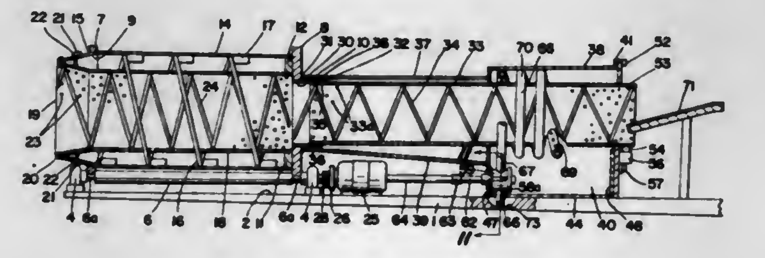


The present device provides a means for applying thin coatings of material to sheet items or webbing material. The invention will be described in connection with the application of a pressure-sensitive adhesive to sheet or webbing material, wherein the adhesive compound employs a solvent to keep it in a fluid state, thus enabling the adhesive to be worked without being heated. In accordance with the design principles of the present device, the adhesive mixture containing solvent is held in a reservoir and is kept from evaporating from said reservoir by employing a cover which seals the applicator member and hence the reservoir from the atmosphere which surrounds the housing, when there is no sheet material being processed. However the sealing cover is movably positioned away from the path along which the sheet or webbing material passes in contact with the applicator when the device is in use. In addition the path for the sheet material is arranged so that the "adhesive side" of the sheet is facing up as the sheet material leaves the machine, thereby enabling the user to support or carry the sheet by coming in contact with the nonsticky undersurface.

3,608,516

BREADING MACHINE

Edward F. Temple, 3934 Harris Road, Broadview Heights, Ohio
Filed June 18, 1969, Ser. No. 834,266
Int. Cl. B05c ***5/00***
U.S. Cl. 118—16 **9 Claims**

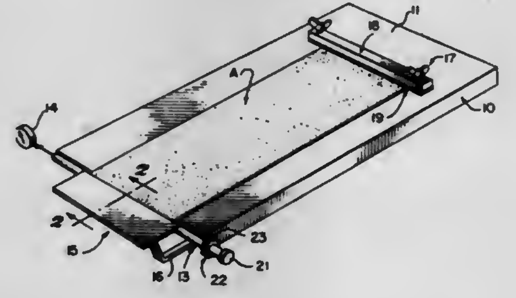


A breading machine is provided, which is characterized by simplicity of construction, ease of assembly and disassembly, and adaptability of one-man operation. Novel features include pumping means for continuously spraying the items to be breaded with an edible coating fluid which facilitates adherence of the breading mixture to the items, means for continuously feeding the coated items through a shower of breading mixture, and means for continuously feeding excess breading mixture in a- direction countercurrent to the direction of movement of the items which are being breaded. Auxiliary features include means enabling a single operator stationed at the delivery end of the machine to feed articles to be breaded to the entry or feed end of the machine, irrespective of the overall length of the machine.

3,608,517

SUBSTRATE-TENSIONING MEANS

Shrenik D. Shroff, Chicago, Ill., assignor to U.S. Plywood-Champion Paper Inc.
Filed June 10, 1969, Ser. No. 831,880
Int. Cl. B05c ***11/12***
U.S. Cl. 118—33 **4 Claims**

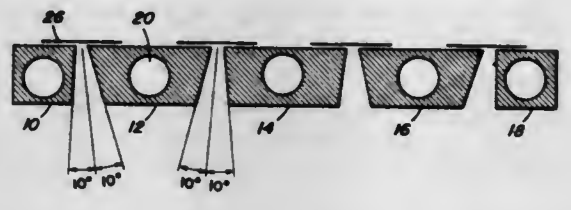


This invention relates to apparatus for coating and drying a fibrous substrate under tension comprising a platform, means at one end of said platform for holding an end of fibrous substrate stationary against said platform under constant pressure, and adjustable tensioning means at the opposite end of said platform for grasping the opposite end of said fibrous substrate for applying and maintaining tension thereon during coating and drying.

3,608,518

STATIONARY MASK FOR CONTINUOUS VAPOR DEPOSITION

Thomas A. Poole, Setauket, N.Y., assignor to Alloys Unlimited, Inc.
Filed Apr. 1, 1970, Ser. No. 24,488
Int. Cl. C23c ***11/02***
U.S. Cl. 118—48 **4 Claims**



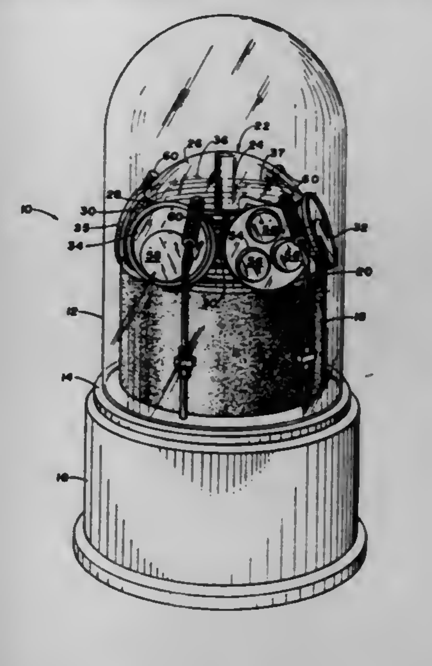
A stationary mask for depositing a strip of metal on a moving substrate is disclosed. The mask has a generally trapezoidal cross section, with an angle between the line of sight from the evaporation source and the side of the mask of about 10°. The acute angle of the mask adjacent the substrate is as sharp as possible. The mask is preferably constructed of water-cooled copper.

3,608,519

DEPOSITION REACTOR

Kenneth E. Bean, Richardson, and John R. Campion, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 31, 1968, Ser. No. 788,250
Int. Cl. B05c ***11/14***
U.S. Cl. 118—48 **6 Claims**

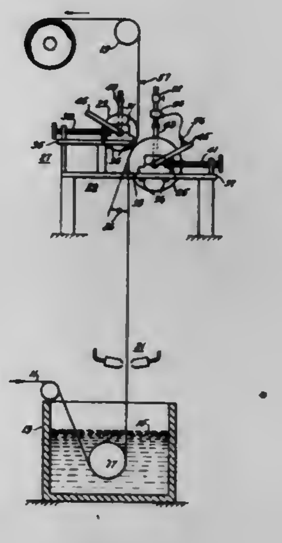
A reactor for depositing a thin layer of material on a semiconductor slice by thermal decomposition of reactant gases is disclosed which has a circular rail, a number of disk-shaped graphite susceptors or supports each having a flat face from which projects a circular retaining rim, a member rotating on an axis extending through the circular rail for rolling the susceptors along the rail while supporting the susceptors at an inclined angle, and an RF coil for heating the susceptors as they are rolled along the rail. The edge of a semiconductor slice placed on the face of the susceptor rolls around the rim of the susceptor as the susceptor rolls. This mechanism is enclosed in a chamber and the reactant gases passed through the chamber. Thus, anomalies in the RF field are compensated as the susceptor rolls around the rail to evenly heat the susceptor, thermal anomalies in the susceptors are compensated as the slice continually moves over the susceptor, and anomalies in the composition of the reactant stream are compensated as each semiconductor slice rotates about its own axis while being translated in a circular path through the vapor stream. Layers uniform in thickness within ±0.5 percent have been achieved, representing an order of magnitude improvement over prior art devices, with corresponding improvements in the uniformity of doping levels and resistivities.



3,608,520

COATING APPARATUS

Laurence B. Caldwell, and Robert W. Helman, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Filed Sept. 12, 1969, Ser. No. 857,515
Int. Cl. B05c ***11/00***
U.S. Cl. 118—60 **6 Claims**



Molten zinc-coated material is wrap contacted with unequal-sized, internally cooled, chromium-plated rolls prior to solidification to inhibit the formation of undesirable spangling of the zinc-coated surface.

3,608,521
APPARATUS FOR APPLYING ADHESIVE

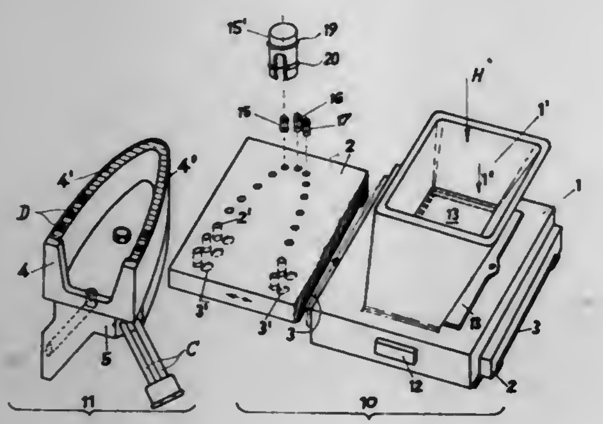
Georg Gopel, Frankfurt am Main, Germany, assignor to Maschinenfabrik Moenus AG, Frankfurt am Main, Germany

Filed July 24, 1969, Ser. No. 844,519

Claims priority, application Germany, July 27, 1968, P 17 60 978.8

Int. Cl. B05c *1/02*

U.S. Cl. 118—202 5 Claims



A support has a heated contact surface onto which the margin of a lasted insole is to be placed. A supply arrangement is located spaced from the support and supplies particulate dry powdered substance thermoplastic adhesive. A transfer device receives quantities of the adhesive powder from the supply arrangement and deposits them on the heated surface without coming in contact with the latter. The adhesive melts when heated by engagement with the contact surface and is then ready for application to the margin of an insole which is to be connected with a shoe upper.

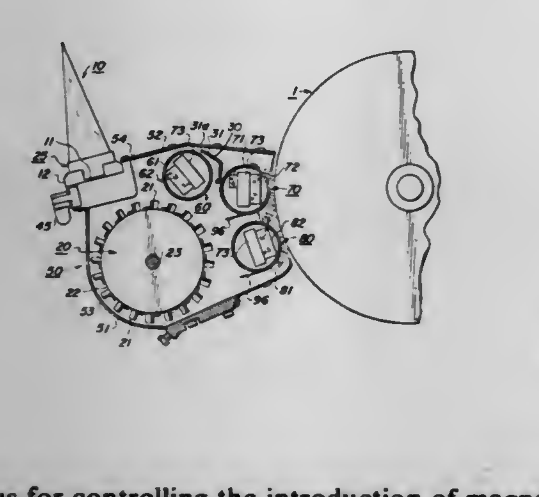
3,608,522
XEROGRAPHIC DEVELOPMENT CONTROL APPARATUS

James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 4, 1969, Ser. No. 830,238

Int. Cl. B05b *5/00*

U.S. Cl. 118—637 5 Claims



Apparatus for controlling the introduction of magnetizable developer material to a plurality of magnetic developing rollers for effecting the development of latent electrical charges selectively retained on a support surface in image configuration. The developing apparatus is continually operable with image development being effected by gating developer material to the magnetic developing rollers or recirculating the developer material in the developer apparatus removed from the effective magnetic field of the developing rollers.

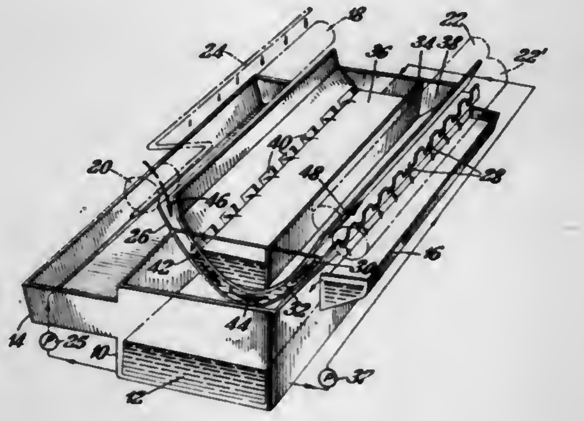
3,608,523
WET ELECTROSTATIC TONING APPARATUS

Lester H. Jeffery, Apalachin, and Edward J. Radin, Johnson City, both of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,225

Int. Cl. G03g *13/60*

U.S. Cl. 118—637 9 Claims



Liquid toning solution is sprayed on a wire wound roller to prewet a sheet or web of copy material as the latter is fed downwardly between such roller and a drive roller to squeegee such web or sheet. The web with the face up then enters the arcuate space between upper and lower trays containing liquid toner with the face up. The underside of the upper tray is metallized to provide image intensification by the reinforced lines of force between such metal surface and the electrostatic latent image areas of the copy as web passes through the toner solution in close proximity to the upper tray. The latter is provided with a vertical wall adjacent the rear thereof, and with front wall having a row of rectangular openings through which the toner liquid cascades into the lower tray by first impinging upon the faceup copy of the web, causing the latter to be forced down and away from the underside of the upper tray, inhibiting undesirable copy surface imperfections. The copy web is drawn upwardly from the arcuate space by squeegee rollers located above an elongated pan at the back of a toner reservoir for also receiving liquid overflow from the lower tray, through a horizontal row of recesses in the upper edge of rear wall of such tray. The liquid is returned to the reservoir from such pan, and then pumped back into the upper tray.

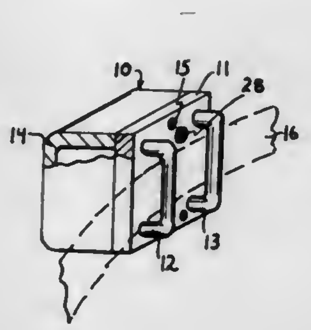
3,608,524
SOUND-ACTUATED ANIMAL-TRAINING DEVICE

Thomas M. Waltz, Stamford, Conn., assignor to Wands, Inc., Stamford, Conn.

Filed July 24, 1969, Ser. No. 844,263

Int. Cl. A01k *15/00*

U.S. Cl. 119—29 15 Claims



A light, compact training device arranged to be worn by a dog or the like and including a pair of electrodes which are adapted to be held in electrical contact with the animal being trained and which have a relatively low energy series of pulses applied thereto in response to a predetermined minimum noise made by the animal; there being a means provided for limiting the maximum amount of energy that may be applied across said electrodes during a given series of said pulses.

3,608,525
VAPOR GENERATOR AND STRUCTURAL UNIT THEREFOR

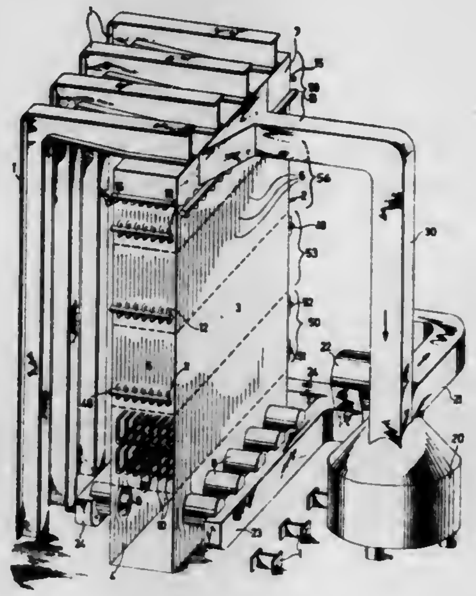
Harendra Nath Sharan, Seuzach/ZH, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Apr. 17, 1970, Ser. No. 29,423

Claims priority, application Switzerland, Apr. 17, 1969, 5805/69

Int. Cl. F22b *37/24*

U.S. Cl. 122—6 A 13 Claims



The structural units are prefabricated to define the heating surfaces of the vapor generator. Each unit is formed of pipe panels disposed in parallel in a horizontal plane as well as wall parts which define a part of the sidewalls of the vapor generator. Some units have pipe ends which extend through the wall parts in gastight relation in order to connect to a header or manifold.

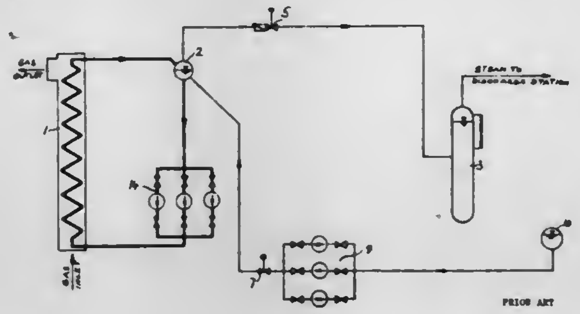
3,608,526
METHOD AND APPARATUS FOR DERIVING USEFUL STEAM FROM A FLUCTUATING HEAT SOURCE

Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.

Filed Aug. 5, 1969, Ser. No. 847,574

Int. Cl. F22b *1/18*

U.S. Cl. 122—7 R 12 Claims



A method and apparatus for deriving useful steam from a fluctuating source of heat. The apparatus includes a heat-exchanger system which operates under conditions of high heat transfer with natural circulation when steam is withdrawn from the system and which requires forced circulation during operation under conditions of low heat transfer. A single high-pressure booster pump installation coacts with the system to provide a supply of new liquid to the system during periods of high heat transfer and to provide forced circulation during periods of low heat transfer, the booster pump installation being operated constantly at its full capacity and controlled to achieve a constant liquid flow through the system under all operating conditions. The booster pumps have their output connected to a jet pump which forms part of the system so that natural circulation can take place through the jet pump while forced circulation can be provided by way of a jet provided in the jet pump by the booster pumps.

3,608,527
HOT-WATER GENERATOR

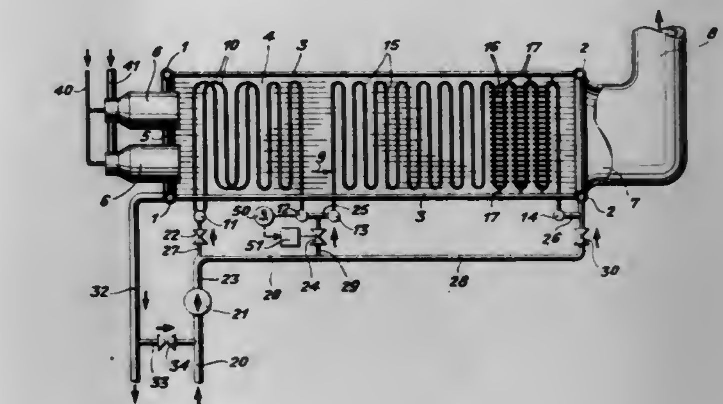
Werner Stiefel, Wintherthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Nov. 12, 1969, Ser. No. 875,675

Claims priority, application Switzerland, Oct. 6, 1969, 14977/69

Int. Cl. F22b *21/22*

U.S. Cl. 122—235 R 7 Claims



The hot-water generator has at least one whirling-muffle burner at the entry to the combustion gas flue so as to direct a combustion gas of high heat, e.g. 1,700° C., against contact-heated heating surfaces in the flue. The heating surfaces are subdivided so that the first heating surface encountered by the gas flow carries only a part of the total water flow. Succeeding heating surfaces carry increased proportions of the total water flow.

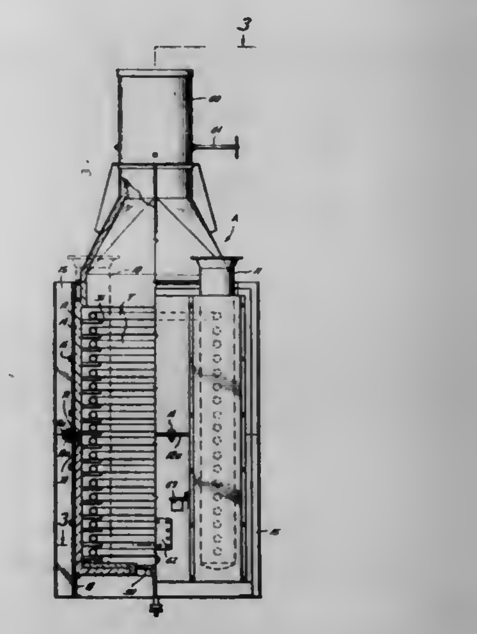
3,608,528
GAS AND VAPOR HEATERS

Hugo C. Mieth, P. O. Box 3152, Houston, Tex.

Filed Nov. 24, 1969, Ser. No. 879,047

Int. Cl. F22b *37/24*

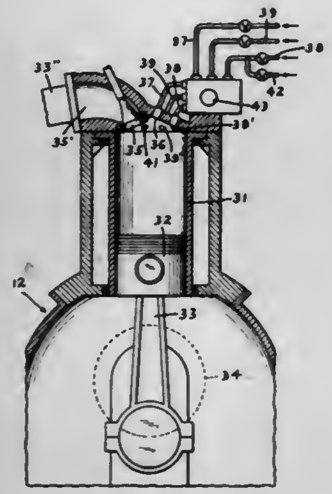
U.S. Cl. 122—510 3 Claims



A gas and vapor heater which is prefabricated at the shop in sections with the casing, refractory, coils and heaters all complete and unitized, whereby a plurality of such sections may be readily assembled together in the field with a minimum of welding and assembly time, and wherein each section has its heater coils disposed substantially horizontally and each section is of such a height that it can be readily transported by truck or rail to the field in the prefabricated condition.

3,608,529
AIR-POLLUTION-FREE AUTOMOBILE AND METHOD OF OPERATING SAME

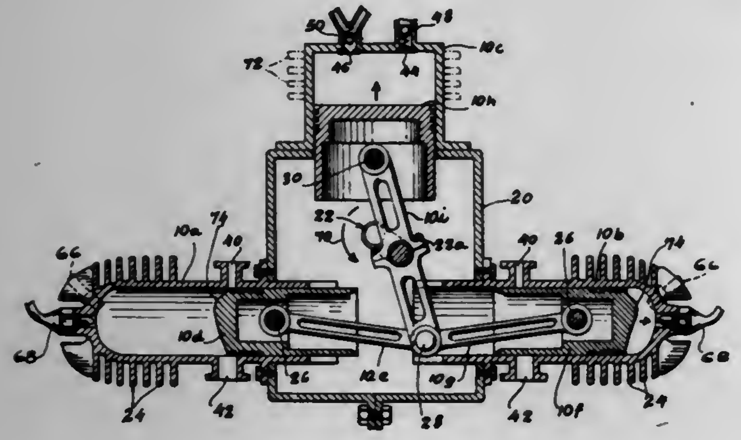
Richard D. Smith, Palo Alto, and Dale A. Furlong, Sunnyvale, both of Calif., assignors to Combustion Power Company, Inc., Palo Alto, Calif.
Continuation-in-part of application Ser. No. 796,089, Feb. 3, 1969. This application May 1, 1969, Ser. No. 820,941
Int. Cl. F02d *19/00;* **F02b** *75/12, 33/00*
U.S. Cl. 123—25C **28 Claims**



An air-pollution-free internal combustion engine and method for operating such engine in which the engine has at least one cylinder, an exhaust port and exhaust valve, fuel, oxygen gas and water spray injectors and a piston in the cylinder, throttle valves for the injectors, a fuel storage and supply system for feeding hydrogen gas or liquid gasoline to the fuel injector, an oxygen storage and supply system for feeding oxygen at first and second pressures to the oxygen gas injector and a water recovery system for recovering water from the exhaust discharged from the cylinder and for feeding the recovered water to the water spray injector.

3,608,530
LEVER-TYPE TWO-CYCLE INTERNAL COMBUSTION ENGINE

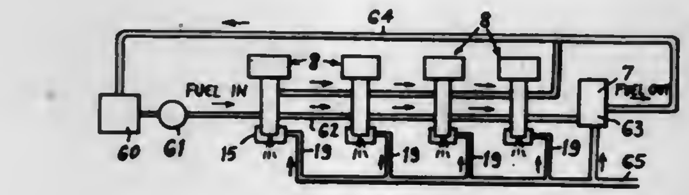
Edward C. Wenzel, 553 W. Shore Trail, Sparta, N.J.
Filed Mar. 3, 1970, Ser. No. 15,999
Int. Cl. F02b *75/24*
U.S. Cl. 123—56 BC **10 Claims**



An internal combustion engine having opposed power cylinders and separate air or air-fuel charging cylinders, and a lever system interconnecting the power and air or air-fuel charging cylinder pistons with each other and with a crankshaft. The lever system comprises the piston rods of the power and air or air-fuel pistons, each piston rod being pivotally connected at one end to its respective piston and being pivotally connected at its opposite end to the corresponding opposite ends of the other two piston rods. One of said piston rods—namely, the piston rod of the air or air-fuel charging cylinder—is connected intermediate its ends to a crankshaft and said piston rod accordingly functions as the lever which drives the crank arm of the engine.

3,608,531
FUEL INJECTION

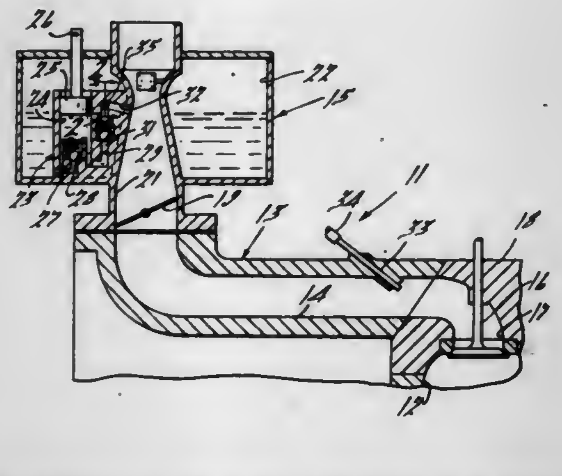
Albert E. Baxendale, Coventry; Brian H. Croft, Coventry, and George E. Fowle, Nuneaton, all of England, assignors to Brico Engineering Limited, Coventry, England
Filed June 23, 1969, Ser. No. 835,620
Claims priority, application Great Britain, July 4, 1968, 32060/68
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **1 Claim**



The present invention relates to a fuel injection system for internal combustion engines. The system comprises at least one electromagnetically operated fuel injector for the injection of fuel into the induction pipe or manifold of the engine and means to provide a supply of exhaust gas from the engine to assist in atomization of the fuel. The flow of the exhaust gas is caused by the pressure differential between the exhaust gas pressure and the depression in the induction pipe or manifold. The fuel pressure to the injectors is adjusted as a function of the pressure of the exhaust gas to provide compensation for variations in fuel flow arising from changes in the pressure of the exhaust gas supply.

3,608,532
WETTING OF INTAKE MANIFOLD

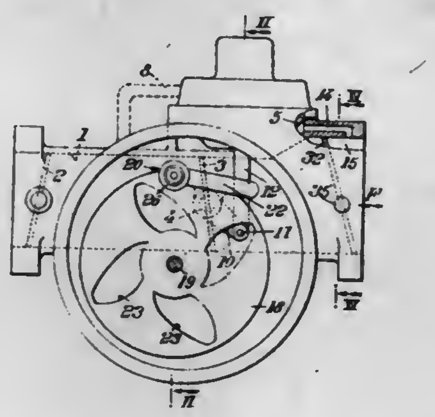
Robert N. Bailuff, Rives Junction, Mich., assignor to Tenneco Inc., Houston, Tex.
Filed Apr. 29, 1969, Ser. No. 820,134
Int. Cl. F02m *19/00*
U.S. Cl. 123—139 AU **1 Claim**



A wetting system for the intake manifold of an automotive internal combustion engine. The system includes an intake manifold and carburetor for delivering a charge to the intake manifold. A device is incorporated for shutting off the flow of fuel during extreme decelerations to reduce the emission of smog producing constituents from the exhaust and nozzles deliver fuel from the accelerating pump to the intake manifold for rewetting the manifold upon reacceleration for promoting smoother operation.

3,608,533
FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES

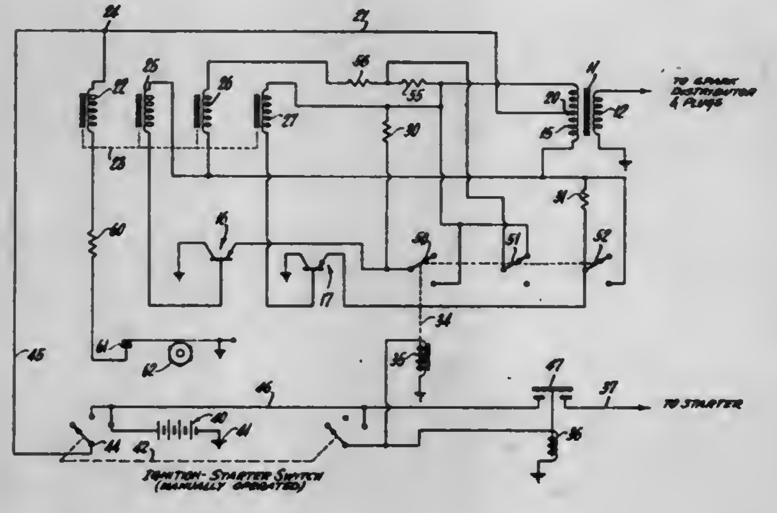
Andre L. Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Neuilly-sur-Seine, France
Filed Dec. 9, 1969, Ser. No. 883,560
Claims priority, application France, Dec. 10, 1968, 177,509
Int. Cl. F02m *39/00;* **F02d** *1/04*
U.S. Cl. 123—139 AW **6 Claims**



The induction pipe includes a throttle valve controlled by the driver and an auxiliary throttle member which opens automatically as a function of the airflow. An eccentric butterfly valve opens under the influence of the airflow and contrary to the variable resilient action of a member responsive to the engine temperature. A passage short circuits the throttle and is progressively closed by a piston proportionately with the opening of the eccentric butterfly valve as the engine heats up.

3,608,534
CONTINUING HIGH FREQUENCY ENERGY IGNITION SYSTEM WITH IMPROVEMENTS

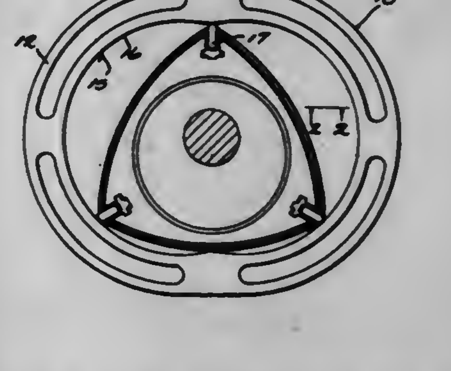
Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.
Filed May 1, 1970, Ser. No. 33,786
Int. Cl. F02p *3/02*
U.S. Cl. 123—148 E **4 Claims**


TO SPARK DISTRIBUTOR & PLUGS
TO STARTER
IGNITION-STARTER SWITCH (MANUALLY OPERATED)

In connection with an ignition system that employs continuing high frequency energy for supplying a spark having a predetermined duration, there are relay controlled circuits for adding and removing resistances that will shift the circuit gain and compensate against a change in frequency.

3,608,535
SEALANT FOR WEAR-RESISTANT COATING

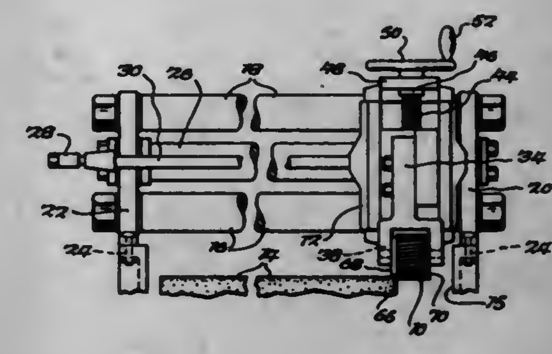
John H. Winston, Menomonee Falls, and Burzoe K. Ghandhi, Milwaukee, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Nov. 6, 1968, Ser. No. 773,764
Int. Cl. F02f *1/00;* **F02b** *55/14*
U.S. Cl. 123—193 C **2 Claims**



Disclosed herein is the impregnation of a sealant in the pores of the wear-resistant coating on the cylinders or combustion chamber of an internal combustion engine to prevent corrosion of the underlying cylinder walls and blistering of the wear-resistant coating and to thereby increase the life of the wear-resistant coating and the piston seals.

3,608,536
BURR AND METHOD OF PULPSTONE DRESSING

Charles B. Roberts, Jr., Lockport, N.Y., assignor to I. W. Roberts Manufacturing Co., Inc., Lockport, N.Y.
Continuation-in-part of application Ser. No. 751,312, Aug. 8, 1968, now abandoned. This application Apr. 2, 1969, Ser. No. 812,662
Int. Cl. B24b *53/14*
U.S. Cl. 125—11 CD **9 Claims**

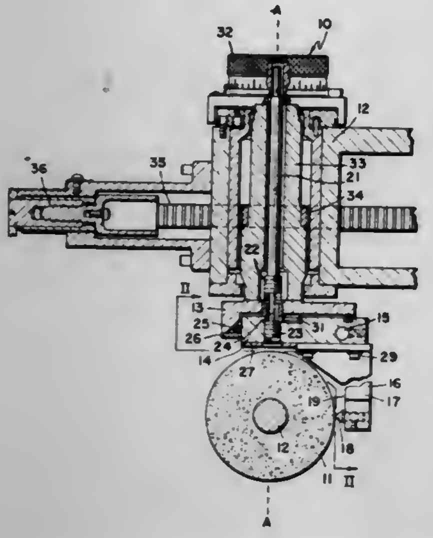


A method of dressing a pulpstone by employing a burr having teeth dimensioned to be completely inserted into the peripheral surface of the pulpstone to impart grooves of controlled depth therein and thereby define the land portions between the grooves to accurately control the grinding surface of the pulpstone. A smooth peripheral edge portion on the burr initially contacts the pulpstone to position the burr and bring it up to speed before traversing the pulpstone.

3,608,537
DRESSING MECHANISM

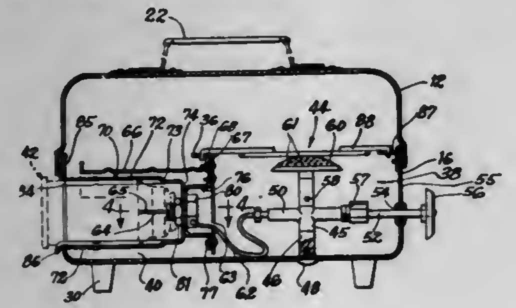
Herbert R. Uhtenwoldt, and Donald R. Johnson, both of Worcester, Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed June 25, 1969, Ser. No. 836,548
Int. Cl. B24b *53/06*
U.S. Cl. 125—11 A **3 Claims**

A device for dressing an arcuate surface on a grinding wheel wherein a diamond tool is rotated about an axis on a transversely pivoted platen to form the arc and adjusting screw means extends along the axis to transversely pivot the tool in order to adjust the distance of the tool from the first axis.



3,608,538
COMBINATION LUNCHBOX PROVIDED WITH MEANS FOR HEATING FOOD AND THE LIKE

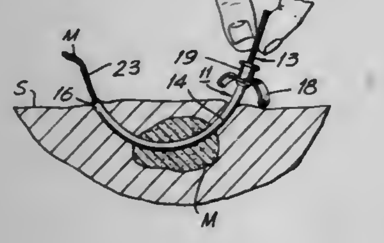
Hermenegildo P. Guerrero, 7641 W. 61st Place, Argo, Ill.
Filed May 21, 1969, Ser. No. 826,544
Int. Cl. F24c *5/20*
U.S. Cl. 126—266 **5 Claims**



A lunchbox provided with means for receiving a displaceable container of liquid gas which supplies fuel to a burner element contained within the lunchbox to thereby heat the food and the like, and in which the lunchbox has a compartment for storing other objects, such as a vacuum bottle, food, and the like.

3,608,539
METHOD FOR THE BIOPSY OF SUBCUTANEOUS MASSES

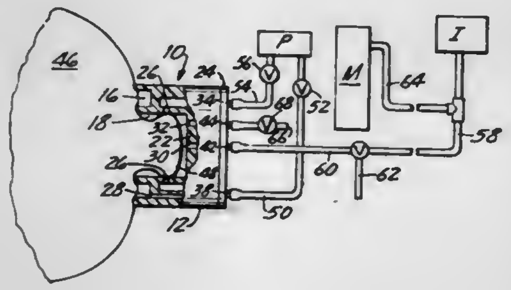
Daniel G. Miller, 430 E. 86th St., New York, N.Y.
Filed Nov. 6, 1968, Ser. No. 773,787
Int. Cl. A61b *10/00, 17/34, 17/32*
U.S. Cl. 128—2 **6 Claims**



An instrument for the biopsy of subcutaneous masses includes an arcuate cannula having a serrated distal cutting end and is provided for alternative insertion, a correspondingly curved pointed stylet and a flexible ejector element. In performing a biopsy, and the skin is punctured and the cannula engaged stylet inserted through the puncture into the surface of the mass from its lateral or inferior aspect. The stylet is removed and the cannula advanced through the mass to cut and draw a specimen thereof into the cannula and the cannula is pushed through the overlying tissue to the skin, which is then punctured and the distal end of the cannula pushed through the puncture. The ejector is then pushed through the proximal end of the cannula to eject the specimen.

3,608,540
METHOD AND APPARATUS FOR AIDING IN THE DETECTION OF BREAST CANCER

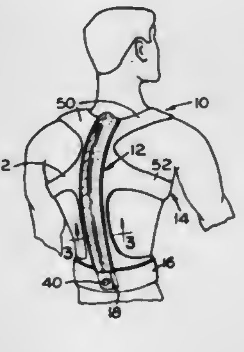
Otto W. Sartorius, Santa Barbara, Calif., assignor to St. Croix Research Company, St. Paul, Minn.
Filed Feb. 24, 1969, Ser. No. 801,613
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 R **10 Claims**



An apparatus is provided for infusing saline solution through the ductal system of the human breast, the apparatus comprising a cup having outer and inner sidewalls defining a peripheral and a central recess opening into the mouth of the cup with openings in the cup for drawing a vacuum in each of the recesses to sealingly attach the apparatus to the breast over the nipple and and enable infusion of solution into the breast ductal system. A method for detection of cancer of the breast is provided by drawing a vacuum around the breast nipple, then irrigating the breast ducts with saline solution infused through the nipple and thereafter examining epithelial cells in the saline solution following irrigation for abnormalities.

3,608,541
POOR POSTURE DETECTORS

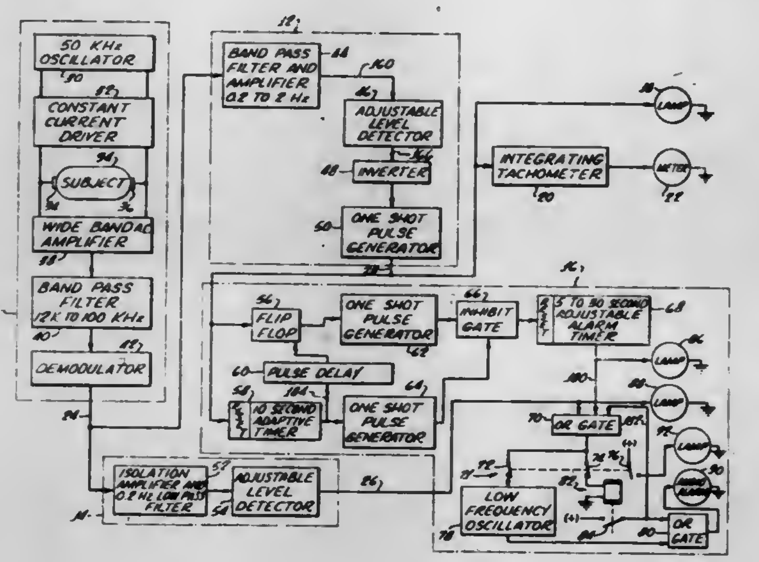
Leland V. Hall, Riddle, Oreg., assignor to Oasis Electronics, Riddle, Oreg.
Filed Dec. 18, 1969, Ser. No. 886,188
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 **10 Claims**



Flexible columns hinged at one side thereof have actuating cables at the opposite sides thereof which actuate warning indicators when the columns are flexed to extents in which the wearers have poor postures.

3,608,542
PHYSIOLOGICAL MONITORING SYSTEM

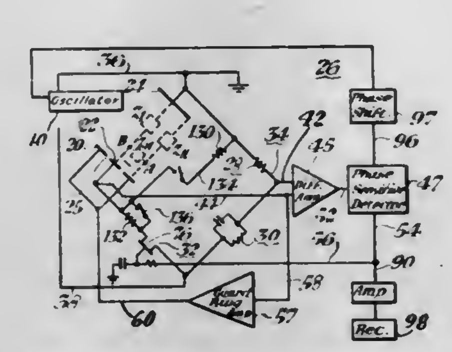
Allan F. Pacela, Diamond Bar, and Fredrick J. Savaglio, Yorba Linda, both of Calif., assignors to Beckman Instruments, Inc.
Continuation of application Ser. No. 656,805, July 28, 1967, now abandoned. This application June 12, 1970, Ser. No. 48,853
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 R **43 Claims**



A respiration monitoring system utilizing an impedance pneumograph which provides an electrical signal having a characteristic that varies in accordance with transthoracic impedance changes during respiratory cycles. Motion artifacts and heart-coupled pulmonary blood flow signal components are eliminated by a narrow band-pass filter and amplifier in conjunction with an adjustable level detector which generates both respiratory rate and volume information in digital form to drive an integrating tachometer and an audiovisual alarm system having an adjustable alarm timer and an adaptive timer adapted to override the adjustable timer under certain conditions of respiration activity. Also, drifts in the total transthoracic impedance are monitored through the same alarm system to determine an equipment failure or loose electrode in the impedance pneumograph. The adjustable level detector discriminates against signals which do not exceed a first level related to respiratory inspiration after having dropped below a second level related to respiratory exhalation.

3,608,543
PHYSIOLOGICAL IMPEDANCE-MEASURING APPARATUS

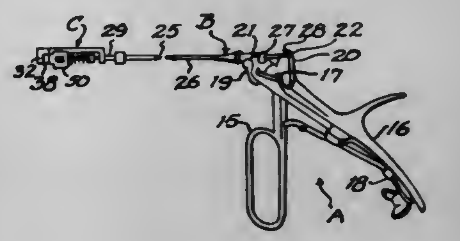
Richard L. Longini, and Wils L. Cooley, both of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.
Filed Oct. 3, 1968, Ser. No. 764,748
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 R **15 Claims**



In a physiological impedance-measuring apparatus, the combination comprising a pair of electrodes for spaced application to predetermined locations of the anatomy, an additional electrode spacedly juxtaposed to one of said first-mentioned electrodes, circuit means for applying a measuring voltage across said first-mentioned electrodes and a portion of said anatomy therebetween and for applying a potential to said additional electrode similar to that on the associated one of said first-mentioned electrodes, and an impedance-measuring circuit coupled to said electrodes for measuring anatomical impedance only between a predetermined pair of said electrodes. In certain applications wherein said circuit means include a unity-gain amplifier for applying a substantially identical potential at lower impedance to said additional electrode for driving the same.

3,608,544
TRANSECTION AND SPECIMEN-TAKING INSTRUMENT

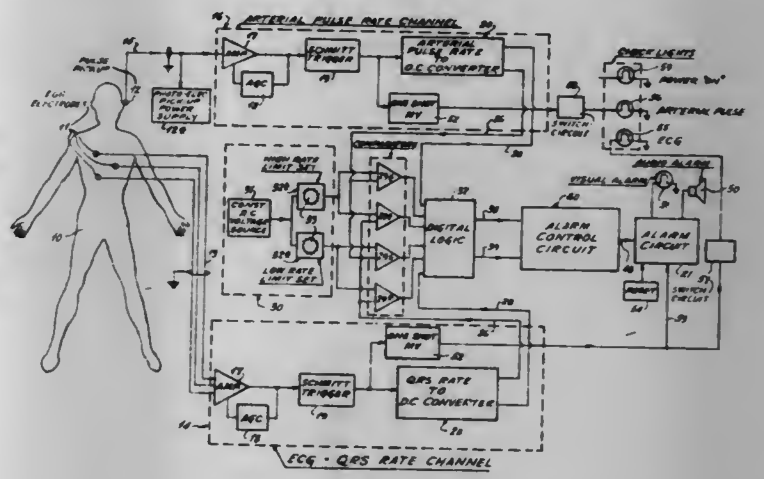
John W. Schnepper, 760 S. Washburn, Corona, Calif.
Filed Jan. 5, 1970, Ser. No. 547
Int. Cl. A61b *17/28;* **A61c** *03/14*
U.S. Cl. 128—2 R **7 Claims**



An instrument for surgical transection, specimen-taking and end-sealing of vessels, nerves and the like (as in vagotomy) having; (1) a clip-setting head to clamp spaced areas of a nerve or vessel and to apply and set hemostatic clips for sealing off those areas, having; (2) a shear for transecting the length of nerve or vessel between the sealed areas, and having; (3) a pocket to receive and hold the transected part for subsequent use as a biopsy specimen.

3,608,545
HEART RATE MONITOR

Bernard Novack, Fort Lee, and Jesse L. Acker, Rockaway, both of N.J., assignors to Medical Engineering Research Corporation, Parsippany, N.J.
Filed Nov. 25, 1968, Ser. No. 778,382
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.06 **17 Claims**



In a heart rate monitor, two electrical inputs derived from ECG. electrodes and from an arterial pulse pickup are received by separate channels to produce respective electrical outputs, such as, variable DC voltages, corresponding to the intervals between successive QRS and arterial pulses, and hence to the rates of such pulses, deviations of such electrical outputs beyond adjustably preset limits of allowable ranges therefor are detected, and an alarm is actuated, as through a digital logic circuit and preferably to operate in synchronism with the QRS pulses, only in response to patient conditions represented by predetermined combinations of detected deviations of the electrical outputs outside the allowable ranges therefor. Further, suitable time delays are provided to cause actuation of the alarm soon after the occurrence of certain combinations of deviations, such as, no pulse and no ECG. or fibrillation (high ECG. rate and no pulse) and to delay the actuation of the alarm in the case of other deviations, such as, the combination of high ECG. or QRS and high arterial pulse rates.

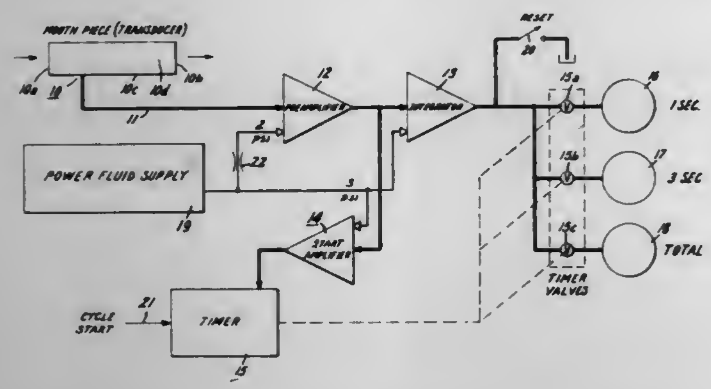
3,608,546
FLUIDIC SPIROMETER

Jeffrey N. Shinn, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 21, 1970, Ser. No. 4,706

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **19 Claims**



An expendable mouthpiece transducer, fluidic circuitry for preventing the breathed air from contaminating the nonexpendable portion of the spirometer, a fluidic integrator, timer and a three-gage readout form the basic elements of an improved spirometer. The transducer generates a pneumatic pressure signal proportional to airflow rate breathed therethrough and the integrator integrates the flow rate to obtain the volume of air breathed through the transducer over a period of time. The three gages are controlled by the timer for operation to determine the total volume breathed for 1 second, 3 seconds, and a total lung volume for 10 seconds. A fluidic preamplifier is connected between the transducer and integrator, and an additional fluidic amplifier provides a sufficient pressure output to actuate the timer.

3,608,547
METHOD FOR DETERMINING THE DISTANCE OF AN OBJECT FROM AN EDOSCOPE

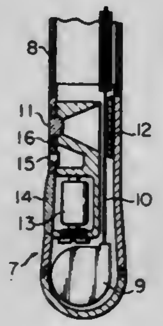
Masaaki Sato, Hachioji-shi; Shoichi Saito, Tokyo, and Shinya Kosaka, Tokyo, all of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed July 24, 1968, Ser. No. 747,224

Claims priority, application Japan, July 29, 1967, Dec. 19, 1967, Dec. 19, 1967, 42/48686;42/81327;42/81328

Int. Cl. A61b *1/06*

U.S. Cl. 128—6 **6 Claims**



Method for determining the distance of an object from an endoscope which comprises the steps of emitting a light of predetermined intensity and receiving the light reflected from the object having substantially the same reflecting power over the entire area thereof by a photoelectric element, the intensity of the reflected light being the function of the distance from the object, the photoelectric element produces an electrical signal corresponding to the distance. The signal thus produced is recorded and compared with a previously prepared chart indicating the relation between the signal and the distance so that the distance is determined after the operation of the endoscope is completed.

The spectroscopic characteristics of the light used for determining the distance is so selected that the film contained in the endoscope for photographing the object is not affected by the light used for determining the distance so that the determination of the distance can be made during the operation of the endoscope.

The intensity of the light used for determining the distance is made variable for the better observation of the object while the output of the photoelectric element is varied in inverse proportion to the variation in the intensity of the light so that the correct determination of the distance can be made even though the intensity of the light source is varied.

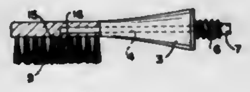
3,608,548
ORAL HYGIENE DEVICE

Terreil D. Lewis, Rte. 2, Box 38, Sebring, Fla.

Filed Mar. 24, 1969, Ser. No. 809,862

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **7 Claims**



An oral hygiene device comprising a brush having a tubular handle with rows of bristles extending laterally from one end and a discharge nozzle positioned between the outside rows of bristles substantially contacting the adjacent bristle tufts to brace such tufts and provide a clear discharge space for liquid issuing from the nozzle so the liquid will directly contact the teeth and gums and means are provided to produce a pulsating action on the liquid to increase the stimulation of circulation and to flush the loosened particles and also dilute the mouth acids. The handle is made in two parts with the bristle-carrying portion removable for replacement.

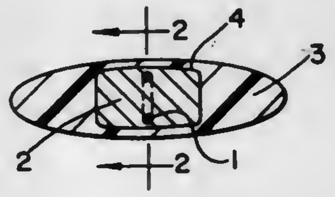
3,608,549
METHOD OF ADMINISTERING DRUGS AND CAPSULE THEREFOR

Edward W. Merrill, Cambridge, Mass.

Filed Jan. 15, 1970, Ser. No. 3,073

Int. Cl. A61m *31/00*

U.S. Cl. 128—260 **8 Claims**



An implantable capsule for delivering a medicament to live animals having a permeable elastomeric wall and containing a mixture of medicament and matrix material which melts between 40° C. and 47° C. The capsule also contains a metal coil capable of being inductively heated by a coil external to the body. When delivery of medicament is desired, the coil is inductively heated to melt the mixture and effect diffusion of medicament through the permeable wall.

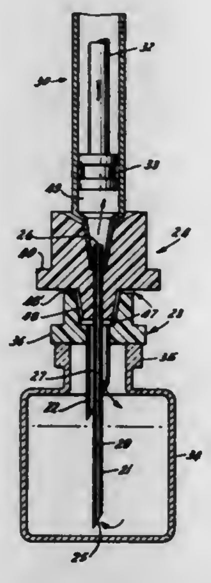
3,608,550
TRANSFER NEEDLE ASSEMBLY

Theodore H. Stawski, Union, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed May 7, 1969, Ser. No. 822,455

Int. Cl. A61j *1/00*

U.S. Cl. 128—272 **7 Claims**



A transfer needle assembly for transferring fluid from a fluid source to a fluid collection container. The assembly includes support means adapted at its rear end to be associated with the collection container and at its forward end to the fluid source. A first cannula is mounted on the support means and is adapted to be connected at its forward end to the fluid source and at its rear end to the collection container. A second cannula is mounted on the support means and is adapted to be connected at its forward end to the fluid source and at its rear end to the atmosphere. In this manner, fluid is permitted to be transferred from a fluid source to a collection container by atmospheric pressure when the volume within the collection container is sufficiently increased.

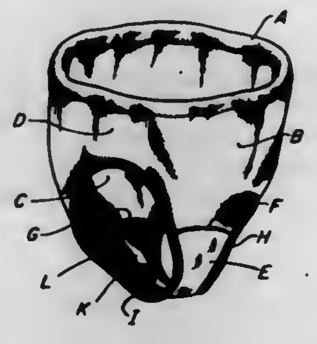
3,608,551
MENSTRUAL RECEIVER

Saburo Seijo, 95, Okarucho, Kashiwara Nara Prefecture, Japan

Filed Oct. 11, 1968, Ser. No. 766,769

Int. Cl. A61f *13/16*

U.S. Cl. 128—288 **3 Claims**



Menstrual short panties provided with an elastic piece fixed either directly or by the intermediary of a network to the middle piece of panties at both sides in an elongated condition, with which a napkin is kept raised by the elasticity of elastic piece to be sufficiently close to the private parts of human female body irrespective of her physical movements in daily life to prevent leakage of blood.

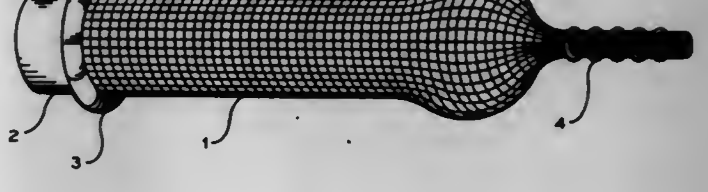
3,608,552
MALE URINAL DEVICE

Arthur B. Broerman, 5901 Baylor, Bartlesville, Okla.

Filed Feb. 5, 1970, Ser. No. 8,819

Int. Cl. A61f *5/44*

U.S. Cl. 128—295 **7 Claims**



A male urinal device comprised of a fabric base tubular expansible liquid conveying sheath adapted to receive the penis and to be affixed thereto in fluidtight relation. The fabric basic tube of the sheath is coated with a suitable liquid repelling substance which itself is pliable and elastic. The downstream end of the sheath is adapted to be connected to a tube of relatively smaller diameter for conveying urine to a receiving container. The receiving container is preferably a container having flexible walls which in turn have projections extending from their inner surfaces toward opposite walls thereof.

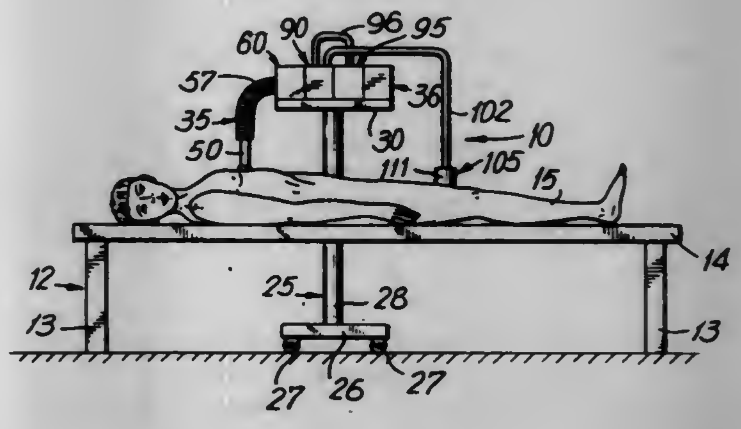
3,608,553
ULTRASONIC METHOD AND APPARATUS FOR TISSUE GRAFTING

Lewis Balamuth, New York, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Continuation-in-part of application Ser. No. 655,118, July 21, 1967, now Patent No. 3,526,219. This application Sept. 4, 1969, Ser. No. 855,126

Int. Cl. A61b *17/00, 17/32*

U.S. Cl. 128—303 **31 Claims**



The method and apparatus of grafting tissue, such as tissue in biological organisms such as humans, by the removal of live epidermal cells from one area of a body by ultrasonic means, and then transporting such cells in a suitable isotonic fluid suspension to the site where the fluidized cells are to find their new homes and then applying the cells thereto.

3,608,554
SURGICAL CLAMPING MEANS

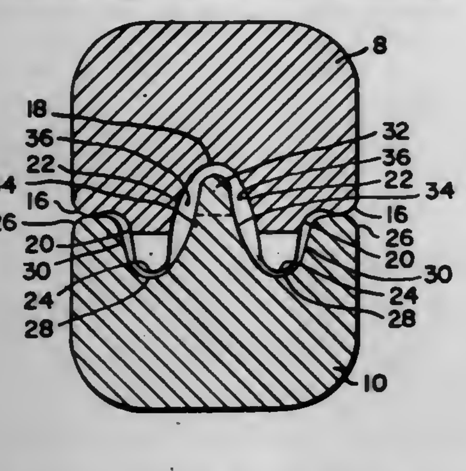
Michael G. McGuinness, Cornwells Heights, and William H. Pilling, Ardmore, both of Pa., assignors to Pilling Co., Fort Washington, Pa.

Filed Dec. 22, 1969, Ser. No. 887,131

Int. Cl. A61b *17/28, 17/08*

U.S. Cl. 128—321 **4 Claims**

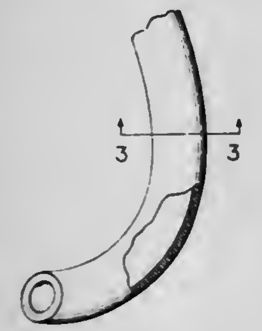
A surgical clamping means is provided with serrated jaws presenting to body tissues surfaces which are relatively rounded rather than sharp to avoid damage to the tissues while nevertheless effecting secure clamping action by



presenting pocketlike regions within which expanded portions of the tissues are clamped.

3,608,555
RADIO OPAQUE AND OPTICALLY TRANSPARENT TUBING

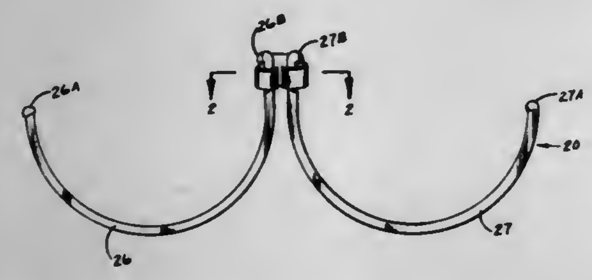
William L. Greyson, Wayne, N.J., assignor to Chemplast Inc., Wayne, N.J.
Filed Dec. 31, 1968, Ser. No. 792,896
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 **4 Claims**



Tubing having a smooth inner bore and a smooth even outer surface wherein the properties of X-ray opacity and optical permeability are optimized and maximized by forming the tubing from a plastic and an X-ray opaque substance homogeneously dispersed in the plastic wherein the X-ray opaque substance has a controlled concentration and an index of refraction as close to the index of refraction of the plastic as possible; additionally where the plastic forms crystalline structures it is not annealed during the fabrication of the tubing to further optimize optical permeability of the tubing.

3,608,556
BRASSIERE CONSTRUCTION

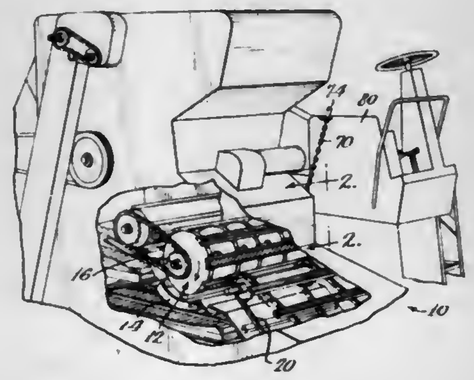
Stephen Paterson, Forest Hills, N.Y., assignor to S. & S. Industries, Inc., Bronx, N.Y.
Filed Feb. 20, 1969, Ser. No. 800,862
Int. Cl. A41c *1/14*
U.S. Cl. 128—472 **10 Claims**



A brassiere construction comprising a pair of U-shaped members to which fabric breast cups are secured, having a substantially rectangular cross-sectional shape in which the longer-dimension extends radially of the curvature thereof and in which the respective U-shaped members are hingedly connected so that they may be disposed between a foldable overlying position and an operative wearing position. An improved hinge construction is also provided to limit the relative rotation of the respective U-shaped members in the operative wearing position.

3,608,557
HARVESTING MACHINE DESLUGGING MECHANISM

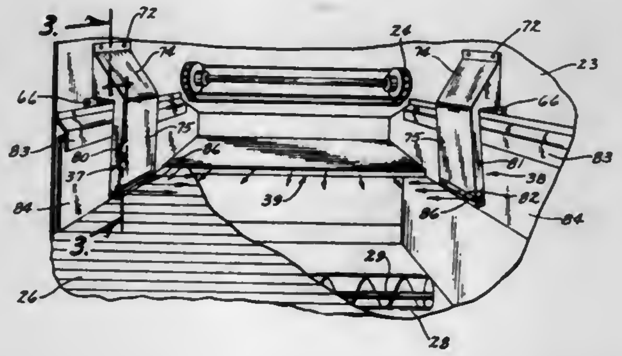
Thomas Evans, Bettendorf, Iowa, assignor to J. I. Case Company
Filed Mar. 4, 1970, Ser. No. 16,416
Int. Cl. A01f *12/28*
U.S. Cl. 130—27 AC **10 Claims**



A remotely controlled deslugging mechanism for removing trapped material from between a threshing cylinder and an adjacent concave of a harvesting machine. The deslugging mechanism includes a fluid ram having a cylinder pivoted about an axis laterally offset to one side and above the pivot axis of the threshing cylinder with a piston rod extending above the axis for the threshing cylinder. The threshing cylinder shaft has a ratchet wheel rotatable therewith and the piston rod has a cooperating pawl so that extension and retraction of the piston rod will cause the threshing cylinder to be rotated in a direction opposite to the normal direction of rotation to remove any "slug" of material from between the cylinder and the concave. The pawl is normally maintained in engagement with the ratchet wheel by gravity and the mechanism incorporates means for normally maintaining a pawl spaced from the ratchet wheel to accommodate normal rotation of said threshing cylinder.

3,608,558
AIR MANIFOLD FOR A COMBINE CHAFFER MATERIAL LEVELER AND AERATOR

Vernon H. Sietmann, Laurel, Iowa, and Gerald F. Dendel, 236 E. 16th St., Costa Mesa, Calif.
Filed Feb. 24, 1969, Ser. No. 801,514
Int. Cl. A01f *12/48*
U.S. Cl. 130—27 AE **9 Claims**



This invention relates to an attachment for a conventional grain combine which includes a sieve or chaffer area where the grain is delivered for finish cleaning, and comprises a high-speed blower that automatically delivers a flow of air under static pressure through a pendulum-operated valve for controlled transmission of air through a plurality of conduits arranged in parallel to manifolds on opposite sides of the chaffer and to a manifold extended tranversely across the combine. All of the manifolds are mounted adjacent the front of the chaffer to deliver a majority of air to the downhill side of the chaffer for directing grain to the uphill side while always maintaining a small amount of air to the uphill side to prevent clogging of the uphill manifold, and to deliver air through the transverse manifold to direct air to the substantially horizontal flow of grain to thereby separate chaff and trash from the heavier grain, effecting an aeration of the material which aids in cleaning. The manifolds on the opposite side of the chaffer are stationary and are not movable with the chaffer. Each of the oppositely disposed manifolds includes a manifold housing connected to its respective conduit and extending downwardly therefrom. A horizontally disposed discharge opening is provided in the manifold housing above the lower end thereof. The cross-sectional area of the lower end of the manifold housing is less than the cross-sectional area at the upper end of the housing to maintain peak output pressure.

3,608,559
PROCESS OF INTRODUCING ASHING INGREDIENTS INTO OXIDIZED CELLULOSE MATERIAL INTENDED AS SMOKING PRODUCT AND PRODUCT OBTAINED THEREBY

Theodore S. Briskin, and Geoffrey R. Ward, both of Beverly Hills, Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 595,622, Nov. 21, 1966, now abandoned , and a continuation-in-part of 674,994, Oct. 12, 1967, now abandoned. This application July 17, 1968, Ser. No. 745,370
Int. Cl. A24b *15/00*
U.S. Cl. 131—2 **23 Claims**

A method of making a smoking product formed of oxidized cellulosic material is disclosed in which incorporation of ash forming components is effected in the form of mineralizing agents preferably developed in situ internally of the oxidized cellulosic fibers by treatment first with a calcium compound in aqueous medium and then with oxalic acid to form insoluble calcium oxalate in situ or by treatment of the cellulosic materials with the freshly mixed components which remain soluble in admixture for a length of time sufficient for internal absorption into the oxidized cellulosic system.

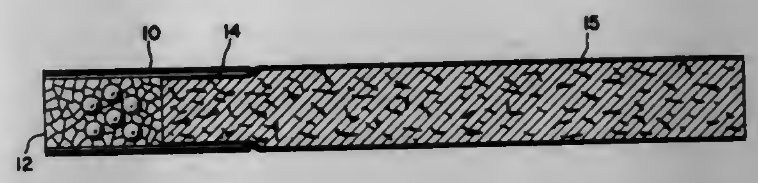
3,608,560
SMOKABLE PRODUCT OF OXIDIZED CELLULOSIC MATERIAL

Theodore S. Briskin, and Geoffrey R. Ward, both of Beverly Hills, Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 595,622, Nov. 21, 1966, Pat. No. 3,447,539, Continuation-in-part of application Ser. No. 674,994, Oct. 12, 1967, now abandoned. This application Nov. 7, 1968, Ser. No. 774,187
Int. Cl. A24b *15/00;* **A24d** *01/18*
U.S. Cl. 131—2 **5 Claims**

A smokable product of oxidized cellulosic material formulated to include combustible carbon in an amount within the range of 2–50 percent by weight of the oxidized cellulosic material for the improvement in the smoking characteristics of the smoking product forward thereof. The combustible carbon particles are of approximate colloidal dimensions and increase the heat of combustion of the oxycellulose. Melting of the oxycellulose is minimized with the carbon additive. Further, the carbon particles may carry a volatile additive absorbent thereon and function as a filtration means downstream from the combustion area. The carbon particles may be secured to the oxycellulose by means of a soluble carbohydrate binder.

3,608,561
EXTENDER MEANS FOR ATTACHMENT OF AN AUXILIARY CIGARETTE FILTER

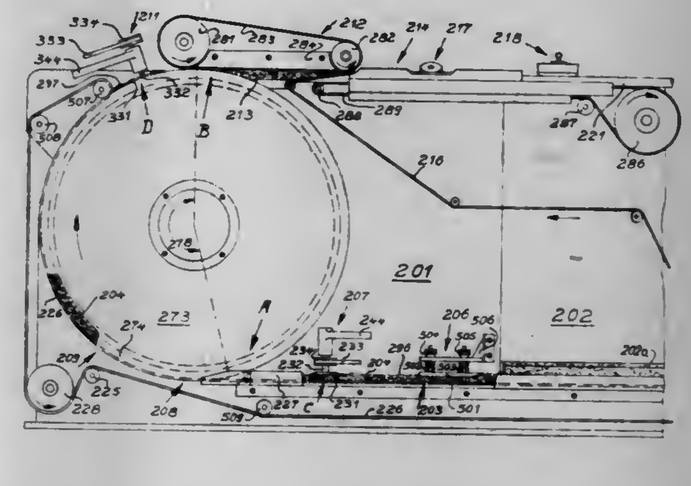
Mortimer Russel Dock, New York, N.Y., assignor to The H-2-O Filter Corporation, New York, N.Y.
Filed Jan. 15, 1970, Ser. No. 3,090
Int. Cl. A24d *01/04;* **A24f** *13/06, 13/08*
U.S. Cl. 131—10 A **4 Claims**



This invention relates to extender means for optional attachment of an auxiliary cigarette filter to a conventional cigarette. The extender means comprises a tubular body having ridges on its internal surface. Each said ridge defines dual vertices creating an air duct therebetween to rarify the smoke drawn through the cigarette.

3,608,562
METHOD AND APPARATUS FOR PRODUCING A TOBACCO ROD

Jurgen Gomann, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany
Filed Jan. 24, 1969, Ser. No. 793,647
Claims priority, application Germany, Feb. 7, 1968, P 16 57 249.9
Int. Cl. A24c *05/18*
U.S. Cl. 131—24 D **16 Claims**



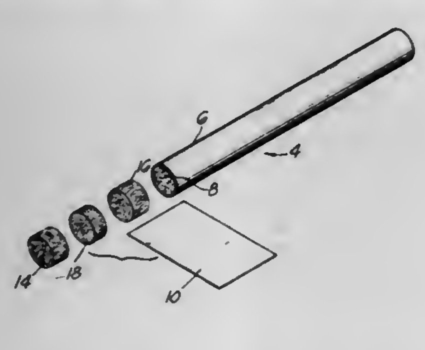
A filler rod of shredded tobacco particles is obtained by trimming diametrically two opposite sides of an elongated filler stream adjacent to two longitudinally spaced portions of plural paths along which the stream is moved by a system of conveyors. At least one of the trimming devices is adjustable in dependency on measurements performed by a testing device which determines the amount of tobacco shreds in successive increments of the rod. The stream is compacted pneumatically or mechanically upstream of and/or adjacent to the trimming devices.

3,608,563
CIGARETTE FILTER

John B. Schmitz, 1856 Oakwood, Arcadia, Calif.
Filed Feb. 6, 1969, Ser. No. 797,135
Int. Cl. A24b *15/02;* **A24d** *1/06*
U.S. Cl. 131—265 **2 Claims**

A cigarette filter including crushed and screened substantially uniformly sized particles of flux calcined diatomaceous earth, the smaller particles being approximately no less than 25 percent of the size of the larger particles to prevent undesirable smoke flow restriction from filling of voids, wherein an exemplary broad size range is from approximately 100 to

425 microns and an exemplary optimum size range, when the particles are associated with conventional cellulose filters, in order to prevent undue draft restriction, is from 175 to 210 microns.



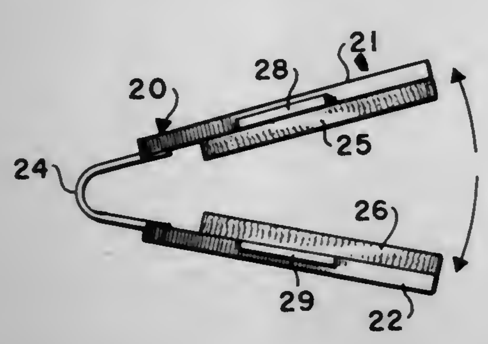
3,608,564
CIGARETTE FILTER

Hiroji Takahashi, Hiroshima; Atsushi Saito, Toyama; Kazuo Kuwahara, Yamaguchi; Katsumi Hayashi, Tokyo; Takashi Kaneko, Hiroshima; Shigeya Hayashi, Tokyo, and Kenji Okano, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Co., Ltd. and Mitsubishi Acetate Co., Ltd., Chuo-ku, Tokyo, Japan
Filed May 15, 1969, Ser. No. 825,069
Claims priority, application Japan, May 15, 1968, 43/32728
Int. Cl. A24b *15/02;* **A24d** *01/06*
U.S. Cl. 131—266 **22 Claims**

Cigarette filters comprising one graft polymer selected from the group consisting of polyvinyl alcohol grafted with at least one monoethylenically unsaturated vinyl monomer and partially saponified polyvinyl alcohol grafted with at least one monoethylenically unsaturated vinyl monomer. A plug comprising a bundle of opened fibers to fit a cigarette carries said polymer.

3,608,565
HAIR GRIPPING DEVICE

Beverly C. Ensign, 4971 Powerferry Road, Atlanta, Ga.
Filed Dec. 9, 1968, Ser. No. 782,397
Int. Cl. A45d *2/06*
U.S. Cl. 132—9 **3 Claims**

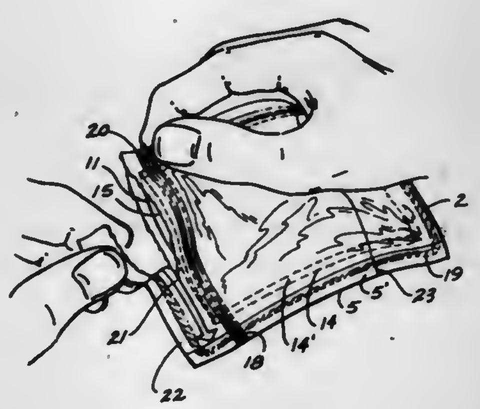


A hair gripping device for holding the hair of the head while backcombing the hair. A form fitting hand covering is provided which includes a body portion sized and shaped to cover primarily only the hand knuckles of the thumb and forefingers, and a thumb sheath and a forefinger sheath are connected to the body portion. The remaining portion of the hand is left uncovered, and the thumb and forefinger are used to grasp and grip the hair of the head during the backcombing procedure while the remaining hand area is uncovered and unencumbered so that it retains its sense of feel.

3,608,566
APPLICATOR PACKAGE

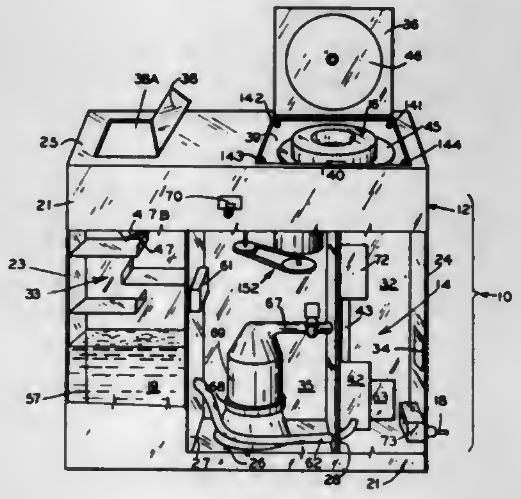
Duane L. Storandt, 8744 Rankin, Brentwood, Mo.
Filed Apr. 7, 1969, Ser. No. 813,871
Int. Cl. A45d *44/18*
U.S. Cl. 132—84 **12 Claims**

An applicator package having an inner pouch of moisture absorptive material enclosed within an outer pouch or envelope and attached thereto along a relatively narrow line located adjacent the inner pouch opening, there being a tear string disposed around the perimeter of said envelope for facilitating opening same on all sides.



3,608,567
FILTER CLEANING PROCESS AND APPARATUSES

Scott E. Neill, Jr., 1147 H St., Salida, Colo.
Continuation-in-part of application Ser. No. 727,594, May 8, 1968, now Patent No. 3,526,237. This application June 26, 1970, Ser. No. 50,169
Int. Cl. B08b *3/02; 11/00*
U.S. Cl. 134—58 **3 Claims**

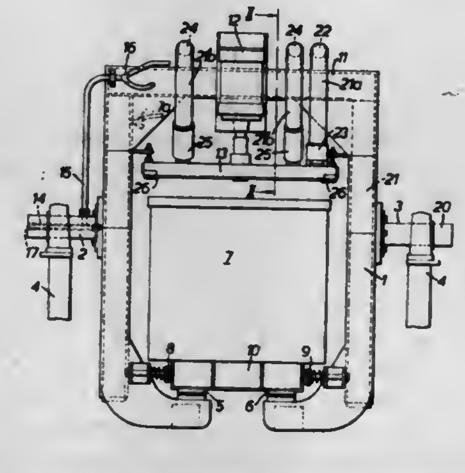


A process organized to successively apply a jet of cleansing liquid to the exterior surface of each successive portion of a complex-shaped thin-walled dirty-air-permeable air filter while the interior surface of that thin-walled portion is concurrently supported from collapse by the mechanical action of said jet.

3,608,568
MACHINES FOR PROCESSING ARTICLES

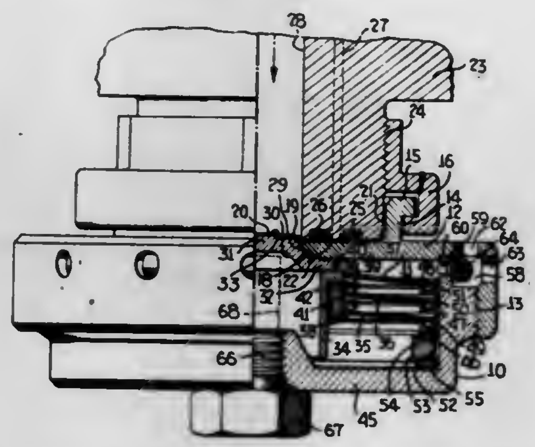
Victor Hallsworth, Ashton-U-Lyne, England, assignor to Sturtevant Engineering Co., Ltd.
Filed Feb. 9, 1970, Ser. No. 9,720
Claims priority, application Great Britain, Jan. 28, 1970, 4083/70
Int. Cl. B08b *3/04*
U.S. Cl. 134—120 **4 Claims**

An article-processing machine which comprises a housing in which is a support for an open-topped container for articles to be processed, a member to engage the open top of the container and means to angularly displace the member container and support in the engaged condition, a feed line to the member to feed processing liquid to the container while it is in motion and a valve carried by the member to control a passage through which liquid may be discharged from the container.



3,608,569
PRESSURE RELIEF VALVE WITH FRANGIBLE DISK

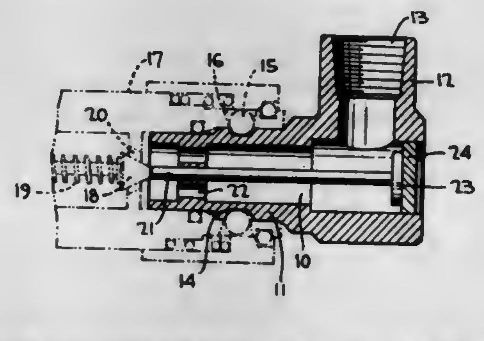
John R. Burns, Culver City, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Sept. 15, 1967, Ser. No. 668,038
Int. Cl. F16k *17/16;* **B64d** *45/00*
U.S. Cl. 137—69 **14 Claims**



A relief valve in which a passage through the valve is closed by both a frangible diaphragm and a valve poppet, the diaphragm being supported against bursting by the poppet when the latter is in its closed position but not when in its open position, the poppet being pressed with decreasing force towards its closed position throughout the range of its opening movement by a negative rate spring.

3,608,570
VALVE UNIT

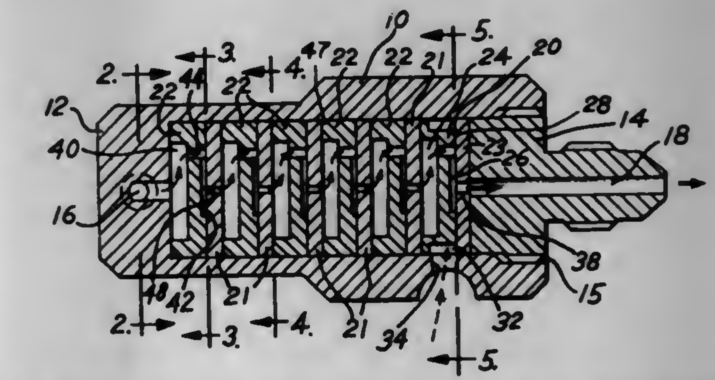
Serge N. McKhann, 425 E. 63rd St., New York, N.Y., and William T. Bahr, 1465 Tuttle Ave., Wallingford, Conn.
Filed Feb. 27, 1969, Ser. No. 802,990
Int. Cl. F16k *17/38*
U.S. Cl. 137—75 **5 Claims**



A valve unit is provided having an external fusible safety cutoff means. The unit is generally utilized as part of quick-disconnect couplings used in connecting lines containing combustible fluids, such as gas. The valve unit functions as a plug part and is provided with a rod member adapted at one end to engage a self-closing valve contained in a communicating socket part, which self-closing valve may be disposed to close the flow of fluid through said socket part, and having a flange at the other end in contact with, and constrained by, a fusible material. The fusible material constitutes an outside wall of said unit or is in the form of a ring which bonds the flange to the housing. When the temperature of the surrounding area reaches a predetermined degree, the material fuses, losing its constraining influence on the rod member which is then pushed outward allowing the self-closing valve to shut off the flow of fluid through the line.

3,608,571
FLUIDIC FLOW CONTROL VALVE

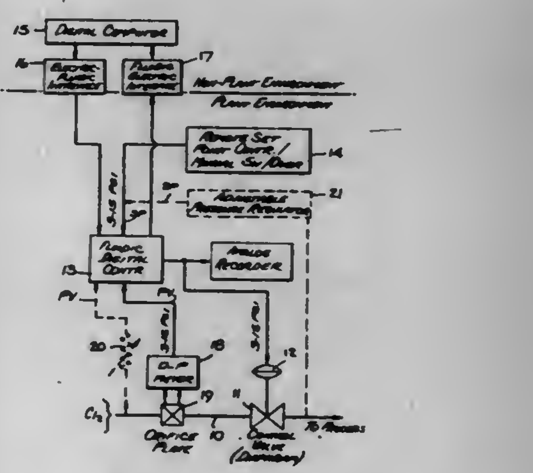
Richard L. Wilcox, Adel, Iowa, assignor to Delavan Manufacturing Company
Filed May 7, 1969, Ser. No. 822,426
Int. Cl. F15c *1/16*
U.S. Cl. 137—81.5 **10 Claims**



A fluidic flow control valve having a control fluid passage which communicates tangentially with a vortex chamber to form a control fluid vortex in the chamber, a power fluid inlet passage communicating radially with the chamber, and a discharge passage communicating with the chamber for discharging the control and power fluids therefrom. A plurality of resistor plates having vortex chambers therein are positioned upstream of the chamber and form fixed resistors in the control fluid stream.

3,608,572
FLUIDIC DIGITAL CONTROLLER

Hyman Hass, Stamford, Conn., assignor to Applied Fluidics, Inc., Stamford, Conn.
Continuation-in-part of application Ser. No. 756,058, Aug. 28, 1968, now Patent No. 3,528,444. This application Sept. 12, 1969, Ser. No. 857,498
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 **11 Claims**

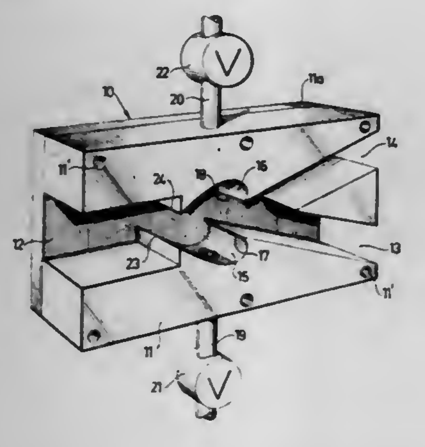


A fluidic process controller for comparing a fluidic input analog pressure signal representing a set point (SP) with a fluidic input analog pressure signal representing a process variable (*PV*) to produce a fluidic output signal whose pressure is proportional to the error therebetween in order to govern a final control element in a direction and to an extent causing the process variable to return to the set point value.

The controller includes a comparator having a trigger circuit responsive to the input signals to produce a fluidic output signal depending only on whether *PV* is lower or higher than SP and at a constant pressure level. This output signal is integrated to produce a control signal which is applied to the final control element. The final control element functions to vary *PV* in a direction reducing its difference with SP but causing *PV* to slightly overshoot SP before reversing direction, whereby the output signal is constituted by square wave pulses whose integrated pressure provides the control signal acting to regulate the final control element to maintain *PV* at the desired level.

3,608,573
FLUIDISTOR

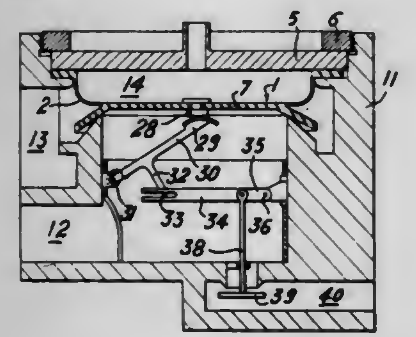
Per Svante Bahrton, 182 75 Stocksund, 11 Villavagen, Sweden
Filed Feb. 4, 1969, Ser. No. 796,484
Claims priority, application Sweden, Feb. 6, 1968, 1537
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **6 Claims**



A fluidistor of the type comprising an inlet, at least two outlets, and an intermediate passage including at least one control chamber. The transition region between the inlet and the control chamber is designed to provide unstable flow to the control chamber. This increases the amplification of the device by reducing the control energy required to switch the output from one outlet to another. The unstable flow to the control chamber is caused by wedgelike shoulder means projecting substantially perpendicular to the direction of flow at the transition region from inlet to control chamber. The wedgelike shoulder means has a small dimension in the direction of flow as compared to the dimension perpendicular to the direction of flow. The transition region from the control chamber to the outlet is also sharply defined for the same reasons.

3,608,574
DIAPHRAGM-VALVE ESPECIALLY FOR A RESPIRATORY-GAS SUPPLY SYSTEM

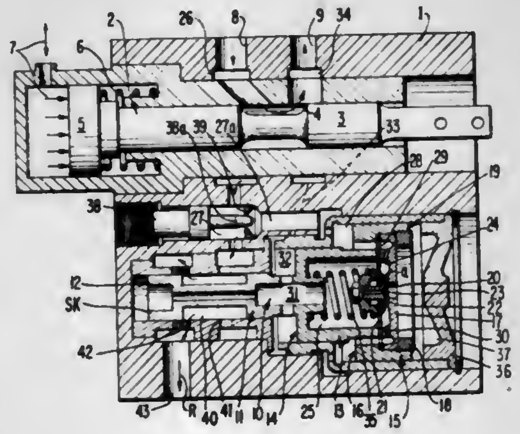
Raymond Beaussant, Bretigny-sur-Orge, France, assignor to Intertechnique S.A., Plaisir, France
Filed Dec. 9, 1968, Ser. No. 782,151
Claims priority, application France, Dec. 19, 1967, 132 966
Int. Cl. G05d *7/00;* **A62b** *7/00*
U.S. Cl. 137—102 **3 Claims**



A diaphragm-valve, especially for a respiratory-gas supply system, comprising a flat diaphragm of revolution about an axis, a sealing lip adapted to cooperate with a seating and added to said diaphragm in the vicinity of its periphery, said lip having a substantially conical profile whose vertex is located on said axis on the gas inlet side of said diaphragm, and a bellows element which forms an extension of said flat diaphragm on the side remote from said lip, said bellows element being made integral at one end thereof with said diaphragm and secured in position at the other end thereof by means of an annular flange, said lip having a diameter of contact with said seating which is substantially identical with the effective diameter of said bellows element.

3,608,575
DIFFERENTIAL-PRESSURE REGULATING VALVE ASSEMBLY ESPECIALLY FOR CONTROL INSTALLATIONS OF GAS TURBINE DRIVE UNITS

Wilhelm Jurisch, Nelligen-Parksiedlung; Gerhard Walliser, Waiblingen, and Heinrich Ulrich, Metzingen, Wurthemberg, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Mar. 20, 1969, Ser. No. 808,892
Claims priority, application Germany, Mar. 20, 1968, P 17 73 006.2
Int. Cl. G05d *11/00*
U.S. Cl. 137—117 **30 Claims**

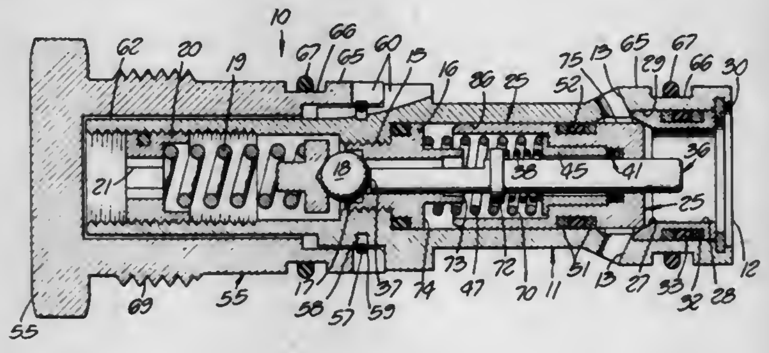


A differential pressure control valve assembly, especially for control installations of gas turbine drive units, in which the control slide valve controlling the backflow quantity of liquid is constructed as servo device only controlled by the control diaphragm which limits one or several servo pressure chambers for receiving a working medium removed from the hydraulic circulation system and having a variable servo-adjusting pressure between the higher hydraulic pressure upstream of the metering place and the lower hydraulic pressure downstream of the metering place; the servo-adjusting pressure is modulated in case of occurring control deviations by a control valve actuated by the control diaphragm in the sense that in case of exceeding the intended value of differential pressure, a larger return quantity is adjusted to by the piston slide valve and in case of dropping below the intended value of differential pressure, a smaller return quantity is adjusted to.

3,608,576
PILOT-CONTROLLED PRESSURE RELIEF VALVE

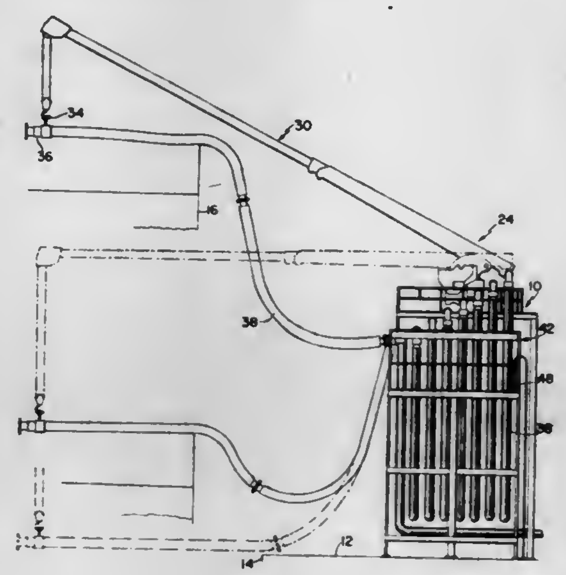
Raymond L. Wilhelm, Glendora, Calif., assignor to Circle Seal Corporation, Anaheim, Calif.
Filed Jan. 7, 1970, Ser. No. 1,215
Int. Cl. F16k *17/10*
U.S. Cl. 137—242 **13 Claims**

A pilot-controlled relief valve having a self-cleaning orifice past the main relief valve leading to the inlet of a pilot valve via a pressure equalizing chamber for the relief valve. A plunger movably supported in the orifice is reciprocated in one direction by the pressure drop produced upon opening of the pilot valve and in the opposite direction by the pilot valve spring, the latter being calibrated and determining the opening and closing of the relief valve proper. A resilient wiper operates during reciprocation of the plunger to clean the sidewall of the control orifice and the relief valve has self-aligning engagement with a floating valve seat.



3,608,577
HOSE-HANDLING FACILITY

Walter P. Blanchard, 35 Miller Style Road, Quincy, Mass.
Filed Apr. 20, 1970, Ser. No. 30,0
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.17 **Claims**

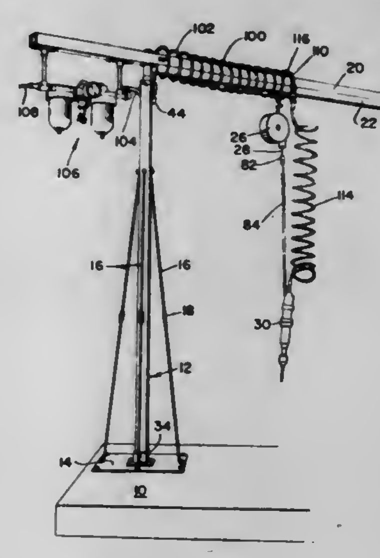


A hose-handling facility is provided for use particularly in the dockside operations involved in the transfer of liquids such as oil and gasoline, to and from a moored ship. A raised platform supports an extensible crane and also carries a bank of vertical conduits arranged in a row extending diagonally with respect to the edge of the dock. An elevated rack is disposed in spaced relation to the platform and perpendicularly with respect to the edge of the dock and by which the free ends of flexible hoses connected to the vertical conduits may be stored. Remote controls are provided adjacent the rack for operating the crane.

3,608,578
HANDTOOL-MOUNTING ASSEMBLY

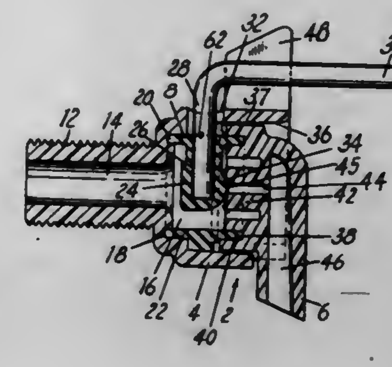
Alan Martin, P. O. Box 262, Sharon, Mass.
Filed Oct. 8, 1969, Ser. No. 864,790
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.24 **8 Claims**

A power tool support assembly having an overhead track for a trolley which supports a balancer on which the power tool is mounted. A retractable drive media conductor joins the tool and the supply source and is coiled about the track to supply the drive media to the tool.



3,608,579
PIVOTED FLOAT ACTUATED VALVE

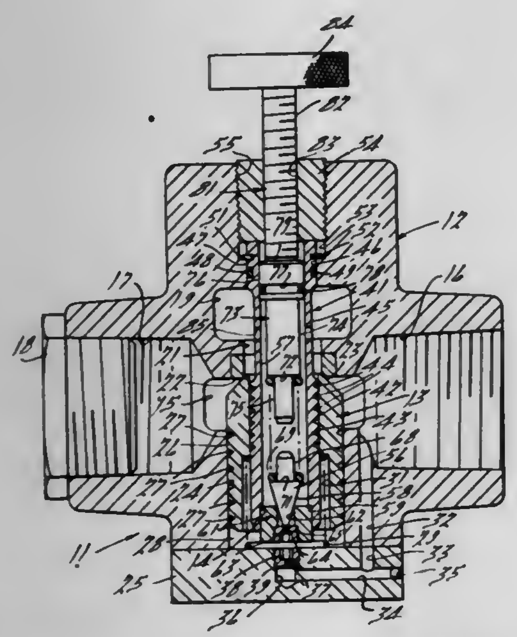
Robert Jonathan Moore, Grand Rapids, Mich., assignor to Leigh Products, Inc., Coopersville, Mich.
Filed July 21, 1967, Ser. No. 655,235
Int. Cl. F16k *31/22, 1/16;* **G05d** *9/02*
U.S. Cl. 137—448 **7 Claims**



A relatively rigid valve body adapted to be fixedly supported and have a source of fluid pressure connected thereto; a passage in the body connecting the source to an open-sided chamber in the body, the wall of the chamber having an annular groove around the inner end of the passage; a relatively rigid orifice body fixedly connected to the valve body and closing the open side of the chamber and having an annular groove in its inner face opposed to the groove in the wall of the chamber; an annular valve seat of relatively flexibly deformable material having its ends in sealed and supported engagement in the grooves of the valve body and orifice body, and having an integral flexible center member projecting into the interior of the annulus of the valve seat; the surface of the center member having a segmental convex spherical surface opposed to the inside of the orifice body, the orifice body having a concave surface located in coacting adjacent relation to the convex surface, with an orifice opening from the concave surface to a director passage formed in the orifice body and open to the exterior of the orifice body; and a relatively rigid actuating bar engaged in a hole extending from within the center member outwardly through the valve seat, the valve body having an opening formed therethrough passing the actuating bar in clearing relation and providing an unsupported, noncontacted, area on the outside of the valve seat surrounding the projecting end of the actuating bar; the outer end of the actuating bar being connected to a float arm having a float on its free end, and a biasing weight adjustable along its length.

3,608,580
PILOT-OPERATED RELIEF VALVE

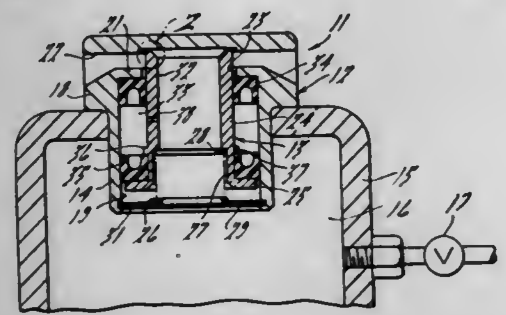
Conrad J. Hohmann, Grosse Pointe Woods; Clarence W. Smith, Farmington, and Ronald J. Klatt, Redford, all of Mich., assignors to Kelsey-Hayes Company
Filed Dec. 18, 1969, Ser. No. 886,257
Int. Cl. F16k *17/10*
U.S. Cl. 137—490 **7 Claims**



A pilot-operated relief valve having simplified construction and wherein a main valve member controls the flow through a fluid passage interconnecting first and second chambers. A third chamber is provided that is in communication with the first chamber by means of second fluid passage formed in the valve housing. The main valve member has areas exposed to the pressure in the first and third fluid chambers and is normally biased to a closed position when the pressure in these chambers is equal. A third passage is formed through the main valve member and interconnects the third fluid chamber with the first fluid chamber. A pilot valve member is supported within the main valve member and controls the flow through this third fluid passage. The pilot valve member is normally biased to a closed position and when the pressure in the third fluid chamber exceeds a predetermined value, the pilot valve member will open. The opening of the pilot valve member reduces the pressure in the third fluid chamber and the pressure in the first fluid chamber acting on the main valve member then forces it to an open position whereby flow from the first chamber to the second chamber through the first passage is permitted.

3,608,581
QUICK EXHAUST VALVE

Roger L. Sweet, Ferndale, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Apr. 16, 1970, Ser. No. 28,994
Int. Cl. F16k *31/143*
U.S. Cl. 137—509 **10 Claims**

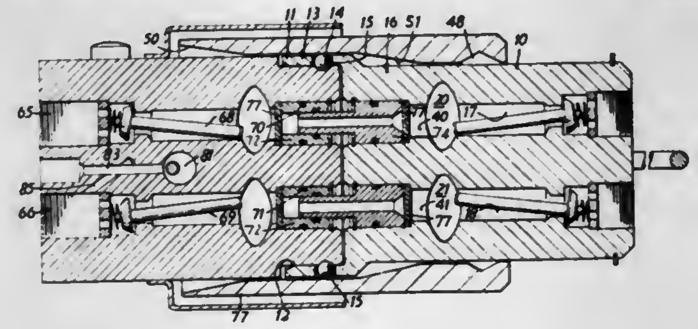


A valve for quickly exhausting a working chamber such as for a press clutch and brake actuator. A cylindrical body has a bore open to the chamber and leading to a transverse vent passage. A poppet is slidable in said body between a closed position separating the chamber from the vent, and an open position. An annular chamber is formed between the poppet and body, and a unidirectional annular seal on the poppet permits rapid filling of this chamber. A restricted passage is provided for exhausting the chamber. The valve is closed by the pressure differential across the valve sealing area, plus a spring, and is opened by pressure on said seal.

For Class 137—525.1 see:
Patent No. 3,608,676

3,608,582
VALVED FLUID COUPLING

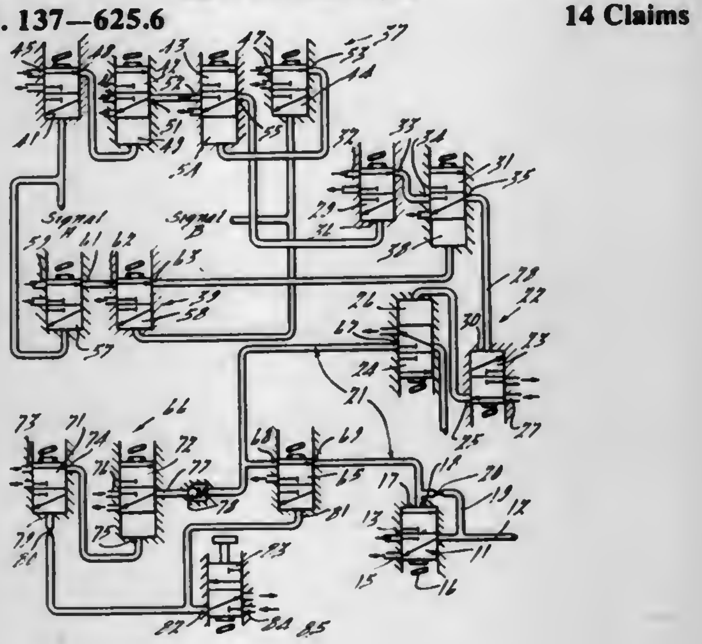
Alfred W. Lambert, Somerset, England, assignor to Sterling Hydraulics Limited, Crewkerne, Somerset, England
Filed Sept. 4, 1969, Ser. No. 855,141
Claims priority, application Great Britain, Sept. 11, 1968, 43111/68
Int. Cl. F16k *11/10*
U.S. Cl. 137—595 **20 Claims**



A coupling for connecting together twin fluid lines, for example for connecting two sources of fluid pressure between a tractor and a trailer. The coupling has co-operating first and second parts each part having two fluid passages and sealing valves therein. The parts are arranged to be locked together, and means are provided for opening the valves after the two parts have been locked together, and for closing the valves before the coupling is broken.

3,608,583
SIGNAL COMPARATOR FLUID CONTROL CIRCUIT WITH RESET

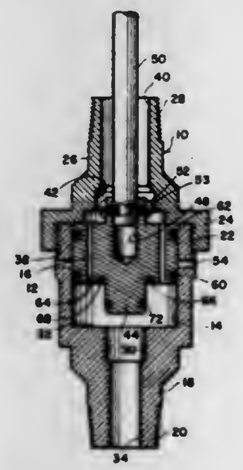
Andrew B. Huntington, Waterford, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Apr. 20, 1970, Ser. No. 30,038
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.6 **14 Claims**



A fluid control circuit which compares the timing of two signals and shifts an output valve to an exhaust position in response to lack of synchronism between the compared signals. The circuit may be reenabled only by a reset signal pulse after the compared signals are in a similar condition. In one embodiment, the circuit (other than the output valve) uses only identical normally open three-way valves. In a modified form, some pairs of normally open valves are replaced by normally closed valves.

3,608,584
FLOW CONTROL DEVICE

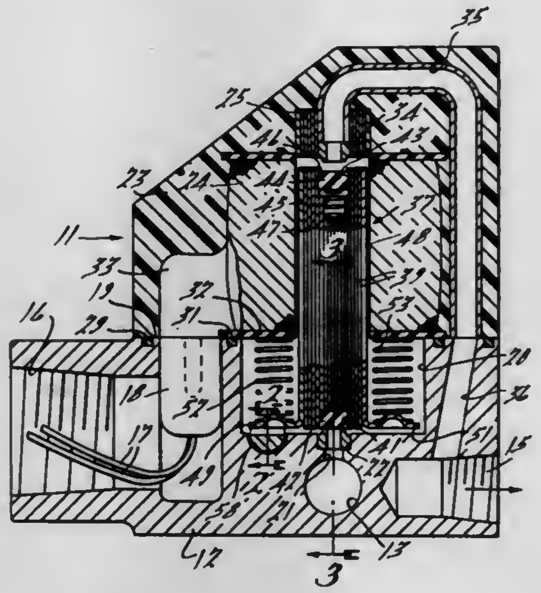
Charles W. Vaughn, Rte. 1, Jennings, Okla.
Filed Feb. 19, 1969, Ser. No. 800,565
Int. Cl. K16k *11/02*
U.S. Cl. 137—625.26 **7 Claims**



A valve having a reciprocal plunger or piston for providing alternate open and closed positions of the valve. The piston is slidably disposed within a housing having opposed inlet and outlet ports and may be moved in one direction for opening the valve to permit the flow of fluid therethrough. Movement of the piston in an opposite direction provides a first closed position of the valve wherein all flow through the valve is interrupted and there is no loss of fluid through the valve. Further movement of the piston in the closing direction provides a second closed position wherein flow of fluid through the valve is precluded and fluid trapped in the line or valve housing may be drained therefrom.

3,608,585
SOLENOID VALVE

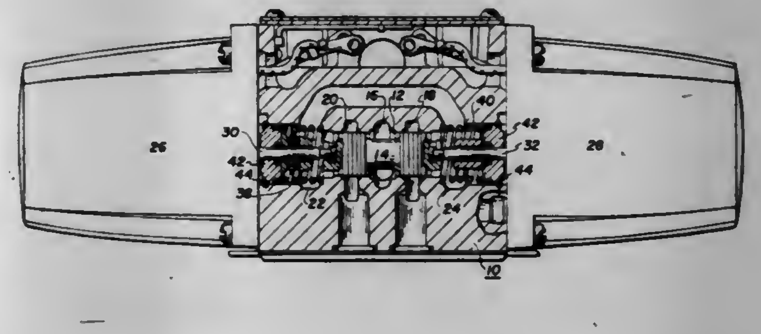
Andrew B. Huntington, Waterford, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Nov. 12, 1969, Ser. No. 875,994
Int. Cl. F16k *11/02, 31/02;* **H01f** *3/02*
U.S. Cl. 137—625.65 **8 Claims**



A three-way solenoid valve of the CT type in which the T-shaped armature is of laminated construction and carries inlet and exhaust valves at its opposite ends.

3,608,586
FRICTION PADS FOR NO-SPRING MODEL DIRECTIONAL VALVES

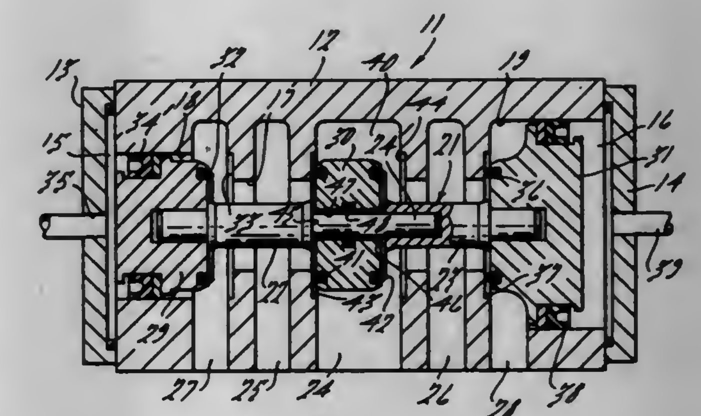
Leo T. Daggy, Jr., Birmingham, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Mar. 23, 1970, Ser. No. 21,571
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.65 **3 Claims**



A solenoid-operated valve having a free-floating, sliding spool is provided with frictional detent pins radially urged inwardly by a C-shaped spring. The pins are mounted in a cartridge member having radial bores.

3,608,587
SINGLE SPINDLE FOUR-WAY VALVE

Richard P. Zbell, Birmingham, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Aug. 6, 1969, Ser. No. 847,941
Int. Cl. F16k *11/02, 25/00*
U.S. Cl. 137—625.66 **3 Claims**

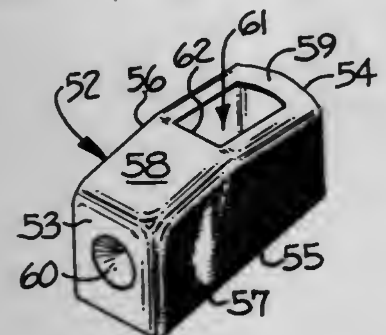


A housing has a bore with two working ports separated by an inlet port, two exhaust ports being located outside of the working ports. A spindle has a constant force applied to one end and signal pressure at the other end. Two oppositely facing poppet valves carried by the spindle engage seats disposed between the exhaust ports and the working ports. A third valve element carries two oppositely facing poppet valves engaging seats between the working ports and the inlet port. This last-mentioned element has slight play with respect to the spindle.

3,608,588
LOOM PICKER AND METHOD OF FORMING SAME

John J. Brown, 5098 Mahoning Ave., Warren, Ohio
Filed Nov. 28, 1969, Ser. No. 880,710
Int. Cl. D03d *49/36*
U.S. Cl. 139—159 **9 Claims**

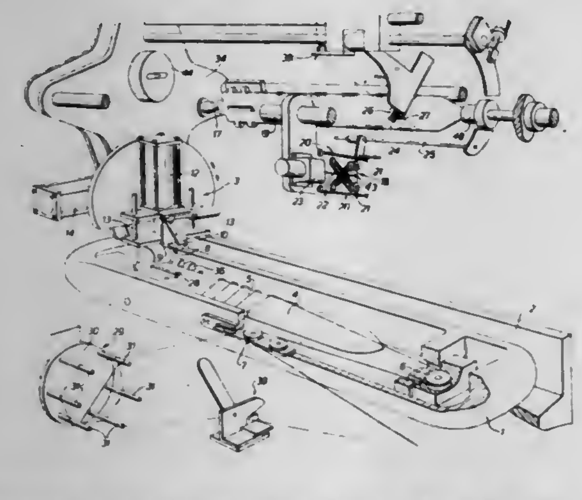
A picker adapted to be positioned on the picker stick of a conventional loom and there serve to engage the nose of the shuttle as it traverses the loom. The picker comprises a plurality of wraps overlying a solid core portion and a hollow collar portion, and is formed by a molding operation which



involves a minimum number of mechanical operations and does not waste any of the raw material.

3,608,589
AUTOMATIC PIRN CHANGER FOR A LOOM

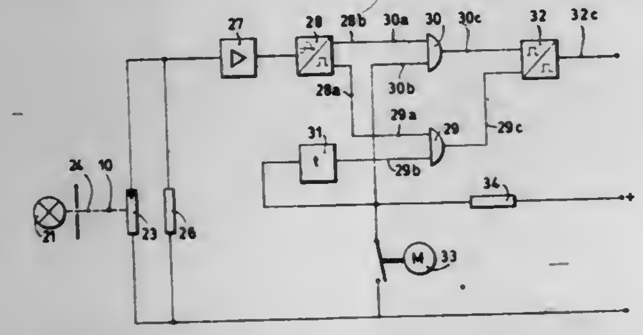
Benjamin Bert Taylor, Poynton, England, assignor to Associated Perforators & Weavers Limited, London, England
Continuation-in-part of application Ser. No. 723,818, Apr. 24, 1968, now abandoned. This application June 9, 1969, Ser. No. 831,409
Int. Cl. D03d *45/00*, *45/02*
U.S. Cl. 139—224 **9 Claims**



An automatic pirn changer for replacing an almost runout pirn in a shuttle by a full pirn in which the yarn or wire from the full pirn is joined to that part of the residual yarn or wire from the runout pirn extending to the shuttle eye at the inside of the shuttle whereupon the join is drawn through the shuttle eye before weaving is recommenced.

3,608,590
OPTICAL WEFT STOP MOTION FOR A WEAVING MACHINE

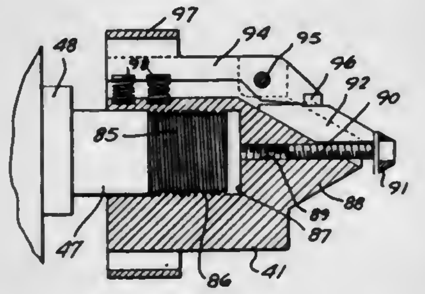
Karl Hohener, St. Gall, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Oct. 8, 1969, Ser. No. 864,690
Claims priority, application Switzerland, Oct. 10, 1968, 15134/68
Int. Cl. D03d *51/18*, *51/34*; **G01n** *21/30*
U.S. Cl. 139—370 **5 Claims**



Upon occurrence of a weft yarn break the photocell is fully illuminated so that the Schmitt trigger is activated to change the state of the monostable multivibrator which thus deactivates the weaving machine. Further, in the absence of a weft yarn in the light path after picking, should the illumination of the photocell fall below a predetermined value, the voltage of the Schmitt trigger and a time network voltage are used to deactivate the weaving machine.

3,608,591
STRAND MATERIAL-GRIPING HEADSTOCK

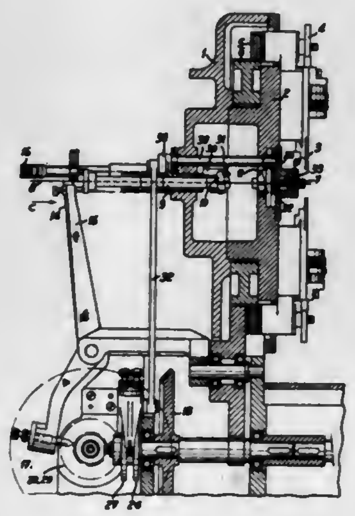
James L. Otstot, Carlisle, Pa., assignor to Carlisle Tire and Rubber Division of Carlisle Corporation
Division of Ser. No. 416,796, Dec. 8, 1964, Pat. No. 3,438,831.
Filed Jan. 8, 1969, Ser. No. 789,820
Int. Cl. B21f *3/00*
U.S. Cl. 140—92.2 **1 Claim**



The present machine is for forming convolutions of one of more strands of material around and along an extended tubular member supported and rotated by a quickly detachable selectively driven and automatically stopped mandrel on the machine and includes means for guiding said strand material to said tubular member in coordination with the rotation of said mandrel, feeds at least one of said strands at a predetermined rate while automatically compensating for any variations in the feeding speed of the strand as well as maintaining a constant tension on the strand being fed, feeds a tape around and over the strand and exposed areas of said tubular member at a proper angle and at controlled speeds to give a uniform spiral pitch and overlapping of the edges of said tape to form a wire-reinforced hose and includes a carriage driven in coordination with said mandrel carrying said strands and tape, means for feeding a liquid to the periphery of the tubular member prior to the tape thereon, means for providing a cast to one of said strands and means for preventing said cast strand from pulling out of said casting means.

3,608,592
AUTOMATIC MACHINE FOR MAKING STEEL WIRE SPRINGS

Rene Perrenoud, Rue des Sugits 14, 2114 Fleurier, Switzerland
Filed Apr. 23, 1969, Ser. No. 818,686
Claims priority, application Switzerland, Aug. 13, 1968, 12163/68
Int. Cl. B21f *35/00*
U.S. Cl. 140—103 **5 Claims**



A machine for making steel wire springs has a tray on which are mounted forming tools slidable towards the center of the tray, means for moving the wire perpendicular to the tray, and means for clamping and cutting the wire. The means for moving the wire comprises two alternately operable clamps, one fixed and the other movable, and further includes a cylindrical member rotating in a fixed member integral with the tray. The movable member has an eccentric opening therein for the passage of the wire coacting with an eccentric opening in the fixed member and means are provided for rotating the movable member in such a way as to clamp in a first phase of operation and then cut the wire even with the opening of the fixed member in a second phase of operation.

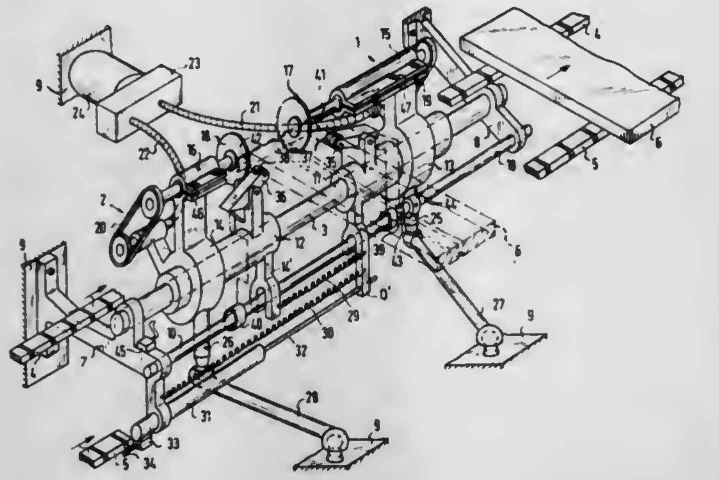
3,608,593
METHOD OF FILLING POWDERS INTO CONTAINERS

Samuel L. McCormick, Jr., Indianapolis; John J. Burke, Indianapolis, and Arthur R. Morstadt, Speedway, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of application Ser. No. 858,541, Sept. 16, 1969, now abandoned. This application Feb. 27, 1970, Ser. No. 15,269
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—11 **6 Claims**

Powders are filled into bottles, ampoules, vials, syringes, and other containers by suspending the powder in an inert, volatile, liquid diluent, filling the suspension into the container, and evaporating the inert, liquid diluent, leaving the dry powder in the container.

3,608,594
CUTTING OR TRIMMING DEVICE FOR VENEERED WORKPIECES

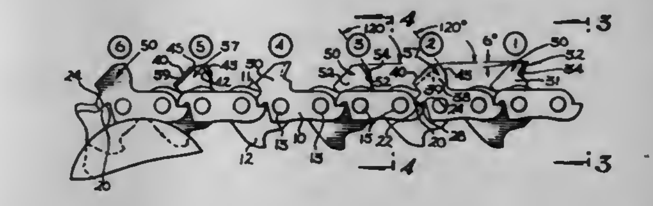
Josef Holderried, Freiburg/Breisgau, Germany, assignor to B. Raimann GmbH, Freiburg/Breisgau, Germany
Filed Nov. 7, 1969, Ser. No. 875,217
Claims priority, application Germany, Apr. 15, 1969, P 19 19 102.7
Int. Cl. B27b *5/04*, *5/18*
U.S. Cl. 143—47 G **15 Claims**



A device for trimming projecting pieces of veneer on veneered workpieces comprises two saw units which are arranged to be displaced in the same direction as the workpieces and have abutments for engaging, respectively, the leading and trailing edges of the workpieces. The workpiece firstly pushes down an abutment on one of the saw units actuating a brake so that this saw unit is locked and the workpiece pushes the other of the saw units along a certain distance during which actuation of a saw automatically occurs to trim off veneer from the front of the workpiece. At the end of this travel the abutment on the entrained saw unit is allowed to be swung downwards by the workpiece so that a brake is actuated. The further movement causes the trailing edge to clear the abutment on the first-mentioned saw unit which can then rock upwards releasing the brake so that the first-mentioned saw unit is drawn along behind the workpiece and its saw cuts off veneer projecting from the rear of the workpiece.

3,608,595
SAW CHAIN

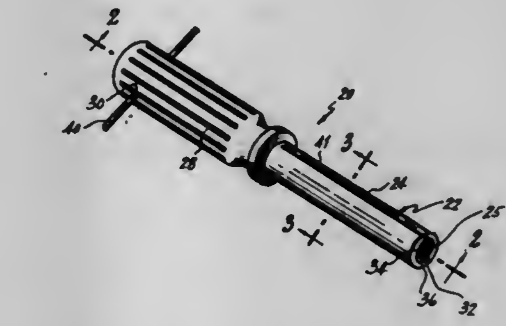
John W. Oehrli, deceased, late of Pacific Palisades, Calif. (by Lillian M. Oehrli, executrix)
Filed July 10, 1968, Ser. No. 743,822
Int. Cl. B27b *33/14*
U.S. Cl. 143—135 **20 Claims**



A scratcher-type saw chain having scratcher and raker cutters, some with positive back rake cutter chisel edge angles which tend toward undue penetration into the kerf, and which uses, to counteract this tendency, negative to zero back rake angles on certain leading side cutter edges.

3,608,596
SAFETY SCREWDRIVER

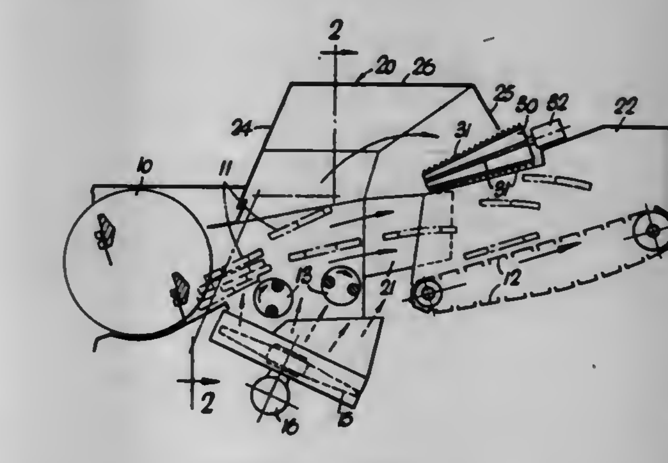
Donald A. Yoho, 1306-204 Hancock Drive, Barrington, N.J.
Filed May 12, 1969, Ser. No. 823,714
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 F **9 Claims**



This screwdriver has a cylindrical tube in which is a flat thin blade. The blade is formed with a rectangular edge which lies in a plane coplanar with the end of the tube. The blade is frictionally and securely fitted in diametrically opposed grooves inside the tube. The exterior of the tube has axially extending marks etched at diametrically opposed positions coplanar with the blade in the tube.

3,608,597
SUGAR CANE HARVESTER WITH TRASH DISCHARGE ASSISTANT

Harry R. Hill, Bundaberg, Queensland, Australia, assignor to International Harvester Company, Chicago, Ill.
Filed Mar. 3, 1970, Ser. No. 16,117
Int. Cl. A01d *55/18*
U.S. Cl. 146—117 **6 Claims**



A cane harvester having a billet cutter and conveyor means to carry the billets issuing from the cutter, fan means disposed to project an air stream upwardly through the billets to separate trash therefrom, a trash discharge opening disposed to one side of the conveyor, a power-driven toothed roller positioned adjacent a lower edge of said opening to grip trash, unusual heavy trash in particular, and propel same outwardly through said opening.

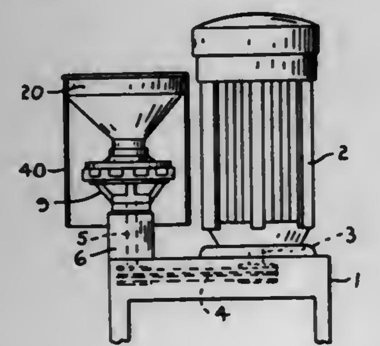
3,608,598
APPARATUS AND METHOD FOR CONDITIONING A PRODUCT

Joe R. Urschel, 202 Michigan Ave., and Edgar R. Sanders, 708 Evan Ave., both of Valparaiso, Ind.

Division of Ser. No. 512,716, Dec. 9, 1965. Filed July 7, 1969, Ser. No. 839,281

Int. Cl. B02b *5/00, 7/00;* B02c *17/00*

U.S. Cl. 146—225 14 Claims



The invention primarily involves forcing a product centrifugally through tortuous passages for varying the viscosity of the product.

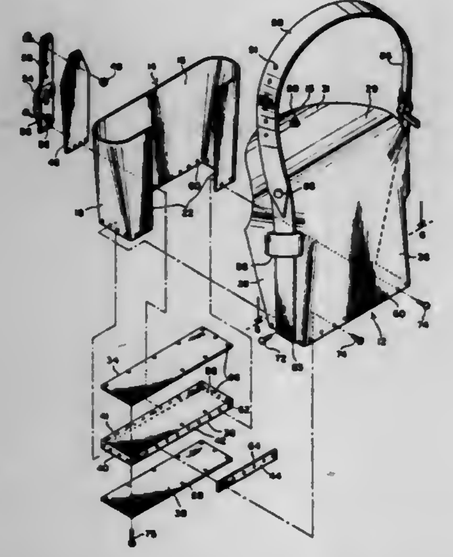
3,608,599
HANDBAG HAVING WALLS ATTACHED ONLY AT BOTTOM EDGES

Gladys I. Spear, 205 Allen St., New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,452

Int. Cl. A45c *13/26*

U.S. Cl. 150—33 10 Claims



A handbag having one main piece folded to form a front panel, a first two end panels, two narrow back panels, and a second piece folded to form two other end panels which overlap the first two end panels, and a rear panel which overlaps the two back panels. The panels are secured only at bottom edges thereof to a rectangular base to define a compartment which is covered by a free flap at the top of the second piece.

3,608,600
LAUNDRY BASKET AND STAND THEREFOR

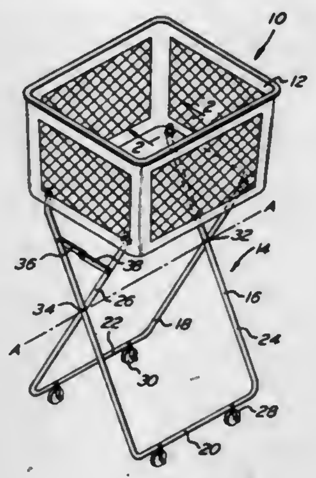
David Lehrman, Cheltenham, Pa., assignor to Ironees Company, Philadelphia, Pa.

Filed July 23, 1969, Ser. No. 844,012

Int. Cl. A45c *5/14*

U.S. Cl. 150—49 6 Claims

A free standing laundry basket and stand are disclosed. The stand comprises foldable legs adapted to be removably coupled to the underside of the basket, the legs serving to support the basket in an operative position.



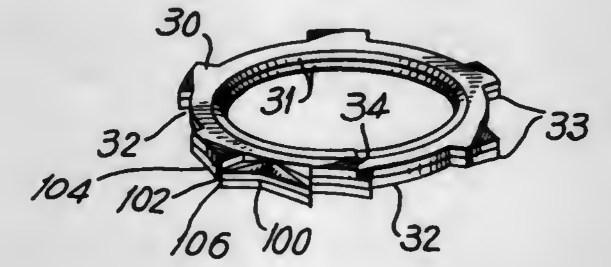
3,608,601
THREADED LOCKWASHER AND METHOD FOR FABRICATION THEREOF

Howard C. Gohs, Syosset, N.Y., assignor to Electrical Fittings Corporation, East Farmingdale, N.Y.

Continuation-in-part of application Ser. No. 703,494, Nov. 13, 1967, now Patent No. 3,453,672. This application May 16, 1969, Ser. No. 825,382

Int. Cl. F16b *39/282*

U.S. Cl. 151—37 7 Claims



A lockwasher having tabs and gripping edges is made of a strip of coil stock material cut and wound a plurality of turns on a mandrel. A portion of at least one turn of the washer is axially displaced so at least one edge of the displaced portion is circumferentially aligned with a shoulder of an adjoining turn for preventing unwinding of the finished product.

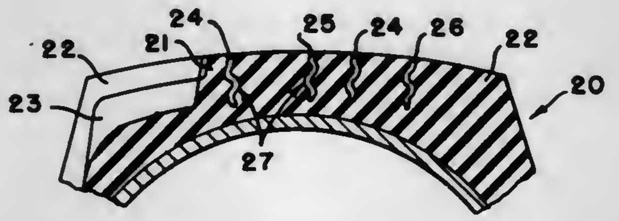
3,608,602
STONE REJECTING TIRE TREAD AND MOLD INSERT THEREFOR

Leonard C. Youngblood, Grosse Pointe, Mich., assignor to Uniroyal, Inc., New York, N.Y.

Filed Dec. 3, 1968, Ser. No. 780,831

Int. Cl. B60c *11/04*

U.S. Cl. 152—212 9 Claims



A pneumatic tire tread having traction groove formations designed to limit stone pickup and retention in service is disclosed, together with a mold insert construction therefor. Each such formation consists of increased depth groove section in one wall of which is provided an annular ridge surrounding an axial depression, and in the other wall of which is provided a registering annular channel surrounding an axial protuberance. "Dimpled" projections of the disclosed mold insert blades are used to create the formations, each of which "dimples" has the appearance, at one face of the respective blade, of an annular ridge surrounding a central depression, and at the reverse blade face, of a central protuberance surrounded by an annular channel. Advantages are greater blade strength and easier extraction of the cured tire from the mold, as well as enhanced stone rejection.

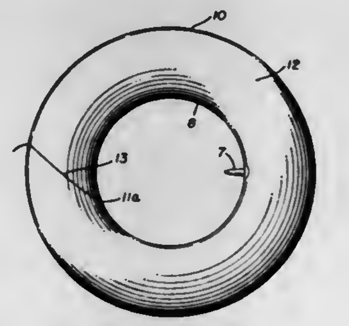
3,608,603
INNER TUBE

Paul O. Pfeiffer, Cuyahoga Falls, and Frank J. Grucella, Akron, both of Ohio, assignors to The General Tire & Rubber Company

Filed Aug. 22, 1967, Ser. No. 662,362

Int. Cl. B60c *5/04*

U.S. Cl. 152—349 2 Claims



This invention relates to an improved inner tube for radial ply tires in which the ends of the tube, which are to be spliced together, lie at an acute angle with respect to the longitudinal axis of the tube.

3,608,604
EPOXY-AZIDO COMPOUNDS

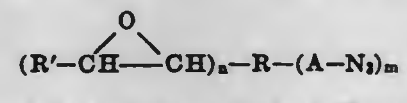
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed July 18, 1969, Ser. No. 843,230

Int. Cl. B60c *1/00;* C08c *11/40, 11/54*

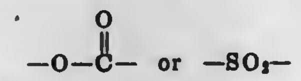
U.S. Cl. 152—359 1 Claim

Disclosed are epoxy-azido compounds of the formula



$$(R'-\overset{O}{\overline{CH-CH}})_n-R-(A-N_3)_m$$

where R is a polyvalent organic radical, R′ is a hydrogen, alkyl, cycloalkyl, aryl, or aralkyl radical, A is



$$-O-\overset{O}{\overset{\|}{C}}- \text{ or } -SO_2-$$

and *n* and *m* are integers from 1 to 100. Also disclosed is the use of said epoxy-azido compounds in modifying polymers, cross-linking polymers, and adhering polymers to certain substrates, e.g., glass and other polymers.

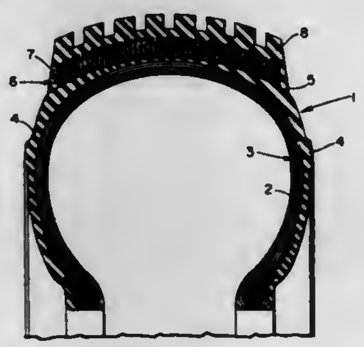
3,608,605
PNEUMATIC TIRE CONSTRUCTION

William G. Cole, 6400 Jocelyn Hollow Road, Nashville, Tenn.

Filed May 28, 1969, Ser. No. 811,563

Int. Cl. B60c *9/18*

U.S. Cl. 152—361 17 Claims



A tire construction in which continuous loops of reinforcement cords are placed in the tread portion of the tire to achieve greater tread stability and strength and provide greater resistance to tread peel.

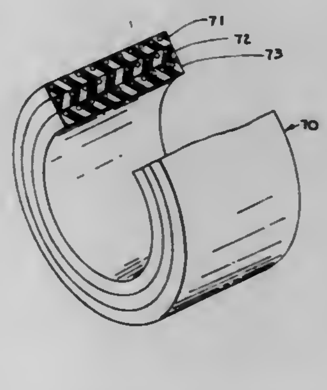
3,608,606
RUBBER STRUCTURES CONTAINING GLASS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 562,216, July 1, 1966, now abandoned. This application Dec. 29, 1969, Ser. No. 888,158

Int. Cl. B60c *9/18;* B32b *5/12;* B29h *17/28*

U.S. Cl. 152—361 21 Claims



Vulcanizable elastomeric stock material in sheet, tubular and spiral form featuring interiorly thereof substantially inextensible cord assemblies in spaced relationship with each other and in aggregate defining a plane closer to one of the surfaces of the sheet or closer to the interface of the spiral member than the other; the stock material in the several forms being adapted to incorporation into tire manufacturers providing placement of the inextensible cord reinforcement in desired preselected disposition.

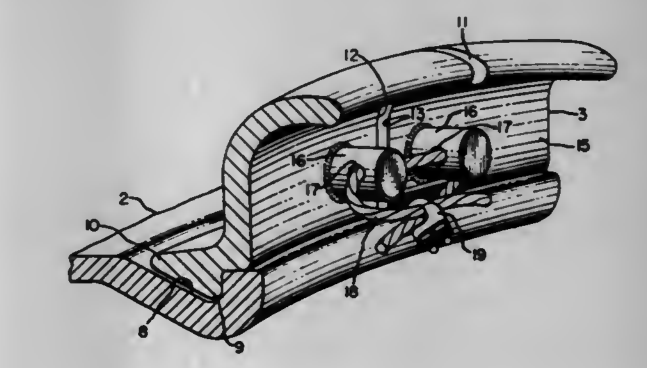
3,608,607
WHEEL RIM WITH SIDE RING CONNECTOR

Gerhart L. Gerbeth, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 8, 1969, Ser. No. 855,962

Int. Cl. B60b *25/20*

U.S. Cl. 152—410 10 Claims



A wheel rim for use with pneumatic tires. The rim has a split side ring, the ends of which are connected together by a short length of flexible cable attached to each opposed end to prevent the side ring from coming off the rim base due to radial expansion of the ring.

3,608,608
APPARATUS FOR CONGEALING LIQUIDS

Crosby Field, 8029 Habor View Terrace, Brooklyn, N.Y.

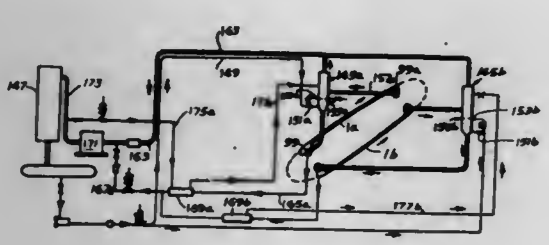
Division of Ser. No. 691,055, Dec. 15, 1967, Pat. No. 3,491,543. Filed Jan. 21, 1970, Ser. No. 8,118

1970, Ser. No. 008,118

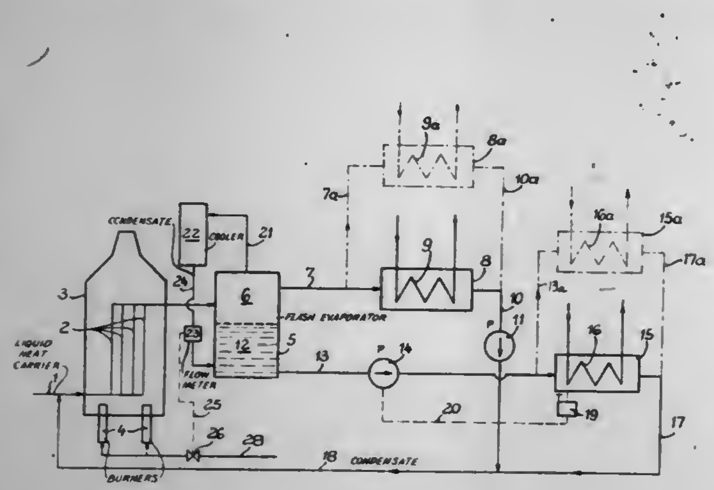
Int. Cl. B01g ; B01d *1/00;* F25d *3/02*

U.S. Cl. 159—1 4 Claims

Congealing apparatus is disclosed which is particularly suited for freezing ice and congealing liquid products. There are two refrigerated plates over which a steel belt passes in two runs at an angle to the horizontal. A heat conducting lubricant is supplied beneath the belt as it starts along each run. A special arrangement is provided for removing ;the lubricant at the bottom of the path of the belt and special means is provided to evaporate water from the lubricant.



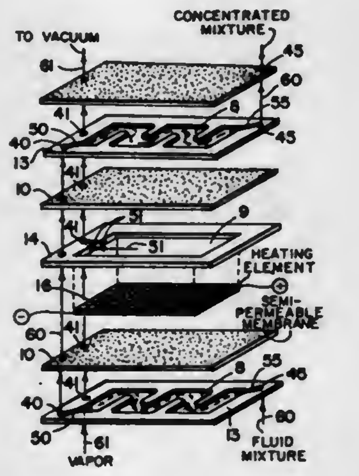
3,608,609
HEAT-EXCHANGING METHOD AND APPARATUS
Franz Trefny, Gelsenkirchen-Buer, Germany, assignor to Heinrich Koppers GmbH, Essen, Germany
Filed Aug. 21, 1969, Ser. No. 851,883
Claims priority, application Germany, Aug. 24, 1968, P 17 51 958.3
Int. Cl. B01d *1/28*
U.S. Cl. 159—2 R **6 Claims**



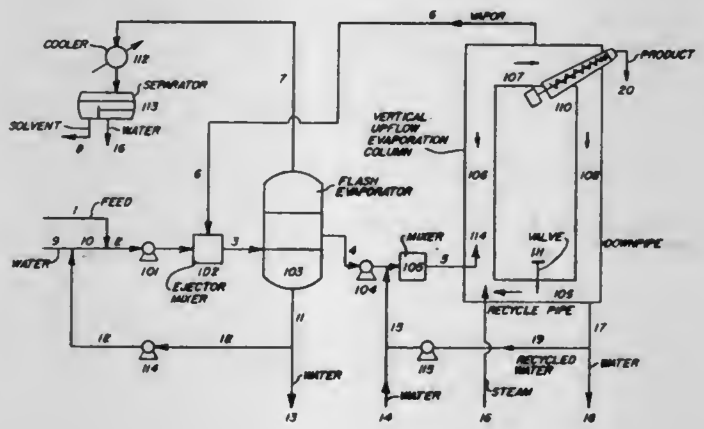
Water is heated in a furnace at slight overpressure to saturation temperature and is thereupon discharged in a flash evaporator to form a vapor phase and a liquid phase. The gaseous phase is employed to heat one or more fluids in one or more first heat exchangers, and the liquid phase is used to heat one or more fluids in one or more second heat exchangers. Cooled liquid phase is pumped back into the furnace, together with the condensed vapor phase. The heating action in the furnace is regulated in dependency on the rate at which the vapor phase must be evacuated from the flash evaporator to maintain the pressure therein at exchangers. constant value, and the rate at which the liquid phase is caused to flow through the second heat exchanger or exchangers is a function of temperature in such heat exchangers.

3,608,610
APPARATUS FOR EVAPORATIVE ŞEPARATION OF LIQUIDS THROUGH MICROPOROUS PANELS
John L. Greatorex, Marblehead, and Dirk M. De Winter, Cambridge, both of Mass., assignors to Ionics, Incorporated, Watertown, Mass.
Filed Oct. 1, 1969, Ser. No. 862,767
Int. Cl. B01d *1/22;* **C02b** *1/74;* **B01d** *23/00, 13/00*
U.S. Cl. 159—13 **6 Claims**

A membrane permeation apparatus for removing one or more components from a fluid mixture comprising a plurality of two compartment units, each compartment defined by semipermeable membranes, wherein the first compartment is the fluid mixture feed compartment and the second a vapor compartment which is maintained under a partial vacuum, the latter having heating means therein for vaporizing a component of the fluid mixture at the adjacent semipermeable membrane surfaces defining said vapor compartment.

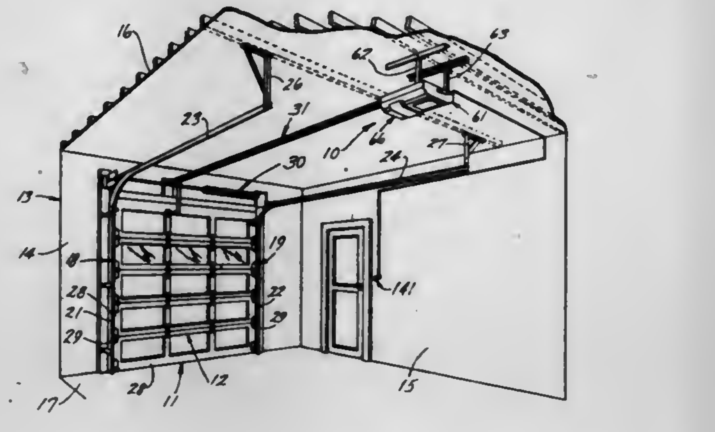


3,608,611
METHOD FOR RECOVERING A RUBBERLIKE HIGH MOLECULAR WEIGHT POLYMER
Teruo Oshima, 7-17, Oide-cho, Nishinomiya; Mamoru Asada, 6-546, 2-chome, Ikku-cho; Kazu Baba, 6-317, 2-chome, Ikku-cho; Shinichi Arakawa, 9, 1-chome, Yushudai-nishi, and Akira Miyashita, 29-7, 2-chome, Oike, Ibaraki, all of Japan
Filed Sept. 22, 1969, Ser. No. 859,840
Claims priority, application Japan, Sept. 21, 1968, 43/68583
Int. Cl. B01d *1/00*
U.S. Cl. 159—47 **5 Claims**



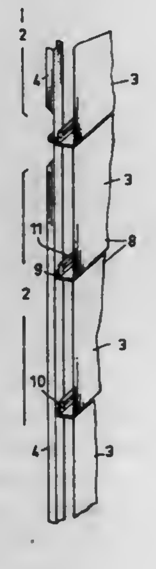
Method and apparatus for concentrating an organic solvent solution or slurry of rubbery or thermoplastic polymers, and for recovering such polymers wherein the solution or slurry is fed to a column filled with heated water, the solvent is evaporated, thereby developing a difference in specific gravity between the column contents and the heated water, and circulating the heated water through the column by utilizing the difference in specific gravity. The apparatus comprises a polymer recovery column, a downpipe, a vessel connecting the upper part of the polymer recovery column with the downpipe, and a pipe connecting the intermediate part or the lower part of the column with the downpipe.

3,608,612
DOOR OPERATOR
Paul E. Pemberton, Dallas, and Sheldon D. Loose, Carroilton, both of Tex., assignors to Overhead Door Corporation, Dallas, Tex.
Filed Sept. 10, 1969, Ser. No. 856,555
Int. Cl. E05f *15/16*
U.S. Cl. 160—188 **10 Claims**



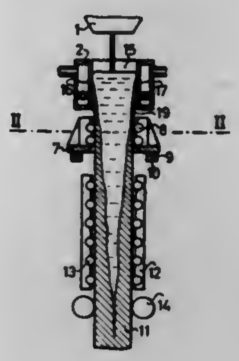
A door operator mounted upon an elongated rail and adapted to open and close an upwardly acting door having horizontally hinged sections supported on tracks. An elongated, helical spring extends lengthwise within the rail and is rotated by drive means mounted on the rail. A traveling nut is engaged with the helical spring and is connected to the door so that rotation of the helical spring causes the traveling nut to move lengthwise of the track to operate the door. Switch means are responsive to the compression and expansion of the spring to deenergize the drive means.

3,608,613
SLIDING DOOR
Keith Halliwell, Brookvale, New South Wales, Australia, assignor to Frantz Manufacturing Co., Sterling, Ill.
Filed May 8, 1969, Ser. No. 823,095
Claims priority, application Australia, May 15, 1968, 37857/68
Int. Cl. E06b *3/14, 3/22*
U.S. Cl. 160—229 **6 Claims**



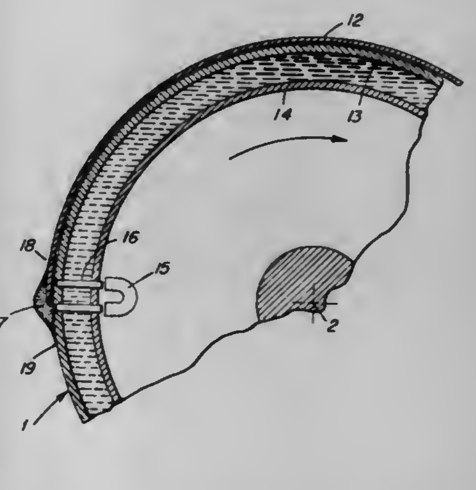
A sliding door formed from a plurality of panels hingedly connected transversely to the direction of sliding.

3,608,614
SUPPORT MEMBER FOR CASTING IN CONTINUOUS CASTING OPERATION
Walter Meier, Wintherthur, and Peter J. Koenig, Zumikon, both of Switzerland, assignors to A. G. Concast, Zurich, Switzerland
Filed Mar. 19, 1968, Ser. No. 714,313
Claims priority, application Switzerland, Mar. 22, 1967, 4243/67
Int. Cl. B22d *11/12*
U.S. Cl. 164—83 **3 Claims**



In a continuous casting plant, a carrier member is positioned between and supports the casting as it passes from the outlet of the mold to the casting guideway. The carrier member is arranged to move linearly and rotatably in a plane generally normal to the longitudinal path of movement of the casting for adjusting to any uneven cooling within the mold which causes the casting to deflect from its normal path of movement. If uneven cooling exists within the mold, means are provided for displacing the carrier member to correct the uneven cooling condition.

3,608,615
FOIL PRODUCTION
John J. Conlon, Westfield, N.J., assignor to Phelps Dodge Corporation, New York, N.Y.
Filed Aug. 20, 1970, Ser. No. 65,422
Int. Cl. B22d *11/06, 11/08*
U.S. Cl. 164—87 **9 Claims**



Vaporized material is condensed and solidified on the surface of a revolving drum from which the material is stripped as a foil. A leader or starter sheet is temporarily magnetically retained on the drum and extended to a takeup means to aid in starting continuous deposition and stripping. Electron beams are employed in various ways to vaporize the material.

3,608,616
CONTINUOUS CASTING APPARATUS WITH PRESSURE EQUALIZATION CHAMBER

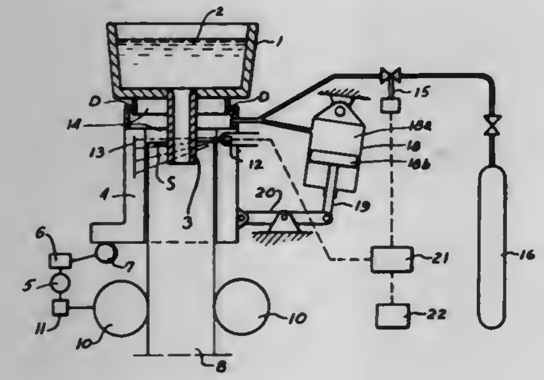
Ralf Schneider, Metzkausen, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 19, 1969, Ser. No. 808,555

Claims priority, application Germany, Mar. 22, 1968, P 17 58 027.7

Int. Cl. B22d *11/02*

U.S. Cl. 164—154 **5 Claims**



Continuous casting apparatus in which the mold oscillates and the space above the melt in the mold is enclosed and connected to an equalization chamber. Oscillation of the mold varies the volume and thereby the pressure in the space above the melt and the equalization chamber has variable volume means for substantially compensating the volume change in the space above the melt and thereby maintaining a substantially constant pressure in the space above the melt as the mold oscillates.

3,608,617
ART OF MAKING PRECISION CASTINGS

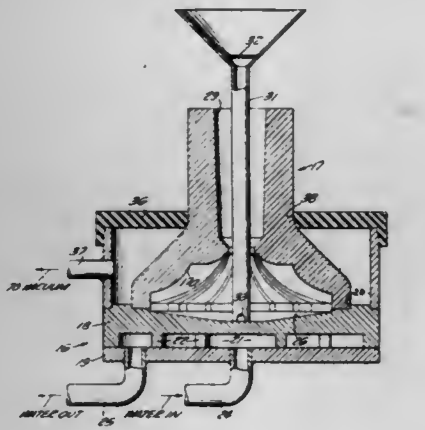
Clarence J. Burke, Rolling Hills Estates, and Milton O. Grosjean, Los Angeles, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 551,256, May 19, 1966, Pat. No. 3,435,885.

Filed Nov. 29, 1968, Ser. No. 794,462

Int. Cl. B22d *7/10, 27/04*

U.S. Cl. 164—126 **3 Claims**



A method for casting in a founding flask in which molten metal is continuously poured below the surface of the previously added molten metal through a heated funnel which extends to the lower portion of the flask and meters the flow of molten metal into the flask. Heat is removed through the lower portion of the flask while heat is prevented from escaping through the upper portion. The exterior of the upper portion of the flask may be evacuated during the pouring of the molten metal.

3,608,618
ELECTROSLAG INGOT PRODUCTION

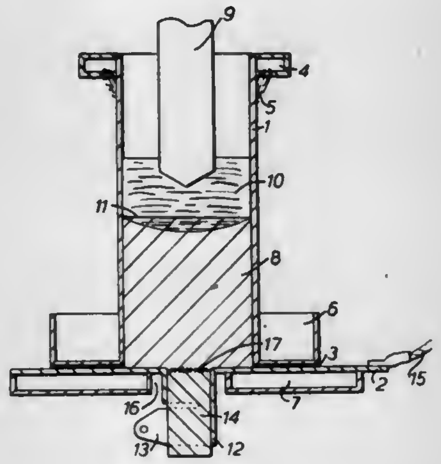
Peter Thomas Reginald Maskall, Birmingham, England, assignor to Associated Electrical Industries Limited, London, England

Filed Jan. 30, 1968, Ser. No. 701,653

Claims priority, application Great Britain, Feb. 7, 1967, 5847-67

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **8 Claims**



The electroslag process of ingot production in a mould is improved by providing bottom contact to the ingot via a stub or spigot provided at its bottom end.

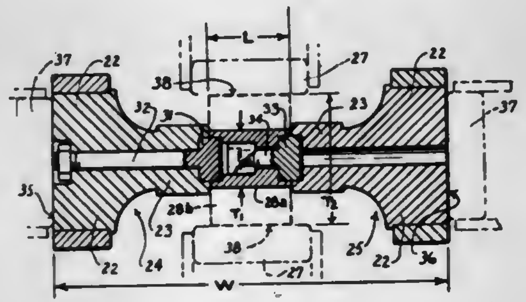
3,608,619
CONTINUOUS CASTING STARTER BAR

Georg Bollig, Buderich, Germany, and Eric T. Vogel, Elmhurst, N.Y., assignors to Concast Incorporated, New York, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,628

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **11 Claims**



In a dummy bar having a head for temporarily plugging a continuous casting mold, the cross-sectional dimensions of links of a chain, which is removably attached to the dummy bar head, are adjustable so that the ends and sides of the links will be supported and guided by the rollers of the roller apron of the casting apparatus when the cross-sectional shape and dimensions of the roller apron are changed to correspond to the shape and dimensions of beam blank and slab molds of different sizes. The links have the cross-sectional shape of the smallest beam blank and are in two halves separable at a break laterally across the web portion and held together by removable tie rods. Inserts are mounted between the halves to adjust the width; the thickness of the inserts determines the adjustment for the thickness of the web of a beam blank. For slabs the rollers of the roller apron engage the flanges of the beam blank shape of the web. A storage rack for the dummy bar chain is adapted to support and and to separate the halves of all the links at once for inserting, removing or exchanging the inserts.

3,608,620
APPARATUS FOR GUIDING A STRAIGHTENED STRAND IN A CONTINUOUS CASTING MACHINE

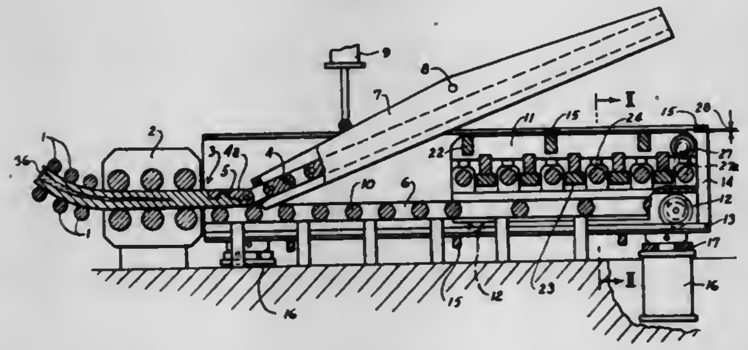
Georg Bollig, Buederich; Horst Grothe, Kaarst, Germany; Walter Meier, Winterthur, and Josef Zeller, Weesen, Switzerland, assignors to Schloemann Aktiengesellschaft, Duesseldorf, Germany

Filed Dec. 15, 1969, Ser. No. 884,820

Claims priority, application Germany, Dec. 13, 1968, P 18 14 662.8; Switzerland, Feb. 20, 1969, 2571/69

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **15 Claims**



In a continuous casting machine a strand having a solidified shell and a liquid core moves onto a roller table and a dummy bar attached to the head end of a strand is detached from the strand and removed from the path of the strand, or is inserted into the strand path in the machine, at a point in the area of said roller table. Dummy bar storage apparatus has an end portion movable into and out of the path of a strand at said point for the insertion or removal of a dummy bar. As disclosed, the machine includes guide apparatus for supporting a strand moving onto the roller table by support means for engaging and supporting at least two opposite sides of a strand to resist bulging due to ferrostatic pressure in the strand core. The guide apparatus includes at least one movable guide unit, which is movable away from said point to provide clearance for the end portion of the dummy bar storage apparatus to move into the strand path at said point for inserting or removing a dummy bar, and which is movable toward said point, when the latter end portion is out of the strand path, so that the guide apparatus engages and supports a strand at said point.

3,608,621
CONTINUOUS CASTING APPARATUS WITH CONTROLLED OVERFLOW CASTING TUBE IN TUNDISH

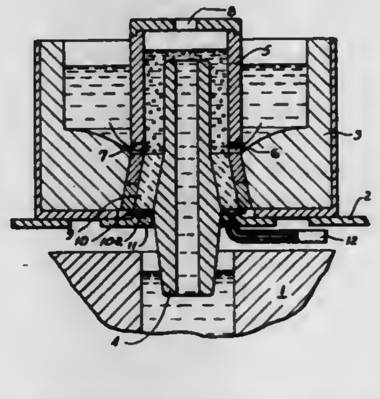
Georg Bollig, and Kristof Tromel, both of Buederich, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 27, 1970, Ser. No. 32,102

Claims priority, application Germany, Apr. 29, 1969, P 19 21 808.7

Int. Cl. B22d *11/10*

U.S. Cl. 164—281 **8 Claims**



In a method and apparatus for controlling the flow of molten metal from a tundish into a continuous casting mold a casting tube is provided in the tundish opening through the bottom thereof with a rising tube around the casting tube extending above the upper end of the casting tube and above the level of molten metal in the mold. Openings in the walls of the rising tube let metal into it from the tundish. A gas, preferably inert, is fed into the rising tube to mix metal to rise up and overflow into the casting tube and down into the mold.

3,608,622
MACHINE FOR MOULDING UNDER PRESSURE METAL CONNECTING MEMBERS OF ROTORS OF ELECTRIC MOTORS

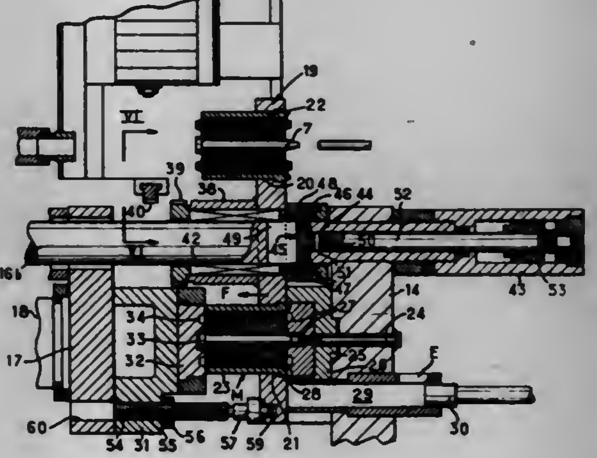
Rene Georges Bachelier, Paris, France, assignor to Ateliers de Constructions Mecaniques et de Chaudronnerie Corpet-Louvet & Cie, La Courxneuve, France

Filed Jan. 6, 1969, Ser. No. 789,191

Claims priority, application France, Jan. 9, 1968, 135,272

Int. Cl. B22d *19/00, 17/24*

U.S. Cl. 164—303 **13 Claims**



The invention provides a machine for moulding under pressure short-circuiting bars and rings of rotors of electric motors formed initially from a stack of magnetic sheets formed with connecting apertures, the machine having a rotatable carrier member fitted with two diametrically opposed sleeves each adapted to receive a stack of sheets, rotation of the carrier member repeatedly through 180° presenting one sleeve to a feed hopper for the stacks and the other to a pair of opposed moulding dies which, when pressed against the end faces of the sleeve, form with the sleeve a complete mould into which is injected under pressure liquid metal which passes into and through the connecting apertures in the stack and into recesses in the dies to form rings on the end faces of the stack continuing from the apertures to form with the stack an assembled rotor which is then removed from the sleeve.

3,608,623
WEDGE-SHAPED CHOCK MEANS FOR LOCKING IMPRESSION BLOCKS OF A DIE ASSEMBLY

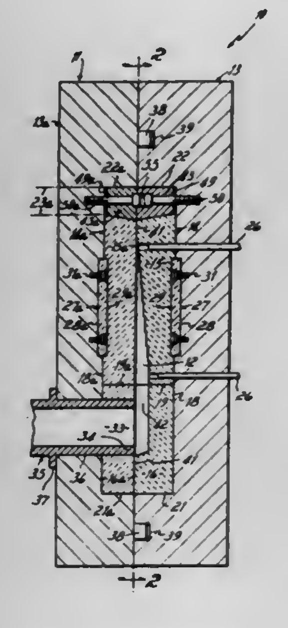
Joseph A. Woltering, Hamilton, Ohio, assignor to Hamilton Die Cast, Inc., Hamilton, Ohio

Continuation of application Ser. No. 737,480, June 17, 1968, now abandoned. This application Mar. 13, 1970, Ser. No. 19,240

Int. Cl. B22d *17/00*

U.S. Cl. 164—339 **4 Claims**

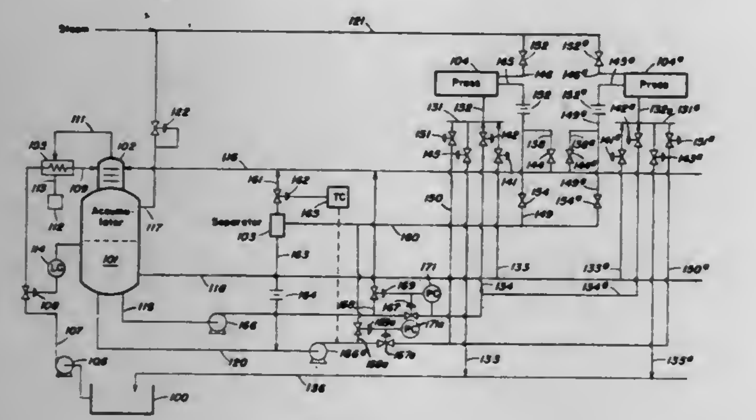
An expansion-gap-compensating system for a die that is especially useful in the area of high-temperature diecasting, e.g., at temperatures of about 1,300° F. and up. When a die's impression block is fabricated of a metal having a different expansion coefficient than that of the die's holding block crevasses or expansion gaps tend to open between the two blocks upon heating of the die assembly to high temperature from room temperature. The width of these expansion gaps is mainly dependent on the difference in expansion coefficients of the block metals and on the casting or operating temperature. The system of this invention permits an impression block and a holding block fabricated of, for example, a refractory metal and a steel respectively, (a) to be simply and easily assembled and maintained together as a die in tight and safe operating relation without damage to either, and (b) to be maintained in an exact centered or preset position relative one to another, at all times throughout a casting run.



Thus, the expansion-gap-compensating system acts to compensate for expansion gaps that tend to open between related impression and holding blocks as the die assembly is heated up to and operated at high temperatures, as well as to compensate for the contracting of those gaps as the die assembly cools after the casting run.

3,608,624
HEATING SYSTEM

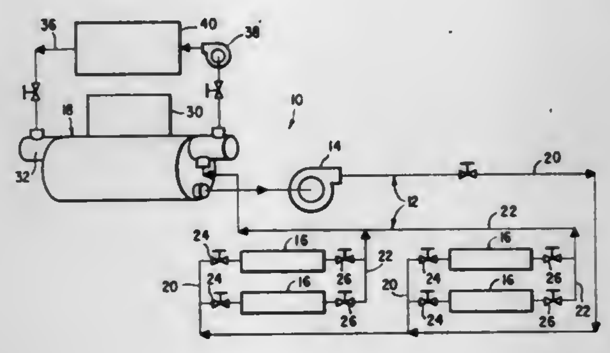
Floyd Hasselrlis, Astoria, N.Y., assignor to American Hydrotherm Corporation
Filed Mar. 2, 1970, Ser. No. 15,384
Int. Cl. B60h *1/00*
U.S. Cl. 165—1 **16 Claims**



An industrial heating system, in particular a system for providing high-temperature high-pressure water to the mold cavity of a tire press, to maintain desired temperature conditions during a curing cycle. A single accumulator provides the high temperature water requirements and in a typical cycle the mold cavity is filled with high temperature water from the accumulator, preferably through a separate fill line under the driving force of high pressure steam which also maintains the desired water fill temperature. During the curing, water is pressurized and circulated through the mold cavity and returned to a gas-liquid separator to provide for continuous degasification of the water. The temperature of the liquid is maintained at the desired operating temperature by splitting the flow of water from the gas-liquid separator between the accumulator and the mold cavity, with there being an increase in flow to the accumulator in response to a decrease in temperature below the desired operating temperature to provide additional high temperature water to the circulating system and vice versa.

3,608,625
CLOSED LOOP HEAT PUMP SYSTEMS

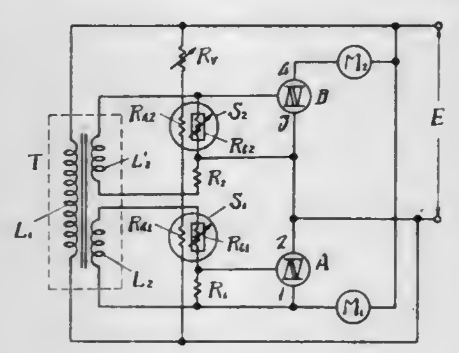
Garland L. Kendrick, Arlington, Va., assignor to The Singer Company, New York, N.Y.
Filed Oct. 28, 1969, Ser. No. 871,832
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **2 Claims**



This disclosure relates to a closed loop heat pump system for use in multizone buildings in which the closed loop is connected through a plurality of individual zone units. The zone units are heat pumps of the type which include reversible refrigerating apparatus. The closed loop circulates a heat exchange media through the individual zone units wherein heat may be absorbed or rejected and maintains a predetermined temperature level by adding or removing heat from the heat exchange media at a temperature control center or storage vessel equipped to heat or cool the heat exchange media of the closed loop.

3,608,626
APPARATUS FOR AUTOMATICALLY ADJUSTING ROOM TEMPERATURES

Mikio Yamazaki, and Naomasa Sunano, both of Ayabe, Japan, assignors to Shinyei Co., Inc., Ikuta-ku, Kobe, Japan
Filed Jan. 2, 1970, Ser. No. 215
Claims priority, application Japan, Jan. 7, 1969, 44/1611
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 **4 Claims**

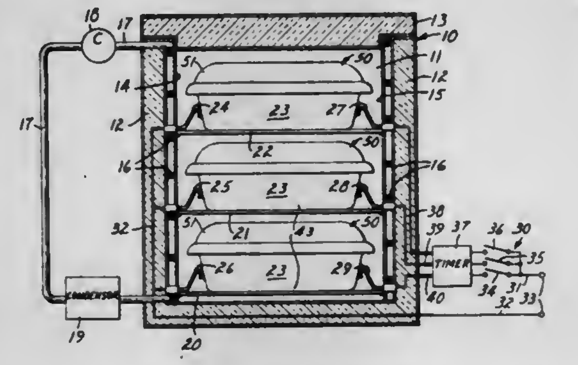


This invention relates to an apparatus for obtaining suitable room temperatures according to every change of season, the environs of working places or office rooms.

The apparatus of the present invention consists of two heat-sensitive semiconductors showing the characteristics of transition of a semiconductor and a metal phase and two heating bodies of different resistance values attached to the semiconductors to constitute two heater-type heat-sensitive elements, each heating body being connected to an electric source, so as to cause heating from said heating body on one hand, and on the other hand, one end of each of the two heat-sensitive semiconductors being connected to the gate of a silicon-control element communicating with a load, namely, the circuit of a cooler and a heater so that the indirectly heated temperature of the cooler or heater can be automatically adjusted by determining the actuating point of the heat-sensitive bodies, namely, the range of changes in room temperature, due to the adjustment of electric current flowing in the circuit of the heating bodies.

3,608,627
DEVICE AND METHOD FOR COOKING FOODSTUFFS IN A FROZEN ENVIRONMENT

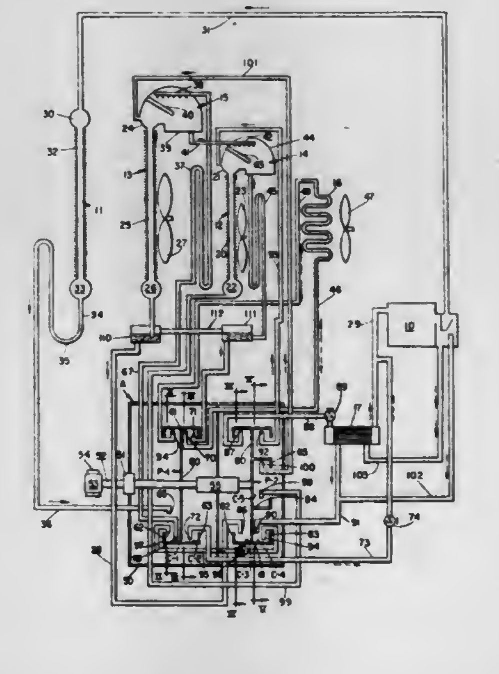
Thomas S. Shevlin, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Dec. 4, 1968, Ser. No. 781,157
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 **9 Claims**



This invention is directed to a device and system for cooking foods from a refrigerated or a frozen state to an edible state directly in the refrigerated or frozen environment. One or more cooking receptacles or casseroles containing foodstuffs are placed in a chamber maintained at desired refrigerated temperatures. A thermally insulated electric heating element either integrally formed with each receptacle or in direct contact therewith is connected to an electric circuit for the purpose of heating or cooking the food. The receptacles are thermally insulated and have a dish member on which the food is placed. In most systems it is preferred that the dish has a low heat capacity and high heat transfer characteristics so that substantially all of the heat produced by the element is transferred through the dish directly into the food. The heating elements of the casseroles are controlled by the circuit so that each casserole or a group of casseroles may be selectively energized to cook or heat the food while the chamber remains at refrigerated or freezing temperatures and the remaining nonenergized casseroles are retained in frozen or refrigerated condition.

3,608,628
HEATING AND COOLING SYSTEM

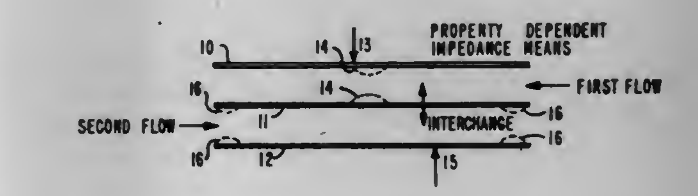
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 18, 1970, Ser. No. 20,772
Int. Cl. F25b *13/00, 15/06*
U.S. Cl. 165—62 **5 Claims**



An absorption refrigeration system having a cooling and a heating mode of operation. A generator, an air-cooled condenser, a two-stage air-cooled absorber, a two-stage adiabatic evaporator and an air-conditioning heat exchanger are connected to provide cooling. A heating mode of operation is provided wherein absorbent solution is heated in the generator and passed through the heat exchanger back to the generator to supply heat to a space being conditioned. The system embodies a plural trough solution scoop pump and a plural trough refrigerant or chilled water scoop pump mounted on a single shaft and driven by a single reversible motor to effect a change from cooling to heating and return.

3,608,629
FLOW COMPENSATOR FOR EXCHANGER APPARATUS

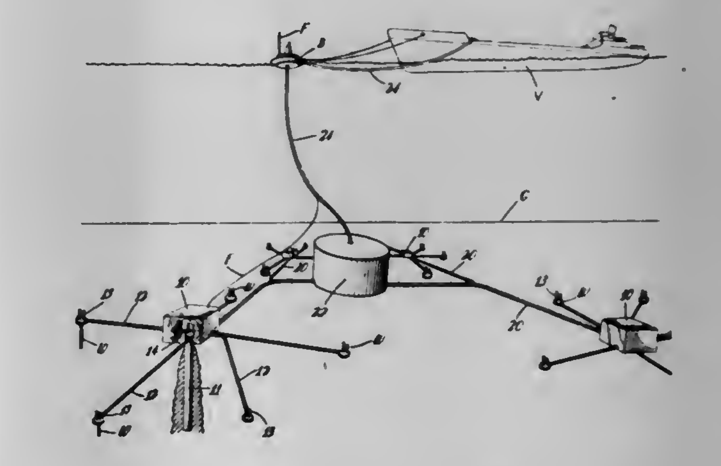
Kenneth W. Cowans, Los Angeles, Calif., assignor to Sub-Marine Systems Incorporated
Filed Feb. 3, 1969, Ser. No. 795,922
Int. Cl. F28d *9/00*
U.S. Cl. 165—165 **13 Claims**



A system is provided for achieving extremely high efficiencies in counterflow heat exchangers having multiple passageways, despite unavoidable passageway variations due to manufacturing tolerances and other causes. The individual passageways are configured with selected cross-sectional variations in dimension disposed in selected fashion along their lengths. These variations cause flow impedance of the passageways to vary in response to temperature differences of the flowing gases, and are arranged to act in compensatory senses, so that the temperatures are equalized. It is shown that adequate compensation is achieved to normalize flows and minimize temperature differentials between counterflowing fluids and adjacent passageways, thus to provide an optimized heat transfer effectiveness.

3,608,630
OFFSHORE OIL PRODUCTION METHOD AND APPARATUS

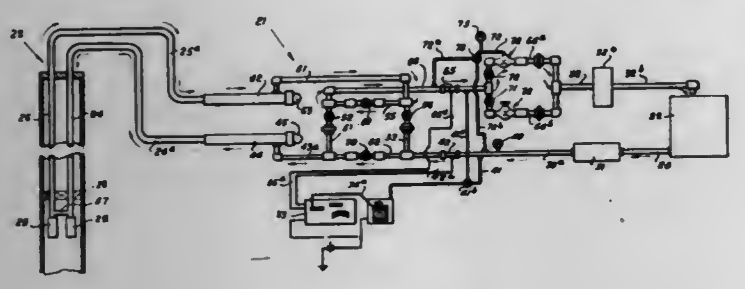
Bruce J. Wooden, Rockville, and Alan M. Bieber, Potomac, both of Md., assignors to Ocean Systems, Inc., New York, N.Y.
Filed Dec. 16, 1968, Ser. No. 783,945
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 **2 Claims**



Offshore oil production system wherein one or more buoyant enclosures are submerged adjacent the ground and serve as sites for manifolding the oil produced from a plurality of wells. The enclosures contain equipments for separating the gas from the oil. The oil, after separation of gas, is transferred from the enclosures to a common oil storage vessel where it is stored prior to transmission to shore.

3,608,631
APPARATUS FOR PUMPING TOOLS INTO AND OUT OF A WELL

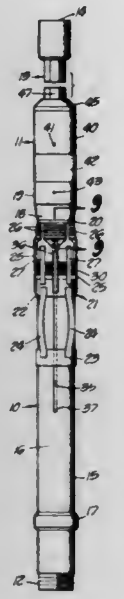
Phillip S. Sizer, Dallas, and Harry E. Schwegman, Richardson, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed Nov. 14, 1967, Ser. No. 682,874
Int. Cl. E21b *33/05, 41/00*
U.S. Cl. 166—70 40 Claims



A system and method for pumping tools into and out of a well through fluid circulation passages in the well including fluid input and return passages communicating with each other in the well bore and with surface apparatus for controlling fluid flow through said passages. The surface apparatus includes a manifold system for directing flow through the well circulation passages in either direction and includes variable choke means in the fluid return portion of the manifold for a controlled back pressure on the well passages and pressure and flow rate measuring means for monitoring fluid flow in the well passages.

3,608,632
WELL PIPE HANGER

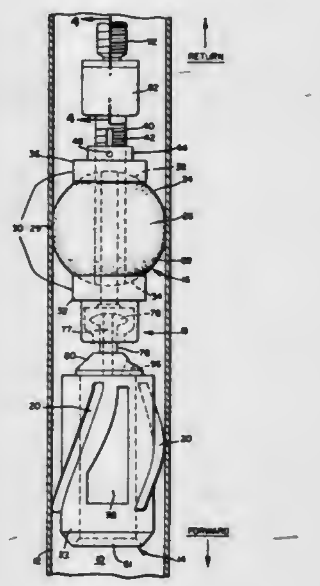
James R. Solum, Huntington Beach, Calif., assignor to B & W Incorporated, Torrance, Calif.
Filed Nov. 21, 1969, Ser. No. 878,792
Int. Cl. E21b *23/00, 43/10*
U.S. Cl. 166—124 17 Claims



A well pipe hanger operated solely by reciprocation for selectively setting or releasing the hanger wherein the casing-engaging wedge slips are supported on a slidable assembly having frictional engagement with the casing with the wedge slips normally in an inoperative position for running the well pipe into the well and the wedge slips are urged outwardly to an operative position by an actuating ring upon substantial upward movement of the hanger whereby downward movement of the hanger then causes the wedge slips to engage and be expanded by a frustoconical surface into casing-engaging relationship for hanging the well pipe. Subsequent upward movement of the hanger releases the wedge slips from casing engagement and returns the wedge slips to their inoperative position for any additional desired downward travel of the well pipe.

3,608,633
WELL TUBE SCRAPING TOOL

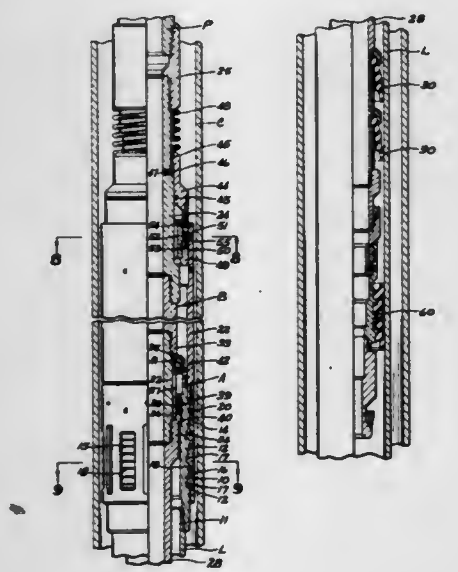
William A. Talley, Jr., Dallas, Tex., assignor to Mobil Oil Corporation
Filed Sept. 17, 1969, Ser. No. 858,659
Int. Cl. F21b *33/16;* **F21b** *37/02*
U.S. Cl. 166—153 9 Claims



A piston section of a TFL tool having an elastic substantially spherical sealing member is serially connected through a ball-and-socket flexible coupling to a scraper section having radially extending scraper blades. Clamping members located on opposite sides of the sealing member may be moved with respect to one another along the axis of the TFL tool to adjust the diameter of the sealing member by varying the axially compressive forces on the sealing member.

3,608,634
HYDRAULIC SET LINER HANGER

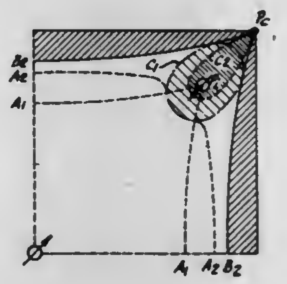
Chudleigh B. Cochran, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.
Filed Mar. 19, 1970, Ser. No. 21,122
Int. Cl. E21b *43/10;* **F21b** *33/129*
U.S. Cl. 166—208 7 Claims



A liner hanger employing a hydraulically actuated setting tool structure which is removable substantially entirely after setting of the hanger leaving a minimal amount of hanger structure in the well. A dog-type latch provides an improved releasable connection between the setting tool and the hanger and a reset spring is provided in the event of premature setting of the hanger to enable release of the hanger for movement to the desired location.

3,608,635
INTERFACE ADVANCE CONTROL IN SECONDARY RECOVERY PROGRAM BY RETARDING CUSP FORMATION AND RESHAPING OF THE INTERFACE BETWEEN DRIVING AND DRIVEN FLUIDS BY THE USE OF A DYNAMIC GRADIENT BARRIER

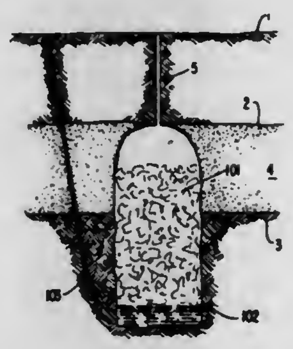
Donald L. Hoyt, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 786,565, Dec. 24, 1968, and a continuation-in-part of 786,568, Dec. 24, 1968. This application June 30, 1969, Ser. No. 837,520
Int. Cl. E21b *43/20, 43/22*
U.S. Cl. 166—245 23 Claims



The interface between driving and driven fluids in a secondary recovery operation is retarded and/or reshaped after a cusp has developed by injection of fluids via wells controlling the advance of flow gradients and to delay the arrival of the injected driving fluid into the vicinity of a production well by the imposition of a dynamic gradient barrier of produced hydrocarbon fluids to spread the interface.

3,608,636
BENEFICIATION OF GEOLOGICAL FORMATIONS BY MEANS OF UNDERGROUND NUCLEAR DETONATIONS AND THE UTILIZATION OF WATER IN CONJUNCTION THEREWITH

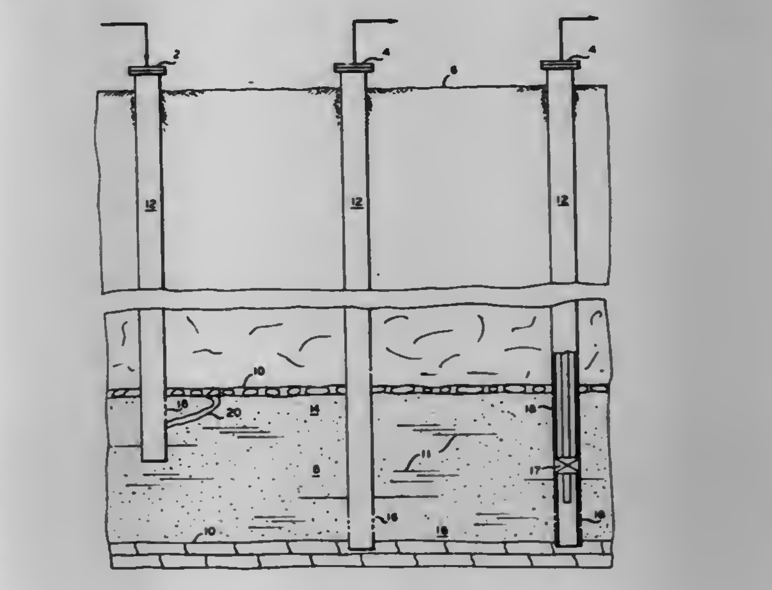
Rod P. Dixon, Salt Lake City, Utah, assignor to American Oil Shale Corporation, Salt Lake City, Utah
Continuation-in-part of application Ser. No. 541,810, Apr. 11, 1966, now abandoned , and a continuation-in-part of 734,661, June 5, 1968. This application Jan. 30, 1969, Ser. No. 795,190
Int. Cl. E21b *43/00*
U.S. Cl. 166—247 10 Claims



When a nuclear explosive device is detonated underground in a geological formation, an extraneous liquid such as water is introduced into the resulting fragmented area of the formation to upgrade the quality of fluid products withdrawn therefrom. For instance, water introduced into a chimney formed by underground nuclear detonation in a natural gas field may be used to remove water soluble radioactive contaminants from the gas to be produced from the formation. In another embodiment, the radioactivity of a water supply which is to be accumulated underground in a nuclearly detonated reservoir may be reduced to an acceptable level by introducing an initial volume of water into the fragmented formation about and above the point of detonation in an early stage of the accumulation process such that this water would scrub radioactive contaminants from the detonated formation and the contaminated water consequently accumulating in such early stage following detonation is removed before accumulation of substantially pure water is begun.

3,608,637
IN SITU COMBUSTION PRODUCTION METHOD

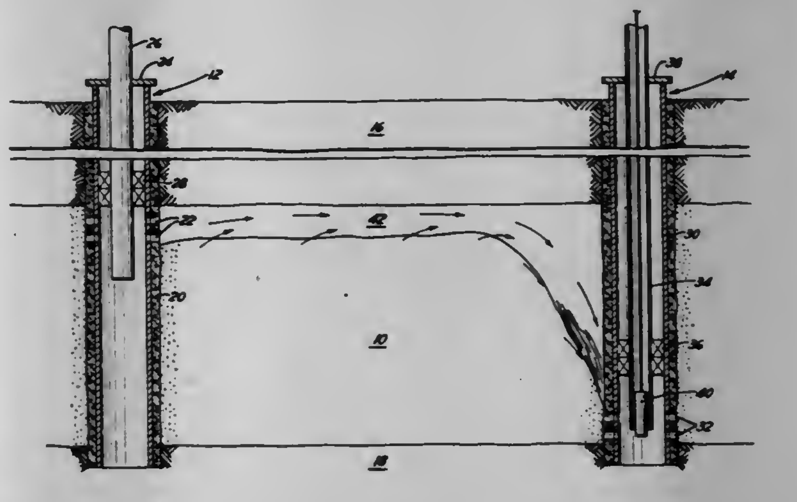
William B. Lumpkin, Morichal, Venezuela, and Robert F. Meldau, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Nov. 12, 1969, Ser. No. 875,672
Int. Cl. E21b *43/24*
U.S. Cl. 166—256 5 Claims



An improved in situ combustion production method wherein the combustion zone is established within the upper portion of the producing formation and fluids are produced from the formation in such a manner as to maintain the combustion gases within the formation.

3,608,638
HEAVY OIL RECOVERY METHOD

Paul L. Terwilliger, Fox Chapel Borough, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Dec. 23, 1969, Ser. No. 887,613
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 1 Claim

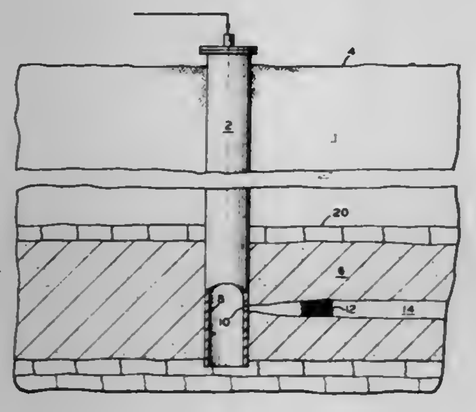


A hydrocarbon solvent such as benzene, platformate, or kerosene at a temperature in the range of 300° to 700° F. is injected into the top of tar sands at an injection well and forced through the formation to an adjacent production well.

Injection of the solvent and production of oil are continued to maintain a gaseous phase across the top of the formation. The tar sand oil is made more mobile as a result of heating and dissolution of the solvent into the oil whereby the oil drains into the production well and is lifted to the surface.

3,608,639
METHOD OF FRACTURING WITH POPCORN POLYMER

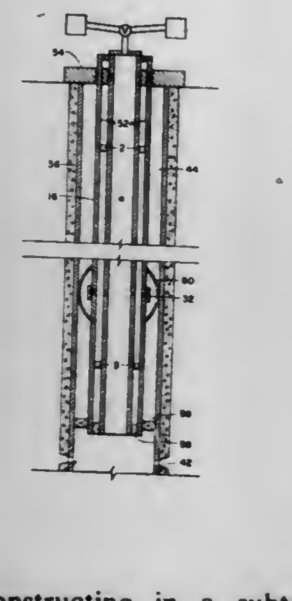
Frank L. Hart, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 19, 1970, Ser. No. 3,900
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **8 Claims**



A method for exerting forces on a subterranean formation for fracturing and increasing the width of a fracture wherein polymerizable materials capable of forming popcorn polymer are placed in the formation and polymerized in situ.

3,608,640
METHOD OF ASSEMBLING A PRESTRESSED CONDUIT IN A WALL

Glen Paul Willhite, and William L. Martin, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Oct. 20, 1969, Ser. No. 871,240
Int. Cl. E21b *17/00, 43/24*
U.S. Cl. 166—315 **6 Claims**



A method of constructing in a subterranean well a prestressed conduit for conveying heated fluids wherein there is positioned in the well bore two concentric tubing strings having support elements in the annular space therebetween. The annular space is sealed at one end by attaching the tubing strings together. The inner tubing is then elongated and the annulus sealed at the other end thereof.

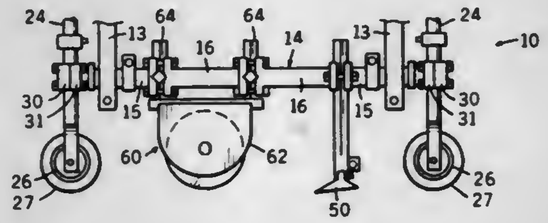
3,608,641
PREPARATION OF FIRE-EXTINGUISHING MATERIAL BY HEATING DICYANDIAMIDE WITH ALKALI METAL CARBONATES OR BICARBONATES

Arnold George Cottrell, Winnington, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Feb. 7, 1969, Ser. No. 797,671
Claims priority, application Great Britain, Mar. 1, 1968, Mar. 1, 1968, 10125;10126
Int. Cl. A62c *1/08;* **A62d** *1/00*
U.S. Cl. 169—1 **4 Claims**

Preparation of powdered fire-extinguishing compositions by heating dicyandiamide with alkali metal carbonates or bicarbonates at 160° C.–180° C., preferably in approximately equimolar proportions, and subsequently powdering the products.

3,608,642
FIELD CULTIVATOR

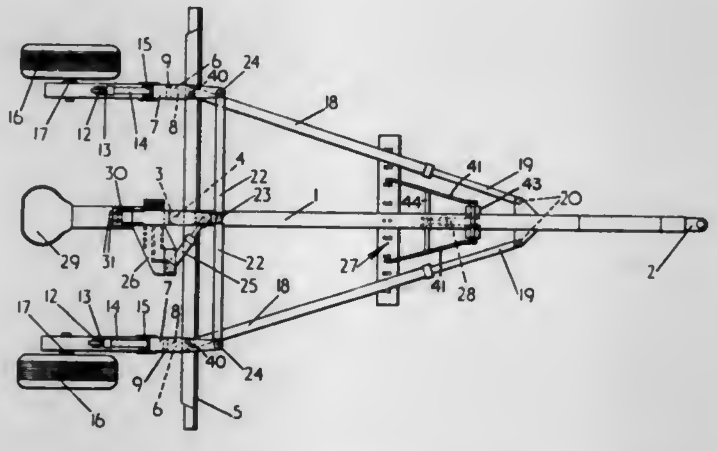
John F. Culp, Rte. 1, Box 163, Bell City, Mo.
Filed Mar. 13, 1969, Ser. No. 807,062
Int. Cl. A01b *33/02, 33/14*
U.S. Cl. 172—62 **7 Claims**



The field cultivator provides support for a cross cultivator unit which comprises a rotative drum mounting a plurality of spring-loaded rake members actuated by a cam member fixed to support means. The cam member engages the orbiting rake members to induce alternating priming and raking stroke of the rake members as the drum rotates. Associated wheels of the field cultivator are linked by synchronizing mechanism to assure alignment of the cross cultivator unit and turning control of the unit as a whole.

3,608,643
GRADING MACHINES

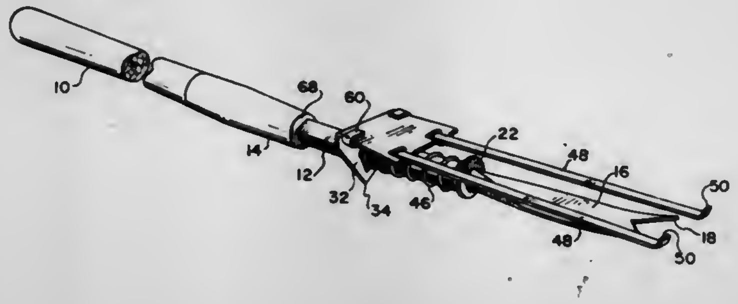
John Reginald Flood, Chester, and John Barr Rogerson, Mynydd-Isa, near Mold, both of England, assignors to Universal Graders Limited, Pentre, Queensperry, Deeside, Flintshire, Great Britain
Filed Feb. 10, 1969, Ser. No. 797,878
Claims priority, application Great Britain, Feb. 12, 1968, 6778/68
Int. Cl. A01b *49/02, 63/16, 65/04*
U.S. Cl. 172—200 **9 Claims**



A machine, particularly a grading machine, comprising a draw bar having a tool support depending therefrom through a vertical pivot to enable angling of the support, a grading blade or other tool is carried on the front of the support which has a pair of wheels attached to a beam at the rear thereof; the blade or other tool can be raised and lowered as well as angled and the wheels can be steered by an operator sitting on a seat behind the tool support.

3,608,644
WEEDING TOOL

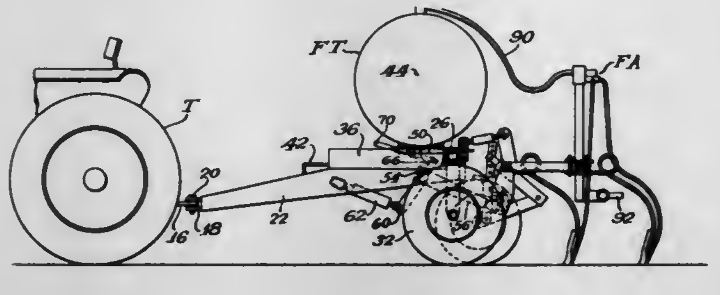
Edward B. Ambrose, 103 Mayfair Place, Chicago Heights, Ill.
Filed Aug. 12, 1969, Ser. No. 849,328
Int. Cl. A01b *1/16*
U.S. Cl. 172—378 **8 Claims**



A tool is disclosed for digging weeds having a handle member with a root-cutting and extracating blade at one end with a pair of spaced spring tines held adjacent to and spaced from the cutting blade from a pivoted bracket member that is biased to resiliently hold the tines in adjacency to the cutting blade. The bracket allows the tines upon contact with the ground to spring upwardly over the top of any outspread parts of the plant as the cutting blade severs the root upon being thrust into the ground. As the tool is removed the plant or weed is automatically held between the tines and the blade for easy disposal.

3,608,645
FARM TRAILER WITH LOAD BALANCING MEANS

Elmo R. Meiners, Anchor, Ill.
Filed Dec. 4, 1968, Ser. No. 781,062
Int. Cl. A01b *25/00*
U.S. Cl. 172—491 **16 Claims**

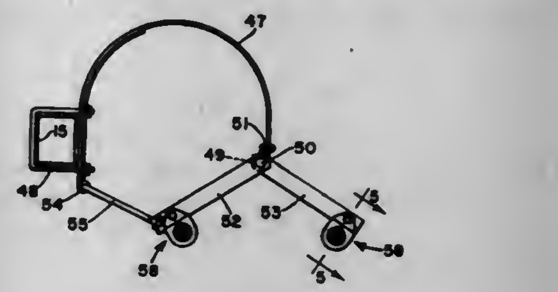


A fertilizer tank mounted on a two-wheeled frame with a tractor hitch includes the improvement of a hydraulically driven linkage for moving the tank forward and rearward on rails incorporated in the frame. The tank is moved on the frame to counterbalance implements that may be attached to the frame.

3,608,646
ROTARY HOE

Edward Clyde Ryan, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Nov. 26, 1968, Ser. No. 778,982
Int. Cl. A01b *33/14*
U.S. Cl. 172—500 **39 Claims**

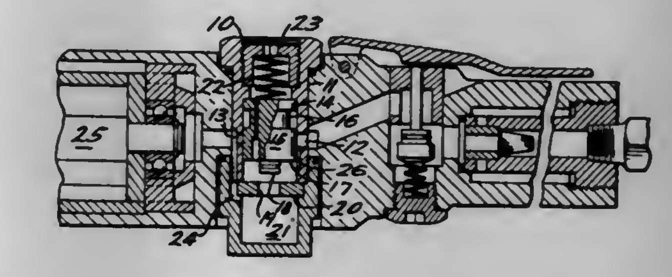
A plurality of transverse sets of front and rear gangs of hoe wheels are individually mounted on a tool bar by leaf springs which will transfer the weight of the tool bar to the gangs to provide down pressure and allow a high degree of flexibility between the sets of front and rear gangs and between the gangs of a single set so that the gangs can follow the ground contour and have excellent soil penetration.



For Class 173—12 see:
Patent No. 3,608,131

3,608,647
PRESSURE-RESPONSIVE FLUID CONTROLLING SYSTEM

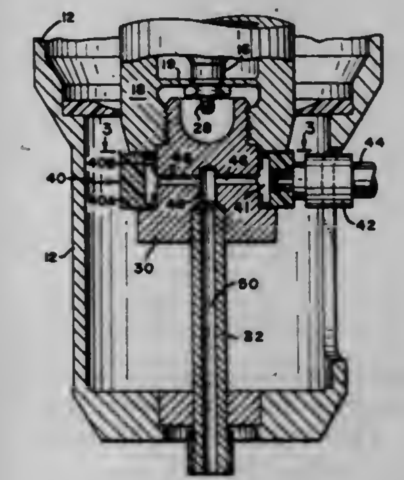
John A. Borries, Chesterland, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.
Filed June 18, 1970, Ser. No. 47,196
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **4 Claims**



A pressure responsive fluid control system for an air tool which is effective to shut off the tool when it reaches a predetermined torque and motor back pressure but will not prematurely react to temporary pressure increases caused by motor inertia. A back pressure sensitive valve has a face exposed to a fluid accumulator chamber whose volume is sufficient to absorb temporary pressure surges but which will increase in pressure to close the valve when the predetermined torque and back pressure are attained.

3,608,648
SONICALLY ACTUATED SHAFT WITH COOLANT JACKET

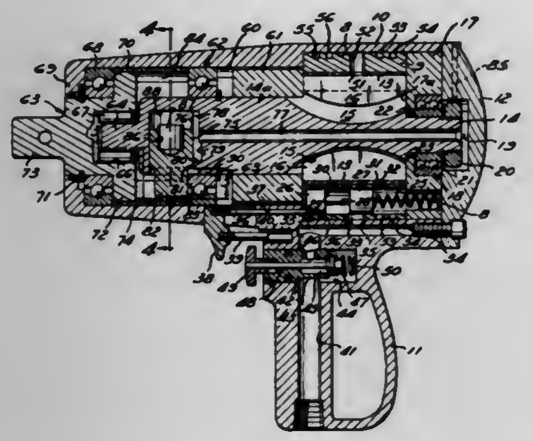
Floyd H. Dibble, Jr., Roxbury, Conn., and Ernest P. Holze, Jr., Brewster, N.Y., assignors to Branson Instruments, Incorporated, Stamford, Conn.
Filed May 25, 1970, Ser. No. 41,127
Int. Cl. B25d *11/00*
U.S. Cl. 173—57 **5 Claims**



A coolant jacket made of low-friction material, such as fluorocarbon, surrounds a portion of a shaft which is rotating while undergoing sonic oscillations along its longitudinal axis. The jacket includes flexible rims which move into and out of sealing contact with the shaft responsive to coolant pressure in the chamber formed between the jacket and shaft.

3,608,649
ROTARY IMPACT TOOL

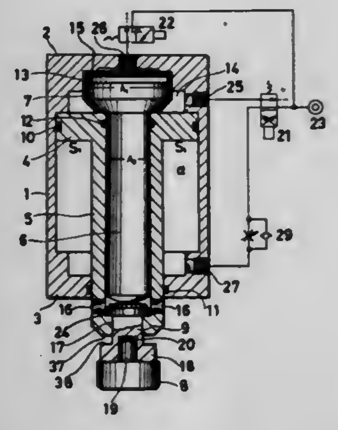
Earl G. Roggenburk, 4120 Behrwald Ave., Cleveland, Ohio
Filed May 5, 1967, Ser. No. 636,528
Int. Cl. B25d *15/00*
U.S. Cl. 173—93.5 **9 Claims**



The rotary impact tool has a hammer pin on the rotor which is self-unloading relieving the air pressure in the front end of the tool through a longitudinal exhaust passage in the rotor when the hammer pin is retracted, to prevent such air pressure from retarding the outward movement of the hammer pin in the next rotation of the rotor. A ball bearing in the tool supports the front end of the rotor for rotation and also guides the hammer pin in its movement laterally of the rotor, preventing the hammer pin from turning. This ball bearing is positively positioned by a cylindrical spacer whose opposite end engages another ball bearing which rotatably supports the anvil in the front end of the tool. Antifriction rollers are engaged between the anvil and the front end of the rotor to prevent side thrusts on the anvil from impeding the desired rotation of the rotor.

3,608,650
IMPACT CYLINDER APPARATUS

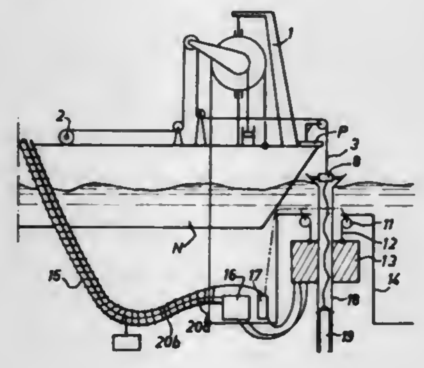
Saburo Matsusaka, Mukogaokadanchi No. 6-104, No. 9-1, Tsukuno-cho 1-chome, Sakai-shi, Osaka-ku, Japan
Filed Nov. 18, 1969, Ser. No. 877,773
Claims priority, application Japan, Nov. 30, 1968, 43 87810/1968
Int. Cl. B25d *9/00*
U.S. Cl. 173—114 **5 Claims**



An impulse stamping device having a cylinder in which a hollow piston and piston rod are mounted. The piston rod extends outwardly of the cylinder and has mounted at its end a dieholder. A ram having a head at its upper end is mounted within the hollow rod. The head is adapted to seat within a second cylinder located axially at the upper end of the first cylinder. Compressed gas is fed selectively to the cylinders to operate the piston rod and ram in sequence to first lower the dieholder and thereafter ram the die against the workpiece.

3,608,651
APPARATUS FOR DRIVING ELONGATED ELEMENTS INTO UNDERWATER GROUNDS

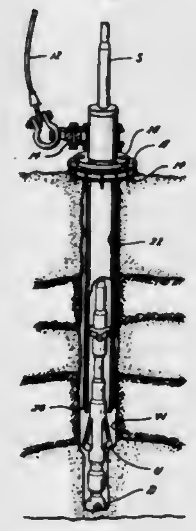
Roger Tindy, Bougival, Yvelines, and Andre Castela, Mesnil LeRoi, Yvelines, both of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison (Hauts de Seine), France
Filed June 26, 1969, Ser. No. 836,713
Claims priority, application France, June 27, 1968, PV 156985
Int. Cl. E21b *7/12*
U.S. Cl. 175—6 **4 Claims**



An apparatus for driving elongated elements such as piles, sheet pilings or tubes into the underwater grounds being operated from a central installation and including a device for generating directed periodic impulses, which device is submerged together with the element. The apparatus further includes assembly-supporting means comprised by the impulse-generating device and the element to be driven and being stationary with respect to the water bottom.

3,608,652
UNDERWATER DRILLING APPARATUS

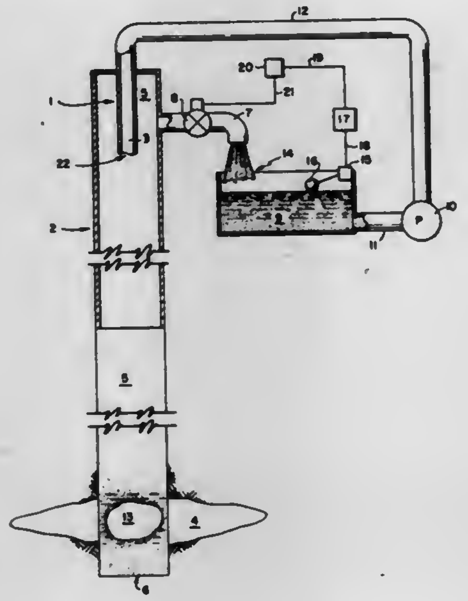
Weldon Medders, and Lawrence Sanford, both of Houston, Tex., assignors to A-Z International Tool Company, Houston, Tex.
Filed Nov. 13, 1968, Ser. No. 775,373
Int. Cl. E21b *15/02*
U.S. Cl. 175—7 **3 Claims**



The combination of a drill string, a tubular structure such as an underwater anchor or conductor pipe supported on the drill string for underwater drilling and an antirotational device and the device itself wherein the device has ground engaging elements to grip the bottom of the body of water in which the tubular structure is being set and a connection coacting between the ground-engaging elements and the tubular structure to restrain the tubular structure against rotation during drilling.

3,608,653
METHOD AND APPARATUS FOR CONTROLLING A WELL

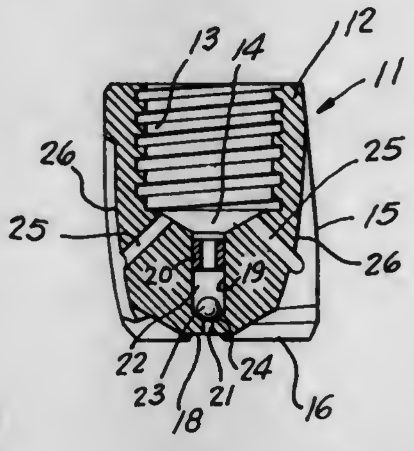
William A. Rehm, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Sept. 22, 1969, Ser. No. 859,938
Int. Cl. E21b *21/00, 41/00*
U.S. Cl. 175—25 **7 Claims**



A method and apparatus for controlling a well to prevent a blowout and an accompanying loss of the drilling mud which utilizes the change in volume of the drilling mud in the mud pits. This change in volume is converted to a corresponding pressure change necessary to compensate for the volume change in the relationship of the gas and drilling mud in the well bore to make such compensation as is necessary to maintain the pressure constant at the bottom of the well bore.

3,608,654
ROCK DRILL BIT

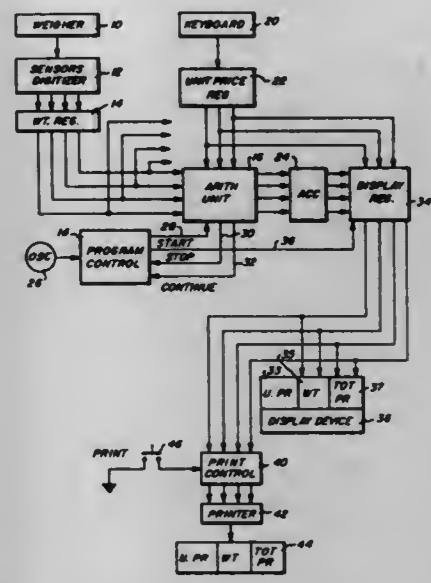
Joseph W. Powell, Bishop, Calif., and Juanita Powell, sole heir, Box 18, Placerville, Colo.
Filed Nov. 21, 1969, Ser. No. 878,770
Int. Cl. E21c *13/06*
U.S. Cl. 175—237 **6 Claims**



A rock drill bit having helical side cutting edges and radial bottom cutting edges, and having an inside cavity for receiving cooling mud, with diametrically opposite downwardly and outwardly inclined outward passages connecting the inside cavity to diametrically opposite grooves between the side cutting edges. The bottom of the bit has a central mud return passage leading to the inside cavity and provided with a ball check valve.

3,608,655
COMPUTER WEIGHER SYSTEM WITH INTERMEDIATE PRICE CALCULATIONS AND DISPLAY

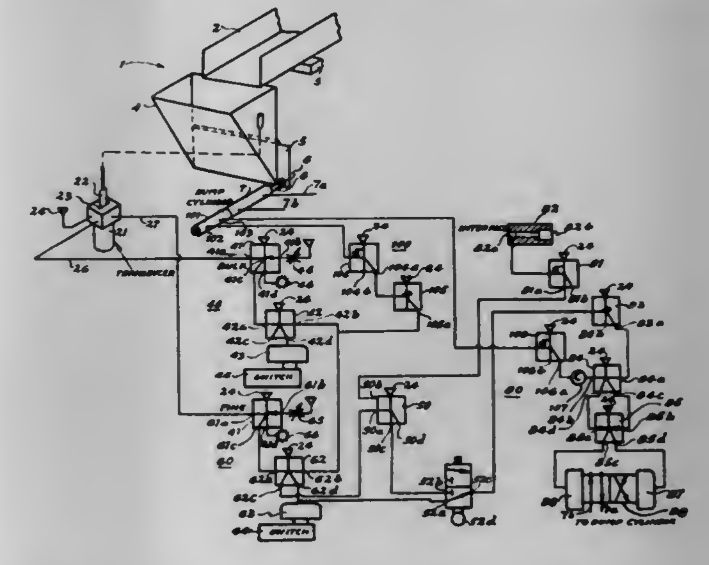
Robert H. Ray, Cinnaminson, and John M. Holt, Cherry Hill, both of N.Y., assignors to Applied Information Industries
Filed Feb. 20, 1970, Ser. No. 12,998
Int. Cl. G01g *23/38*
U.S. Cl. 177—1 **5 Claims**



A computer weigher system employs a continuously operating digital computer which multiplies unit price information supplied via a manual keyboard times the weight information supplied via a weigher which incorporates a digitizer for converting the weight information to digital form. From the moment that the article is first placed on the weigher scale until the weigher platform comes to balance, successive intermediate weight measurements are made as the platform moves to balance, and the computer arithmetic unit continuously operates to develop the total price for each such weight measurement. A display device continuously displays the unit price together with the weight measurement as it varies from the zero ;measurement to the final balance measurement, as well as the total price at each measured weight. An operator can determine when the weigher platform has come to balance from the displayed weight, and when the later is unchanged, the operator presses a print button which initiates the operation of a printer to print out the weight and total price as well as the input unit price.

3,608,656
FLUIDIC CONTROL SYSTEM

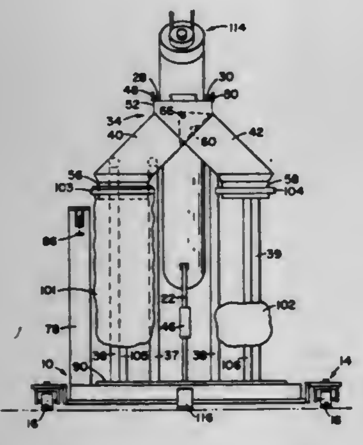
Charles R. Pettis, Jr., Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.
Filed Dec. 18, 1968, Ser. No. 784,564
Int. Cl. G01g *19/22*
U.S. Cl. 177—70 **9 Claims**



A fluidic control for a batch material weigher including a fluidic transducer adapted to produce fluidic control signals indicative of material induced deflections of a weighing scale, fluidic gates adapted to terminate feeding of the material onto the weighing scale in response to the control signals, and means to adjustably control the response of the gates. Adjustment of the response of the fluidic gates may be servo-controlled by feedback from a net weighing apparatus in order to obtain batches of material at predetermined uniform weights.

3,608,657
BAG FILLING AND WEIGHING SYSTEM

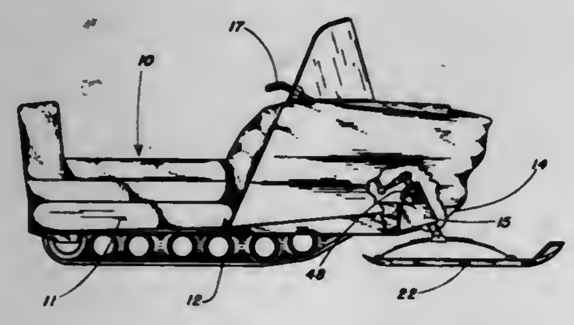
Allie A. Johnson, Rte. 1, and Robert L. Parsons, 202 Thomas St., both of Pulaski, Tenn.
Continuation-in-part of application Ser. No. 525,682, Feb. 7, 1966. This application Nov. 8, 1968, Ser. No. 774,257
Int. Cl. G01g *13/22*
U.S. Cl. 177—93 **4 Claims**



A self-contained weighing and bagging machine which has two bag holding and weighing positions and wherein when one bag is filled to the prescribed weight the machine automatically stops filling that bag and commences to fill the other bag permitting the filled bag to be removed and be replaced with an empty bag.

3,608,658
STEERING MECHANISM FOR SNOWMOBILE

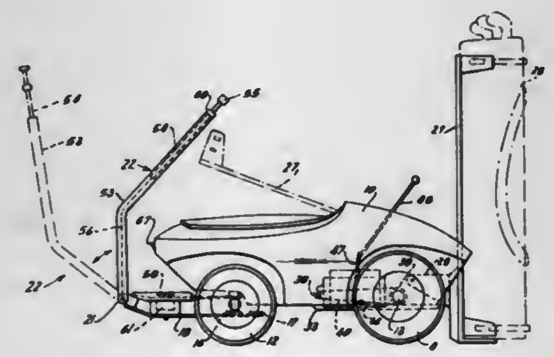
William L. Woodfill, Oshkosh, and James R. Meininger, Fond Du Lac, both of Wis., assignors to Brunswick Corporation, Chicago, Ill.
Filed Apr. 30, 1970, Ser. No. 33,339
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **2 Claims**



Each steering spindle for a snowmobile is mounted with cam and cam follower interposed between the upper end of the spindle and the snowmobile frame. The cams are arranged to extend the outside ski and withdraw the inside ski when turning to force the snowmobile to lean into a corner with corresponding improved steering response.

3,608,659
MOTORIZED GOLF CART

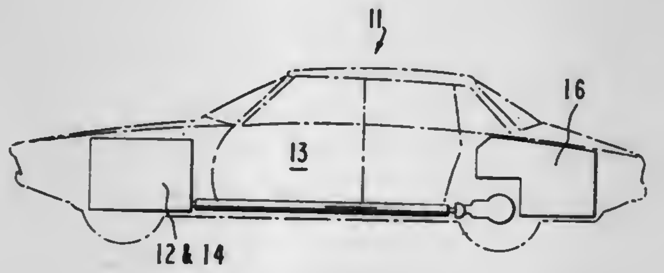
Norman S. Gardner, 64 Trenor Drive, New Rochelle, N.Y.
Filed Apr. 7, 1969, Ser. No. 813,922
Int. Cl. B62d *51/04*
U.S. Cl. 180—19 H **10 Claims**



Wheeled cart carries one-way electric motor, battery for energizing motor, and one-way transmission for driving wheels. Transmission includes belt loosely trained about pulleys, and a roller engageable with belt to make it taut so that it transmits motion from motor to wheels; disengagement of roller from belt allows cart to be rolled backwardly. Handle includes two telescoping parts, inner part being connected to a rheostat which controls amount of current supplied to motor. Pulling force on outer end of handle determines setting of rheostat and speed of motor.

3,608,660
SMOG-FREE AUTOMOBILE AND METHOD OF OPERATING SAME

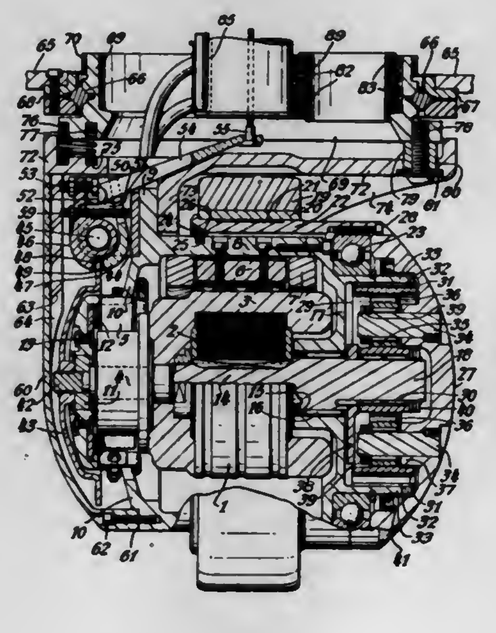
Richard D. Smith, Palo Alto, and Dale A. Furlong, Menlo Park, both of Calif., assignors to Combustion Power Company, Inc., Palo Alto, Calif.
Filed Feb. 3, 1969, Ser. No. 796,089
Int. Cl. B60k *15/08*
U.S. Cl. 180—54 B **9 Claims**



A smog-free automobile is described burning fuel and substantially pure oxygen and spray water cooling the cylinder walls and pistons during exhaust. A dual combustion system is utilized, Otto cycle for cruise power and diesel cycle above cruise power, and water is recovered from the exhaust. The fuel can be pure hydrogen or liquid gasoline. With liquid gasoline, oxygen input atomizes the gasoline and with hydrogen fuel both hydrogen and oxygen can be produced by electrolysis, ideally utilizing nuclear electric generation for a complete smog-free system operation. Gaseous material is stored in a plurality of high-pressure vessels and in the case of hydrogen fuel with the pressure vessels at the rear of the auto. Separate sets of vessels are provided for cruise power supply and above cruise power supply and valving is provided to use the opposite set of tanks in case fuel for one operation is exhausted.

3,608,661
MOTORIZED WHEEL TRACTION DRIVE UNITS

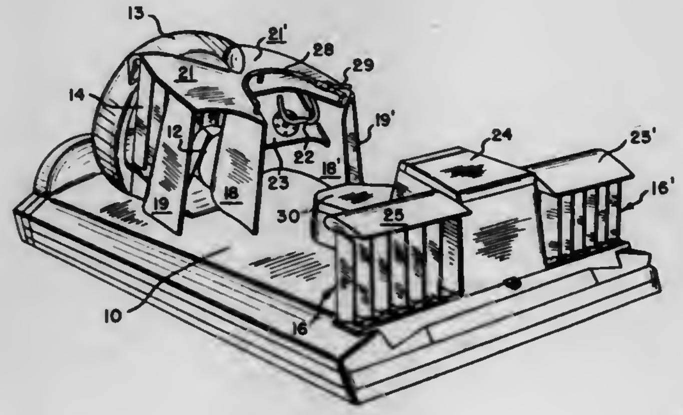
Alfred R. E. Arnot, The Bell House, Baughurst, Basingstoke, Hampshire, England
Continuation-in-part of application Ser. No. 448,011, Apr., 1965, now abandoned. This application July 8, 1968, Ser. No. 747,048
Int. Cl. B60k *7/00*
U.S. Cl. 180—65 F **11 Claims**



A compact motorized wheel has a motor cantilevered on a support and carrying a hub and tire. A gyratory epicyclic gear couples the motor shaft to the hub.

3,608,662
AIR CUSHION VEHICLE

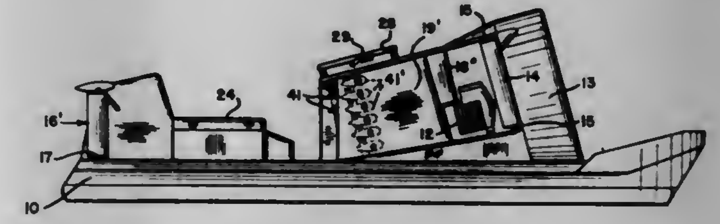
Hugo S. Ferguson, Averill Park, N.Y., assignor to Air Cushion Vehicles, Inc., Poestenkill, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,810
Int. Cl. B60v *1/16, 1/18*
U.S. Cl. 180—117 **22 Claims**



A single propeller mounted toward the front of the vehicle provides both propulsion and air cushion. Two-point steering is provided by front and rear steering vanes with air channels on each side which direct a portion of the downstream flow of air, under the control of the front vanes, to the rear vanes. The air channels shield the operator from the propeller airblast, and produce air curtains on either side of the operator to shield him from spray and dust. Joint steering of front and rear vanes is provided, with means for changing the relative vane angles to counter crosswinds and side slope on hills.

3,608,663
AIR CUSHION VEHICLE WITH THRUST CONTROL

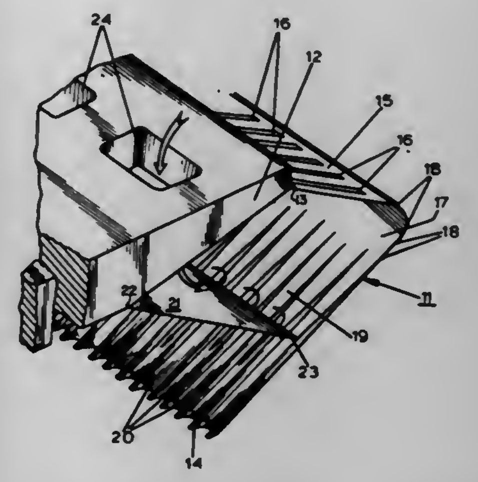
Hugo S. Ferguson, Averill Park, N.Y., assignor to Air Cushion Vehicles, Inc., Poestenkill, N.Y.
Continuation-in-part of application Ser. No. 2,810, Jan. 14, 1970. This application Apr. 20, 1970, Ser. No. 30,158
Int. Cl. B60v *1/14*
U.S. Cl. 180—120 **16 Claims**



A single propeller mounted toward the front of the vehicle provides both propulsion and air cushion. Two-point steering is provided by front and rear steering vanes with air channels on each side which direct a portion of the downstream flow of air, under the control of the front vanes, to the rear vanes. To reduce forward thrust while maintaining effective steering control, sets of vanes are rotatably mounted in the air channels and controllable to block passage of air therethrough.

3,608,664
CUSHION BARRIERS FOR AIR CUSHION VEHICLES

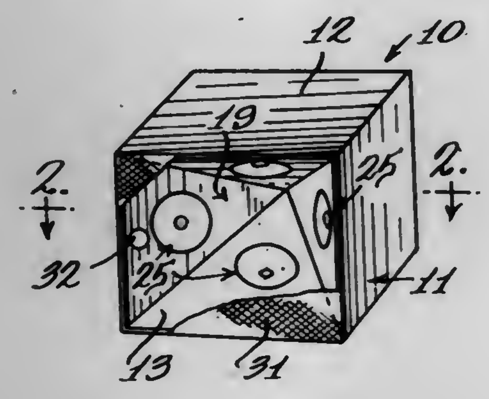
Norman Ralph Taylor, Cowes, Isle of Wight, England, assignor to British Hovencraft Corporation, Limited, Yeovil, Somerset, England
Filed May 2, 1969, Ser. No. 821,266
Claims priority, application Great Britain, May 8, 1968, 21,689/68
Int. Cl. B60v *1/16*
U.S. Cl. 180—127 **2 Claims**



A barrier for bounding at least part of the periphery of the cushion area of an air cushion vehicle is constructed at least in part from composite materials so as to have an acutely bent cross section. The barrier comprises an upper part and a lower part connected by a resilient sharply curved part, the free edge of the upper part being adapted for attachment to the rigid structure of the vehicle. In its nonoperational state, the upper part of the barrier extends outwardly from the vehicle to merge with the sharply curved part, which curves sharply downwardly and inwardly to merge with the lower portion which extends inwardly with respect to the vehicle, terminating in a free edge. When the cushion is pressurized, the pressure on the barrier overcomes the resilience of the sharply curved part and moves the free edge of the lower part downwardly and outwardly in opposition to the normal sharply curved configuration of the resilient part. The resilience of the sharply curved part is sufficient to return the barrier to its original configuration when the cushion pressure ceases.

3,608,665
SOUND-REPRODUCING STRUCTURE

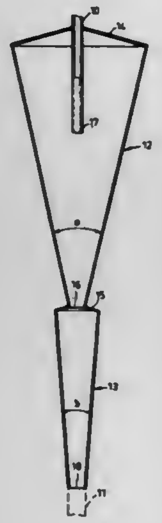
Mohamed B. A. Drisi, 100 W. Main St., Glenwood, Ill.
Filed Sept. 16, 1969, Ser. No. 858,484
Int. Cl. G10k ***13/00;*** **H04r** ***1/28***
U.S. Cl. 181—31 B **8 Claims**



A sound-reproducing structure wherein one or more loudspeakers are mounted on baffle means within a baffle housing to direct the sound (a) from the speaker, directly, forwardly outwardly through the forward opening of the cabinet; (b) against a reflecting surface within the cabinet and hence forwardly outwardly through the forward opening of the cabinet; (c) inwardly against the apex of the baffle means and hence forwardly outwardly through the forward opening of the cabinet. From the back of the cabinet, as a reverse phase, the sound follows a similar reflecting and retarding process but aimed toward the rear of the cabinet. The sound-reproducing structure effectively defines a phase division horn means wherein a portion of the total sound emanating forwardly and rearwardly from the cabinet is delayed in time before passing outwardly therefrom.

3,608,666
SILENCER

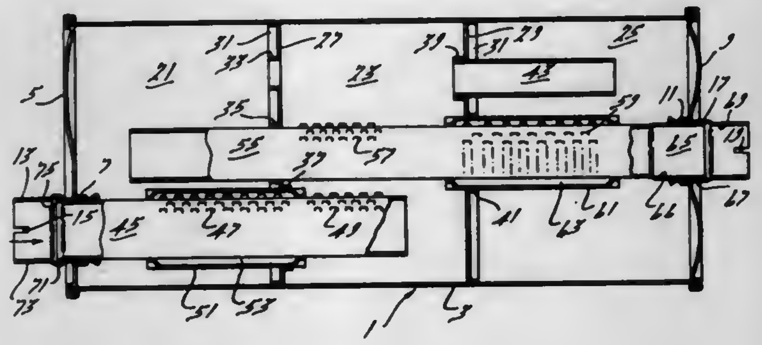
Karl Borje Olsson, Hellekas, Kivik, Sweden
Filed Nov. 17, 1970, Ser. No. 90,296
Int. Cl. F01n ***1/02, 1/08, 7/02***
U.S. Cl. 181—47 **4 Claims**



Silencer or muffler for a combustion apparatus such as an internal combustion engine or gas or oil burner, comprising two coaxial truncated cones of different widths at their wide ends, which are provided with end walls and central openings therein, the wide cone having its small end connected to the opening in the end wall of the narrow cone, and the cone angle of the two cones being in different ranges, preferably about 25° for the wide cone and preferably about 10° for the narrow cone.

3,608,667
MUFFLER TUBE AND BUSHING CONNECTION

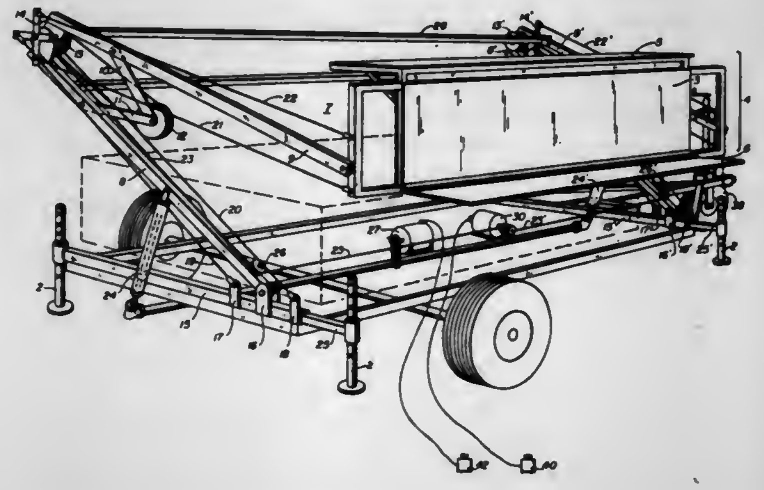
John H. Foster, Clarke Lake, Jackson, Mich., assignor to Tenneco Inc., Houston, Tex.
Filed May 9, 1969, Ser. No. 823,329
Int. Cl. F01n ***7/18***
U.S. Cl. 181—61 **3 Claims**



The inlet and/or outlet end of an exhaust muffler contains a bushing which in one form of the invention is provided with an expanded annular rib to receive an expanded portion of a gas flow tube and thereby serve to hold the tube in axial position; and, in a second form of the invention, has an expanded portion which receives an expanded portion on a gas flow tube so that additional axial space is provided to receive a tailpipe or an exhaust pipe.

3,608,668
MOBILE SCAFFOLD

James B. Mahaney, 401 E. Downing St., Tahlequah, Okla.
Filed July 16, 1970, Ser. No. 55,374
Int. Cl. B66f ***11/04***
U.S. Cl. 182—2 **6 Claims**

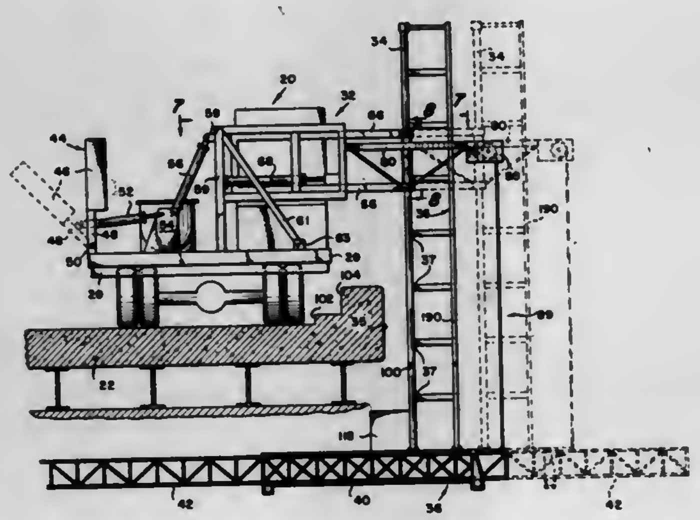


A mobile scaffold suitable for use in working at elevated positions on the outside or inside structure of buildings, the said scaffold being mounted on a supporting platform with means to automatically move the scaffold to selected elevated positions, the said scaffold working area remaining parallel to the platform area at all times; the said support platform having levelling means and independent motion means to move it from one location to another.

3,608,669
BRIDGE-PAINTING APPARATUS AND METHOD

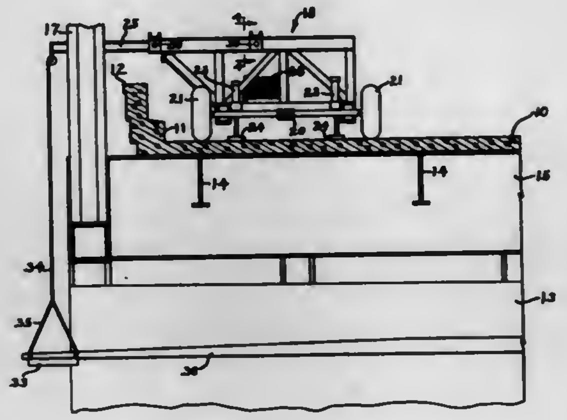
Lewis L. Lindsay, Jr., Richmond, Va., assignor to Bridge Painting, Inc., Richmond, Va.
Filed Dec. 2, 1969, Ser. No. 881,426
Int. Cl. E04g ***1/24, 1/36***
U.S. Cl. 182—14 **28 Claims**

A bridge-painting apparatus employing an extensible scaffold means and method of folding the latter whereby the apparatus may be transported by a motor vehicle. The apparatus includes a mast or boom with means for extending the boom over the side of a bridge to be painted and means for raising and lowering it. The boom is provided with a reinforcing frame construction to which the extensible scaffold means is secured. A split collar construction permits the boom to be raised and lowered without dismantling any of the apparatus whereby the apparatus may be ready for operation and/or removal in an extremely short period of time. A remote control means is provided whereby the apparatus may be extended or collapsed with great facility. The vehicle on which the apparatus is mounted is provided with abutment or curb-sensing means whereby the vehicle may be driven remotely and automatically.



3,608,670
SCAFFOLD TENDER

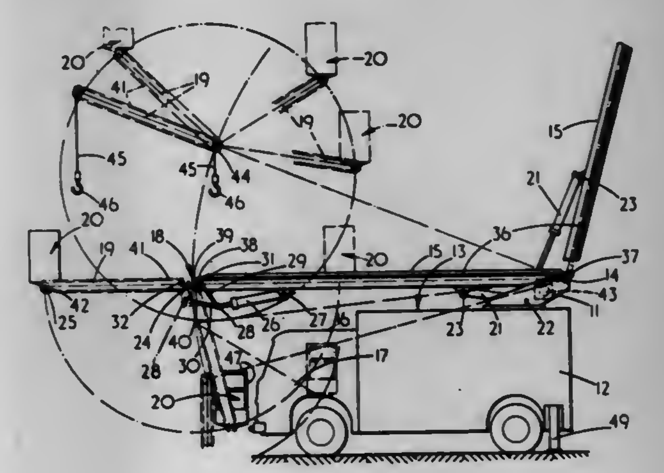
James H. Blake, 1520 E. Capital Expressway #220, San Jose, Calif., and Richard E. Barber, 6800 Enterprise Road, Box 25, Ferndale, Wash.
Filed Apr. 13, 1970, Ser. No. 27,867
Int. Cl. E04g ***3/10***
U.S. Cl. 182—63 **8 Claims**



A scaffold tender for suspending a transverse work platform across the underside of highway bridges or the like. The scaffold tender comprises a wheeled framework supported on the bridge deck. A plurality of longitudinally spaced supports are mounted at each side of the framework, each support being selectively retractable in order to clear vertical abutments during movement of the framework along the bridge. The work platform is alternately suspended from one or more of the extended supports during movement of the scaffold tender. The method of traversing the bridge involves the alternate use of the supports and the movement of each support between a retracted position and an extended position as required to clear obstructions encountered in the path of movement of the framework.

3,608,671
MOBILE MACHINE WITH AN ELEVATABLE AND TRAVELLING CARRIER

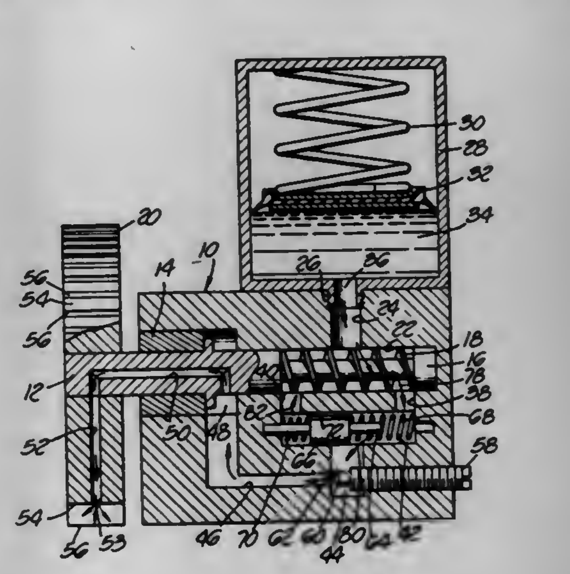
Denis Henry Ashworth, Woodsetton, near Dudley, England, assignor to Simon Engineering Dudley Limited, Dudley, England
Filed Feb. 20, 1969, Ser. No. 800,855
Claims priority, application Great Britain, Feb. 23, 1968, 8823/68
Int. Cl. B66f ***11/04***
U.S. Cl. 182—141 **10 Claims**



A mobile machine of the kind having an elevatable and travelling load-supporting carrier comprising, a supporting base structure rotatable about a vertical axis, an articulated structure of pivotally interconnected booms having horizontal pivots and including a main boom and at least one auxiliary boom which main boom is pivotally supported by a horizontal pivot member mounted to a part of the supporting base structure and which one auxiliary boom or the auxiliary boom furthermost from the main boom is pivotally connected at its end remote from the boom interconnecting pivot to the load-supporting carrier.

3,608,672
AUTOMATIC GEAR LUBRICATOR

Gerard W. Dandridge, 4857 W. 147th St., Hawthorne, Calif.
Filed Mar. 10, 1969, Ser. No. 805,445
Int. Cl. F01m ***1/00;*** **F16n** ***7/36***
U.S. Cl. 184—6 TT **4 Claims**

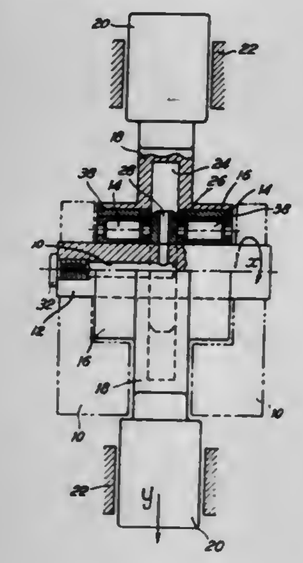


A device for continuously supplying small quantities of grease to a gear or train of gears. The unit consists of an idler gear to which is coupled a screwshaft mounted in a body which is suitably drilled and channeled and to which is connected a spring-loaded grease cartridge. The screwshaft takes grease supplied from the cartridge and conducts a metered amount through the channels to the idler gear where it is expelled between the gear teeth to lubricate gears with which it is in mesh.

3,608,673

LUBRICATION DEVICE FOR UNBALANCED ROTATING MEMBERS, PARTICULARLY PERCUSSION TOOLS

Pietro Cucciati, Via Velasca 8, Milan, Italy
Filed Oct. 27, 1969, Ser. No. 869,666
Claims priority, application Italy, May 14, 1969, 16,879-A/69
Int. Cl. E02d *7/18;* **F16n** *1/00*
U.S. Cl. 184—6.14 **6 Claims**

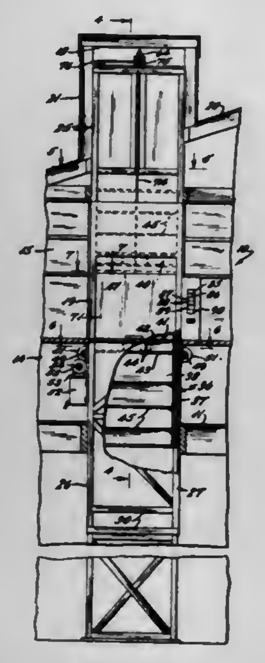


A housing having an annular chamber defined at its radially inner side by an annular ring. Lubricant is conveyed into said chamber under the influence of dynamic action, through an opening in the ring, to lubricate bearings adjacent the ring and supporting the housing on a shaft extending through the ring. The opening in the ring communicates with a passageway in the shaft.

3,608,674

STORAGE ELEVATOR HAVING MULTIPLE SHELVES

Walter A. Phillips, P.O. Box 3237, Fort Smith, Ark.
Filed May 20, 1969, Ser. No. 826,108
Int. Cl. B66b *9/00*
U.S. Cl. 187—3 **4 Claims**

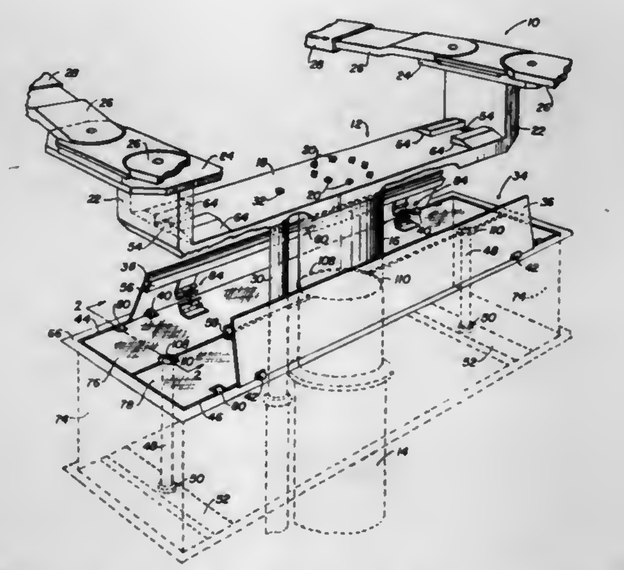


Apparatus located in an elevator shaft within a building and including an elevator having multiple storage areas and means for selectively moving the areas to an opening in the wall normally closed by a door. The apparatus includes a reversible motor for moving the elevator in the desired direction when a pushbutton switch is closed.

3,608,675

VEHICLE LIFT INSTALLATION

Martin J. Sherry, Dayton, Ohio, assignor to The Joyce-Cridland Company, Dayton, Ohio
Filed July 30, 1969, Ser. No. 846,009
Int. Cl. B66f *7/00*
U.S. Cl. 187—8.62 **27 Claims**



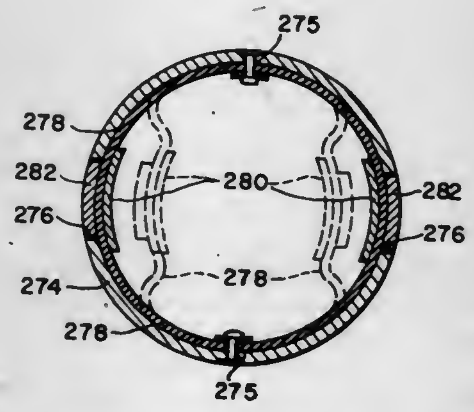
Open areas of the floor pit of a vehicle lift installation are covered by a first pair of cover plates when the lift is lowered and by a second pair of cover plates when the lift is raised. The first pair of cover plates are spread open by the lift superstructure or jacking unit and the second pair of cover plates are moved to a closed position by motion transmitting means connecting them to the first pair of cover plates.

In one embodiment the motion transmitting means interconnecting the two pairs of cover plates includes a lost motion linkage and the pivot axes for the two pairs of cover plates are offset whereby the second pair of cover plates pivots through a greater angle than the first pair of cover plates. In the second embodiment the plates forming the two pairs of cover plates are interconnected by combined hinge and motion transmitting devices and both pairs of cover plates are pivoted through substantially 90°.

3,608,676

REVERSIBLE IRRIGATION LINES

Gregory J. Wieck, Enterprise, Oreg.
Division of Ser. No. 654,809, July 20, 1967, Pat. No. 3,447,751. Filed Nov. 6, 1968, Ser. No. 773,845
1968, Ser. No. 773,845
Int. Cl. F16k *15/14*
U.S. Cl. 137—525.1 **5 Claims**

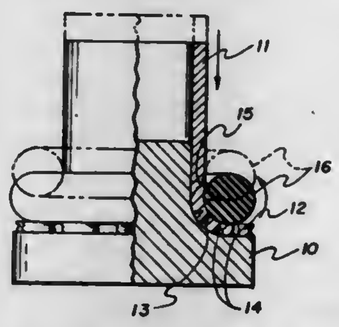


A long hose having sprinklers at both ends forms, with a cable running over a reversible, powered capstan, an endless, reversible towline. The length of the hose is about one-half of the length of the area to be irrigated and the hose is advanced through an injection tube at the central portion of the area to be irrigated, and water under pressure supplied to the tube enters the hose through check valves in thick-walled coupling portions spaced along the hose. The check valves are in the form of elastic sleeves fitting in the coupling portions, each sleeve normally covering two oppositely disposed openings in the coupling portion and adapted to buckle from the higher water pressure in the injection tube to admit water into the hose. Each sleeve preferably has stiff backing plates on its inside and plugs on its outside filling the openings in the coupling portion. The openings preferably are elliptical. Washing chambers at the ends of the injection tubes wash the hose before it enters the seals in the injection tubes. In one construction, two hoses with sprinklers are disposed in parallel relationship in one side of a field with two cables connecting their ends and forming an endless towline therewith, one cable being on a capstan of a drive unit midway between two sides of the field. Two other parallel hoses and cables are positioned in the other half of the field and are pulled by a second capstan of the drive unit. In another construction, a power unit midway between two sides of the field pulls two parallel cables to pull two hoses through injection tubes from one side of the field to the center of the field. The injection tubes then are disconnected from a fixed pipeline in the first half of the field, the cables are disconnected from the hoses, the hoses and injection tubes are towed by a tractor to the second half of the field, the injection tubes are connected to a pipeline in the second half of the field, the cables are connected to the other ends of the hoses, and the power unit pulls the hoses to the power unit from the far side of the second half of the field.

3,608,677

FRAGMENTING TUBE ENERGY ABSORBER

Donald H. Wykes, Downey, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.
Filed Oct. 3, 1968, Ser. No. 764,892
Int. Cl. F16f *7/12*
U.S. Cl. 188—1 **15 Claims**

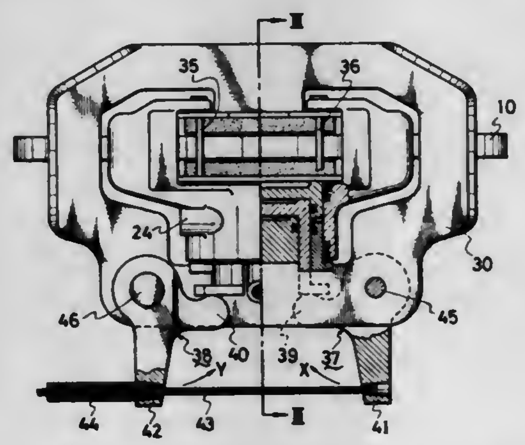


A frangible tube energy absorber is described including means for inhibiting propagation of longitudinal fracture of the tube. In a preferred embodiment the means for inhibiting propagation of longitudinal fracture comprises means for applying a radially inwardly directed force against the outside of the tube also inducing a higher frequency of transverse cracking to increase the amount of energy absorbed as well as improve the reliability and reproducibility.

3,608,678

SPOT-TYPE DISC BRAKE

Toyoaki Kobayashi, Toyohashi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan
Filed Oct. 2, 1969, Ser. No. 863,302
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.6 **6 Claims**

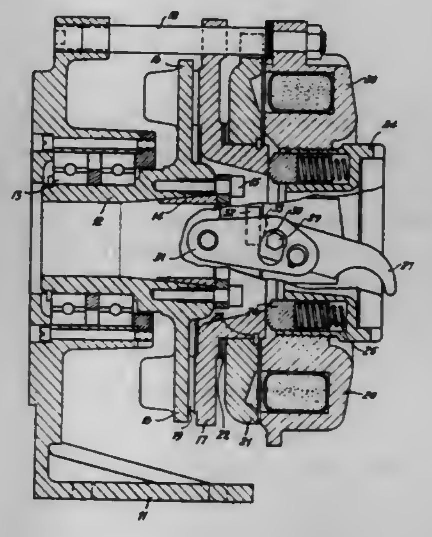


A spot-type disc brake having a dual circuit from a master cylinder wherein four pistons are provided in a single hydraulic cylinder located on a stationary member so as to constitute two independent hydraulic chambers to which pressurized fluid is applied through each fluid passage for braking, and one of the pistons is adapted to be actuated mechanically by a hand-lever for parking.

3,608,679

ELECTRICALLY OPERATED BRAKING DEVICE

Stanley George Harrison, Leederville, Western Australia, Australia, assignor to Westate Electrical Industries Limited, Leederville, Western Australia, Australia
Filed July 7, 1969, Ser. No. 839,255
Claims priority, application Australia, Nov. 18, 1968, 46397/68
Int. Cl. F16d *65/24, 55/22*
U.S. Cl. 188—171 **7 Claims**

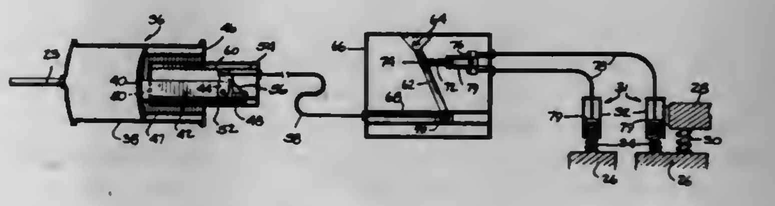


A braking device for a machine having a rotating shaft wherein a brake disc is attached to the shaft for rotation therewith, the brake disc facing a brake plate which plate is held away from the brake disc by an electromagnet, manually operable locking means being provided to lock the brake plate in a released position when the electromagnet is deenergized, the locking means being automatically disengaged when the electromagnet is energized.

3,608,680

LOAD-RESPONSIVE BRAKING MECHANISM

Robert G. Beacon, Rosemere, Quebec, Canada, assignor to Ellcon National, Inc., Totowa Borough
Filed Feb. 13, 1970, Ser. No. 11,230
Int. Cl. B60t *8/22*
U.S. Cl. 188—195 **9 Claims**

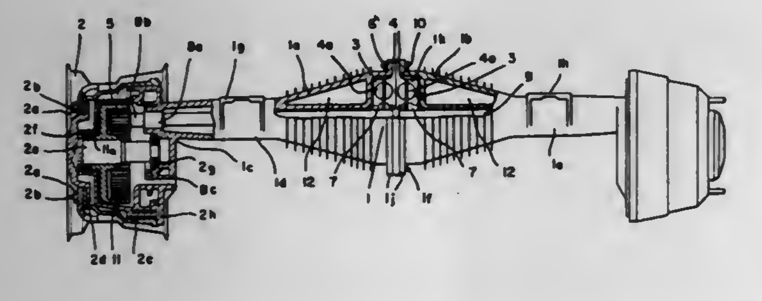


A braking mechanism for a railway car including feeler apparatus mounted on each side of a railway car truck for indicating movement of the bolster with respect to the truck side frames, load-compensating apparatus connected to the brake cylinder pipe for varying pressure of air in the brake cylinder, and equalizer apparatus for receiving vertical movement indications from the feeler apparatus and sending corresponding indications to the load-compensating apparatus.

3,608,681

HYDRODYNAMIC BRAKE

Karl Schlor, Biebesheim (Rhine), Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Germany
Filed Feb. 24, 1969, Ser. No. 826,037
Claims priority, application Germany, Feb. 23, 1968, P 16 55 479.3
Int. Cl. F16d *57/06*
U.S. Cl. 188—274 **4 Claims**

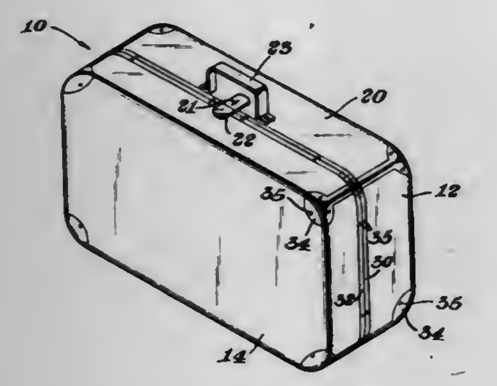


A hydrodynamic brake received in the axle housing of a vehicle with independently operable rotors connected to the wheels on opposite sides of the vehicle. Within the wheel assemblies, there are provided step-up transmissions connecting the wheels to the rotor shafts. The axle housing includes a compartment for storage of the brake fluid while the thermal energy of the brake fluid is dissipated through the wall of the housing.

3,608,682

LUGGAGE CONSTRUCTION

John R. Newton, Strongsville, and Carl B. Salzinger, Mayfield Heights, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.
Filed Aug. 29, 1967, Ser. No. 664,134
Int. Cl. A45c *5/02;* **B32b** *27/32*
U.S. Cl. 190—53 **12 Claims**

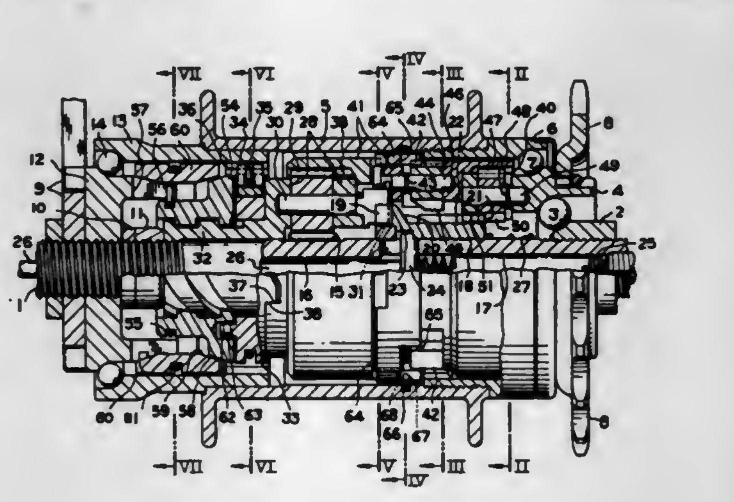


This invention concerns a suitcase or the like having a nonblushable outer skin comprising laminated plies of plastic, blushing being the tendency of many plastics of suitable thickness for skin employment to fade or whiten as, for example, when bent around corners and edges in the fitting and securing of the skin to the suitcase frame. Preferably the skin is of a three-ply construction with each ply being in its naturally transparent or translucent nonpigmented state. A pigmented, opaque adhesive blended to provide the desired skin color secures the two outermost plies. The outer ply is formed sufficiently thin to endure the bending or forming required, such as at the corners of the suitcase, without the occurrence of a blush mark thereat. Thus, the combination of the opaque adhesive and thin outer ply effectively conceals and prevents blush marks from appearing on the visible outer surfaces of the skin.

3,608,683

BICYCLE HUB HAVING A BUILT-IN THREE-STAGE SPEED CHANGE MECHANISM AND EQUIPPED WITH A COASTER BRAKE

Kentaro Fujisawa, Sakai, Japan, assignor to Shimano Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Aug. 22, 1969, Ser. No. 852,239
Claims priority, application Japan, Sept. 18, 1968, 43/67783
Int. Cl. F16h *57/10*
U.S. Cl. 192—6 A **5 Claims**

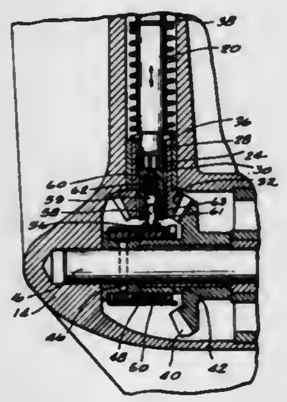


This invention relates to a bicycle hub having a built-in three-stage speed change mechanism, wherein rotation of a driving drum is imparted through separate pawl and ratchet means to an annulus or driven member and to a planet carrier supporting a plurality of planet pinions, and the pawl and ratchet means between said driving drum and said annulus is adapted to impart both forward and backward rotations of the driving drum to the annulus, the mechanism being so improved that the invention exhibits practical effects such as a simple construction, a less trouble and so on.

3,608,684

CLUTCH FOR MARINE PROPULSION DEVICE

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 29, 1969, Ser. No. 872,142
Int. Cl. F16d *11/04, 41/20;* **B63h** *21/28*
U.S. Cl. 192—20 **8 Claims**



Disclosed herein is a marine propulsion device which affords reverse operation by rotation of the drive shaft housing about a vertical axis and which includes a clutch in the lower unit gear case for selectively engaging or disengaging the propeller shaft with the drive shaft. The clutch is responsive to axial movement of the drive shaft caused by moving a control handle accessible to the operator. The drive shaft has splines at each end, which splines permit axial movement of the drive shaft while maintaining a driving connection between the engine output shaft and a first bevel gear in the lower unit gear case. In one embodiment of the invention, the clutch includes a torsion spring which normally grips the hub of a second bevel gear rotatably carried by the propeller shaft to secure the gear to the propeller shaft. Downward axial movement of the drive shaft interferes with rotary movement of the spring with the propeller shaft and thus unwinds the spring to release the grip of the spring on the bevel gear hub to disconnect the second gear from the propeller shaft. In another embodiment, downward movement of the drive shaft causes an axial projection on the lower end of the drive shaft to engage an axially inclined cam surface located on a clutch dog which is splined to the propeller shaft to shift the clutch dog axially and disengage the clutch dog from the bevel gear on the propeller shaft and interrupt transfer of power from the gears to the propeller shaft.

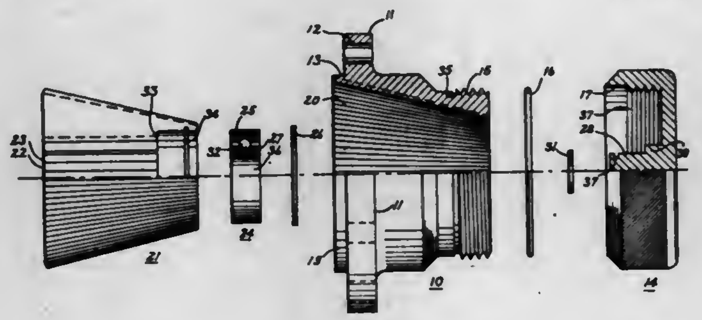
ERRATUM

For Class 192—24 see:
Patent No. 3,608,691

3,608,685

SELECTIVE DRIVE HUB CLUTCH

Glenn W. Childress, 1480 Sumac Ave., Boulder, Colo.
Filed Dec. 2, 1969, Ser. No. 881,496
Int. Cl. F16d *15/00, 17/00, 23/04*
U.S. Cl. 192—94 **6 Claims**

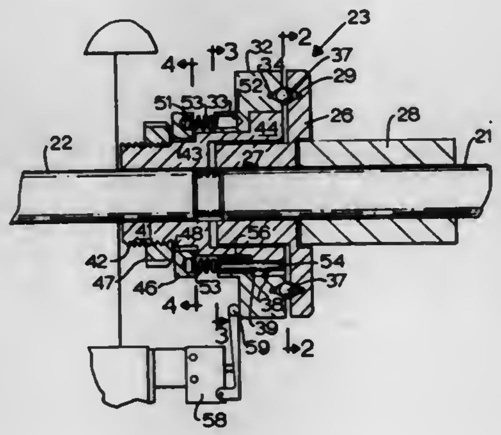


A selective drive clutch for the front wheels of four-wheel drive vehicles comprises inner and outer clutch members having frustoconical interengageable toothed surfaces which are moved into and out of engagement by a closure cap threaded on the outer member, the outer member being securely attached as a hub on the wheel to be driven. A ball bearing assembly or the like mounted on the inner member constitutes an end bearing for the vehicle drive axle when the clutch is disengaged. The entire assembly is locked together by two snap rings one retaining the bearing in the inner member and the other locking the closure cap to the bearing assembly.

3,608,686

AUTOMATIC RELEASE CLUTCH

Thomas B. Martin, Sr., 182 Cross Road, Danville, Calif., and Thomas B. Martin, Jr., 17 Dudley Court, Pleasant Hill, Calif.
Filed Dec. 18, 1969, Ser. No. 886,160
Int. Cl. F16d *43/20, 7/00*
U.S. Cl. 192—150 **7 Claims**

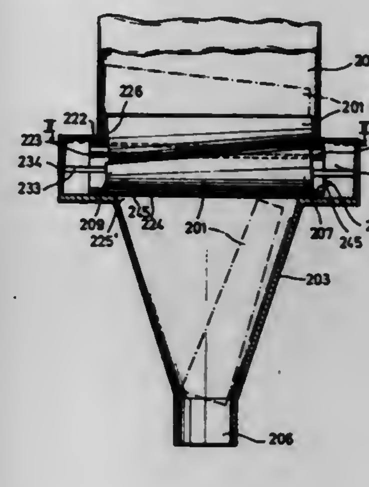


To prevent damage to automatic machine tools wherein a motor is connected to a rotating machine tool part a clutch is interposed which opens by axial movement when the load of springs is exceeded. Axial movement of a clutch element causes a switch to open, thereby deenergizing the motor. The clutch drive comprises two facing disks having holes to receive resilient balls which normally function as keys. When the clutch is overloaded, the disks move apart, permitting the bills to leave the holes and ride in grooves in the disk faces.

3,608,687

APPARATUS FOR ORIENTING TAPERED BOBBINS

Gunter Schulz, Ebersbach, and Gerhard Haussmann, Ebersbach-Sulpach, both of Germany, assignors to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Ebersbach, Germany
Filed June 12, 1970, Ser. No. 45,671
Claims priority, application Germany, June 12, 1969, P 19 29 866.9
Int. Cl. B65g *11/20*
U.S. Cl. 193—43 B **9 Claims**

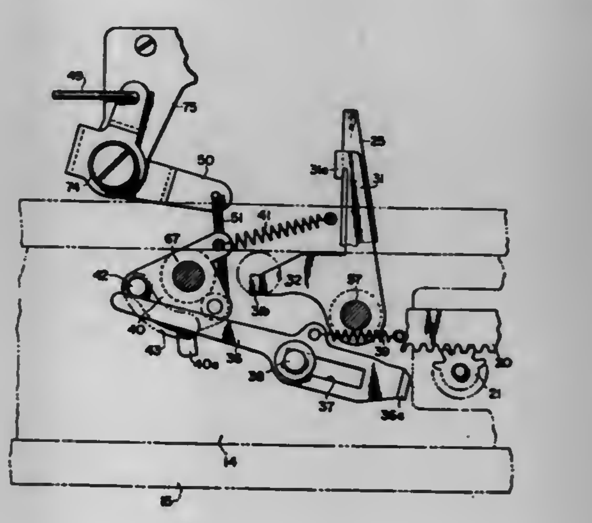


Random-oriented conical bobbins, having a wide end and a narrow end are, one-by-one, positioned over the opening of a discharge chute. A pusher, when moved transversally towards a positioned bobbin, gradually displaces the latter axially in the direction of its narrow end, so that the bobbin falls into said chute wide end first. The displacement of each bobbin is effected by that one of two working edges forming part of said pusher and disposed obliquely with respect to the bobbin length which is adjacent said wide end.

3,608,688

A PARAGRAPH INDENTATION MECHANISM FOR TYPEWRITERS

Yukio Hishida, and Toshio Nakai, both of Nagoya, Japan, assignors to Brother Industries Ltd., Nagoya, Japan
Filed Nov. 25, 1968, Ser. No. 778,489
Claims priority, application Japan, Nov. 25, 1967, 75832/67
Int. Cl. B41j *19/00*
U.S. Cl. 197—82 **11 Claims**



A paragraph indentation mechanism for a typewriter which has an escapement mechanism for controlling the letter-spacing movement of the carriage and which includes a rack mounted on the carriage and also a member pawl mounted on a frame for both pivotal and limited sliding movement in a carriage traveling direction. A special key is operatively connected to the member pawl and the escapement mechanism for engaging the member pawl with the rack and then disabling the escapement mechanism so as to move the carriage with the member pawl. By this mechanism, the carriage is moved in a letter-spacing direction a number of spaces, for example five, from any position where the carriage is retained by the escapement mechanism.

3,608,689

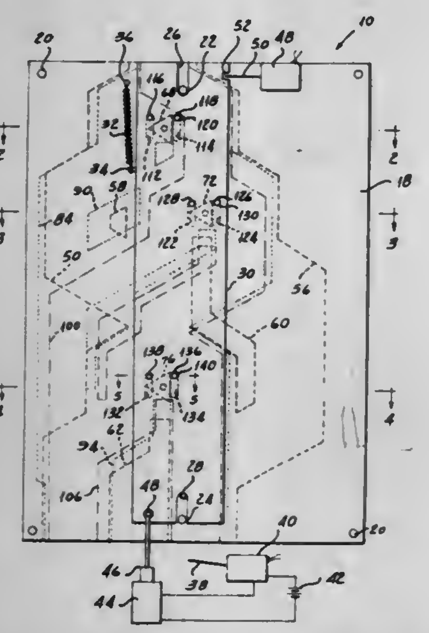
BINARY COIN TOTALIZER

William Rosenhagen, Ossining, N.Y., assignor to Rowe International, Inc., Whippany, N.J.

Filed Sept. 22, 1969, Ser. No. 859,902

Int. Cl. G07f *1/00*

U.S. Cl. 194—1 **14 Claims**



A binary coin totalizer in which a plurality of guide plates are mounted in side-by-side relationship to form branched paths for coins of different denominations. Coin diverters selectively common to branches of the various paths alternatively divert successive coins passing thereby to different branches ultimately to direct all coins saving the last making up the total for which the device is set to a first opening and to direct the last coin out of a second opening to indicate that the total has been deposited in the totalizer.

3,608,690

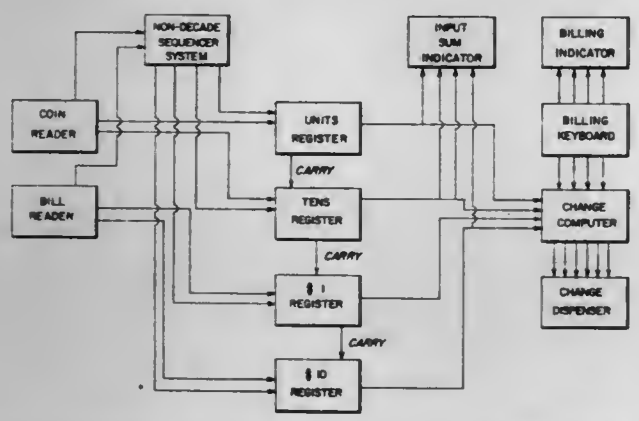
APPARATUS AND METHODS FOR REGISTERING CASH, REGISTERING A SALE, AND AUTOMATICALLY DISPENSING CHANGE

Robert D. Morrow, Baltimore, and Donald E. Miller, Glen Burnie, both of Md., assignors to Technology Systems Incorporated, Cockeysville, Md.

Filed May 26, 1969, Ser. No. 827,675

Int. Cl. G07f *1/06*

U.S. Cl. 194—4 **43 Claims**



Robbery-immune cash-handling system in which bills and coins are received, identified, and registered, the amount of a sale is registered and correct change is automatically computed and disbursed. Multicell magazines are provided for $10, $5, and $1 bills, which are dispensed automatically as change. $1 bills are also loaded automatically. Step switches are employed in a parallel addition technique for registering cash inputs and in a dynamic subtraction technique for computing and dispensing change. Cash reserves are accessible only to authorized personnel.

3,608,691

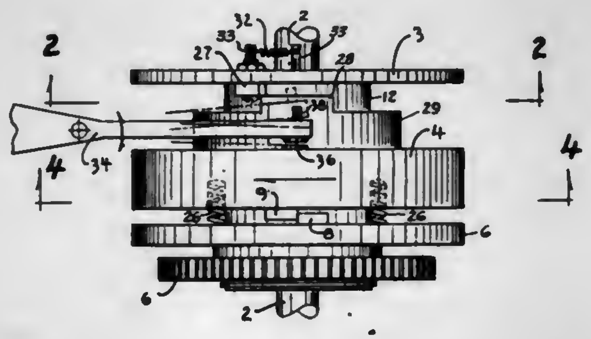
OVERLOAD CLUTCH

Harold J. Rosenberg, 1408 Patuxent Drive, Ashton, Md.

Filed Sept. 23, 1969, Ser. No. 860,379

Int. Cl. F16d *11/04, 43/20*

U.S. Cl. 192—24 **2 Claims**



An improved overload and synchronizing clutch of the type shown in U.S. Pat. No. 3,103,999 obviates a problem of clutch sticking and wear, permits the clutch to be set up for either right-hand or left-hand drive without removing any major parts, and permits rapid change in operating torque range to be made.

3,608,692

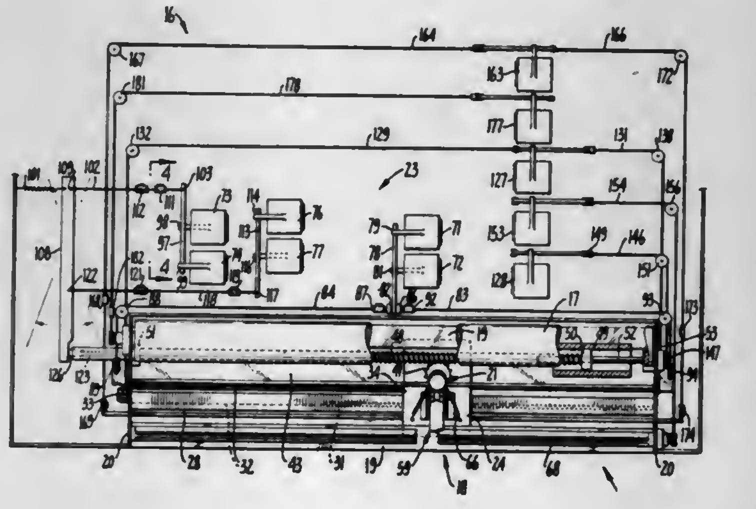
SELECTOR STRUCTURE FOR PRINTING MACHINE

Donald J. Henry, 1454 California St., San Francisco, Calif.

Filed Nov. 22, 1968, Ser. No. 778,183

Int. Cl. B41j *1/26*

U.S. Cl. 197—55 **19 Claims**



A teleprinter for printing characters on a receiving medium in response to a telegraphic code, including a platen, a carriage movable along the platen, a cylindrical type element mounted on the carriage and bearing the print characters embossed thereon in circumferential rows, a worm gear mounted for both rotation and axial motion and a lockable pinion gear meshed with the worm gear so that the combination of the two acts both as a rack and pinion and as a lead screw and follower for rotatably and transversely positioning the type element to select a print character, and a selector mechanism for operating the type positioning means in response to the signals for a decoding and conversion circuit which processes the incoming telegraphic code signal. The type element is mounted on a shaft which is splined through the center of the pinion gear to rotate with the slide axially through the pinion gear. The end of the shaft opposite the type element slides laterally along a vertically movable track. The selector mechanism uses solenoids coupled in combinations to levers which gang the actions of the solenoids to create the motions of the worm gear and the transversely movable track. The type element is struck to print the character by a trigger mechanism cocked and released by an elongated spline, the spline being rotated by a ratchet driven by a solenoid. The decoding and conversion circuit includes a clock for generating time codes which in turn gate a serial to parallel converter. A first set of memory units stores the parallel signal until it is examined to detect nonprinting function characters, and the signal is then gated to a second set of memory units for retention of those portions of the signal which are unchanged from one character to the next, to minimize motion of the type element. A logic circuit recognizes the carriage return instruction, examines the position of the carriage and spaces forward if necessary before returning the carriage, to preserve synchronism. Other logic circuits recognize the spacing, line feed, figures shift and the letters shift instructions and operate solenoids appropriate to lock the pinion gear, shift the worm gear laterally, rotate the worm gear or advance the platen ratchet as necessary. Detection of a function instruction inhibits the gating of the signal into the second set of memory units and inhibits the printing action.

3,608,693

ROLLERS, PARTICULARLY FOR SHOPPING TROLLEYS

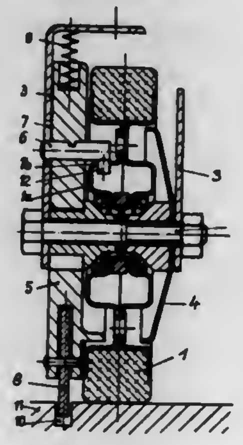
Herbert Stosberg; Horst Fleishmann; Gunter Reinhards, and Engel Siegfried, all of Wermelskirchen-Tente/Rhineland, Germany, assignors to Firm Tente-Rollen Gesellschaft mit beschrankter Haftung Companie, Wermelskirchen-Tente am Rhineland, Germany

Filed Apr. 10, 1969, Ser. No. 814,961

Claims priority, application Germany, Sept. 18, 1968, G 67 51 035

Int. Cl. B60b *33/00*

U.S. Cl. 198—16 **14 Claims**



A roller for a shopping trolley comprises a wheel held rotatably in a fork and having at one side a sensing member which travels over the ground surface with the wheel. When the wheel runs onto a ribbed or grooved surface the sensing member is urged down into a groove, by gravity or by a spring, and in so doing locks the wheel against rotation. The locking of the wheel may be effected by a lug which either enters an aperture in a hub rim of the wheel or engages teeth on the hub. In an alternative the wheel is formed by two wheel discs with a sensing disc situated between them. The sensing disc has a locking cam which can engage a bore in a nonrotatable bearing sleeve of the wheel discs.

3,608,694

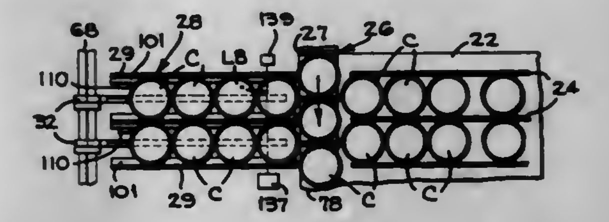
CASING MACHINE

David F. Schlueter, Hoopeston, Ver million, Ill., and Myron C. Noble, South Bend, St. Joseph, Ind., assignors to FMC Corporation, San Jose, Calif.

Filed Sept. 6, 1968, Ser. No. 757,876

Int. Cl. B65g *47/42*

U.S. Cl. 198—21 **5 Claims**



Upright containers are fed into the casing machine from a multiple-lane supply line, assembled into one tier, and the tier is transferred and reoriented by tiering fingers which deposit the containers in a tiering chamber. The open end of an empty case is manually positioned adjacent the tiering chamber, and pusher feet insert the tier in the case. A feature of the casing machine is a rocking differential which smoothly accelerates and decelerates the tiering fingers to prevent damage to the containers. Other features include a timing pin and chain mechanism which can be manually adjusted to control the number of tiers loaded into a case, rapid change structure in the zone where the tiers are assembled so that the machine is readily adaptable to handle a range of container sizes, and a lowerator mechanism under positive mechanical control for gently lowering the loaded cases to a discharge position.

3,608,695

FEED RATE EQUALIZER MEANS

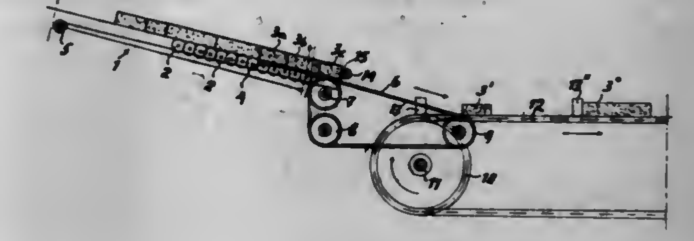
Nils Erik Hellstrom, Nyland, Sweden, assignor to Aktiebolaget Hammars Mekaniska Verkstad, Nyland, Sweden

Filed May 29, 1969, Ser. No. 828,933

Claims priority, application Sweden, Dec. 18, 1968, Feb. 26, 1969, 17319/68;2586/69

Int. Cl. B65g *47/26*

U.S. Cl. 198—26 **1 Claim**



A conveyor assemblage for boards or pieces of lumber for obtaining a uniform flow rate of such items in which means are provided for arresting the boards arriving from a frame saw or the like, and for permitting the boards to arrive at a predetermined position with respect to the lugs of the high-speed conveyor, means are provided for releasing one board at a time, at predetermined time intervals, from the arrested position, accelerating the boards toward the high-speed conveyor and delivering the boards onto the conveyor between the lugs.

3,608,696

PROCESS AND APPARATUS FOR CHEMICAL MILLING

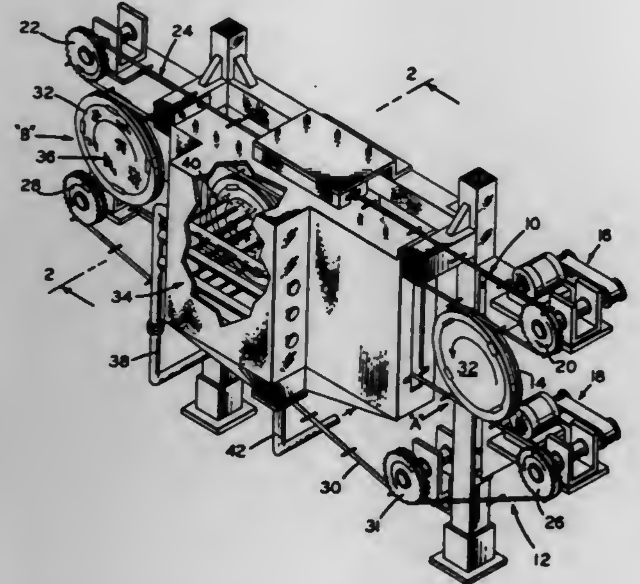
Joseph P. Lagermasini, Towanda, and Leadom A. Warner, Sayre, both of Pa., assignors to Sylvania Electric Products Inc.

Filed Feb. 16, 1970, Ser. No. 11,742

Int. Cl. B65q *15/14;* **B65g** *47/24*

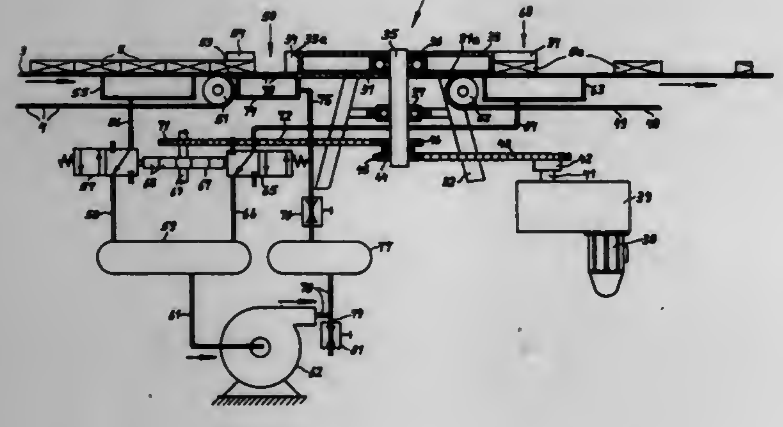
U.S. Cl. 198—33 **7 Claims**

An improved process for selectively etching a pattern into a base material by the photochemical method using a photoresist coating over the base material to enable the exposure of an etching solution to selected portions of the base material wherein the article to be etched is coated with the photoresist material and is thereafter continuously advanced and rotated at relatively uniform rates past a stationary spray of etching solution. A conveying system is also disclosed that is capable of simultaneously rotating and linearly advancing an article. The apparatus comprises a first and second spaced-apart conveyor, a movable article carrier therebetween and in engagement with the conveyors and a driving means for each conveyor. The conveyors comprise a driving sprocket, an idler sprocket and an endless carriage in engagement with the sprockets. The endless carriage comprises a core and substantially equally spaced protrusions extending from each side of the core that engage the toothlike configuration of the periphery of each side of the sprockets. The carriages of each conveyor engages the article carrier to provide the linear movement. Differing the linear speeds or direction of travel of the two carriages enables variations in the rotational and linear movement of the article carrier.



3,608,697
APPARATUS FOR TRANSPORTING CIGARETTE PACKS IN PACKING MACHINES

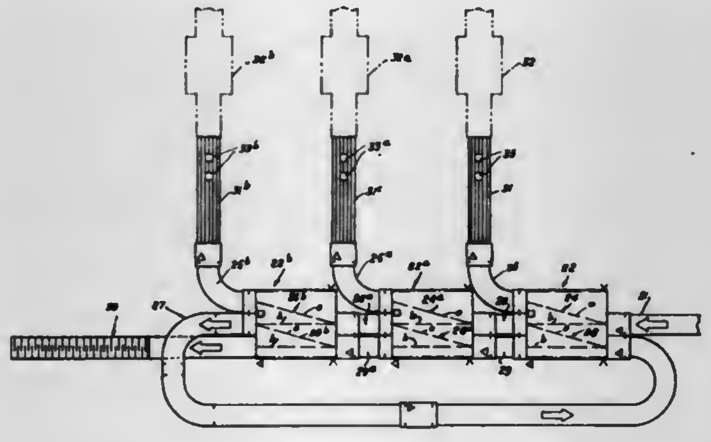
Gunter Wahle, Reinbek; Heinz-Christen Lorenzen, Hamburg, and Anton Baler, Hamburg, all of Germany, assignors to Hauni-Werke Korber & Co. KG., Hamburg, Germany
Filed Feb. 20, 1969, Ser. No. 800,959
Claims priority, application Germany, Feb. 22, 1968, H 65396 VIIb/81a
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **18 Claims**



Apparatus for transporting cigarette packs to or from the cells of a rotary turret in a packing machine comprises a foraminous belt whose upper stretch transports the packs, a chamber adjacent to the underside of the upper stretch and having an open upper side which is overlapped by the belt, and a blower which circulates air through the chamber and the perforations of the belt, either in a direction to evacuate air from the chamber whereby the packs which travel with the upper stretch are drawn against the belt during travel along the open side of the chamber, or in a direction to expel air from the chamber and through the perforations of the belt so that such air forms a cushion which reduces friction between the upper stretch and the packs.

3,608,698
CONVEYOR SYSTEM AND SWITCH CONVEYOR

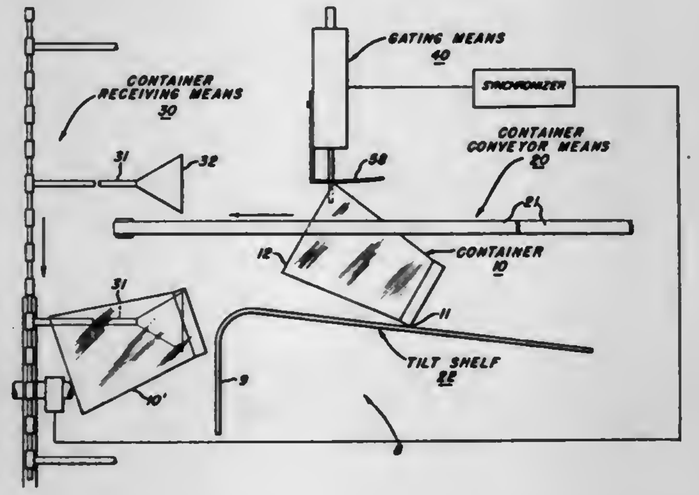
Russell D. Crall, Dallas, Tex., assignor to Stewart Engineering & Equipment Company, Richardson, Tex.
Filed May 26, 1969, Ser. No. 827,628
Int. Cl. B65g *37/00*
U.S. Cl. 198—81 **18 Claims**



A conveyor system having a plurality of switch conveyors for selectively moving articles delivered by a delivery conveyor to a plurality of spaced locations or stations and to a recirculating conveyor if all the stations are not in condition to accept the articles, the recirculating conveyor moving the articles back to the switching conveyors. A switching conveyor usable in the system which has a pair of parallel switch means which are movable to deliver the articles delivered thereto selectively to two different locations.

3,608,699
CONTAINER TRANSPORT APPARATUS

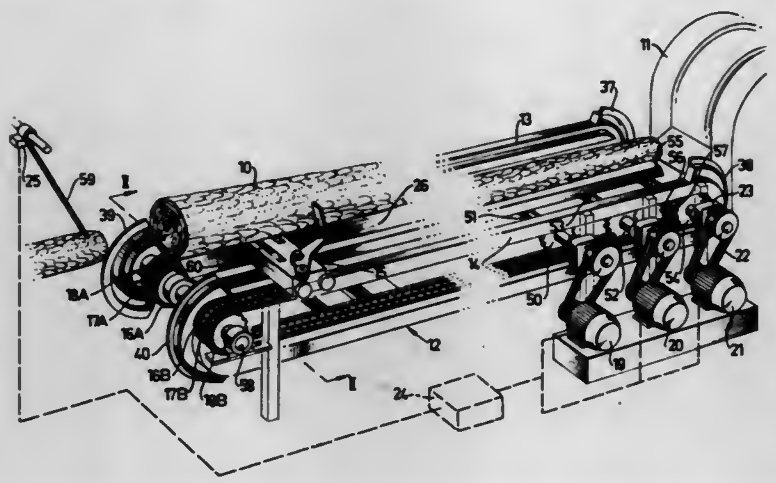
Arthur A. Voris, Jr., Inglewood, Calif., assignor to Standard Oil Company, Chicago, Ill.
Filed Apr. 10, 1969, Ser. No. 815,081
Int. Cl. B65g *37/00*
U.S. Cl. 198—102 **4 Claims**



The disclosure describes a container transport apparatus comprising conveyor means for conveying containers along a predetermined path, container-receiving means positioned at the end of the conveyor means, and gating means, positioned in advance of the container-receiving means and above the path of the containers. The gating means is in synchronization with the container-receiving means thereby effecting a continuous flow of containers from the conveyor means to the receiving means.

3,608,700
INFEED CONVEYOR

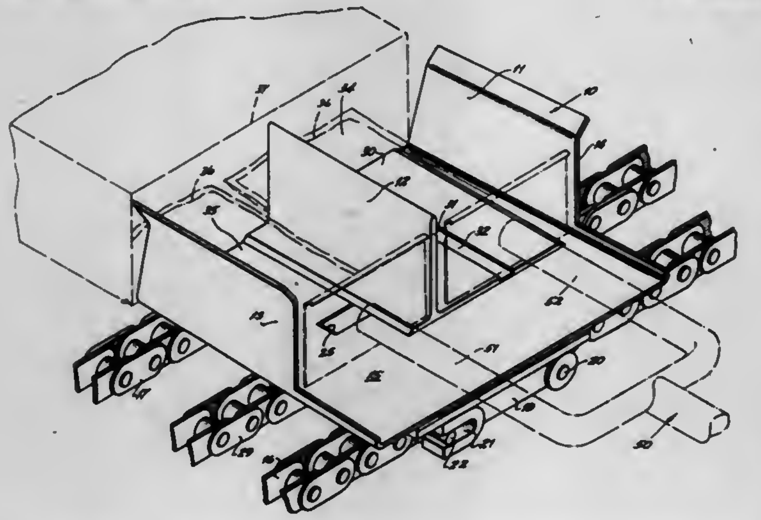
Philip Nilsson, Soderhamn, Sweden, assignor to Kockum Soderhamn Aktiebolag, Soderhamn, Sweden
Filed Dec. 12, 1969, Ser. No. 884,654
Int. Cl. B65g *15/00*
U.S. Cl. 198—179 **8 Claims**



An infeed conveyor for feeding elongated material such as logs or blocks into a sawing machine, a logging machine or the like. The infeed conveyor is provided with carriages guided in an endless path for carrying one end of a log or block to a sawing or logging machine and then returning to a standby position. According to the invention, the infeed conveyor comprises at least two independently driven endless conveyor means disposed in parallel, e.g., in the form of conveyor chains arranged in pairs. Each of the conveyor means is arranged to drive one of the carriages that carry one end of a log or block. Beneath the path of movement of the carriages there is provided a trough for guiding the other end of each conveyed log or block in a longitudinal direction in a centered position relative to a central, vertical and longitudinal plane through the infeed conveyor. In addition, each carriage is provided with a centering member for centering and holding the ends of the logs which are carried thereby in the longitudinal central plane. Finally, the infeed conveyor is provided with control means for controlling the driving of the carriages in dependence upon the advance of the logs to the conveyor.

3,608,701
PRODUCT BUCKET FOR CARTONING MACHINE

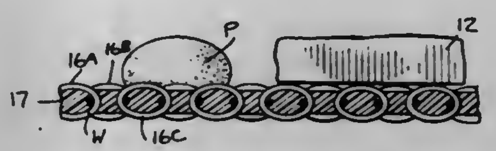
Julian A. Dieter, Cincinnati, Ohio, assignor to R. A. Jones and Company, Inc., Covington, Ky.
Filed June 3, 1969, Ser. No. 830,064
Int. Cl. B65g *17/12*
U.S. Cl. 198—189 **10 Claims**



A product bucket for an automatic cartoning machine having a channel-shaped element adapted to be carried by a first conveyor chain and an adjustable divider element mounted on said channel-shaped element and adapted to be carried by a second conveyor chain, the conveyor chains being adjustable with respect to each other to vary the position of the divider element with respect to the channel-shaped element.

3,608,702
CONVEYOR BELT

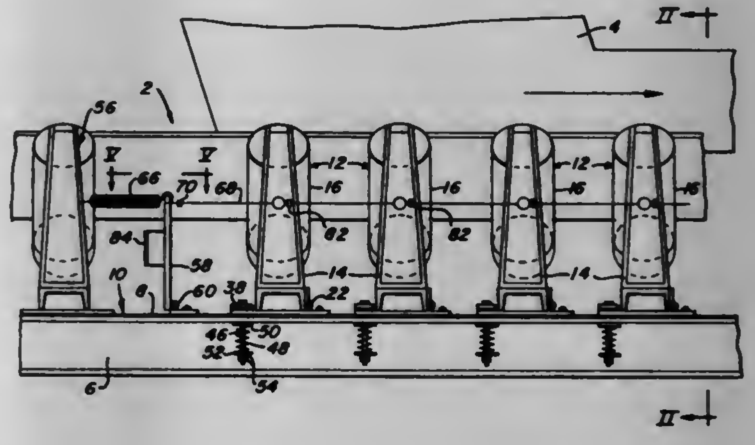
Joseph Fraioli, Sr., 300 Martin Ave., White Plains, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,645
Int. Cl. B65g *15/42*
U.S. Cl. 198—193 **7 Claims**



A conveyor belt for transporting impressionable articles such as baking dough without sticking or slippage, the face of the moving belt slidably engaging the undersurface of rails or other fixed elements. The belt is constituted by a reinforcing core of interlinked wire coils or woven wire mesh having a low coefficient of friction, almost entirely embedded in a layer of silicone rubber or other nonadhesive material having a high coefficient of friction, whereby only the upper points of the core are exposed. These points make contact with the undersurface of the rails to facilitate a sliding action therebetween, whereas the articles are impressed by the points and mainly engage the high drag surface of the layer.

3,608,703
CONVEYOR BELT PROTECTION DEVICE

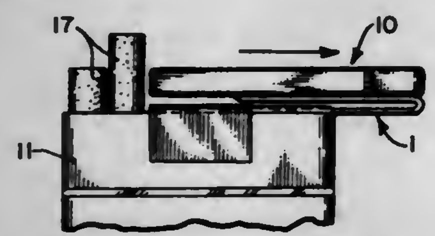
Frank J. Hitchcock, and William L. Jones, both of Lander, Wyo., assignors to United States Steel Corporation
Filed Apr. 8, 1970, Ser. No. 26,486
Int. Cl. B65g *43/02*
U.S. Cl. 198—232 **8 Claims**



A belt conveyor has a table on which are pivotally mounted one or more idler roll assemblies in the loading zone. These assemblies have limited tilting movement away from the direction of belt approach with the tilting movement being resisted by springs. Under normal conditions there is no tilting movement, but under abnormal loads the assemblies tilt and stop the conveyor.

3,608,704
COMBINED CIGARETTE LIGHTER CASING AND SLIDABLE CLOSURE

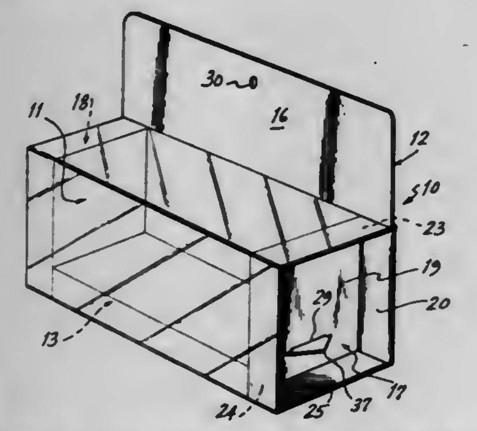
Yvette Boasso Kopp, 856 Hidalgo St., New Orleans, La.
Continuation-in-part of application Ser. No. 734,844, June 4, 1968, now abandoned , Continuation-in-part of application Ser. No. 734,846, June 4, 1968, now abandoned. This application June 6, 1969, Ser. No. 831,137
Int. Cl. A24f *15/00;* **B65d** *85/10*
U.S. Cl. 206—41.3 **2 Claims**



A combined cigarette lighter casing and attachment clasp which slidably engages the top portion of a cigarette pack to provide a convenient placing of the lighter and a slidable closure for the pack.

3,608,705
DISPLAY PACKAGE

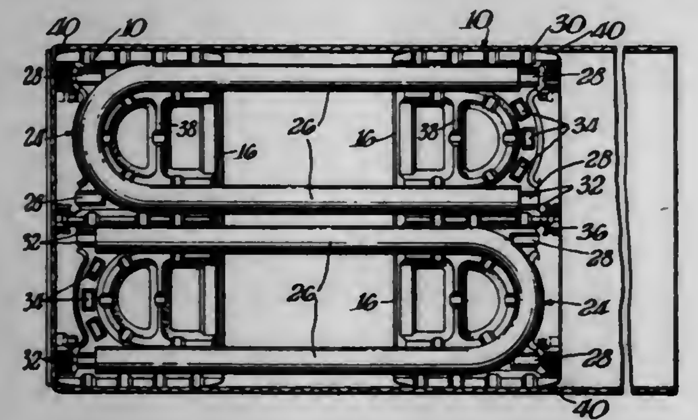
Martin B. Moshel, Westwood, N.J., assignor to Miner Industries, Inc., New York, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,644
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.31 **5 Claims**



A display package includes a laterally extending, open-ended transparent sleeve of rectangular cross section to contain an article to be displayed in the package, and a support of cardboard or other flexible sheet material having a back panel extending along length of the sleeve in back of the latter, and preferably projecting above the sleeve, and extensions foldably joined to the ends of the back panel and folded into the adjacent ends of the sleeve to constitute end walls for the sleeve and to mount the sleeve on the support.

3,608,706
TRAY FOR PACKAGING U-SHAPED BULBS

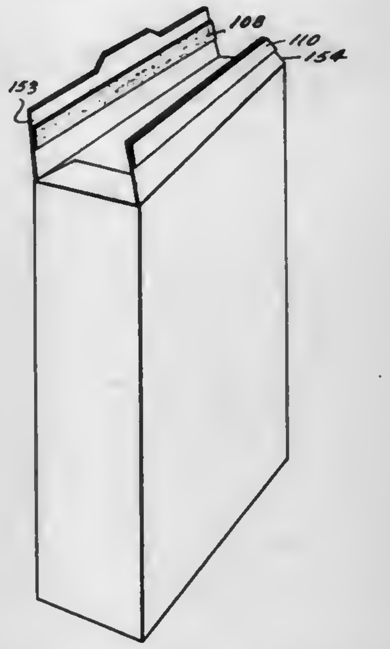
Henry R. Vigue, Waterville, assignor to Keyes Fibre Company, Waterville, Maine
Filed Oct. 16, 1969, Ser. No. 866,947
Int. Cl. B65d *43/02*
U.S. Cl. 206—46 FR **13 Claims**



A molded tray for packaging U-shaped bulbs includes a bottom wall having upwardly extending sidewalls which terminate in a peripheral rim. At least one U-shaped bulb-receiving pocket is on the bottom wall with the legs of the pocket terminating at the rim and the bight of the pocket terminating short of the rim. Upstanding crushing resistance means or ribs are on the bottom wall to define the U-shaped pocket. A plurality of spaced resilient pads are in the U-shaped pocket and extend above the bottom wall a lesser amount than the crushing resistance ribs.

3,608,707
PACKAGE CLOSURE

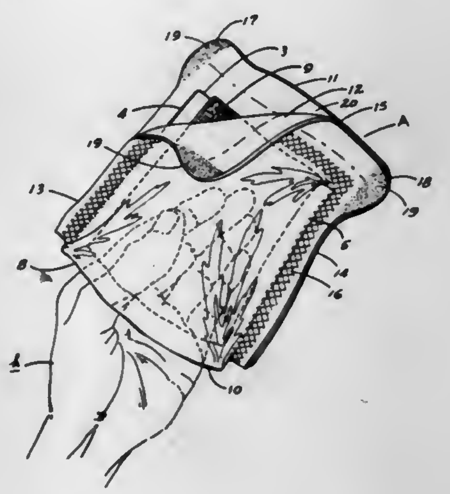
Harmon B. Miller, Atlanta, Ga., assignor to Reclosable Package, Atlanta, Ga.
Continuation-in-part of application Ser. No. 795,586, Jan. 31, 1969, now abandoned. This application Sept. 11, 1969, Ser. No. 857,036
Int. Cl. B65d *27/16, 77/12, 85/00*
U.S. Cl. 206—46 F **15 Claims**



A tape comprising two layers of flexible sheet material bonded together by pressure-sensitive adhesive. The outer surfaces of the sheet material are coated with a permanent-type adhesive such as a heat seal material. The tape is heat sealed between facing members of a package closure. Access to the package is gained by separating the sheet members and the package can be reclosed by means of the pressure-sensitive adhesive.

3,608,708
APPLICATOR MITT

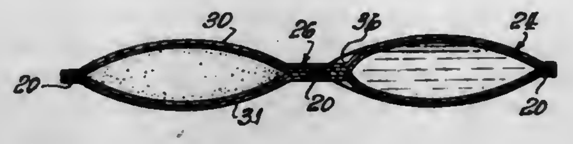
Duane L. Storandt, 8744 Rankin, Brentwood, Mo.
Filed Oct. 8, 1969, Ser. No. 864,608
Int. Cl. A47l *13/19;* **B65d** *85/00*
U.S. Cl. 206—46 R **6 Claims**



An applicator mitt having a normally open chamber for receiving the user's hand, a treated pad attached to the exterior portion of said hand chamber, and protective covers jointed to the opening adjacent margin of said chamber and detachably connected along their remaining confronting margins for enclosing said pad when connected and forming a gauntlet when detached; there being retainer members formed with said covers for securing same into both positions.

3,608,709
MULTIPLE COMPARTMENT PACKAGE

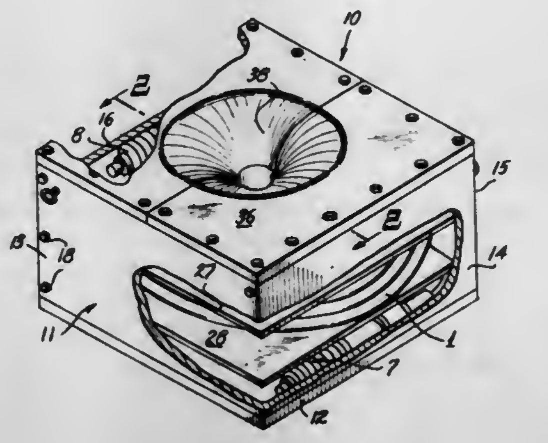
Brian R. Pike, Sylmar, Calif., assignor to V. Wayne Rogers, Pasadena; William S. Schneider, Glendale and Carl F. Schneider, Peninsula, all of, Calif., part interest to each
Filed Sept. 8, 1969, Ser. No. 856,099
Int. Cl. B65d *79/00*
U.S. Cl. 206—47 A **19 Claims**

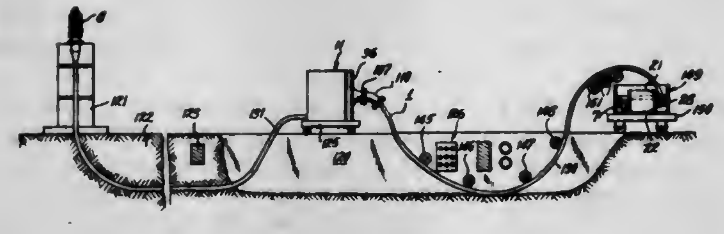


A multiple-compartment laminated package is provided which is suitable for holding in separate compartments different substances which can be mixed together within the package upon breaking the barrier between the separate compartments. This barrier can be broken by the application of external pressure to the package which applies tension to an inner layer of the outer wall of the package, such rupture of the inner layer taking place at a controlled location by virtue of a reduction in the bond strength between the inner layer and the next adjoining layer of the outer wall of the package.

3,608,710
HIGH VOLTAGE CABLE SYSTEM WITH FACTORY INSTALLED POTHEADS AND METHOD OF INSTALLING SAME

Paul F. Pugh, 4082 Sequoyah Road, Oakland, Calif.
Filed Nov. 20, 1968, Ser. No. 777,415
Int. Cl. B65d *85/04;* **B65h** *49/00;* **H02g** *1/06*
U.S. Cl. 206—52 W **13 Claims**

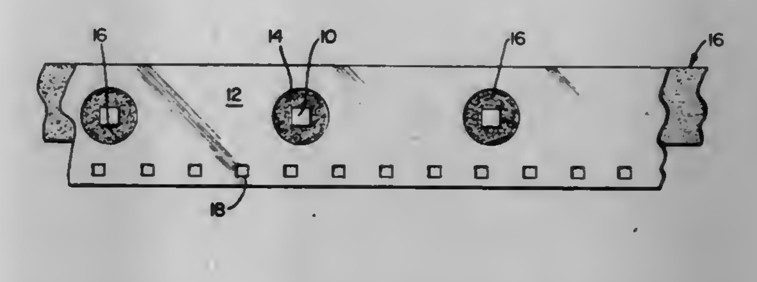




The high-voltage cable system and its preattached potheads facilitate installation of cable in underground work. The method of installation using the improved cable package of this invention permits rapid installation without the necessity of expensive field splicing of the cable to the pothead. Pressure accumulators located within the potheads maintain a positive pressure in the cable system to avoid contamination of the insulating oil. A unique oil submerged, ultrashort pothead and automatic oil purifier form another feature of the system.

3,608,711
PACKAGE FOR ELECTRONIC DEVICES AND THE LIKE

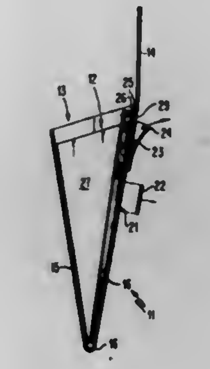
Mordechai Wiesler, Lexington, and John S. MacIntyre, Lynnfield, both of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.
Continuation-in-part of application Ser. No. 665,635, Sept. 5, 1967, now Patent No. 3,497,948, dated Mar. 3, 1970, and a continuation-in-part of 785,209, Dec. 19, 1968. This application Oct. 6, 1969, Ser. No. 866,793
Int. Cl. B65d *85/30, 73/02*
U.S. Cl. 206—56 A **11 Claims**



Small, fragile products such as transistors, diodes and integrated-circuit dice are packaged on a tape which may be indexed through various production stages. The tape is formed with spaced apertures closed on one side by means of a pressure-sensitive adhesive wall bonded to one side of the tape. Devices are dropped onto the wall and adhere thereto. Sprocket holes are formed along the marginal edge of the tape for engagement with an indexing drive mechanism.

3,608,712
WASTE RECEPTACLE

Wilfred R. Savoie, 9 Martin Road, Poughkeepsie, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,795
Int. Cl. B65d *5/60*
U.S. Cl. 206—57 A **2 Claims**



A reusable waste receptacle includes: an outer container having foldable sidewalls and a bottom V-shaped in cross section; and, in inner array of disposable bags in vertically disposed relation, the innermost bag resting against the rear wall of the container, the outermost bag covering the remaining bags, and when in use being supported by the V-shaped bottom of the outer container. An interlockable lid holds the container in compact closed position. When opened, however, the container snaps open and the outermost bag folds into place. Adhesive strips on the container and a removable punch in the rear wall of the container allow same to be held by or affixed to a supporting means.

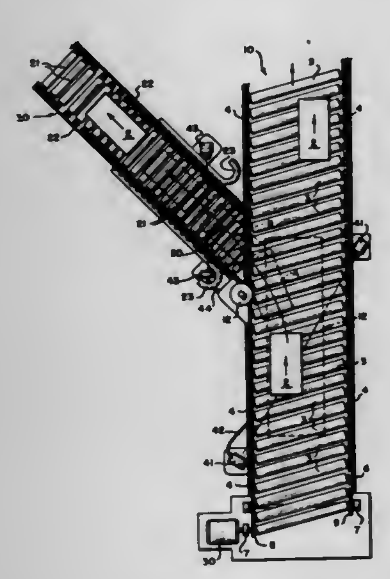
3,608,713
SKEWED ROLL SORTATION SYSTEM

Peter F. Crosby, Cazenovia, N.Y., and John H. Lawrence, Decatur, Ga., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 886,052

Int. Cl. B07c *5/00*

U.S. Cl. 209—74 **9 Claims**



A sortation conveyor system for selectively distributing articles from a main conveyor to one or more branch conveyors including a main conveyor equipped with a moving bed of freely rotating rollers skewed in the general direction of the branch conveyor and a drive element selectively engageable with the skewed rollers upstream of the branch conveyor to cause rotation thereof and movement of the overlying articles laterally toward the branch conveyor.

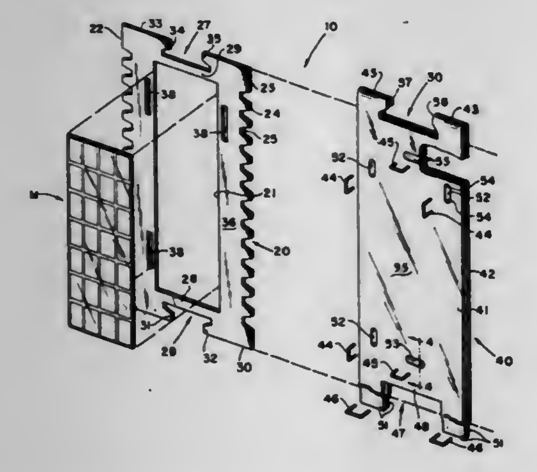
3,608,714
INFORMATION STORAGE AND RETRIEVAL SYSTEM

David Cox, Stratford, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 13, 1970, Ser. No. 36,822

Int. Cl. B07c *3/20*

U.S. Cl. 209—80.5 **20 Claims**



An information unit is provided which comprises a substantially rectangular plate and a carrier therefor. The plate has a arrangement, of opposite longitudinal edges which are encoded with identifying notch and land configurations. The opposite end portions of the plate are shaped to respectively define a pair of opposed hooklike members. The carrier has a pair of opposite walls between which are sandwiched the faces of the plate. The plate and the carrier are connected in sliding relation for parallel movement in opposite directions between a first relative position wherein the identifying configurations and only the first of the hooklike members are exposed and a second relative position wherein the identifying configurations and only the second of the hooklike members are exposed.

Information units of the type described are vertically supported in a stacked arrangement with each respectively connected plate and carrier disposed in its first relative position, by an information unit retrieval apparatus. Undesired ones of the respectively connected plates and carriers are moved from their first relative position to their second relative position in response to actuation of a carrier moving assembly and individual members selectively engageable with the corresponding notches in each of the arranged plates. Desired ones of the respectively connected plates and carriers remain in their first relative position as those lands of the former that would ordinarily be engaged by the members are removed. Thereafter, a pair of opposed movable bars are brought into engagement with the first of the exposed hooklike members to affirmatively extract the desired information units from the arrangemn, while another pair of opposed movable bars, brought into engagement with the second of the exposed hooklike members, affirmatively hold the undesired information units in the arrangement.

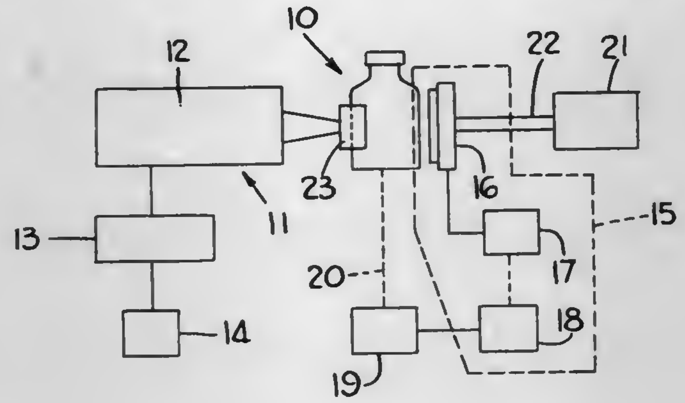
3,608,715
METHOD AND APPARATUS FOR INSPECTING LIQUIDS

Herbert C. Snyder, Brockway; Lewis W. McFadden, Brockway; Clyde W. Dickey, State College, and Louis V. Mancuso, Reynoldsville, all of Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Filed Feb. 6, 1970, Ser. No. 9,236

Int. Cl. G01n *29/02*; B07c *5/34*

U.S. Cl. 209—111.9 **16 Claims**



A method and apparatus for detecting particulate matter in liquids in closed containers wherein ultrasonic energy is introduced to the liquid while in the container, for a predetermined time interval at a frequency and intensity sufficient to produce cavitation in a contaminated liquid but not in an uncontaminated liquid. The occurrence of cavitation is determined by the detection of high frequency noise. Ultrasonic energy at a frequency of about 65–90 kilocycles and duration of about 10 milliseconds is provided by a driving transducer including piezoelectric elements which are excited by a broad frequency band generator under control of a pulse generator. Cavitation noise, in the megacycle range and indicative of contamination, is detected by a pickup transducer comprising a drum-face-shaped element of sound transmitting material having a piezoelectric element attached to one side thereof. An output electrical signal is amplified and then can provide a visual or audible indication as well as activate a reject mechanism. In a preferred arrangement, the container bottom is supported on the pickup transducer which is apertured to allow passage therethrough of an end of the driving transducer, both transducers being supported in an hydraulic liquid in a self-leveling arrangement whereby regardless of the curvature of the container bottom, intimate contact is achieved between the container bottom and both transducers.

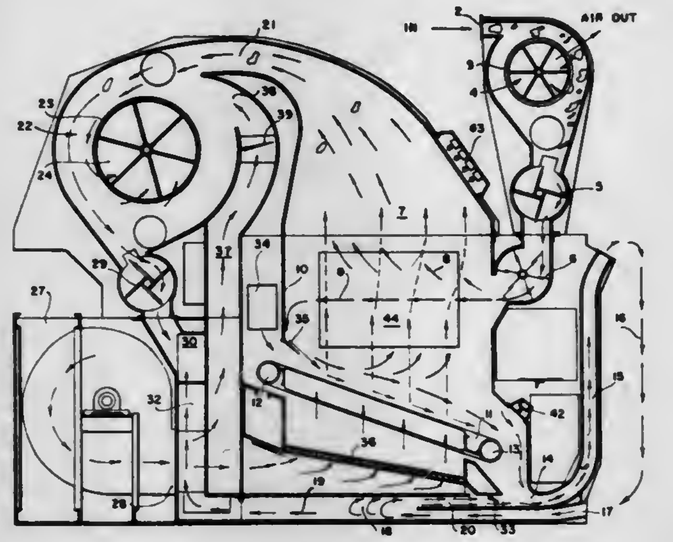
3,608,716
RECIRCULATING PNEUMATIC SEPARATOR

Lorne A. Rowell, Lachine, Quebec, and Peter A. Tillich, Montreal, Quebec, both of Canada, assignors to Imperial Tobacco Company of Canada Limited, Montreal, Quebec, Canada

Filed Jan. 27, 1969, Ser. No. 794,000

Int. Cl. B07b *4/08*

U.S. Cl. 209—139 R **11 Claims**



This invention relates to a recirculating pneumatic separator which is particularly designed for separating threshed tobacco leaves form the heavier tobacco parts. The lighter tobacco fraction is carried up by air which is recirculated through the separator and the heavier tobacco function falls to an endless belt and is separately conveyed out of the separator. Means is provided for accurately controlling the air velocity in the separation chamber and for ensuring complete separation of the tobacco fractions by means of an air jet impeller.

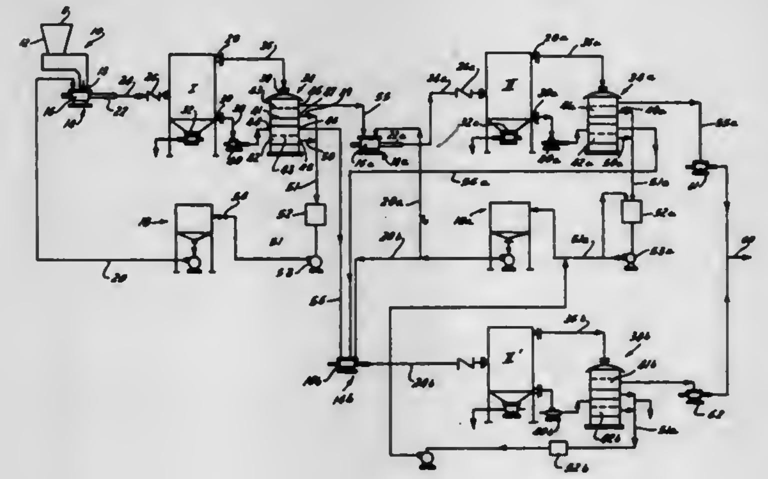
3,608,717
METHOD AND APPARATUS FOR THE LIQUID SEPARATION OF A MIXTURE OF MATERIALS

David G. Strubel, Jeffersontown, and Nicholas E. Ludwig, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation-in-part of application Ser. No. 750,131, Aug. 5, 1968, now abandoned. This application July 1, 1969, Ser. No. 838,158

Int. Cl. B03b *3/40*

U.S. Cl. 209—172 **4 Claims**



Method for separating particles of different specific gravities and absorption characteristics in a heavy liquid medium.

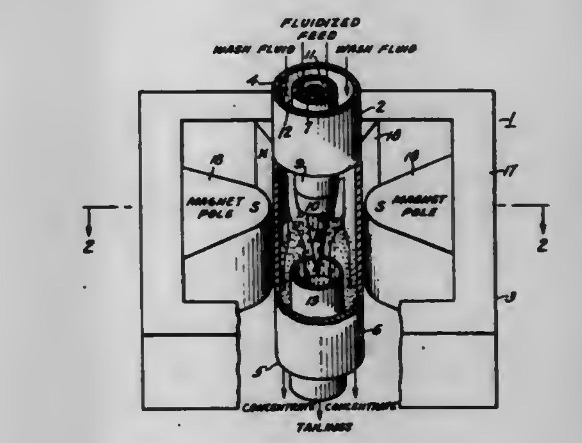
3,608,718
MAGNETIC SEPARATOR METHOD AND APPARATUS

William M. Aubrey, Jr., Bethlehem; Janusz M. Karpinski, Bethlehem, Pa.; David S. Cahn, Upland, Calif., and Conrad J. Rauch, Acton, Mass., assignors to Bethlehem Steel Corporation

Continuation-in-part of application Ser. No. 676,297, Dec. 8, 1967, now abandoned. This application Dec. 20, 1968, Ser. No. 804,336

Int. Cl. B03c *1/14*, *1/26*

U.S. Cl. 209—214 **37 Claims**



Radial magnetic field is applied in tube from a source surrounding tube. Magnetic field is applied in either a static, pulsating, or alternating mode. A first baffle divides tube inlet into feed inlet receiving fluidized material and surrounding coaxial passage receiving wash fluid. A second baffle spaced downstream of the first baffle divides tube outlet into tailings discharge and surrounding coaxial concentrate discharge. Magnetic and magnetizable particles are attracted outwardly between baffles from central fluidized material stream and leave as a concentrate discharged with wash fluid. Nonmagnetic particles in central fluidized material stream leave tailings discharge. Fluid stream within tube has no outward radial components and may have inward radial components.

3,608,719
SELF-SUPPORTING SCREENS FOR STONE, ORE AND LIKE MATERIAL

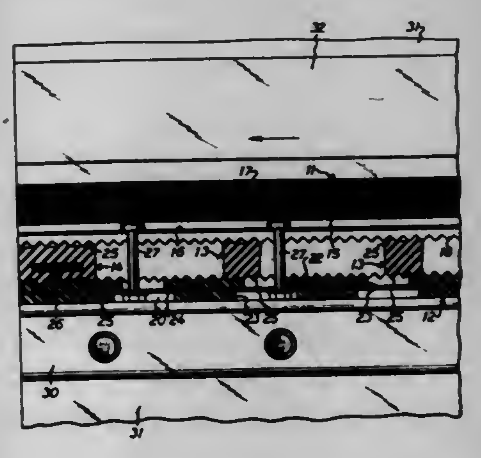
Bengt Lars Arne Dehlen, Trelleborg, Sweden, assignor to Trelleborgs Gummifabriks Aktiebolag

Filed Mar. 11, 1969, Ser. No. 806,242

Claims priority, application Sweden, Mar. 14, 1968, 3351/68

Int. Cl. B07b *1/04*

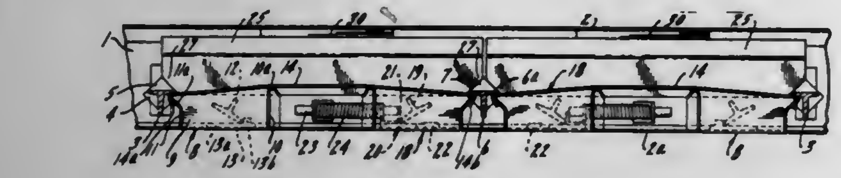
U.S. Cl. 209—394 **4 Claims**



A self-supporting screen for sorting stone, ore and like material having apertures of adjustable size. Two crossed sets of bars are detachably clamped together to form screen lattice. The rods are coated with a wear-resistant natural or synthetic rubber, and at least the bars in one rod set are reinforced to impart self-supporting ability to the screen. The bar sets have cooperating ridges and toothlike projections to fix the positions of the bars in the two bar sets in relation to each other. One bar set may then be displaced with respect to the other bar set utilizing the cooperating ridges and projections to provide a screen having apertures of adjustable size.

3,608,720
SCREEN-CLOTH-SECURING MEANS

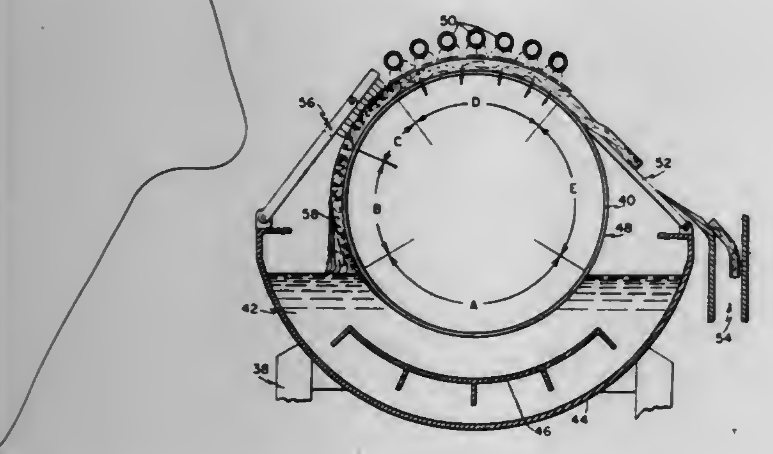
Edgar P. Symons, Hollywood, Calif., assignor to Symons Brothers Co., North Hollywood, Calif.
Filed May 7, 1969, Ser. No. 822,611
Int. Cl. B07b *1/46*
U.S. Cl. 209—405 **7 Claims**



A screen-cloth-tensioning device in which cloth is tensioned, and in which the operator can work within the periphery of the screen in applying or removing tensioned screen cloth, so that it is possible to work down through a multideck screen structure, the work being done primarily within the periphery of the screen.

3,608,721
METHOD FOR FILTRATION OF SLURRIES

Edwin B. Lopker, Fort Lauderdale, Fla., assignor to Pullman Incorporated, Chicago, Ill.
Filed Mar. 11, 1969, Ser. No. 806,087
Int. Cl. B01d *25/28*
U.S. Cl. 210—66 **4 Claims**

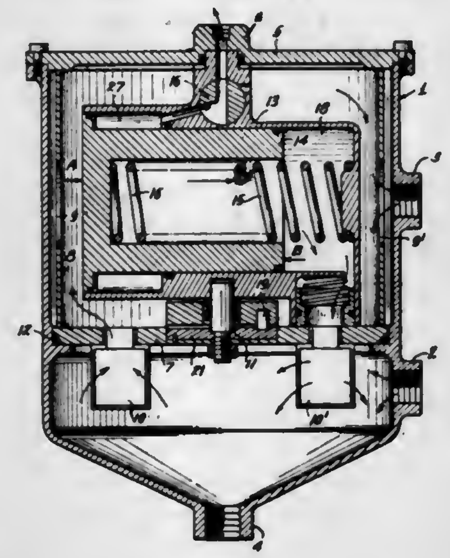


This invention concerns a process and apparatus for filtering slurries and efficiently washing the filter cake. More specifically, the invention provides for mechanically raking the surface of the filter cake to loosen particles therefrom. The loosened particles are entrained by a wash liquid or other fluid applied subsequent to the raking step; the entrained particles tend to occlude cracks in the filter cake, thereby eliminating preferential fluid flow through such cracks.

3,608,722
FILTER HAVING AUTOMATIC MEANS ACTUATED BY DIFFERENTIAL PRESSURE, WHICH MEANS ARE EASILY ACCESSIBLE

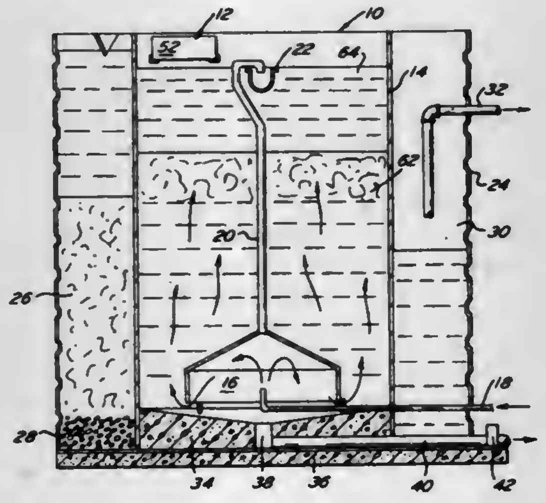
Marcel Picard, Rue Pasteur, Saint-Aigulin, Charente Maritime, France
Filed Jan. 21, 1969, Ser. No. 792,696
Claims priority, application France, Jan. 22, 1968, 137,139
Int. Cl. B01d *29/38*
U.S. Cl. 210—108 **4 Claims**

Filter comprising a plurality of filtering elements and having a self-cleaning device consisting of a differential piston cooperating with a pivotally mounted cylindrical body, said piston controlling a distributing spigot whereby to insure the cleaning of one filtering element in turn among said multiple filtering elements when moving in one direction and the pivoting of said cylindrical body upon its return in the other direction.



3,608,723
FLOC BLANKET LEVEL CONTROLLER COMPRISING MEANS FOR SENSING LIGHT DIFFUSELY REFLECTED FROM THE FLOC BLANKET

David Brown, Lansdale, Pa., assignor to Met-Pro Water Treatment Corp., Lansdale, Pa.
Filed Dec. 5, 1968, Ser. No. 783,171
Int. Cl. C02c *1/20;* **B01d** *21/24;* **G01n** *21/26*
U.S. Cl. 210—114 **6 Claims**

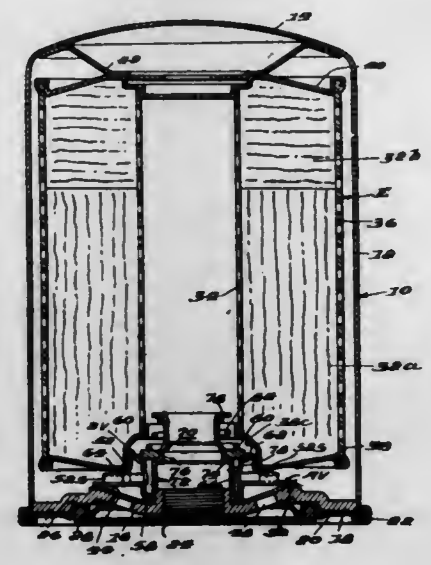


A sensor based on light reflectance is disclosed for detecting when a hydraulically suspended interface, such as a floc blanket in an upflow clarifier, has reached a predetermined level at which point a control valve(s) is operated to lower the floc blanket level by automatically directing that a predetermined quantity of the solids/liquid slurry be removed from the system.

3,608,724
OIL FILTERS WITH FRONT-END BYPASS VALVE

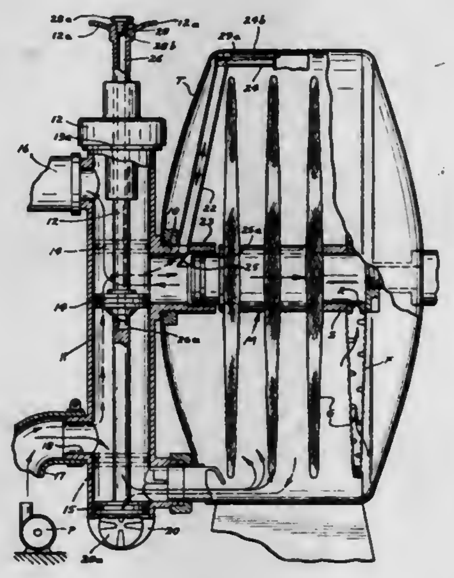
Jesse A. Baldwin, Kearney, Nebr., assignor to J. A. Baldwin Manufacturing Company, Kearney, Nebr.
Filed Jan. 7, 1970, Ser. No. 1,238
Int. Cl. B01d *35/14, 27/10*
U.S. Cl. 210—130 **7 Claims**

An oil filter incorporating a front-end bypass valve interposed between the baseplate providing the front or bottom closure of the filter shell and a filter element contained therein. Said bypass valve is so constructed as to provided a relatively elongated and unobstructed annular oil flow channel therethrough which at its lower end is in full open communication with the interior space of the filter adjacent its lower, oil-entering end and whose upper end connects to the oil outlet opening of the filter via a ring valve which is urged to its seated, channel-closing position by a spring reactive against its upper face. The arrangement is such that when oil pressure within the interior space of the filter, and which is always effective on the under face of the ring valve, exceeds the seating force exerted by said spring on the upper face thereof, due to normal oil flow through the filter element being restricted because of clogging or the oil being too viscous as to readily flow therethrough, the bypass valve provides an alternate path of oil flow between the filter oil inlet and filter oil outlet openings, which path is characterized by a minimum obstruction and is further sufficiently elongated as to reduce restriction of oil flow due to turbulence caused by change of oil flow direction.



3,608,725
AUTOMATIC, SELF-CLEANING AIR RELIEF SYSTEM FOR DIATOMACEOUS EARTH FILTER TANKS

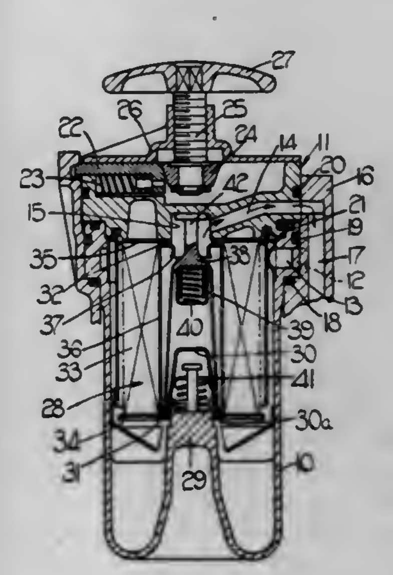
William A. Oden, Temple City, Calif., assignor to Domain Industries, Inc., New Richmond, Wis.
Filed Oct. 13, 1969, Ser. No. 865,730
Int. Cl. E04h *3/16*
U.S. Cl. 210—169 **5 Claims**



A system and apparatus for combination with conventional water filter systems for pools and the like which continually relieves accumulation of air in the filter tank and redistributes such air to the pool or other reservoir. The system employs an upwardly extending air withdrawal passage filtered at its upper end for entrance of air at the top of the filter tank, and having communication at its lower end with the effluent discharge or water stream emanating from the manifold or other main discharge of cleansed water from the filter tank. The apparatus also preferably includes a water diverting means for deflecting water through the air withdrawal passage in backwash operation of the general filtering system to thus clean the filter of the air withdrawal passage.

3,608,726
LIQUID-FILTERING EQUIPMENT

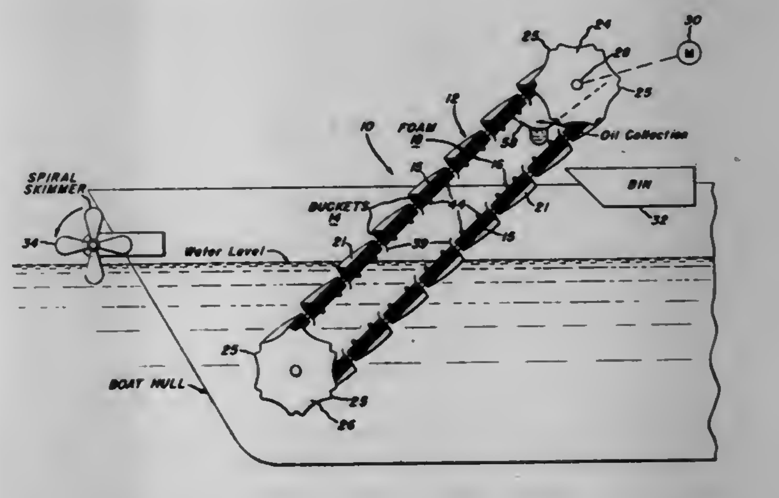
Harold Crowther, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Mar. 17, 1969, Ser. No. 807,497
Int. Cl. B01d *35/02*
U.S. Cl. 210—234 **13 Claims**



A filter has a cup-shaped housing, which includes a liquid inlet, and a lid which includes a liquid outlet. The liquid inlet opens tangentially into a groove around the interior of the mouth of the housing. A baffle covers the groove opening and itself has openings through which the liquid passes. A filter element is mounted centrally within the housing and is surrounded by a sleeve which directs the liquid entering through the baffle towards the closed end of the housing before it passes through the filter to the outlet.

3,608,727
APPARATUS FOR REMOVING OIL AND DEBRIS FROM WATER

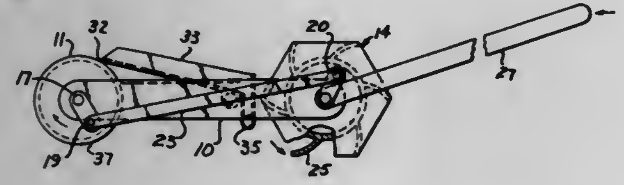
James F. Grutsch, Hammond, and Russell C. Mallatt, Crown Point, both of Ind., assignors to Standard Oil Company, Chicago, Ill.
Filed Mar. 18, 1970, Ser. No. 20,508
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **6 Claims**



Oil, solid particles such as biological slime and floating debris etc. are removed from water by an apparatus including endless chain means made up of a series of interconnected foraminous chambers holding a regenerable porous filter material such as polyurethane. Preferably the filter material has an outer large pore section and an inner small pore section. A plurality of buckets are attached to the chain means, and as the chain means moves through a closed loop path, these buckets catch debris and dump it into a holding bin. Simultaneously, the filter material absorbs surface and subsurface oil and the like from water traveling through the filter material. The filter material is regenerated by squeezing the filter material to release the oil.

3,608,728
OIL SKIMMER

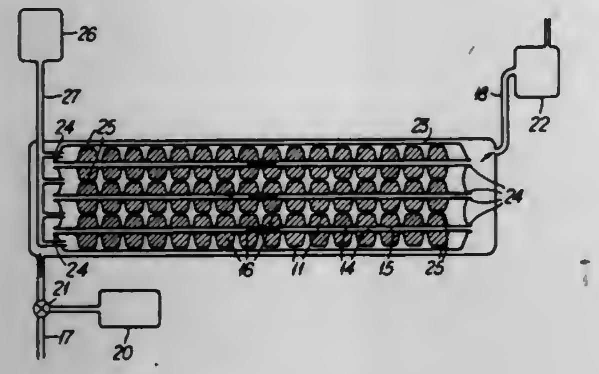
Leslie E. Trimble, 1341 West Vista Way, Vista, Calif.
Filed Oct. 15, 1969, Ser. No. 866,561
Int. Cl. E02b ***15/04***
U.S. Cl. 210—242 **7 Claims**



A skimmer for removing oil from the surface of water which includes a cylindrical float mounted to a frame so that the float may rotate with its axis parallel to the surface of the water, a second float connected to the other through the frame with paddles that cause the second float to rotate and actuate a bellcrank and connecting rod system to rotate the cylindrical float. A scraper contacts the upper surface of the cylindrical float to remove oil collected on the surface of the float and allows it to drain down the trough in the scraper into a drainpipe that will flow the oil into a reservoir for storage. In operation, a push-bar frame is attached to the second float having paddle vanes and the entire apparatus would be pushed by a boat, thereby using the motion through the water to actuate the paddle wheel to rotate the oil skimmer float to pick up oil from the surface.

3,608,729
DISPOSABLE DIALYSER PACK WITH ADSORBENT

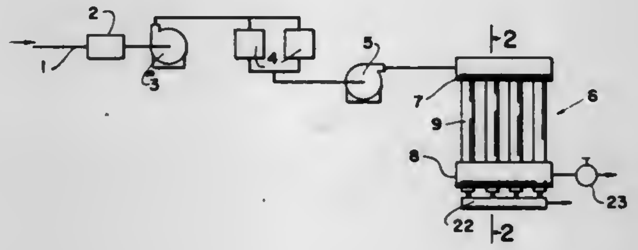
Geoffrey Gordon Haselden, Leeds, England, assignor to National Research Development Corporation, London, England
Filed Sept. 27, 1968, Ser. No. 763,269
Claims priority, application Great Britain, Sept. 27, 1967, 43954/67
Int. Cl. B01d ***13/00***
U.S. Cl. 210—321 **11 Claims**



A self-contained pack for hemodialysis comprising a stack of rigid plastic sheets each formed with ridges and valleys and arranged in oppositely facing pairs, with pairs of flexible dialysis membranes interposed between the pairs of rigid sheets in the stack. The spaces between the paired membranes serve as blood flow passages, while the ridges of the rigid sheets provide support for the membranes. The spaces in the valleys between the ridges are packed with adsorbent material, e.g. an ion-exchange resin, immersed in nonflowing dialysis fluid.

3,608,730
DESALINATION APPARATUS

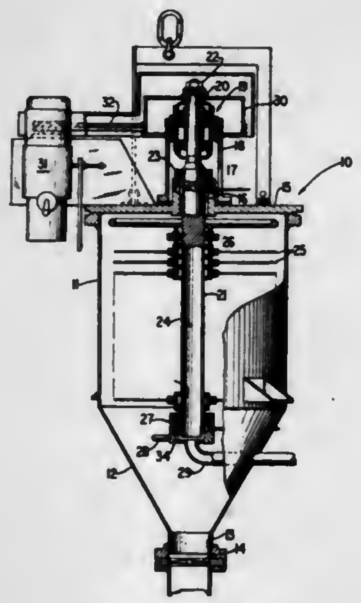
Emil Blaha, Cheltenham, Pa., assignor to Selas Corporation of America, Dresher, Pa.
Filed Oct. 2, 1969, Ser. No. 863,125
Int. Cl. B01d ***31/00***
U.S. Cl. 210—321 **4 Claims**



A desalination apparatus in which there is provided a thin desalination membrane that is mounted on a rigid, porous support. The membrane and its support are concentrically located in a tube through which water to be treated is forced under pressure.

3,608,731
CENTRIFUGAL DISCHARGE FILTER SEALS

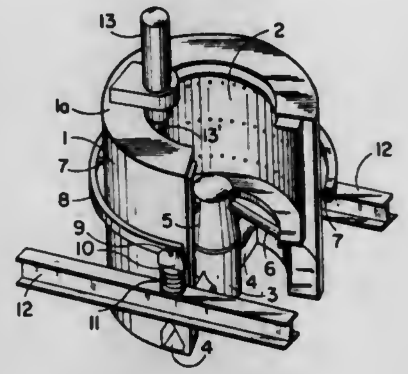
Ernie G. Seggebruch, East Moline, Ill., assignor to Ametek, Inc., New York, N.Y.
Filed Jan. 16, 1970, Ser. No. 3,365
Int. Cl. B01d ***29/02***
U.S. Cl. 210—331 **4 Claims**



A rotary filter unit has a pressure casing in which is rotatably mounted a shaft having filter means thereon. Both ends of the shaft are rotatably supported and are surrounded by inflatable sealing means which may be selectively inflated and deflated. When inflated, the sealing means engage the periphery of the shaft to provide a secure seal between the interior of the casing and the exterior thereof. When deflated, the inflatable sealing means are spaced from the periphery of the shaft.

3,608,732
CENTRIFUGE

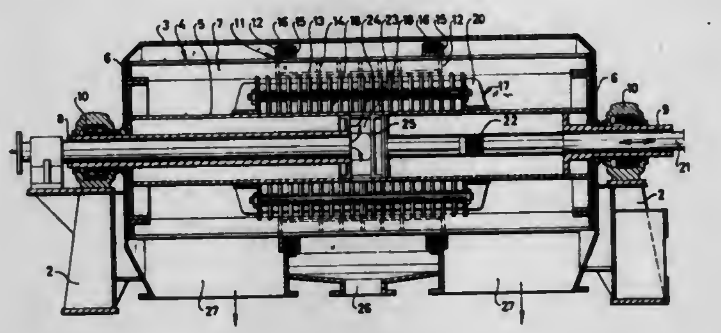
Werner Steprath, Gohr/Neuss, Germany, assignor to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany
Filed Nov. 5, 1969, Ser. No. 874,125
Claims priority, application Germany, Jan. 31, 1969, P 19 04 774.6
Int. Cl. B04b ***9/12***
U.S. Cl. 210—364 **6 Claims**



A centrifuge particularly for use for sugar extraction includes an outer protective jacket which is supported on a gimbal ring for resilient pivotal movement. The ring, in turn, is supported on resilient pivots for pivotal movement about an axis extending 90° to the pivotal mounting of the jacket. The centrifuge includes a drum mounted within the jacket for rotative movement. In one embodiment the drum is supported by and driven by an electric motor which in turn is carried on radially extending arms supported on the outer protective jacket. In another embodiment the driving motor is mounted on a stationary frame and the drum is driven by a telescopic drive shaft connected to the motor and to the respective drum through pivotal or universal joint constructions.

3,608,733
CENTRIFUGAL THICKENER

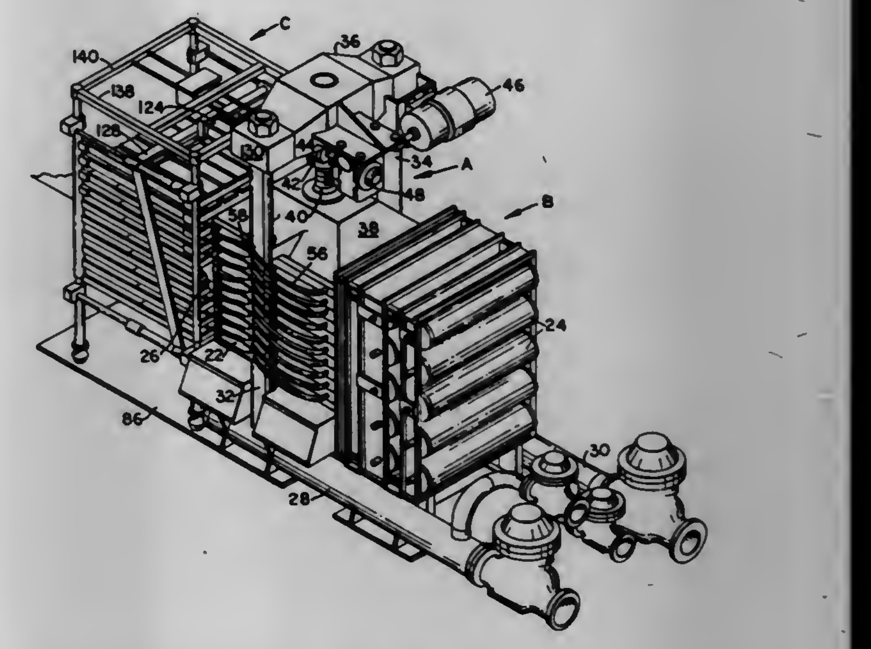
Alf Torsten Okvist, Berghult, Skarblacka, and Nils Olof Nilsmar, Stalringen, Kallhall, both of Sweden, assignors to Maskin A B N.A. Ele, Bandhagen, Sweden
Filed Sept. 17, 1968, Ser. No. 760,136
Int. Cl. B01d ***33/38***
U.S. Cl. 210—376 **7 Claims**



The present invention relates to a centrifugal thickener comprising a machine housing, which includes a rotatable thickening cylinder and feed and discharge means for the slurry. The invention is characterized in that the feed means is a pipe axially projecting through one end of the machine housing, and that the discharge means is rotatably connected with the thickening cylinder and axially movable in relation to the same.

3,608,734
LIQUID FILTERING APPARATUS

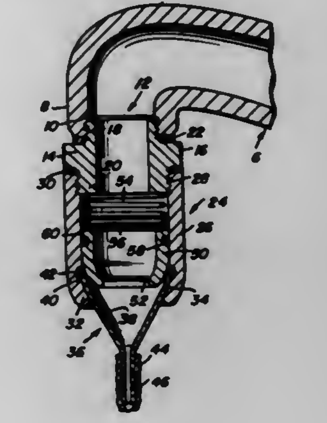
John R. Schneider, 26 Cove Road, Belvedere, Calif.
Filed July 31, 1968, Ser. No. 749,003
Int. Cl. B01d ***25/04***
U.S. Cl. 210—387 **16 Claims**



A filtering apparatus for handling a large volume of liquid to be filtered comprising a plurality of separable pairs of liquid containers, a continuous sheet of filter media between each container pair, and means for simultaneously moving all of the sheets of filter media when the portions between pairs of containers have become contaminated with accumulated dirt or sludge. The contaminated filter sheets are moved from between pairs of liquid containers which have been separated and are advanced until fresh filter media is in place between the pairs of liquid containers. When the new filter media is in place between separated containers they are pressed together to form a fluidtight seal around their edges, the filter media being positioned so the liquid flowing into each container passes through the filter media and then through an outlet. Movement of each filter media sheet is accomplished by a series of members that engage the media and then pull it forwardly before disengaging from the media and then moving backwardly to repeat the cycle. Separate series of engaging members are provided for each filter media sheet and are coordinated by a common control apparatus.

3,608,735
SPIGOT ADAPTER CONNECTION FOR PRESSURE HOSE

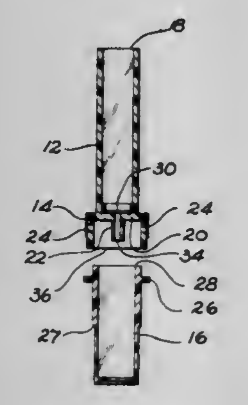
Leo R. Smith, 1203 South 28th St., Fort Pierce, Fla.
Filed Nov. 6, 1969, Ser. No. 874,464
Int. Cl. B01d ***35/04***
U.S. Cl. 210—449 **10 Claims**



A self-contained attachment which permits a hydraulic oral hygiene dental syringe to be operatively joined to a spigot. It is characterized by an adapter, coupling means connected with the adapter, and a funnel-type connector, which also constitutes an adapter, and is carried by the coupling means and to which a hose is connected. In practice the usual filter-type spigot strainer unit is removed and replaced by the herein disclosed attachment which embodies, as one of its features, a built-in spring-loaded filtering screen or strainer. The overall attachment constitutes a spigot-to-hose filtering device.

3,608,736
FILTRATION UNIT

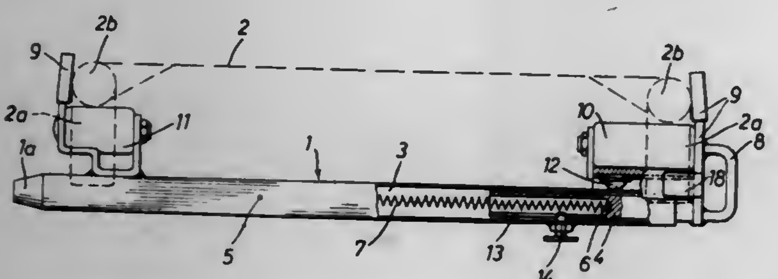
Johnson N. S. Wong, Harbor City, Calif., assignor to Evergreen Industries, Inc.
Filed Dec. 19, 1969, Ser. No. 886,642
Int. Cl. B01d *29/04*
U.S. Cl. 210—477 **9 Claims**



A disposable filtration unit for use with a specimen tube, including a hollow cylindrical filter column formed with a cap depending from the bottom of the column and dimensioned to fit the mouth of the specimen tube, the bottom of the column being formed with a depending discharge tip spaced axially centrally of the cap. The bottom of the filter column is formed with flat marginal portions and filter material is utilized in a form including flat sheet portions supported flush on the marginal filter column portions. The sample tube is formed with an exterior annular ridge spaced from its mouth and the cap is sized so as to engage the ridge to thereby space the bottom of the filter column from the mouth. One or more vent openings are defined in the cap between the sample tube mouth and the bottom of the filter column.

3,608,737
FRAME ASSEMBLY FOR SUPPORTING A STRETCHER

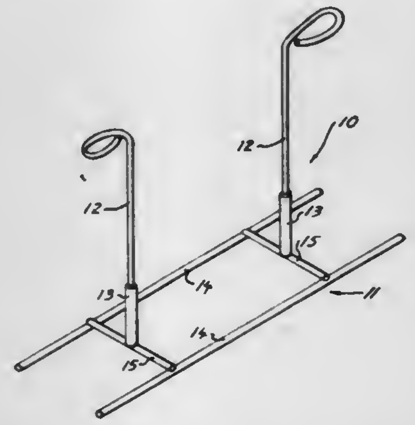
Hans Stollenwerk, 197-201 Dellbrucker Hauptstr, 5 Cologne-Dellbruck, Germany
Filed Nov. 10, 1969, Ser. No. 875,328
Claims priority, application Germany, Nov. 13, 1968, P 18 08 480.5-35
Int. Cl. A47f *7/00*
U.S. Cl. 211—13 **14 Claims**



A frame assembly having at least two transverse bearer elements mounted in spaced relationship with respect to each other is provided to support a stretcher. Each of the elements includes a fixedly mounted section and a movably mounted section which have telescoping structural configurations. A biasing means is attached to each of the sections to telescope the sections with respect to each other. The frame assembly as provided is particularly useful for mounting in vehicles. Abutment members are mounted at each end of the elements with at least one of the abutments being secured to the fixedly mounted section and another abutment member being secured to the movably mounted section. Arresting means are provided to prevent movement of the fixedly mounted sections with respect to the movably mounted sections.

3,608,738
BOOT-DRYING RACK

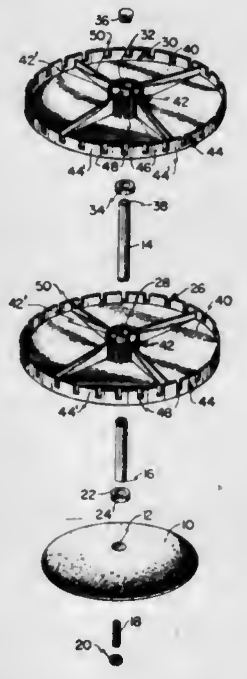
Sally-Rae Andersen, 45152 Wells Road, Sardis, British Columbia, Canada
Filed May 26, 1970, Ser. No. 40,673
Int. Cl. A47f *7/08*
U.S. Cl. 211—38 **3 Claims**



A boot-drying rack having a base frame and removable upright supports for supporting boots in an inverted position over the base frame. The rack can be set over or near a hot air register so that heated air can circulate drying particularly the inside of the boots. Packs flat for packaging, and storage when not in use.

3,608,739
REVOLVING STORAGE TABLE

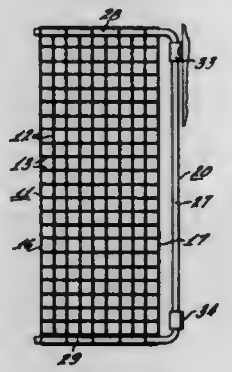
Philip L. Duboff, Kearny, N.J., assignor to Shelfmaker Products Corp., Kearny, N.J.
Filed Feb. 18, 1969, Ser. No. 800,057
Int. Cl. A47g *29/00*
U.S. Cl. 211—40 **5 Claims**



A novel revolving storage table is disclosed offering single- or double-tier storage of phonograph record albums and the like, the storage table further functioning as an occasional table. The storage table generally comprises a base member having an elongated pole extending vertically upwardly thereof. First and second tray means are removably journaled for easy rotation on nylon collars or bearings disposed on the pole at a lower and upper tier or level, respectively. Each of the tray means includes record guide means on one surface thereof for vertically storing the records in a novel fashion such that the title of each record is visible to facilitate selection. The tray means disposed at the upper tier can be flipped over in a novel fashion to present a flat, smooth surface coextensive with the top of the elongated pole thus providing an occasional table.

3,608,740
DEVICE FOR SUPPORTING AND DISPLAYING NECKTIES

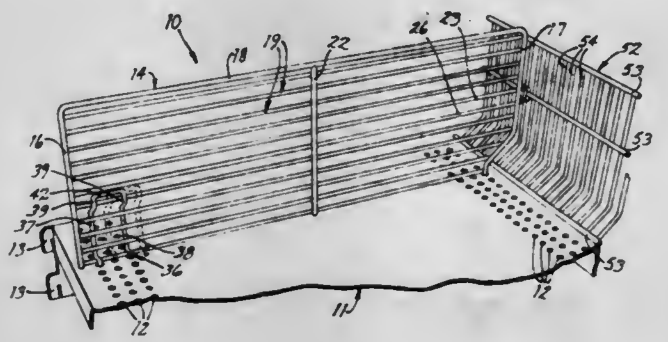
Charles E. Bowman, Jr., 414 Anderson St., Crown Point, Ind. continuation-in-part of 628,374, Apr. 4, 1967, now abandoned. This application Apr. 7, 1970, Ser. No. 26,247
Int. Cl. A47f *7/19;* **A47j** *51/24*
U.S. Cl. 211—96 **4 Claims**



A device for supporting and displaying haberdashery, especially pretied neckties having supporting hooks built therein, comprising a yieldable foraminous surface mounted under slight tension to provide surfaces having a plurality of discrete supporting means defined therein upon which such ties may be hung and from which one may be removed independently of others suspended therefrom. The device is mountable in a vertical plane to provide access from either of two sides.

3,608,741
SHELF PARTITION

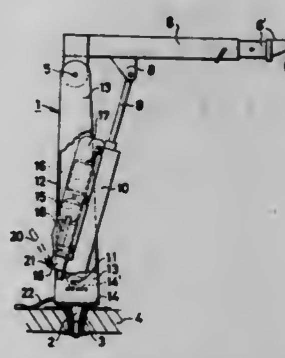
Walter H. Schray, Battle Creek, Mich., assignor to United Steel and Wire Company, Battle Creek, Mich.
Filed May 27, 1970, Ser. No. 40,999
Int. Cl. A47f *5/00*
U.S. Cl. 211—184 **7 Claims**



A shelf partition adapted for use with a generally horizontal shelf having a plurality of rows of laterally spaced holes therein. The partition is of a wire mesh construction having a plurality of longitudinal and transversely related wire rods interconnected to each other. A slider member slidably engages at least one of the longitudinal wire rods for relative movement therealong. Foot means are provided on the slider member for selectively engaging one of the laterally spaced holes in the shelf to fixedly locate the partition relative to the shelf. The slider member, due to its sliding relation relative to the partition, may be adjusted longitudinally of the partition to permit an alignment of the foot means thereon with at least one of the laterally spaced holes in the shelf.

3,608,742
SMALL SIZE CRANE HAVING A HYDRAULICALLY OPERATED JIB AND AN ELECTROMOTOR-DRIVEN HYDRAULIC PUMP

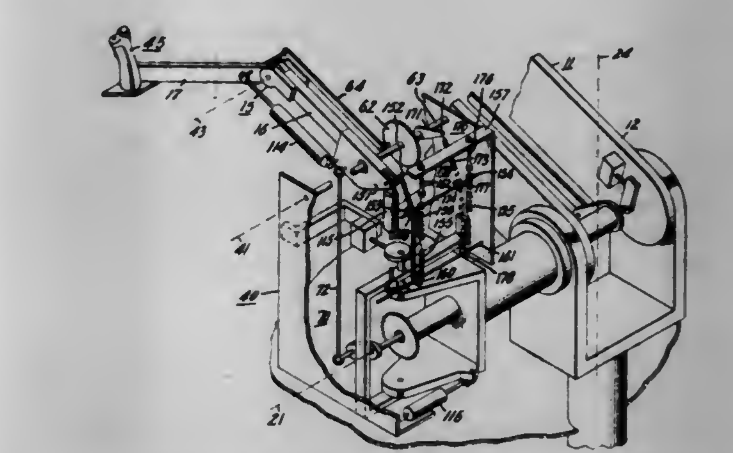
Karl Fritjof Torbjorn Adolfsson, Bjorn Tradgardsgrand 3, Stockholm, Sweden
Filed Aug. 16, 1968, Ser. No. 753,286
Claims priority, application Sweden, Aug. 30, 1967, 12015/67
Int. Cl. B66c *23/54*
U.S. Cl. 212—35 **2 Claims**



An electromotor-driven small size crane comprises a rotary crane post presenting two spaced-apart sidewalls, a vertically swingable jib on said post and a hydraulic jack for actuating the jib, said jack normally occupying a forwardly inclined position relative to the crane post and including a cylinder having its rear end hingedly connected to the lower end portion of the crane post between said sidewalls thereof. An oil pump and an electromotor for driving the same are both mounted on the back of the cylinder so as to partake in the tilting movements of the latter during raising and lowering of the jib and so as to normally remain substantially sheltered between said sidewalls of the crane post. Preferably, said pump and motor are covered by a cap removably attached to the cylinder, which also carries an oil reservoir and valve means for operating the crane.

3,608,743
MATERIAL-HANDLING APPARATUS

Ralph S. Mosher, and Donald A. Kugath, both of Schenectady, N.Y., assignors to General Electric Company
Filed May 4, 1970, Ser. No. 34,159
Int. Cl. B25j *3/04*
U.S. Cl. 214—1 CM **3 Claims**

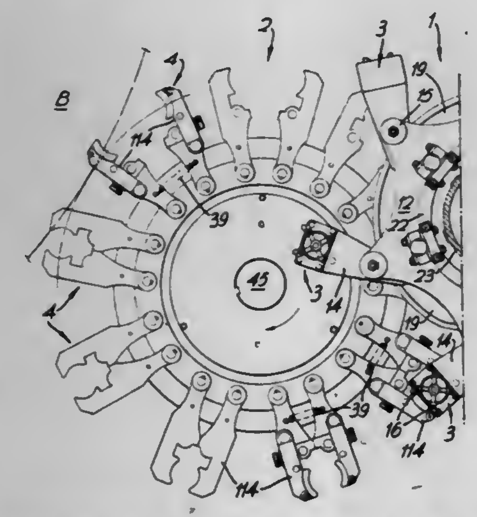


An articulated boom having a single joint intermediate the ends thereof is pivoted at one end about a horizontal axis of a support member. The other end of the boom has end effectors and end effector positioning elements located thereon. A control member smaller in size but similar in form to the articulated boom having a single joint intermediate the ends thereof is also pivoted at one end about another horizontal axis of another support member and a handle is provided at the other end thereof. Means are provided to cause each of the two parts of the articulated boom to follow in orientation a respective one of the two parts of the control member in response to movement of the handle by an operator. Additional means are provided so that forces encountered by the articulated boom are reflected back, reduced in magnitude however, to the handle held by the operator.

A pair of assemblies of levers and springs are provided each in cooperative association with a respective part of the control member to counterbalance completely the weight of the unloaded control member and the weight of unloaded boom as reflected by force feedback to the control member.

3,608,744
TRANSFER DEVICE FROM FOOT-FORMING MACHINE TO BURN-OFF MACHINE

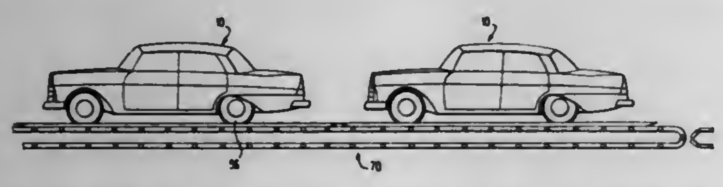
Francis Joseph Ward, Burtonwood, near Warrington, and Derek Grimes, St. Helens, both of England, assignors to Ravenhead Glass Limited, St. Helens, England
Filed Nov. 5, 1968, Ser. No. 773,405
Claims priority, application Great Britain, Nov. 6, 1967, 50444/67
Int. Cl. B65g *29/00*
U.S. Cl. 214—1 BC **13 Claims**



Article transfer apparatus particularly for use in glassmaking, comprises a first continuously rotating device carrying a plurality of pivotally mounted article-engaging members, and a second continuously rotating device carrying a plurality of article-gripping members adapted to receive articles from said article-engaging members, wherein said first and second devices rotate in the same direction and in synchronism, the pitch circles of the article-engaging members and the article-gripping members overlap, and means associated with the first device causes each article-engaging member to pivot to effect transfer of an article therefrom to an article-gripping member.

3,608,745
INSTALLATION FOR THE FURTHER TRANSFER OF ASSEMBLED MOTOR VEHICLES READY FOR DRIVING AND INSTALLATION FOR CARRYING OUT THE METHOD

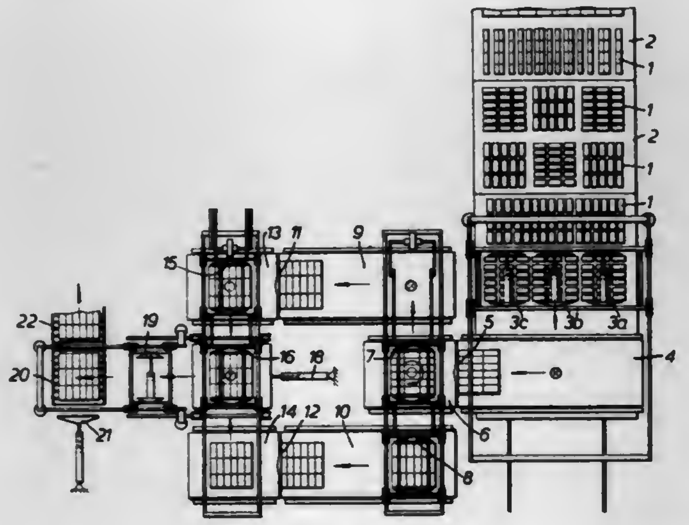
Hubert Pohl, Sindelfingen, and Kurt Leonhardt, Stuttgart-Mohringen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Continuation-in-part of application Ser. No. 618,573, Feb. 27, 1967, now abandoned. This application Apr. 17, 1969, Ser. No. 824,346
Int. Cl. B65g *47/00*
U.S. Cl. 214—1 R **13 Claims**



An installation for the further conveyance or transport of assembled motor vehicles, ready for driving in which the assembled vehicles, ready for driving, are transported while supported on a conveyor base support which, in its length, projects beyond the front as well as the rear end of the vehicle, corresponds in width essentially to that of the vehicle and is provided with a holding device for at least one vehicle wheel whereby the conveyor base support, during nonuse can be transported individually. In a preferred construction, the conveyor base support consists of two separate runner-type guide members, each provided with a troughlike recess for a rear wheel of the vehicle and interconnected along the forward and rearward ends. A system of conveyor belts for transporting the vehicles on their respective supports includes at least one belt constructed in the form of a buffer belt.

3,608,746
APPARATUS FOR STACKING BRICKS AND OTHER ARTICLES

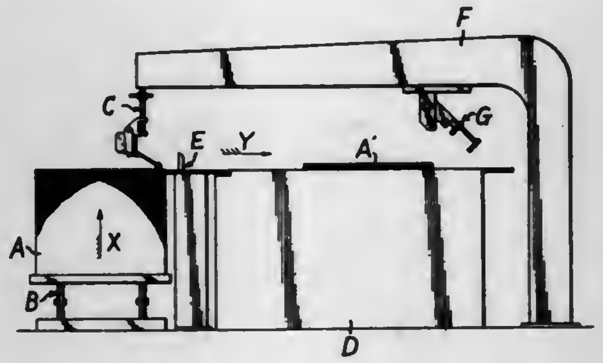
Alfred Meyer, Hasbergen, Germany, assignor to C. Keller u. Co., Laggenbeck am Westphalia, Germany
Filed Apr. 8, 1970, Ser. No. 26,517
Claims priority, application Germany, Apr. 9, 1969, P 19 18 017.7.-22
Int. Cl. B65g *57/22*
U.S. Cl. 214—6 A **5 Claims**



Apparatus for stacking bricks and other articles comprises a series of conveyors and gripper devices for transferring individual layers from one conveyor to another. To avoid delays a dual path is provided over part of the apparatus. A table receives the layers from both paths alternately and a stack is delivered from the table to a fixed support base and thence to a take away conveyor.

3,608,747
APPARATUS FOR TRANSFERRING A BUNDLE OF PAPER FROM A PAPER PILE ON A TABLE LIFTER ONTO A TABLE

Seiya Shibata; Akitoshi Yamasaki, and Isokazu Shimono, all of Osaka, Japan, assignors to Tsubakimoto Chain Manufacturing Company, Limited, Osaka, Japan
Filed Dec. 18, 1969, Ser. No. 886,136
Claims priority, application Japan, Dec. 19, 1968, Dec. 24, 1968, 43/111282;43/95175
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 A **5 Claims**

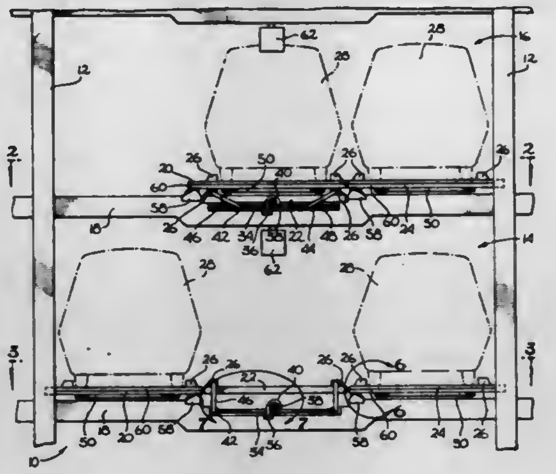


An apparatus to be used in transferring a bundle of paper from a paper pile on a table lifter or the like onto a table in the subsequent step. Upon detecting undulation in the top surface of the paper pile, a suitable number of detectors emit a signal indicating whether the paper bundle can be transferred or not to control the upward movement of the paper

pile. Before transference, the end of the undulated paper bundle is flattened by an intermediate unit and clamped by a clamp device.

3,608,748
VEHICLE PARKING GARAGE

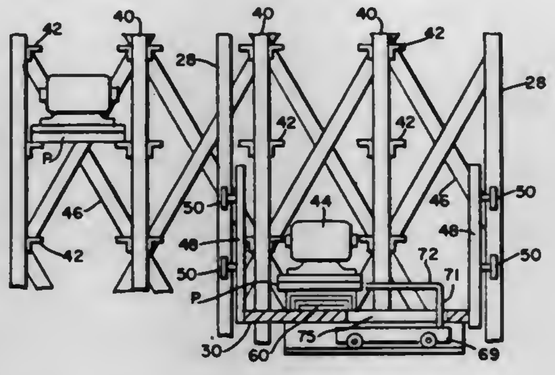
Paul R. Wilson, 17830 Bahama St., North Ridge, Calif.
Filed Nov. 26, 1969, Ser. No. 880,050
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.1 CC **7 Claims**



A parking garage apparatus is disclosed herein for storing vehicles which provides a plurality of parallel longitudinal lanes or sections having a multiplicity of laterally movable pallets or carriers wherein each section is capable of storing parked vehicles on the respective carriers arranged in end-to-end relationship to form parking rows. A central travelling lane for vehicles to use during parking procedures is disposed between the adjacent parking sections and includes vertically movable platforms operable between a raised position and a lowered position, each platform serving as a coextensive surface with said carriers in its raised position, while in its lower position, permitting lateral movement of selected adjacent carriers thereover. Means are included for automatically conveying vehicles intended to be parked along the travelling lane and for selectively positioning the carriers and the platforms to permit unrestricted selection of parking location.

3,608,749
PLURAL DEPTH STORAGE SYSTEM WITH A PLURALITY OF ARTICLE HANDLING MEANS

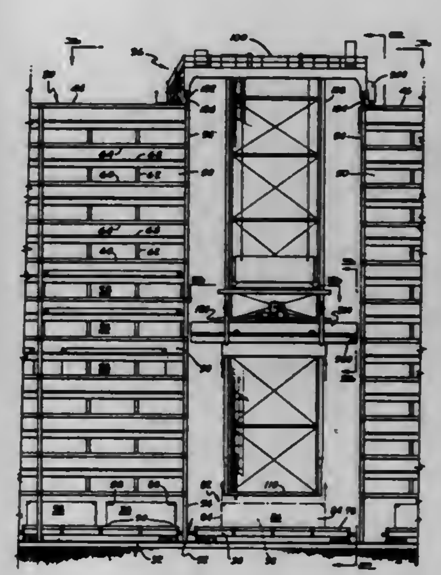
Howard A. Zollinger, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,507
Int. Cl. B65g *1/06;* **B60p** *1/44*
U.S. Cl. 214—16.4 A **5 Claims**



Described is a high bay storage warehousing system of the type wherein storage rack modules comprising superimposed storage racks are disposed on either side of an aisle. Articles to be stored in the racks are carried to and from a loading area at one end of the aisle by means of a stacker crane which runs on overhead rails. The loads are stored two deep on either side of the aisle, while a unique stacker crane is provided capable of reaching twice the width of a load to retrieve a load in the back of a rack. Also described is a novel method for warehousing utilizing a high bay storage system of the type described above wherein loads are stored one behind the other in each rack of a storage module.

3,608,750
STORAGE MEANS AND LOAD-HANDLING EQUIPMENT THEREFOR

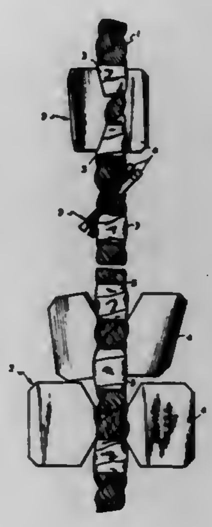
Robert R. Young, Danville, and Robert W. Medland, Hayward, both of Calif., assignors to Kaiser Industries, Inc., Oakland, Calif.
Filed Mar. 3, 1969, Ser. No. 803,838
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **8 Claims**



Equipment for transferring large heavy containers and similar loads among the compartments of a vertical array of compartments and a separate transfer station and more particularly to a crane for inserting such containers into the compartments and depositing the same therein or for picking up the containers within the compartments and removing the same therefrom.

3,608,751
DEVICE AND METHOD FOR LOADING OF VERTICAL CATALYST TUBES

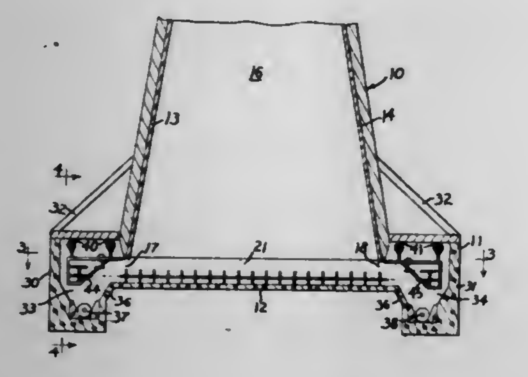
Virgil A. Hundtofte, Omaha, Nebr., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Mar. 6, 1970, Ser. No. 17,097
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 C **14 Claims**



A device and method for facilitating dry loading of a particulate catalyst into vertical catalyst tubes. The loading device includes an elongated member such as a Manila line having inclined blades mounted thereon at selected spaced intervals. The elongated member is held vertically in the catalyst tube during the loading of the catalyst whereupon the blades function to cushion and retard the speed of the catalyst, the elongated member being removed therefrom in timed relation to the loading. With use of the device, catalyst breakage is greatly minimized.

3,608,752
STORAGE FACILITY FOR PARTICULATE MATERIAL

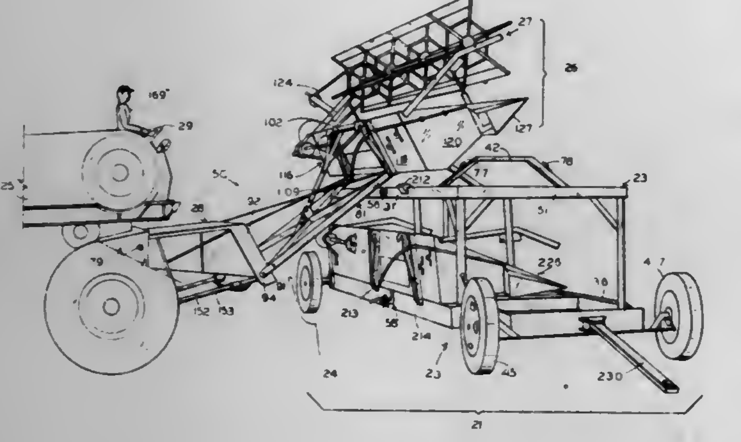
John L. Peterson, and George H. Pettis, both of Spokane, Wash., assignors to Atlas Spokane, Inc.
Filed Aug. 11, 1969, Ser. No. 848,978
Int. Cl. B65g *65/42*
U.S. Cl. 214—17 DA **5 Claims**



A storage facility has a rectangular cross section with sidewalls elevated above a floor providing side openings between the walls and the floor. A continuous drag line is slidably mounted on the floor between dual carriages that ride on the rails outside the sidewalls for removing the particulate from the floor to conveyors at the edges of the floor. Motors drive the continuous drag line while the carriages move on the rails to move the continuous drag line into the particulate pile.

3,608,753
COMBINE HEADER AND TRANSPORT APPARATUS

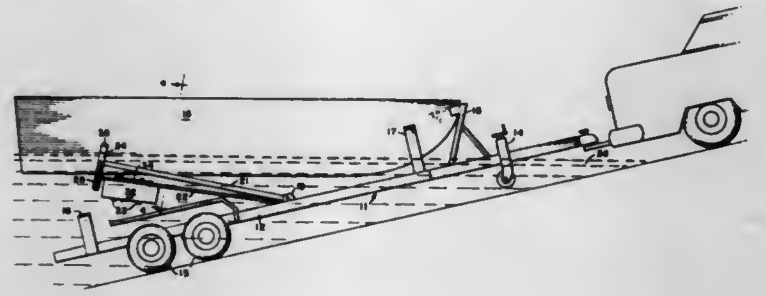
Ronald J. Scott, 211 West Cherry, Amarillo, Tex.
Filed May 23, 1969, Ser. No. 827,366
Int. Cl. B65g *67/04*
U.S. Cl. 214—38 R **1 Claim**



A cooperatively related transport apparatus and loading apparatus organized for rapid and reliable use of the power of a combine machine to load a plurality of headers for transport by the steps of connecting the power of a combine to a header loading means; releasably supporting the bottom wall of said header at its rear while holding to an upper portion of said header by said loading means; transmitting power from said combine to said loading means and thereby raising the thus-held header upwards, and then moving said header transversely to the length thereof and towards and over a transport apparatus therefor and centrally of means thereon for attaching said header to said transport apparatus; then moving said header downwardly and laterally and thereby engaging said transport apparatus and said header-holding means spaced apart along length of the transport apparatus whereby limited longitudinal motion of said header relative to said transport apparatus is permitted, and at two other holding means spaced apart along length of said transport apparatus and transversely spaced away from said first holding means, said other holding means permitting limited transverse motion of said header relative to said transport apparatus; and removing said loading means from the header and locking said header to said transport apparatus at a point between said two other holding means.

3,608,754
LAUNCHING AND RECOVERY GUIDE

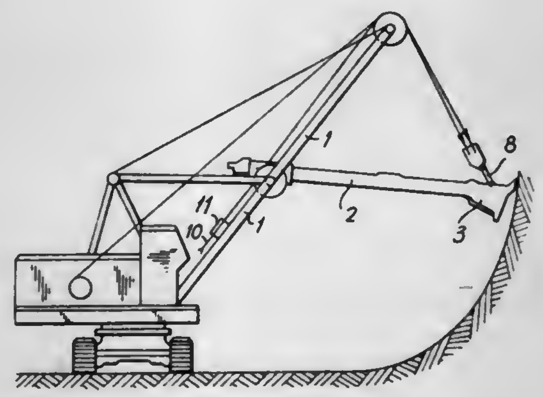
Wallace Sidney Park, c/o Park Aerial Surveys, Inc. P. O. Box 21379, Louisville, Ky.
Filed Apr. 14, 1970, Ser. No. 28,371
Int. Cl. B60p *1/52*
U.S. Cl. 214—84 **9 Claims**



A launching and recovery guide for a boat trailer comprises a floatable concave member hingedly connected to the trailer for movement between a normally retracted position below the rear bolsters of the trailer to protracted positions above the bolsters. The concave member is adapted to contact the bottom of the hull of the boat as it is being launched from the trailer or recovered and retain it in a longitudinal position against the forces of tide, water currents and wind until the launching or recovery is completed.

3,608,755
STRAIGHT-SHOVEL-TYPE WORKING EQUIPMENT OF A SINGLE-BUCKET EXCAVATOR

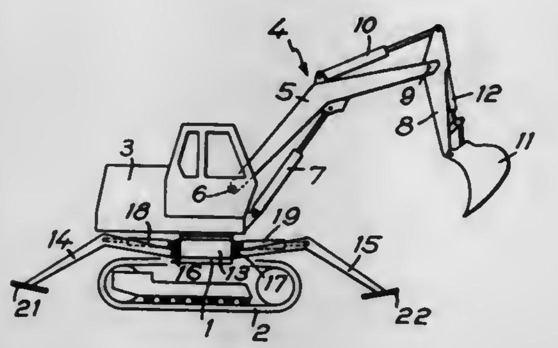
Boris Ivanovich Solokhin, prospekt Lenina, 21, kv. 40, Kolpino; Vladimir Iosifovich Khazak, prospekt Dalnevostochny, 60, kv. 4, Leningrad, and Viktor Afanasievich Kartashov, ulitsa Zapadnaya, 25, kv. 2, Kolpino Leningradskoi Obl., all of U.S.S.R.
Filed July 19, 1968, Ser. No. 746,093
Int. Cl. E02f *3/62*
U.S. Cl. 214—135 **7 Claims**



A single-bucket excavator comprises a boom with a grip mounted thereon and turnable about its longitudinal axis. A bucket is mounted on the grip and is suspended on movable pulleys of two double pulley block and tackle systems containing a balancing system which transmits loads to the boom via a spring-loaded friction device.

3,608,756
MECHANICAL EXCAVATOR OR OTHER EARTH WORKING MACHINE

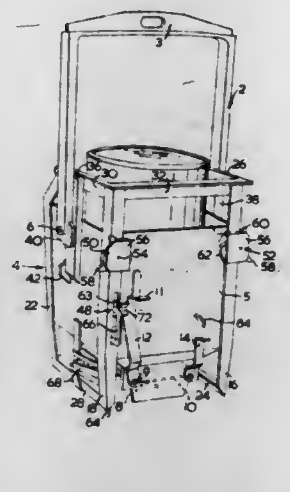
Gabriel L. Guinot, Le Plessis-Belleville, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville, Oise, France
Filed June 4, 1969, Ser. No. 830,441
Claims priority, application France, June 7, 1968, 154261
Int. Cl. B66c *23/78*
U.S. Cl. 214—138 **4 Claims**



This invention consists in providing a mechanical excavator or other earth working machine having a rotary implement carrying turret with stabilizing legs mounted on a support which is rotatably mounted on the machine about an axis coaxial with the turret so that said stabilizing legs can be swung to an inoperative position fore and aft of the machine or an operative position in which they extend laterally of the machine.

3,608,757
DRUM UNLOADER

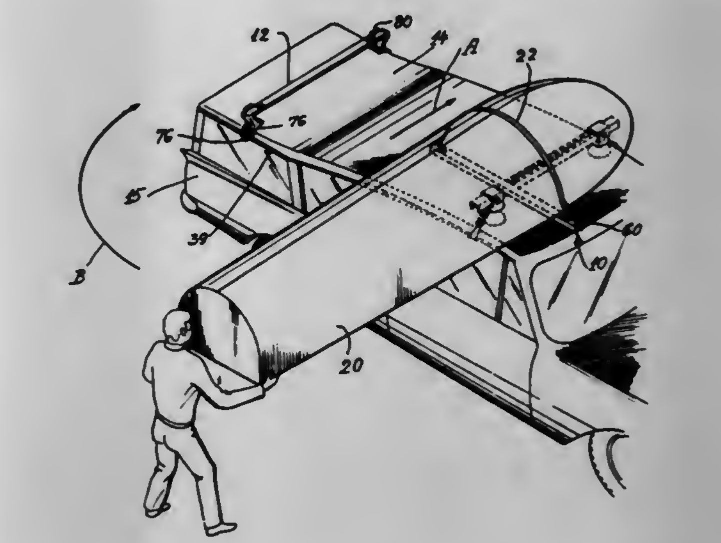
Emerick I. Tary, Vancouver, British Columbia, Canada, assignor to Laforge Canada Ltd., Vancouver, BC, Canada
Filed May 28, 1969, Ser. No. 830,583
Claims priority, application Canada, Feb. 19, 1969, 043,350
Int. Cl. B65b *69/00*
U.S. Cl. 214—307 **11 Claims**



A bucket-and-bail container which is designed to be placed over an open topped drum of solid particulate materials, such as grinding balls, and, by manipulation of the bail, inverted so that the particulate materials are emptied into the bucket container. The bucket container can then be safely transported to a preselected unloading station and then emptied via a door in the bottom. After emptying the empty drum is again inverted and dumped out of the bucket container. A special feature of the invention is the provision of a safety interlock which prevents the doors in the bucket container from being opened until the bucket is positively located at the unloading station.

3,608,758
BOAT LOADING AND CARRYING DEVICE FOR VEHICLE TOP

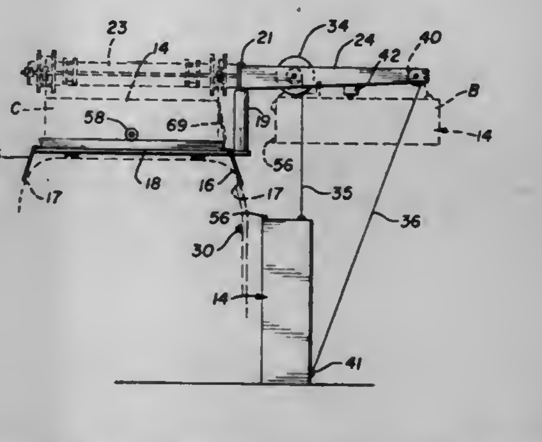
Donald S. Dolbin, 1424 Cutright St., Chillicothe, Ill.
Filed Jan. 14, 1970, Ser. No. 2,884
Int. Cl. B60n *9/00*
U.S. Cl. 214—450 **10 Claims**



A boat loading and carrying device comprises an assembly of front and rear racks attachable to the roof of a vehicle. The front rack includes a stationary rail attached transversely of the roof, and a movable rail engaged with the first rail by a pin. The pin has a key engaged in a longitudinal slot in the first rail to permit the pin and second rail to slide along the first rail when the second rail is perpendicular to the first rail. A hole at the center of the slot permits the movable rail and pin to rotate with respect to the first rail. The narrow slot engages the wider pin to prevent the pin and second rail from sliding along the first rail when the second rail is disposed parallel to the first rail. Straps attached to opposite ends of the front and rear racks hold the boat in place on the device.

3,608,759
CAR TOP CARRIER

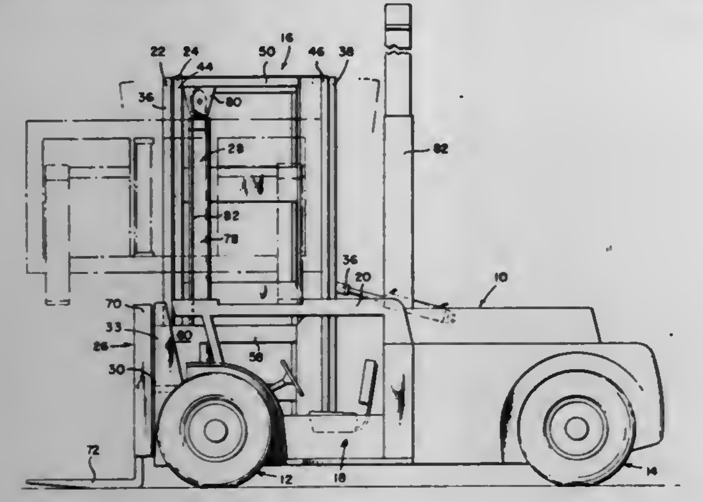
Lawrence A. Spurgeon, Arvada, and Earl F. Sorensen, Denver, both of Colo.
Filed Dec. 24, 1969, Ser. No. 887,948
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **12 Claims**



A mechanism for handling a storage compartment as it is raised from ground level to a carry position on top of a vehicle whereby wheelchairs and the like deposited in said compartment may be stored and transported for convenient useage. Controls regulate up, down, rotational and locking operations of compartment hoist elements that move the compartment transitionally from an upright position at the side of the vehicle to an elevated flat disposition on top of the vehicle with said compartment and all hoist elements being maintained at a low elevation to preserve low clearance characteristics.

3,608,760
LIFT TRUCK WITH HORIZONTALLY SLEWABLE LOAD CARRIER

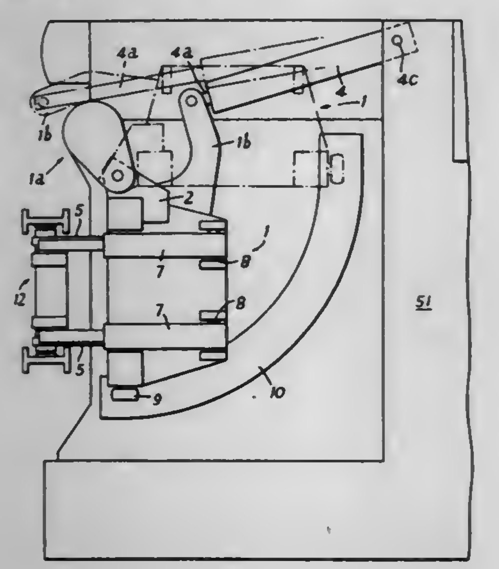
Maurice J. McIntyre, Coquitlam, New Westminister, British Columbia, Canada, and John R. Newton, Salem, Oreg., assignors to Skagit Corporation, Sedro Woolley, Wash.
Continuation-in-part of application Ser. No. 740,707, June 27, 1968, now abandoned. This application July 10, 1969, Ser. No. 840,758
Int. Cl. B66f *9/18*
U.S. Cl. 214—654 **4 Claims**



A lift truck is provided with a lift mast having a horizontal slewable load carrier. In one aspect of the lift truck the body thereof is provided with an operator's cab having a load-bearing roof onto which the load carrier can lower its load after being horizontally slewed to a laterally facing position. In another aspect of the lift truck, the fixed and movable upright guides of the lift mast are aligned longitudinally of the lift truck with the load carrier being mounted to the movable guide for vertical movement and for horizontal slewing.

3,608,761
FORKLIFT TRUCK WITH SWINGING MAST

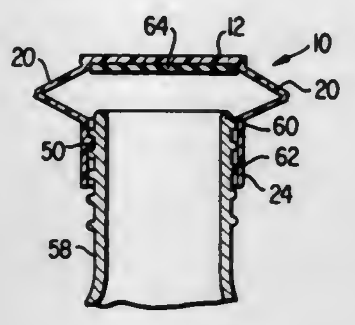
James William Henry Taylor, New Addington, England, assignor to Matbro Limited, Horley, Surrey, England
Filed June 3, 1968, Ser. No. 734,169
Claims priority, application Great Britain, June 5, 1967, 25923/67
Int. Cl. B66f *9/20*
U.S. Cl. 214—671 **1 Claim**



The specification describes a forklift truck having a mast structure which is mounted for swiveling about an axis offset to one side of the fore-and-aft extending center line of the truck between a forwardly facing position and a sideways facing position. The mast structure comprises a first guide which is fixed against movement in a vertical direction, a second guide which is guided for movement up and down along the first guide, a carrier frame supporting a load fork and guided for movement up and down along the second guide, and a single-extension jack for actuating the movement of the second guide and of the carrier frame. The connections between the jack and the second guide and between the second guide and the carrier frame are such that the speed of the second guide along the first guide is twice the speed of the jack and that the speed of the carrier frame along the second guide is twice the speed of the second guide along the first guide.

3,608,762
SAFETY CAP

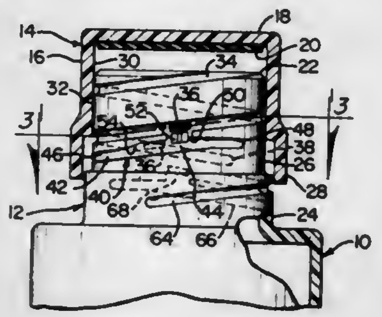
Millard C. Fitzgerald, 25 Yarmouth Lane, Media, Pa.
Filed Jan. 29, 1970, Ser. No. 6,803
Int. Cl. B65d *41/06*
U.S. Cl. 215—9 **23 Claims**



A safety bottle cap that cannot be opened by inquisitive children yet is readily openable by adults comprises a hollow member with a hollow portion large enough to encompass a screw thread disposed about a container, said hollow member comprising an upper portion separated from a lower portion by a central portion, said central portion being comprised of flexible material so that said bottom portion may be moved relative to said top portion by flexing said flexible material, said hollow member further comprising a locking member having a width less than the distance between adjacent flights of said screw thread, said locking member including a locking surface, said locking surface having a complementary shape with respect to the terminal end surface of said screw thread in order to permit said locking surface to mate with said end surface of said screw thread, said central portion having an unflexed height less than the distance between the top of said container and said terminal end surface of said screw thread to permit said locking surface to mate with the end surface of said screw thread only when said flexible central portion is in at least a partially flexed position whereby the tendency of said central portion to return to its unflexed condition exerts an upward bias on said locking member.

3,608,763
CONTAINER AND SAFETY CLOSURE THEREFOR

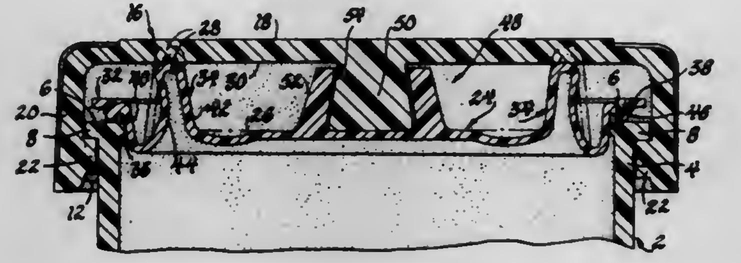
Mollie L. Smith, and John A. Smith, both of Lexington, Ky., assignors to Lok-A-Away, Inc., Columbus, Ohio
Filed Jan. 28, 1970, Ser. No. 006,381
Int. Cl. B65d *41/06*
U.S. Cl. 215—9 **9 Claims**



Container has annular neck provided with helical guide track and closure has lug to engage guide track and advance closure toward sealing position. Safety locking track axially inward of guide track is connected to guide track by axial passage. When lug reaches passageway closure is pushed axially to cause lug to move through passageway and engage locking track. Lug is rotated away from passageway to lock closure against inadvertent release. Detent in passageway requires recess in lug to pass over it. This demands very exact registry calling for knowledge of arrangement and careful manipulation. Second lug at opposite side of closure and axially spaced engages second guide track to produce balanced force and avoid rocking of seal. Second lug engages similar locking track to produce dual locking effect. Closure may be plug or cap. Lugs and tracks may be on either member. Tracks may be beads or grooves.

3,608,764
SAFETY CLOSURE ASSEMBLY

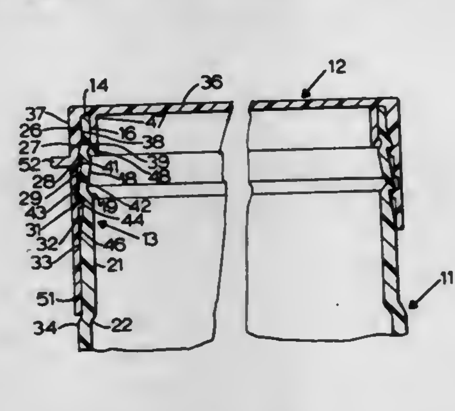
Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Windsor, Ontario, Canada
Filed Sept. 5, 1969, Ser. No. 855,503
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **38 Claims**



A safety closure assembly including a cap of the type which is applied to and removed from a container by a combined axial and rotative motion. A sealing member is carried by the cap and includes a base portion for overlying the opening of the mouth of a container, a portion for engaging the inner surface of the end wall of the cap, and a sealing portion for engaging the rim of a container. A resilient annular biasing member projects axially from the periphery of the base portion and extends between the cap-engaging portion and sealing portion to bias the cap-engaging portion and sealing portion to axially spaced positions such that when the cap is placed on a container, the cap is biased into locked engagement with the container and maintained in a fixed axial position relative to the container by the annular biasing member which simultaneously applies pressure to the sealing portion.

3,608,765
NECK FOR WIDEMOUTH JAR AND CAP THEREFOR

George W. Faulstich, c/o Cap Snap Seal Inc., 800 Alameda, San Carlos, Calif.
Filed Apr. 1, 1970, Ser. No. 24,708
Int. Cl. B65d *43/02*
U.S. Cl. 215—46 A **4 Claims**

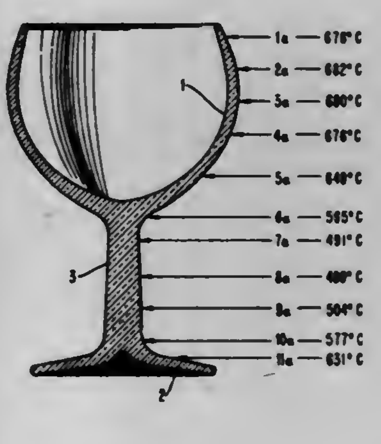


A widemouth jar of plastic or glass of the type used for peanut butter has an exterior neck finish comprising two circumferential, vertically spaced buttressed beads, the lower being of greater diameter than the upper. The plastic cap which fits on the neck has a flattop disk with a peripheral skirt, the interior of which is formed with two circumferential beads dimensioned to engage immediately under the radial flanks of the beads of the neck. The wall of the skirt is weakened immediately above the lower cap bead in a circumferential internal groove which connects with a downward slanted internal groove extending to the bottom of the skirt. A finger grip tab depends from the bottom of the skirt to one side of the slanted groove.

This application is an improvement upon U.S. Pat. No. 3,338,446 patented Aug. 29, 1967. However, the present invention is particularly suited to widemouth (e.g. 120 mm.) jars of plastic suitable for peanut butter and other substances which have heretofore been packed in glass jars closed with metal screw caps.

3,608,766
TEMPERED STEMWARE AND PROCESS OF MAKING IT

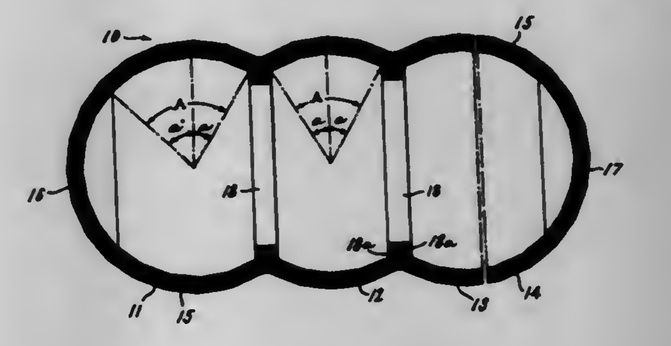
Rene D'Orefice, Saint-Jean-de-la-Ruelle, France, assignor to Compaznie de Saint Gobain, Neuilly-Sur-Seine, France
Filed Dec. 19, 1968, Ser. No. 785,168
Claims priority, application France, Dec. 22, 1967, 133,535
Int. Cl. C03b *27/00*
U.S. Cl. 215—99.5 **5 Claims**



Footed glassware is, for the first time, satisfactorily tempered by annealing hollow glassware, such as goblets and blowing them with air jets. The annealing raises the surface temperature of the stemware to about 660° to 680° C. in the cup and to about 490° to 500° C. in the midlength of the stem. The new glass is of superior resistance to mechanical and thermal shocks.

3,608,767
DEEP SUBMERGENCE VESSELS OF INTERCONNECTED RADIAL-FILAMENT SPHERES

Daniel R. Elliott, Ridgewood; Edgar Francois, Wayne, and Donald C. MacDonald, Ridgewood, all of N.J., assignors to Uniroyal, Inc., New York, N.Y.
Filed June 20, 1969, Ser. No. 835,039
Int. Cl. B65d *1/16, 1/40*
U.S. Cl. 220—5 A **16 Claims**

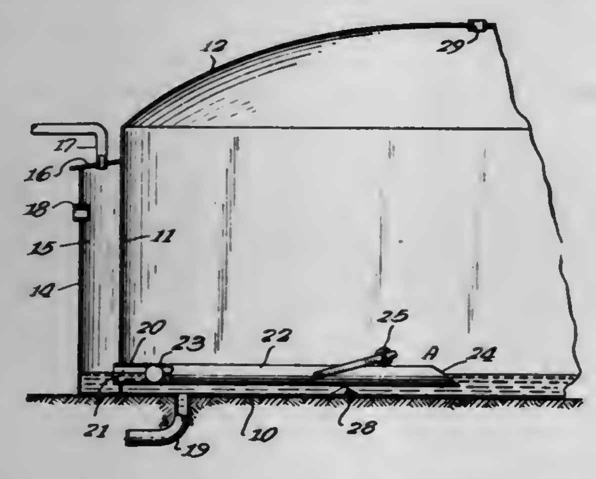


A class of hollow, shell-type, deep submergence vessels with low weight to displacement ratio and high resistance to external hydrostatic pressures and made of interconnected shells in the form of equatorial segments of unidirectional radial fiber-reinforced resin spheres is disclosed. Suitable stiffening rings are provided to interconnect and take up stresses at the junctures of the sphere sections of such a vessel.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,608,768
MULTIPLE-WALL LIQUID STORAGE TANK

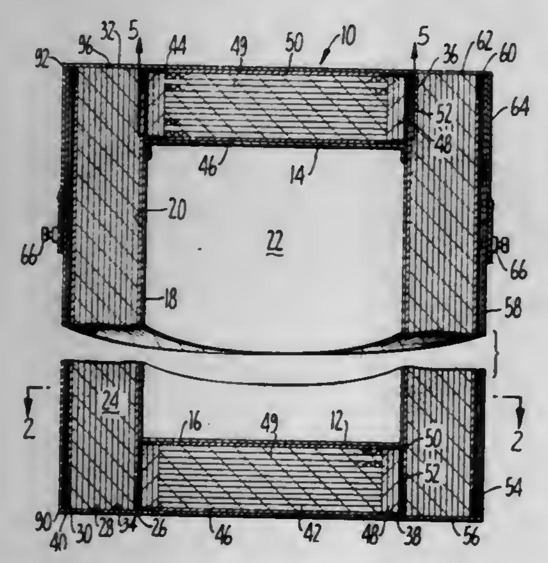
Raymund V. McGrath, Palos Heights, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Jan. 30, 1970, Ser. No. 7,101
Int. Cl. B65d *7/22*
U.S. Cl. 220—10 **11 Claims**



A vessel for storing liquids having walls forming an outer annular chamber adjacent walls of an inner tank and surrounding the lower peripheral portion of the tank, the chamber having an outer wall with the inner sidewall thereof and a portion of the tank walls being common, a liquid passage connecting the annular chamber and the inner tank, a pipe positioned in the inner tank communicating at its lower end with the liquid passage, and means to buoyantly support the pipe so that its upper end is below or at about the level of liquid in the inner tank to transfer liquid through the pipe between the inner tank and annular chamber when the liquid level is at or below a maximum level in the annular chamber during filling or emptying of the vessel, and to support the upper end of the pipe above the liquid level in the inner tank when the liquid level in the annular chamber reaches or is at the maximum level.

3,608,769
SHIPPING CONTAINER ARRANGEMENT

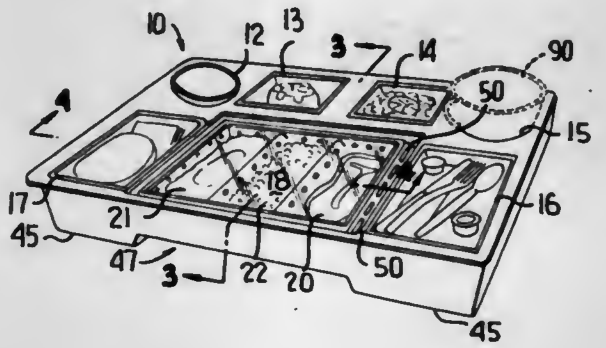
Kenneth A. Gablin, Tacoma, Wash., assignor to Nuclear Engineering Company, Inc., San Francisco, Calif.
Filed June 9, 1969, Ser. No. 831,512
Int. Cl. B65d *7/22*
U.S. Cl. 220—10 **15 Claims**



An improved hazardous materials shipping container arrangement for providing puncture and penetration resistance, flame resistance, shock absorption and thermal insulation by surrounding a standard drum with a multilayered structure to provide the various desired protections. An energy-absorbing crushable wrap is provided around the drum and extending axially longer than the drum to provide cavities at the drum ends occupied by energy-absorbing crushable plugs, an energy-reflective layer, such as aluminum foil, is wound around the outside of the energy-absorbing elements to provide thermal radiation protection. The entire assembly of the drum and the energy-absorbing wrap and the end plugs is positioned inside a lightweight outer steel drum that preferably is slightly greater in size than the energy-absorbing wrap. The outer steel drum or shell provides puncture and penetration resistance and acts as a flame barrier. The inner energy absorption core provides shock absorption and thermal insulation.

3,608,770
APPARATUS AND SYSTEM FOR FOOD PREPARATION

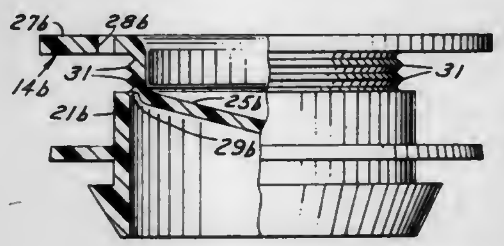
Vincent J. Naimoli, Wyckoff, N.J., assignor to Continental Can Company, New York, N.Y.
Filed June 10, 1969, Ser. No. 831,852
Int. Cl. B65d *25/00*
U.S. Cl. 220—16 **9 Claims**



An apparatus and system for food preparation wherein a novel tray is loaded with a full course meal, transported within a novel carrier, placed into a novel oven or heating chamber, and portions of the food are heated to an elevated serving temperature while other portions of the foods are maintained at unheated serving temperatures.

3,608,771
DISPOSABLE PRESSURE CONTAINER

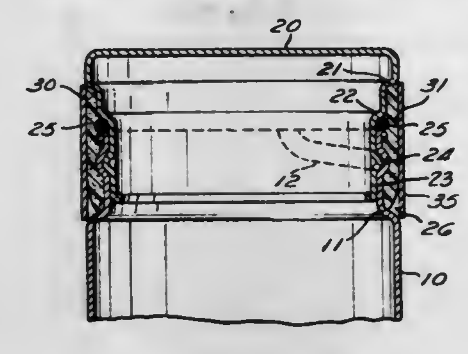
Carl C. Monroe, Orchard Lake, and Verner Vollquartz, Pontiac, both of Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.
Filed Mar. 12, 1969, Ser. No. 806,487
Int. Cl. B65d *17/00*
U.S. Cl. 220—27 **5 Claims**



A disposable, self-destruct, composite container for liquid goods, and in particular, liquid goods having internal pressures, such as beer and carbonated soft drinks. The container includes an elongated body member comprising a paperboard cylinder which is provided with a plastic film on its internal surface for restricting gas permeability and sealing of liquid. The paperboard body member is provided with an exterior coating of thermoplastic to provide a moisture barrier, and for cosmetic appearance purposes. The paperboard body member is closed at each of the top and bottom ends thereof by a circular-shaped disc. The top disc has an opening which is enclosed by a sealing plug means that includes an integral tear-off tubular cap portion that is provided with an integrally molded pull ring for detaching the tubular cap portion.

3,608,772
BAND-SEALED CONTAINER

Richard W. Asmus, 3628 West 48th St., Cleveland, Ohio
Filed Oct. 2, 1969, Ser. No. 863,105
Int. Cl. B65d *17/24*
U.S. Cl. 220—53 **9 Claims**



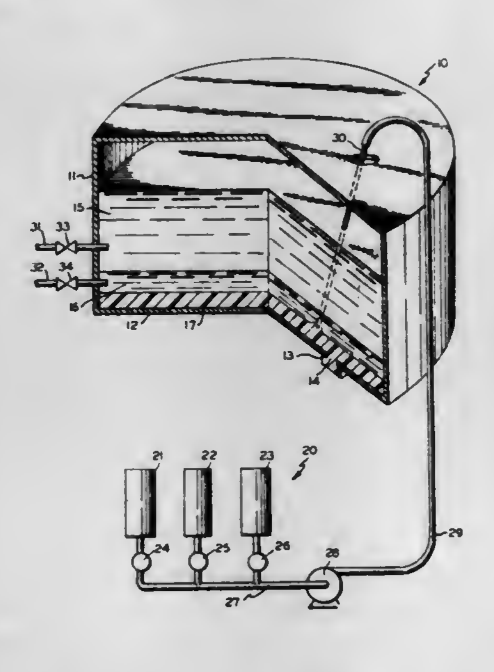
A reclosable container having a removable top closure mechanically joined to the container body to carry the structural loads of container and contents, the mechanical joint being cylindrical and connected and disconnected by rotation of the top closure and the container body relative to each other. The ultimate seal during the shelf life between filling and initial opening of the container is effected by a rupturable band adhered over the joint, said band in the locus of the joint line having a strength in shear less than its adhesive bond to the container closure and body adjacent the joint line. The closure and body are preferably recessed adjacent the joint line to receive the band. The band is preferably endless and formed in situ by application of band material in liquid condition; a repellent or adhesion inhibiter (preferably an immiscible liquid) may be located in or over the joint line to exclude entrance of the band material into the joint and provide an equatorial area of weakness for rupture of the sealing band.

ERRATUM

For Class 220—60 see:
Patent No. 3,609,263

3,608,773
COATED TANK

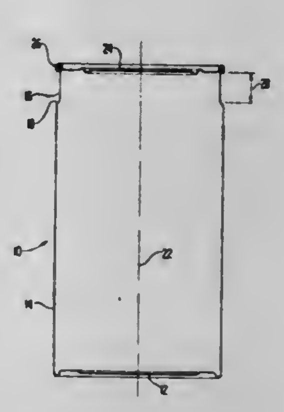
Richard A. Coderre, St. Louis Park, and Robert H. Leitheiser, Jordan, both of Minn., assignors to Ashland Oil, Inc., Ashland, Ky.
Filed Apr. 2 •, 1968, Ser. No. 725,273
Int. Cl. B65d *25/14*
U.S. Cl. 220—64 **2 Claims**



A storage tank, the bottom of which has been coated with a layer formed by polymerizing a water-in-oil emulsion without breaking same.

3,608,774
DRAWN CAN FOR ACCOMMODATING CONVENTIONAL OPENERS

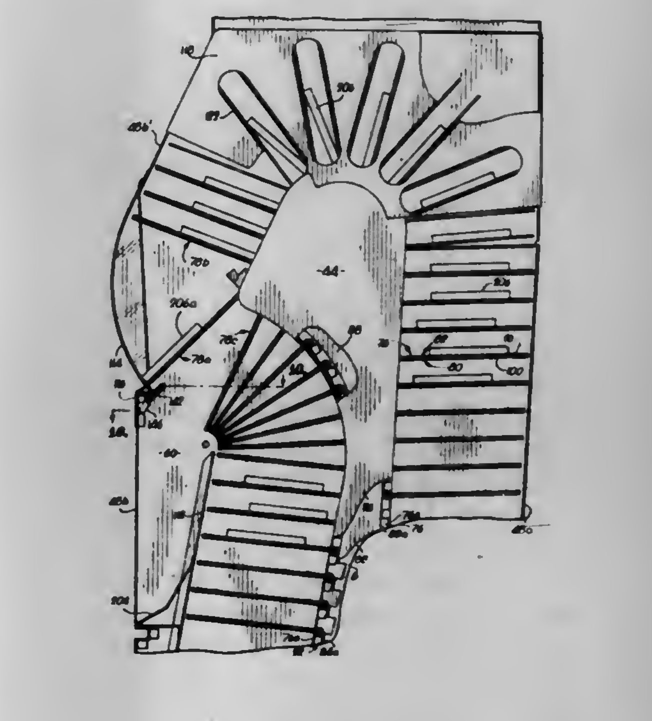
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation
Filed Jan. 7, 1970, Ser. No. 1,171
Int. Cl. B65d *7/42*
U.S. Cl. 220—67 **3 Claims**



Provision is made for opening a seam-free body, two-piece can with conventional plow-type can openers while maintaining substantially the same diameter container at opposite longitudinal ends by forming an elongated necked-in portion at the open end of the seam-free body; the necked-in portion being of extended longitudinal length (approximately ½-inch) to accommodate the drive wheel of a plow-type opener; and, the radial thickness and/or placement of the chime seam being such that the outer diameter of the chime seam is substantially equal to the outer diameter of the seam-free body.

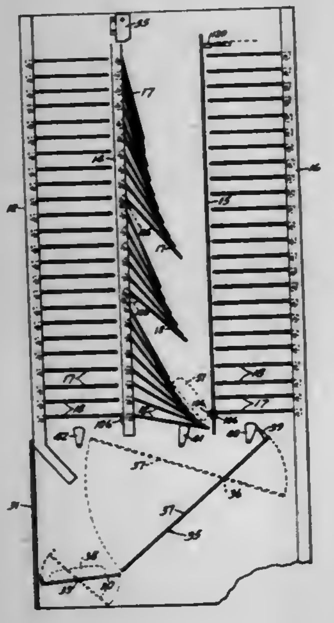
3,608,775
FIRST-IN FIRST-OUT PRODUCT-DISPENSING MACHINE HAVING HIGH-LEVEL ARTICLE DISPLAY AND DISCHARGE

Elmer Bradley Offutt, Independence, Mo., assignor to The Vendo Company, Kansas City, Mo.
Filed Oct. 9, 1969, Ser. No. 865,007
Int. Cl. G07f *11/52*
U.S. Cl. 221—84 **27 Claims**



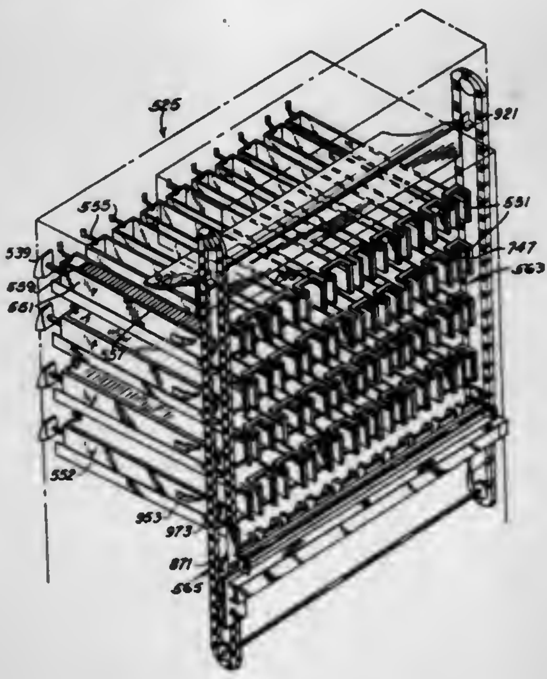
A first-in, first-out product-dispensing machine provided with a plurality of upright, side-by-side conveyors each having a series of product-supporting tray assemblies movable incrementally upon selection thereof through a respective inverted, J-shaped path of travel past a dispensing station and operable during each cycle of actuation to effect release to the dispensing station of a product supported by a tray assembly initially in a product display location proximal to the upper part of the path of travel of the tray assemblies of the selected conveyor and to also shift another tray assembly thereof into said product display position whereby both display of each of the products next to be dispensed, and delivery of a selected product to the dispensing station, may be carried out at a convenient, high-level height while at the same time permitting stocking of virtually all of the product tray assemblies of each conveyor. The tray assemblies of said conveyors are each made up of two normally back-to-back, pivotally interconnected tray members co-operable with J-shaped conveyor guides therefor to fan apart as the tray members are moved through the arcuate portions of said closed loop path to prevent end-over-end tumbling of the products between adjacent tray assemblies.

3,608,776
ARTICLE-DISPENSING MODULE
James A. Moe, 503 Carolyn Lane, White Bear Lake, Minn., and Thomas J. Ross, 1011 Euclid St., St. Paul, Minn.
Filed Nov. 14, 1969, Ser. No. 876,752
Int. Cl. G07f *11/00*
U.S. Cl. 221—90 **18 Claims**



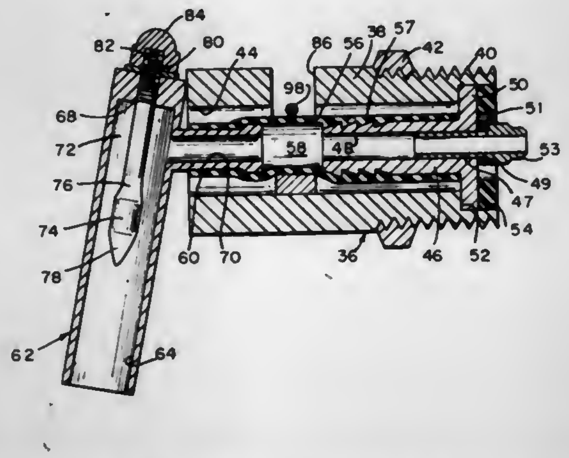
An article-dispensing module comprising a plurality of shelves in a plurality of columns which may be unloaded seriatim. The module may be one of a plurality of modules in a dispensing apparatus, each module operating on command to dispense the article on display and to place another article in the display position. The dispensing module is operated by a single motor incrementally rotatably driving a plurality of gears which control reciprocating self-resetting cams acting to release the shelves and dispense the articles. The dispensing module of the present invention provides the sequential unloading of articles from the shelves by pivoting the closely spaced shelves arranged in a plurality of columns disposed in a row and provides means for restricting the articles dispensed from becoming inverted when moving from their shelves to the display position.

3,608,777
ARTICLE-VENDING APPARATUS UTILIZING DISPLACEABLE ARTICLE-CONTAINING TRANSPORT MEMBERS
Albinus G. Bodoh, Prospect Heights; Owen J. Schwertfeger, Chicago; Roy A. Johnson, Chicago, all of Ill., and Walter E. Heller & Company, Chicago, Ill.
Filed Sept. 12, 1968, Ser. No. 759,478
Int. Cl. B65g *59/00*
U.S. Cl. 221—129 **18 Claims**



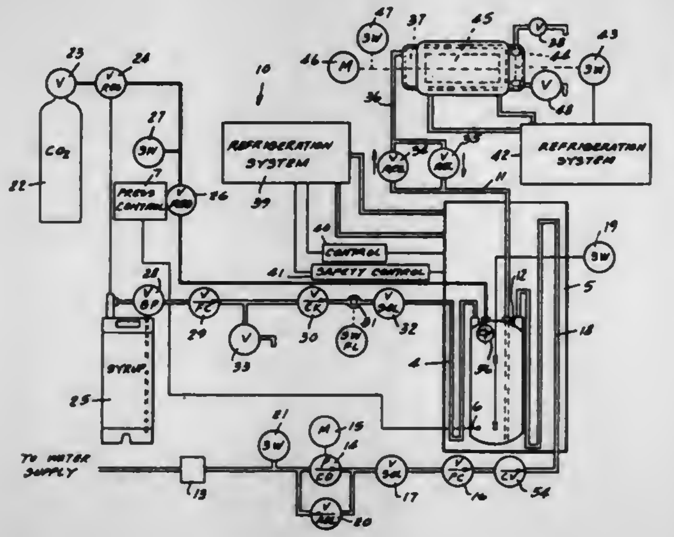
Article vending is achieved by utilizing article-containing transport members that are displaced for vending of an article thereon. The movable trays are horizontally disposed in drawers, with a plurality of vertically separated drawers positioned in a cabinet. Selection of an article located on a transport member results in that transport member being displaced to position the rearmost article on the transport member in a vend area, from whence it is conveyed to a dispensing area by a vertically movable extracting member.

3,608,778
AUTOMATIC FLUID-DISPENSING AND FOAM CONTROL APPARATUS
Archie V. Paranto, and Thomas J. Mathews, both of Dallas, Tex., assignors to Draft Meter Corporation, Dallas, Tex.
Filed Dec. 16, 1968, Ser. No. 784,070
Int. Cl. B67d *5/54*
U.S. Cl. 222—30 **9 Claims**



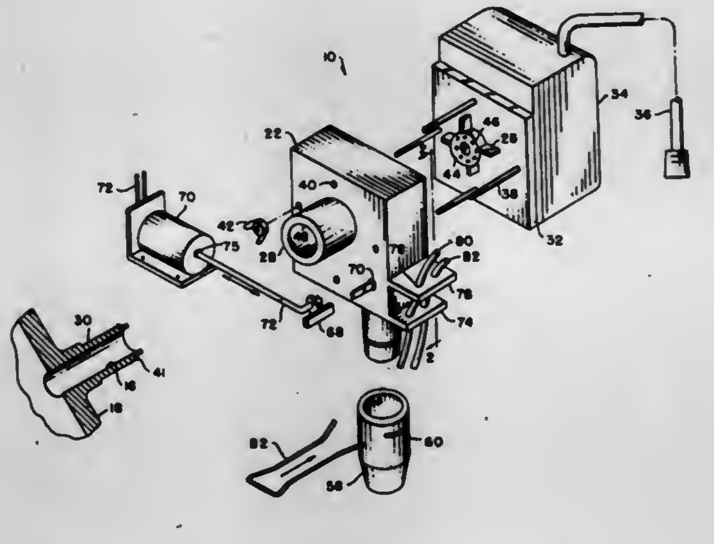
An automatic fluid-dispensing apparatus for measuring and dispensing preselected quantities of fluids. Upon selection of the desired dispensing quantity the apparatus is triggered and automatically fills the container with substantially the exact required amount of fluid thus substantially eliminating overpouring of the fluid to reduce loss through spillage. The quantity of fluid dispensed is accurately counted whereby an inventory of the fluid may be maintained at all times. Where the fluid is a gas-charged liquid, a foam control means is provided.

3,608,779
METHOD AND APPARATUS FOR PRODUCING AND DISPENSING A SEMIFROZEN CARBONATED BEVERAGE
Richard T. Cornelius, Minneapolis, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Dec. 12, 1968, Ser. No. 783,302
Int. Cl. B67d *5/08*
U.S. Cl. 222—54 **15 Claims**



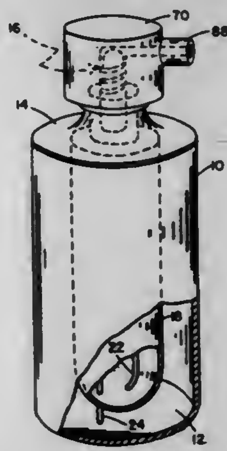
Water, syrup, and carbon dioxide gas are combined after precooling the liquids in a refrigerated carbonator, operating at a first static pressure, and thence conducted through a pressure regulator valve to a freezing chamber operating at a lower static pressure where the product is converted into a slush type of beverage under temperature and pressure conditions such that free carbon dioxide gas will be diffused throughout the product which is saturated with CO_2 gas in solution. Temperature in the carbonator is used to regulate the carbonating pressure.

3,608,780
CONSTANT-VOLUME VARIABLE-VISCOSITY MATERIAL DISPENSING APPARATUS
Foy J. Nevans, 22206 Raymond, St. Clair Shores, Mich.
Filed Oct. 2, 1969, Ser. No. 863,144
Int. Cl. B67d *5/16*
U.S. Cl. 222—73 **7 Claims**



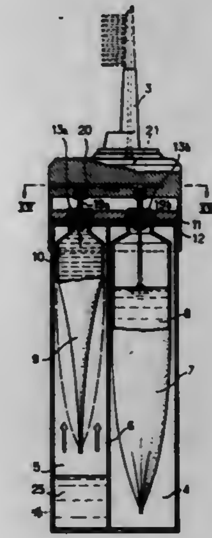
Apparatus for dispensing a constant volume of slush in a fixed time including a source of slush, a dispensing chamber having a nozzle outlet, means for positively feeding slush into the dispensing chamber from the source of slush, a selectively operable check valve within the dispensing chamber for opening and closing the nozzle outlet, an impeller in the dispensing chamber, a bypass passage in the dispenser chamber for feeding excess slush in the dispensing chamber back to the source of slush, and means for opening the check valve and rotating the impeller for a predetermined time.

3,608,781
PRESSURIZED MIXING DISPENSER
John Barry Flynn, Needham, Mass., assignor to The Gillette Company, Boston, Mass.
Filed June 7, 1968, Ser. No. 735,291
Int. Cl. B65d *35/28, 83/14*
U.S. Cl. 222—94 **13 Claims**



A pressurized mixing and dispensing device has an inner container disposed within an outer container. The dip tubes are in the inner container, one tube passing through inner container bottom to a point near the bottom of the outer container and the other going to a point near the bottom of the inner container. Both tubes are connected to outlets in the inner container, which communicate through a valve housing seated in inner container with a valve core disposed in the bore of the valve housing. The valve core has grooves in its surface in which are formed flow restricting protuberances. The core grooves are connected to the container outlets when axial force is applied to the valve core. That axial force causes the core to move axially and rotatably because of a camming pin which extends from the valve core through a camming aperture in the housing against the resistance of a spring connected between the core and the housing. A seal surrounds the valve core just below the grooves.

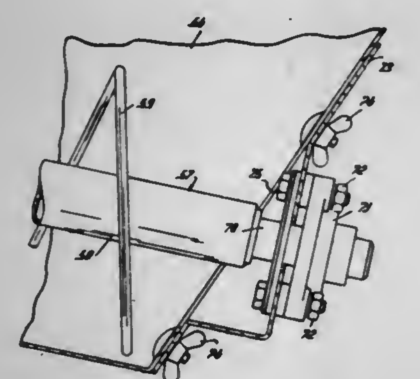
3,608,782
DEVICE FOR HOLDING TWO PRODUCTS SEPARATELY AND DISPENSING THEM SIMULTANEOUSLY
Robert Sathicq, Villepinte, France, assignor to L'Oreal, Paris, France
Filed Oct. 29, 1969, Ser. No. 872,034
Claims priority, application France, Nov. 5, 1968, 172,606
Int. Cl. B65d *35/24*
U.S. Cl. 222—94 **9 Claims**



Two products are stored in separate tubes, each in a separate container compartment, with one of said tubes under external pressure. Means are provided for connecting the tubes together so that the contents of the tube under pressure will be forced into the other tube, and for then dispensing the contents of the second tube.

3,608,783
SPREADING IMPLEMENTS HAVING A REMOVABLE FEEDER

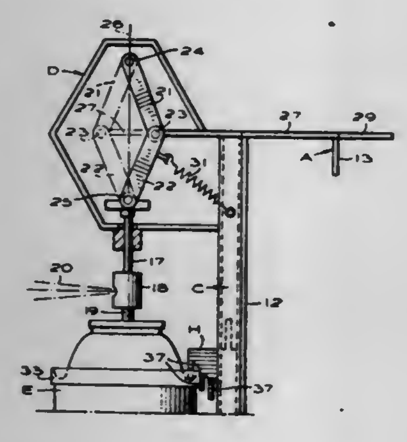
Ary van der Lely, 10, Weverskade, Maasland, Netherlands
Filed Feb. 11, 1969, Ser. No. 798,282
Claims priority, application Netherlands, Feb. 16, 1968, Nov. 21, 1968, 68,02206;68,16608
Int. Cl. B67d *5/62*
U.S. Cl. 222—142 **8 Claims**



An agricultural spreading implement has one or more containers for material and the container includes at least one feeder member rotatably supported in its container. The feeder member is supported at points to extend substantially lengthwise of the interior of its container and in operation, urge material towards at least an outlet opening. The feeder member is mounted for easy access and removal. A masking member can be moved relative to the bottom of the container to open or close the outlet.

3,608,784
DOOR-ACTUATED DEODORIZER

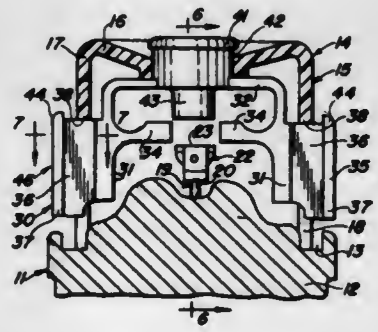
Jackson E. Brown, 198 42nd Ave., San Mateo, Calif., and Harvey G. Thomas, 1709 Berkeley Way, Berkeley, Calif.
Filed Mar. 2, 1970, Ser. No. 15,414
Int. Cl. B67d *5/12*
U.S. Cl. 222—180 **7 Claims**



A door-actuated deodorizer having a hanger bracket removably hooked over the upper edge of a door, and a vertical guide secured to the bracket on the inner face of the door. Moreover, a toggle arrangement is supported by the guide and a toggle actuator is disposed so that a sliding bar thereof projects outwardly beyond an outside face of the door, the bar having an outer end located to abut against a stop strip of the door frame as the door is closed, thereby causing a reciprocating plunger on the toggle arrangement to be moved so as to depress an atomizer spray head on a can of disinfectant that is supported by the guide, causing disinfectant to be sprayed into the room.

3,608,785
AEROSOL CONTAINER AND CLOSURE CAP UNIT THEREFOR

August J. Durso, 1604 Blackthorn Drive, Glenview, Ill.; Frank C. Maurer, Skokie; John F. McEnery, Niles, and George A. Panczyszyn, Glenview, Ill.
Filed Dec. 18, 1969, Ser. No. 886,264
Int. Cl. B65d *83/4*
U.S. Cl. 222—182 **12 Claims**

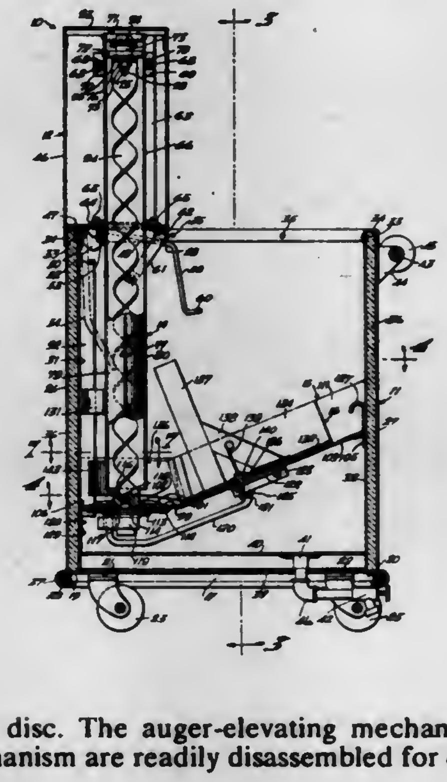


An aerosol container and closure cap unit therefor are provided for closing an aerosol container and operating the valve-controlled aerosol-conducting and discharge nozzle member of an aerosol container, and includes means for actuating the valve-controlled aerosol-conducting and discharge nozzle member and the valve means therefor; a generally cylindrical closure cap housing mounted on the top wall of the generally cylindrical body of the said aerosol container, and including a top wall and a depending generally annular sidewall; manually operable control means movably mounted in the generally cylindrical closure cap housing for moving the said actuating means into engagement with the said valve-controlled aerosol-conducting and discharge nozzle member including a first manually operable control means mounted at one point on the wall of the closure cap housing, and a second manually operable control means mounted at another point on the wall of the closure cap housing. The valve-controlled aerosol-conducting and discharge nozzle member is moved into engagement with the valve means therefor to open the latter by simultaneously manipulating both of the manually operable control means and the valve-controlled aerosol-conducting and discharge nozzle member cannot be operated without operating both of such manually operable control means simultaneously. The construction and arrangement of the closure cap unit are such that the valve-controlled aerosol-conducting and discharge nozzle member cannot be manipulated into open or discharge position by small children since it has been found that small children cannot operate simultaneously both of the manually operable control means as is required for manipulating the actuating means for the valve-controlled aerosol-conducting and discharge nozzle member into effective or discharge position.

3,608,786
PORTABLE AUGER LIFT CUBED ICE DISPENSER

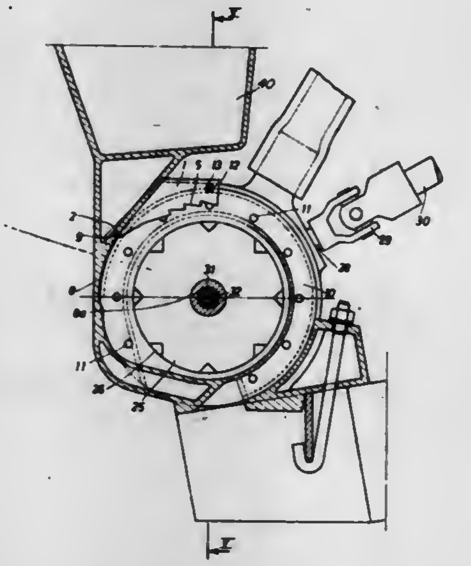
George R. Shelley; Robert J. Shelly, Jr.; Arthur B. Dixon, and Bruce House, all of Miami, Fla., assignors to Shelley Manufacturing Company
Filed Aug. 25, 1969, Ser. No. 862,587
Int. Cl. G01f *11/00*
U.S. Cl. 222—232 **12 Claims**

A portable, low center of gravity ice dispenser for automatically dispensing predetermined portions of cubed, cracked or crushed ice is described, including an ice bin supplied with the ice to be dispensed and an ice elevating mechanism in the form of an auger having an ice feeder disc at its lower end and an auger tube within which the auger turns for elevating the ice. The auger is driven from the top by an electrical drive means, and is mechanically connected at its lower end to agitator means for feeding ice from the bin to the auger disc. The auger-elevating mechanism and the agitator mechanism are readily disassembled for cleaning.



3,608,787
DEVICE FOR ELIMINATING DOUBLE SEEDS IN DISTRIBUTORS FOR SOWING MACHINES

Xavier Roger Grataloup, Montereau, France, assignor to Societe Anonyme: Nodet-Gougis, Montereau; Paul Lamazou, Astis par Auriac (Basses Pyrenees) and Jean Lamazou, Euros (Basses Pyrenees), Morlaas, France, part interest to each
Filed June 16, 1969, Ser. No. 833,305
Claims priority, application France, July 24, 1968, 160 452
Int. Cl. G01f *11/06*
U.S. Cl. 222—342 **5 Claims**

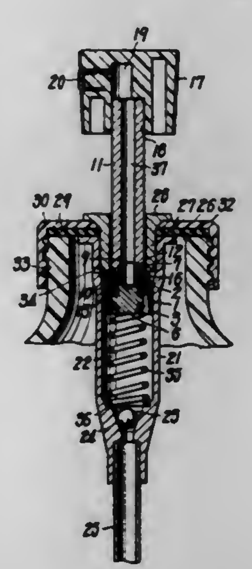


The present invention relates to a device for eliminating double seeds or seed clusters in distributor for sowing machines.

The object of the invention is a device constituted by a selector plate which is applied against the rotary disc provided with seed suction holes and which is cut out on one of its edges, so as to form a series of hollow and projecting points constituting a succession of fixed contact points situated tangentially in relation to the trajectory of the conglomerated packets or clusters of seeds near the suction holes, these fixed points having the effect of turning each conglomeration of seeds around and/or over said holes and, through their dissociative contact, effecting the elimination of all double seeds or additional seeds situated around each of the suction holes.

3,608,788
FLUID-DISPENSING PUMP

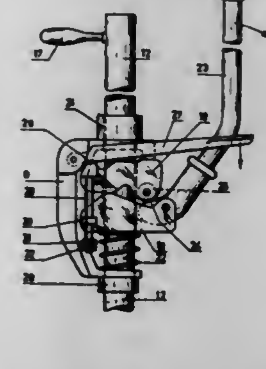
Noboru Tanaka, Fujiidera, Japan, assignor to Kabushiki Kaisha Mitani Valve, Taito-ku, Tokyo, Japan
Filed Dec. 13, 1968, Ser. No. 783,680
Claims priority, application Japan, Dec. 15, 1967, Dec. 15, 1967, Dec. 29, 1967, Sept. 28, 1968, 42/80,365;42/80,366;42/110,576;43/70,668
Int. Cl. B67d *5/40*
U.S. Cl. 222—384 **9 Claims**



This disclosure relates to a finger-operated atomizer pump for separating a liquid from a container, and is so formed that, in case a piston is pushed down or is pushed up by a resiliency of a coiled spring when the force of pushing it down is released, a valve body may move vertically to open or close a passage hole connecting an inner chamber of a cylinder and a central hole of the piston. Therefore, there are obtained advantages that the number of the component parts is small, that therefore the trouble and wage for making many component parts can be reduced, that the trouble in assembling them can be reduced and that the products can be provided cheaply.

3,608,789
APPARATUS FOR PREPARING PUREE OR A SIMILAR PRODUCT

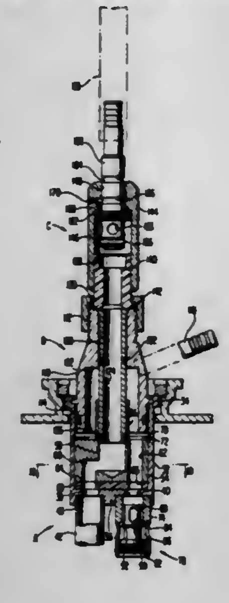
Willem H. Willemsen, 83, Westervalge, Warffum, Netherlands
Filed Oct. 31, 1969, Ser. No. 872,966
Claims priority, application Netherlands, Nov. 14, 1968, 68/6249
Int. Cl. G01f *11/00*
U.S. Cl. 222—391 **3 Claims**



An apparatus for preparing and extruding puree such that exactly equal portions are dispensed. The apparatus has a piston which may be operated by a lever through a displacement mechanism. The lever stroke is limited by a stop. In a preferred embodiment the stop is adjustable and also relieves the pressure on the puree at the end of the lever stroke, thereby preventing the spilling of puree when the apparatus is inoperative as well as demixing of the puree.

3,608,790
TAPPING DEVICE FOR BEER KEGS AND THE LIKE

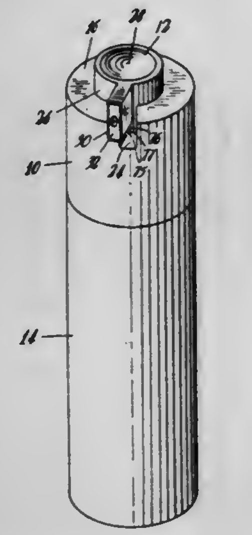
Mack S. Johnston, Rolling Hills, Calif., assignor to Republic Corporation, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 819,706, Apr. 28, 1969. This application Dec. 31, 1969, Ser. No. 889,485
Int. Cl. B65d *83/00*
U.S. Cl. 222—400.7 **20 Claims**



Disclosed is a tapping device for beer kegs and the like including a cup-shaped keg adapter mounted in the keg opening at the brewery and a probe type coupler secured to the keg adapter at the dispensing establishment for dispensing beer. The adapter includes a pair of offset openings through its lower end wall which respectively define in part beer and gas passages through the adapter. A valve body is disposed in the adapter body and has beer and gas passageways, the body being rotatable between a position sealing about the openings and a position permitting flow of gas and beer through the valve body, respectively and into and out of the keg. The coupler includes a member engageable with the valve body to rotate the latter to the valve open and closed positions. A positive gas check valve is also provided in the keg adapter body. A beer shutoff valve is provided on the coupler.

3,608,791
AEROSOL ACTUATOR ASSEMBLY

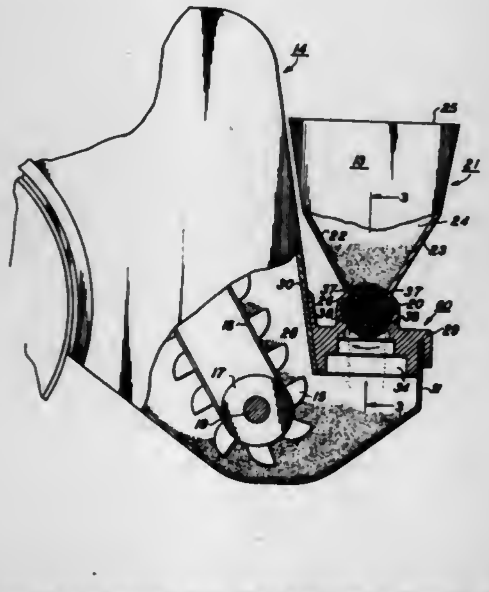
Gilbert S. Jordan, Monroe, and Paul H. Mohr, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Oct. 15, 1968, Ser. No. 767,714
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 **4 Claims**



An aerosol actuator assembly is provided which is functionally improved, aesthetically superior and capable of manufacture at a cost which is economically competitive. The actuator comprises a cap member and an actuator button concentrically mounted therein. The button moves axially within the cap member to effect dispensing of aerosol formulation and, when the button is rotated, a spout thereon engages a stepped configuration on the cap member whereby the button is either locked in a nondispensing position or moved to a position wherein dispensing is enabled. The cap member comprises a double-walled configuration with an inner wall firmly engaging an aerosol container and an outer wall shaped to blend with the container to effect a streamlined contour.

3,608,792
APPARATUS FOR DISPENSING FINELY DIVIDED PARTICULATE MATERIAL

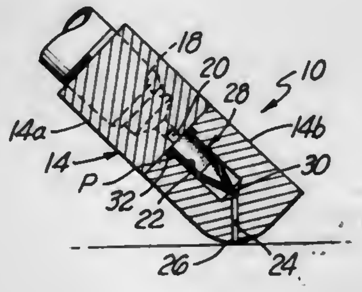
Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Feb. 6, 1969, Ser. No. 796,965
Int. Cl. G01f *11/00*
U.S. Cl. 222—407 **3 Claims**



Method and apparatus for dispensing a finely divided particulate material in which a resilient member having a textured outer surface of cell-like cavities being adapted to receive and support particulate material therein is passed through a quantity of the particulate material to load said member and the member then transported to a discharge station where the member is deformed sufficiently to force the particulate material from the surface of said member.

3,608,793
DRIPLESS LIQUID DISPENSER

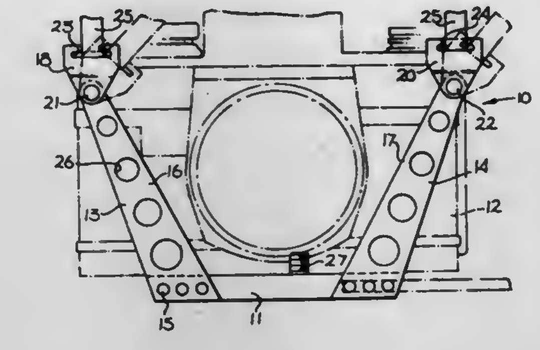
Peter J. VanLobenSels, 11838 Cherrylee Drive, El Monte, Calif.
Filed July 22, 1969, Ser. No. 843,411
Int. Cl. B65d *25/40*
U.S. Cl. 222—490 **4 Claims**



A dripless liquid dispenser having an inlet for receiving liquid at dispensing pressure and one or more dispensing ports through which the liquid exits from the dispenser. Each port is provided with an individual pressure-actuated valve which opens to pass liquid to the port when liquid is supplied to the dispenser inlet at normal dispensing pressure and closes to block dripping of the liquid from the port when the supply of liquid to the dispenser is Shut off. The preferred dispensing port shutoff valve is an elastic valve sleeve surrounding the communicating passage between the port and dispenser inlet and having an exit end located immediately adjacent the port which normally assumes a constricted configuration wherein the sleeve blocks liquid flow to the port.

3,608,794
CAMERA CRADLE

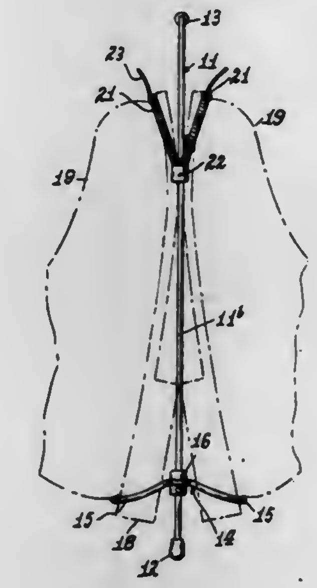
Harry E. Mazur, 930 Westbourne Drive, Los Angeles, Calif.
Filed Sept. 8, 1969, Ser. No. 856,081
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 V **10 Claims**



A camera cradle is disclosed herein having a flat base including fastening means for detachably securing a camera thereto for supporting purposes. A pair of spaced diverging support members are secured to one side of the base at the opposite ends thereof so as to project upwardly adjacent the camera secured to the base. The free end of each support member carries a swivel connection for coupling to a suitable neck strap whereby the cradle-supported camera may be readily positioned transversely or tilted without encountering strap binding, interference with actuating mechanisms of the camera or unstable support for the camera.

3,608,795
BOOT CARRIER

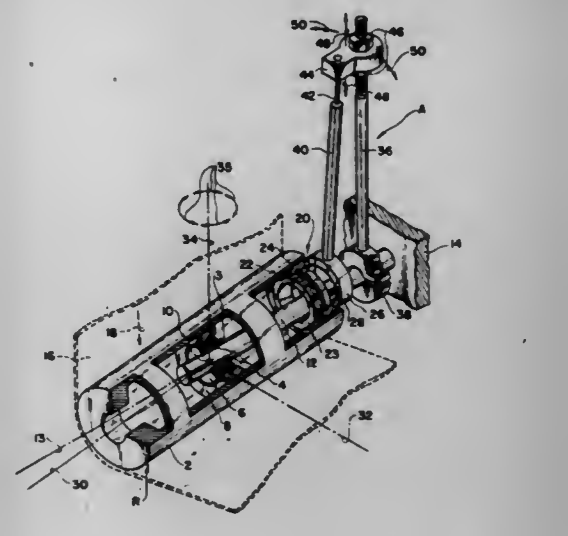
Bernard W. Klein, St. Charles, and Sam F. Emma, Geneva, both of Ill., assignors to Gunter L. Steves, St. Charles, Ill., a part interest
Filed Oct. 30, 1968, Ser. No. 771,781
Int. Cl. B65d *71/00*
U.S. Cl. 224—45 R **5 Claims**



This invention is concerned with the structure of a ski boot carrier having a frame of a length greater than the boots and provided with an adjustably mounted cradle on each side at one end to receive and support the heel of a boot and a resilient strap on each side adjacent to the other end to engage over the sole at the boot toe. A carrying handle is at one end.

3,608,796
WEB-SUPPORTING DEVICE

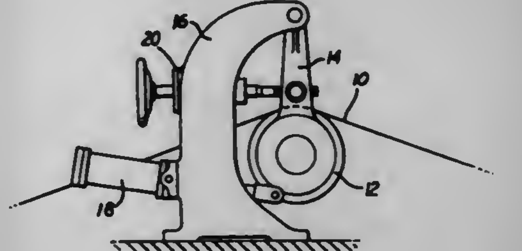
John E. Morse, and Richard A. Marsh, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,565
Int. Cl. B65h *25/26*
U.S. Cl. 226—21 **11 Claims**



A supporting roller across which a flexible web moves is rotatably mounted at its midpoint on a longitudinal shaft and is pivotally movable with respect to said shaft. Three orthogonal axes pass through the midpoint. The first axis is the longitudinal aXis of the roller; the roller is adjustably positionable about the second axis; and the third axis is a gimbal axis about which the roller is free to rotate. In order to restrain the roller for these movements one end of the roller is provided with a roller bearing which is connected by flexures to an annulus extending around the shaft. In one embodiment the annulus is connected by a flexure arm to a lug which is longitudinally adjustable along a support post extending perpendicular from the shaft. Also, the post is adjustably positionable about the shaft so that the direction of the gimbal axis can be changed. In another embodiment a spring bracket biases the flexure member along its axis, the amount of the movement thereof being limited by a setscrew.

3,608,797
SENSING MEANS FOR CONTROLLING FELT GUIDES

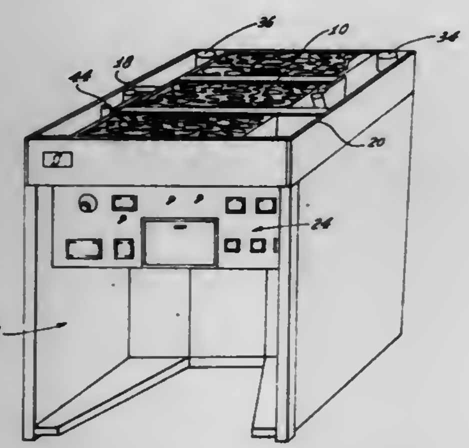
Thomas Hindle, and David Dugmore Banks, both of Blackburn, England, assignors to Hindle, Son and Company Limited
Filed Nov. 29, 1968, Ser. No. 780,086
Claims priority, application Great Britain, Nov. 30, 1967, 54464/67
Int. Cl. B65h *23/26*
U.S. Cl. 226—22 **13 Claims**



Sensing means comprising two nozzle outlets from which jets of fluid medium can issue, supported in relation to a web travelling over a pivotally supported guide roll which is adapted to be slewed relative to one end to correct wandering of the web by a motor and linkage connecting the motor to one end of the guide roll, said nozzle outlets being positionable in relation to the web so that when the web is moving along its normal course one or both nozzle outlets may or may not be interrupted by the web, and a detector on which the jets from the nozzle outlets fall when not interrupted by the web, said detector being operable to effect operation of the motor in a direction to effect compensating slewing of the guide roll.

3,608,798
TAPE LOOP BIN APPARATUS AND SYSTEM

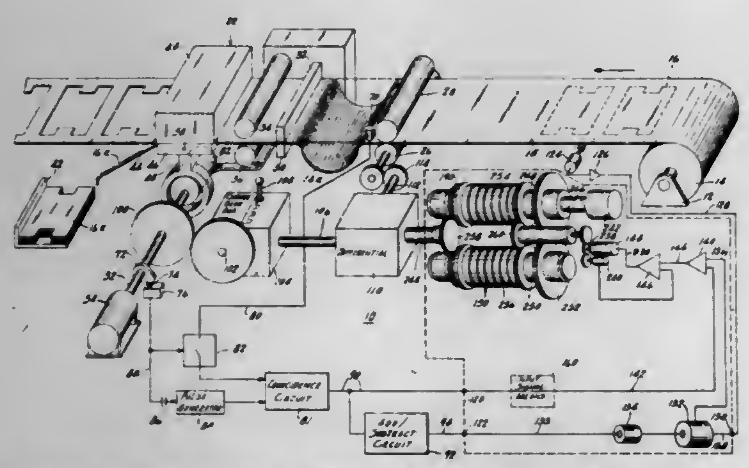
William F. Lawless, Los Angeles, Calif., assignor to MCA Technology, Inc., Santa Monica, Calif.
Filed Apr. 28, 1969, Ser. No. 819,815
Int. Cl. B65h ***23/18***
U.S. Cl. 226—25 **11 Claims**



A tape loop bin storage apparatus is provided in which an endless magnetic tape, or other elongated flexible tape, is stored in serpentine folds in a bin or magazine, and which may be used in conjunction with a master recorder/reproducer. The improved loop bin storage apparatus of the invention incorporates many unique features which are of general utility in the magnetic recorder/reproducer art. For example, the apparatus includes an improved timing system which facilitates the recording of programs on the tape and the subsequent reproduction of such programs by the master recorder; and the storage apparatus further includes improved components for controlling and guiding the endless tape in and out of the storage bin.

3,608,799
PRINT TO CUT REGISTER SYSTEM

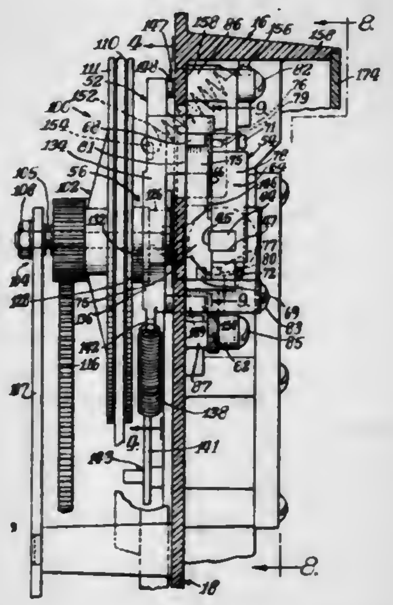
Charles R. Edson, West Allies, Wis., assignor to Zerand Corporation, New Berlin, Wis.
Filed Nov. 21, 1969, Ser. No. 878,692
Int. Cl. B65h ***23/18***
U.S. Cl. 226—31 **17 Claims**



A print to cut register system for establishing and maintaining registration between a pattern on a moving web and a cutting die by controlling the operative condition of a pair of web feed rolls. The print to cut register system incorporates an electric signal means responsive to the output of a registration error detector. The electric signal means, which may include a computing resolver, provides an output signal proportional to the alteration in the web feed rolls necessary to correct the detected registration error. The electric signal means is connected to electromechanical means having a servomotor for converting the output signal of the electric signal means into a corresponding shaft speed and rotary direction signal. The servomotor shaft speed and rotary direction signal is amplified by the torque amplifier and provided through a differential drive means to the feed rolls to correct the registration error.

3,608,800
INTERMITTENT FILM-FEEDING MECHANISM

George J. Zahradnik, Wheaton, assignor to Fred S. Golden, Chicago, both of, Ill. and A. B. Dick Company, Chicago, Ill.
Filed Mar. 25, 1970, Ser. No. 22,520
Int. Cl. G03b ***1/22***
U.S. Cl. 226—62 **6 Claims**



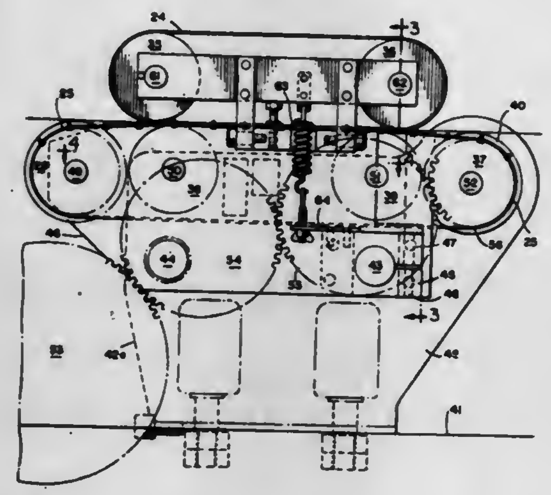
An intermittent film-feeding mechanism for advancing a motion picture film frame by frame across a film guide block has an elongated slit opening in the path of the perforations at one edge of the film for receiving a claw, and having resilient finger members engaging the opposite edges of the film to cause the perforations along said one edge of the film to pass over the slit opening. A shuttle assembly has a claw and two cam followers that cooperate with two cams of a claw drive assembly to move the claw in a closed loop path for advaNcing the film frame by frame. A spring member biases the shuttle assembly about two movable pivot members such that the claw rubs against one of the sidewalls which define the slit opening to prevent any lateral movement of the claw relative to the slit opening.

3,608,801
WEB TRANSPORT SYSTEM

Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company Inc., Green Bay, Wis.
Continuation of Ser. No. 726,788, May 6, 1968, abandoned, which is a Continuation-in-part of Ser. No. 566,609, July 20, 1966, abandoned. This application Apr. 16, 1970, Ser. No. 28,227
Int. Cl. G03b ***1/30***
U.S. Cl. 226—74 **6 Claims**

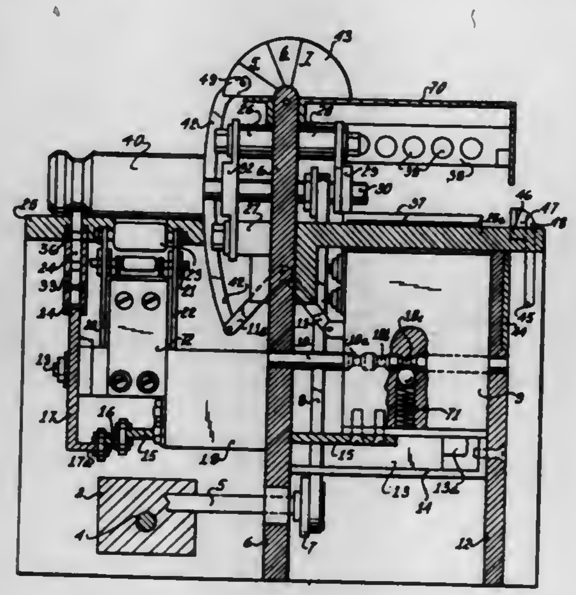
A belt system for controlling the speed of advance of line-hole-punched copy forms wherein upper and lower belts are arranged on opposite sides of the punched web, the lower

belt having pins projecting through the line holes into registering openings in the upper belt. The belts are arranged on pulleys so that the upper run of the lower belt slopes away from the web before reversal.



3,608,802
TWIN READ-OUT DEVICES

Heinz Pons, Walldorf, and Gunter Lorek, Hochst, both of Germany, assignors to Olympia Burosysteme GmbH, Frankfurt am Main, Germany
Filed Nov. 17, 1969, Ser. No. 877,396
Claims priority, application Germany, Nov. 16, 1968, P 18 09 335.1
Int. Cl. G11b ***15/66***
U.S. Cl. 226—90 **12 Claims**

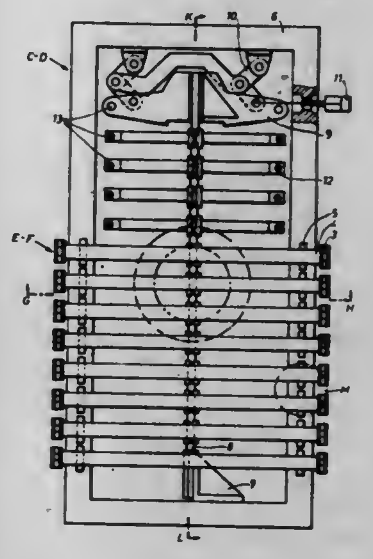


Twin readout devices with parallel paths and aligned transporting rollers for two record carriers, are provided with control means for simultaneously adjusting one device to the width of a specific record carrier, and preparing the other device for a readout operation.

3,608,803
ROLLER TRACK FOR GUIDING STRIPS HAVING PARALLEL EDGES

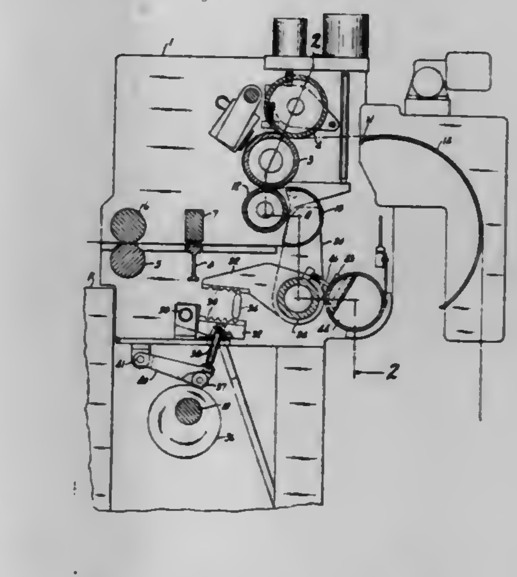
Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Wolfgang Schweicher, Leverkusen, and Karl Voss, Leverkusen-Alkenrath, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 11, 1969, Ser. No. 857,131
Int. Cl. B65h ***17/28***
U.S. Cl. 226—95 **6 Claims**

A roller track for guiding flexible strips through a change in spatial direction has a series of idler rollers perpendicularly connected to an elongated deformable guide member. The guide member has a continuous deformation which causes the rollers attached to it to assume a staggered position relative to each other. A low pressure is maintained by suction under the rollers to retain the strip in close contact with them throughout the spatial transition. An elongated spring provides an elastic type of elongated guide member.



3,608,804
WEB HANDLING MECHANISM FOR CARTON-BLANK-FORMING APPARATUS OR THE LIKE

Raymond Swansen, Jr., West Allis, Wis., assignor to Zerand Corporation, New Berlin, Wis.
Filed Mar. 5, 1970, Ser. No. 16,716
Int. Cl: B65h ***17/44***
U.S. Cl. 226—114 **10 Claims**

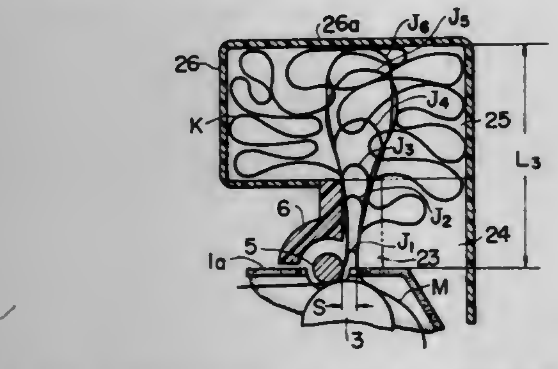


web-handling apparatus for feeding a web to a carton-forming press or the like and in which the web is continuously fed by metering rolls and after passing through the metering rolls the web is intermittently stopped prior to its entry into the press. The loop in the web which is intermittently formed between the metering rolls and the intermittent feed rolls has means movable therewith and which prevents slapping action of the loop as it is taken up by the feed rolls when the latter are engaged.

3,608,805
TAPE-FORWARDING MEANS

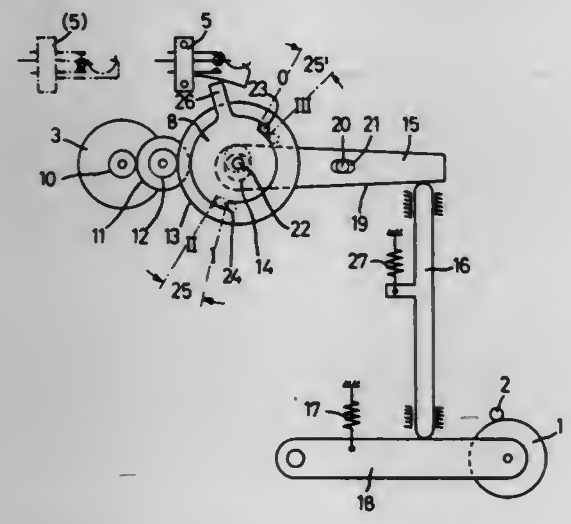
Osamu Ogata, Suwa-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 23, 1969, Ser. No. 827,196
Claims priority, application Japan, May 31, 1968, May 31, 1968, May 31, 1968, 43/37666; 43/37667; 43/37668
Int. Cl. B65h ***17/20***
U.S. Cl. 226—118 **4 Claims**

A tape-forwarding means for making a tape contained in a case to run at a predetermined speed in a predetermined direction during recording and/or reproducing, in which provisions are made for preventing a malfunction of tape forwarding, and for preventing the tape from being damaged or cut.



3,608,806
TAPE-STOPPING MECHANISM FOR MAGNETIC TAPE RECORDING AND PLAYBACK APPARATUS

Helge Butte, Fuerth, Germany, assignor to Grundig E.M.V., Elektro-Mechanische Versuchtsanstalt, Inh.: Max Grundig, Fuerth am Bay, Germany
Filed May 8, 1970, Ser. No. 35,722
Claims priority, application Germany, May 13, 1969, P 19 24 306.2
Int. Cl. G11b *15/24*
U.S. Cl. 226—176 11 Claims

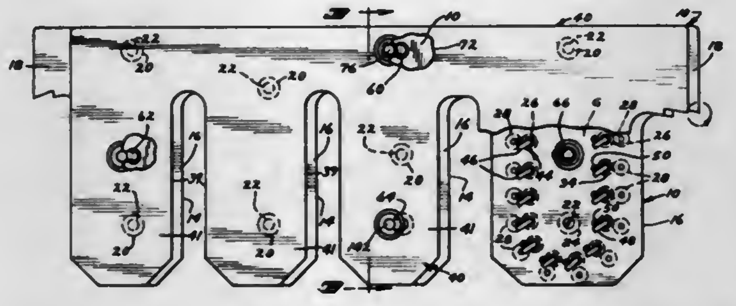


An arrangement for rapidly stopping the movement ot magnetic tape in recording and playback devices. The tape is driven between a rotating driving or transport shaft and a rubberized pressure roller which presses the tape against the driving shaft. A geared speed reducer is mechanically linked to the shaft of a miniature motor which is rotatable in both directions and is battery-operated. The output of the speed reducer drives an eccentric and a cam mechanism. The eccentric actuates the rubber pressure roller to move it away from the tape and the driving shaft when the movement of the tape is to be stopped. At the same time, the cam operates a switch which results in short circuiting of the motor to provide electrodynamic braking whenever the tape is to be stopped. A remote control switch in either the microphone or foot switch may be operated in conjunction with the recorder and playback apparatus.

3,608,807
DRIVING MECHANISM FOR A ROLLER TRANSPORTING DEVICE

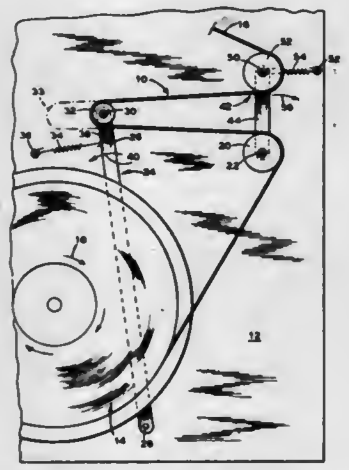
Conrad E. Lee, Mound, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed June 9, 1970, Ser. No. 44,792
Int. Cl. B65h *17/20*
U.S. Cl. 226—188 9 Claims

Driving means for transporting sheet material between a series of companion rollers rotatable in opposite directions and which are rotatably mounted in bearing means and rotated by cranks acting between said rollers and driving plates being each actuated by one driven crank acting between the plate and rotatably supported on parallel shafts journaled in said bearing means, and two or more floating cranks, one of said shafts being driven by motive means and the other by meshing spur gears mounted on said shafts.



3,608,808
TAPE TRANSPORT TENSIONING MECHANISM

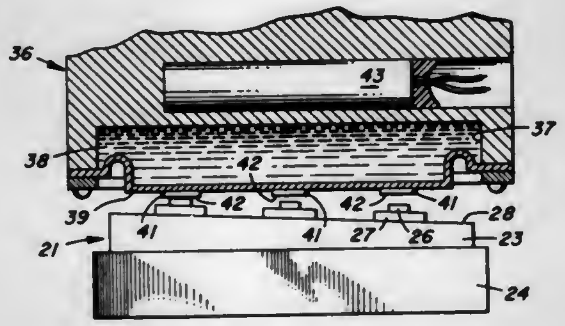
Edgar Wolf, New Hyde Park; Francis C. Marino, Huntington; Edward Henry Lau, Old Westbury, and Marvin Laut, Huntington Station, all of N.Y., assignors to Digitronics Corporation, Albertson, N.Y.
Filed Mar. 6, 1969, Ser. No. 804,907
Int. Cl. B65h *23/10*
U.S. Cl. 226—195 8 Claims



A tensioning mechanism for use in a tape transport mechanism of the type which is operable to transport a tape medium between feed and takeup reels mounted on a tape deck. The mechanism includes a stationary roller means for guiding the medium in a preselected path, first movable tensioning means for biasing the medium in a first direction and second movable tensioning means having a smaller inertia than the first tensioning means and being pivotable about said stationary roller means for biasing said medium in a direction opposite to the first direction to continuously maintain the tape medium under tension and to prevent breakage of the medium during stepping of the medium.

3,608,809
APPARATUS FOR UNIFORM MULTIPLE-LEAD BONDING

Robert Holbrook Cushman, Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Aug. 16, 1968, Ser. No. 753,230
Int. Cl. B23k *19/00*
U.S. Cl. 228—44 15 Claims



A viscous medium such as a heavy grease or molten solder is sealed in a chamber by a diaphragm to provide a compensating bonding tip and/or a compensating base. As bonding pressure is applied to a workpiece to bond a plurality of leads to selected bonding sites on the workpiece, the diaphragm flexes to compensate for workpiece irregularities and the viscous medium distributes the bonding pressure across the diaphragm to apply uniform bonding pressure at each bonding site. Bonding and/or supporting pads may be carried by the diaphragm to facilitate the application of pressure to a desired site.

Alternatively, a ductile material is confined in a chamber and an apertured plate is employed to locate and retain a plurality of pins at desired positions on the ductile material. The pins and plate cooperate to confine the ductile material to the chamber and the pins are employed to apply bonding pressure to selected bonding sites on a workpiece and/or to support selected areas of the workpiece. The pins are independently displaceable to compensate for workpiece irregularities and the confined ductile material hydraulically interconnects the pins to uniformly distribute the bonding pressure to the pins.

Alternatively, the resiliency of the pins is employed to provide compensation for workpiece irregularities or the pins are mounted on a resilient mat to provide such compensation.

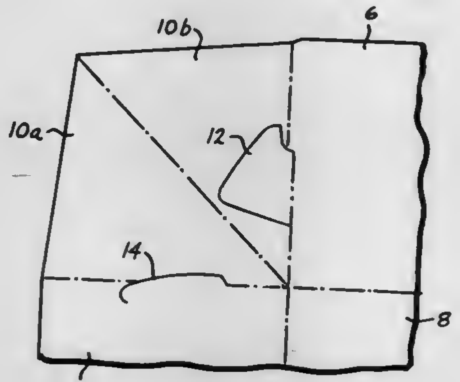
3,608,810
METHODS OF TREATING ATMOSPHERIC CONDITIONS

Eugene K. Kooser, Houston, Tex., assignor to World Weather Inc., Houston, Tex.
Filed Dec. 5, 1968, Ser. No. 781,623
Int. Cl. A01g *15/00*
U.S. Cl. 239—2 R 9 Claims

Methods of treating atmospheric conditions including dispensing in the atmosphere surfactants, water-soluble polyelectrolytes or mixtures thereof, methods of dispersing fog by dispensing fog-coalescent materials around an unstable spot in the fog and by dispensing fog-coalescent materials in a substantially straight path through an area to be cleared, and methods of increasing rain by dispensing surfactants, water-soluble polyelectrolytes or mixtures thereof around an unstable spot in a cloud.

3,608,811
CARTON BLANK

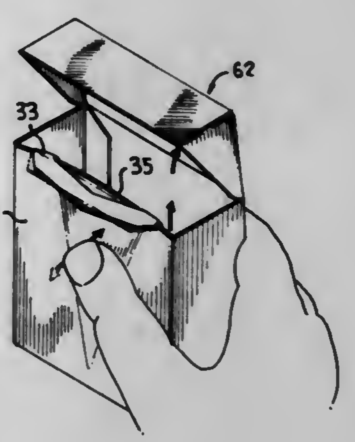
Thomas Peter Frick, Raa, Sweden, assignor to Karl Axel Arne Torbjorn Ericson, Malmo, Sweden
Filed Sept. 6, 1968, Ser. No. 757,979
Int. Cl. B65d *5/24, 5/26*
U.S. Cl. 229—31 R 6 Claims



The invention is for a blank for a carton. The blank has score or fold lines so that the blank may be folded into a bottom panel, wall panel and a corner panel. Then, one of the wall panels is so cut as to project into the corner panel to form a locking tab. This locking tab is integral with the adjacent wall panel. In the other wall panel, adjacent to the same corner panel, there is a locking slit which is both in the corner panel and said wall panel. Upon folding the carton blank, the locking tab slips into the locking slit so as to lock the wall panels in a substantially normal position with respect to the bottom panel to form a carton for holding objects such as bakery good, meat and the like.

3,608,812
FLIP-TOP CARTON LOCK

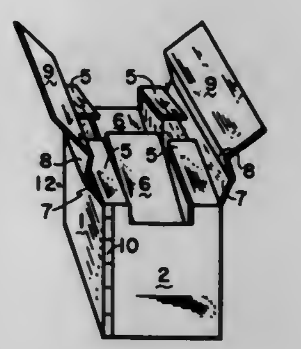
Randall C. Hamilton, Elkhart, Ind., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 5, 1969, Ser. No. 821,796
Int. Cl. B65d *5/08, 45/00*
U.S. Cl. 229—37 R 5 Claims



This disclosure relates to a lock for a flip-top carton. The lock comprises a flap hingedly connected to a panel of the carton body and tab means associated with the flip-top adapted to cooperate with the flap for releasably locking the flip-top in a closed condition. A slit is provided in the fold line along which the flap is hinged to the body panel whereby bending of the body panel will cause the flap to flex thereby disengaging the tabs and releasing the lock.

3,608,813
SHIPPING CONTAINER

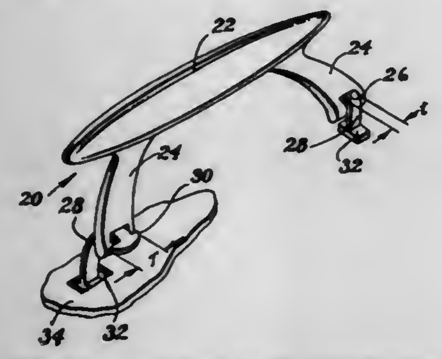
Robert O. Blasdell, Birmingham, Mich., assignor to The Mead Corporation, Dayton, Ohio
Filed Sept. 4, 1969, Ser. No. 855,307
Int. Cl. B65d *5/08, 5/50*
U.S. Cl. 229—37 E 2 Claims



A shipping container having end panels with matching medial recesses along their lower margins. A series of flaps and panels depending from the side and bottom panels fold conformably into these recesses to define a longitudinal channel for entry of a forklift or the like. A flat-bottom interior may be provided either by a fiber board recess cover or by filler pads inserted into the container legs.

3,608,814
CARTON HANDLE

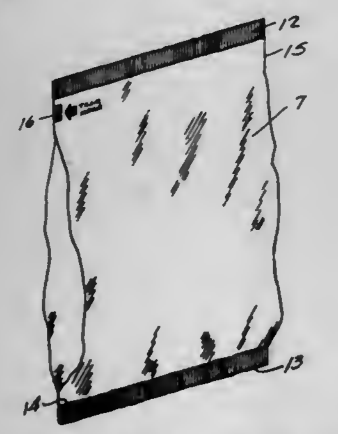
Leon Lautin, 43 White Drive North, Cedarhurst, N.Y.
Filed Apr. 25, 1969, Ser. No. 819,233
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 A **1 Claim**



A rigid, molded plastic handle is provided with tabs permitting attachment of the handle to a carton.

3,608,815
OPENING AID FOR PACKAGES

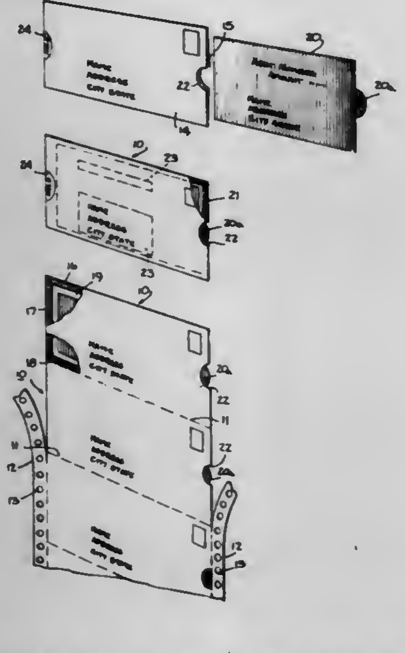
Elmo L. Bunch, Dallas, Tex., assignor to Dixie Wax Paper Company, Dallas, Tex.
Filed July 3, 1969, Ser. No. 838,808
Int. Cl. B65d *33/00*
U.S. Cl. 229—66 **10 Claims**



Opening aids are provided in packaging material consisting of or including at least one oriented material by minutely expanding said material in a plurality of points within an area pattern located at a position on the material which will be on a fold of the material when formed into a package.

3,608,816
SEALED ENVELOPE WITH REMOVABLE INSERT

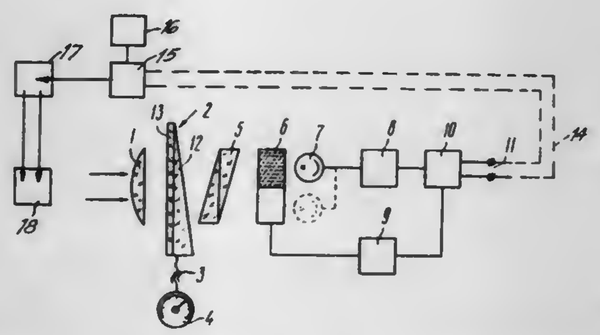
Frank H. Neubauer, Larchmont, N.Y., assignor to Transkrit Corporation, New York, N.Y.
Filed June 20, 1969, Ser. No. 835,197
Int. Cl. B65d *27/10, 27/36*
U.S. Cl. 229—69 **23 Claims**



A continuous series of envelopes with detachable edge strips for feeding the envelopes through processing equipment wherein each envelope and an insert contained therein may be printed. Each envelope contains a permanent adhesive along three edges to seal the front and back portions and form a pocket wherein the insert is housed. The front and back portions are bonded along the remaining edge by a releasable adhesive so that as a portion of the insert adjacent to the remaining edge is pulled away from the envelope, the bond of the releasable adhesive is broken and the insert is removed from the envelope in a one-step operation.

3,608,817
METHOD OF CONTROLLING COLOR OF AN OBJECT BY ITS RADIATION AND DEVICE FOR ACCOMPLISHING THE SAME

Dary Yakovlevich Svet, ulitsa Fersmana 3, kv. 17, Moscow, U.S.S.R.
Filed Dec. 9, 1968, Ser. No. 782,227
Int. Cl. G05d *23/27*
U.S. Cl. 236—78 **3 Claims**



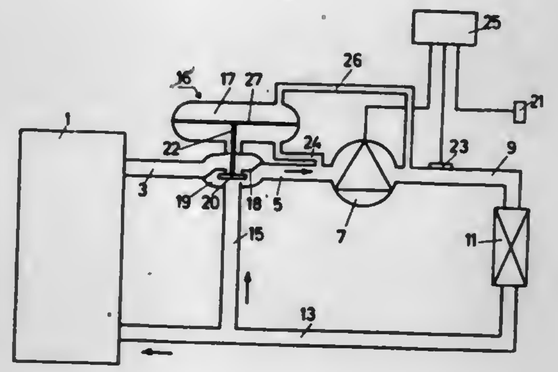
A method for controlling color temperature of an object by its radiation from which at least two radiation fluxes of different spectral compositions are separated and thereafter transformed in a device including a flux ratio setter disposed in front of or ahead of a radiation receiver, a modulator and a limiting amplifier, the transformation of the fluxes or corresponding signals being effected so as to equalize them when the object under examination acquires a temperature to be maintained constant, while temperature deviation from the preset value results in an unbalance signal which is fed to a heater of the object in order to nullify the unbalance of the aforesaid radiation fluxes.

ERRATUM

For Class 236—151.1 see:
Patent No. 3,609,315

3,608,818
HEATING SYSTEM CONTROL

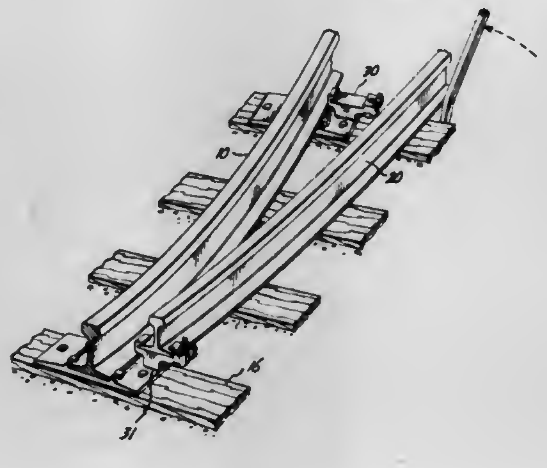
Jost Eduard Von Fellenberg, Bahnkobstrasse 49 9320, Arbon, Thurgau, Switzerland
Filed June 6, 1969, Ser. No. 830,993
Claims priority, application Switzerland, June 15, 1968, May 22, 1969, 8906/68;7785/69
Int. Cl. F24d *3/02*
U.S. Cl. 237—8 **6 Claims**



A variable-speed pump is provided in a liquid feed line between a boiler and a heat exchanger, while a bypass line extends from a return line between the heat exchanger and boiler to a three-way valve in the feed line upstream from the pump. The pump speed is varied as a function of temperature changes and liquid pressure variations in the feed line under varying pump speeds actuate a control for the three-way valve. In a modified embodiment the pump speed is constant and liquid pressure variations in the feed line are produced by a temperature-responsive throttle valve.

3,608,819
MUD RAIL SUPPORT ASSEMBLY

Lutillus L. S. Nelson, and Minoru Suyama, both of Seattle, Wash., assignors to Nelson Iron Works, Seattle, Wash.
Filed Apr. 28, 1969, Ser. No. 819,686
Int. Cl. E01b *5/18*
U.S. Cl. 238—20 **2 Claims**



A support assembly is disclosed for holding a mud rail in predetermined spatial relationship to a main running rail, the apparatus finding a particular use at railroad crossings. The mud rail support, commonly called a mud rail chair, includes a main support base which is welded to a conventional rail tie plate with the base being welded on the tie plate at a position such that the mud rail will be spaced the desired distance from the main running rail. The support assembly includes an outer flange receptacle having an opening adapted to receive one edge of the flange of the mud rail and includes a portion which partly covers the upper edge of the flange. A locking plate arm extends laterally from the support base at a position opposite the flange receptacle and includes a substantially vertical edge adapted to engage the outer flange of the mud rail. The small vertical edge serves to hold the mud rail in position temporarily with a locking plate then being secured to the arm via a bolt and nut assembly so that the mud rail is then firmly held in position on the mud rail chair. Construction details of the support assembly and a preferred method of utilizing the same are disclosed.

ERRATUM

For Class 239—2 see:
Patent No. 3,608,810

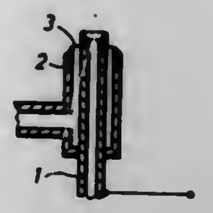
3,608,820
TREATMENT OF ATMOSPHERIC CONDITIONS BY INTERMITTENT DISPENSING OF MATERIALS THEREIN

Eugene K. Kooser, 1510 Ronson Drive, Houston, Tex.
Filed Dec. 5, 1968, Ser. No. 781,624
Int. Cl. A01g *15/00*
U.S. Cl. 239—2 R **7 Claims**

Methods of treating atmospheric conditions including intermittently dispensing unbalancing materials such as salts, surfactants, water soluble polyelectrolytes or mixtures thereof in the atmosphere and methods of dispensing fog including dispensing materials that cause coalescence of water droplets in spaced locations throughout a fog.

3,608,821
ELECTROSTATIC ATOMIZATION OF LIQUIDS

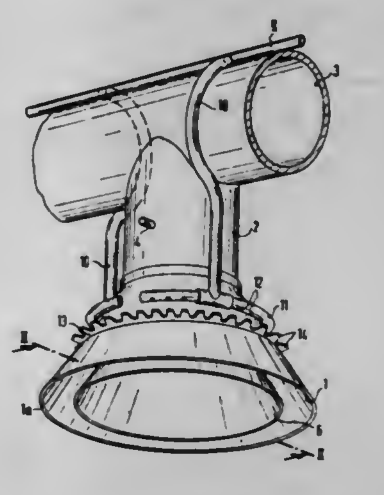
Walter Simm, and Otto Koch, both of Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 9, 1966, Ser. No. 571,243
Claims priority, application Germany, Oct. 15, 1965, A 50511
Int. Cl. G03g *13/16;* **B05b** *5/02*
U.S. Cl. 239—3 **1 Claim**



The process of atomizing liquids having conductivity in 10'6to 10'3ohms - centimeters range using either a negative or a positive electrostatic charge for the purpose of producing the aerosol which is deposited. In this process an ambient atmosphere is placed around the atomizing electrodes of an electric field with gases and vapors having a higher breakdown that air which vapors include short chained aliphatic compounds containing halogens and inorganic halogens. As a result, both negative and positive charges can be used in atomizing with liquids in the indicated conductivity range.

3,608,822
PROCESS AND DEVICE FOR THE MECHANICAL SPRAYING OF LIQUIDS

Francis David Berthoud, Vaud, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed July 9, 1969, Ser. No. 840,157
Claims priority, application Switzerland, July 12, 1968, 10481/68
Int. Cl. B05b *7/06*
U.S. Cl. 239—8 **11 Claims**

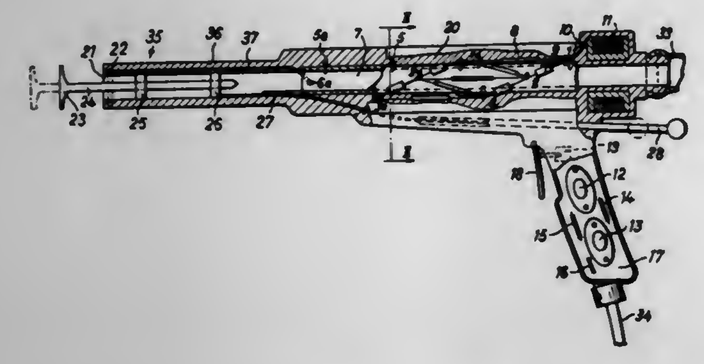


A process and device for the mechanical formation of aerosols are disclosed, whereby the formation of a downwardly flowing liquid film is effected on the slanted surface of a downwardly widening mouthpiece of an air supply line, which mouthpiece points downwards and the breakup of the film at an annular edge of the mouthpiece by an airstream which escapes under slight excess pressure from the interior of the at least approximately cone-shaped hollow space inside the mouthpiece, whereby the film is atomized in the form of an essentially vertically downwardly directed spray cone. A limiting body may be inserted in the mouthpiece to direct the airstream essentially entirely toward the interrupting edge of the mouthpiece.

3,608,823

APPARATUS FOR THE ELECTROSTATIC COATING OF OBJECTS WITH ATOMIZED SOLIDS PARTICLES

Karl Buschor, St. Gall, Switzerland, assignor to Gema AG Apparatebau, St. Gall, Switzerland
Filed June 24, 1970, Ser. No. 49,354
Claims priority, application Switzerland, June 25, 1969, 9744/69
Int. Cl. B05b *5/02*
U.S. Cl. 239—15 **21 Claims**

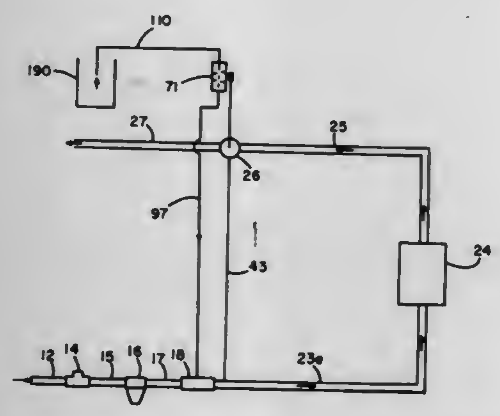


A spray gun for electrostatic coating of objects with atomized solid particles comprises a tube of electrically insulating material, the free end of the tube supporting an atomizer for the coating material and the other end being connected to conveying means for supplying coating material by means of a propellant gas stream. A high-voltage generator and electrodes are provided for the electric charging of the coating material and for maintaining a high-voltage field between the gun and the object to be coated. A plurality of electrodes are disposed on the internal wall of said electrically insulating tube and are connected to potentials of different amplitudes for producing corona discharge within the tube. The electrodes preferably are formed as spikes of tungsten successively projecting from the internal wall of the tube in the direction of flow of the propellent gas-coating material mixture, each electrode being connected to one stage of a voltage divider or voltage multiplier circuit so that the successive electrodes have an increasing potential relative to a reference potential.

3,608,824

HIGH-PRESSURE WASHING EQUIPMENT

Milton L. Ballou, Gloversville, N.Y., assignor to Lennawill, Inc., Gloversville, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,656
Int. Cl. B05b *9/00*
U.S. Cl. 239—124 **3 Claims**

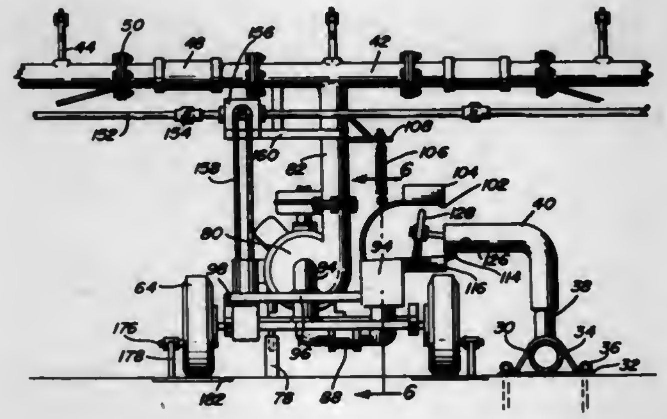


High-pressure washing equipment adapted to deliver either of two cleaning fluids selectively against hard surfaces to be cleaned and having for its principal object to provide simplified controls adapted to be selectively operated to deliver a multiplicity of cleaning fluids in the form of a high-pressure and high-velocity spray, said equipment incorporating a sequential valve.

3,608,825

LINEAR IRRIGATION SYSTEM WITH WATER TANK

Richard F. Reinke, P. O. Box 272, Deshler, Nebr.
Filed Aug. 14, 1969, Ser. No. 850,177
Int. Cl. B05b *9/00*
U.S. Cl. 239—148 **11 Claims**

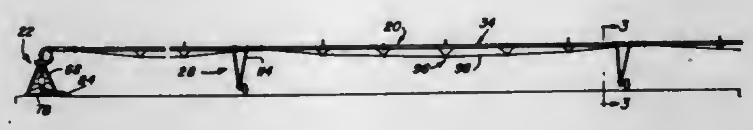


An elongated sprinkler-equipped pipe supported in elevated position transversely above an area to be irrigated and movable in a linear manner back and forth between the ends of the area to be irrigated. A water supply pipe is provided for discharging water into a water supply tank carried by a driving and supporting tractor assembly at a plurality of intervals along the length of the pipe. The tractor includes a pump mounted thereon for supplying water to the sprinkler pipe and includes a drive mechanism for driving a plurality of carriages spaced along the sprinkler pipe with the tractor and carriages being retained in substantially aligned condition by timing cam assemblies associated with the wheels on the tractor and carriages.

3,608,826

ELECTRICALLY DRIVEN CIRCULAR IRRIGATION SYSTEM

Richard F. Reinke, P.O. Box 272, Deshler, Nebr.
Filed Jan. 17, 1969, Ser. No. 792,013
Int. Cl. B05b *3/12*
U.S. Cl. 239—177 **18 Claims**



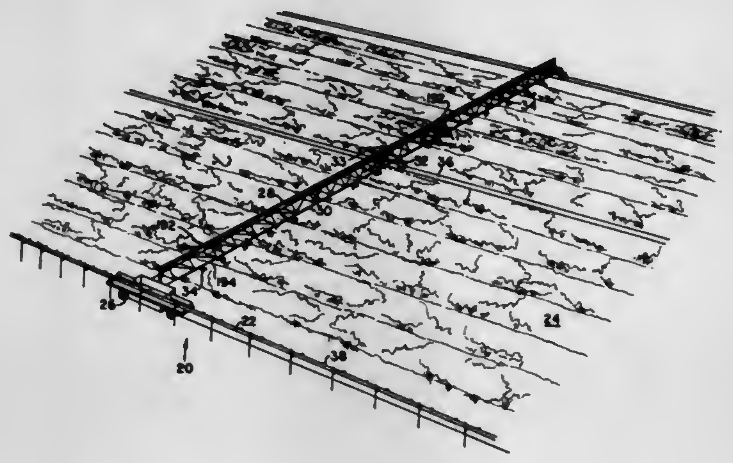
An elongated boom having a plurality of sprinkler heads mounted thereon with the boom being constructed of a plurality of articulately connected sections supported by electrically driven wheeled assemblies for propelling the boom in a circular path about a central standpipe. The boom is in the form of a truss construction, the articulate connections between the sections of the pipe are disposed interiorly of the flow path and the sections of the boom are retained in alignment in either direction of movement. An end gun is provided and cam operated to irrigate the normally missed corners of a square area and the lugged wheels on the supporting assemblies are timed so that the lugs track thereby providing less disturbance of the ground surface.

3,608,827

LINEARLY MOVABLE IRRIGATION SYSTEM

Alan Kinkead, Los Altos Hills, Calif., assignor to W. R. Ames Company, Milpitas, Calif.
Filed July 10, 1969, Ser. No. 840,751
Int. Cl. B05b *3/18*
U.S. Cl. 239—184 **8 Claims**

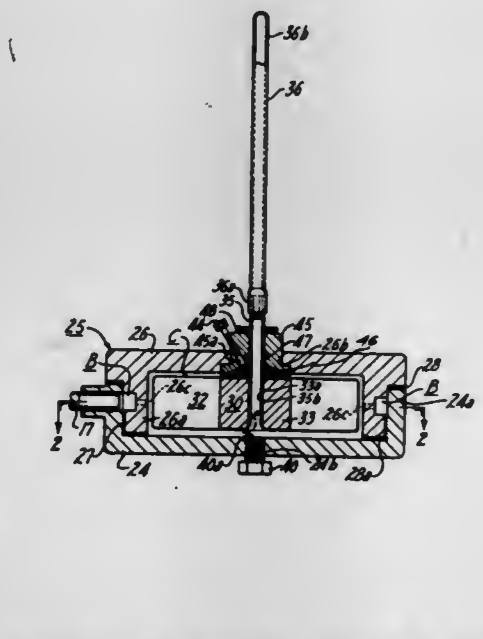
Apparatus for irrigating a field from a stationary supply pipe on the field supplied at one end with water under pressure and having a series of valves located at predetermined spaced-apart intervals along its length. Each valve is operable by an actuating means for releasing water from the supply pipe in an open position and for preventing the release of water in a closed position. A mobile, self-powered main drive unit movable in a direction generally parallel to the supply pipe has an open receiving tank with an outlet connected to a distribution pipe that extends generally perpendicular to said supply pipe and has a series of outlets spaced apart along its length. Means are provided on said main drive unit for opening said valves when they are positioned over the tank of said drive unit as it moves along and thereafter for closing each open valve just before the tank moves away from the open valve, thereby maintaining the tank in a filled condition as the apparatus moves along with the water being pumped through and sprayed from the distribution pipe in a predetermined manner.



3,608,828

FLUID SPRAY APPLICATOR

Gerald Tokar, 3231 Pinehurst Ave, Pittsburgh, Pa.
Filed Mar. 25, 1969, Ser. No. 810,224
Int. Cl. B05b *3/04*
U.S. Cl. 239—240 **13 Claims**

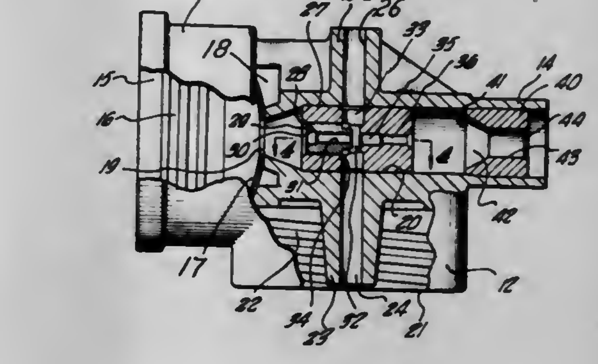


A spray applicator is provided having a housing body within which rustproofing material, such as paint, an asphalt mixture, etc., is introduced under pressure as a liquid and is moved under centrifugal force to cause rotation of an impeller carried within an operating chamber of the housing and to cause a corresponding rotation of a coaxial, forwardly projecting spray nozzle wand. The wand is inserted through a drilled hole or other opening into a hidden area of a vehicle body for applying the liquid to its surfaces. Radial blades of the impeller having a spaced relation within an enclosing wall of the chamber, and a pair of opposite blades may have a closer spaced relation than others for varying the speed of rotation and the liquid spray.

3,608,829

MIXING APPARATUS

Fredolph M. Forsman, Altadena, Calif., assignor to The Leisure Group, Inc., Los Angeles, Calif.
Filed Mar. 28, 1969, Ser. No. 811,311
Int. Cl. B05b *7/30*
U.S. Cl. 239—318 **5 Claims**

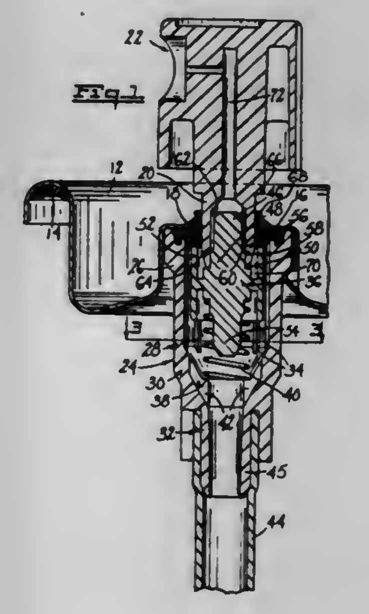


The invention disclosed herein describes a mixing apparatus for mixing a second liquid with a first liquid. The mixing apparatus includes a housing having a bushing located therein, the bushing functioning as an eductor means for entraining the second liquid into the first liquid. A pair of axial grooves are defined on the outer surface of the bushing to permit a portion of the first liquid to be bypassed past the eductor means.

3,608,830

SPRAY HEAD AND VALVE FOR PRESSURIZED CONTAINER

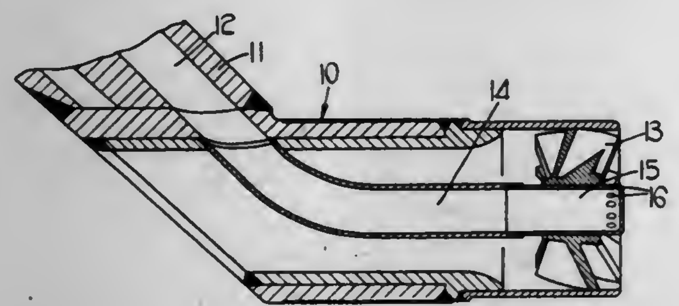
Mario A. Ramella, Via Carlo Porto 1, Milan, Italy
Filed July 15, 1969, Ser. No. 841,726
Int. Cl. B05b *1/30*
U.S. Cl. 239—350 **15 Claims**



A valve and spray head to be used with a pressurized container for dispensing metered amounts of fluids, comprising a valve seat mounted at the opening of the container. Adjacent the valve seat, a tubular support member is positioned in which a plug member is spring biased to abut and seal the valve seat. Spray head means having a tubular stem is positioned about the plug member for spraying fluid. The stem of the spray head has a nozzle opening for metering the passage of fluid through the head.

3,608,831
LIQUID ATOMIZING DEVICES

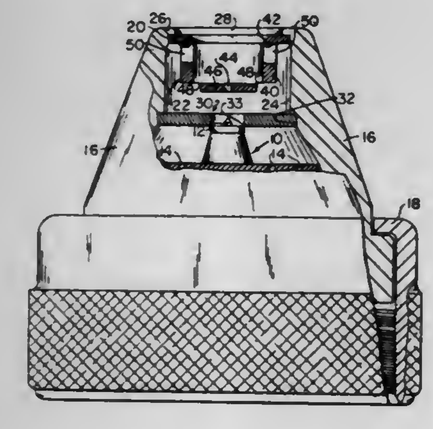
Harold Place, Accrington, and Alan G. Cheshire, Burnley, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 8, 1969, Ser. No. 839,902
Claims priority, application Great Britain, July 18, 1968, 34308/68
Int. Cl. B05b *7/10*
U.S. Cl. 239—406 **8 Claims**



The invention relates to liquid atomizing devices, particularly intended for use in the burners of gas turbine engines. Such a device comprises a tubular body, through which, in use, air flows to a swirler formed by vanes at the downstream end of the body. The body is mounted on a support which contains a fluid passage communicating with a similar passage within the body. The fluid passage within the body is defined by a tubular member within the body and the passage may lie either within this member or between the member and the body wall. The fluid passage within the body terminates in an end wall within which, or adjacent to which, are a plurality of holes through which fluid is ejected downstream of the swirler and in a direction generally transverse to the airflow. The transverse direction of fluid ejection is achieved either by the directions of the holes themselves or by directing the fluid against a projection of the end wall or of the body. The tubular member may form part of the body or may conveniently be in the form of a cast insert. Preferably there are the same number of holes and vanes, and each hole is adjacent the root of an associated blade at the trailing edge thereof.

3,608,832
SPRAY NOZZLE ASSEMBLY OPERABLE AT LOW PRESSURE

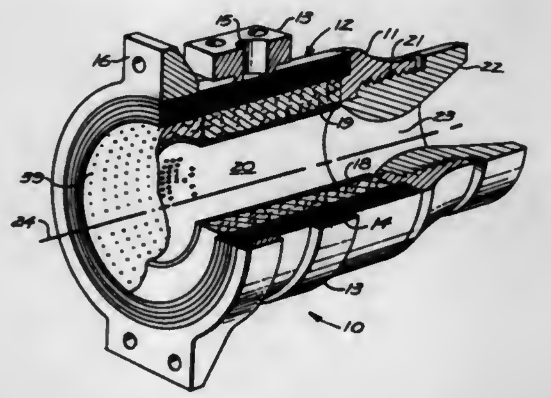
Nathaniel Hughes, Beverly Hills, and Edson B. Gould, III, Playa Del Rey, both of Calif., assignors to Energy Sciences, Incorporated, El Segundo, Calif.
Filed Sept. 4, 1969, Ser. No. 855,342
Int. Cl. F23d *11/16*
U.S. Cl. 239—419 **7 Claims**



Paint sprayer with nozzle mounted in a chamber of an air cap adapted to be secured to a conventional compressed-air gun adjacent separate paint and air outlets therefrom.

3,608,833
FLUID DISTRIBUTORS AND THRUSTERS

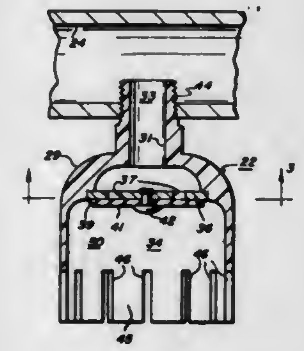
Ronald A. Hankins, Fair Oaks; Donald W. Culver, Fair Oaks, and Harrison B. Scammon, Jr., Carmichael, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Oct. 13, 1969, Ser. No. 865,706
Int. Cl. B05b *1/14;* **F23d** *13/44*
U.S. Cl. 239—553.3 **8 Claims**



According to the present disclosure, a fluid distributor comprises a stack of a plurality of wafers. Inlet apertures are provided through inlet wafers and are in fluid communication with distribution apertures in a distribution wafer. Outlet apertures are provided in fluid communication with the distribution wafers. Preferably, metering apertures and transfer apertures are provided in serial fluid communication with said distribution apertures between the inlet and outlet apertures. A thruster according to this disclosure may include a first fluid distributor for radially injecting monopropellant into a radial catalyst pack, or a second fluid distributor for axially injecting monopropellant into an axial catalyst pack.

3,608,834
GAS DIFFUSER

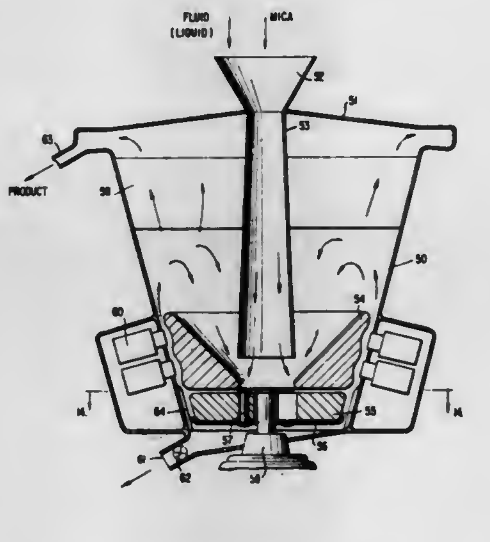
David S. MacLaren, 21176 Brantley Raod, Shaker Heights, Ohio
Filed Aug. 30, 1968, Ser. No. 756,500
Int. Cl. B05b *1/30*
U.S. Cl. 239—571 **1 Claim**



An air diffuser for use in a sewage treatment tank in combination with an air supply conduit. The air diffuser comprises a body member with an opening therein extending therethrough from an inlet side to an exit side. Valve means are located in the opening intermediate the inlet and exit sides and is movable between open and closed positions. The body member is provided with means for attaching the same to the air supply conduit in gas-conducting relationship therewith in such a position that the exit side of the body member may be located vertically below or above the inlet side. Introduction of pressurized air to the air supply conduit and to the inlet side of the body member causes the valve means to open with subsequent passage of air to the exit side of the body member and the exit side of the body member is preferably formed into a chamber of a substantially larger volume than the inlet side. A plurality of notches or slots or holes is provided in the peripheral edge on the exit side of the opening and this tends to let the air escape into the sewage in small bubbles. When the pressurized air is shut off, the gas trapped between the slots and the valve means tends to hold the valve means closed and this trapped volume of air also keeps liquid sewage from traveling back to the valve means and to the air supply conduit.

3,608,835
ULTRADISINTEGRATION AND AGGLOMERATION OF MINERALS SUCH AS MICA, PRODUCTS THEREFROM AND APPARATUS THEREFOR

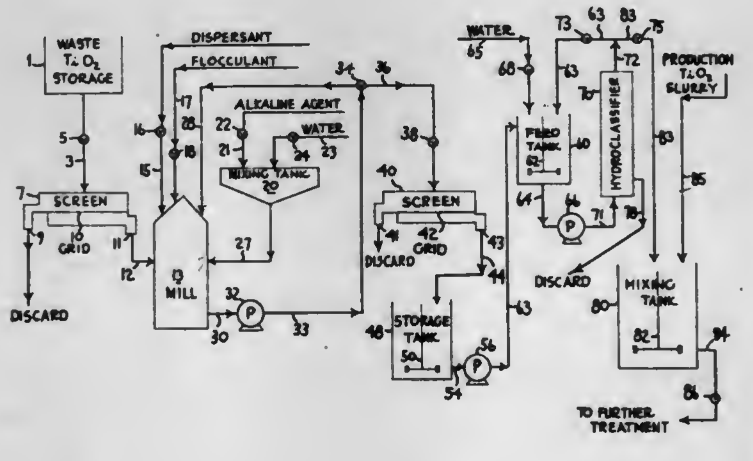
Josef Ruzicka, 55-25 98th Place, Rego Park, N.Y.
Filed June 30, 1967, Ser. No. 650,543
Int. Cl. B02c *19/06*
U.S. Cl. 241—4 **11 Claims**



Frangible or cleavable solids, such as mica, are disintegrated in oriented, high-velocity streams of a fluid medium so as to produce thin smooth-surfaced particles or flakes having a high specific surface area and a high ratio of length to thickness. The resulting particles or flakes are useful as agglomerants, fillers or pigments or can be agglomerated to form paperlike webs or solid discs or articles of other predetermined configurations, with or without added binder, either in self-supporting form or adhered to a substrate. Various methods and apparatus for such disintegration and agglomeration are also disclosed.

3,608,836
PROCESS OF RECLAIMING OFFGRADE TITANIUM DIOXIDE

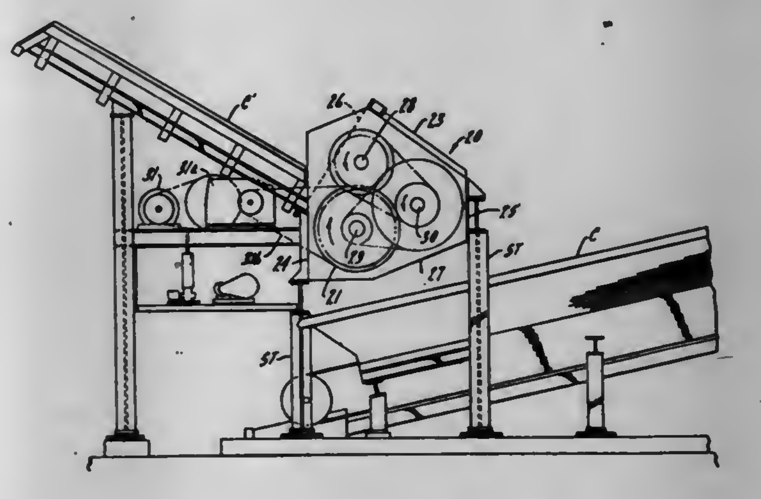
Leonard S. Bryant, Wadsworth, and Harley D. Hickenbotham, Barberton, both of Ohio, assignors to PPG INdustries, Inc., Pittsburgh, Pa.
Filed Apr. 11, 1969, Ser. No. 815,459
Int. Cl. B02c *23/06;* **C09c** *1/36*
U.S. Cl. 241—16 **12 Claims**



Offgrade titanium dioxide produced by vapor phase reaction of titanium halide is reclaimed to yield pigmentary titanium dioxide that can be blended with production grades of titanium dioxide pigment. Reclamation includes the steps of wet milling waste titanium dioxide under nonpeptizing conditions, and hydroclassification of the milled slurry.

3,608,837
SHREDDING MACHINE

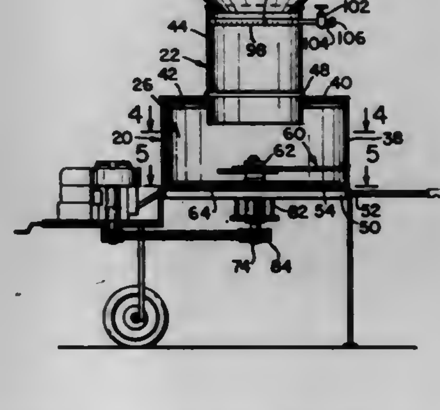
Martin H. Panning, 304 Sunny Lane, Thienville, Wis., and Bruce R. Curry, 4731 North Oakland Ave., Whitefish Bay, both of Wis.
Division of Ser. No. 642,967, June 1, 1967, Pat. No. 3,502,276.
Filed Jan. 19, 1970, Ser. No. 3,981
Int. Cl. B02c *25/00*
U.S. Cl. 241—36 **15 Claims**



A shredding machine with shredding teeth arranged on plural axes and designed to operate with slow speed, high-torque characteristics to enable the use of relatively small horsepower motors as compared to the load which is being shredded. The machine is arranged to handle extremely large objects of complex shapes and formed from various types of materials such as are represented in automobile bodies. An automatic control circuit protects against overloads.

3,608,838
APPARATUS FOR COMMINUTING ARTICLES

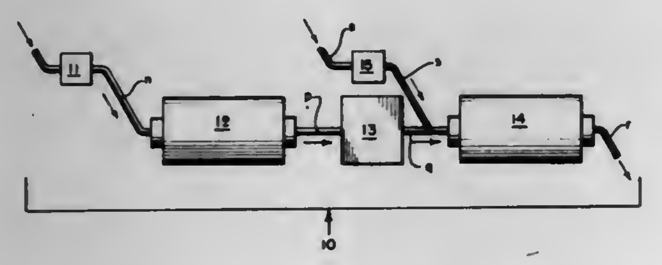
Andrew P. Lundin, 323 Covington Raod, and John D. Milner, 11945 Country Club Drive, both of Los Altos, Calif.
Filed May 21, 1970, Ser. No. 39,339
Int. Cl. B02c *13/18, 13/288*
U.S. Cl. 241—55 **16 Claims**



A comminuter for reducing articles to small particles which has an upright housing with vertically spaced intake and discharge openings. A strong, rigid spider assembly comprised of a plurality of interconnected bars having tooth sides are secured to the interior of the housing between the openings. Rotatable cutting blades having sharp leading edges facing the toothed spider-blade sides are mounted below the spider assembly and include scraping members that move over the bottom of the housing and remove particles on the bottom to the discharge opening. The blades are driven via V-belts by a movably mounted motor which permits the tensioning and release of the V-belts A spray pipe is mounted to the op of the housing for the introduction of water to facilitate the removal of comminuted particles into the housing interior.

3,608,839
APPARATUS FOR MAKING ULTRAFINE CEMENT

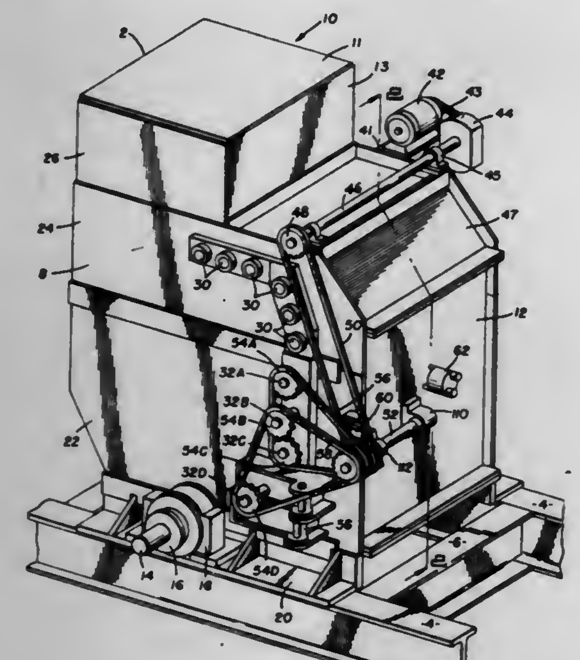
Gunnar Rindal Fagerholt, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., New York, N.Y.
Division of Ser. No. 688,732, Dec. 7, 1967, abandoned. Filed Jan. 21, 1970, Ser. No. 10,687
Claims priority, application Great Britain, Dec. 8, 1966, 55091/66
Int. Cl. B02c *17/06, 21/00*
U.S. Cl. 241—65 **2 Claims**



Hydraulic cement of very high strength is ground to a fineness corresponding to a specific surface of 6,000 cm. ^{2}/g. or more as measured by the Blaine method by grinding the clinker to the fineness of ordinary Portland cement, cooling the cement to about room temperature and then grinding the cooled cement by small grinding bodies having an average weight of no more than 6 grams.

3,608,840
NONCLOGGING IMPACT CRUSHER

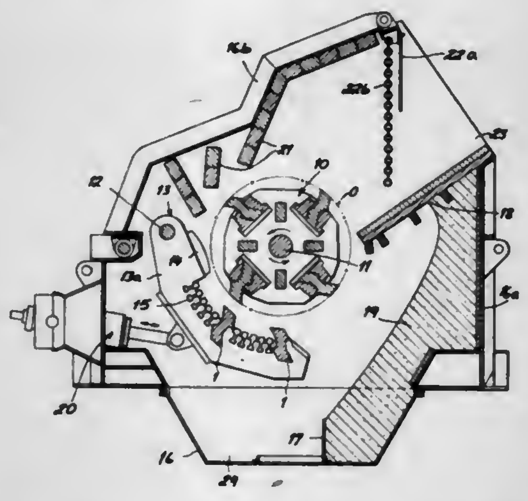
Mark R. Lange, Joplin, Mo., assignor to New Byers Corporation
Filed Jan. 3, 1969, Ser. No. 788,808
Int. Cl. B02c *13/09, 13/282*
U.S. Cl. 241—167 **6 Claims**



A rock crusher of the type having a confined chamber in which a heavy rotor, carrying a plurality of hammers, contacts large rocks with sufficient force to fracture the rocks and to impel them against spaced parallel breaker bars for further size reduction is provided with self-cleaning features which permits it to handle wet or sticky feed stock without clogging. At least some of the active breaker bars are slowly rotated during operation of the crusher and the wall of the chamber in back of the bars is vibrated to prevent adherence or sticking of material to the bars and wall. The rotating bars may also be provided with intermeshing lobes or with scraper bars to further assist in the self-cleaning.

3,608,841
ROTARY IMPACT CRUSHER

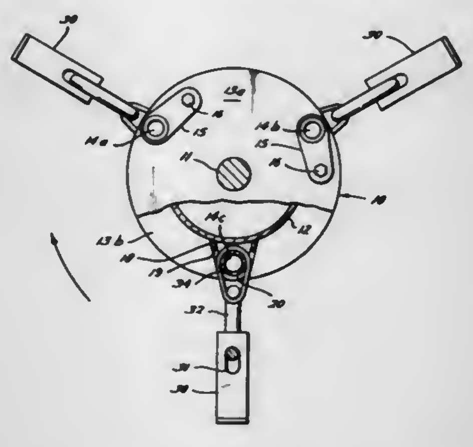
Franz Wageneder, Josef Grimps-Strasse 6, Laakirchen, Austria
Continuation-in-part of application Ser. No. 665,448, Sept. 5, 1967, now Patent No. 3,480,214. This application Mar. 12, 1969, Ser. No. 806,556
Claims priority, application Austria, Mar. 14, 1968, A2520/68
Int. Cl. B02c *13/00, 13/28*
U.S. Cl. 241—189 R **10 Claims**



A rotary impact crusher for rock or the like has an impeller with a plurality of impeller blades, and a plurality of breaker plates. A pivotal cylindrically concave baffle extends along a segment of the blade orbit. The blades are inclined into the direction of impeller rotation at angles of 25° to 45° and have outside edges lying along the orbit. Strips of resilient material wedge the blades into channels in the impeller. Like blades are mounted on the baffle, the faces of these blades being positioned complementarily to the impeller blades.

3,608,842
FLAIL-MOUNTING DEVICE

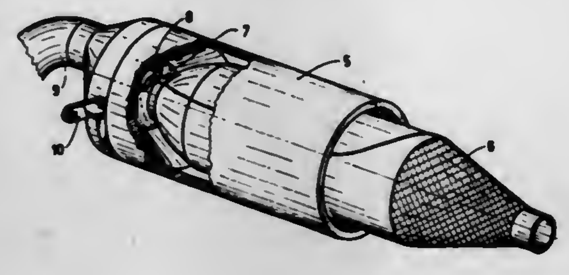
Anthony R. Engler, Houston, Tex., assignor to Engler Manufacturing Corporation, Houston, Tex.
Filed Apr. 24, 1969, Ser. No. 819,003
Int. Cl. B02c *18/18;* **A01d** *55/22*
U.S. Cl. 241—194 **15 Claims**



Means for individually mounting and dismounting flail cutting members from a rotor, wherein such means may include apertured positioners fixed to the rotor, rotatable blade holder rod contained within the positioners and having link-receiving portions, and link means connecting the flail cutting blades to the blade holder rod which link means may be so positioned relative to said rod as to permit individual blades or cutting members to be removed or attached.

3,608,843
METHOD AND APPARATUS FOR THE PNEUMATIC REMOVAL OF THE FOOT WINDING OR LAP FROM COPS

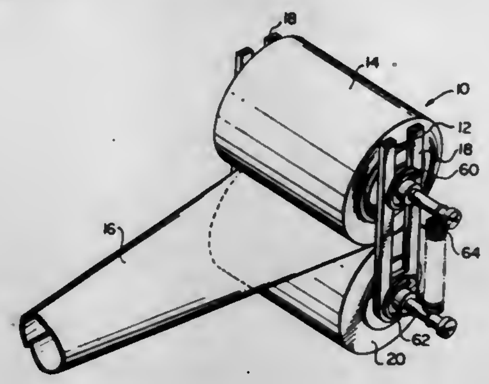
Wernfried Siedlich, Horgen, Switzerland, assignor to Maschinenfabrik Schweiter A. G., Horgen, Switzerland
Filed May 29, 1969, Ser. No. 828,975
Claims priority, application Switzerland, June 25, 1968, 9465/68
Int. Cl. B65h *54/22*
U.S. Cl. 242—35.6 E **9 Claims**



A novel method and apparatus for pneumatically removing the foot winding or lap from spinning cops or bobbins is disclosed. The method aspects of the invention contemplate exposing the foot lap, as the cop rotates, to an airstream over a portion of its circumference, the airstream acting upon the section of the foot lap in an essentially axial direction. The novel apparatus comprises a rotatable support and clamping installation for replaceably receiving the cop as well as a suction tube for surrounding the free end of the cop. The suction tube is tapered in the area of the cop foot and is closed off by a bottom portion at the conical end thereof, the bottom portion having a nozzlelike opening eccentrically disposed outside of the axis of the suction tube, the opening being aligned with the foot lap section acted upon by the airstream when a cop is inserted in the suction tube.

3,608,844
MINIMECH SELF-DEPLOYING BOOM MECHANISM

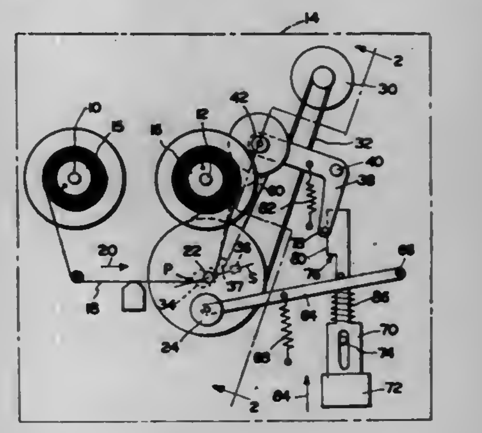
William T. Tumulty, Jr., Cheverly, and Wayne P. Sours, Silver Spring, both of Md., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 31, 1969, Ser. No. 889,438
Int. Cl. B65h *75/00;* **E04h** *12/18*
U.S. Cl. 242—54 **3 Claims**



Extendable, self-deploying boom apparatus wherein the boom is of any present type fabricated from thin metal strip having a tendency to unwrap when wound upon a cylindrical storage spool. The end portion of the boom is restrained between the storage spool and a cooperating roller serving first to restrain the boom in place upon the storage spool. Resilient springs compress together the cylindrical surfaces of the spool and roller along a mutual line of pressure, thus producing, in a portion of the boom between rollers, a force acting parallel to the boom major axis. Such force is derived from the storage energy of the boom and will permit self-deployment of the boom when the spool and roller are unrestrained for counterrotating motion. The springs maintain a mutual line of pressure between the rollers as additional portions of the boom progressively unwind. Additional equipment may be utilized, for example, a deployment prevention control, a retracting mechanism, a deployment rate control and an increment deployment control.

3,608,845
TAPE END DETECTING DEVICE FOR TAPE RECORDER

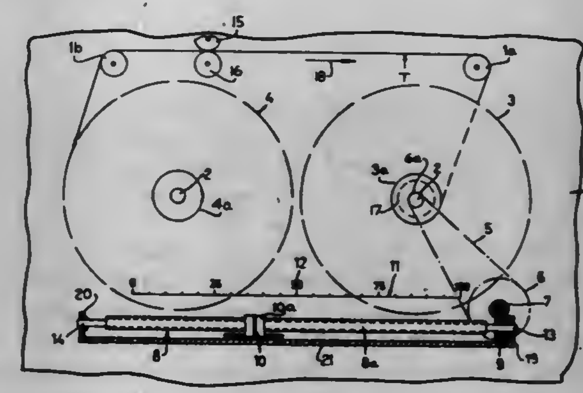
Isao Kozu, and Yukitada Ayukawa, both of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 23, 1969, Ser. No. 868,703
Claims priority, application Japan, Oct. 29, 1968, Oct. 29, 1968, 43/80178;43/80188
Int. Cl. B65h *59/38;* **G03b** *1/04;* **G11b** *15/32*
U.S. Cl. 242—186 **6 Claims**



A tape end detecting device for a tape recorder comprising a follower member biased by a tape reel roller member against a cam formed integrally with a motor driven fly wheel so that when transport of the tape is completed the follower is engaged by an activating member also integral with the fly wheel so as to unlatch an associated control member and restore the tape transport to its original stop condition.

3,608,846
TAPE RECORDER

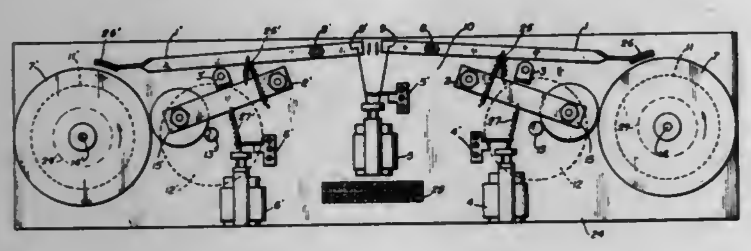
Hanswerner Pieplow, Nurnberg, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsonstalt, Fuerth am Bayern, Germany
Filed Feb. 10, 1970, Ser. No. 10,246
Claims priority, application Germany, Mar. 14, 1969, P 19 12 990.9
Int. Cl. G11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—201 **10 Claims**



The pointer which is movable along a scale on the deck of a tape recorder to indicate that length of tape which is available for recordal or reproduction of sound has a follower which tracks the thread of a spindle driven by the takeup reel at a speed which varies as a function of changes in diameter of tape which is convoluted on the core of the takeup reel. The graduations of the scale are equidistant from each other; therefore, the pitch of the thread on the spindle varies as a function of changes in rotational speed of the takeup reel when the tape is transported at a constant speed.

3,608,847
ELECTROMECHANICAL REEL ASSEMBLY ATTACHMENT FOR A TAPE DECK

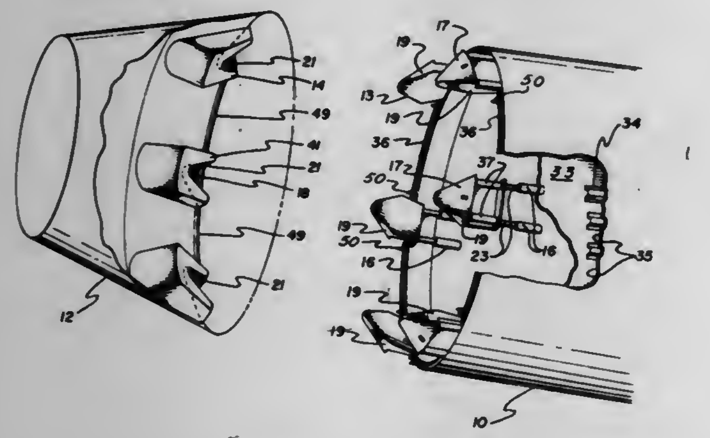
Wayne T. Hufford, Tulsa, Okla., assignor to Cherokee Electronics Co., Inc., Oklahoma City, Okla.
Filed May 8, 1969, Ser. No. 822,999 .
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—204 2 Claims



Apparatus which is used for rapidly increasing and controlling the speed and stopping rotating reels in a tape deck assembly. The speed of the rotating wheels being regulated by a system of motors and a braking system which is made effective by an electrical control system which is actuated by a mechanical switch. The mechanical switch being part of a console housing the tape deck.

3,608,848
DOCKING MECHANISM

Myron A. Cantor, Rolling Hills; Harry S. Greenberg, Tustin, and Clifford H. Parks, Diamond Bar, all of Calif., assignors to North American Rockwell Corporation
Filed Oct. 21, 1968, Ser. No. 769,276
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 7 Claims

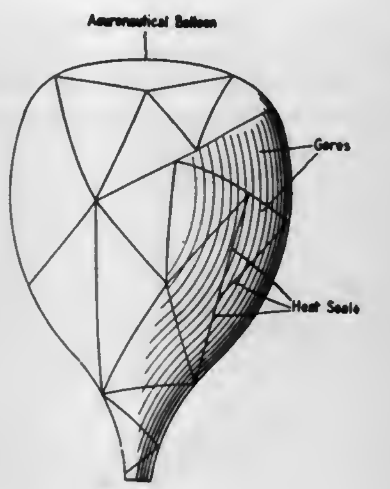


A mechanism is described for aligning and securing two vehicles and attenuating shock upon impact therebetween. A plurality of wedge-shaped or semipyramidal bumpers are yieldably mounted on one vehicle and adapted to mate with complementary receptacles on the other vehicle. Sloping faces on the wedge-shaped bumpers resolve or redirect impact forces for shock attenuation by a single set of shock absorbers. Docking latches are provided for securing the vehicles together and an assembly latch arrangement is provided for holding the vehicles spaced apart for a minimum heat transfer or alternatively drawing the vehicles together for operation.

3,608,849
AERONAUTICAL BALLOONS

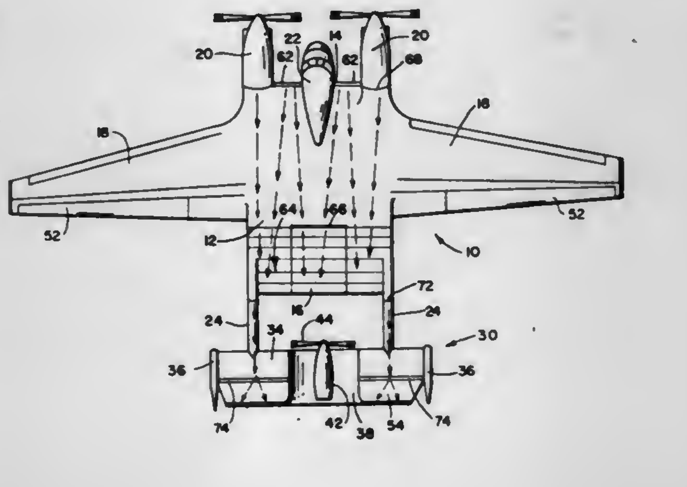
William F. Underwood, Oak Park, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 698,756, Jan. 18, 1968, now abandoned. This application July 10, 1969, Ser. No. 840,635
Int. Cl. B64b *1/40*
U.S. Cl. 244—31 4 Claims

An aeronautical balloon is fabricated from a biaxially oriented plastic film which is obtained from a polyolefin resin composition comprising a homopolymer of copolymer of ethylene of at least about 50 percent by weight.



3,608,850
LIFTING BODY BOUNDARY LAYER CONTROL

Charles G. Fredericks, Silver Spring, Md., assignor to Occidental Aircraft Corporation, Washington, D.C.
Filed Sept. 26, 1969, Ser. No. 861,361
Int. Cl. B64c *21/02*
U.S. Cl. 244—36 8 Claims

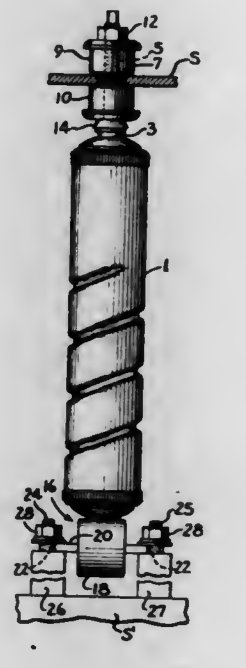


A twin boom lifting body fuselage aircraft has airflow control ports adjacent leading and trailing edges of the airfoil lifting body. Preferred embodiments have interconnected ram air intake means in fuselage booms and air outlets along a trailing edge of a horizontal stabilizer. An engine mounted in a channel section of the horizontal stabilizer produces a low pressure area near the upper trailing portion of the lifting body promoting flow through the air control ports, thereby reducing drag and increasing lift of the aircraft.

3,608,851
SHOCK ABSORBER MOUNTING ASSEMBLY

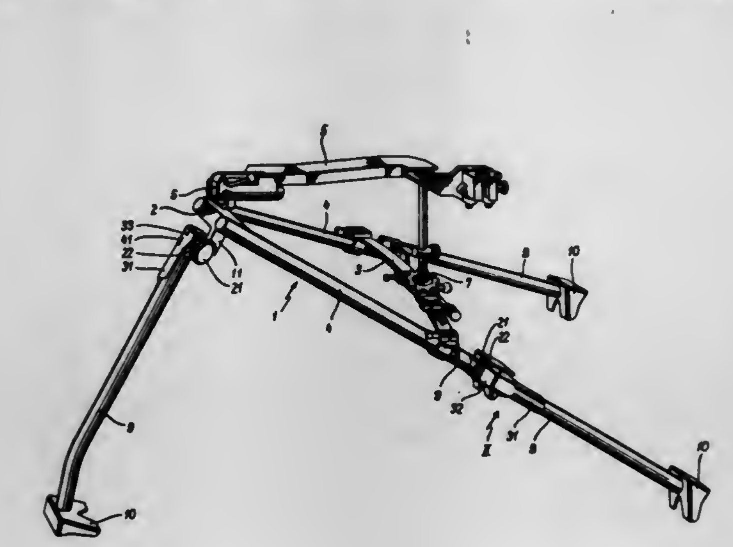
Richard D. Anderson, 866 S. Charles Street, Elgin, Ill.
Filed Dec. 18, 1968, Ser. No. 784,624
Int. Cl. F16f *15/00*
U.S. Cl. 248—15 6 Claims

A shock absorber mounting assembly in which the shock absorber is provided with an axially extending stud at each end for mounting the shock absorber between the structures which are to be shock insulated from each other and an offset bracket is fitted on one of the studs and mounts the stud to one of the structures.



3,608,852
SUPPORT FOR LIGHT AUTOMATIC FIREARMS

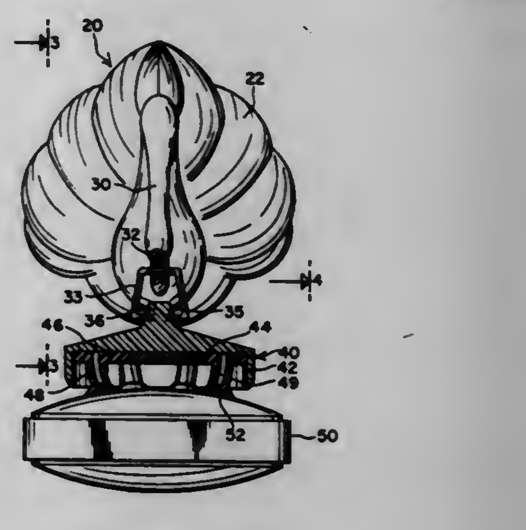
Kurt Horn, Oberndorf, Germany, assignor to Heckler & Koch GmbH, Oberndorf, Germany
Filed July 29, 1970, Ser. No. 59,058
Claims priority, application Germany, July 30, 1969, P 19 38 593.4
Int. Cl. F41c *27/00*
U.S. Cl. 248—166 8 Claims



A tripodlike support for automatic firearms comprises a frame incorporating two divergent tubes coupled at one end by means of an angle member which member and the ends of the two tubes are provided with pivot mountings for legs which are adapted to fold to a compact structure. The legs are mounted on pivot pins associated with toothed detent members engageable by displacement of the pivot pins by means of release levers. Each release lever incorporates a displaceable stop or abutment which is adapted to be placed between the release lever and the end of the pivot pin when the lever is raised for operating purposes but which enables the release lever to lie snugly against the leg under normal service conditions thus avoiding projecting parts which might catch in obstructions or entanglements during transport under service conditions.

3,608,853
SOAP-HOLDING APPLIANCE EMPLOYING VACUUM CUPS

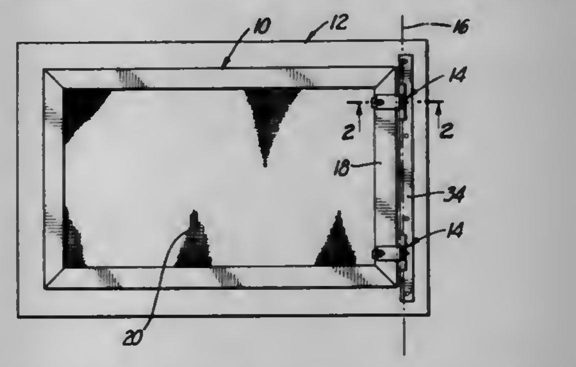
Anthony Sertich, 346 East 29th St., Brooklyn, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,804
Int. Cl. A45d *40/00*
U.S. Cl. 248—309 9 Claims



A soap holder has a rigid body which is attachable to a vertical wall and which supports a cup-shaped member in which is a flexible pad. Flexible legs depend from the lid and are formed with integral suction cups. The cup-shaped member may be pivotally attached to the rigid body. The flexible legs may be hollow or solid. A space may be defined between the pad and cup-shaped member into which the pad can flex when the legs and cups bend to conform to the curved surface of a piece of soap.

3,608,854
HINGE CLAMP

Kaino J. Hamu, 4013 North Durfee Ave., El Monte, Calif.
Filed Nov. 19, 1969, Ser. No. 878,157
Int. Cl. E05d *7/04*
U.S. Cl. 248—316 A 4 Claims

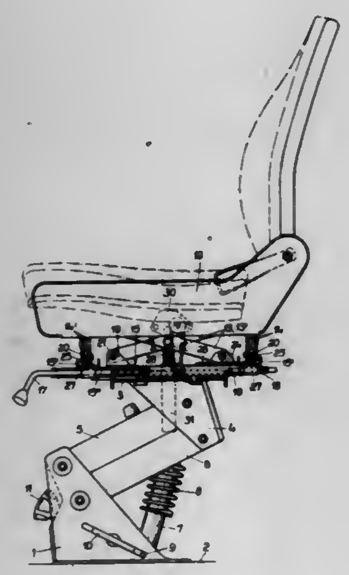


A hinge clamp for releasably and hingably attaching a bar to a support. The clamp has a pair of angle brackets whose interior corners open toward one another to define between the brackets an effective opening for receiving the bar endwise in a manner such that the bar is cradled between the flanges of each bracket. A mounting plate hinged to one bracket on a hinge axis parallel to the axis of the opening, and clamp means for urging the brackets toward one another to firmly and positively grip the bar. A primary application of the hinge clamp is attaching a silk screen frame to a frame support.

3,608,855
ADJUSTABLE SEATING STRUCTURE, PARTICULARLY FOR AUTOMOBILES

Werner Osenberg, Opladen, Germany, assignor to Bremshey & Co., Osnaibrueck, Germany
Filed Feb. 19, 1969, Ser. No. 800,585
Claims priority, application Germany, Feb. 27, 1968, P 17 29 966.0
Int. Cl. B60n *1/02*
U.S. Cl. 248—400 5 Claims

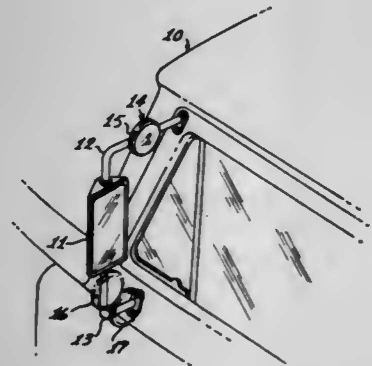
A seating structure which is adjustable and designed particularly for automobiles and the like. The seating structure includes a lower frame fixed to the floor of the vehicle and an upper seating frame situated over and spaced from the lower frame. An intermediate adjustable assembly is situated between the upper frame and the lower frame and is carried by the lower frame while being adjustable to adjust the elevation of the upper seating frame with respect to the lower frame. An adjustable spring assembly is operatively connected with the lower frame to provide for the latter a resilient resistance to a given load so that by adjusting the yieldability of the lower frame with respect to a given load it is possible for an individual to be very comfortably seated.



At the same time the elevation of the seat can be adjusted independently of the adjustment for the particular load.

3,608,856
MIRROR MOUNTING BRACKET

George G. T. Hurley, 922 B West Monterosa, Phoenix, Ariz.
Filed Aug. 11, 1969, Ser. No. 848,905
Int. Cl. A47g *1/24*; **G02b** *5/08*
U.S. Cl. 248—480 **1 Claim**

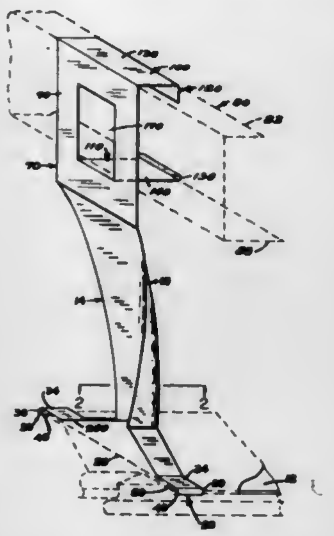


A mirror mounting bracket, particularly for a rear view mirror of a vehicle, in which the rotation of the mirror held on the bracket serves to operate the clamp to secure the mirror in mounting position of the motor vehicle.

3,608,857
CHANNEL CLIP FOR T-BARS

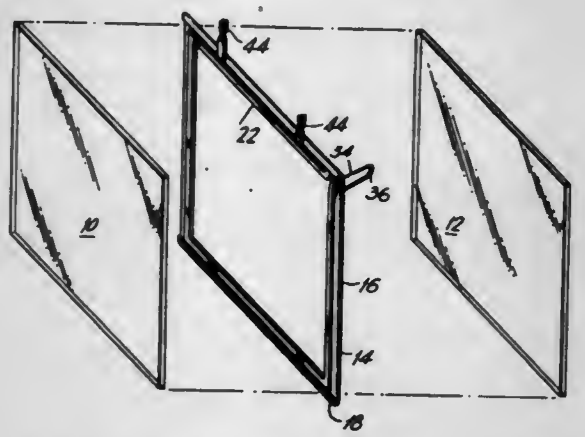
Richard H. Hibbeler, 7603 Sherman Drive, Omaha, Nebr.
Filed Dec. 11, 1969, Ser. No. 884,231
Int. Cl. E04g *17/18*
U.S. Cl. 248—317 **12 Claims**

A channel clip for suspending a ceiling-supporting T-bar from a horizontal channel comprising a shank portion having a pair of hooks at its lower end for resiliently gripping the T-bar and having at its upper end projecting transverse portions adapted to hook about the flanges of a channel.



3,608,858
GASKET FRAME FOR PLASTIC CASTING APPARATUS

John O. Beattie, Riverside, and James Jay Ferris, Old Greenwich, both of Conn., assignors to The Polycast Corp., Stamford, Conn.
Filed Oct. 7, 1968, Ser. No. 765,554
Int. Cl. B41b *11/04*
U.S. Cl. 249—160 **5 Claims**



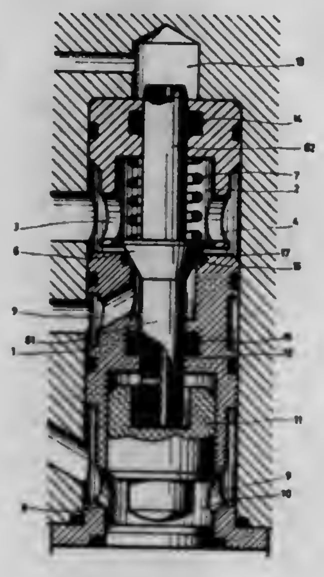
A frame for mounting a compressible gasket to be used in a plastic casting apparatus is shown. A stiff frame having an inner perimeter upon which a gasket strip is mounted seals a casting zone between two, flat, closely adjacent glass surfaces. A gap between ends of the gasket strip provides a feed zone through which a conduit carrying plastic casting fluid is inserted. A lever mounted on the frame is rotated to cause ends of the gasket strip to abut one another when sealing of the casting zone is desired.

3,608,859
CONTROLLABLE CHECK VALVE

Walter Hetzer, Haldholzen, Germany, assignor to Messerschmitt-Bolkow Gesellschaft mit Beshrankter Haftung, Ottobrunn, near Munich, Germany
Filed Apr. 15, 1969, Ser. No. 816,324
Claims priority, application Germany, Apr. 23, 1968, P 17 50 341.2
Int. Cl. F16k *31/143*
U.S. Cl. 251—63.4 **1 Claim**

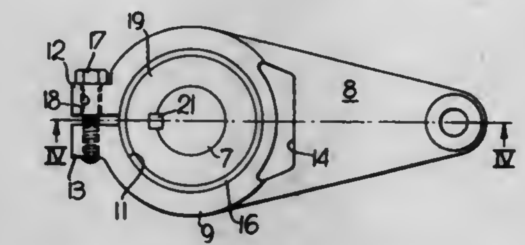
A controllable check valve, for a hydraulic system, includes a relatively elongated body having means defining a valve zone, fluid inlet means and fluid outlet means. The body is formed with a frustoconical valve seat between the inlet and outlet means. A valve member is displaceable longitudinally in the body and is formed with a frustoconical valve seating surface sealingly engageable with the valve seat.

Stems extend in opposite longitudinal directions from the frustoconical valve seating surface, and slide in closely fitting bores in the valve body to serve as guides for the valve member. During longitudinal displacement of the valve member, these stems project through the valve zone through at least the length of the possible valve stroke. Packings are provided in the valve housing, spaced from the valve zone, and engage the stems which extend outside the valve zone in at least one operating position of the valve member.



3,608,860
WICKET-GATE-RESTRAINING DEVICE

John M. Horn, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 12, 1969, Ser. No. 875,625
Int. Cl. F16k *31/52*; **F16d** *1/06, 3/14*
U.S. Cl. 251—79 **3 Claims**

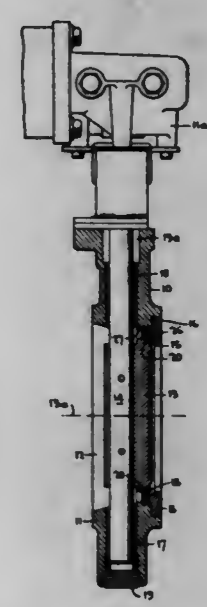


A frictional connection in the linkage for controlling hydraulic turbine wicket gates. Each wicket gate is provided with a shaft to which is connected an arm which is operated to revolve the wicket gate to a desired position. A frictional connection is provided between the arm and the wicket gate shaft so that if a predetermined torque is exceeded, slippage will take place between the shaft and the arm prior to damaging the gate or linkage. Because of the frictional connection, after the slippage has taken place, the wicket gate is not free to rotate or flutter but is held in the slipped position.

3,608,861
BUTTERFLY VALVE SEAT

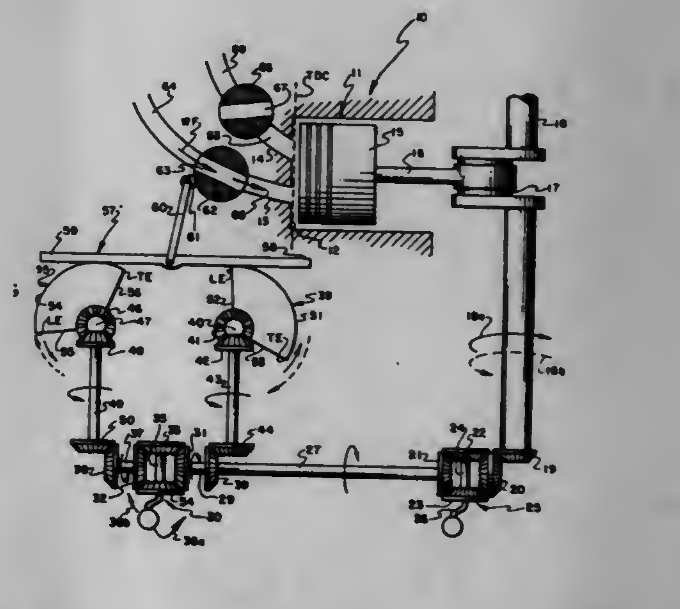
David A. Helman, Berlin; Michael E. Miles, Northborough, and James F. Donnelly, Worcester, all of Mass., assignors to Jamesbury Corporation, Worcester, Mass.
Filed May 28, 1968, Ser. No. 732,729
Int. Cl. F16k *5/16*
U.S. Cl. 251—173 **9 Claims**

In a butterfly valve of the type wherein an annular flexible seat ring circumscribing the fluid flow channel cooperates with an inclined circumferential sealing surface on a rotatably mounted butterfly disc to open and close the flow channel, an improvement is made to permit the valve to resist internal fluid pressure with equal effectiveness regardless of the direction from which applied. The disc deflects in the downstream direction to the same extend upon the application of a given fluid pressure (up to the design pressure of the valve) regardless of the direction from which the pressure is applied; whereas the annular flexible seal tends to deflect to a greater extent than this when the pressure is applied from the direction of convergence of the inclined circumferential sealing surface and to a lesser extent than this when the internal fluid pressure is applied from the opposite direction.



3,608,862
VARIABLE DWELL CAM ADVANCE MECHANISM

Douglas Ray Paxton, 426 31st St., Newport Beach, Calif.
Filed May 21, 1969, Ser. No. 826,628
Int. Cl. F16k *31/524*
U.S. Cl. 251—229 **10 Claims**

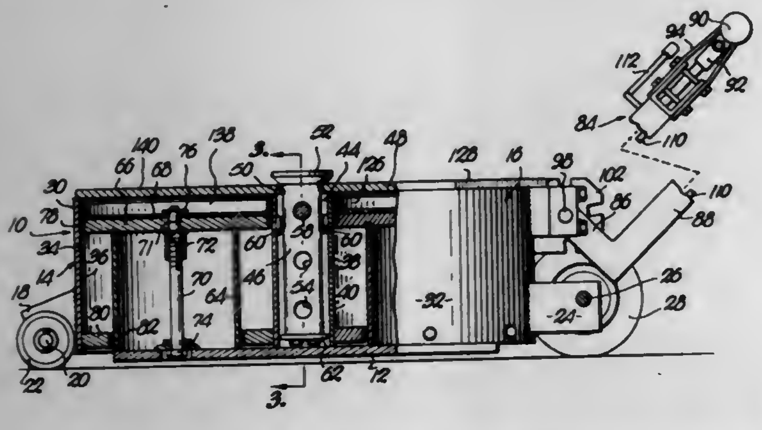


A pair of radial cams bear against a common cam follower whose motion controls the operation of a valve, such as an inlet valve for admitting a working fluid into a power cylinder. When raised segments of both cams simultaneously engage the cam follower then the cam follower is sufficiently raised to fully open the valve. The dwell period of the cam follower in its raised position dictates the time during which the valve remains fully open. The cam follower dwell period can be varied by adjusting the angular relationship between the cams.

A reversing control interconnects the cams and a drive shaft in order to selectively reverse the rotational direction of the drive shaft. The valve is coupled to a quick opening mechanism and is also coupled to a quick closing mechanism which serves to snap the valve closed when cams and the cam follower move to predetermined positions.

3,608,863
DUAL-CYLINDER VEHICLE LIFT

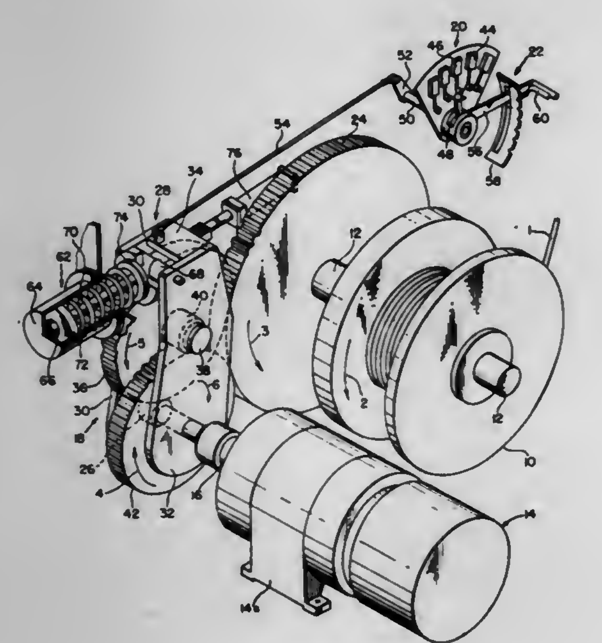
Gilbert W. Gaardner, and Edwin L. Vollmer, both of St. Joseph, Mo., assignors to Gray Manufacturing Company, Inc., St. Joseph, Mo.
Filed May 1, 1969, Ser. No. 820,856
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 HP **11 Claims**



A vehicle lift primarily intended for lifting loaded trucks and trailers at the axle, the lift having a portable base, there being a pair of shiftable cylinders on the base and means for shifting the cylinders between a lowered position and raised positions, such means including a compressed air plumbing system for the lift whereby air may be delivered into a tubular handle which is pivotally mounted with respect to the common top plate of the cylinders and thence into a space defined by said top and a fixed piston and packing seal corresponding to each cylinder whereby the cylinders are raised; there being a centrally disposed lift post coupled with the cylinders and adjustable vertically with respect thereto whereby the effective height of the lift may be selectively adjusted.

3,608,864
CONSTANT-TENSION WINCH

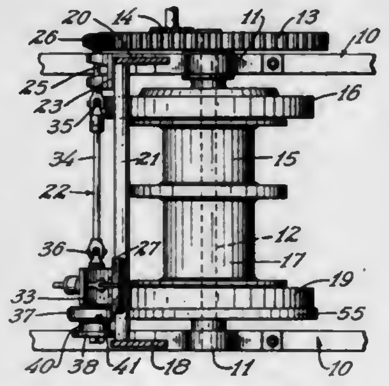
Larry L. Dargitz, and Arthur J. Muhlbeier, both of Skagit, Wash., assignors to Skagit Corporation, Sedro Wooley
Filed Mar. 5, 1969, Ser. No. 804,522
Int. Cl. B66d *1/48*
U.S. Cl. 254—172 **5 Claims**



A winch drum is coupled to an electric motor through a gear train, one section of which constitutes a cable drumline tension sensitive mechanism capable of changing position responsive to changes in cable drumline tension. An automatic tension control mechanism is coupled to the cable drumline tension sensitive mechanism for activation thereby to control the operation of the electric motor so as to maintain cable drumline tension between predetermined limits.

3,608,865
DRAGLINE HOIST ATTACHEMENT

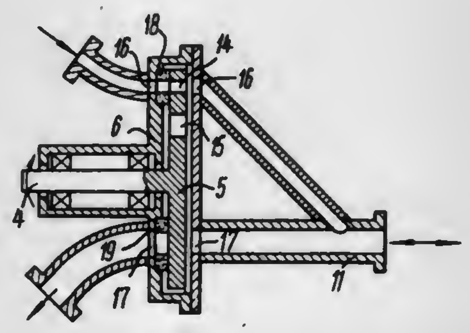
Delbert J. Kirk, Willernie, Minn.
Filed Feb. 18, 1969, Ser. No. 800,070
Int. Cl. B66d *1/24*
U.S. Cl. 254—187 **4 Claims**



A dragline hoist attachment is provided to increase the speed at which the dragline is reeled in during back-casting operations. A friction wheel is provided engageable with the clutch rim of the dragline hoist drum, and which is rotated at a peripheral speed much higher than the normal peripheral speed of the clutch rim. Means are provided to engage this friction wheel with the clutch rim as the bucket is swinging toward the cab, reeling in the slack at a relatively high rate.

3,608,866
PNEUMATIC PULSATOR FOR IMPARTING VIBRATORY MOTION TO LIQUID IN A CONTAINER

Susanna Mikhailovna Karpacheva, 2 Shukinsky proezd, 2, kv. 88; Valerian Matveevich Muratov, Astakhovsky pereulok, 1/2, kv. 118; Leonid Solomonovich Raginsky, Nikitinskaya ulitsa, 16, Korpus 1, Kv. 29; Igor Viktorovich Ilgisonis, 7 Parkovaya ulitsa, 2, Korpus 4, kv. 20, and Noi Mikhailovich Adamsky, Novaya Bodraya ulitsa, 7, Kv. 45, all of Moscow, U.S.S.R.
Filed Oct. 22, 1968, Ser. No. 769,622
Int. Cl. B01f *3/00*
U.S. Cl. 259—1 **7 Claims**

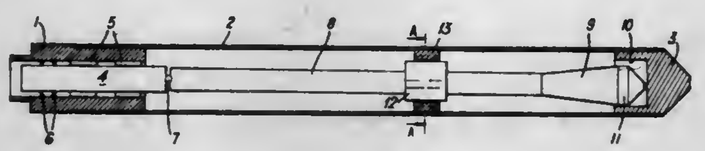


A pneumatic pulsator is provided for imparting vibratory motion in a liquid in a container, and the pulsator comprises a rotatable slide valve in the form of a disc, housed in a body with an inlet port and exhaust port, the disc having one or more holes or slots for periodically providing communication between the liquid in the container with a compressed air line or the atmosphere. The container is connected to the exhaust port by an outlet pipe which is coaxial with the exhaust port.

3,608,867
VIBRATORS

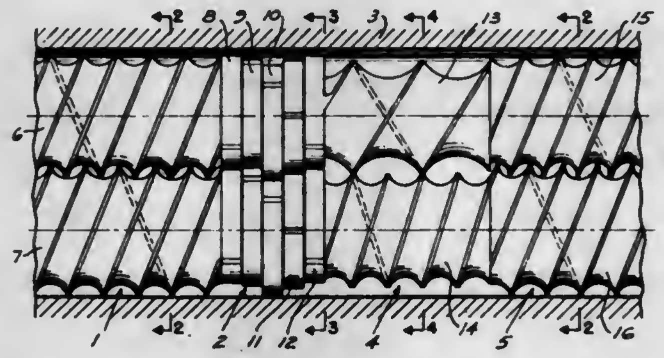
Percival George Hunter, New Malden, Surrey, England, assignor to Fyne Machinery & Engineering Limited, London, England
Filed July 7, 1969, Ser. No. 839,604
Claims priority, application Great Britain, May 2, 1968, 37,111/68
Int. Cl. B01f ; B28c
U.S. Cl. 259—1 **1 Claim**

A vibrator, such as used in concrete mixes, comprises a cylindrical casing in which a rotor in the form of a pendular mass is suspended and rotatably driven. The rotor is causes to gyrate in rolling contact in the casing by coacting lobes and recesses, and these lobes and recesses are located intermediately between the ends of the pendular rotor, e.g. at about two-fifths of the length of the rotor from its free end.



3,608,868
CONTINUALLY MIXING AND KNEADING DEVICE WITH TWO OR MORE SCREWS FOR A PLASTICIZABLE MATERIAL

Heinz Koch, Ludwigsburg, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany
Filed Nov. 20, 1968, Ser. No. 777,367
Claims priority, application Germany, Dec. 16, 1967, P 16 79 884.8
Int. Cl. B01f *7/02;* **B29b** *1/10*
U.S. Cl. 259—6 **7 Claims**

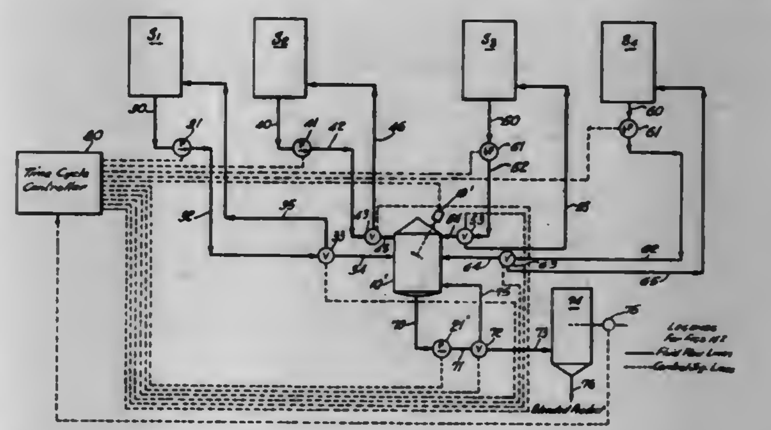


A continuously operating device for homogeneously mixing components of a plasticizable material has an input zone including unidirectionally rotating meshing screw elements for mixing components of the material received therein and feeding the mixed components to a dispersion zone also including rotatable meshing screw elements. The dispersion zone, in turn, conveys the components received therein from the input zone, after dispersing the same, to a mixing zone the screw elements of which have fewer threads than the screw elements in the dispersion zone and are preferably not in mesh whereby the components are homogeneously mixed when leaving the mixing zone. Instead of using one dispersion zone and one mixing zone two or more such couples may be provided in one device. Due to the arrangement of the screw elements in the mixing zone the desired homogeneous mixture is obtained at the downstream end of the mixing zone.

3,608,869
SYSTEM FOR BLENDING LIQUID INGREDIENTS

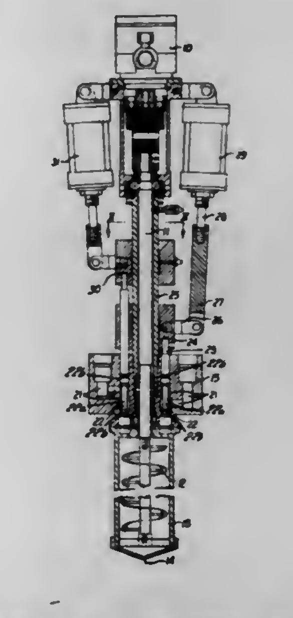
Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.
Filed May 28, 1969, Ser. No. 828,560
Int. Cl. B01f *7/00;* **B28c** *7/04*
U.S. Cl. 259—7 **7 Claims**

Disclosed is a system for automatically blending liquid ingredients which is useful to continuously or discontinuously provide blended products. A mixing vessel having an agitator is provided for blending the ingredients. Each of the liquid ingredients is admitted thereto in the form of a stream introduced at a uniform flow rate for a time interval proportional to the desired concentration in the product mixture of each respective ingredient. The individual time intervals of flow are kept small compared to the volume of the mixing vessel and are arranged sequentially so that ingredient segments of the product mixture are continuously added to the mixing vessel. The vessel is always maintained full by withdrawing the mixture at a rate equal to the rate at which the ingredients are added. Automatic time cycle control means and valves are provided so that the operating sequence can be rapidly performed and continuously repeated providing the capability of producing a continuous stream of the blended mixture. An output storage tank is provided which is fitted with a level controller which starts up and shuts down the blending system to meet varying output quantity demands of the blended products.



3,608,870
FOAMABLE MIXTURE DISPENSING HEAD

John Brian Aldridge, Manchester, England, assignor to Vitafoam Limited
Filed Mar. 28, 1969, Ser. No. 811,555
Claims priority, application Great Britain, Mar. 29, 1968, 15093/68
Int. Cl. B01f *7/24, 15/02*
U.S. Cl. 259—23 **6 Claims**

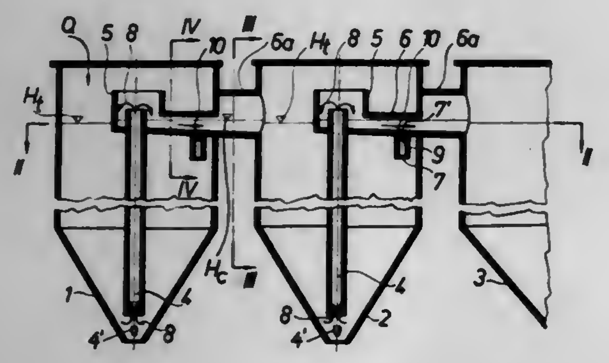


A dispensing head for dispensing foam mixtures, the dispensing head including a mixing chamber having an impeller mounted within the mixing chamber, first feed and return lines for simultaneously admitting premixed nonreactive components and reactive components to the mixing chamber, and second feed and return lines for simultaneously admitting a second premixed nonreactive component and the reactive component to said mixing chamber.

3,608,871
LEVEL-REGULATING APPARATUS FOR TANKS CONNECTED IN SERIES

Jozsef Harsanyi, Budapest; Geza Pinter, Budapest; Zoltan Pais, Ajka, and Zoltan Toth, Ajka, all of Hungary, assignors to Aluterv Aluminiumipari Tervezo Vallalat, Budapest and Ajkai Timfoidgyar es Aluminiumkoho, Ajka, Hungary
Filed Nov. 10, 1969, Ser. No. 875,097
Claims priority, application Hungary, Nov. 29, 1968, AU-205
Int. Cl. B01f *5/12*
U.S. Cl. 259—95 **6 Claims**

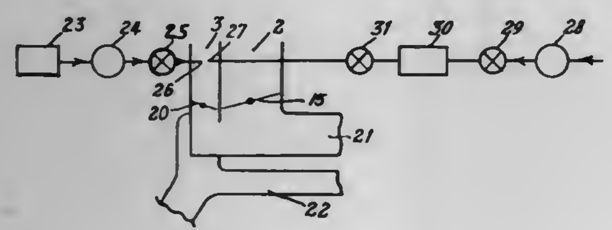
Continuous flow apparatus for maintaining solid particles suspended in liquid for a predetermined period of time, as in alumina production. The suspension passes through a plurality of tanks in series, and is agitated by flowing upwardly through a vertical stirring tube. The suspension that flows out of the upper end of the stirring tube is directed toward the next tank by a channel that has a drain for returning a portion of the lifted material to the tank from which it was lifted. Preferably, the drain is a conduit that extends downwardly from the channel, and the height of the channel within the tank is less than the height of the channel between tanks.



3,608,872

ENGINE FUEL SUPPLY HAVING SEPARATE AIR AND FUEL MIXING BORES

Junzo Uozumi; Toshikazu Suzuki; Kaneo Kuno; Kazuo Kikuchi, and Junki Iwata, all of Aichi, Japan, assignors to Aisan Kogyo Co., Ltd., Aichi Prefecture, Japan
Filed July 10, 1969, Ser. No. 840,617
Claims priority, application Japan, July 18, 1968, 43/50687
Int. Cl. F02m *69/04*
U.S. Cl. 261—28 **1 Claim**



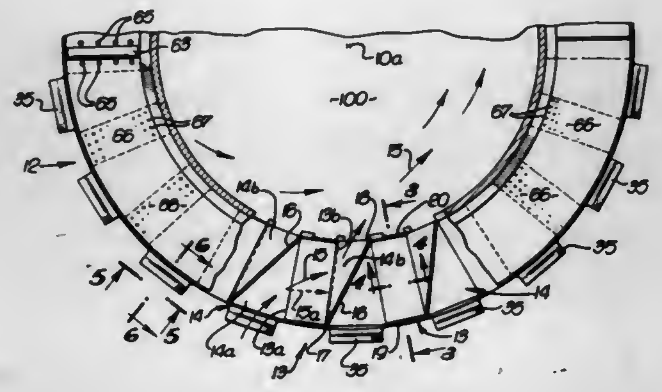
A fuel supply system for an internal combustion engine, said system having a performance equal to that of a two-stage carburetor over a wide range of operation from small to large fuel requirements. The system has a first bore for regulating the inflow of air and a second parallel bore for mixing fuel with air. A throttle valve is provided in each bore and one of the throttle valves is connected to a fuel metering device. Metered fuel is injected into the fuel mixing bore at a Venturi that has a diameter considerably less than the diameter of the air inflow bore. In a second device, the fuel injection system controls fuel quantity by air jet pressure. In the last embodiment, the fuel metering device comprises pure fluid amplifiers which are controlled by pressure within the fuel and air mixing bore.

3,608,873

MECHANICALLY ASSISTED SPIRAL-DRAFT WATER-COOLING TOWER

Donn B. Furlong, Santa Rosa, Calif., assignor to Fluor Products Company, Inc., Santa Rosa, Calif.
Filed Oct. 15, 1969, Ser. No. 866,446
Int. Cl. B01f *3/04*
U.S. Cl. 261—30 **18 Claims**

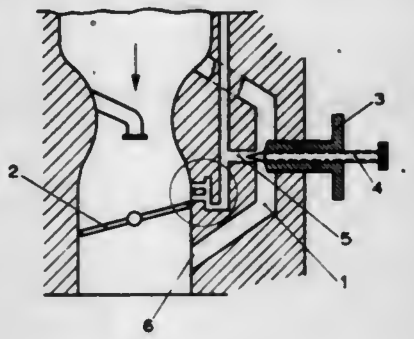
A forced-draft cooling tower employs fans, passages to receive fan-displaced air or gas, and packing sections spaced about the tower axis so that positive swirling of the gas or air about that axis within the tower interior is produced as the flow passes through the passages and packing sections.



3,608,874

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

Rudolf Beckmann, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Feb. 28, 1969, Ser. No. 803,273
Claims priority, application Germany, Mar. 1, 1968, P 16 01 994.6
Int. Cl. F02m *3/00*
U.S. Cl. 261—41 D **2 Claims**

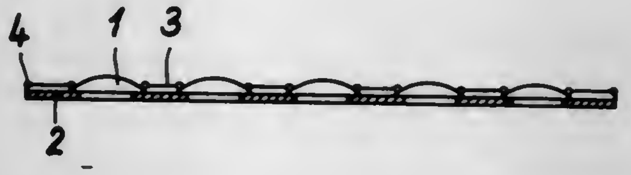


A carburetor for an internal combustion engine having a bypass channel around a throttle valve and means to adjust the flow in the channel.

3,608,875

VALVE TRAY FOR COLUMNS WITH MASS TRANSFER

Ernst Kriegel, Essen, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Nov. 14, 1968, Ser. No. 775,768
Claims priority, application Germany, Nov. 14, 1967, P 16 42 940.6
Int. Cl. B01d *3/20*
U.S. Cl. 261—114 A **4 Claims**

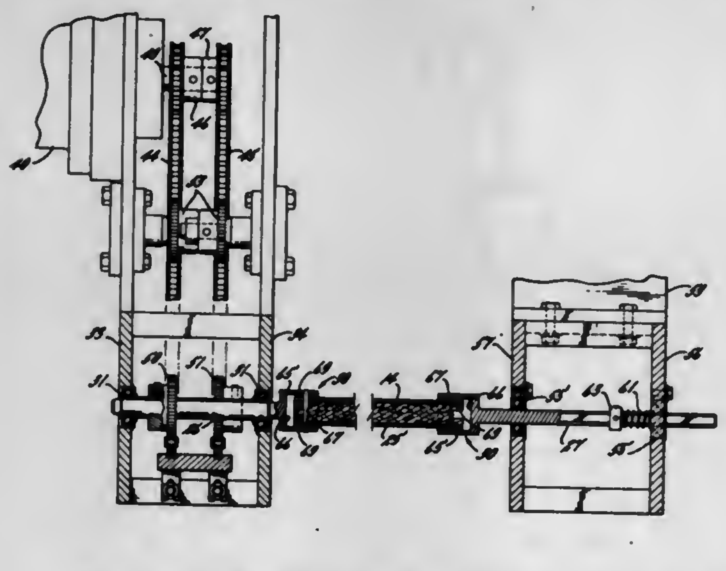


In combination with a valve tray for mass-transfer columns which has a great number of openings for the passage of vapor, a cover structure which comprises disc elements to close and open the openings and interconnected by links so as to form a chain of discs while the outer discs are attached by links to the tray is the object of the invention.

3,608,876

HEAT-TREATING APPARATUS WITH ROLLER-TYPE HEARTH

Charles E. Leaich, Rockford, and Edwin L. Springer, Belvidere, both of Ill., assignors to Alco Standard Corporation, Valley Forge, Pa.
Filed Apr. 10, 1970, Ser. No. 27,339
Int. Cl. F27b *9/24*
U.S. Cl. 263—6 C **7 Claims**

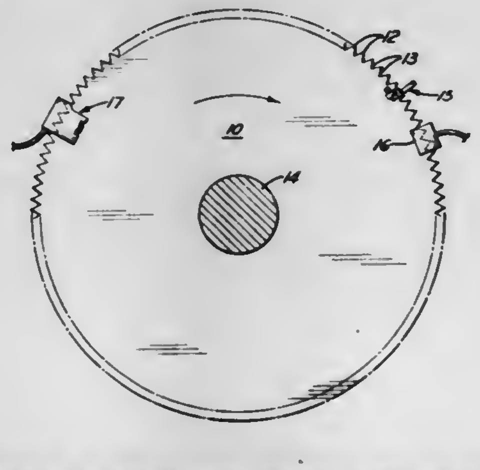


The ceramic hearth rollers of a kiln are connected to driving and supporting shafts by pin-and-slot connections which enable universal pivoting and lengthwise expansion and contraction of the rollers relative to the shafts while reducing the danger of the ends of rollers becoming chipped and broken during service use.

3,608,877

APPARATUS FOR TREATING CIRCULAR SAW BLADES

Edward H. Dehn, Oil City, and Fernand J. Dewez, Jr., Monroeville, both of Pa., assignors to United States Steel Corporation
Division of Ser. No. 711,261, Mar. 7, 1968. Filed Nov. 9, 1970, Ser. No. 88,030
Int. Cl. C21d *1/66*
U.S. Cl. 266—4 E **4 Claims**



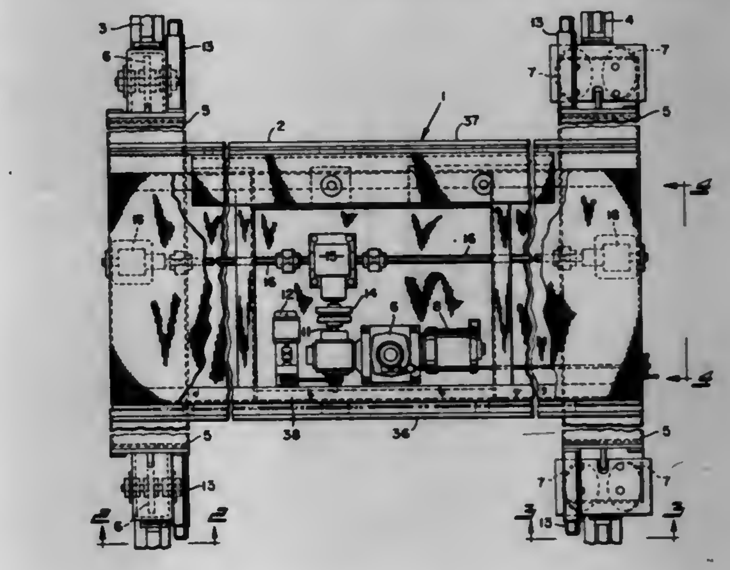
An apparatus for hardening the teeth and tooth roots of a saw blade used for cutting hot steel shapes. Blade rotates, while its teeth and roots are heated to the austenitizing temperature and quenched by a stationary induction-heating unit and a stationary quenching device. Shield applied to blade to prevent reheating and softening of portion first heated as it reenters heating unit. The hardening treatment forestalls failure through fatigue cracking at the roots.

3,608,878

FLAME CUTTING MACHINE

Roy H. Dreshman, Munhall, Pa., assignor to R. H. Dreshman & Sons, Inc., Homestead, Pa.
Filed Aug. 1, 1968, Ser. No. 749,356
Int. Cl. B23k *7/00*
U.S. Cl. 266—23 **9 Claims**

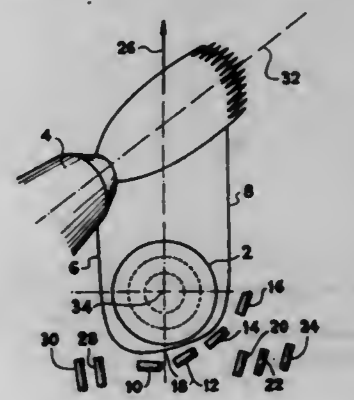
Flame cutting machine for cutting iron or steel plates, bars, structural shapes, castings, etc. characterized in the provision of a variable speed positive drive means for the rail mounted torch carriage or gantry thereof by which the carriage is driven in smooth, uniform manner at any cutting speed between zero and maximum, said drive means being mounted on the carriage for floating movement to accommodate misalignment of the carriage guide rails. Machine further characterized in the provision of floating positive drive means for rapid traverse of the carriage.



3,608,879

DEVICE FOR TRIMMING FLASH FROM METAL WHICH HAS BEEN WORKED WITH A MACHINING TORCH

Jacques Birr, Paris; Michel Donze, Nancy; Bernard Abel, Epinal, France, and Patrice Charbonnier, Pointe Noire, Congo, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Erploitation des Procedes Georges Claude
Filed Nov. 22, 1968, Ser. No. 805,918
Claims priority, application France, Nov. 23, 1967, 129347
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 H **2 Claims**



Oxygen is blown through orifices against the flash resulting from the scarfing when the flash is still hot and can burn in oxygen.

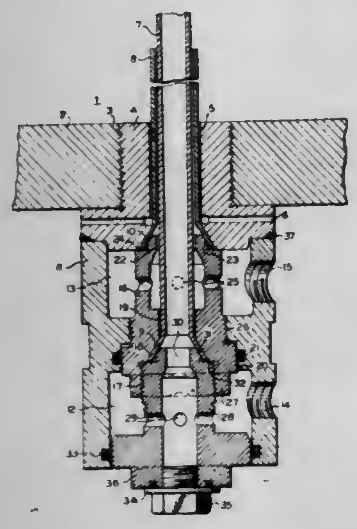
Orifices are provided for the place where the scarfing has started, other orifices for the lateral flash produced during the scarfing pass.

3,608,880

BLAST FEED DEVICE FOR A STEEL CONVERTER

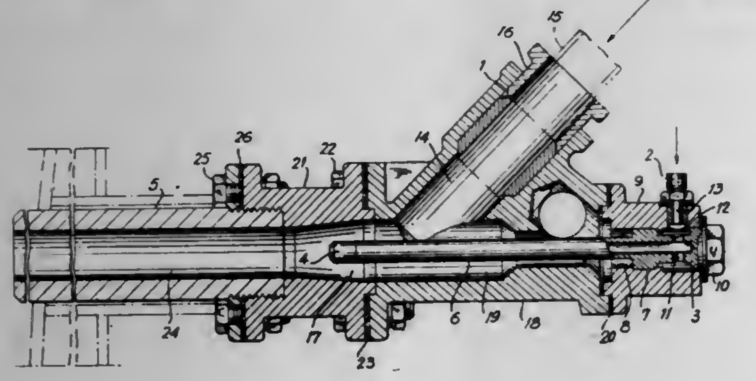
Marcel Gombert, Metz-Queuleu; Pierre Leroy, St. Germain en Laye, and Emile Sprunck, Moyeuvre-Grande, all of France, assignors to Wendel-Sidelor and Compagnie des Ateliers et Forges de la Loire (St-Charmand, Firming, St-Etienne, Jacob Holtzer)
Filed Jan. 23, 1970, Ser. No. 5,303
Claims priority, application France, Jan. 28, 1969, Nov. 6, 1969, 6,901,640;6,938,151
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T **14 Claims**

This device for supplying wind to be blown through the bottom of a steel converter, adapted to ensure a double yet separate feed to the blast tuyeres and wherein said tuyeres comprise for each blowhole a pair of concentric metal tubes adapted to be supplied with different gaseous substances, such as a combustive agent, for instance pure oxygen, and a cooling gas such as water steam or carbon dioxide gas, said device comprising essentially a body constituting a two-compartment chamber, each compartment being adapted to supply a specific substance annularly to at least one injector having its head engaged in a fluidtight manner against the base of the particular one of the pair of tubes of each tuyeres which it is intended to supply with this gaseous substance.



3,608,881
TUYERE APPARATUS FOR USING LIQUID FUEL IN THE FUMING PROCESS

Yordan Todorov Yordanov; Georgi Ivanov Abrashev; Georgi Tenev Georgiev; Velyo Dimitrov Zhekov; Yancho Hristov Yanev; Ivan Georgiev Rossenov; Velcho Angelov Prodanov, and Yordan Todev Roussev, all of Plovdiv, Bulgaria, assignors to Kombinat Za Zvetni Metali, Dimiter Blagoev, Plovdiv, Bulgaria
Filed Mar. 24, 1967, Ser. No. 625,850
Int. Cl. C21b *7/16;* C21c *5/48*
U.S. Cl. 266—41 **6 Claims**

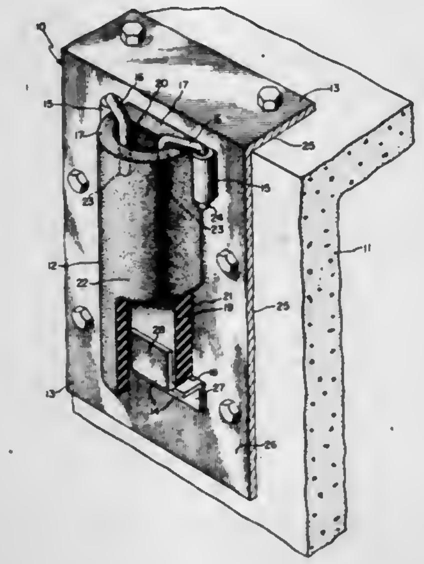


A tuyere is provided for feeding liquid fuel, under a pressure of about 15 atmospheres, and air into a slag formed in nonferrous processes.

3,608,882
ELASTOMERIC BUFFER MOUNTING ASSEMBLY

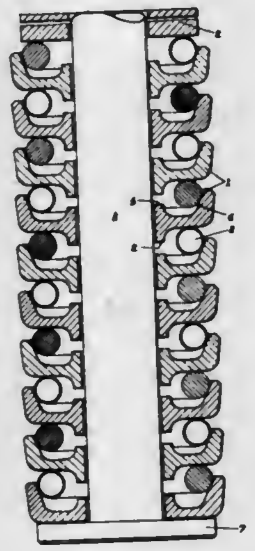
William F. Culp, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 20, 1969, Ser. No. 851,626
Int. Cl. B60r *19/08;* E02b *3/22;* F16f *1/36*
U.S. Cl. 267—140 **10 Claims**

An improved bumper assembly for use on a rigid structure including an elongated resilient bumper member having a longitudinally extending bore in at least the top portion thereof and preferably of a D-shaped cross-sectional configuration, a mounting clip for the bumper member which is attached to the structure having retaining means attached to its lower end portion to hold the bottom portion of the bumper and removable attaching elements in engagement with the bumper member to hold its top portion. The removable elements make it possible for the bumper to be installed in or removed from the bumper assembly without distortion or bending. The invention is particularly useful in providing means to absorb the impact of a moving vehicle, such as a truck, ship, or crane, as contact is made with a rigid structure.



3,608,883
SPRING

Maximilian Russold, and Heribert Sidan, both of Judenburg, Austria, assignors to Stelrische Gubstahlwerke Aktiengesellschaft, Wien I, Schreyvogelgasse, Austria
Filed June 17, 1969, Ser. No. 833,960
Claims priority, application Austria, June 18, 1968, A5844/68
Int. Cl. F16f *1/38*
U.S. Cl. 267—152 **12 Claims**

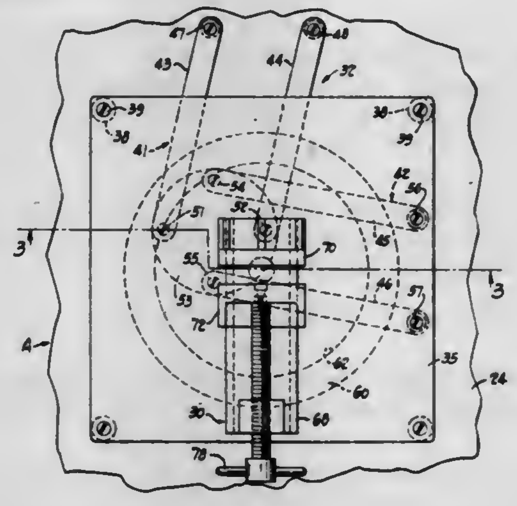


A heavy-duty spring device with a series of axially arranged rigid outer rings and having resilient split inner rings sandwiched axially therebetween. The inner and outer rings have curved interacting surfaces whereby, upon the application of an axial force, the inner rings are compressed with the axial force being substantially absorbed.

3,608,884
WORKHOLDER

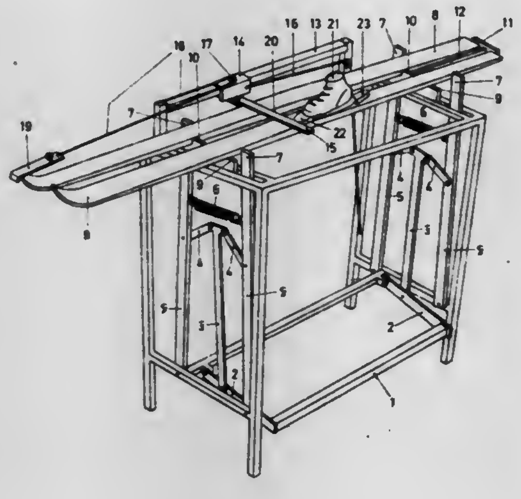
Marion W. Humphreys, 5631 North East 16 Terrace, Fort Lauderdale, Fla. (Addie Humphreys, surviving spouse)
Filed Mar. 5, 1969, Ser. No. 804,392
Int. Cl. B25b *1/22;* B23q *3/18*
U.S. Cl. 269—82 **3 Claims**

A workholder comprising a work gripping device at one end of a parallel motion arm which is connected at the opposite end to a stationary surface over which the work gripping device is movable while remaining oriented in a predetermined reference plane.



3,608,885
ASSEMBLY BENCH, ESPECIALLY FOR SKI BINDINGS AND SKI REPAIRS

Hans-Werner Roth, Ziegeleistrasse 14/1, 593 Huttental-Weidenau, Germany
Filed Jan. 21, 1969, Ser. No. 792,406
Claims priority, application Germany, Jan. 19, 1968, Sept. 18, 1968, Nov. 29, 1968, R 36 730; G 67 50 925.5; G 68 09 127.0-7402
Int. Cl. B25b *1/16*
U.S. Cl. 269—158 **8 Claims**

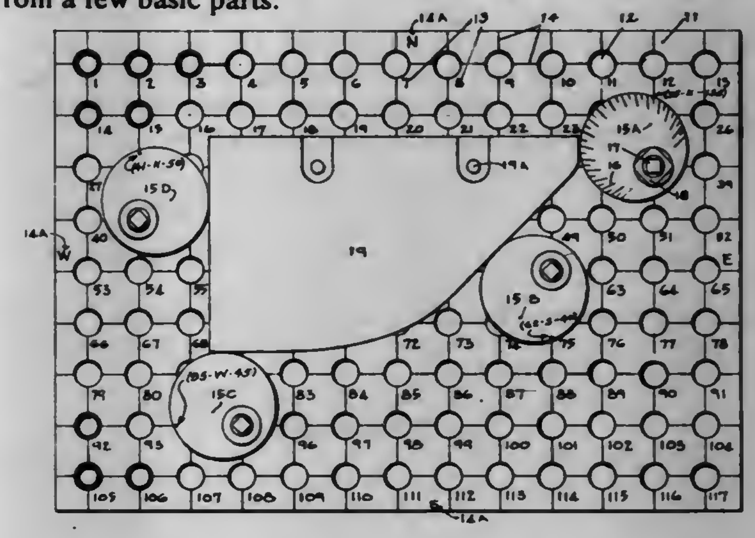


An assembly bench for the mounting of bindings and ski repairs, which comprises holding means with two clamping jaws on each side of the assembly bench and with an intermediate spacer, the clamping jaws which are spring urged so as to be under pull stresses, are by means of a foot lever and through the intervention of a spreader linkage adapted to be spread apart, said assembly table having associated therewith a measuring device.

3,608,886
SYSTEM OF DIGITAL JIGGING

Gary Y. Greene, Route 6, Box 16, Hickory, N.C.
Filed June 11, 1969, Ser. No. 832,198
Int. Cl. B23q *3/00*
U.S. Cl. 269—305 **7 Claims**

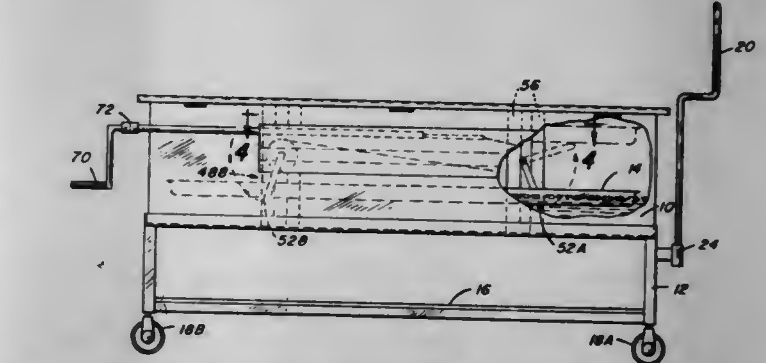
Instead of forming and storing a separate jig for each workpiece which is to be subjected to a machine operation or other workprocess, a series of cams are set in coded positions by reference to a code table consisting of digital symbols which makes it possible to reform a jig at any future time from a few basic parts.



The devising a system of digital symbols makes possible to use the process in sophisticated methods of control.

3,608,887
DISSECTING TABLE

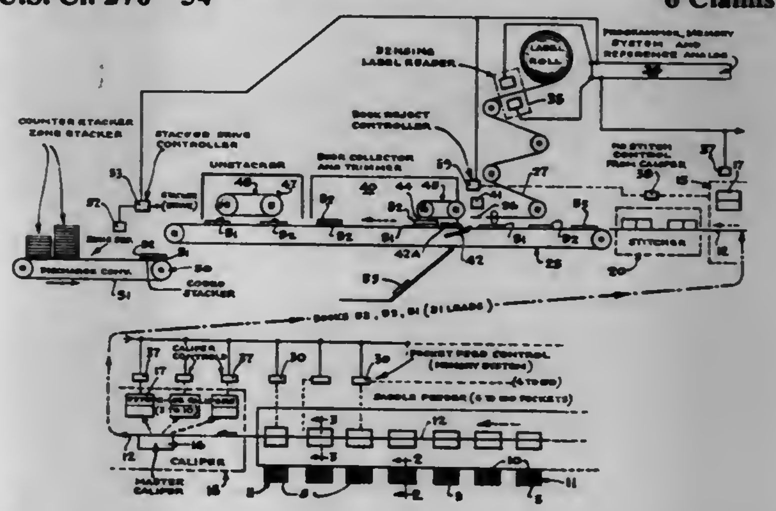
Charles D. Rose, 739 South 83rd East Ave., Tulsa, Okla.
Filed May 5, 1969, Ser. No. 821,705
Int. Cl. A61g *13/00*
U.S. Cl. 269—322 **5 Claims**



A device for use in the retention of a cadaver, the cadaver tray is adjustable in a multiplicity of positions by means of a lifting arm assembly connected to a chain and sprocket operated by the manual turning of a crank. The tank in which the cadaver tray is disposed is releasable from the supporting frame to facilitate cleaning.

3,608,888
SIGNATURE GATHERING

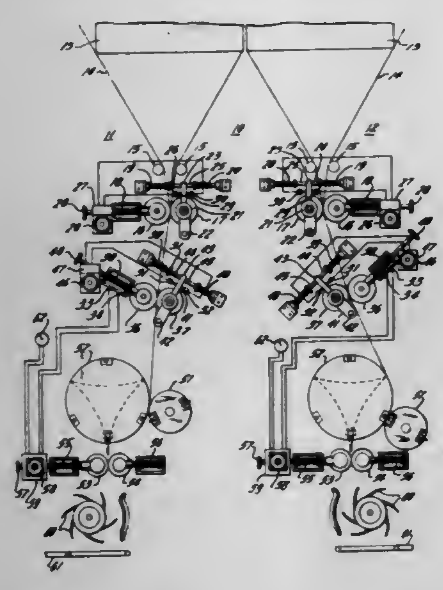
William B. McCain, Hinsdale, and James F. Cosgrove, Western Springs, both of Ill., assignors to McCain Manufacturing Corp., Chicago, Ill.
Filed Oct. 16, 1969, Ser. No. 866,892
Int. Cl. B65h *39/06*
U.S. Cl. 270—54 **6 Claims**



Books (magazines) are compiled from signatures demographically in that persons in the same mailing zone may receive books with signatures of different content. The books are trimmed while superimposed one on another, but nonetheless proper mailing sequence (zone separation) is maintained by shifting a trailing book forward to lie atop the next leading book just before trimming, and then the shifted book is returned to its former position before being mailed thereby to preserve the mailing zone sequence.

3,608,889
AUTOMATIC NIPPING AND FOLDING ROLLER CONTROL SYSTEM

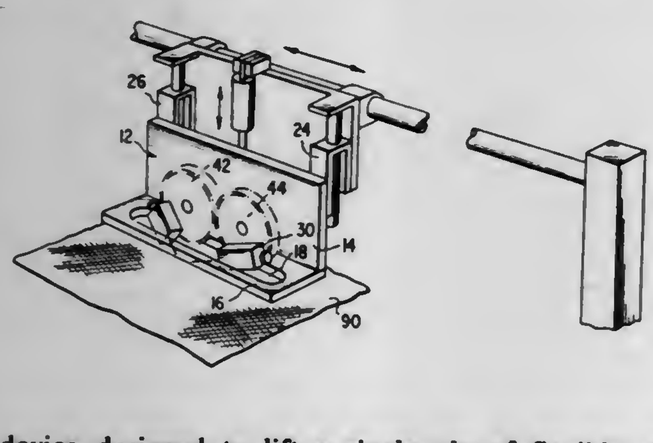
Richard Woessner, Fairlawn; Jack Bryer, Paramus, N.J., and Ralph L. Fusco, Commack, N.Y., assignors to Wood Industries, Inc., Plainfield, N.J.
Filed Apr. 9, 1969, Ser. No. 814,668
Int. Cl. B65h *45/16*
U.S. Cl. 270—76 **6 Claims**



A newspaper-printing machine folder has two pairs of nipping rollers and one pair of folding rolls. The rollers of each pair are held against one another under the pressure force of a spring or the like elastic means. The setting of the position of the rollers is adjustable according to the thickness of the product to be folded. Additional pressure force balancing devices are provided on the rollers. Sensing elements are arranged for detecting of differences of the roller pressure, controlling the motive power-operated adjusting devices for resetting the roller position to the originally set force.

3,608,890
LIMP MATERIAL PICKUP DEVICE

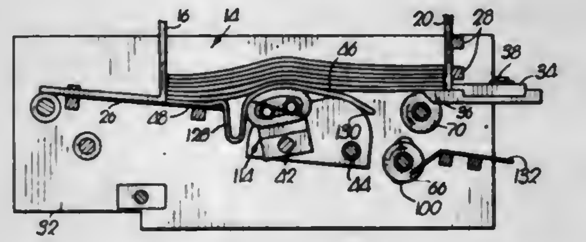
William W. Littlefield, El Paso, Tex., assignor to Automatic Systems of America Inc., El Paso, Tex.
Filed Sept. 24, 1969, Ser. No. 860,587
Int. Cl. B65h *3/22*
U.S. Cl. 271—21 **7 Claims**



A device designed to lift a single ply of flexible sheet material from a stack. A pair of meshing gears rotatably mounted upon a support each carry an impaling means mounted on its periphery extending in converging relationship towards each other. A fluid motor mounted upon the support is drivingly connected through a crank arm to one of the gears, which upon actuation, will rotate one of the gears driving the other. Rotation of the gears causes the impaling means to move downwardly towards a stack of sheet material which can be positioned therebeneath, to penetrate and grasp therebetween, in a pinching or bunching motion, a single ply of said material from the stack. The fluid motor has its piston linearly adjustable in a slot formed in the crank arm, wherein the throw of the crank arm can be varied to finely adjust the amount of rotation of the gears, which in turn adjusts the depth of penetration or downward movement of the impaling means, so that the device will pick up only a single ply of material regardless of variations in thickness of material in different stacks.

3,608,891
MECHANISM FOR SUCCESSIVELY DELIVERING SHEET ARTICLES FROM A STACK THEREOF TO A FOLDING MACHINE

Warren W. Hannon, and Charles N. Hannon, both of 925 Grand Ave., Olathe, Kans.
Continuation-in-part of application Ser. No. 665,540, Sept. 5, 1967, now abandoned. This application Aug. 7, 1968, Ser. No. 751,011
Int. Cl. B65h *3/30*
U.S. Cl. 271—23 **15 Claims**



Bottom delivery feeders are employed in conjunction with a newspaper folding and wrapping machine and serve to sequentially feed sections of a newspaper into the machine for collation with the main body of the newspaper. One, two or three of such feeders of varying design may be used with the folding and wrapping machine in various operational configurations, depending upon the nature of the sections to be collated with the main newspaper.

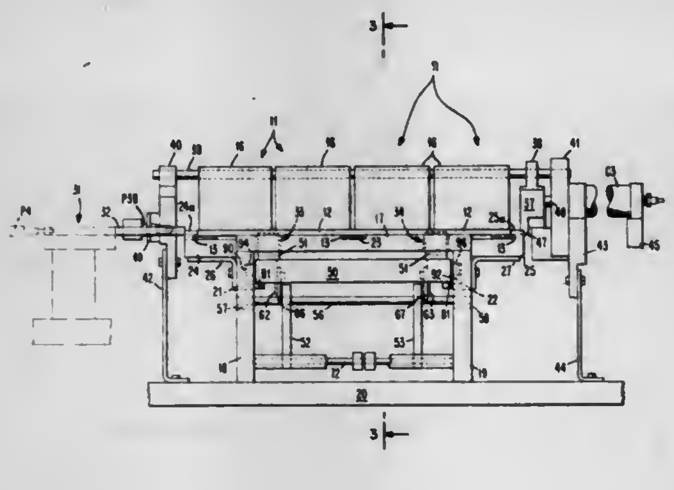
One feeder embodiment is particularly adapted to feed multileaved newspaper sections from a stack thereof. A hopper receives the stack of newspaper sections, a shelf beneath the stack being utilized to support the trailing edge portion of the lowermost section. A pair of stationary fingers supports the leading edge portion and feeding is effected from the bottom of the stack by a plurality of oscillatory grippers which frictionally engage the lowermost section and withdraw the leading edge portion thereof from between the next to the lowermost section and the support fingers. The trailing edge portion of the lowermost section is then withdrawn by pinch rollers which receive the leading edge portion upon return movement of the grippers as the same are continuously oscillated to provide sequential feeding. In a modified form of this embodiment, a single, reciprocable support finger is employed and is particularly adapted for use in the feeding of thin supplements with a hard edge at the fold only.

A second feeder embodiment is particularly suited for the feeding of tabloid size sheets which require folding prior to collation with the main newspaper. The same basic operational principles are employed in the withdrawal of the leading edge portion of the lowermost sheet from the hopper. However, continuously rotating grippers are used in conjunction with a roller against which force is applied by the grippers to pinch the loop (formed upon withdrawal of the leading edge portion) between the grippers and the roller to guide the same into a delivery conveyor that transports the withdrawn sheet in folded form to the folding and wrapping machine. The feeders of the first and second embodiments may both be mounted on the machine and used singly depending upon the nature of the paper to be fed. When the feeder of the first embodiment is in operation, the sections being fed therefrom are conveyed through the other feeder, the operating components of the latter being adapted to assist in the conveying of the sections to the folding and wrapping machine. When it is desired to employ such other feeder to feed tabloid sheets to the machine, it operates in the normal manner and the first feeder is inoperative at this time.

A top delivery feeder for sequentially delivering wrappers to the folding and wrapping machine operates in conjunction with either of the above feeders and employs a plurality of rotary grippers which are brought into frictional engagement with the uppermost wrapper of a stack thereof during each revolution of the grippers. The grippers are driven by a common shaft but are coupled with the shaft in a manner to permit the grippers to rotate ahead of the shaft free of the latter as each wrapper is advanced from beneath the grippers by a conveyor that receives the leading edge of each wrapper as it is fed from the stack.

3,608,892
ARTICLE-HANDLING MACHINE FOR USE WITH ELECTRONIC ASSEMBLIES

Ernest L. Newman, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 5, 1968, Ser. No. 750,226
Int. Cl. B65h *3/24*
U.S. Cl. 271—43 R **4 Claims**

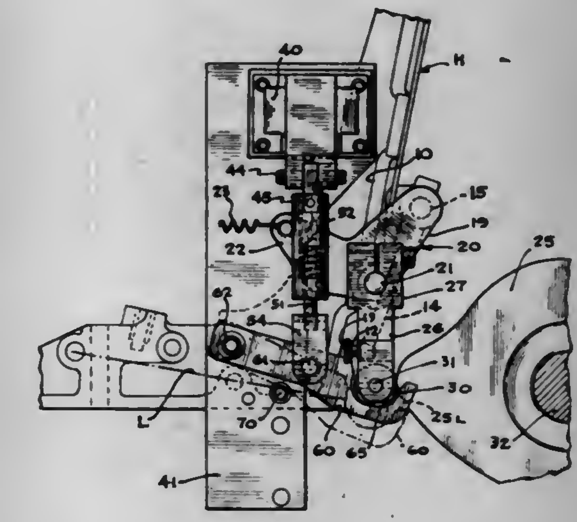


A printed circuit card transfer machine comprises a transfer table, an unloading mechanism movable relative to the transfer table, and means for indexing a magazine loaded with printed circuit card assemblies along the transfer table to an unloading position. The transfer table has a top plate with apertures over which the magazine moves. The indexing mechanism is a horizontal frame located under the top plate and having feed teeth extendable upwardly through the apertures to engage the magazine. The feed frame is cycled through a square motion pattern by an oscillatable elevating mechanism and a reciprocating mechanism operated by pneumatic cylinders controlled by pilot valves for sensing the location of the feed frame and the condition of the unload mechanism. Cam means located on the transfer table and the feed frame provide a square motion guide path for the frame to precisely position the feed frame for engaging and holding card-holding channel of the magazine for feeding to the unloading position.

3,608,893
SIGNATURE FEEDERS

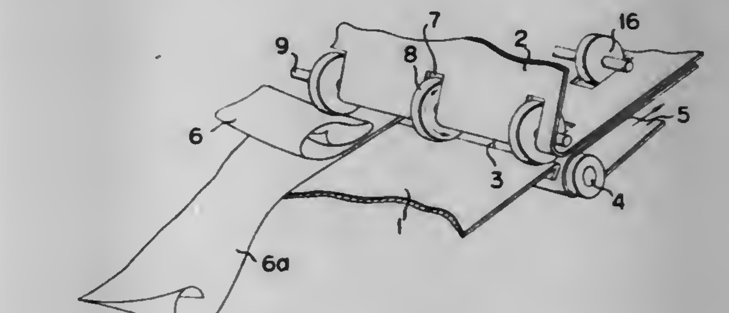
William B. McCain, Hinsdale, and John Balla, Argo, both of Ill., assignors to McCain Manufacturing Corp., Chicago, Ill.
Filed July 14, 1969, Ser. No. 841,493
Int. Cl. B65h *7/04*
U.S. Cl. 271—56 **5 Claims**

Improved operation of a cyclically operable signature gathering machine is achieved by latching the gripper, which feeds a signature from a hopper, against the signature pile in response to a command signal that signatures are not to be fed from the hopper.



3,608,894
ORIGINAL FEEDING DEVICE FOR PHOTOCOPYING MACHINE

Kenzo Ariyama, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 3, 1969, Ser. No. 803,711
Claims priority, application Japan, Mar. 6, 1968, 43/14052
Int. Cl. B65h *7/06*
U.S. Cl. 271—57 **3 Claims**

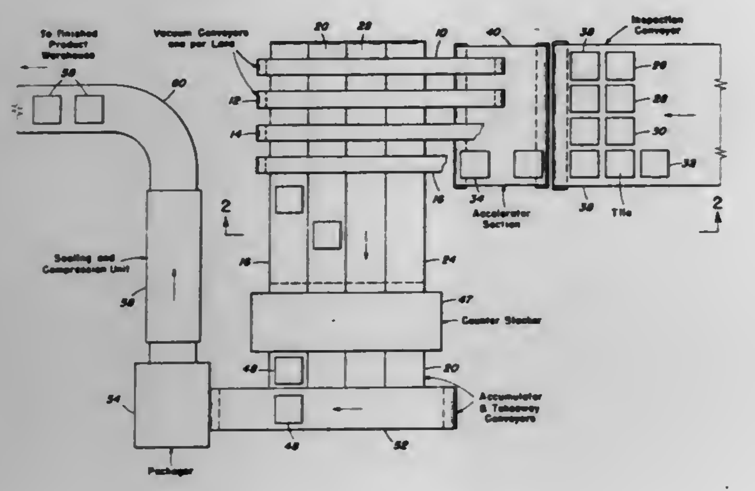


An original feeding device for a photocopying machine in which a plurality of resilient rollers carried by a common shaft and disposed in parallel with an original inserting inlet rotate in the same direction with that of the original feed direction when the leading edge thereof passes the rollers. But the rollers are caused to rotate in the direction opposite to said first direction after the leading edge has passed the rollers, thereby preventing the trailing edge of the original from being wound by the rollers.

3,608,895
ELECTROPNEUMATIC FLAT PRODUCT SHUFFLING AND PACKAGING SYSTEM

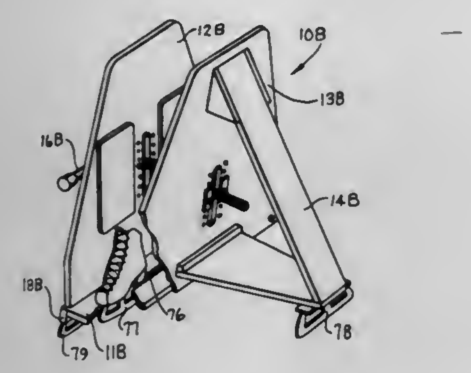
Alex E. Kalven, Somerville, N.J., assignor to GAF Corporation, New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,138
Int. Cl. B65h *29/32*
U.S. Cl. 271—74 **4 Claims**

As flat products such as floor tiles leave a production conveyor in transverse rows and longitudinal lanes, they are picked up by an accelerator conveyor travelling in the same direction under vacuum conveyors which lift the tiles and carry them over transverse conveyors which the tiles are selectively deposited by the operation of unique air pressure valves which act to positively break the vacuum supporting the tiles over selected ones of the transverse conveyors, so as to mix the tiles from different lanes, for subsequent packaging thereof. The air pressure valves are built into the vacuum housing associated with each vacuum belt, and each is provided with an air pressure inlet for breaking the vacuum supporting the tiles when a selected one is directly over the selected transverse conveyor. A control circuit provides for automatic operation of the air pressure valves in the desired sequence.


To Finished Product Warehouse
Vacuum Conveyors one per Lane
Inspection Conveyor
20
28
10
40
38
26
28
30
32
58
60
12
14
16
2
2
34
Accelerator Section
36
Tile
Sealing and Compression Unit
56
18
24
47
Counter Stacker
48
20
Accumulator & Takeaway Conveyors
54
48
52
Packager

3,608,896
TRAINING DEVICES FOR BALLET AND ICE SKATING

Pierre Brunet, 15 West 55th St., New York, N.Y.
Filed July 10, 1968, Ser. No. 743,903
Int. Cl. A63b *23/04, 69/00*
U.S. Cl. 272—57 D **9 Claims**

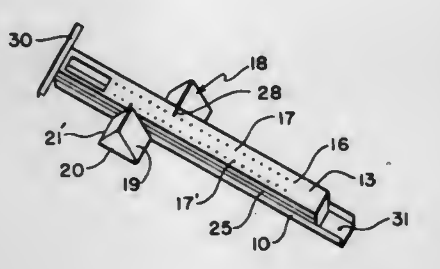


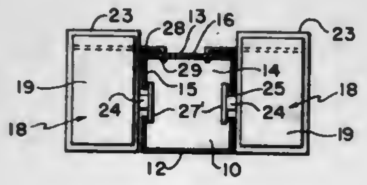
An exercise and training device for ballet and figure skating performers having pivotally interconnected front and rear panel members defining a narrow elongated slot therebetween for retaining the user's feet in oppositely extending directions, and screw means for adjusting the spacing of said front member relative to said rear member. Once properly adjusted, the performer may stand between said panel members and be snugly gripped thereby to facilitate bending backwardly and forwardly for loosening and strengthening various muscles of the body. Such exercising is further facilitated by the fact that the performer's feet may be moved laterally various distances during the exercising period.

3,608,897
STARTING BLOCK ASSEMBLY

Francis James Ross, Winnipeg, Manitoba, Canada, assignor to Topper Mfg. Co., Ltd., Winnipeg, Manitoba, Canada
Filed Apr. 14, 1969, Ser. No. 815,664
Int. Cl. A63b *69/00*
U.S. Cl. 272—59 A **1 Claim**

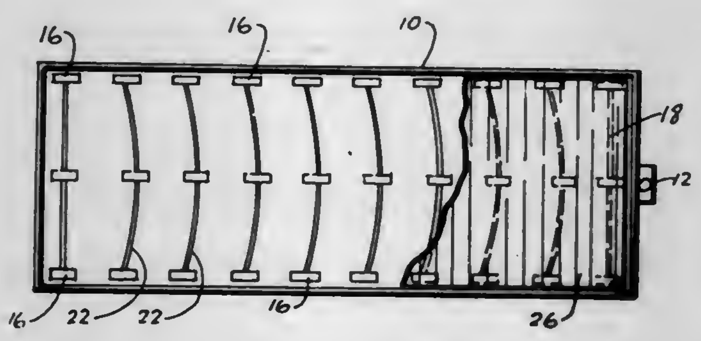
A starting block apparatus including an elongated frame having longitudinal slots on opposite sidewalls thereof and a row of apertures on the top side thereof extending the full length of the frame. Foot-engaging blocks are disposed adjacent their respective slots and each including a protruding stud and web engageable within the slots for longitudinal movement therealong. The slots are wider than the protruding studs to enable the block to be raised and lowered therein and to further enable a locking hook mounted on the block to be selectively positioned within the various apertures.





3,608,898
TREADMILL WITH CURVED AXLES SUPPORTING THE BELT

Evan H. Berlin, 119 Dunn Ave., Lake City, Pa.
Filed May 19, 1970, Ser. No. 38,666
Int. Cl. A63b *23/06*
U.S. Cl. 272—69 **4 Claims**

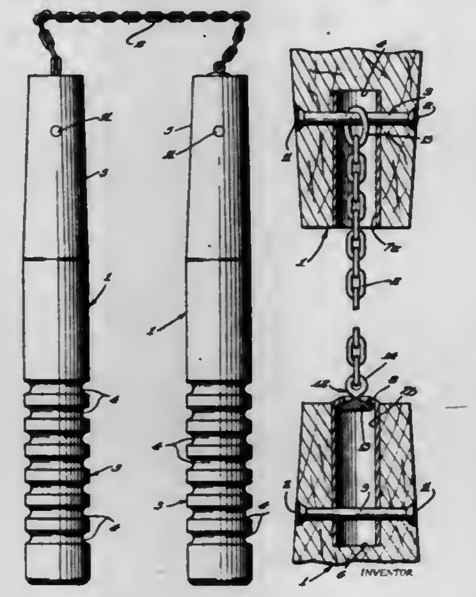


A treadmill utilizing an endless belt which permits a user to run while remaining in one place. Curved axles supporting driving wheels are employed to minimize the number of driving wheels and axles employed. Each axle rotatably supports one wheel at its center and one wheel at each end. These axles are curved in a horizontal plane so that the center wheel is offset from the end wheels.

3,608,899
HAND WEAPON

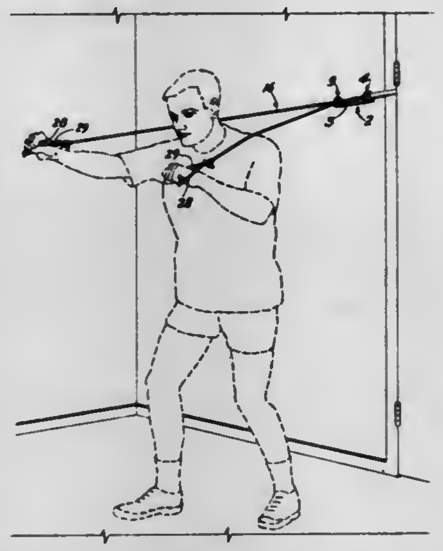
William S. Hall, 237 Keck Ave., Aurora, Ill.
Filed Apr. 10, 1968, Ser. No. 720,319
Int. Cl. F41b *15/02*
U.S. Cl. 273—84 **3 Claims**

A hand weapon, generally similar in usage to a nightstick or baton, comprising two rigid elongated members, each connected to one end to the other by a nonrigid element such as a length of chain, whereby each member may swing relatively independent of the other, within the limitation imposed by the chain with respect to separation of the connected ends of said members, each member being provided with a handgripping portion adjacent the free end thereof whereby one member may be grasped in each hand and utilized in cooperation with each other, or either member may be grasped and the other member permitted to swing loosely.



3,608,900
FRICTIONAL RESISTANT EXERCISING DEVICE

Harold Dee Welch, 532 E. William, San Jose, Calif.
Filed Apr. 9, 1969, Ser. No. 814,597
Int. Cl. A63b *21/00, 21/16*
U.S. Cl. 272—79 A **7 Claims**

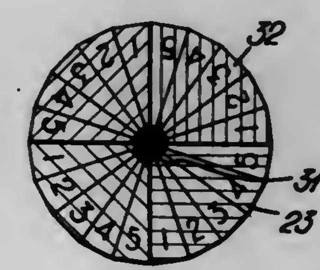


An exercise device in the form of a bracket utilized in conjunction with a rope doubled back upon itself to form a bight engaging one end of the bracket. The strands of the rope immediately adjacent the bight are twisted to provide a plurality of helical turns extending generally the length of the bracket. The opposite end of the bracket is arranged to guide the separate strands of the rope so that tension applied to one or the other of the strands effects longitudinal sliding movement of the rope to create frictional resistance between the contiguous strands. The amount of such frictional resistance is controlled by the number of helical turns into which a portion of the rope is twisted, and the amount of tension applied to the rope strands.

3,608,901
SIMULATED GOLF BOARD GAME

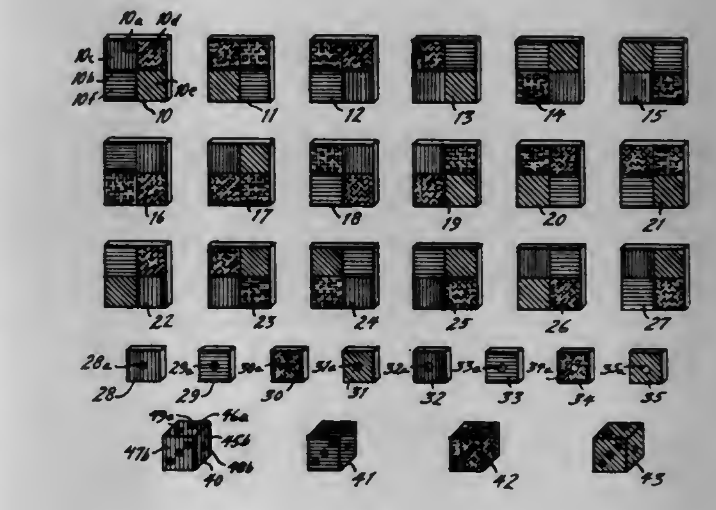
William H. Royle, Mayfield Park, Rhodesia, assignor to Entertainment Service (Private) Limited, Salisbury, Rhodesia
Filed Mar. 6, 1968, Ser. No. 711,088
Claims priority, application Rhodesia, Mar. 8, 1967, 84/67
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 CG **4 Claims**

A board game adapted to simulate the game of golf includes at least one game board depicting one or more, and preferably 9 or 18, holes in a golf course, pin markers adapted to be positioned on said board and to protrude above said board for recording the lie of a golf ball thereon, chance means for selecting coordinate indicia for determining a possible golf shot and a plurality of different indicator means each representing a different golf club and each adaptable to interpret a golf shot of the chance means onto said board. Each indicator means has a datum aperture for receiving a pin marker therethrough to pivotally position said club-designating indicator means on the board in a manner permitting proper alignment positioning. In one form the club-designating indicator means may have the form of transparent fan-shaped protractorlike members having a plurality of arcuately and radially dispersed holes therein related to the aperture datum for potentially locating by a pin marker on the board a lie for a golf shot determined from the chance selected coordinate indicia. Other forms of the indicator means include either a single elongated (putter) member or a pair of such limblike members pivotally connected at one of their ends for varying angular relation for a golf shot and having a plurality of points related to the aperture datum for establishing potential golf shot lies by the use of pin markers, as determined from the coordinate indicia.



3,608,902
CUBE GAME

Joseph A. Weisbecker, 1220 Wayne Ave., Erlton, Cherry Hill, N.J.
Filed Dec. 10, 1969, Ser. No. 883,918
Int. Cl. A63f *3/02, 9/06*
U.S. Cl. 273—134 AD **2 Claims**

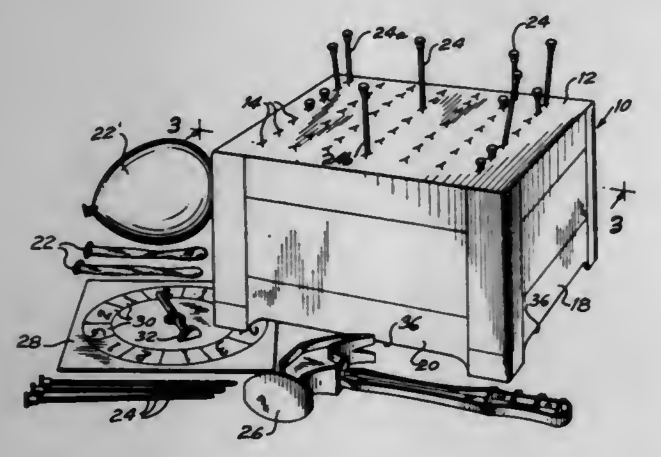


A game construction wherein a playing surface is marked to provide a plurality of congruent, contiguous squares, and playing pieces are provided, each being of cubical configuration with its faces each congruent to the playing surface squares for aligned superposition on a respective square and selective rolling into aligned superposition on a contiguous square, the playing piece faces and the playing surface squares being provided with characteristic markings of corresponding form, and the playing piece face markings being one or more in number.

3,608,903
GAME BOX ENCLOSING INFLATED BALLOONS

Julius Cooper, New Hyde Park, and Walter Moe, Plainview, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Nov. 19, 1969, Ser. No. 878,134
Int. Cl. A63f *9/00*
U.S. Cl. 273—135 R **5 Claims**

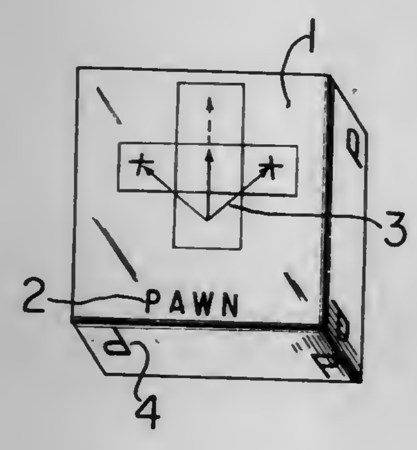


A toy game apparatus and playing pieces including an opaque box with an open bottom and with the top thereof providing a playing surface having precut nail-receiving perforations. The game progresses with balloons being placed within the confines of the opaque box and each child in turn, attempting to drive one or more nails through the playing surface without bursting a balloon. The precut perforations are shaped and formed in a construction making the playing surface and the perforations indefinitely reusable. A spinner is provided with the game, the spinner surface having indicia thereon to indicate, after spinning the spinner dial, the number of nails the child playing with the toy game must attempt to drive through the playing surface during his turn without bursting a balloon.

3,608,904
SET OF CHESS PIECES

Desmond W. Margetson, 515 West 122nd St., New York, N.Y.

Filed June 18, 1968, Ser. No. 738,011
Int. Cl. A63f *3/00*
U.S. Cl. 273—137 R **1 Claim**

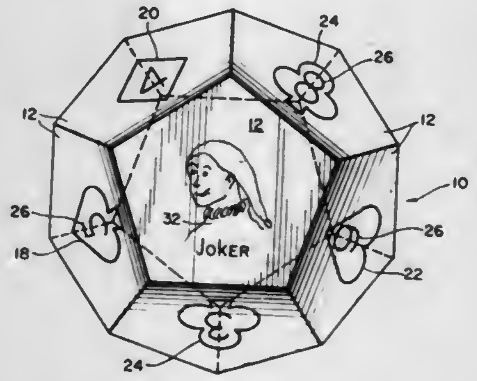


A chess set comprising reversible pieces which are squares of about the same size as the squares on the playing board, the said pieces having on one side the name and symbol of the piece and on the opposite side the name and move of the piece, and on each lateral side two relatively inverted indicia thereon facing in opposite directions, the thickness of the piece being substantially less than its width, and said indicia consisting of the first letter of the name of the piece, one indicia being upright no matter which face is up.

3,608,905
FIVE DODECAHEDRON CARD INDICIA DICE

Robert W. Edison, 1212 Walnut, Berkeley, Calif.

Filed Dec. 18, 1968, Ser. No. 784,664
Int. Cl. A63f *9/04*
U.S. Cl. 273—146 **6 Claims**

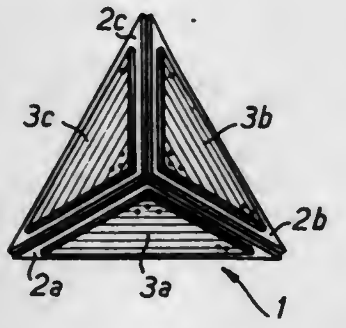


A set of dice utilizing five die each having the shape of a dodecahedron with twelve flat surfaces. Symbols representing the face and number cards of a standard 52 card deck of playing cards are distributed over the surface of the dice and displayed thereon. Each die displays at least 10 and at most 11 of the symbols, and the latter are distributed so that the symbols of a particular suit on one die vary in their value by at least five increments while the four remaining dice have a similar distribution except for one combination. Additionally, the dice may have the symbols distributed so that no die has two symbols of the same value but different suits. Surfaces of the dice not having card symbols display markings which can be "wild cards" and/or may further serve promotional purposes such as the advertising of goods or services. This distribution of the card symbols over the dice enables the playing of many card games, particularly poker.

3,608,906
MULTISIDED VALUE-CODED PUZZLE PIECES AND SUPPORTS THEREFOR

Marc Odier, 85 Bd Ehelmans, Paris, 16e, France

Filed June 15, 1970, Ser. No. 45,971
Claims priority, application France, June 17, 1969, 6920254
Int. Cl. A63f *9/06*
U.S. Cl. 273—157 R **16 Claims**

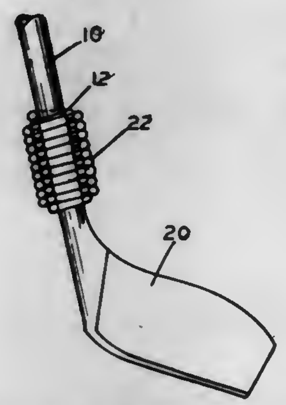


A puzzle is provided in which identical planar multiside puzzle pieces carrying a value taken from M possible values at each one of its apices. A support which is preferably a polyhedron is provided and has portions adapted to receive the pieces such that the completed puzzle formed by the pieces arranged on the portions of the polyhedron is substantially that of the polyhedron. According to the preferable rules of the puzzle, the pieces are to be placed on the support in such a manner that in each of the groups of juxtaposed apices, the value carried by each apex is the same as that carried by each of the other apices juxtaposed thereto. Further, the number of puzzle pieces is preferably limited so that all the combinations of M values taken N by N are produced once and only once by the number pieces.

3,608,907
GOLF CLUB INCLUDING HEAD-WEIGHTING STRING ENCASED IN PLASTIC SHEATH

George E. Bouchard, 59 W. Schuyler St., Oswego, N.Y.

Filed Mar. 28, 1968, Ser. No. 716,932
Int. Cl. A63b *69/36*
U.S. Cl. 273—194 A **1 Claim**

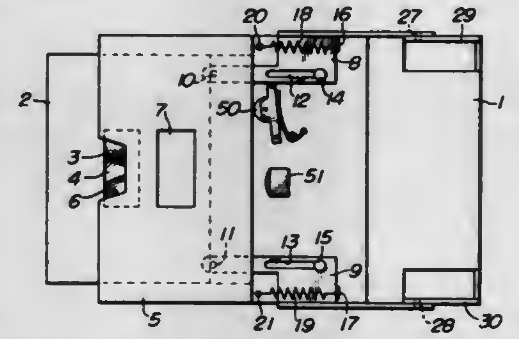


Plastic coated string solder adapted to be spirally wrapped around the shank of a golf club to weight the same as desired. The plastic coating may be heat shrunk about the string solder to close off the ends.

3,608,908
TAPE-VIEWING DEVICE IN MAGNETIC TAPE RECORDER OF MAGAZINE TYPE

Kozo Yamamoto, Hirakata-shi, and Morihisa Naito, Moriguchi-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Japan

Filed Mar. 8, 1968, Ser. No. 711,673
Claims priority, application Japan, Mar. 15, 1967, Apr. 12, 1967, 42/22330;42/31269
Int. Cl. G11b *5/78, 19/12*
U.S. Cl. 274—4 E **2 Claims**

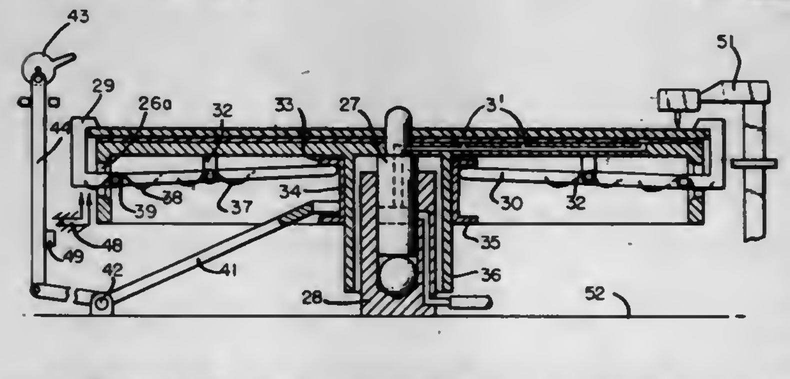


A tape recorder of the magazine type adapted to operate with a tape magazine of the kind in which a magnetic tape supplied from one reel is taken up on the other, having means through which the interior of the tape recorder body, hence the relative amount of the tape on the reels within the magazine can clearly be seen only when the magazine is inserted into the tape recorder body.

3,608,909
RECORD-FLATTENING TURNTABLE

Jacob Rabinow, 6920 Selkirk Drive, Bethesda, Md.

Filed Nov. 3, 1969, Ser. No. 873,314
Int. Cl. G11b *3/60*
U.S. Cl. 274—39 R **4 Claims**

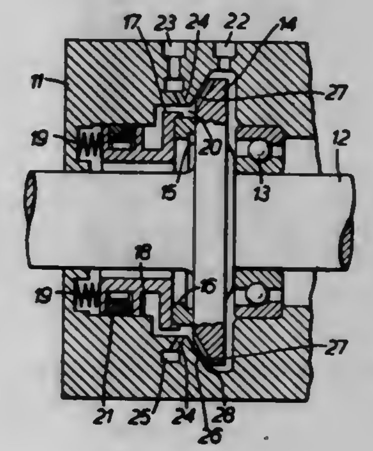


A phonograph record turntable is provided with means for flattening disc records placed thereon. Examples are shown for accomplishing this by means of vacuum or mechanical holddown devices.

3,608,910
SHAFT SEAL ARRANGEMENTS

Stanley R. Tyler, Cheltenham, England, assignor to Dowty Fuel Systems Limited, Cheltenham, England

Filed Oct. 29, 1969, Ser. No. 872,178
Claims priority, application Great Britain, Oct. 31, 1968, 51670/68
Int. Cl. F 16j 15/00
U.S. Cl. 277—15 **4 Claims**

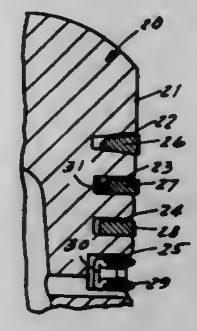


A seal assembly for use with a rotatable shaft has a sealing ring axially loaded against a flange portion of the shaft, a number of orifices directing fluid for cooling and lubrication radially inwardly against the sealing ring, and a scavenge pump having an impeller which is formed by a part of the flange disposed radially outwardly of the sealing ring, and which operates during rotation of the shaft to return the fluid to the source and to maintain low fluid pressure adjacent the sealing ring. When applied to the shaft of a fuel pump, the foregoing arrangement is used to seal a lubricated part of the shaft which is supported in bearings, while a second seal engages the part of the shaft adjacent the pump, the space around the shaft between the two sealing rings being vented.

3,608,911
RESILIENT PLASTIC PISTON RING

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Mar. 4, 1970, Ser. No. 16,278
Int. Cl. F16j *9/00, 9/20*
U.S. Cl. 277—58 **14 Claims**

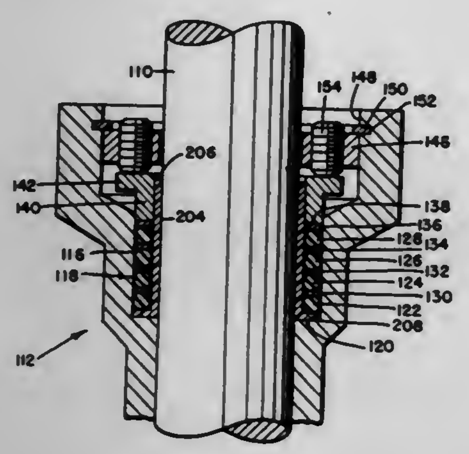


A plastic ring for internal combustion engine pistons. In a preferred embodiment, the ring has a flat outer diameter adapted to engage the inner diameter of a compression piston ring and an inner diameter adapted to engage the backwall of the ring groove. An axial groove slightly spaced from the outer diameter extends into the ring from the top thereof, whereby combustion gases will expand the ring so that it acts as a circumferential expander for the compression ring while preventing blowby of gases through the ring groove. In another modification, the ring is used with its outer diameter acting against the cylinder wall.

3,608,912
SEALING MEANS FOR VALVE STEMS

Paul D. Templin; William G. Sonderman, and Russell G. Smith, all of Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio

Filed Nov. 4, 1969, Ser. No. 873,804
Int. Cl. F16j *15/18*
U.S. Cl. 277—123 14 Claims

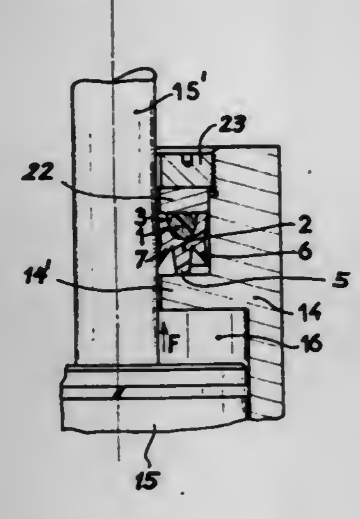


A seal is formed between a liner sleeve, which surrounds part of a valve stem, and a body through which the valve stem extends, the seal comprising a plurality of O-rings with annular spacers therebetween always out of contact with the valve stem. The inner diameter of each of the annular spacers is greater than the outer diameter of the liner sleeve, so that there is no firm engagement therebetween, and each of the O-rings makes four-point contact with the spacers adjacent thereto, the body, and the liner sleeve, to produce a series of annular-spaced sealing zones.

3,608,913
GLAND FOR PISTON-CYLINDER ASSEMBLY AND THE LIKE

Andre D'Assignies, Saint-Etienne, France, assignor to Industrial Development Company Establishments, Vaduz, Liechtenstein

Filed Nov. 20, 1969, Ser. No. 878,333
Claims priority, application France, Nov. 22, 1968, 50663
Int. Cl. F16j *15/37*
U.S. Cl. 277—165 10 Claims

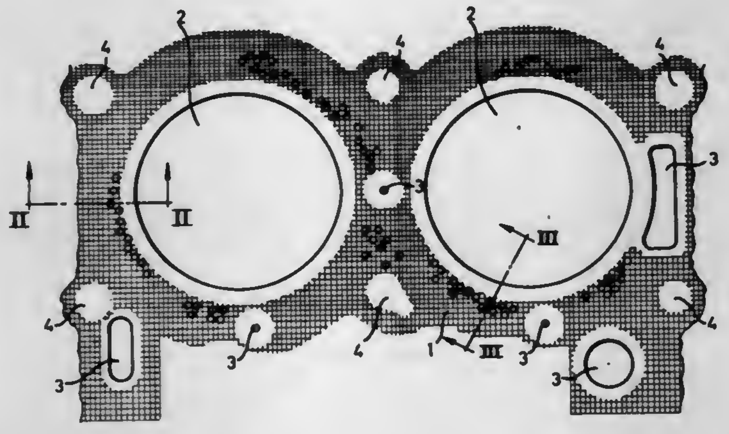


A fluid cylinder traversed by a piston rod has a peripheral recess formed between two axially spaced, relatively adjustable annular members. Clamped within this recess is an annular gasket of relatively stiff elastic material having on one face an annular rib abutting against one of these members and bearing through a membranelike central zone of the gasket upon a resilient ring of more readily deformable material lodged in a groove flanked by two annular beads on the opposite gasket face. The rib is flanked by a pair of annular lips separated from it by respective annular incisions and facing in the direction of fluid pressure, one lip bearing upon the piston rod while the other rests against the peripheral wall of the recess; the beads flanking the groove form integral extensions of the two lips to compress the deformable ring between them upon a splaying of the lips.

3,608,914
GASKET, PARTICULARLY FOR CYLINDER HEADS, COMPRISING GASKET AREAS OF GRADUATED RESILIENCY

Eigil Brandt Harby, Strandvejen 39, Klampenborg, Denmark

Filed June 13, 1968, Ser. No. 736,609
Int. Cl. F16j *15/00;* **F16k** *41/00*
U.S. Cl. 277—235 B 4 Claims

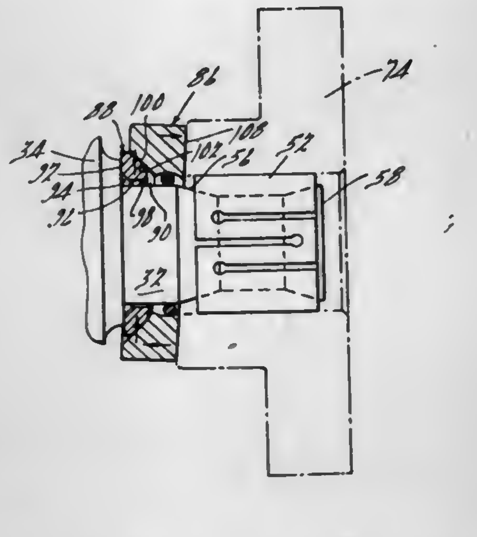


A sealing gasket is disclosed comprising essentially a layer of elastic sealing material and a layer of reinforcing material, e.g., a metal sheet, this sheet being perforated with a great number of small holes located in relation to each other with a varying density in such a manner that said density is lowest in the areas where, in use of the gasket an increase in the specific pressure is desirable or necessary, the edge of gasket apertures registering with apertures corresponding for instance to cylinder being folded back, if desired, in order to provide locally an extra thickness producing an increased specific pressure, the perforations being advantageously produced by means of a tool comprising punches optionally rendered active or inactive by means of a patterned platen provided serving to operate the punches in the manner of a Jacquard loom, the entire perforation being carried out in one or several operations.

3,608,915
FLOATING END STOP FOR WORK-HOLDING CHUCK

George Hohwart, Farmington, Mich., assignor to N. A. Woodworth Company, Ferndale, Mich.

Filed June 2, 1969, Ser. No. 829,203
Int. Cl. B23b *31/40*
U.S. Cl. 279—1 L 11 Claims

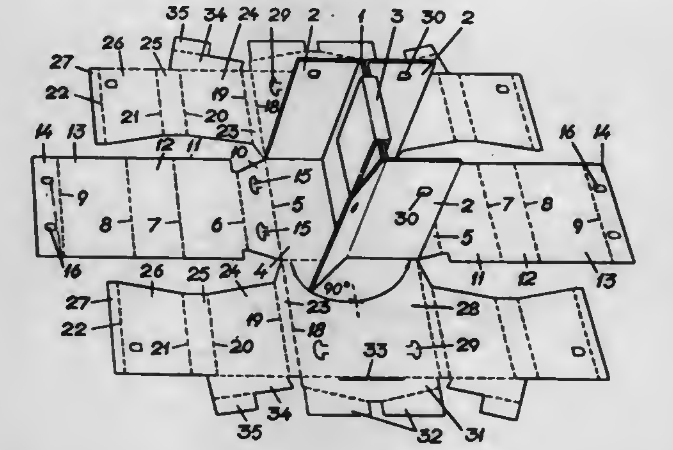


A work-holding chuck having a novel end stop comprising front and rear beveled washers, the front washer being mounted for universal rocking movement on a spherically curved annular seating surface of the rear washer to adapt to the seating end of the workpiece and the rear washer being freely laterally shiftable to accommodate rocking of the front washer.

3,608,916
ERECTABLE U-SHAPED ARTICLE

Jaakko Tauno Aleksis Halko, Helsinki, and Paavo Tapio Pennanen, Inkeroinen, both of Finland, assignors to Oy Tampella AB, Inkeroinen, Finland

Filed Mar. 21, 1969, Ser. No. 809,151
Int. Cl. A47c *9/12, 4/02*
U.S. Cl. 297—440 7 Claims

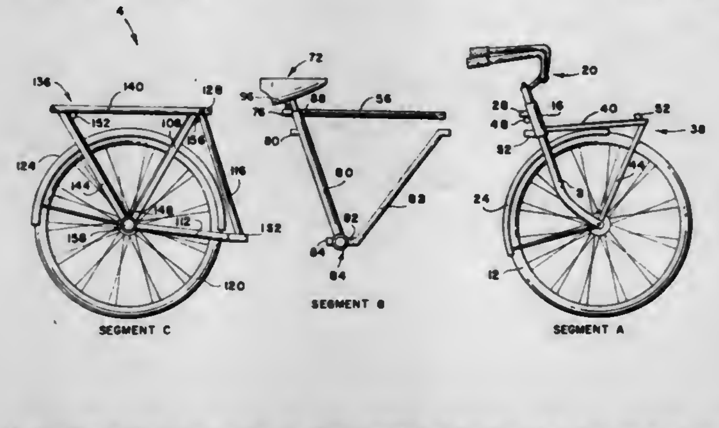


An erectable item of furniture which is assembled from an initially flat sheet and a juxtaposed support is provided comprising a pair of hollow sidewalls, an end wall formed of hollow sections extending between the sidewalls and a shelf formed by a center wall portion extending between the sidewalls.

3,608,917
COLLAPSIBLE BICYCLE

Joseph A. Cogliano, 1268 Maple Ave., Baltimore, Md.

Filed Aug. 14, 1969, Ser. No. 850,187
Int. Cl. B62k *13/00*
U.S. Cl. 280—7.16 13 Claims



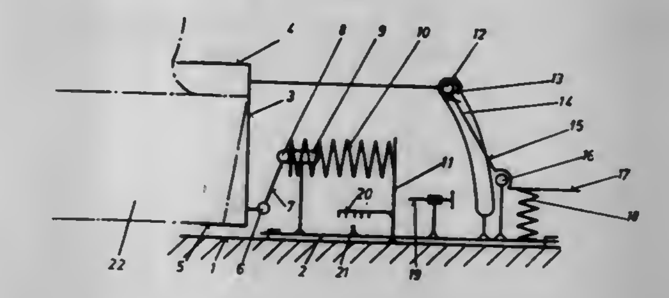
A collapsible bicycle is disclosed which can be made into or converted into various tandem or coupled arrangements. The basic collapsible bicycle contains a front steering and wheel unit, a central seat and pedaling unit and a rear wheel unit.

3,608,918
HEEL-HOLDING DEVICE FOR SAFETY SKI BINDINGS

Egon Heckl, Farchant, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed June 6, 1969, Ser. No. 830,984
Claims priority, application Germany, June 11, 1968, P 17 03 569.7
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T 3 Claims

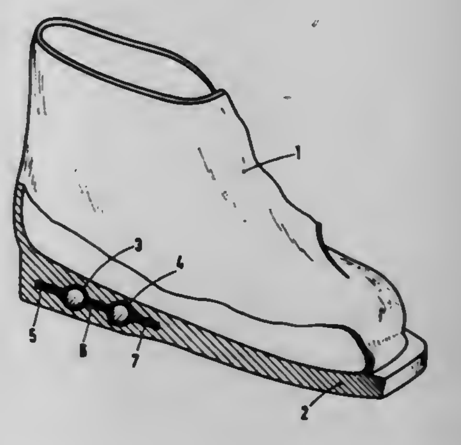
A pivoted carrier is biased by a spring element and carries a sole holder and a closing pedal and in response to the insertion of the skiing boot into the binding automatically assumes a locked position. From this position it can be swung to a heel-releasing position arbitrarily, e.g., by a slight pressure applied with the ski stick to a release member, or automatically in response to an excessive force which is approximately vertically upwardly directed. Two separate pivotal axes are provided for the opening of the device, one of which is for the arbitrary opening of the device. The other pivotal axis is for the automatic opening of the device carrier which is held in operative position by a releasable locking member.



3,608,919
SKI BOOT AND SKI BINDING THEREFOR

Paul Lollmann, and Justus Rieker, both of Tuttlingen, Germany, assignors to Rieker & Co., Tuttlingen, Wurttemberg, Germany

Filed Jan. 31, 1969, Ser. No. 795,550
Claims priority, application Germany, Feb. 27, 1968, P 16 78 289.1
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 R 12 Claims

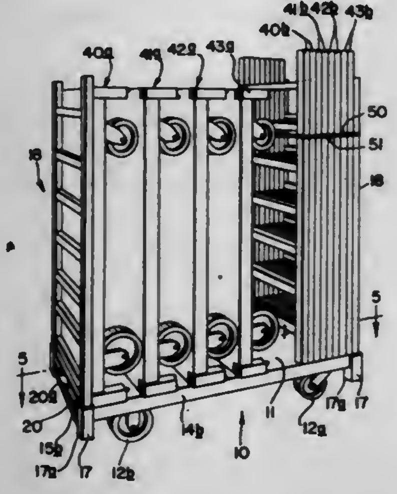


A ski boot in which one or more tubular elements are firmly embedded in the sole into which the skier himself may install at least partly spherical locking elements of a ski binding which are adapted to engage resiliently into spherical apertures or recesses in bracketlike fittings which are adjustably secured to the ski. The ends of the tubular element or elements are flush with the peripheral edge of the sole and may be closed by plugs if the skier wishes to employ a different ski binding.

3,608,920
CART STORAGE ASSEMBLY

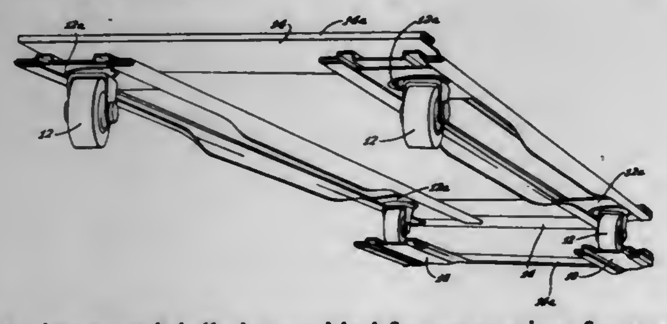
Richard J. Rubin, 39 Dolphin Road, Newton, Mass.
Continuation-in-part of application Ser. No. 789,131, Dec. 16, 1968. This application Sept. 16, 1969, Ser. No. 858,342
Int. Cl. B62d *39/00*
U.S. Cl. 280—33.99 7 Claims

A cart storage assembly including one assembled cart which includes a substantially horizontal platform member, rollers for moving it along the floor and a pair of opposite end members extending upwardly from the platform member, a plurality of detached end members supported on the platform of the assembled cart in substantially parallel relationship to each other and to one end member of the assembled cart and a plurality of platform members detached from their end members, the detached platform members being supported on the platform of the assembled cart in substantially parallel relationship to each other and to one end member of the assembled cart.



3,608,921
DOLLY

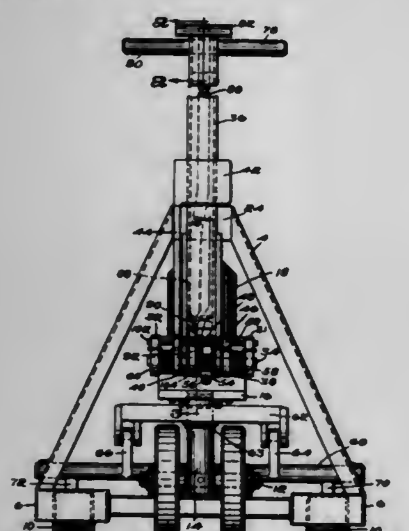
James D. Wilson, Long Beach, Calif., assignor to Banner Metals, Inc., Compton, Calif.
Filed July 25, 1969, Ser. No. 844,771
Int. Cl. B62b *5/00*
U.S. Cl. 280—79.1 **1 Claim**



An improved dolly is provided for supporting, for example, a stack of receptacles, and which is constructed in an improved manner to incorporate a pair of side strips, each formed into a channel, so as to permit the dolly to be stacked easily on top of a similar dolly for shipping convenience, and to incorporate a pair of upstanding, transverse end strips, which serve to prevent the receptacles and the stacked dollies from sliding or rolling off the dolly.

3,608,922
MEANS FOR ACTUATING LOWERING VALVE IN HYDRAULIC HAND-OPERATED PALLET TRUCK

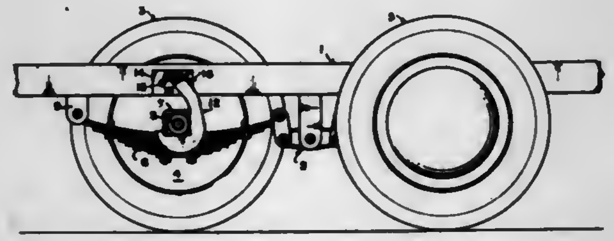
Erich Best, Welland, and Kenneth Booth, Sr., Fonthill, both of Ontario, Canada, assignors to Hyster Company, Portland, Oreg.
Filed Nov. 4, 1969, Ser. No. 873,820
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.12 **11 Claims**



Mechanism whereby the operator of a hand-operated pallet truck can control the release of fluid from the hydraulic lifting cylinder without removing his hands from the truck handle and while both of his feet are on the ground. The mechanism comprises hand-operated means located at the end of the handle for applying a controlled opening movement to the lowering valve regardless of the position of the truck handle.

3,608,923
MEANS RESTORING AN AXLE TO HORIZONTAL POSITION UPON TIRE DEFLATION AT EITHER END THEREOF

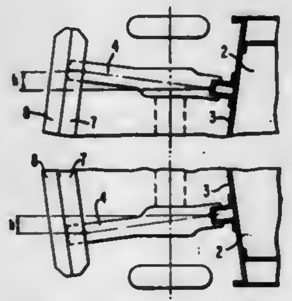
William J. Houfek, Sr., 136 Fairway Drive, and William J. Houfek, Jr., Rt. 3, Box 1011, both of Albany, Oreg.
Filed May 29, 1969, Ser. No. 828,870
Int. Cl. B60g *19/10*
U.S. Cl. 280—104.5 **1 Claim**



A device for selectively engaging and holding either end of an axle in a tandem axle and spring assembly to compensate for the lowering or dropping of that end of the axle due to deflation of its respective pneumatic tire. The device comprises a hook swingably depending from the frame or chassis of the vehicle and adapted for holding engagement with the axle after said end thereof has been jacked up or elevated to restore it to its normal horizontal position.

3,608,924
SAFETY FRAME FOR MOTOR VEHICLES, ESPECIALLY FOR PASSENGER MOTOR VEHICLES

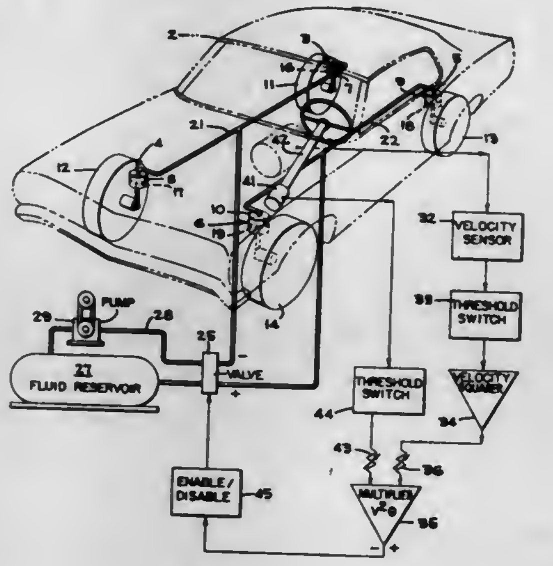
Bela Barenyi, Stuttgart-Vaihingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed July 2, 1968, Ser. No. 742,050
Claims priority, application Germany, July 5, 1967, P 16 30 315.4
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 **5 Claims**



A safety frame for motor vehicles, particularly for passenger motor vehicles, which comprises crossbearers, lateral bearers extending longitudinally approximately within the wheel track and pronglike frame end members of the vehicle end sections which are spaced from each at a smaller distance than the spacing of the lateral bearers; the pronglike frame end members are supported essentially only at the main crossbearers and extend in a downward direction toward the respective vehicle ends.

3,608,925
APPARATUS FOR OFFSETTING CENTRIFUGAL FORCE AFFECTING MOTOR VEHICLES

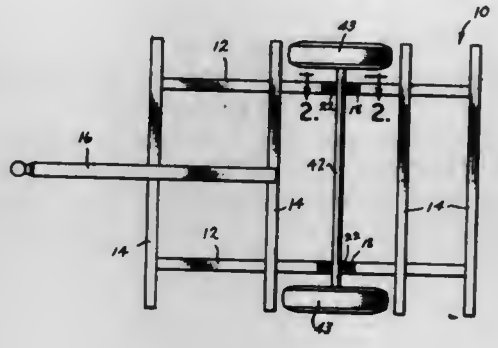
Peter H. Murphy, 241 John St., Santa Cruz, Calif.
Filed May 7, 1969, Ser. No. 822,546
Int. Cl. B60g *21/10*
U.S. Cl. 280—112 **10 Claims**



The invention is a suspension for motor vehicles and the like which adjustably controls the wheel height of the vehicle relative to the chassis during turns. Sensors convert vehicle turn angle and velocity information into electrical signals for initiating pressure changes in selected expansible springs for adjustably offsetting the centrifugal force occurring during turns.

3,608,926
SUSPENSION SYSTEM FOR AN AXLED VEHICLE

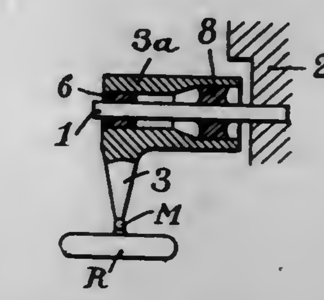
Lynn H. Sprunger, P.O. Box 78, Albion, Ind.
Filed Apr. 14, 1969, Ser. No. 815,812
Int. Cl. B60g *11/22*
U.S. Cl. 280—124 **4 Claims**



A suspension system for a vehicle having a frame which includes a pair of spaced longitudinal frame members. An upper bracket is secured to each frame member and has diverging downwardly extending end parts which project below the supporting frame member and which are positioned longitudinally of the vehicle. A lower bracket is spaced below each upper bracket and includes diverging downwardly extending end parts which are separated by an intermediate part and which underlie corresponding end parts of the adjacent upper bracket. Resilient means is disposed between and interconnects each pair of corresponding upper and lower bracket end parts. An axle extends transversely of the frame between the end parts of each lower bracket and is secured to the intermediate part thereof.

3,608,927
LONGITUDINAL-FLEXIBILITY WHEEL SUSPENSION

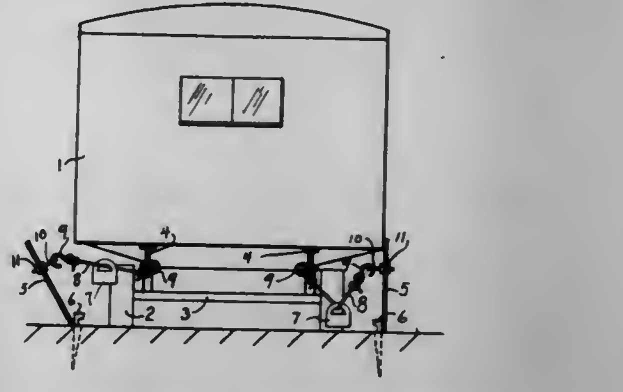
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automibiles Citroen, Paris, France
Filed Dec. 22, 1969, Ser. No. 887,081
Claims priority, application France, Dec. 27, 1968, 181,255
Int. Cl. B60g *3/12*
U.S. Cl. 280—124 **10 Claims**



Longitudinal-flexibility suspension system for vehicle wheels comprising an arm adapted to oscillate about a fixed shaft disposed in a vertical longitudinal plane and rigid with the chassis of the vehicle, a first sleeve of elastomer mounted about said shaft and having a cylindrical outer surface formed with hollow cells spaced from one another and from the sleeve ends, said outer surface of the sleeve being in frictional contact with the inner surface of a first end of a hub while a second connecting means consists of a second sleeve of elastomer fitted on said shaft and formed with circular external projections in frictional contact with the inner surface of the other end of said hub.

3,608,928
TRAILER SKIRT

John D. Hooker, 309½S. Marina, Prescott, Ariz.
Filed May 15, 1970, Ser. No. 37,653
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R **5 Claims**

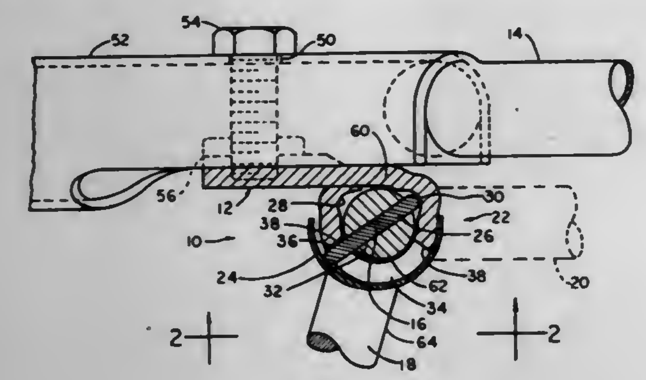


The trailer skirt comprises a plurality of panels arranged around the lower edge of the trailer for enclosing the space therebeneath. The panels are individually held in place against the trailer body at the top and against ground stops at the bottom by resilient, readily detachable means connected between the trailer frame and the panels. These resilient means may be in the form of either weights or springs, and are connected to the panels by a hook-and-eye connection whereby the panels may be removed by merely pulling the top edges away from the trailer body far enough to reach in and unhook the connection.

3,608,929
CYCLE KICKSTAND

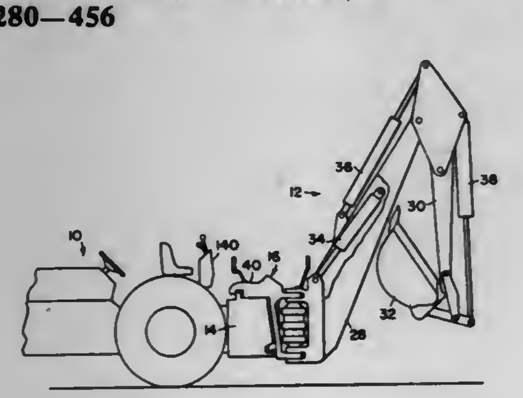
Martin R. Baginski, Austinberg Township, Ashtabula, Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula, Ohio
Filed July 23, 1969, Ser. No. 844,134
Int. Cl. B62h *1/02*
U.S. Cl. 280—301 **16 Claims**

A cycle kickstand having a support leg which may be positioned in a cycle-supporting position or a storage position, includes a supporting member adapted to be secured to a cycle frame. The support leg is rotatably supported by the support member for movement between the cycle-supporting position and the storage position. A detent mechanism is provided which positively positions the support leg with respect to the support member in the cycle-supporting position and the storing position. The detent mechanism includes a floating key which is slidably supported in an opening in the support leg. A spring urges the floating key into communication with one of the members.



3,608,930
HYDRAULIC CLAMPING APPARATUS FOR A SIDE-SHIFTABLE MECHANICAL DIGGER

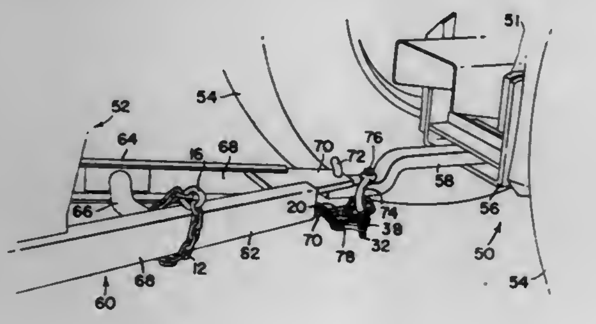
Pierre Moriceau, Saran, and Yves Loranchet, Le Saumon, both of France, assignors to Deere & Company, Moline, Ill.
Filed Sept. 22, 1969, Ser. No. 859,755
Claims priority, application France, Apr. 15, 1969, 6911555
Int. Cl. B60d *1/00*
U.S. Cl. 280—456 **32 Claims**



A mechanical digger support assembly has a boom-supporting slide frame mounted for transverse sliding on a tractor-supported, transverse main frame and hydraulically applied clamping apparatus are provided for securing the slide frame against movement at selected positions along the main frame.

3,608,931
HITCH SAFETY CHAIN

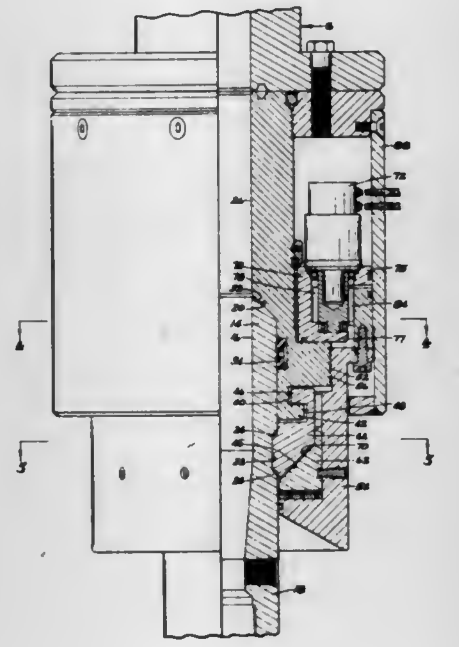
Arnold Burton Skromme, Moline; Dennis Albert Kerckhove, East Moline, Ill., and Donald Thomas Sorlie, Ankeny, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Dec. 15, 1969, Ser. No. 885,023
Int. Cl. B60d *1/12*
U.S. Cl. 280—457 **12 Claims**



A hitch safety chain is provided for connection between towed and towing vehicles. The chain has a grabhook at one end and the grabhook includes a releasable latch for closing the throat of the hook portion to retain a link of the chain therein. At the other end of the chain is an enlarged passing or connecting link which may be either welded or bolted to a draft member of the towed vehicle or through which the grabhook may be passed to loop or wrap the safety chain about the draft member of the towed vehicle.

3,608,932
POWERED COUPLING DEVICE

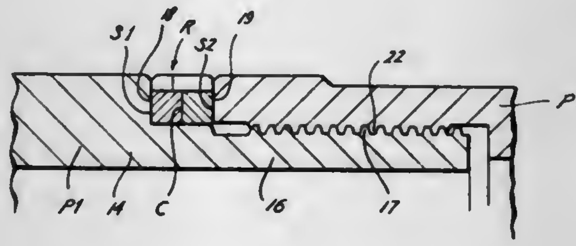
Cicero C. Brown, 5429 Sturbridge Drive, Houston, Tex.
Filed Feb. 18, 1970, Ser. No. 12,333
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **6 Claims**



A powered coupling device for connecting massive tubular bodies, particularly at locations remote from the center of operations, as in connecting large diameter conduit or pipe to a subsea wellhead. The coupling device includes a pin member sealingly received in a box or socket member and power-driven latch elements for strongly securing the pin-and-box members together and to afford a metal-to-metal seal between the members to supplement a plastic seal between the members.

3,608,933
LOCK RING ASSEMBLY FOR LOCKING THREADED SHOULDERED JOINTS

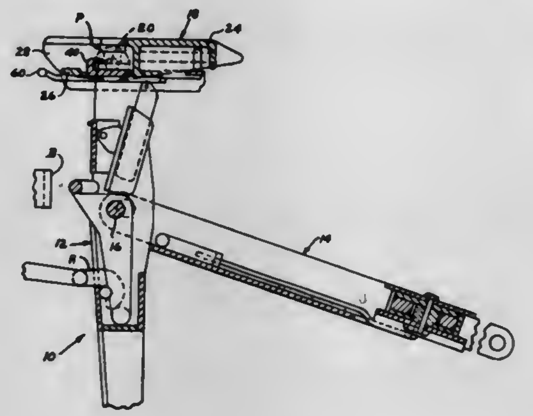
William T. Lee, Houston, Tex., assignor to Bowen Tools, Inc.
Filed Aug. 22, 1969, Ser. No. 852,173
Int. Cl. F16l *15/00*
U.S. Cl. 285—39 **8 Claims**



A lockring assembly for resisting disconnecting torque in a threaded coupling for connecting adjacent pipes wherein such assembly includes a pair of circular members adapted to be positioned between opposed shoulders in the coupling and wherein the circular members have outer gripping surfaces for gripping the opposed shoulders when the threaded connection is tightened together. The circular members also include interengaging cam surfaces which mesh together upon such tightening and which urge the pipes axially apart as they are rotated in a disconnecting direction relative to each other to thereby resist such rotation. The invention also includes means for holding the circular members against rotation relative to each other to prevent such intermeshing cam surfaces urging the threaded joints axially apart to thereby avoid interference with loosening and disconnecting such pipes.

3,608,934
MANUAL LOCK FOR A TRAILER HITCH

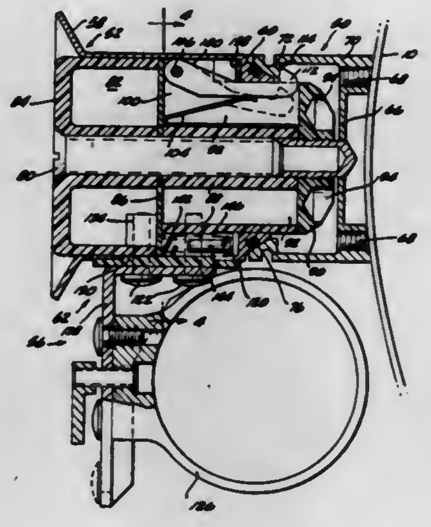
Richard P. Yeates, Bridgeton, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed July 20, 1970, Ser. No. 56,296
Int. Cl. F16b *9/02*
U.S. Cl. 287—20 **6 Claims**



A hitch, particularly of the tractor-operated type for supporting a trailer on a railway car, has a pair of jaws adapted to clamp the upper portion of a trailer kingpin, and an additional manual locking device for holding the kingpin in the trailer supporting plate of the hitch. The manual locking device includes a locking plate located beneath the kingpin and pivoted to the supporting plate and extending forwardly of the kingpin. The forward end of the locking plate has an upturned ridge or wall. A locking handle supported on the bottom of the supporting plate is adapted to slide forwardly to engage the bottom of the locking plate and move it upwardly. In this position the upstanding wall on the locking plate is juxtaposed to the lower portion of the kingpin to prevent it from moving out of the supporting plate.

3,608,935
HELMET MOUNTED DISPLAY UNIT WITH FASTENER DEVICE

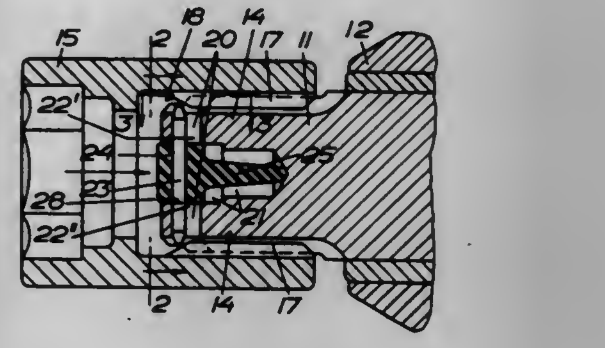
Edward W. Hodapp, Jr., Gardena, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 28, 1970, Ser. No. 6,631
Int. Cl. F16d *1/10*
U.S. Cl. 287—23 **2 Claims**



Helmet-mounted, electro-optical display unit with fastener device for mounting and demounting of the display unit. Special design of the fastener device allows simple, quick operation thereof by the human hand to effect detachment of the unit from the helmet.

3,608,936
SOCKET-RETAINING MEANS FOR SPLINED DRIVE SHAFTS

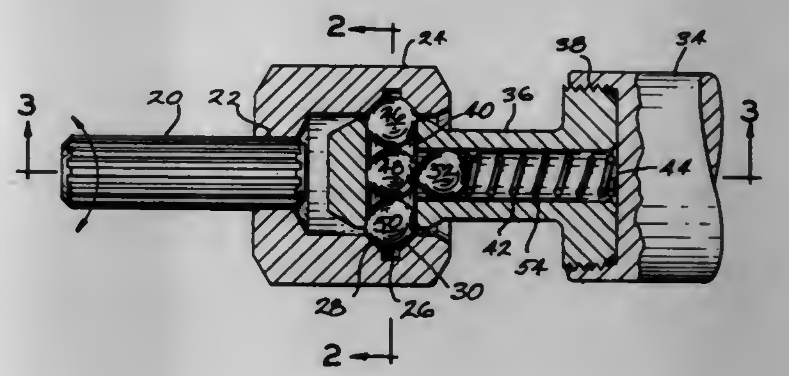
Karl Gosta Karden, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Dec. 5, 1968, Ser. No. 781,362
Claims priority, application Sweden, Dec. 8, 1967, 16877/67
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 **11 Claims**



A retaining means for retaining a socket element on a splined drive shaft end by way of locking cooperation between the outer extremity of a retaining pin and an internal abutment on the splines of the socket element, the retaining pin being movably journaled in a transverse guide passage in the shaft end transversely of the shaft end and transversely of itself between a retaining position in which the outer extremity of the retaining pin is disposed within the axial extension of one of the grooves of the shaft end and a release position in which the outer extremity of the retaining pin is disposed within the axial extension of a spline on the shaft end.

3,608,937
COUPLING DEVICE

William E. Nave, South Bend, Ind., assignor to The Bendix Corporation
Filed May 4, 1970, Ser. No. 34,283
Int. Cl. F16b *7/00*
U.S. Cl. 287—119 **9 Claims**

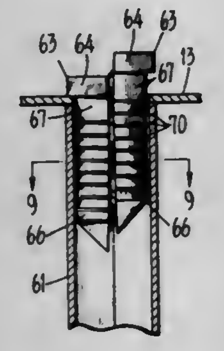


A coupling device for connecting rotatable and pivotable relatively movable first and second members wherein an annular member fixedly secured to one of the relatively movable members is provided with an annular recess or bearing race in the inner wall thereof. A shaft portion of the other MEMBER extends into the cup-shaped portion and is provided with a diametrical bore having oppositely disposed spherical bearing elements which are urged outwardly from the diametrical bore into seating engagement with the annular recess or race by an intermediate spherical bearing element urged between and into alignment with the oppositely disposed bearing elements to secure the first and second members together. The intermediate spherical bearing element is engaged by and held in position by a spring-loaded spherical bearing element disposed in an axial bore which intersects the diametrical bore. The first and second members are prevented from pulling apart by the aligned spherical bearing elements in the diametrical bore which permit relative rotation of the first and second members and/or relative pivotal movement thereof on an axis passing through the aligned spherical bearing elements.

3,608,938

INTERLOCKING RAILING CONSTRUCTION

Robert H. Murdock, Oakland, Calif., assignor to Railtec Corporation, Berkeley, Calif.
Division of Ser. No. 644,505, Aug. 30, 1967, Patent No. 3,498,589.
Filed Sept. 18, 1969, Ser. No. 870,937
Int. Cl. F16b *5/00*
U.S. Cl. 287—189.36 **9 Claims**

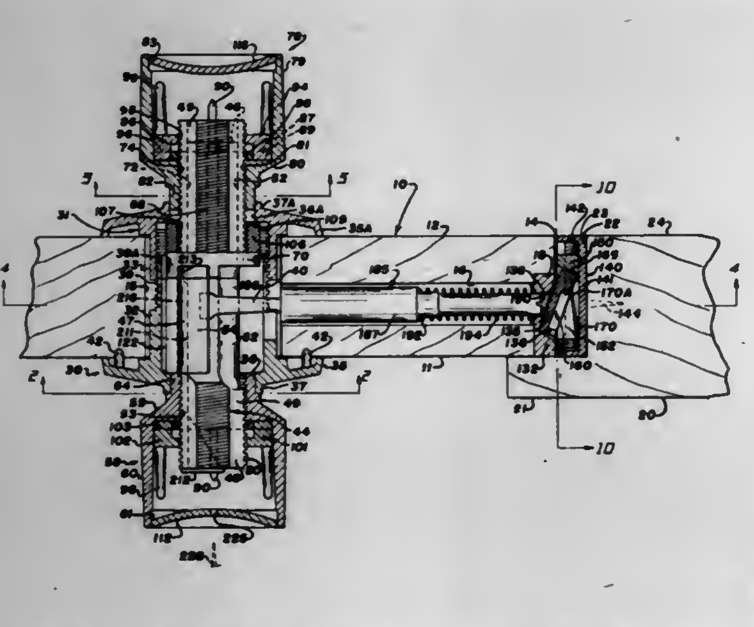


An interlocking construction for metal railings is described which provides a rigid and tamperproof railing construction and yet which is quickly assemblable. The interlocking construction includes a wedge-and-hanger assembly for rigidly securing locking bars for an upper rail to railing posts. A connector is also provided for securing a bottom rail to the posts by a wedge arrangement which assures tight securance of the bottom rail to the posts. Bars are arranged vertically between the upper and lower rails and are secured thereto by locking studs which rely upon a friction fit to assure tight securance of the bars.

3,608,939

CONVERTIBLE LATCH SET

Stuart G. McBurnie, Burnaby; William G. Fortt, Port Coquitlam, and Michel L. E. Rocher, Vancouver, all of British Columbia, Canada, assignors to Velto Industries Ltd., Vancouver, British Columbia, Canada
Filed Sept. 17, 1969, Ser. No. 858,630
Int. Cl. E05b *15/02, 13/00*
U.S. Cl. 292—254 **9 Claims**

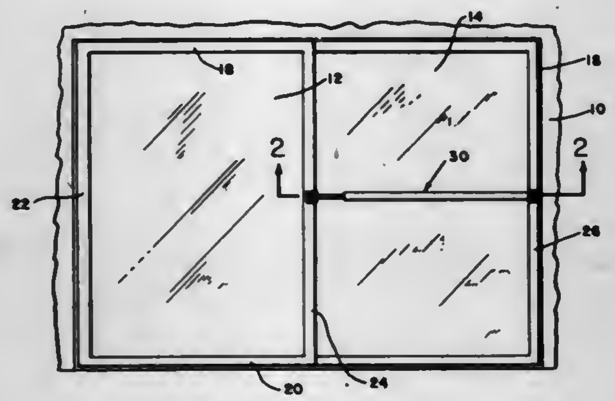


A latch set having a locking slide which is movable from a disengaged position, in which a latch mechanism can be actuated by rotation of either door handle, to an engaged position, in which the latch set and therefore the door are locked. The locking slide is adjustable relative to associated parts whereby the latch set can selectively be installed as either a privacy set which will lock the door, or as a passage set which will merely latch but not lock the door, with either one of the alternate installations being adapted for later conversion to the other.

3,608,940

SLIDABLE DOOR SAFETY LOCK

Francis B. Mueller, 4917 Chase Ave., Downers Grove, Ill.
Filed Oct. 30, 1969, Ser. No. 872,574
Int. Cl. E05c *17/04*
U.S. Cl. 292—262 **11 Claims**

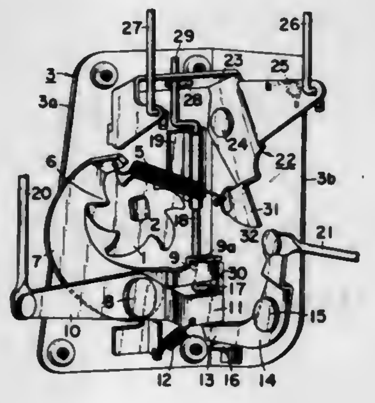


A sliding door security lock of telescoping members limited in movement in a contracted direction, one end being attached to the frame of the sliding door itself and the other end being attached to the doorjamb or a second door in the doorjamb. Both attachments are releasable, one by retracting one member from one member when the door is closed and the other by angularly moving the other member when the one member is retracted therefrom. The one member is latched by a pivoted coaxial keeper in its telescoping position and the latch is held closed by the other member when the door is open.

3,608,941

DOOR LOCK FOR AUTOMOBILES

Tsukane Kondo, Yokohama, and Kishiro Muroi, Sagamihara, both of Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan
Filed Apr. 7, 1969, Ser. No. 814,143
Claims priority, application Japan, Apr. 10, 1968, 43/23571
Int. Cl. E05c *19/06, 3/06*
U.S. Cl. 292—280 **6 Claims**

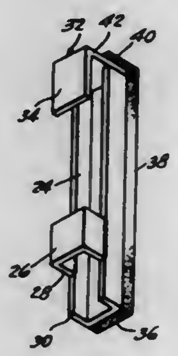


A door lock for automobiles is disclosed, the door lock comprising a ratchet adapted to be turned by the opening and closing of the door, a latch to permit the rotation of the ratchet in the direction where the door is closed and obstruct the rotation of the ratchet in the direction where the door is opened. Levers are provided each controllable by the outside handle or the inside handle and means are interposed between the levers and the latch to disengage the latch from the ratchet when either lever is operated with the outside handle or inside handle. Locking means are further provided, these locking means being adapted to be operated with the inside knob or by a key, the locking means, when in the locked state, preventing transmission of the motion or turning due to manipulation of either of the outside handle or inside handle to the latch and, when the door is shut without using the outside handle, the locking means being coupled to the latch wherein the movement of the latch due to the turning of the ratchet shifts the lock to the unlocked state and further, when the lock is fastened and the door is closed while manipulating the outside handle, the door can be closed without a key.

3,608,942

BUMPER DEVICE

Joseph L. Telles, 1570 Blake Ave., Los Angeles, Calif.
Filed July 25, 1969, Ser. No. 844,825
Int. Cl. B60r *19/08*
U.S. Cl. 293—65 **1 Claim**

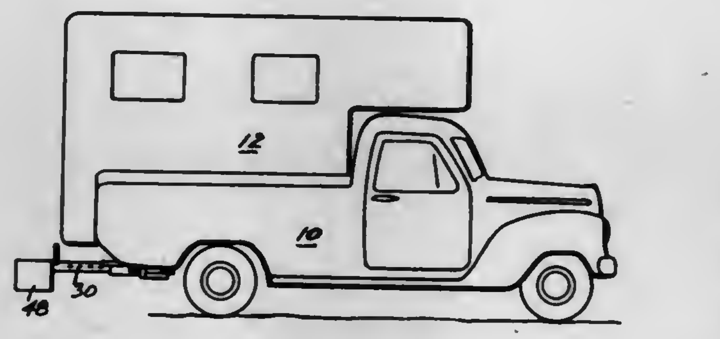


A bumper device including a pair of rubber-covered blocks with a U-shaped bracket connected to one end thereof and an outwardly extending and downwardly extending member having an L shape connected to another end thereof for attaching the blocks to the tow plate of a tow truck.

3,608,943

EXTENSIBLE AUTOMOBILE BUMPER

Frank T. Gostomski, 246 West Eighth St., Wahoo, Nebr.
Filed June 2, 1969, Ser. No. 829,463
Int. Cl. B60r *19/02, 27/00;* **B61f** *19/04*
U.S. Cl. 293—73 **8 Claims**

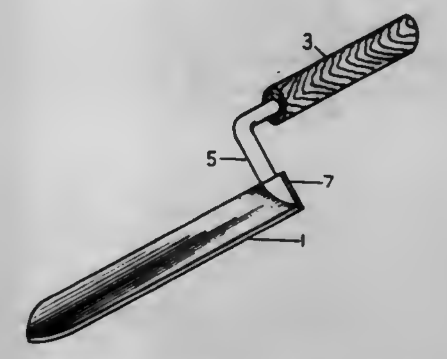


A bumper extension construction is disclosed comprising plate hangers adapted to be detachably secured to the opposite sides of the frame of an automobile and to depend therefrom. Spaced U-shaped brackets have their legs welded to said plate hangers to provide spaced, longitudinally extending passageways. In each passageway a bumper arm is slidably mounted for extension or retraction. Spring-loaded, wedge-shaped catch means are provided so a selected extension can be maintained without the use of bolts or tools, thus eliminating any looseness of parts during travel in forward and reverse directions. Also, spring-loaded wedges are provided to eliminate mechanical rattles between the bumper arms and the frame means forming the longitudinal passageways for the reception of said bumper arms.

3,608,944

MORTAR TROWEL

William V. Turner, 2800 Stanwix Lane, Richmond, Va.
Filed May 14, 1969, Ser. No. 824,401
Int. Cl. E04g *21/20*
U.S. Cl. 294—3.5 **1 Claim**

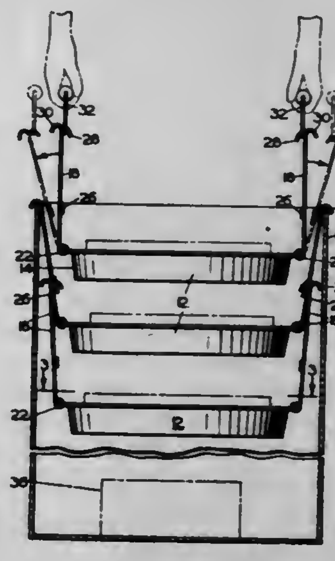


A trowel is disclosed characterized by the novel features of elongated blade of uniform width from end to end, a curved blade bottom, an offset handle and other features adapted to enable the operator to conveniently lay down a long, thin bead of mortar with minimum wrist movement.

3,608,945

ARTICLE-HOLDING ASSEMBLY FOR USE WITH AN OPEN-TOP CONTAINER

Charles T. Heitz, 7200 S. E. 92nd Ave., Portland, Oreg.
Filed Mar. 20, 1969, Ser. No. 808,816
Int. Cl. A47j *45/00*
U.S. Cl. 294—27 **1 Claim**



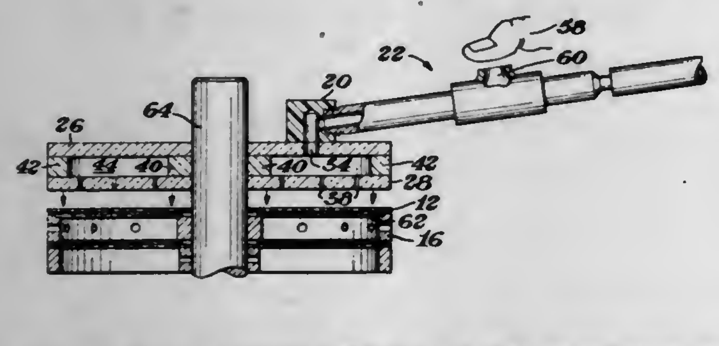
A tray having a pair of upright arms pivotally connected at their lower ends thereto. Each arm has an outwardly turned hook at its upper end adapted to engage the top edge of an open-top can for suspending the tray in the can. Each arm also has inturned hook at its upper end adapted to engage other trays for suspended connection thereto. The arms further have cross frame members for engagement by the inwardly turned hooks of other trays for suspending one tray from another in a container. The assembly may include one tray or a number of the trays one above the other in parallel relation. The trays have apertures therein allowing movement of heat, steam of liquid therethrough.

3,608,946

DEVICE FOR HANDLING OF A FILTER MEMBRANE

Edward D. Erickson, Arvada, and Robert L. Wilson, Boulder, both of Colo., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 19, 1968, Ser. No. 776,934
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 **4 Claims**

A vacuum-operated tool useful for removing a filter medium, such as a filter membrane or disc, from its package and for subsequently seating the membrane on a horizontal plate filter. The tool eliminates direct manual handling of the membrane, thus preventing flexing of the membrane and possible cracking or tearing of the material as a result of the flexing.



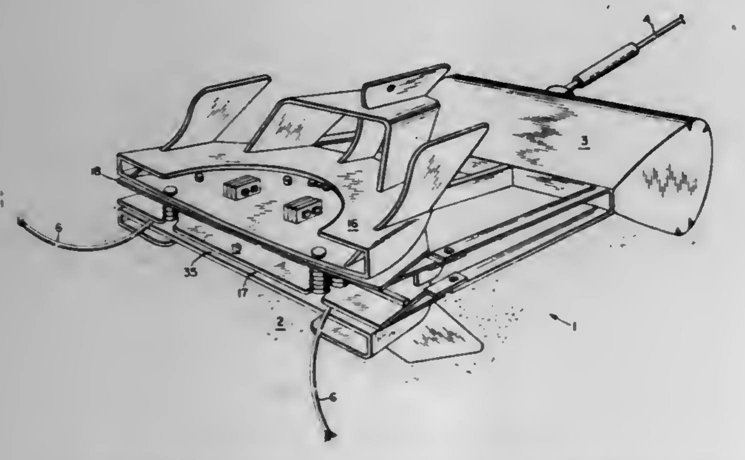
3,608,947
APPARATUS FOR RETRIEVING OCEANOGRAPHIC CABLE FROM THE SEA BOTTOM

Charles S. Mundy, Boulevard, and Fred Noel Spiess, La Jolla, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 22, 1970, Ser. No. 48,244

Int. Cl. B63c *7/06*

U.S. Cl. 294—66 **7 Claims**



Lost oceanographic instruments can be recovered by locating and retrieving the line to which they are attached. A cable grabber formed of a four-layered sandwich presently is employed, the sandwich including upper and lower plowheads and upper and lower spring-loaded pressure plates, the plates being attached by upper and lower mounting braces to a tow sled which itself can be towed in any manner. The entire apparatus is symmetrically formed to permit an upside down operation. The pressure plates are resiliently maintained in a spaced disposition, while the plowheads include plowshares to dig into the bottom sediment and guide a trapped cable section into the space between the plates. The sled itself is free-flooding to improve stability. The resistance of a trapped cable to the pull of the sled causes the pressure plates to wedge together and clamp about the cable. Breakage of the cable is avoided by minimizing bending and by using a spring arrangement that exerts a controlled clamping force.

3,608,948
TACTICAL CARGO HOOK

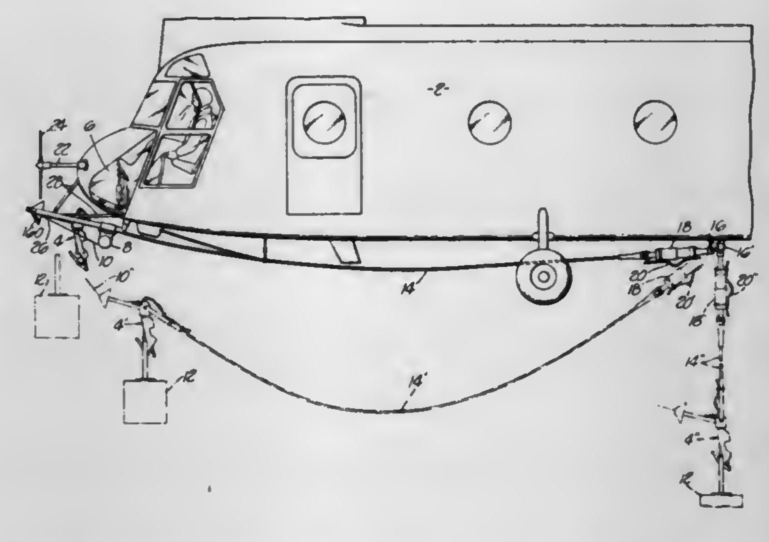
Giles Arthur Kendall, Tarzana, and Robert Minick, Glendale, both of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Filed Apr. 3, 1968, Ser. No. 718,531

Int. Cl. B66c *1/12*

U.S. Cl. 294—78 **21 Claims**

A cargo hook system having a drogue which may be supported on the nose of a helicopter; a cargo hook assembly and a probe supported from the cargo hook assembly, said cargo hook assembly having a hook movable from an open to a closed position, and means to maintain the hook in an unloaded condition in a direction facing toward the probe, means to position the hook in any desired direction when supporting a load, means to open and close the hook, means to lock the hook in its closed position when loaded, and latch means to prevent removal of a load from said hook in its closed position; support means for the cargo hook assembly which may be connected to a helicopter at or near its center of mass; and means to guide the probe into the drogue, to maintain the probe in the drogue when the cargo hook assembly is not in use, and to release the probe from the drogue when the cargo hook assembly is in use. A cargo hook assembly having a support housing; a hook supported by the housing and being rotatable with respect thereto; the hook having an open and a closed position; means to open and close the hook; means to lock the hook in its closed position when supporting a load; means to bias the rotational direction of the hook to a predetermined position with respect to the support housing; means to position the hook in any desired rotational direction with respect to the support housing when supporting a load; and a latch means to prevent removal of a load from the hook in its closed position. A pickup adapter having a plurality of frame member connected pivotally in a sequential end-to-end relation; the endmost frame members connected to load support means; means biasing the frame members to maintain the unloaded adapter in a collapsed condition in which one of the frame members having a curved and a straight portion has its straight portion in a substantially horizontal position to provide a target area for the engagement of a hook; the frame members forming an inverted V-frame structure when the adapter is loaded, the load being supported by a hook which engages the horizontal straight portion of the said frame member having a curved portion, the hook sliding upwardly to the curved portion of the member as the adapter forms an erect inverter V-frame structure under load conditions.



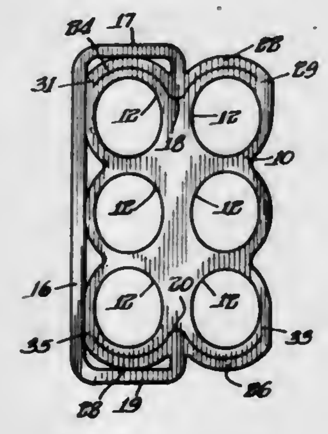
3,608,949
CONTAINER CARRIER

Ronald C. Owen, Harwood Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed July 22, 1969, Ser. No. 843,472

Int. Cl. B65d *71/00*

U.S. Cl. 294—87.2 **2 Claims**



A container carrier blank formed from a flat sheet of resilient material and having a plurality of sockets for receiving and gripping the central portion of a plurality of containers. A handle is joined to the body member of the carrier at opposing ends thereof and is so shaped as to be substantially resiliently displaceable transverse to the plane of the body member.

3,608,950
ARRANGEMENT AT LOAD CARRIER

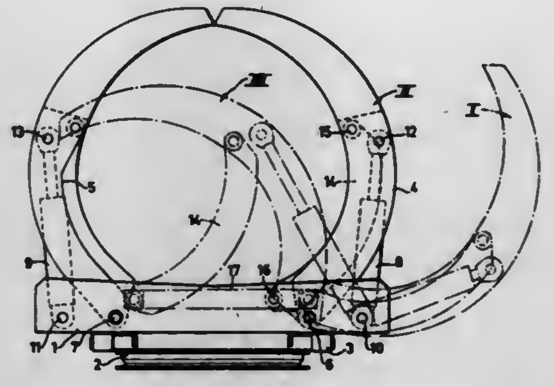
Karl-Ivan Westbrand, Ornskoldsvik, Sweden, assignor to Ostbergs Fabriks AB., Alfta, Sweden

Filed Oct. 10, 1969, Ser. No. 865,253

Claims priority, application Sweden, Oct. 11, 1968, 13732/68

Int. Cl. B66c *1/42*

U.S. Cl. 294—88 **3 Claims**



A load carrier comprises two grip arms pivotally mounted at their lower ends and so foldable from and towards each other that they overlap one another, each grip arm having a link mounted thereon at a point spaced from the axis of rotation of the arm. The other ends of the links are mounted slidably along paths each extending from the vicinity of the axis of rotation of the associated arm and directed substantially to the axis of rotation of the opposite arm, the respective paths for said other ends of the two links so extending side by side that when the grip arms swing together the links intersect one another providing a four-corner gripping space.

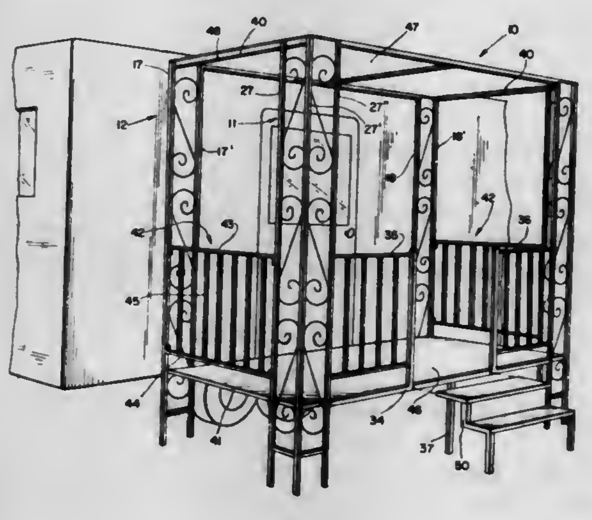
3,608,951
TRAILER PORCH

Samuel Thomas Jackson, 819 Stokes St., Danville, Va.

Filed Feb. 4, 1970, Ser. No. 8,522

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 **6 Claims**



A readily assembled porch includes a rear unit positioned against a mobile home or the like and comprising a pair of vertical columns permanently connected by upper and lower crossmembers. A front unit is spaced outwardly from the rare unit and similarly comprises vertical columns permanently interconnected by crossmembers and the ends of the rear and front units being detachably connected by side rail members and upper and lower crossmembers. A panel member extends between the rear and front units and lower cross members to define a floor and a roof is formed by a panel extending across the upper ends of the rear and front units.

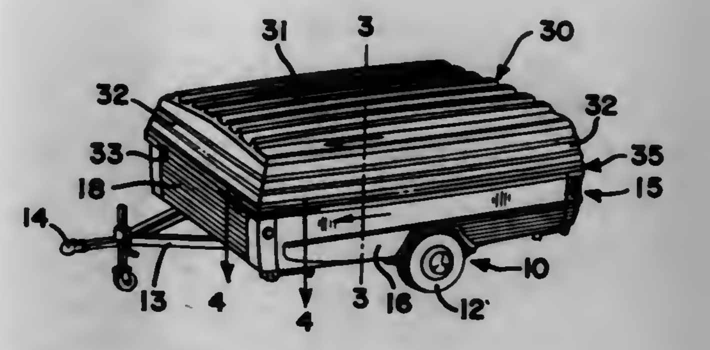
3,608,952
CAMPING TRAILER

Robert G. Simmer, Hamilton, Ohio, assignor to Ward Manufacturing, Inc., Hamilton, Ohio

Filed Mar. 4, 1970, Ser. No. 16,390

Int. Cl. B60p *3/34*

U.S. Cl. 296—23 **6 Claims**



A camping trailer has a wheel-supported body, extendible beds and a collapsible cover including a substantially rigid plastic roof with a depending peripheral skirt. A framelike metal trim member is clamped on a curved lower edge portion of the skirt and provides for sliding movement of the skirt relative to the trim member in response to thermal expansion and contraction of the roof. The trim member also includes an inner portion to which flexible wall material is uniformly secured and provides spaces at the corners to permit free expansion and contraction of the roof.

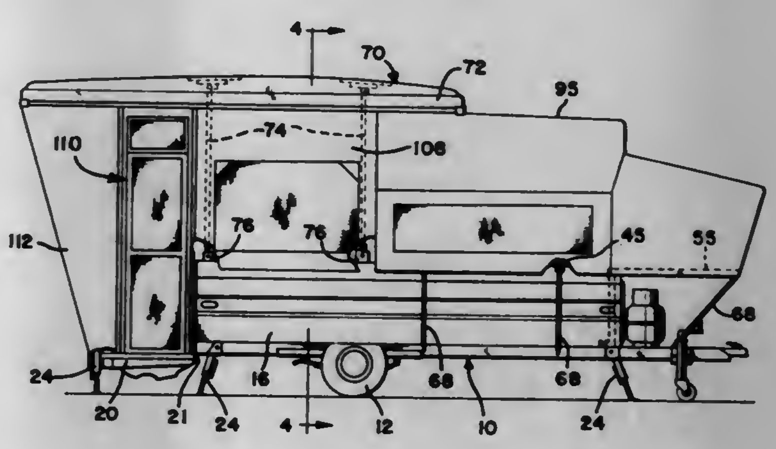
3,608,953
COLLAPSIBLE CAMPING TRAILER

Albert Stevens Bernard, Cincinnati, Ohio, assignor to Ward Manufacturing, Inc., Hamilton, Ohio

Filed Mar. 5, 1970, Ser. No. 16,673

Int. Cl. B60p *3/34*

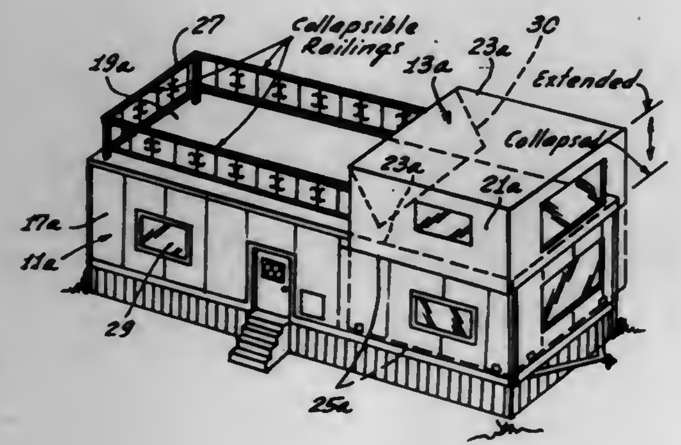
U.S. Cl. 296—23 **12 Claims**



A wheel-supported boxlike body supports a front bed and two side beds for movement between corresponding retracted positions overlying the body and corresponding extended positions projecting outwardly from the front and sidewalls of the body. The body has a rear wall which pivots to a horizontal open position forming an extension of the floor of the body at a lower level, and a utility console is movable from within the body rearwardly onto the rear wall in its open position. A rigid top is movable between a collapsed position overlying the beds and body and an elevated position covering the open rear wall and a rearward portion of the body. Canvas is supported by a tubular frame to form an extension of the top member and covers the beds in their extended positions. The canvas continues downwardly to form sidewalls which attach to the beds and the rear wall in addition to the body.

3,608,954
COLLAPSIBLE VEHICULAR STRUCTURE

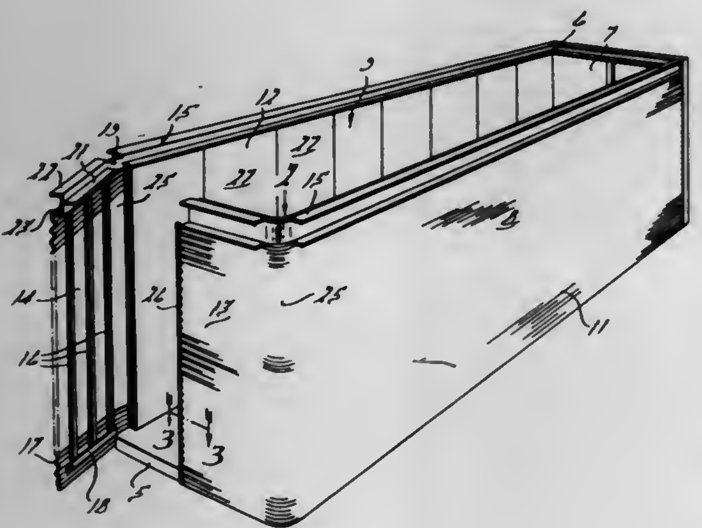
Orland R. Lynd, 940 Larch St. Apt. 6, Inglewood, Calif.
Filed May 16, 1969, Ser. No. 825,221
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **9 Claims**



This disclosure describes a collapsible vehicular structure which includes a vehicular cabin having a peripheral sidewall and an upper wall and a cabin extension having a peripheral sidewall and a roof. The cabin extension is mounted on the vehicular cabin with the peripheral sidewalls thereof being telescopically interrelated to thereby provide a collapsible second story for the vehicular cabin.

3,608,955
METHOD OF MAKING TRUCKS, TRAILERS AND THE LIKE

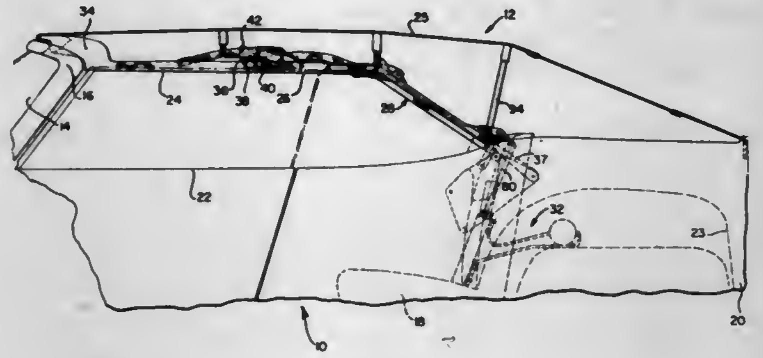
Keith W. Tantlinger, Grosse Pointe Shores, Mich., assignor to Fruehauf Corporation
Filed Jan. 9, 1967, Ser. No. 608,101
Int. Cl. B62d *33/00*
U.S. Cl. 296—28 M **4 Claims**



A trailer body has a platform to which two independent built-up side and front sections of the opposite hand are attached to the rear doorframe and the front and side edges of the platform and to each other by an upright extending upwardly from the platform centrally of the front edge thereof.

3,608,956
FOLDING TOP MECHANISM FOR CONVERTIBLE-TYPE AUTOMOBILE

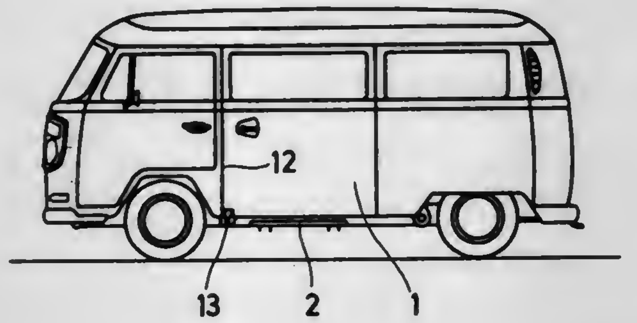
Joseph Adamski, Brooklyn, Mich., assignor to Dura Corporation, Oak Park, Mich.
Filed June 2, 1969, Ser. No. 829,178
Int. Cl. B60j *7/12*
U.S. Cl. 296—117 **7 Claims**



A folding top mechanism is provided in which the conventional control link is replaced by use of a pair of side-by-side generally parallel rear rail components thereby materially increasing the seating space in the rear seat of convertible vehicles providing clean interior lines thereby improving the safety factor, which in the past, has been relatively lower for convertible automobiles than for metal top vehicles, and also increasing the rigidity of the mechanism in the extended position.

3,608,957
RUNNING BOARD FOR VEHICLES

Ernst Maneck, Wolfsburg, Germany, assignor to Volkswagenwerk AKG, Wolfsburg, Germany
Filed June 25, 1969, Ser. No. 836,232
Claims priority, application Germany, July 2, 1968, P 17 55 862.2
Int. Cl. B60r *3/00*
U.S. Cl. 296—146 **6 Claims**

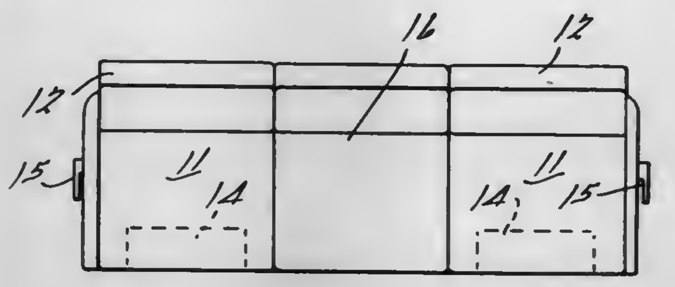


An automatically retractable running board for vehicles with sliding doors having at least two guide levers mounted in parallel to one another under a bottom plate and a lever movable horizontally under spring load together with a driver engaging the end of the lever and at the stop side of the sliding door.

3,608,958
MULTIPLE SEAT UNIT OF THE RECLINING AND ROCKING TYPE

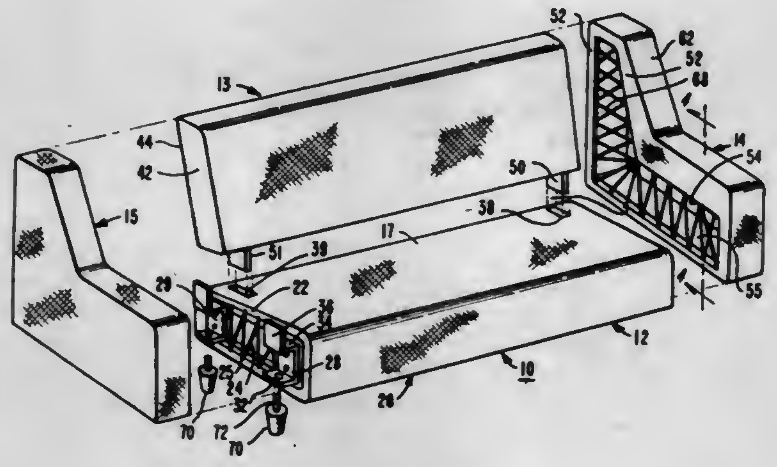
Edward M. Knabusch, and Edwin J. Shoemaker, both of Monroe, Mich., assignors to La-Z-Boy Chair Company
Filed Aug. 4, 1969, Ser. No. 847,330
Int. Cl. A47c *1/02, 3/02*
U.S. Cl. 297—69 **10 Claims**

The multiple seat unit of a rocking or reclining type chair employs linkage mechanism therefor and for the leg rest which is similar to that used in a single unit chair construction. Some modification is required to the unit and mechanisms when two or more seating areas are provided for supporting the mechanisms between the side and center member of the unit. The end seating areas of a unit have tilting backs, movable seats and adjustable leg rests which operate independently of each other. The rocking type of multiple seating unit is a single construction which may be retained from rocking by locking it in tilted position at each side of the unit. The rocking unit will have a seating capacity for two or more occupants while the reclining unit for a plurality of occupants has only the end units which are reclinable and provided with leg rests, the seating portion therebetween has a rigid back and seat without leg rests.



3,608,959
FURNITURE UNITS

Maynard C. Sarvas, 4773 Dogwood, Seal Beach, Calif.
Filed July 17, 1969, Ser. No. 842,639
Int. Cl. A47c *4/42, 4/02*
U.S. Cl. 297—218 **11 Claims**

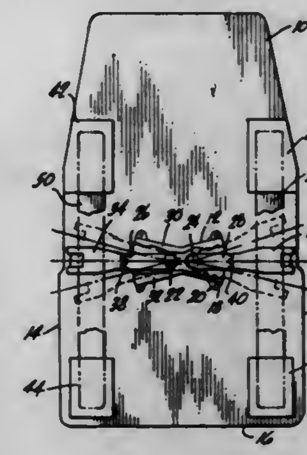


A furniture unit is provided which can be shipped in disassembled condition and readily assembled and which has firmly attached, tightly fitting but removable covers while at the same time having the appearance of upholstered furniture. The unit incorporates individual seat, back and sidearm portions. Separate cover units for each of these portions include peripheral restraining elements detachably maintaining the covers under tension, the restraining elements being out of sight when the unit is assembled. The seat portion incorporates back support apertures within which mating members of the back portion register and are retained, and also includes side brackets for receiving and supporting the sidearm portions.

3,608,960
ADJUSTABLE BACK SUPPORT

Gale K. Sherman, Tustin, Calif., assignor to McDonnell Douglas Corporation
Filed Sept. 3, 1970, Ser. No. 69,374
Int. Cl. A47c *7/46*
U.S. Cl. 297—284 **7 Claims**

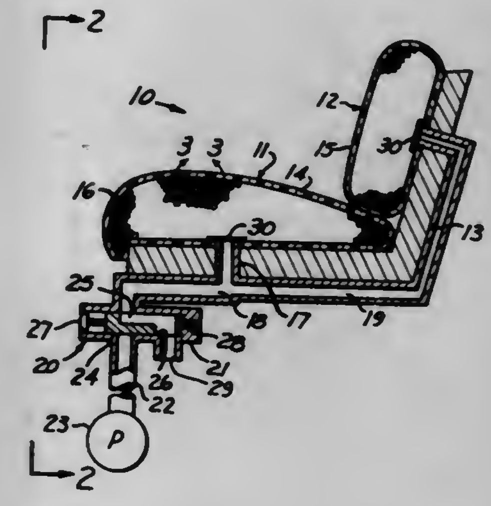
A back support in which a change in contour is provided not only in the front to rear plane but also vertical adjustment is provided to match the contour of the back of the seat occupant. Two arms are attached to a mounting plate secured to the seat back structure behind the cushion. These arms have outer end supports which pivot in a horizontal plane from front to rear to vary the "wrap-around" curvature of the back support. The arms also are tiltable vertically to adjust the contour to fit. Vertical resilient stays are provided within the seat cushion adjacent the hinged arms to spread



the cradling effect on the cushion over a satisfactory distance.

3,608,961
VARIABLE CONTOUR CUSHION

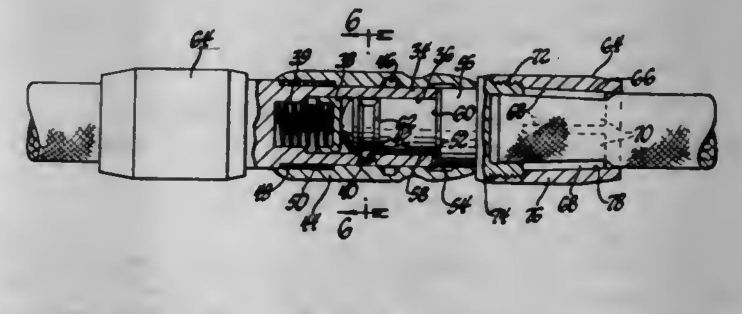
Robert Von Heck, 3205 Udall St., San Diego, Calif.
Filed Sept. 4, 1969, Ser. No. 855,144
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 **12 Claims**



A cushion comprising a plurality of plastic beadlike material sealed within a pliant covering and including means whereby a user may selectively alter ambient air pressure differential and cushion contour and neutralize body pressure fatigue points for maximum comfort.

3,608,962
SAFETY BELT AND COUPLING DEVICE

Hillery G. Knecht, 552 Kingsley Trail, Bloomfield Hills, Mich.
Filed Aug. 19, 1969, Ser. No. 851,219
Int. Cl. B60r *21/10*
U.S. Cl. 297—385 **8 Claims**



A safety belt of soft round braided rope with a coupling which includes male and female parts having ball wedging snap-lock interengagement therebetween and are under the control of an outer-disposed reciprocal sleeve member.

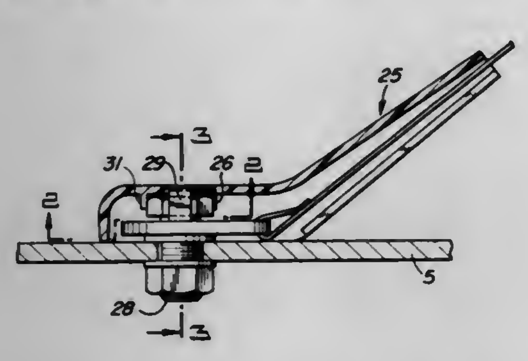
3,608,963
BOOT

Frank W. Steere, Jr., Akron, Ohio, assignor to Steere Enterprises Inc., Tallmadge, Ohio

Filed May 19, 1969, Ser. No. 825,614

Int. Cl. A62b *35/60*

U.S. Cl. 297—385 **3 Claims**



Boots for seat belts which boots are slit from the top to the bottom so that they can be placed on a belt after it is attached to a vehicle.

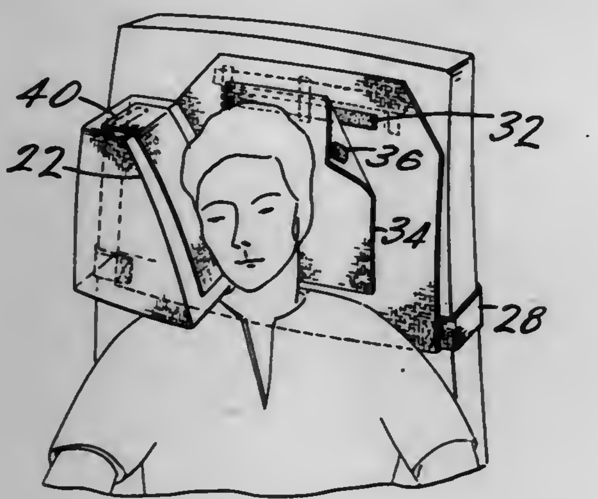
3,608,964
PILLOW FOR VEHICLE SEAT

Thad J. Earl, 1132 East Second St., Defiance, Ohio

Filed June 9, 1969, Ser. No. 831,380

Int. Cl. A47c *1/10;* **A47g** *9/00*

U.S. Cl. 297—397 **1 Claim**



A pillow unit for the head of a passenger in a vehicle seat is attached to the back of the seat and supports the head of the passenger and includes a base member or sheet attached to the seat with a pillow extending outwardly from the back a sufficient distance and at proper angle to support the head in a comfortable position. The base sheet is attached to the seat back by a lower elastic strap and by upper patches of Velcro or similar material which cooperate with other patches of Velcro on the seat back. In a preferred form, the pillow includes a cover and a removable pillow insert which can be removed for cleaning purposes.

3,608,965
AUTOMOTIVE VEHICLE HEAD AND NECK REST

Kurt Cziptschirsch, and Gunter Dietz, both of Wuppertal-Barmen, Germany, assignors to Gebr. Happich G.m.b.H., Wuppertal-Elberfeld, Germany

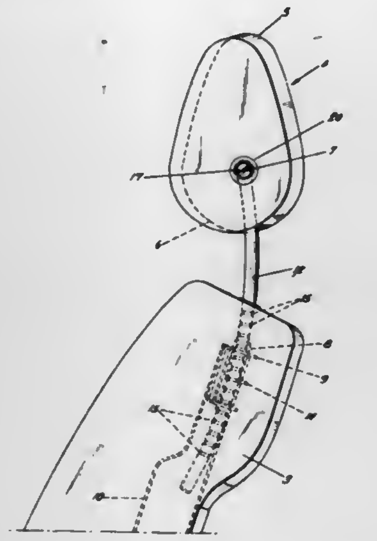
Filed June 20, 1969, Ser. No. 835,013

Claims priority, application Germany, July 16, 1968, P 17 79 181.0

Int. Cl. A47c *7/36, 7/42*

U.S. Cl. 297—410 **8 Claims**

Automobile seat headrest having a curved, approximately wedge-shaped in side cross section, cushioned body, with a narrow curved top edge and a wide curved bottom edge; supporting rods extending into the body and being connected thereto by pivot support means which permit pivoting of the headrest; a sector shaped insert in the cushioned body, through which the supporting rods pass, the walls defining the sector serving as the limit stops for the pivoting motion of the body; an auto seat includes a bushing for each supporting rod, which bushing has a break in the walls thereof to permit the arms of a detent spring to mass through the walls and engage in one of the detent grooves on the supporting rod; the detent grooves face downward to impede downward headrest movement.



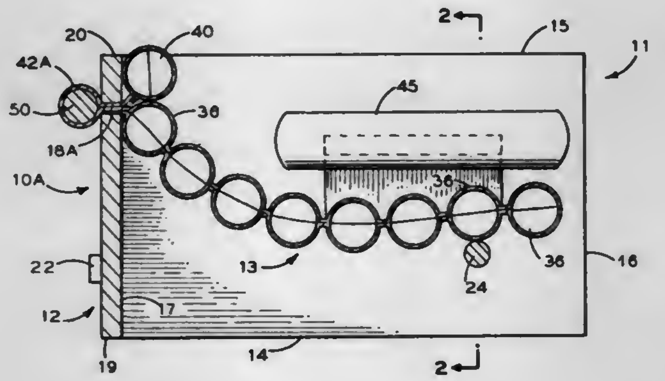
3,608,966
COLLAPSIBLE CHAIR

Peter Kredenser, 53 East 10th St., New York, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,585

Int. Cl. A47c *27/08, 27/18*

U.S. Cl. 297—454 **9 Claims**



A collapsible chair construction having separably connected side and back frames together with a combination seat and back member separably suspended on the frames and including inflatable cushioning chamber portions, together with selected chamber portions for locking the seat and back member to the frames.

3,608,967
METHOD AND APPARATUS FOR FLAME WORKING MINERAL BODIES

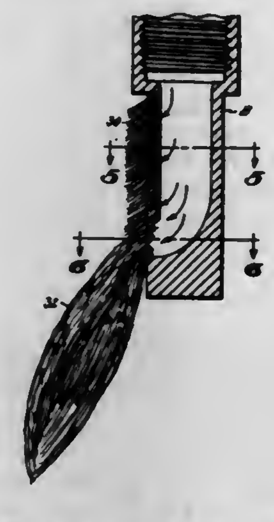
John F. Vasselin, deceased, late of Nabnasset, Mass., by Herbert F. Vasselin, administrator, Westford, Mass., assignors to H. E. Fletcher Co.

Filed Apr. 21, 1969, Ser. No. 818,203

Int. Cl. E21c *37/16*

U.S. Cl. 299—14 **5 Claims**

Flame cutting mineral bodies with an improved form of flame jet to produce spalling is employed to carry out a channeling operation wherein a vertical channel is cut in an exposed vertical face of granite in a quarry. Emission of a stream of products of combustion from a burner at superatmospheric pressure is controlled by means of a specially formed exit orifice in a flame jet nozzle to provide a jet flame which is distorted out of the normally conical shaped configuration so as to provide a fan-shaped flame operative over a relatively extended area of impingement on a vertical face of stone with more efficient utilization of flame energy being realized in spalling.



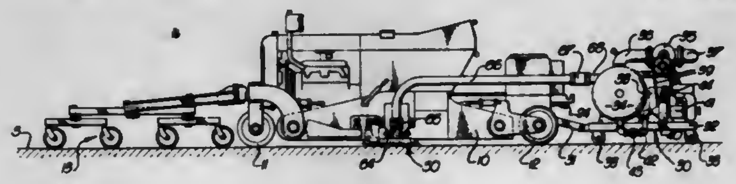
3,608,968
PAVEMENT CUTTING AND WATER AND CUTTING PICKUP APPARATUS

Theodore Burnett, Orange, Calif., assignor to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Apr. 3, 1969, Ser. No. 812,994

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **20 Claims**



A concrete or other pavement planing, texturing and grooving machine embodying a vacuum pickup assembly located outside the perimeter of the groove-producing cutters, the cuttings being flushed away by water issuing from nozzles at the work region and producing a slurry with the cuttings, which slurry is sucked into the pickup assembly aided by ambient air also sucked from the pavement region into its confines. The air and water slurry mixture is drawn into a separating tank where the water slurry drops to the lower tank portion, the air being exhausted to atmosphere. The water slurry is pumped to a settling tank where the cuttings and water are separated and the clean water repumped to the nozzles located at the cutters.

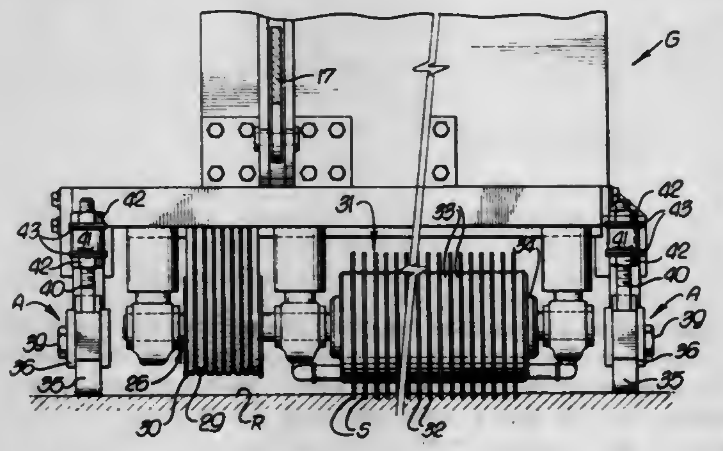
3,608,969
APPARATUS FOR CONTROLLING INITIAL ENGAGEMENT OF CUTTERS WITH CONCRETE PAVEMENT SURFACES

Joseph B. Fowkes, Salt Lake City, Utah, assignor to Christensen Diamond Products Company, Salt Lake City, Utah

Filed Oct. 30, 1969, Ser. No. 872,494

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **24 Claims**



A tractor or wheel loader carries a grooving unit, including a gang of rotating saw blades, for cutting parallel grooves in a concrete pavement. A shock absorber device prevents the saw blades from being lowered rapidly to impact against the pavement and thereby possibly damage the blades. The shock absorber device is initially lower than the blades and contacts the pavement first, gradually retracting to permit gradual lowering and engagement of the saw blades with the pavement.

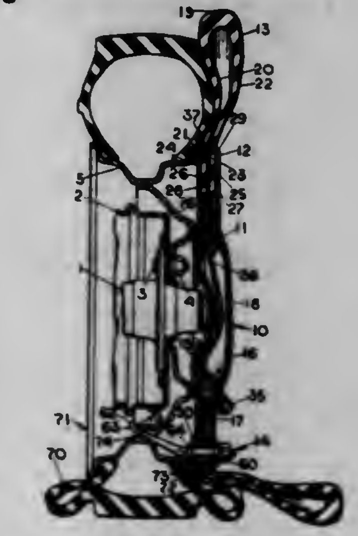
3,608,970
EMERGENCY WHEELS

William P. Strumbos, 85 Middleville Road, Northport, N.Y.

Filed Nov. 18, 1968, Ser. No. 776,332

Int. Cl. B60b *11/00*

U.S. Cl. 301—38 **13 Claims**



In the art of automotive emergency wheels that are used when a vehicle road tire has been punctured, an invention in which the emergency wheels used are of the type adapted to be mounted on the vehicle road wheel outboard of the damaged tire. The invention comprises a method for installing the wheel, and lightweight emergency wheels having narrow-section tubeless tires suitable for practicing the method. Preferred embodiments of the wheel used in the method incorporate as an integral part of the wheel disk a reservoir for pressurized fluid for inflating the tire. In the method, it is not necessary to jack up the vehicle to install the emergency wheel. In use, the emergency wheel, with its tire in the uninflated condition, is fastened on the vehicle road wheel outboard of the damaged tire. After the emergency wheel is fastened in place, its tire is inflated. This raises the vehicle off its damaged tire and into substantially its normal attitude such that it can be driven safely at reasonable speeds until repair facilities are reached. Also proposed in an emergency wheel construction in which a displacement of the sidewall produced by the inflation of the tire causes clamping means to be forced automatically over the vehicle road wheel rim such that the emergency wheel is clamped thereon pneumatically. A further embodiment uses the pressurized fluid utilized for inflating its tire to actuate the fasteners used to mount the wheel.

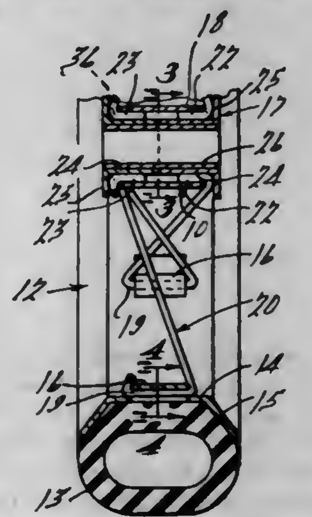
3,608,971
SPOKED WHEEL AND METHOD OF CONSTRUCTION

Paul F. Seibold, 26665 York Road, Huntington Woods, Mich.

Filed Apr. 4, 1969, Ser. No. 813,567

Int. Cl. B60b *1/04*

U.S. Cl. 301—58 **9 Claims**

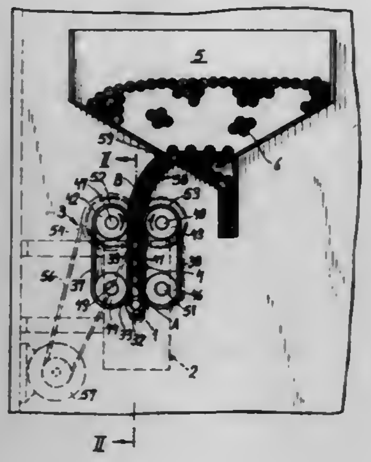


A spoked wheel has a tired rim with U-shaped wire spoke elements having a web, two arms with outwardly extending ends which are secured in spaced corrugations in a central hub section. The webs are secured in tongues struck inwardly from the central portion of the rim which tension the spoke elements when the tongues are forced outwardly.

3,608,972
TRANSFER APPARATUS FOR ROD-SHAPED ARTICLES

Willy Rudszinat, Dassendorf near Hamburg, Germany, assignor to Hauni-werke Korber & Co. KG., Hamburg, Germany

Filed Dec. 26, 1968, Ser. No. 786,932
Claims priority, application Great Britain, Feb. 9, 1968, Jan. 2, 1968, 06479/68;00306/68
Int. Cl. B65g *53/00*
U.S. Cl. 302—2 36 Claims

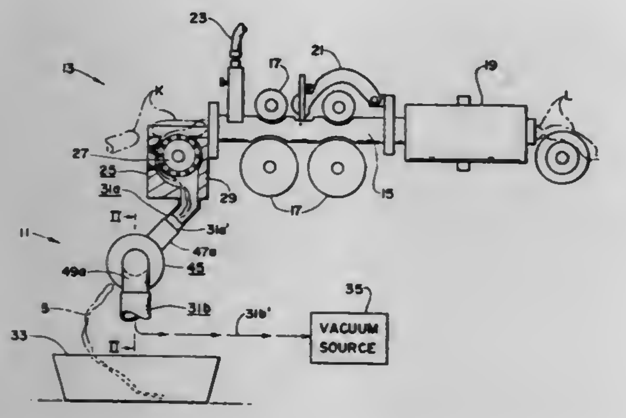


Apparatus for transporting filter rod sections or analogous rod-shaped articles comprises a pneumatic tube discharging a succession of articles which move lengthwise into one end of a channel defined by two walls at least one of which travels toward the other end of the channel to transport the articles sideways toward the inlet of a magazine. The width of at least a portion of the channel is slightly less than the diameter of an article.

3,608,973
SAUSAGE CASING DISCHARGE MEANS FOR LINK-SAUSAGE-PEELING APPARATUS

Thomas A. Klyce, Memphis, Tenn., assignor to Ranger Tool Co., Inc., Ellendale, Tenn.

Filed Jan. 30, 1969, Ser. No. 795,210
Int. Cl. B65g *53/00*
U.S. Cl. 302—2 8 Claims

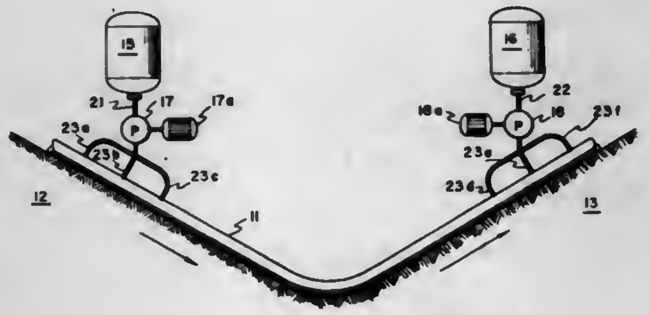


For use in sausage-peeling apparatus utilizing suction air pneumatic tube means for conveying meat-free casings of the sausages. The disclosed structure includes a vacuum wheel discharge unit adapted to be interposedly arranged in the pneumatic tube means of the sausage peeling apparatus for removing the sausage casing elements from the pneumatic tube while yet maintaining suction in the tube. The vacuum wheel casing discharge unit includes a cuplike power-driven vacuum wheel having a generally cylindrical perforated rim. Air under negative pressure is caused to flow radially inwardly into the hollow interior of the wheel and axially outwardly away from the wheel through the open side thereof; the sausage casing elements are sucked against the outside of the wheel by vacuum and are moved in an arc configuration to a position of no vacuum and discharged at atmospheric pressure. The casing discharge unit includes also vacuum seal means including a vacuum gate member for assisting in maintaining vacuum pressure in the interior of the casing discharge unit.

3,608,974
GELLING ADDITIVE INJECTION ARRANGEMENT FOR PREVENTING PIPELINE SLUMPING

Moye Wicks, III, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,350
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 7 Claims

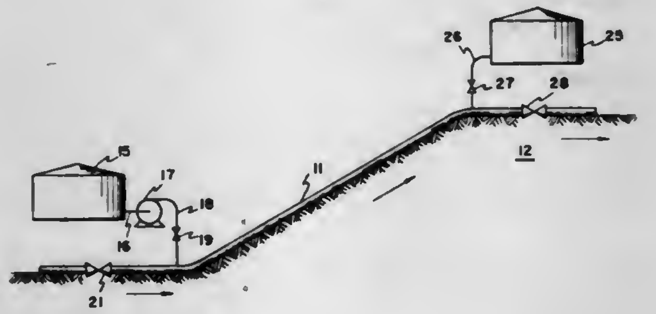


Method and apparatus for preventing downhill slumping in a shutdown slurry pipeline. Upon pipeline shutdown, a gelling agent is introduced into the slurry mixture to prevent the solid phase of the slurry from sliding downhill within the pipeline under the influence of gravity.

3,608,975
LIQUID INJECTION ARRANGEMENT FOR PREVENTING PIPELINE SLUMPING

Webster Morrill Sawyer, Houston; Erroll Vernon Seymour, Houston; Moye Wicks, III, Houston, Tex., and Lewis Philip Reiss, Denver, Colo., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,351
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 8 Claims

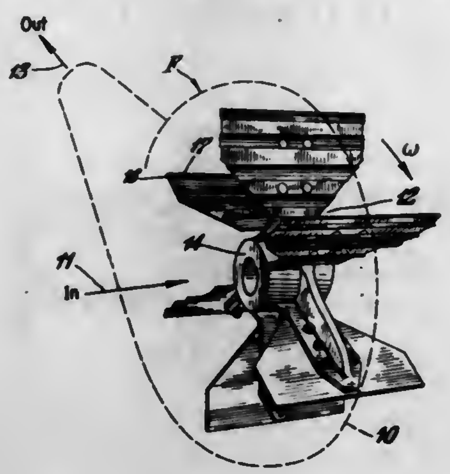


Method and apparatus for preventing downhill slumping in a shutdown slurry pipeline wherein a liquid is injected into the pipeline at those locations where slumping and plug formation by the slurry solid phase is likely to occur. Slurry material is removed from upper elevations of the line substantially simultaneously with the injection of the liquid.

3,608,976
FAN BLADE HAVING WEAR-RESISTANT RIBS AND FAN INCLUDING A PLURALITY OF SAME

Fines A. Zugelder, 335 Laramie Lane, Kokomo, Ind., and Ray K. Dehn, 2940 Galahad Drive, Indianapolis, Ind.

Filed Sept. 12, 1969, Ser. No. 857,525
Int. Cl. B65g *53/40*
U.S. Cl. 302—37 8 Claims

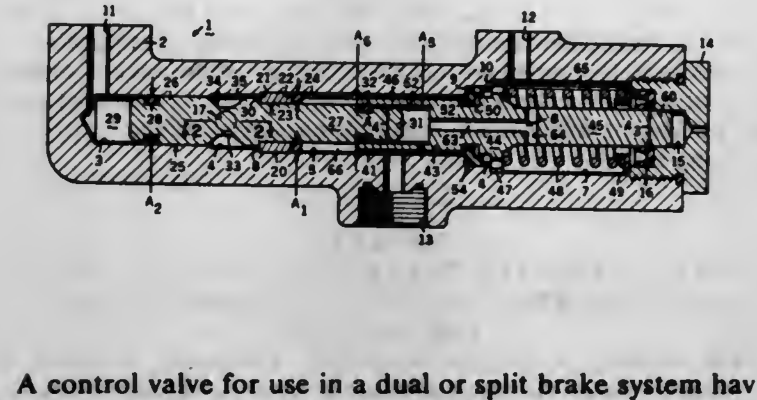


A fan blade is disclosed having a plurality of wear-resistant ribs extending across the width of its working surface and spaced along the length thereof for contacting solid particles, e.g. pulverized coal, to be propelled thereby. A fan including a plurality of blades as above-described is also disclosed.

3,608,977
CONTROL VALVE

Raymond J. Kersting, Dellwood, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Oct. 7, 1969, Ser. No. 864,483
Int. Cl. B60t *8/26, 17/22, 11/34*
U.S. Cl. 303—6 C 14 Claims

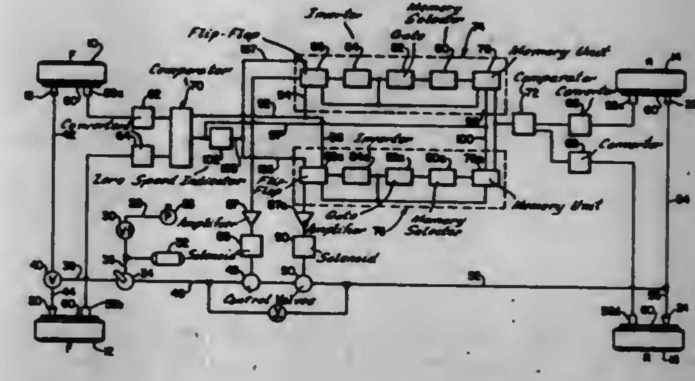


A control valve for use in a dual or split brake system having a switch-operating piston movable from a centered position toward opposed translated positions in response to a predetermined differential between separately supplied fluid pressures acting thereon and a metering piston normally movable to effect a metered application through said control valve of one of the supplied fluid pressures. A bypass passage is provided through the metering piston for connecting the one supplied fluid pressure and the applied fluid pressure in open pressure fluid communication to obviate the metering function of the metering piston, and the switch-operating piston is provided with a portion slidable in one end of the bypass passage to normally interrupt pressure fluid communication therethrough between the one supplied fluid pressure and the applied fluid pressure when said switch-operating piston is in its centered position.

3,608,978
ANTISKID BRAKE CONTROL

James C. Neisch, Warren, Mich., assignor to Rockwell-Standard Company, Pittsburgh, Pa.

Continuation of application Ser. No. 709,706, Mar. 1, 1968, now abandoned. This application May 1, 1970, Ser. No. 37,396
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 EB 9 Claims

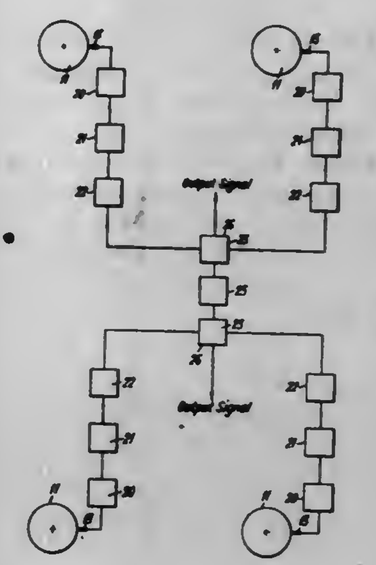


An automotive braking control system in which the rotational velocity of at least one of a set of wheels, usually the front wheels, provides a reference for comparison with the rotational velocity of at least one of another set of wheels to provide a signal to limit the braking effort at said other wheels, to a level just below that, which will cause said other wheels to lock up, except when said front wheels are first locked.

3,608,979
APPARATUS FOR INDICATING CHANGES IN ANGULAR VELOCITY, AND VEHICLE BRAKING SYSTEMS EMPLOYING SUCH APPARATUS

John Cadden Coyle, Wybunbury, near Nantwich, England, assignor to Rolls-Royce Limited, Derby, England

Filed Feb. 24, 1969, Ser. No. 801,538
Claims priority, application Great Britain, Mar. 6, 1968, 10,921/68
Int. Cl. B60t *8/08*
U.S. Cl. 303—21EB 19 Claims

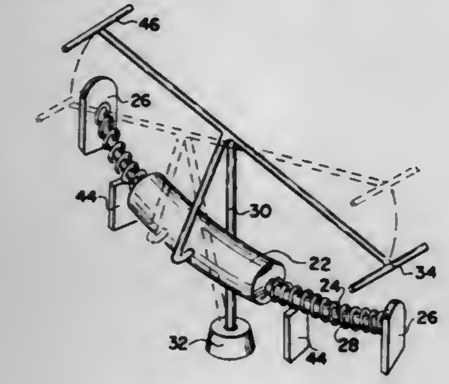


An apparatus for indicating changes in the angular velocity of a rotating body subjected to acceleration or deceleration, e.g. an automobile, has a velocity sensor producing an output having a frequency proportional to the angular velocity, a frequency-to-DC converter, a differentiator, a comparator for comparing the differentiated signal with a reference signal and for producing an output signal whenever the signals compared differ by a predetermined magnitude, which may be indicative of the onset of wheel-locking, and an actuator for reducing the deceleration (braking force) on the body in response to the comparator output signal.

3,608,980

ANTISKID AND ANTISPIN DEVICE

Walter S. Pawl, 2844 Powder Mill Road, Adelphi, Md.
Filed Feb. 25, 1969, Ser. No. 806,344
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 **2 Claims**

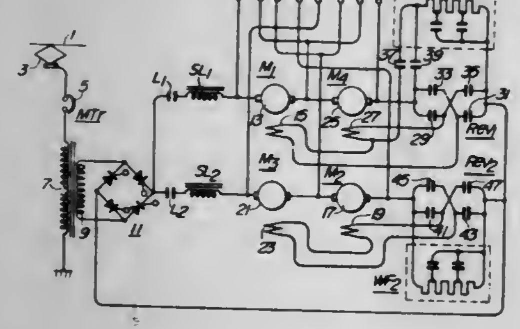


This invention comprises a means for detecting the point at which the braking wheel begins to skid or the driving wheel begins to spin, by using circumferential accelerometers mounted on the wheels to indicate the initiation of a skid or spin by an inertial displacement of each of the accelerometer weights as it passes the bottom of its rotation as the wheel starts to decelerate or accelerate its rotation faster than the resulting deceleration or acceleration of the vehicle, or is actually locked while the vehicle is still in motion, or is spinning while the vehicle is motionless. This displacement is used to control means for reducing the maximum brake pressure or the maximum power that may be applied to a maximum that the instant conditions of load, tire and road characteristics will permit without causing skidding or spinning of the particular wheel on which the accelerometers are mounted. Thus, by having the maximum pressure that may be applied to the brakes on each wheel, separately and automatically limited in this manner to get the maximum braking without skidding, a safe stop can be made even under the most hazardous conditions, in the shortest distance possible. Likewise, by having the maximum power applied, automatically limited in the same manner to get maximum acceleration, a fast spurt to the desired speed can be safely and most speedily accomplished, even under adverse road conditions.

3,608,981

RE-ADHESION APPARATUS FOR VEHICLES

Shigetomo Yui, Katsuta-shi; Tetsuji Hirotsu, Katsuta-shi, and Hisao Sonobe, Ibaragi-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan
Filed Mar. 18, 1969, Ser. No. 808,093
Claims priority, application Japan, Mar. 22, 1968, Oct. 28, 1968, July 24, 1968, Nov. 29, 1968, 43/18211;43/77927;43/62834;43/103619
Int. Cl. B60t *8/08*
U.S. Cl: 303—21 BE **25 Claims**

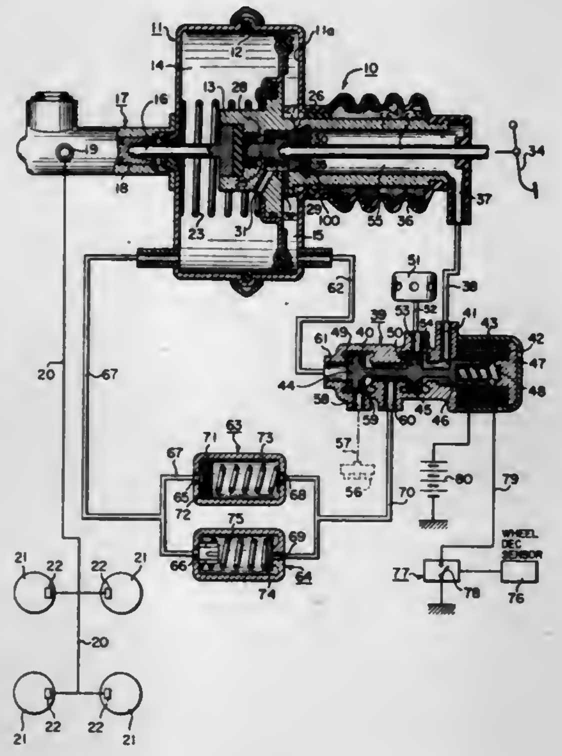


A re-adhesion apparatus for vehicles, including means adapted to detect together a change in the velocity of a nonadhesion axle with respect to the velocity of an adhesion axle and a differential of such change whereby nonadhesion phenomena in a vehicle can very early be detected in accordance with an output which is obtained when the detected values exceed preset levels.

3,608,982

METHOD AND APPARATUS FOR THE CONTROL OF ANTISKID BRAKE PRESSURE

Masami Inada; Tatsuo Hayashi, and Katuki Takayama, all of Kariya-shi, Aichi-ken, Japan, assignors to Aisin Seiki Company Limited, Asahi-machi, Kariya-shi, Aichi-ken, Japan
Filed June 12, 1969, Ser. No. 832,600
Claims priority, application Japan, June 22, 1968, 43/43534
Int. Cl. B60t *8/12, 13/60*
U.S. Cl. 303—21 F **7 Claims**



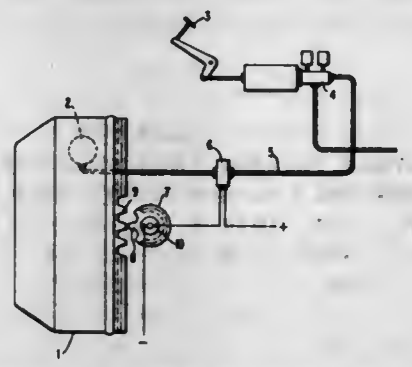
In a pneumatically servo-controlled hydraulic brake pressure control arrangement, comprising a pneumatic servo unit having two pneumatic piston chambers; a master cylinder unit operatively connected with said servo unit, on the one hand, and with hydraulic cylinder means for wheel or wheels of a powered vehicle, on the other; an air change off valve means adapted for receiving a wheel lock or lock-impending a signal from a wheel deceleration sensing means, the improvements comprise the provision of a check valve adapted for on-off controlling pneumatic flow from one of said servo piston chambers through said change off valve means, and a flow control valve adapted for throttling said flow, said check valve and said flow control valve being arranged in parallel to each other for suppressing otherwise possible excess repetition of hydraulic brake pressure increase and release in case of an abrupt and considerable application of the hydraulic braking effort.

3,608,983

INSTALLATION FOR PREVENTING THE LOCKING OF ONE OR SEVERAL WHEELS OF A VEHICLE DURING THE BRAKING

Adolf Steiner, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed June 23, 1969, Ser. No. 835,653
Claims priority, application Germany, June 22, 1968, P 17 55 791.4
Int. Cl. B60t *8/16*
U.S. Cl. 303—21 CG **3 Claims**

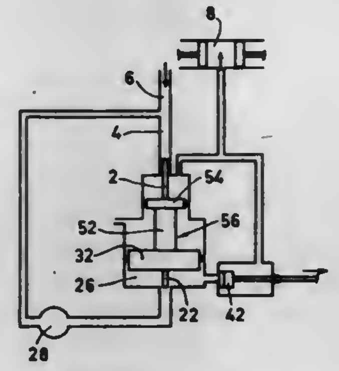
An installation for preventing locking of one or several wheels of a motor vehicle during braking in which the locking of a wheel is sensed magnetically producing a signal which is used as an input to a control unit controlling the reduction of the pressure medium in the brake line leading to the wheel starting to lock. U-shaped magnets are arranged in a magnetic wheel in such a manner that the alternating succeeding poles correspond to the tooth pitch of the brakedrum. A rotary mass is coupled with the magnetic wheel such that it leads the magnetic wheel during locking of the wheel and thereby actuates a switch provided in the switching installation and connected with a valve.



3,608,984

RESTRICTION DEVICE FOR AN ANTILOCK BRAKE SYSTEM

Derek Robert Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation
Filed July 24, 1969, Ser. No. 844,446
Claims priority, application Great Britain, Aug. 1, 1968, 36,746/68
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **5 Claims**

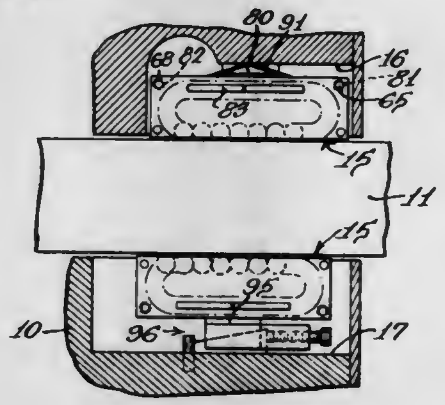


A restriction device for use within an antilock brake system to control pressurized fluid flow to the wheel brake. A restrictor element is slidably inserted within a section of the pressure line restricting flow therethrough; variations in the extent of penetration of the slide member will determine the degree of restriction.

3,608,985

BEARING PACK AND MOUNTING THEREFOR

Walter S. Swanson, Rockford, Ill., assignor to Sundstrand Corporation
Filed Apr. 2, 1970, Ser. No. 25,093
Int. Cl. F16c *29/06*
U.S. Cl. 308—6 C **16 Claims**

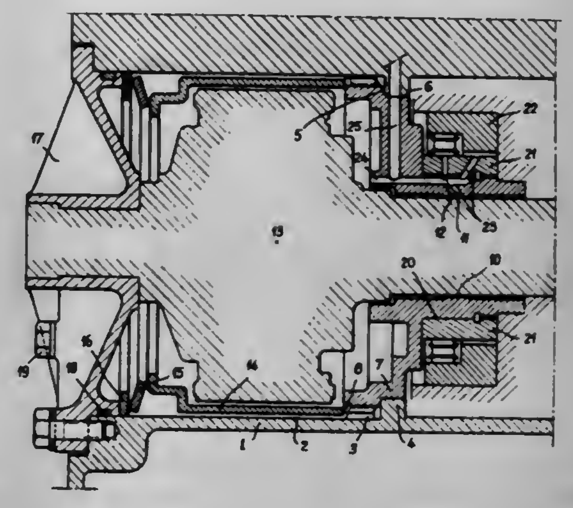


A bearing pack and mounting therefor which minimizes side forces, with the pack having a body member of a cross shape with a central section defining upper and lower lateral guide surfaces for at least two laterally spaced circuits of rolling bearings and with a lateral section extending beyond both sides of the central section intermediate the height thereof to have the lower surfaces define load bearing surfaces, additional members are associated with the body member for retaining the rolling bearings in their travelling circuits and the mounting includes a frame element with a recess for receiving the pack with a backup member aligned with said central section to permit movement of the pack relative to said backup member about plural axes to assist in obtaining uniform loading of the rolling bearings.

3,608,986

BEARING ASSEMBLIES

Jean Piret, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine), France and Automobiles Peugot, Paris, France
Filed Dec. 22, 1969, Ser. No. 886,996
Claims priority, application France, Dec. 31, 1968, 183 138
Int. Cl. F16c *31/00*
U.S. Cl. 308—15 **1 Claim**

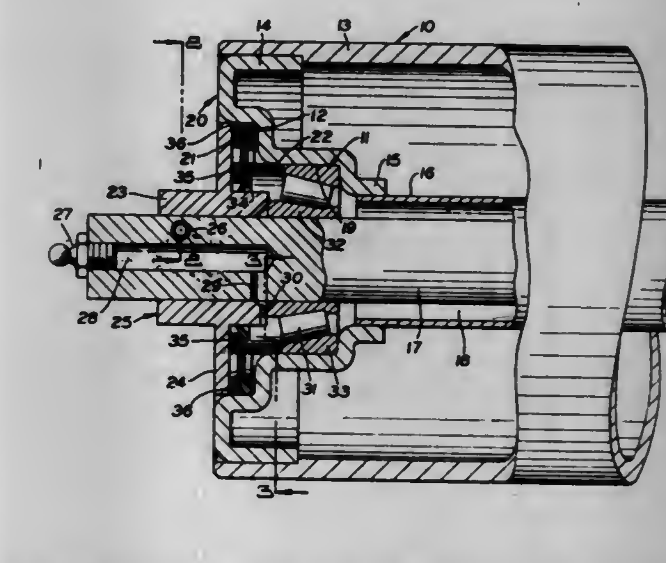


Bearing assembly for change speed mechanism which comprises a male peripheral surface adapted to engage a female surface of the casing enclosing said mechanism, a longitudinal bearing face and splines adapted to engage corresponding splines of said casing, this bearing assembly being characterized in that a member opposite to the casing-engaging bearing face coacts in transverse planes on the one side with said bearing and on the other side with a resilient member held by an abutment member against axial movement in relation to the casing.

3,608,987

SEAL FOR CONVEYER ROLLER BEARING

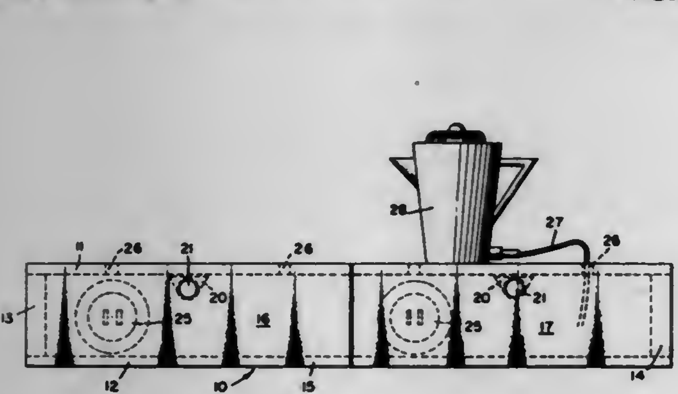
Kenneth K. Jordan, Bradley, W. Va., assignor to Electric & Machine Company, Huntington, W. Va.
Filed Oct. 9, 1969, Ser. No. 865,137
Int. Cl. F16c *13/00, 33/78*
U.S. Cl. 308—187 **4 Claims**



A seal incorporated in an antifriction-bearing unit of the type used in mounting conveyor belt supporting or similar rollers. It comprises a one-piece seal in the form of an annular collar, preferably of nylon, which rotates with the roller and relative to the roller axle hub or bearing retainer. The seal collar is of such a cross section that it provides three relatively spaced annular sealing and bearing surfaces which effectively contact with adjacent fixed surfaces to seal lubricant in the bearing unit and to prevent the entry of dust into the bearing unit.

3,608,988
CULINARY APPLIANCE SHELF UNIT

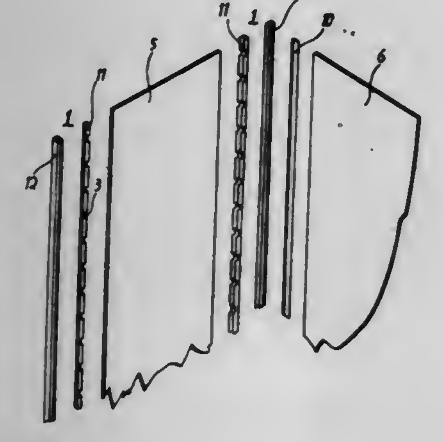
Theodor K. L. Amberg, Wasserloserstrasse 15, 8755 Alzenau, Germany
Filed July 2, 1969, Ser. No. 838,503
Claims priority, application Germany, July 5, 1968, P 17 79 092.0
Int. Cl. A47b *77/08*
U.S. Cl. 312—223 **4 Claims**



The invention provides an improved shelf unit for electrical, and other, kitchen appliances adapted to be supported on the wall or to rest on the work surface of a counter or of a floor cabinet. The shelf is hollow, and its interior space is adapted to house electrical outlets and cables as well as tools accessory to appliances normally stored on the shelf of the unit.

3,608,989
CABINET OR CABINET PANEL, FROM PREFABRICATED PARTS

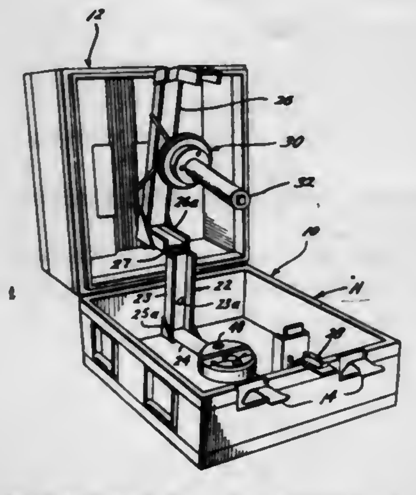
Eberhard Wurster, and Thomas Peter Teschemacher, both of Reutlingen, Germany, assignors to Wilhelm Weller, Mobelfabrik, Nurtingen, Neckar, Germany
Filed Sept. 6, 1968, Ser. No. 757,969
Claims priority, application Germany, Oct. 23, 1967, W 45027
Int. Cl. A47b *43/00*
U.S. Cl. 312—257 **3 Claims**



A prefabricated cabinet assembly having corner members comprising a pair of U-shaped rails, one nested inside the other. The inner rail has a plurality of notches in its sides for accommodating shelf support rails. Side panels are inserted into the inner rail. The rails are held together by mating grooves on their sides. The outer rail also has dovetail grooves in its outer sides for receiving rear panel connecting slats.

3,608,990
CONTAINER HAVING INTERNAL OBJECT SUPPORT MEANS AND A PIVOTED TOP SECTION

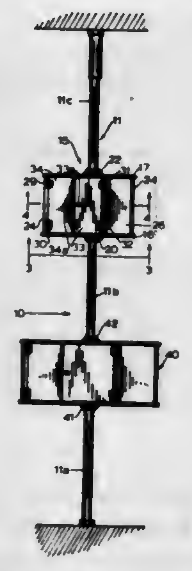
William H. Arlitt, 1024 S. Laredo St., Antonio, Tex., and Ethelbert J. Baker, San Antonio, Tex.
Filed Apr. 10, 1969, Ser. No. 815,156
Int. Cl. A47b *88/00*
U.S. Cl. 312—327 **22 Claims**



A container having a bottom section on which an object may be supported, a top section hingedly connected to the bottom section for swinging between raised and lowered positions, and means for latching the top section to the bottom section when the top section is lowered. An arm carrying a holddown part is mounted on the bottom section of the container for swinging between a lowered position in which such part bears on the supported object and a raised position above the object to permit it to be removed from supported position on the bottom section. A means is provided for releasably holding the arm in its lowered position to maintain the holddown part in engagement with the object. The holddown part is connected to the arm for movement toward and away from the supported object while the arm is held in lowered position.

3,608,991
COLLAPSIBLE SPRING-LOADED POLE-SUPPORTED CABINET

Ammon L. Wade, 801 Kenly Road, Goldsboro, N.C.
Filed Mar. 3, 1969, Ser. No. 803,689
Int. Cl. A47b *88/00*
U.S. Cl. 312—345 **2 Claims**

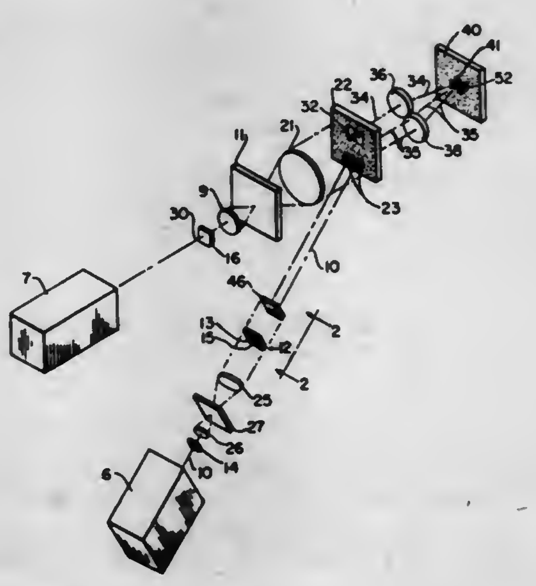


A home storage cabinet suitable for use as a "bar" employs a set of collapsible wall and door members which can

be broken down for storage and moving and can be assembled to provide storage space and held clamped in the assembled position between spring-loaded pole sections making up an extensible pole that extends between ceiling and floor.

3,608,992
MULTIPLEX HOLOGRAPHY WITH TRESNEL DIFFRACTION PATTERN CODED REFERENCE BEANS

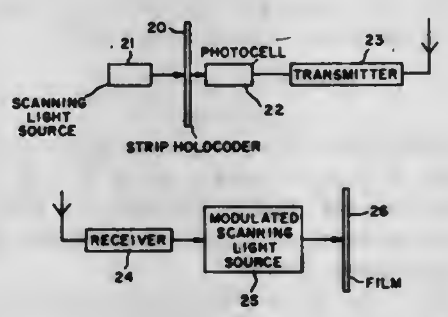
Robert A. Phelps, Kettering, and Thomas J. Negrelli, Dayton, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed June 18, 1970, Ser. No. 47,372
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **8 Claims**



The present invention relates to a method of forming and utilizing a hologram by placing a Fresnel diffraction pattern and a Fourier transform lens in the reference beam during the formation of the hologram. An object pattern is placed in the object beam. A hologram of the near field or the far field of the object beam is formed by interfering the object beam and the reference beam at a recording medium in the focal plane of the Fourier transform lens. A reconstruction of the object pattern is produced from the hologram by passing the reference beam through the Fresnel diffraction pattern, the Fourier transform lens, the hologram, and a reconstruction lens.

3,608,993
METHOD AND APPARATUS FOR THREE-DIMENSIONAL IMAGING

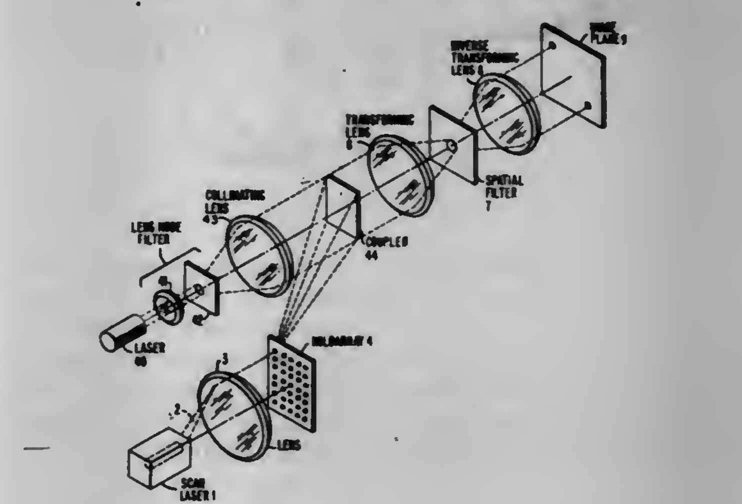
Dominick John De Bitetto, Briarcliff Manor, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 10, 1968, Ser. No. 735,710
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **15 Claims**



A three-dimensional imaging system and method in which original image information is obtained in the form of a series of full-field two-dimensional image recordings from different directions in a common plane. The three-dimensional image can be reconstructed by conversion of the recordings to a strip hologram employing coherent light, by viewing the recordings with incoherent light by means of an optical system having a moving lens or mirror, or by means of an optical system including an autocollimating screen.

3,608,994
HOLOGRAPHIC INFORMATION STORAGE-AND-RETRIEVAL SYSTEM

James A. McDonnell, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 28, 1969, Ser. No. 819,679
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **3 Claims**

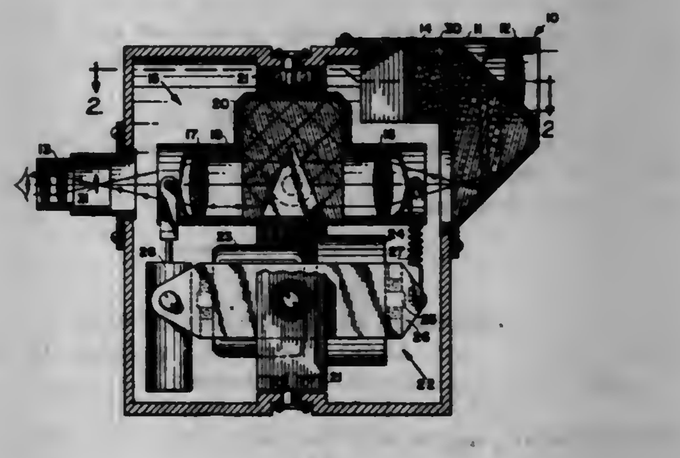


The invention concerns an information retrieval system in which a hologram is utilized as a mass-storage media that is scanned by means of a laser beam. The information which is retrieved is read-out onto a photodiode array. Interposed between the hologram and the photodiode array is a key in the form of a spatial filter. When correlation is secured between the key and the information scanned in the hologram, an output beam is directed through the filter and onto the photodiode array.

A second hologram is further interposed between the filter and the first hologram to provide for conversion to a single font when different fonts are employed in the first hologram.

3,608,995
INTERMEDIATE OPTICAL PROCESSING STABILIZER

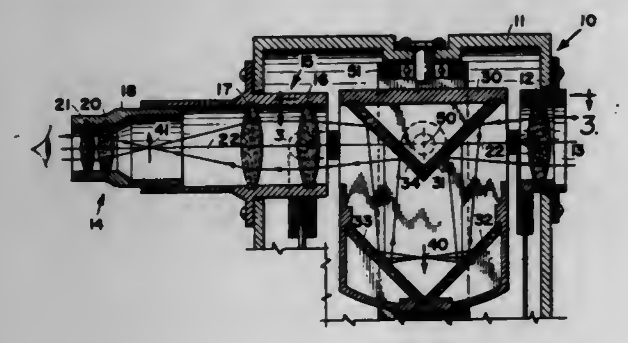
William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.
Filed Sept. 4, 1968, Ser. No. 757,287
Int. Cl. G02b *23/02*
U.S. Cl. 350—16 **6 Claims**



An optical stabilizing device incorporating a relay optical system of substantially unit magnification which is inertially stabilized and adapted to relay an image from the objective lens focal surface a distance of one focal length of the objective lens which is insensitive to pivot-point mounting, and other than unity magnification which is stabilized by selected pivot-point mountings.

3,608,996
OPTICAL PATH DETOUR STABILIZATION SYSTEM

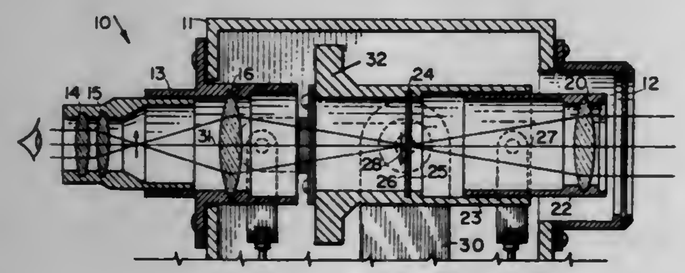
William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.
Filed Sept. 4, 1968, Ser. No. 757,288
Int. Cl. G02b *23/02*
U.S. Cl. 350—16 **2 Claims**



An optical stabilizing device in which the image from an objective lens is passed through optics on an inertially stabilized platform, said platform comprising optics which divert the light rays from the optical path and return the light rays to the path in axial alignment with the light ray prior to divergence, the additional light path portion being a distance equal to one focal length of the objective lens.

3,608,997
FOCAL PLANE STABILIZATION SYSTEM

William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.
Filed Sept. 4, 1968, Ser. No. 757,289
Int. Cl. G02b *23/00*
U.S. Cl. 350—16 **11 Claims**

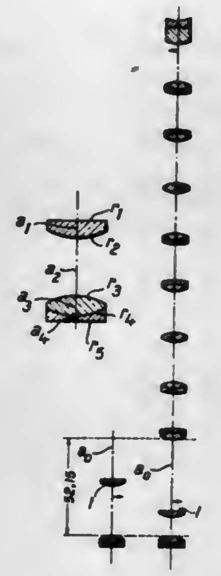


An image-stabilizing device incorporating in one embodiment an objective lens rigidly mounted to a transmissive image display plate in which the image from the objective lens is focused on the image display plate on one side and displayed on the opposite side thereof in which the lens and image display plate are pivoted about an axis substantially aligned with the focal plane of the image display plate and further incorporating nonstabilized optics viewing the obverse side of the image display plate and in the second embodiment having an image-receiving plane and an inertially stabilized objective lens mounted for pivotal movement about the focal plane.

3,608,998
VARIABLE POWER ENDOSCOPE

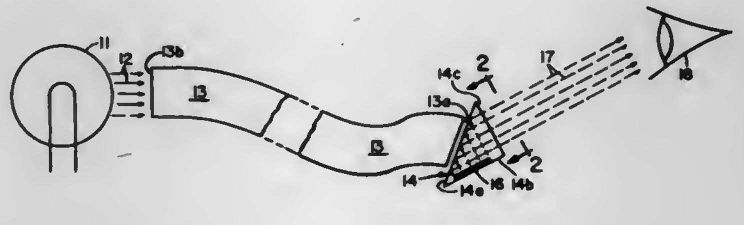
Walter Rinker, Am Anger, Germany, assignor to Richard Wolf GmbH, Knittingen, Wurttenberg, Germany
Filed Nov. 1, 1968, Ser. No. 772,522
Claims priority, application Germany, Nov. 25, 1967, P 15 66 112.8
Int. Cl. G02b *7/04, 7/10*
U.S. Cl. 350—42 **3 Claims**

An instrument for examining a relatively large area of the interior of a tube or other cavity in the human body in order to locate a lesion therein, and for then examining said lesion in greater detail without removing said instrument from said tube or other cavity. A variable magnification optical system is incorporated in said instrument sufficiently near its outward or proxal end so that the overall magnification of the instrument can be changed without removing it from said tube or other cavity.



3,608,999
MONITORING AND INDICATION SYSTEM UTILIZING FIBER OPTICS

Alan C. Bailey, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,459
Int. Cl. G02b *5/14, 5/16*
U.S. Cl. 350—96 B **5 Claims**

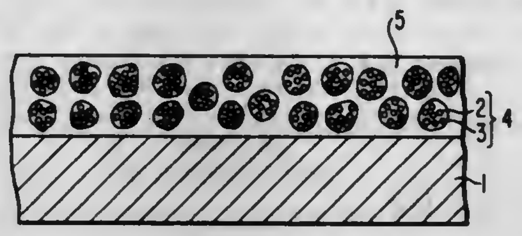


A system for monitoring and giving indications of the deenergized and energized conditions of a light source which, when energized, emits rays including actinic rays. One end of a fiber optic bundle is disposed adjacent a reflective surface of a normally transparent device of a phototropic material or having phototropic properties and the other end of the bundle is disposed adjacent said light source. An indication symbol is disposed so as to be reflected by the reflective surface of the transparent device when no light is transmitted by the fiber optic bundle from the light source to the reflective surface. When light is so transmitted, the phototropic properties of the normally transparent device cause the device to be darkened so that the indication symbol is no longer visible or is no longer visible to any appreciable extent.

3,609,000
TRANSMISSION-TYPE PROJECTION SCREEN

Shizuo Miyano; Hirotoshi Endo; Asaji Kondo, and Shingo Ooue, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami Ashigara-Machi, Ashigara-Kamigun, Kanagawa, Japan
Filed Sept. 16, 1969, Ser. No. 858,261
Claims priority, application Japan, Sept. 16, 1968, Sept. 17, 1968, 43/66819;43/67133
Int. Cl. G03b *21/60*
U.S. Cl. 350—126 **13 Claims**

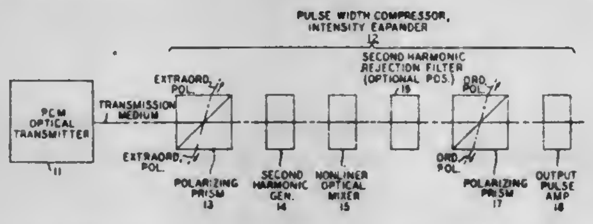
A transmission-type projection screen comprising a support having thereon a layer of a binder having microcapsules dispersed therein, said microcapsules containing particles of a material having a refractive index different from that of said binder.



The transmission-type projection screen is one wherein the refractive index of said material differs from the refractive index of said binder by a factor of at least 0.02.

3,609,001
NONRECIPROCAL OPTICAL DEVICE USING POLARIZED SECOND HARMONIC GENERATED RADIATION

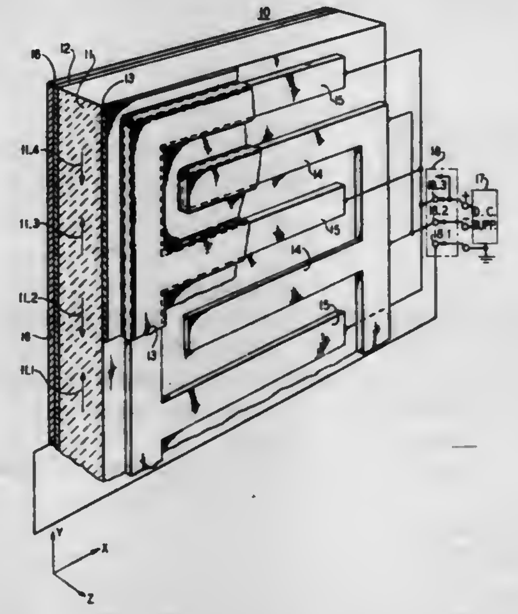
Heinz Paul Weber, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 1, 1970, Ser. No. 42,243
Int. Cl. G02b *5/30*
U.S. Cl. 350—147 **5 Claims**



There is disclosed a nonreciprocal optical device in which optical wave energy is admitted through a polarizer, generates a second harmonic or orthogonal polarization, and mixes with the second harmonic to generate phase-matched fundamental wave energy of the orthogonal polarization, which is extracted through a crossed polarizer. Nonreciprocity results from the lack of phase-matching in the backward direction.

3,609,002
MULTIPLE ELEMENT OPTICAL MEMORY STRUCTURES USING FINE GRAIN FERROELECTRIC CERAMICS

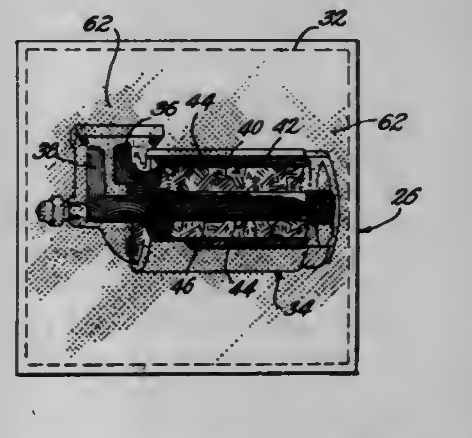
David B. Fraser, Berkeley Heights; Juan R. Maldonado, North Plainfield, and Allen H. Meltzler, Morristown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 30, 1969, Ser. No. 889,087
Int. Cl. G02f *3/00*
U.S. Cl. 350—150 **11 Claims**



An optical image storage and display device is obtained by using the electrical polarization property of a plate of fine grain polycrystalline electrooptic ferroelectric, such as lead zirconate-lead titanate. Under the influence of an applied electric field, the polarization of a selected portion of the plate of ferroelectric locally is switched through a predetermined angle of less than or equal to 90°, if and when a scanning light beam or an electron beam is incident upon a photoconductive film deposited on the plate. Readout of the resulting permanent polarization is accomplished by means of another scanning light beam traversing the ferroelectric plate, the plate being located between a polarizer and an analyzer. Thereafter, the polarization of the plate can be switched back through an appropriate angle to its initial state ("erased", by means of another applied electric field.

3,609,003
ANIMATED DISPLAY DEVICE

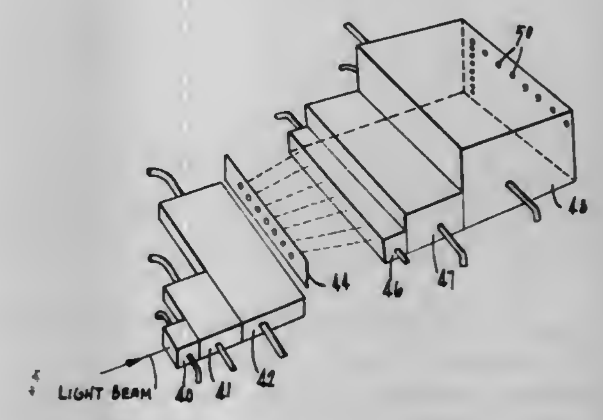
Anthony Siksai, 2705 Lahser Road, Bloomfield Hills, Mich.
Continuation-in-part of application Ser. No. 197,128, May 23, 1962, now abandoned. This application Feb. 28, 1968, Ser. No. 709,138
Int. Cl. G02b *1/24*
U.S. Cl. 350—157 **10 Claims**



A device for animating a picture painted on a transparency. A light-intercepting sheet having a pattern of embossed motion lines overlies portions of the picture to be animated an the two are sandwiched between rotary and stationary polarized sheets. The picture becomes animated when the rotary polarizer is rotated and light is transmitted through the sheets in a manner to illuminate the picture.

3,609,004
LIGHT DEFLECTION SYSTEM

George William Taylor, Princeton, N.J., assignor to RCA Corporation
Filed May 14, 1968, Ser. No. 729,067
Int. Cl. G02f *3/00*
U.S. Cl. 350—160 **5 Claims**



Apparatus for selectively deflecting a light beam into one of a plurality of beam paths by selectively changing the effective optical path of the beam through a refractive transparent fluid. A first embodiment selectively varies the quantity of fluid traversed by the light beam. Other embodiments use the combined refractive effect of transparent fluids in adjacent transparent fluid chambers to position a light beam.

3,609,005

VARIFOCAL OPTICAL SYSTEM FOR ZOOM LENS HAVING ULTRA-HIGH ZOOM RATIO

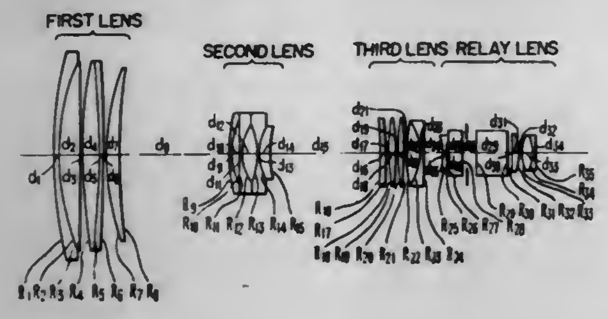
Souichi Nakamura, Kamakura-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 1, 1969, Ser. No. 870,481

Claims priority, application Japan, Oct. 8, 1968, 43/72886

Int. Cl. G02b *15/14*

U.S. Cl. 350—184 **3 Claims**



Varifocal optical system for zoom lens of this invention attains a zoom ratio larger than 20 and consists of convergent, divergent and convergent lens groups. The second group is movable over a wide range and the third group is moved in the direction opposite to that of the second group so as to constitute the zoom operation maintaining the position of image surface constant.

3,609,006

ZOOM PROJECTION LENS SYSTEM HAVING A MOVEABLE POSITIVE COMPONENT

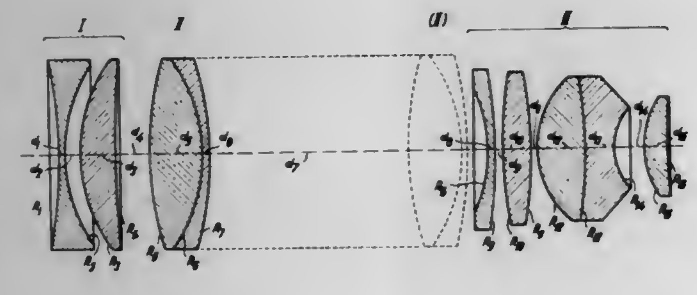
Ladislav Pospisil, Veselicko, Czechoslovakia, assignor to Meopta narodni podnik, Prerov, Czechoslovakia

Filed July 8, 1969, Ser. No. 839,990

Claims priority, application Czechoslovakia, July 12, 1968, 5120-68

Int. Cl. G02b *15/14*

U.S. Cl. 350—184 **4 Claims**



A three-member zoom projection lens system whose front member is an airspaced negative doublet, whose central element is a positive cemented doublet, and whose rear member consists of three simple lenses and a cemented doublet, the central member being axially movable between the fixed front and rear members. A lens combining an *f*-number of 1.2 with a ratio of maximum and minimum focal lengths of 2.4 in a projector for Super-8 motion picture film can be obtained by maintaining certain parameters in the lens design.

3,609,007

DEVICE FOR CONVERTING CIRCULARLY POLARIZED RADIATION INTO PLANE-POLARIZED RADIATION

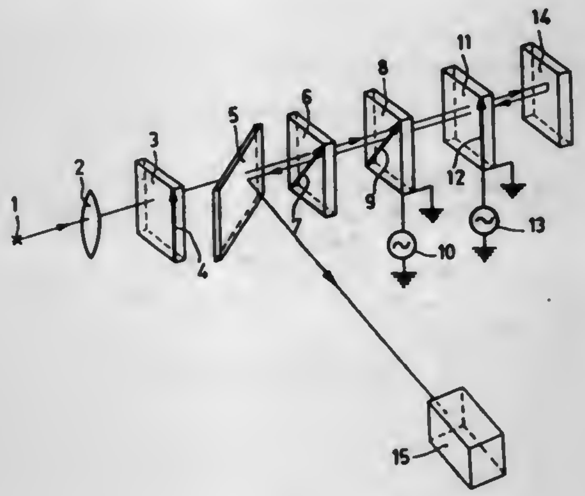
Theodorus Hendrikus Peek, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,863

Claims priority, application Netherlands, Nov. 8, 1968, 6815909

Int. Cl. G02f *1/26*

U.S. Cl. 350—150 **3 Claims**



A device for converting a beam of light into a plane-polarized beam having a rotating plane of polarization using a serially arranged polarizer, quarter-wave plate, a pair of electrooptic crystals having their principle planes mutually offset by 45° and modulated by voltage sources in phase quadrature, and a retroreflective element for redirecting the polarization through the electrooptic crystals and the quarter-wave plate.

3,609,008

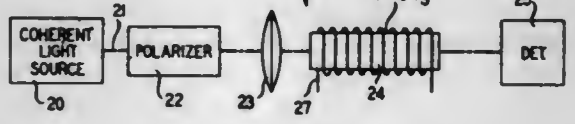
THALLIUM IRON FLUORIDE AND DEVICES UTILIZING SAME

Joseph F. Dillon, Jr., Morris Township, Morris County, and Howard J. Guggenheim, Somerville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 29, 1968, Ser. No. 771,544

Int. Cl. G02f *1/22*

U.S. Cl. 350—151 **8 Claims**



Thallium iron fluoride $(\mathrm{T1FeF_3})$ appears to be isostructural with $\mathrm{RbFeF_3}$. Described device uses depend primarily on the magneto-optic effect below the Curie temperature of about 77° K.

3,609,009

BINARY LIGHT BEAM DEFLECTOR USING ACOUSTIC WAVES

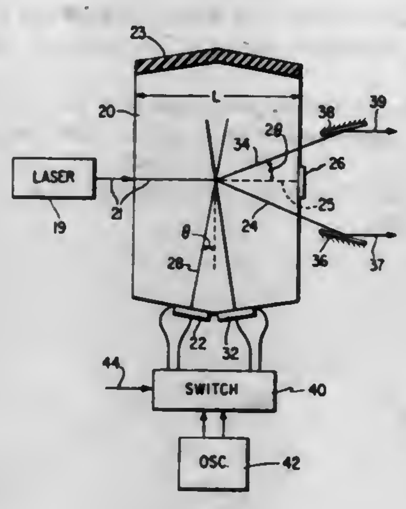
Robert D. Lohman, Princeton; Gerard A. Alphonse, Princeton, and Walter F. Kosonocky, Skillman, all of N.J., assignors to RCA Corporation

Filed Feb. 13, 1969, Ser. No. 799,020

Int. Cl. G02f *1/28*

U.S. Cl. 350—161 **2 Claims**

A binary light beam deflector is disclosed which includes a medium, such as water or quartz, which is transparent to an incident light beam. Two electroacoustic transducers are positioned to propagate acoustic waves of the same frequency through the medium so that each acoustic wave intercepts the incident beam at an angle equal to the Bragg angle. A radiofrequency oscillator is connected to one or the other of the transducers to cause deflection of the light beam in one or the other of two output directions. A plurality of the described deflectors may be arranged in cascade to provide any desired amount of deflection in binary steps.



3,609,010

SPECTRAL ZONAL FILTER

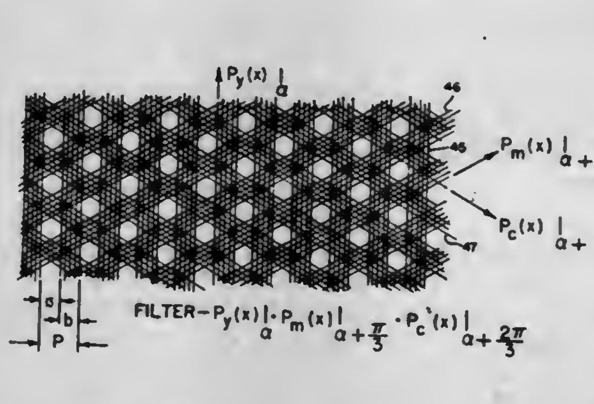
Peter F. Mueller, Concord, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Division of Ser. No. 564,340, July 11, 1966, abandoned.

Filed Jan. 30, 1969, Ser. No. 810,897

Int. Cl. G02b *27/38*

U.S. Cl. 350—162 SF **5 Claims**



This invention relates to spectral zonal photography in which spectral zones of a scene are stored with unique respective carrier modulations on a colorblind photostorage medium such as a black-and-white panchromatic film from which the scene can be reconstructed in color by Fourier transform techniques with spatial and spectral filtering, and in particular to methods and means to effect such storage without the intervention of a plurality of separate individual images of the scene. Each of several spectral zones is modulated with a periodic function, such as a grating having a unique orientation relative to the scene. Embodiments are disclosed in which these zones and their respective modulations can be stored in sequence or simultaneously. Unique spectral zonal filters are disclosed for simultaneous storage of several spectral zones of a scene. In one aspect of the invention such filters can be employed in direct contact with the storage medium. In another embodiment. Fourier transform techniques are employed with spatial and spectral filtering to effect simultaneous storage of several spectral zones of a scene. In all embodiments the final storage of color-coded information in a colorblind storage medium is useful to reconstruct the original scene in the original colors or in any desired portion or portions of the visible spectrum by means of Fourier transform and filtering techniques. The reconstructed scene can be viewed in full color or recorded on a color-sensitive medium.

3,609,011

ZOOM RING FOR ZOOM LENS

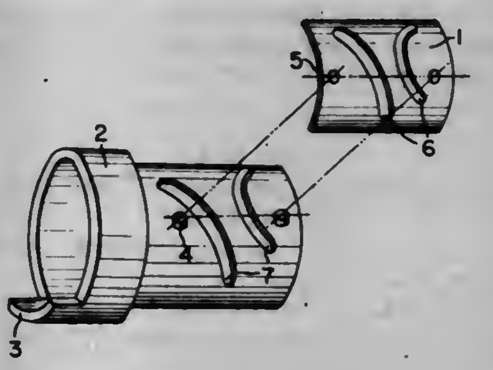
Keiichi Sakaguchi, Yokohama-shi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1969, Ser. No. 850,131

Claims priority, application Japan, Aug. 20, 1968, 43/71,669

Int. Cl. G02b *7/10*

U.S. Cl. 350—187 **2 Claims**



A zoom ring is provided for a zoom lens, the ring being made of at least two members; a cylindrical member including a rotational limit stop and provided with cam slots, and a curved member or plate formed with matching cam slots. The cam slots in both members register with each other when the curved plate is positioned on the cylindrical member by means of pin connections, the cam slots in the cylindrical member being relieved while the plate cam slots are accurately machined.

In zoom lens systems, the zoom lens or lenses are shifted longitudinally with respect to the optical axis of the objective by means of a cam ring having formed therein, cam grooves which may be either curved or straight grooves.

The cam grooves are machined individually to close tolerances to provide accurate focusing, particularly when two lens elements of the objective are separately movable. The zooming cam ring is further provided with a stop member, either in the form of a pin or projection and which may be integrally formed with the ring, to prevent rotation of the ring beyond a predetermined angle and to provide a positive limit for the focusing plane of the objective. Such rings in the past have been manufactured on an individual basis due to the close tolerances required in forming the cam grooves and in setting the stop member. In addition, the wearing down or breaking of the cutting tools led to further complications in providing an accurately machined cam ring suitable for optical work.

3,609,012

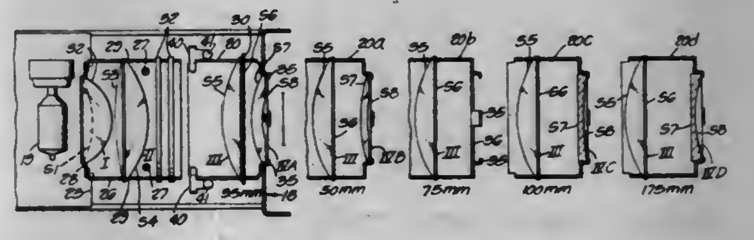
OPTICAL CONDENSING SYSTEM WITH VARIABLE EFFECTIVE FOCAL LENGTH

Chan Street, El Segundo, Calif., assignor to Spindler & Sauppe, Inc., Glendale, Calif.

Filed Oct. 6, 1969, Ser. No. 864,117

Int. Cl. G02b *3/04*

U.S. Cl. 350—189 **12 Claims**

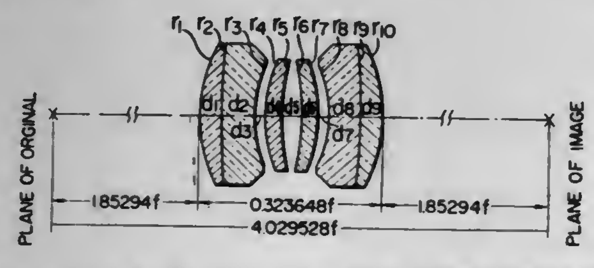


A versatile optical condensing system readily convertible for use with projection lenses covering a wide range of focal lengths, as 35 to 250 mm. using a common group of lenses by themselves or in combination with a selected one in a second group of lenses. This system is characterized by its simplicity, compactness, highly uniform light intensity, minimal chromatic abberation and ability to hold the image size of the light source to a minimum at the entrance pupil of the projection lens to avoid the need for costly high-speed projection lenses. The basic lens system utilizes three lens the second and third of which each have one aspheric surface designed with controlled spherical abberation and so that the light rays passing between these two aspheric surfaces are substantially parallel to the optical axis. This feature makes it feasible to vary the axial spacing of these two lenses as necessary to accommodate the basic lens system for optimal use wit a selected supplemental condensing lens and one of several projection lenses of differing focal lengths. The invention makes it possible to manufacture of wide range of condensing system sizes at very substantial cost savings using a minimum number of variable components.

3,609,013
SYMMETRICAL FOUR-COMPONENT PHOTOCOPYING LENS SYSTEM

Motoaki Kawazu, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 26, 1970, Ser. No. 22,798
Claims priority, application Japan, Mar. 29, 1969, 44/24,126
Int. Cl. G02b *9/58*
U.S. Cl. 350—220 **1 Claim**

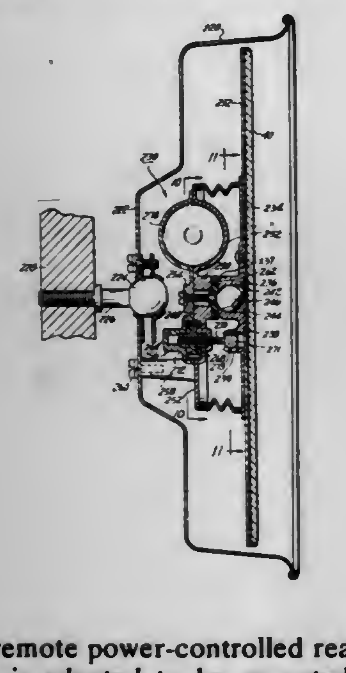


A holosymmetrical photocopying lens system with a field angle of 53° and an aperture ratio of 1 : 4.5 is provided. Within the range from *c*-line (565.3 mμ) to *g*-line (435.8 mμ), both of the spherical aberration and astigmatism are well corrected with a resolution of 20 lines/mm.

3,609,014
ELECTRIC REMOTE CONTROL REAR VIEW MIRROR

Arthur W. Kurz, Jr., P.O. Box 454, Birmingham, Mich.

Continuation-in-part of application Ser. No. 467,064, June 25, 1965, now abandoned. This application June 10, 1970, Ser. No. 45,141
Int. Cl. G02b *5/08;* B60n *1/06*
U.S. Cl. 350—289 **5 Claims**

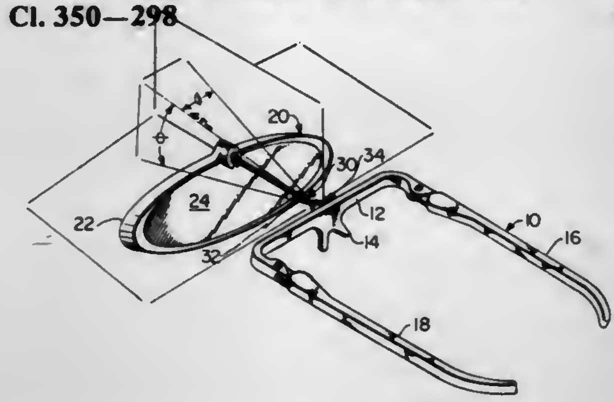


An electric remote power-controlled rearview mirror for a vehicle, which is adapted to be mounted externally of the vehicle adjacent the windshield and at the left or right side of the vehicle for convenient viewing by the operator of the vehicle. The mirror is pivotally supported by a three-point pivot connection of which the center pivot connection is stationary to permit angular movement of the mirror therearound. The remaining two pivot connections are spaced an equal distance radially outwardly from the center pivot and are connected to pins or rods which are individually actuatable for longitudinal movement by power means including at least one reversible motor to thereby positively angularly adjust the mirror around the center pivot.

3,609,015
HAIRSTYLING AND MAKEUP MIRROR DEVICE

Jules Messinger, Weinbergstrasse 74, 8006 Zurich, Switzerland

Continuation-in-part of application Ser. No. 833,900, June 13, 1969, now abandoned. This application Aug. 15, 1969, Ser. No. 850,367
Int. Cl. G02b *7/18;* G02C *7/14*
U.S. Cl. 350—298 **4 Claims**

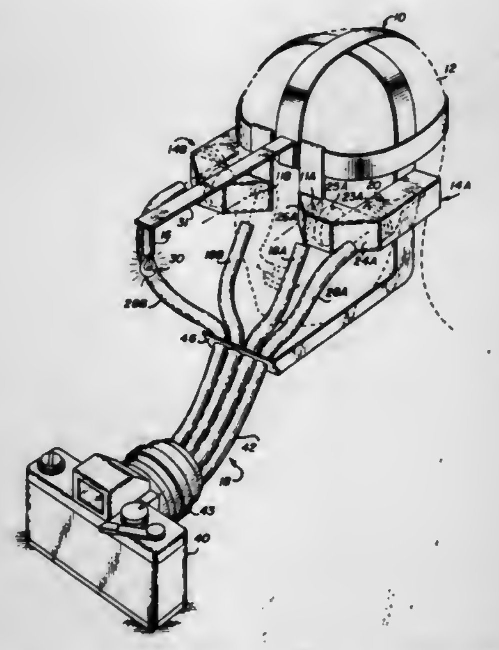


A novel hairstyling and makeup mirror device is disclosed, the device including a frame adapted to be worn about the the eyes of the user, similar to an eyeglass frame. A normal or flat or, if desired, even a magnifying mirror is attached to the front or forehead bar portion of the frame by means of an elongated rod which may be telescopically constructed. One end of the rod is preferably pivotally attached to the mirror while the other end of the rod is pivotally attached to the frame, the pivotal connection at the frame in the preferred embodiment comprising a magnetically operable ball and socket joint. With the novel device, the mirror is displaceable to virtually any position relative to theeyes of the user such that when the user stands with his back toward a fixed mirror, the back of the head can be viewed so as to facilitate hairstyling. Alternatively, the mirror can be displaced into a position so as to provide a reflection of the viewer's eyes to facilitate the application of eye makeup or other cosmetic operations.

3,609,016
VISION-TESTING DEVICE FOR VISUALLY DISPLAYING A CALIBRATED SIGNAL TO THE EYE AND RECORDING THE RESPONSIVE MOVEMENT THERETO

Arthur Jampolsky, Mill Valley, Calif., assignor to Optical Sciences Group Incorporated, San Francisco, Calif.

Continuation of application Ser. No. 699,896, Jan. 23, 1968. This application Dec. 30, 1969, Ser. No. 888,123
Int. Cl. A61b *3/14;* G02b *27/02*
U.S. Cl. 351—7 **6 Claims**

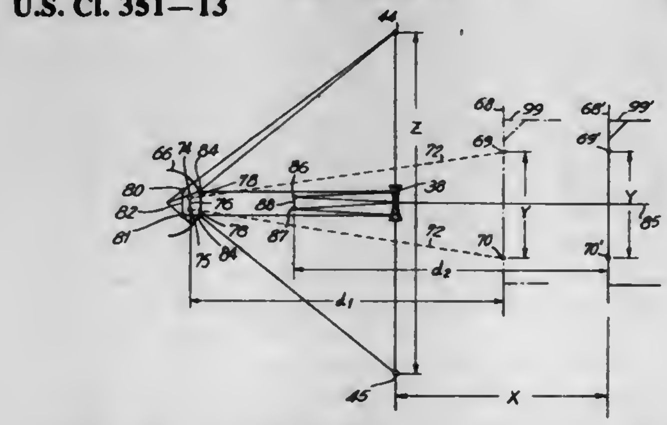


A vision-testing device in the form of a frame which is placed in contact with and supported by the head of the subject to allow the subject freedom of head movement during examination. The frame carries a pair of signal display elements plus optical path modifiers, one for each eye, for forming, displaying and directing a separate display stimulus toward each eye without interfering with the normal vision. The frame further carries a set of flexible light pipes whose objectives are positioned to image the eyes upon a photographic recording means without interfering with the normal vision of the subject along with a record of the stimulus which is being directed to the eyes. Finally, the frame carries a point source of light which is positioned forward of and in a plane bisecting the eyes to provide corneal reflections from both eyes.

3,609,017
MEANS FOR EXTENDING THE RANGE OF KERATOMETERS

Benjamin Nuchman, 820 Birchwood Drive, Westbury, N.Y., and Sang Y. Whang, 8445 S. W. 148th Drive, Miami, Fla.

Continuation-in-part of application Ser. No. 814,895, Apr. 7, 1969, now abandoned. This application May 21, 1970, Ser. No. 39,346
Int. Cl. A61b *3/10*
U.S. Cl. 351—13 **18 Claims**

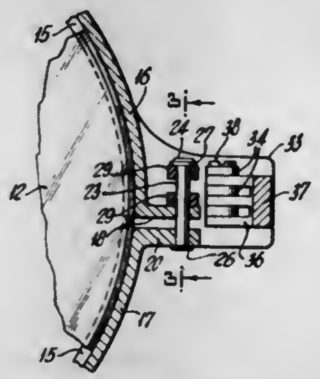


Means for extending the range of a keratometer to measure the curvature of a cornea in a region spaced a greater distance from the optical axis of said keratometer than the region normally measured. Said means includes a further set of illuminated mires adapted to produce a virtual image inside the cornea larger than the virtual image produced by the original mires, and diverging lens means for producing a secondary virtual image from the virtual image produced by said further set of mires which can be read directly by said keratometer while being representative of the radius of curvature in the new region.

3,609,018
SPECTACLES HAVING RESILIENTLY CLOSED LENS RIMS

Michael Marolla, Fort Lauderdale, Fla., assignor to Paramount Optical Mfg. Corp., Woodside, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,401
Int. Cl. G02c *1/08*
U.S. Cl. 351—95 **3 Claims**

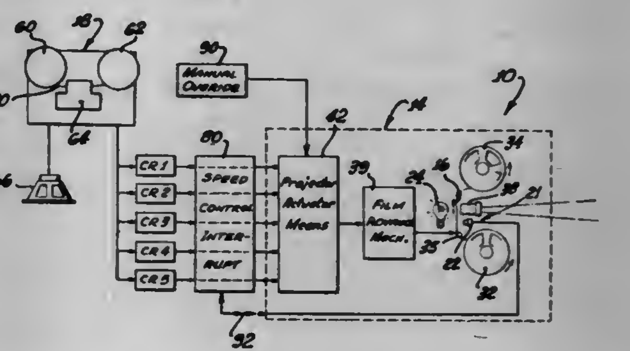


A replaceable lens spectacle structure comprises lens rims which are split at their outer sides to delineate opposite relatively movable frame portions terminating in outwardly directed apertured ears. A guide rod having enlarged end heads slidably engages the ears and a U-shaped spring has openings in its legs engaging the guide rod and is trapped between one of the ears and a guide rod end head resiliently to close the rim. Each closure assembly is masked by a laterally projecting masking plate mounted on a portion of the rim in front of the rim closure assembly and a temple piece is hinged to the plate.

3,609,019
FILM PRESENTATION SYSTEM

Richard J. Tuber, Encino, Calif., assignor to North American Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 550,294, May 16, 1966. This application July 28, 1969, Ser. No. 847,813
Int. Cl. G03b *31/00*
U.S. Cl. 352—17 **8 Claims**

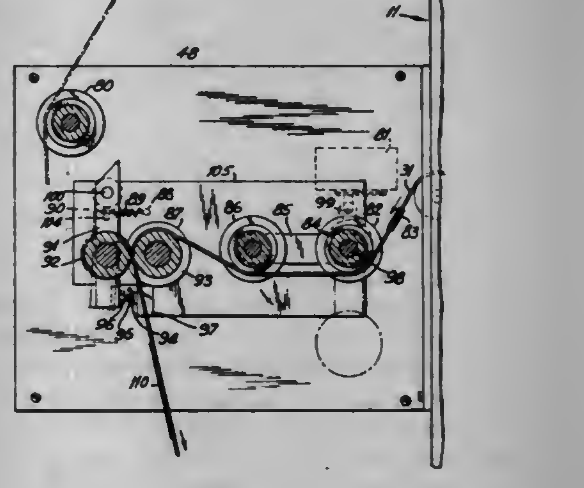


The invention is a system for making combined sound and visual presentations, the entire presentation being a composite of component parts combining sound and visual displays wherein the visual displays may be fixed pictorial presentations or animated pictorial presentations projected at different rates. The system has the purpose of greatly minimizing the amount of film required for the desired presentations. Preferably there is a separate sound tape which generates signals controlling a film projector to operate it at different rates which may include the normal rate for moving pictures; rates which are fractions of this rate for purposes of animation; and for completely stopping the projection at an individual frame for stills. Preferably the stopping of the projector at individual frames is achieved by way of a signal generated from the film strip itself and in the preferred form of the invention this is an optical signal controlling a photocell.

3,609,020
FILM PROJECTOR AND AUTOMATED THEATER PROJECTION SYSTEM

Joseph Kelly, Huntington, N.Y., assignor to Minitek, Inc., New Castle, Del.

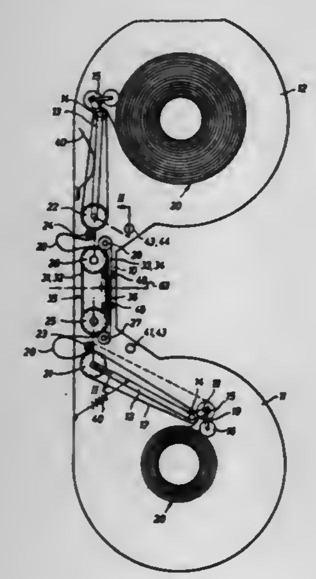
Filed Mar. 24, 1969, Ser. No. 809,620
Int. Cl. G03b *21/50*
U.S. Cl. 352—40 **24 Claims**



A film projector is provided with a cue detector for generating a signal to start a theater-control procedure or sequence when a transparent or translucent tape is detected on a film which is to be or has been projected. The projector also has a cleaning attachment through which the film passes prior to entering the interior of the projector. A programmer and associated circuitry are provided for automatically turning off pre- or inter-show music, dimming house lights, turning on the projector as well as picture sound mechanisms, and opening the curtain at the beginning of a show in the theater. The programmer is moreover adapted for closing the curtain, turning up the house lights, turning off the projector and sound mechanisms, turning on the aforesaid music, and turning off the projector at the end of a show. The programmer, in one form, includes a bank of cams relative to which special provision is made to avoid self-terminating characteristics.

3,609,021
CASETTES FOR STORING AND PROJECTING A FILM

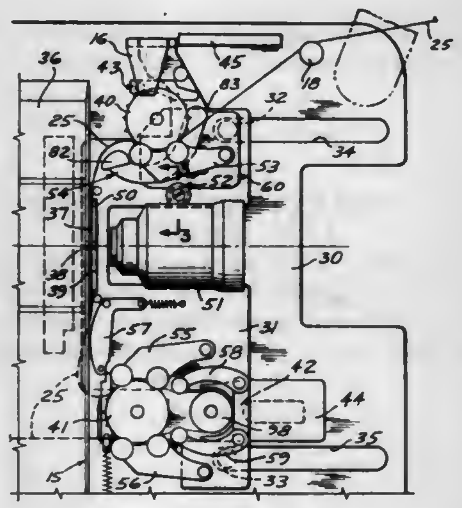
Ernst Gill, Ludwigstrasse 8, Saarlouis, Germany
Filed Aug. 5, 1969, Ser. No. 847,554
Claims priority, application Germany, Aug. 8, 1968, P 17 97 048.8
Int. Cl. G03b ***23/02***
U.S. Cl. 352—78 **10 Claims**



A cassette adapted for storing a perforated film having at least two mutually parallel series of images which can be reproduced in opposite directions of advance so that the film may be projected by a cinema projector. The cassette comprises a casing having a plurality of connected walls, one of the walls comprising a baseplate with bushings for aligning one of the series of images at a time with the optical projection axis of the projector. A plurality of magazines are carried by the baseplate on opposite sides of the projection axis with each of the magazines being adapted for receiving and storing the film. A first sprocket drive is connected to the baseplate for advancing the film through the area of projection axis with a second sprocket drive connected to the baseplate for feeding the film through the first sprocket drive. At least one transfer sprocket is positioned between the first and second sprocket drives with each transfer sprocket comprising parallel first and second discs spaced relative to one another. The discs have toothlike projections on their outer periphery for engagement in the perforations along the margins of the film and are mounted independently of each other in opposite cassette walls so that they are coaxially arranged and dimensioned as to lie to each side of the projection axis outside the picture area of the film in all operative positions of the cassette. The first disc has a shaft engaging it with the shaft extending through the baseplate and having a driving disc at its free end outside the baseplate cassette casing wall.

3,609,022
MOTION PICTURE FILM PROJECTOR

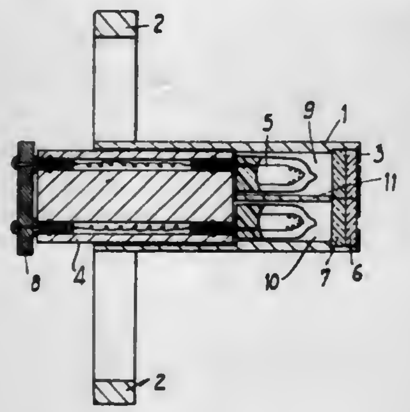
Morris Schwartz; Conkling Chedister, and Frank H. Beckman, all of Plainville, Conn., assignors to The Kalart Company Inc., Plainville, Conn.
Filed July 17, 1969, Ser. No. 842,618
Int. Cl. G03b ***1/58***
U.S. Cl. 352—158 **17 Claims**



A motion picture film projector, particularly a sound film projector, has an automatic film-threading mechanism with which threading and loop setting are effected by first dropping the film to be threaded into a loading slot formed in the casing of the projector and then moving an operating lever from a film-loading position into the operating position. As a result of such movement the threading mechanism is activated to thread the film upon the upper and lower sprockets, to form upper and lower loops and to move the lens system into position for projection. Removal of the film is effected by simply returning the operating lever to its loading position thereby freeing the film from its engagement with the components of the threading mechanism so that the film can be lifted out of the slot.

3,609,023
HEADUP DISPLAY SYSTEMS FOR AIRCRAFT PILOTING

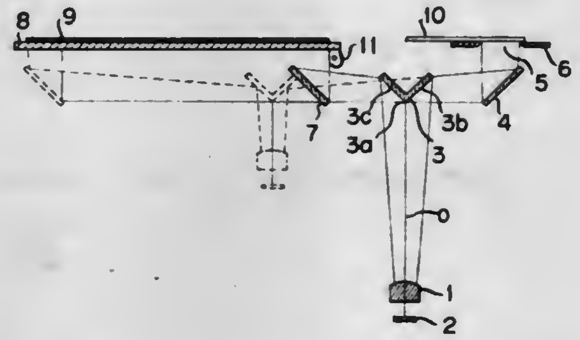
Jean Turboult, and Marcel Morion, both of Paris, France, assignors to CSF-Compagnie Generale de Telegraphie Sans Fil
Filed June 21, 1968, Ser. No. 738,890
Claims priority, application France, June 29, 1967, 112,498
Int. Cl. G03b ***21/00***
U.S. Cl. 353—13 **7 Claims**



A lighting arrangement for illuminating reticles in a headup display system comprises a hollow shaft having opaque walls and fixed to a movable assembly controlled in position, the reticle being formed in an end wall of this shaft, and a lampholder slidably mounted in this shaft for carrying plugin bulbs inside this shaft. This arrangement also comprises a translucent body between the bulbs and the reticle and printed circuits plugged into the lampholder for supplying the bulbs. A colored filter may be positioned between the reticle and the bulbs or in front of the reticle.

3,609,024
SLIT EXPOSURE DEVICE

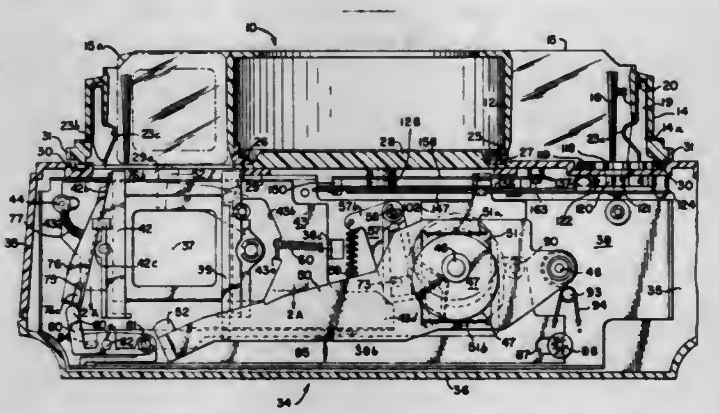
Shigeru Suzuki, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 13, 1969, Ser. No. 806,843
Claims priority, application Japan, Mar. 19, 1968, 43/18,142
Int. Cl. G03b ***27/70***
U.S. Cl. 355—51 **3 Claims**



A slit exposure device comprising a stationary original holder and a slit for exposure and a movable optical system for directing to the slit the light from the original. This optical system includes a photocopying lens having a reflecting mirror integrally disposed at the rear surface of the lens, a V-shaped reflecting mirror having two reflecting surfaces and a movable reflecting mirror adapted to impinge upon the lens the light from the original, and the V-shaped reflecting mirror and a stationary reflecting mirror to impinge the light emanating from the lens to the slit. The lens moves in the direction normal to and parallel with the original at a speed one-half of that of a photocopying paper while the V-shaped and movable reflecting mirrors move in parallel with the original at speeds one-half and equal to that of the copying paper respectively.

3,609,025
SLIDE-CHANGING MECHANISM FOR A SLIDE PROJECTOR

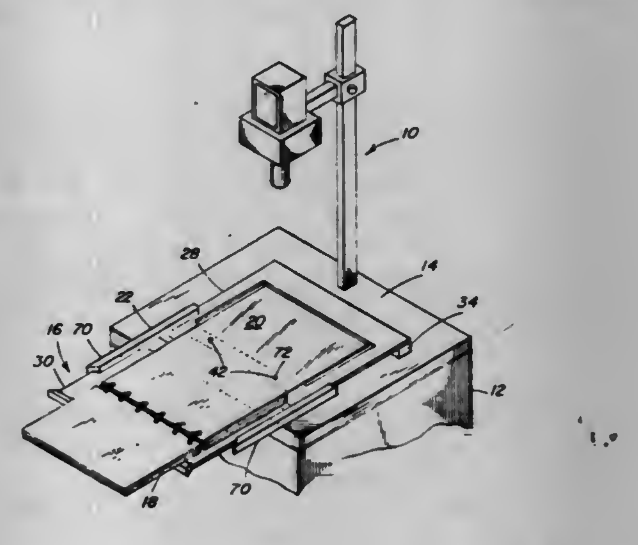
Walter J. Hall, Chicago, Ill., assignor to General Aniline & Film Corporation, New York, N.Y.
Division of Ser. No. 684,202, Nov. 20, 1967, Patent No. 3,499,708, which is a continuation-in-part of Ser. No. 554,071, May 31, 1966, abandoned.
Filed July 30, 1969, Ser. No. 872,787
Int. Cl. G03b ***02, 06, 04***
U.S. Cl. 353—107 **2 Claims**



The projector includes a vertically disposed projection gate located adjacent one side of the projector housing. The housing has a top wall portion with a slot therein disposed over the gate for entry of a slide thereinto and for exit of a slide therefrom. The projection gate includes a pair of vertically extending slide guides. One of these guides is mounted for movement toward and away from the other guide for alternately releasing and gripping the slide at the side edges thereof. The movable guide contacts a slide-releasing arm which causes a release of a slide in the magazine thereby allowing such slide to drop into the gate. The rotary slide magazine has a plurality of slide-receiving spaces which are open at the tops and bottoms. A spring finger is mounted in each slide-receiving space for yieldable engagement with a side edge of a slide for releasably retaining the slide in its space in the magazine. When a slide is positioned over the housing slot which is in turn located over the projection gate, and when the spring finger biasing such slide is contacted by the aforementioned slide-releasing member, the slide is allowed to drop into the gate. The projector includes an indexing gear engaged with a series of teeth on the magazine for indexing the magazine in forward and reverse directions. The indexing gear is rotated in either direction by indexing means in the projector, such indexing means including a locking member which is yieldably urged into its locked position and positively withdrawn to an unlocked position. The projector includes a cam-operated lifting member to return the slide in the projection gate to its place in the magazine. The projector also includes an operating member or "load" button. When this member is depressed, the indexing means are disabled and a latch is withdrawn permitting separation of the magazine from the projector.

3,609,026
STAGE FOR TRANSPARENCY PROJECTION

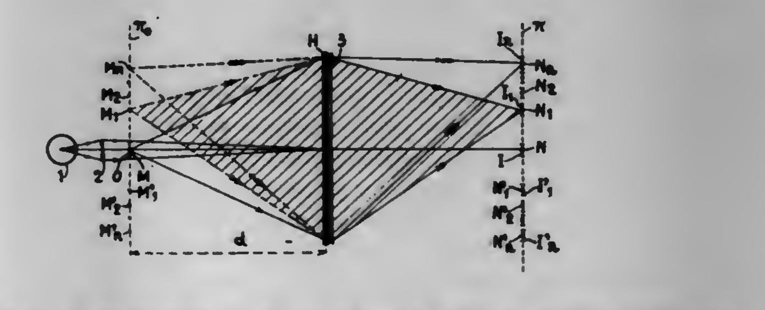
Max Verebay, Jamaica, N.Y., assignor to Visionetics, Inc., Long Island, N.Y.
Filed May 19, 1969, Ser. No. 825,685
Int. Cl. G03b ***27/00***
U.S. Cl. 353—120 **10 Claims**



A stage assembly for the projection of transparencies comprising a main frame adapted to slidingly and opposingly house a viewing member and a supporting member so that the viewing and supporting members may be horizontally extended for use or horizontally retracted when not in use.

3,609,027
ARRANGEMENT FOR PRODUCING MULTIPLE IMAGES

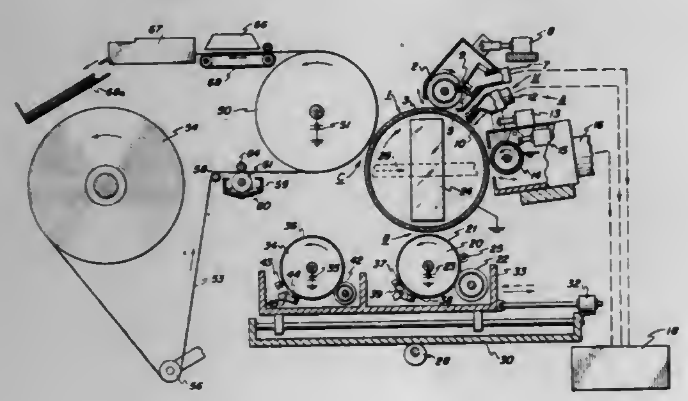
Serge Lowenthal, Paris, France, assignor to Thompson CSF
Filed Apr. 29, 1969, Ser. No. 820,058
Claims priority, application France, May 15, 1968, 151,801
Int. Cl. G03b ***27/44***
U.S. Cl. 355—2 **8 Claims**



An arrangement for projecting by means of a quasi-monochromatic incoherent source of radiant energy, multiple images of a transparency illuminated by the above-mentioned source. The multiple images are projected through the medium of a holographic lens.

3,609,028
IMAGING APPARATUS

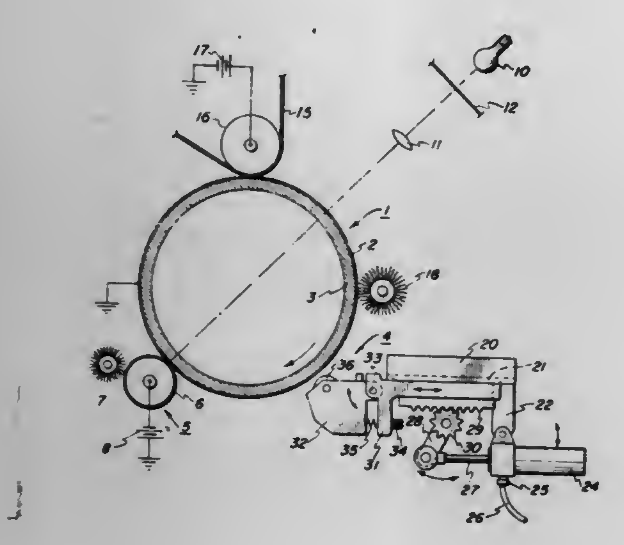
Raymond K. Egnaczak, Williamson, and Gino F. Squassoni, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,640
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **15 Claims**



A machine for automatically producing images from photoelectrophoretic suspensions using a cylindrical transparent conductive electrode which is inked and contacted by an imaging electrode in the presence of an electric field and electromagnetic radiation in image configuration. The cylinder electrode is cleaned and an image transferred from its surface to a transfer material. The electromagnetic radiation is imaged at the intersection of the transparent cylindrical electrode and the imaging electrode. The projection passes from the end of the transparent cylindrical electrode to an internal mirror for reflection to the intersection.

3,609,029
MATERIALS APPLICATION APPARATUS

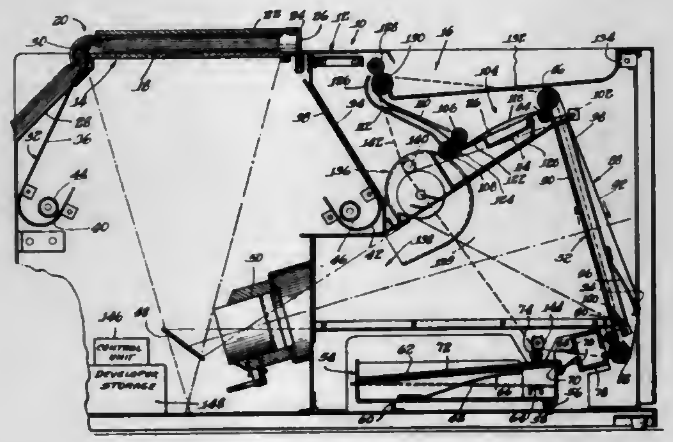
Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,646
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **7 Claims**



Apparatus for supplying a fluid coating to a surface. The apparatus has an extruder extending across the length of a movable surface with a manifold fluid supply system to force the fluid through the extruder. One embodiment includes a roller applicator as part of the extruder and a vacuum pickup to remove excess fluid from the surface.

3,609,030
ELECTROSTATIC BOOK COPIER

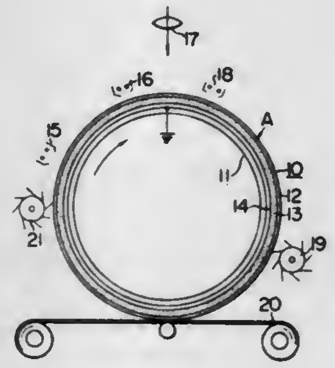
Meyer L. Sugarman, Northbrook, and William B. Jarzembski, Riverside, both of Ill., assignors to Opto/Graphics, Inc., Kenilworth, Ill.
Filed Apr. 2, 1968, Ser. No. 718,142
Int. Cl. G03g *13/10*
U.S. Cl. 355—10 **5 Claims**



A compact or tabletop electrostatic book copier having at the top thereof an exposure station on which a book is laid with a mirror and lens optical system for projecting an image of the book page to a more or less vertical exposing station. Paper is fed from a paper safe at the bottom of the machine through a charging unit substantially horizontally, and then substantially vertically up to the exposing station where the paper is exposed. From the top of the exposing station the paper is fed face down in a downwardly diagonal direction over a developing station, and along an inverting reentrant path to a delivery station immediately above the developing station where the copy is delivered face up.

3,609,031
METHOD OF FORMING ELECTROSTATIC LATENT IMAGES

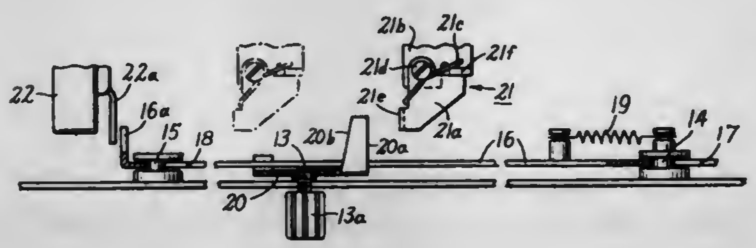
Koichi Kinoshita, Narashino-shi, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokoy-to, Japan
Filed June 5, 1969, Ser. No. 830,676
Claims priority, application Japan, Nov. 5, 1968, 43/80,880
Int. Cl. G03g *13/22*
U.S. Cl. 355—17 **6 Claims**



In a method of forming an electrostatic latent image by the steps of applying a first electric field across a photosensitive element including a photosensitive layer and a highly insulative layer so as to deposit a first uniform change of one polarity upon the surface of the highly insulative layer and to establish a uniform charge distribution in the photosensitive layer, applying a second electric field across the photosensitive element to deposit a second charge of the opposite polarity and projecting a light image upon the photosensitive element concurrently with the application of the second field, the second field is applied in two spaced-apart periods and the light image is projected between the periods.

3,609,032
DEVICE FOR LIMITING MOVEMENT RANGE OF A MOVABLE EXPOSURE MEANS IN A COPYING MACHINE

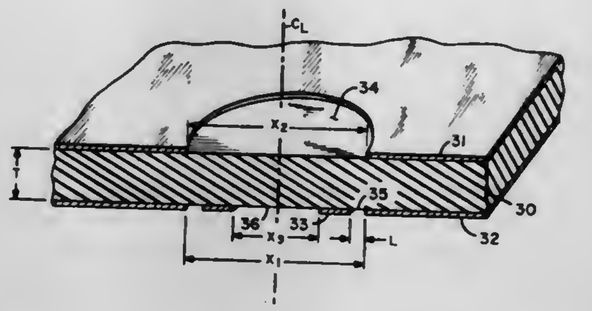
Toshio Watanabe, Tokyo, and Shigeru Suzuki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Jan. 30, 1969, Ser. No. 795,317
Claims priority, application Japan, Jan. 31, 1968, 43/6375;43/6376
Int. Cl. G03b *27/50, 27/70*
U.S. Cl. 355—25 **3 Claims**



A device for limiting the movement of a reciprocable exposure unit in a copying machine including a manual setting for a positioning element corresponding to the size of the copy sheet. A collidable element on the exposure unit moves to contact the positioning element thereby actuating a microswitch to reverse the movement of the exposure unit. The collidable element includes a spring-biased pivotal portion that makes the movable contact and is rotatably movable from one side to the other side of the collidable element.

3,609,033
MASK FOR ETCHING ENLARGEMENT

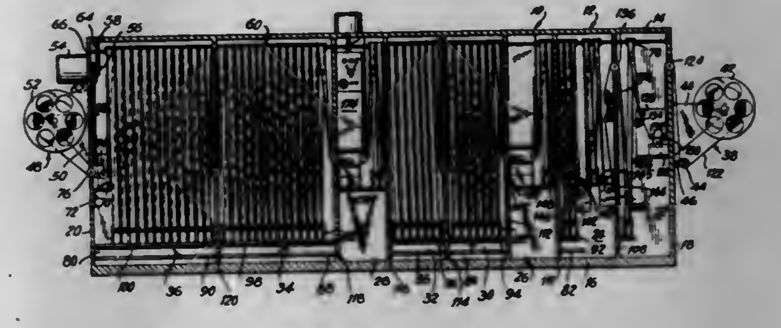
John J. Frantzen, North Saint Paul, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.
Filed Aug. 15, 1969, Ser. No. 850,450
Int. Cl. G03b *27/32*
U.S. Cl. 355—26 **4 Claims**



A mask has a metallic material, preferably cold-rolled steel, covered by an etchant-resist layer on both sides. On one side the layer has a circular area of diameter X_2 void of etchant resist, and on the second side the layer has a circular area of diameter X_3 and an annular area of outer diameter X_1 both void of etchant resist. The three areas are coaxially aligned.

3,609,034
METHOD AND APPARATUS FOR TREATING FILM

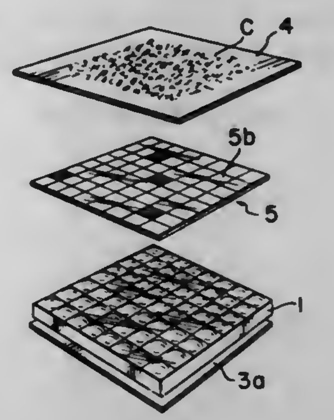
Yar W. Mociuk, 66 Hazelton Road, Yonkers, N.Y.
Filed May 5, 1969, Ser. No. 821,622
Int. Cl. G03b
U.S. Cl. 355—30 **16 Claims**



Method and apparatus for treating film, wherein the apparatus comprises a plurality of baths for treating the celluloid and emulsion sides of a film, and wherein each bath comprises an assembly of treating wheels constructed and arranged to present a meniscus of treating fluid to the surfaces of the film. The method comprises at least the steps of exposing the celluloid side of the film to a meniscus of fluid to remove scratches from that surface, exposing the emulsion side to a meniscus of fluid, and then drying the film to fill in any abrasions surface marks, and the like.

3,609,035
METHOD AND DEVICE FOR RECORDING CHARACTERS OR SYMBOLS IN A REPRODUCIBLY INDISCERNIBLE MANNER

Hisanori Ataka, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Dec. 17, 1969, Ser. No. 885,694
Claims priority, application Japan, Dec. 30, 1968, 43/96549
Int. Cl. G03b *27/52*
U.S. Cl. 355—40 **3 Claims**



A method and device for recording characters or symbols in a reproducibly indiscernible manner, in which adjacent to a lens plate having a plurality of lenses is disposed a key pattern plate having at least one light shielding portion which covers some of the lenses of said lens plate and the remaining portion of said key pattern plate made transparent when a camouflaging or concealing original or object is recorded; thereafter, a true original is recorded without said key pattern plate, thereby forming a camouflaged or concealing photograph; and to read out or reproduce the camouflaged photograph, instead of said key pattern plate is disposed a decoding plate having the light shielding and transparent portions complementary to those of said key pattern plate when said camouflaged photograph is projected.

3,609,036

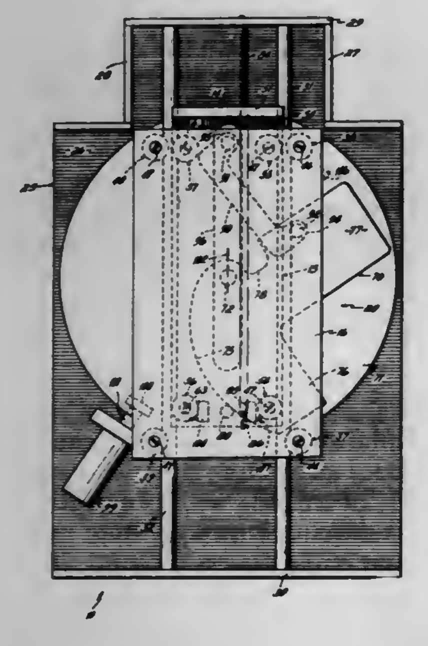
GEARLESS CAMERA-FOCUSING APPARATUS

Warren D. Novak, Chappaqua, N.Y., assignor to The Mosler Safe Company, Hamilton, Ohio

Filed June 2, 1969, Ser. No. 829,231

Int. Cl. G03b *27/36*

U.S. Cl. 355—58 **25 Claims**



A variable-magnification closed-circuit television system. The system comprises an adjustment mechanism for synchronously positioning a lens and a camera relative to an objective so as to enable the lens to both magnify and reduce the image while always maintaining the image accurately in focus. The adjustment mechanism comprises a plate cam for positioning the lens and a crank driven from the plate cam for positioning the camera.

3,609,037

SLIT EXPOSURE OPTICAL SYSTEM

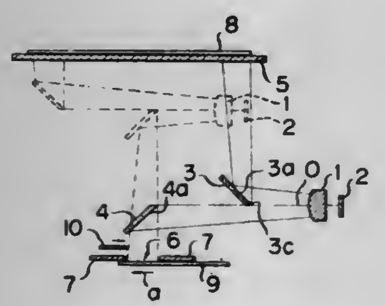
Shigeru Suzuki, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 13, 1969, Ser. No. 806,825

Claims priority, application Japan, Mar. 19, 1968, 43/18141

Int. Cl. G03b *27/70*

U.S. Cl. 355—66 **3 Claims**



A slit exposure optical system having a fixed original to be copied and parallelly spaced advancing photocopying paper. A lens is located between the original and photocopying paper and is associated with two reflecting mirrors to transfer an image from the original to the photocopying paper. The lens and each reflecting mirror are movable at different related speeds to maintain the optical path between the lens and the original equal to the optical path between the lens and the photocopying paper.

3,609,038

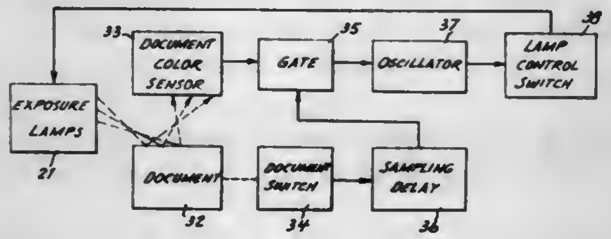
ELECTRONIC CONTROL APPARATUS

Hajo A. Kolshorn, Marietta, Ohio, assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,391

Int. Cl. G03b *27/74*

U.S. Cl. 355—68 **10 Claims**



An electronic system for controlling light source intensity in document copying apparatus. Illumination for a photographic process is automatically varied in accordance with relative reflectivity characteristics of documents being advanced through the apparatus. A photoelectric device senses the amount of light energy reflected from such documents and this information is coupled to a circuit adapted to control energization of the illuminating lamps. The coupling circuitry includes an electronic switching device operatively connected to the output of a square wave generator having a duty cycle dynamically adjusted for modulating power to the lamps.

3,609,039

ILLUMINATING APPARATUS

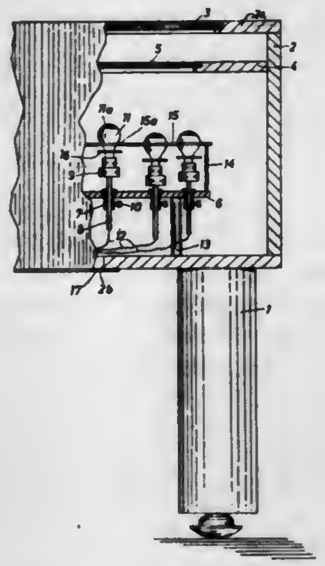
Kasimir Ambraschka, Unterhaching, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 19, 1968, Ser. No. 776,961

Claims priority, application Germany, Nov. 30, 1967, 57,542

Int. Cl. G03b *27/54*

U.S. Cl. 355—70 **6 Claims**



An illuminating assembly for illuminating an article such as a sheet located on a light-permeable support which forms a part of a structure used in connection with making microfilm photographs. The structure includes a light-permeable plate through which the light passes to reach the article which is to be illuminated, and on one side of this plate is situated a reflecting wall for reflecting light to the plate. A plurality of light sources extend at least in part to the side of the wall which is directed away from the plate, and a plurality of reflecting means respectively coact with the light sources for screening the latter against transmitting light directly to the plate while reflecting light therefrom to the wall to be reflected by the latter to the plate. An adjusting means is connected with the reflectors for adjusting the distance thereof with respect to the light-reflecting wall.

3,609,040

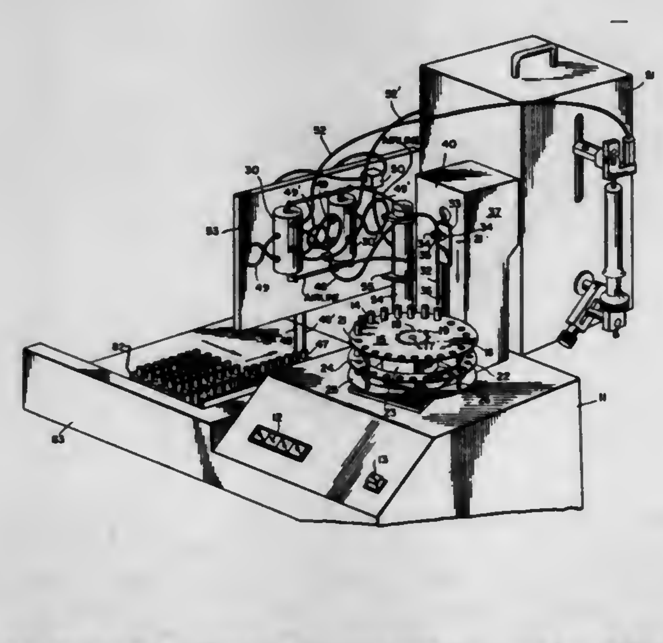
AUTOMATED SYSTEM FOR PERFORMING SAMPLE MEASUREMENTS, DILUTIONS AND PHOTOMETRIC MEASUREMENTS

Norbert R. Kuzel, and Frederick W. Kavanagh, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 24, 1969, Ser. No. 801,369

Int. Cl. G01n *1/00, 21/06, 1/10*

U.S. Cl. 356—36 **6 Claims**



An automatic diluter and photometric reader adapted for use in the turbidimetric microbiological assays of antibiotics, vitamins, and the like, as well as in various other analytical assays.

3,609,041

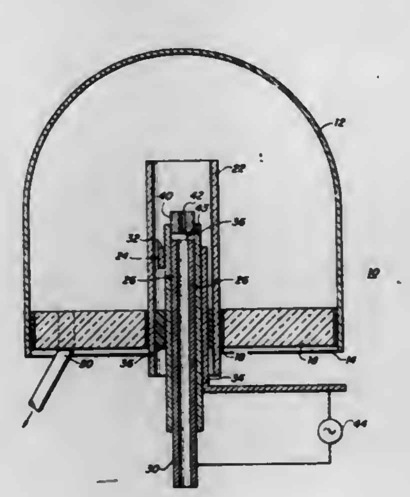
LIQUID SAMPLE SPECTRAL SOURCE

Robert H. Webb, 104 Bertwell Road, Lexington, Mass., and Niels O. Young, Old Winter St., Lincoln, Mass.

Filed June 2, 1970, Ser. No. 42,729

Int. Cl. G01j *3/30, 3/34*

U.S. Cl. 356—85 **27 Claims**



A method and device for generating spectral radiation characteristic of a liquid sample. An electrical voltage is applied to a body of conductive liquid, the voltage being in excess of the breakdown voltage of the vapor state of the liquid and causing a current sufficient to raise the temperature of the liquid to cause the liquid to vaporize and form a bubble. The bubble formed is sufficiently restricted so that the potential across the bubble can rise until electrical breakdown and an electrical discharge only across the bubble occurs.

3,609,042

OPTICAL MEASURING APPARATUS FOR SAMPLING MATERIAL, MAKING A FLAME TEST, AND COMPARING THE LIGHT FROM AN UNKNOWN CONCENTRATION WITH THAT FROM TWO KNOWN CONCENTRATIONS

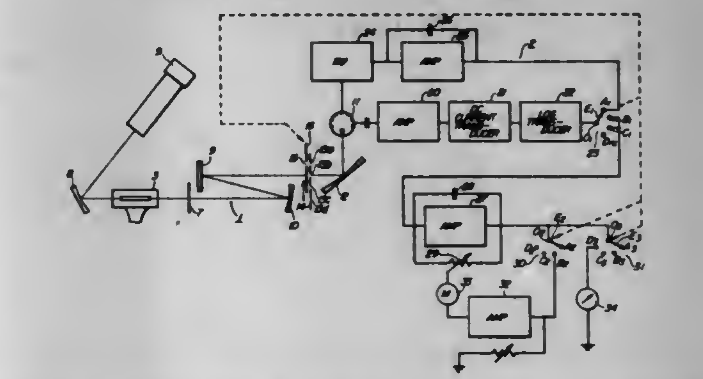
Kazuo Yasuda; Koichi Uchino, and Hiroshi Inomata, all of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1969, Ser. No. 823,336

Claims priority, application Japan, May 13, 1968, 43/31647

Int. Cl. G01j *3/30, 3/48;* H01j *39/12*

U.S. Cl. 356—87 **10 Claims**



Optical measuring apparatus for sampling material in which a first and a second samples of known concentration and a third sample of which concentration is unknown but in between those of the first and the second samples are intermittently introduced in this order into a flame, light beams which pass through the flame being detected by a detector which in turn produces a first, a second and a third electric signals corresponding to the concentrations of the first, second and third samples, the third electric signal being compared with the first and the second signals and thereafter introduced into an indicating means.

3,609,043

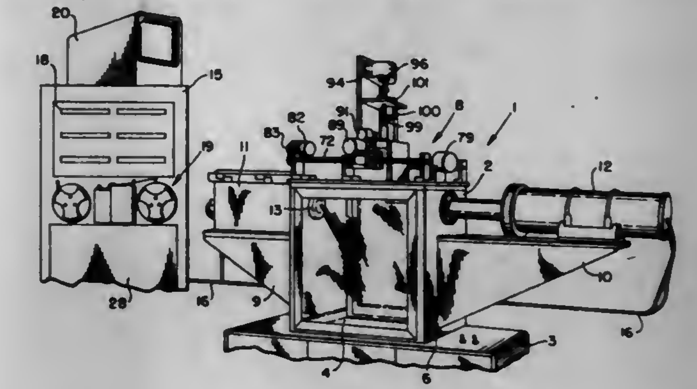
SPRAY DROPLET ANALYZER

Harold C. Simmons, Richmond Hts., and John H. Gaag, Chesterland, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 19, 1968, Ser. No. 777,057

Int. Cl. G01n *15/02*

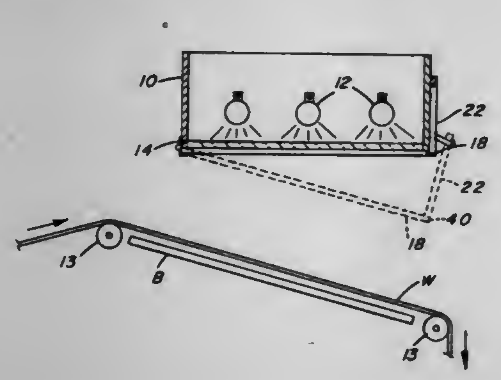
U.S. Cl. 356—102 **14 Claims**



Apparatus for analyzing fluid spray patterns for evaluation of characteristics of the spray and of the spray nozzle comprising a video system for counting the number of various size droplets in a specified view volume of the spray and a positioning and computer system cooperative with the video system for moving the nozzle to various positions and for performing a complete analysis of the fluid spray pattern. A three axis closed loop positioning system is used to control the instantaneous location of the fluid spray within a spray chamber and a conventional vidicon pick up tube receives images of fluid droplets at the particular view volume, the illumination being provided by an in-line xenon flash tube. Multiple readings of both the number and size of droplets in a particular view volume are made, the droplets being recognized by the intersection of the images with the scanning lines of the vidicon tube, and the averaged totals are retained in appropriate readout registers. The information of each view volume is recorded on paper tape together with the location of the view volume for further computation and a complete analysis of the spray pattern. The spray chamber further includes a shield for the vidicon tube aperture wherein a continuous airflow prevents condensation of the fluid on the viewing glass.

3,609,044
APPARATUS FOR SELECTIVELY INSPECTING A WEB SURFACE AND A COATING ON THE SURFACE

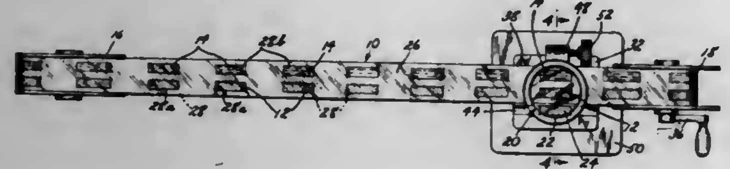
Thomas J. Murphy, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 1, 1969, Ser. No. 838,177
Int. Cl. G01b *11/30*
U.S. Cl. 356—120 **10 Claims**



An apparatus for inspecting a specular surface and a coating on said surface. A reference pattern is so positioned with respect to the surface that a reflection of the pattern appears on the surface. A diffusion plate is located between the reference pattern and the surface and is movable between a first position wherein the reflection of the pattern on the surface has a high contrast for inspecting the surface to a second position wherein the reflection of the pattern on the surface is diffused for inspecting the coating.

3,609,045
APPARATUS FOR STORING AND VISIBLY COMPARING THE OPTICAL PROPERTIES OF MINATURE SAMPLES

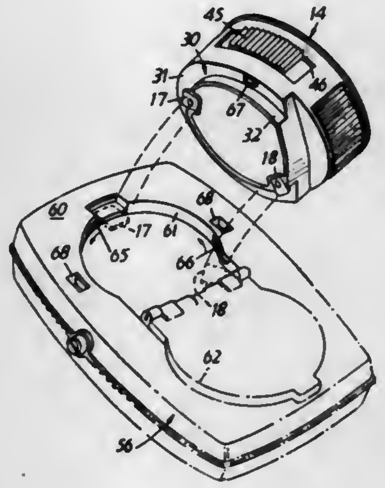
Kurt Stein, 105 Pinehurst Ave., New York, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,793
Int. Cl. G01n *21/02*
U.S. Cl. 356—212 **10 Claims**



Apparatus for storing a plurality of samples having known optical properties and for displaying and samples in a manner wherein the latter may be readily compared with an unknown sample for matching color or other optical properties of the latter comprises a flexible, elongated carrier tape upon which known microsamples are mounted. The tape is fed to a viewing station at which a magnifier or microscope is utilized to view the known samples simultaneously with an unknown sample which is disposed in a fixed position in the viewing station. Indicia means on the carrier tape, and associated with each known sample is also located within the viewing station, so that when the carrier tape is moved until a known sample matches the unknown sample, the indicia means, viewed through the magnifier, identifies the color or other optical properties of the matched samples.

3,609,046
PHOTOELECTRIC EXPOSURE METERS

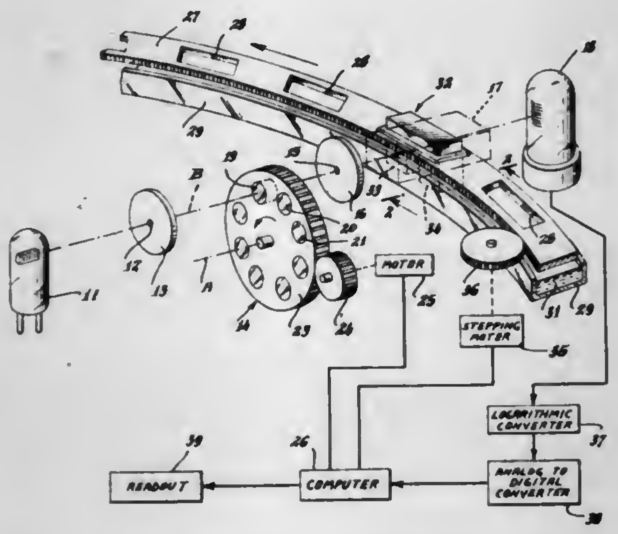
Gerhart Lothar Hamburger, Welwyn, England, assignor to Sangamo Weston Limited, Enfield, Middlesex, England
Filed June 23, 1969, Ser. No. 835,682
Claims priority, application Great Britain, June 25, 1968, 30307/68
Int. Cl. G01j *1/42, 1/44*
U.S. Cl. 356—222 **18 Claims**



Photoelectric exposure meter including a selenium photocell coupled to an electrical measuring instrument calibrated in light values and a separate attachment including a second, cadmium sulfide type of photocell and a battery for extending the measuring range to lower light values, said attachment being mountable over the selenium cell on the exposure meter by a bayonet-type fixing including contact plates which engage other contacts on the exposure meter to couple the second cell to the measuring instrument whereby the latter is operated by current derived from the second photocell. A transistor amplifier is included in the attachment together with switching means in which the single-mercury cell battery forms the movable switch contact.

3,609,047
SINGLE BEAM PHOTOMETER SYSTEM WHEREIN THE ABSORBANCE OF A SAMPLE IS DETERMINED RELATIVE TO A REFERENCE

Douglas G. Marlow, Arcadia, Calif., assignor to Xerox Corporation, Rochester, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,536
Int. Cl. G01n *21/24*
U.S. Cl. 356—205 **8 Claims**

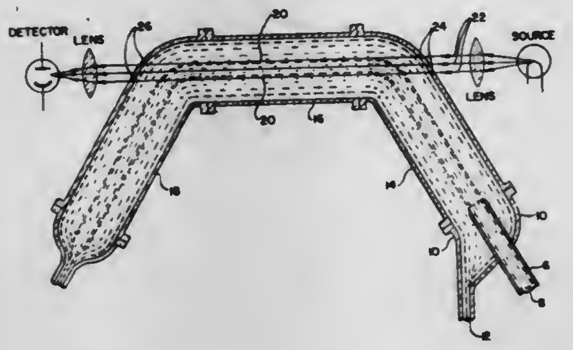


A single beam photometer system for measuring the differential optical absorbance of a sample with respect to a reference. The sample and the reference are held in a two compartment container. A rotating transport wheel driven by

a stepping motor is utilized to move the container so as to pass the sample and the reference through a light beam in succession. The intensity of the light transmitted through the sample and the reference is measured by a photocell. The output from the photocell is fed into an electronic system which produces an output signal corresponding to the differential optical absorbance of the sample with respect to the reference.

3,609,048
SELF CLEANING SAMPLE CELL FOR RADIANT ENERGY ANALYZERS

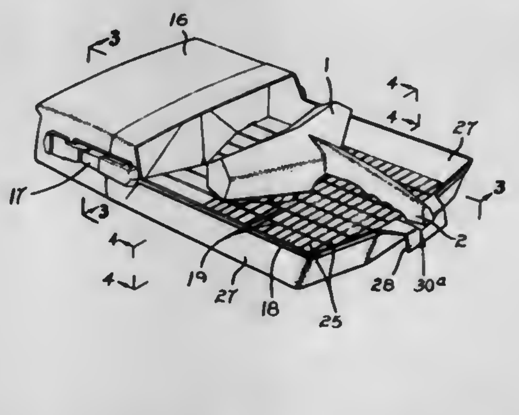
Allen Strickler, Fullerton, Calif., assignor to Beckman Instruments, Inc.
Filed Nov. 25, 1969, Ser. No. 879,883
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **1 Claim**



There is disclosed a self-cleaning flow-through sample cell through which a sample fluid is conducted for analysis in a radiant energy analyzer. A fluid-combining assembly is provided to establish laminar flow of a carrier fluid in a sheath around a core of sample fluid. A conduit is connected to the fluid combining assembly to conduct and maintain the laminar flow. Windows are provided in the walls of the conduit to establish a path for radiant energy used for analysis of the sample fluid core. The sheath of carrier fluid prevents contamination of the window areas by the sample fluid.

3,609,049
HAND SHAMPOO AND SUPPLY TRAY

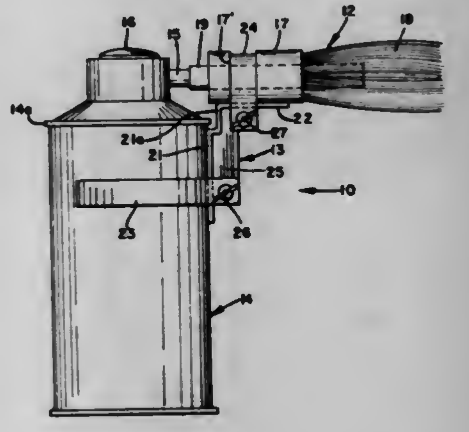
Donald Nation Smyth, South Plympton, South Australia, Australia, assignor to S. A. Brush Company Limited, Albert Park, South Australia, Australia
Filed Nov. 4, 1969, Ser. No. 873,814
Claims priority, application Australia, Nov. 22, 1968, 46690
Int. Cl. A46b *11/00*
U.S. Cl. 401—118 **10 Claims**



A hand-operated shampoo device for cleaning fabrics or the like comprising in combination a body arranged to be hand held and having on it rolling members on axles which are at an angle to the direction of travel of the said body as it is swept across the surface, the angular disposition resulting in a shearing action between the rolling members and the surface, there being means to apply fluid to the rolling members comprising a tray having a floor which is channelled or shaped to hold a small volume of a foaming liquid supplied to the floor, rolling members when engaged on the floor and rolled on same causing the liquid to foam and thus charging the rolling members with foam rather than a quantity of liquid.

3,609,050
SHAVING LATHER APPLICATOR

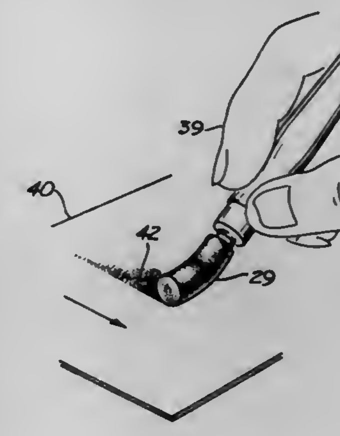
Warren V. Alexander, 922 W. Vanderbilt, Stephenville, Tex.
Filed Aug. 5, 1969, Ser. No. 847,634
Int. Cl. A46b *11/02*
U.S. Cl. 401—190 **2 Claims**



A fountain brush supported on an aerosol container of shaving lather by removable attachment means so that the outlet nozzle of the container discharges into a lather supply tube extending into the bristles of the brush. The attachment means consist of an angle bracket with clamp means on one arm to embrace the container and second clamp means on its other arm to support the brush.

3,609,051
ARTISTS SPIN BRUSH

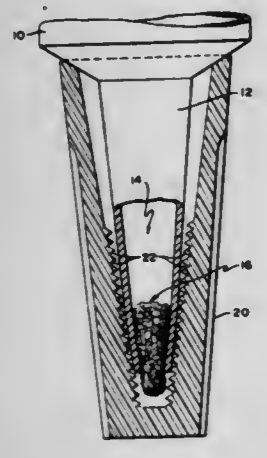
Ben Braun, 15 Georgie Drive, Syosset, N.Y.
Continuation-in-part of application Ser. No. 600,556, Dec. 9, 1966, now abandoned. This application Oct. 13, 1969, Ser. No. 865,939
Int. Cl. B44d *3/28*
U.S. Cl. 401—197 **9 Claims**



According to the present invention, a rotatable brush for combining the tactile qualities of a roller with that of a conventional brush is characterized primarily in that a brush is provided means whereby the tip is made rotatable relative to the holder and adapted to be selectively bent by hand pressure against a drawing surface and rollably moved therealong to produce a stroke of desired width. It comprises, in combination, a hand grip holder having a longitudinal compartment therewithin open at one end; a spindle assembly composed of a spindle, a flexible brush tip disposed about one end thereof, the rest of the spindle rotatably mounted in the hand grip holder. An optional feature of the present invention is the use of an internal feed which further comprises an ink reservoir, an internal passage communicating with the reservoir, a valve means intermediate the tip and internal passage which is operative with the flexure and rotation of the tip for feeding ink thereto, and a vent means extending into the free end of the passage to facilitate, by tongue means, the movement of liquid and air in opposite directions.

3,609,052
FLUID DISPENSING

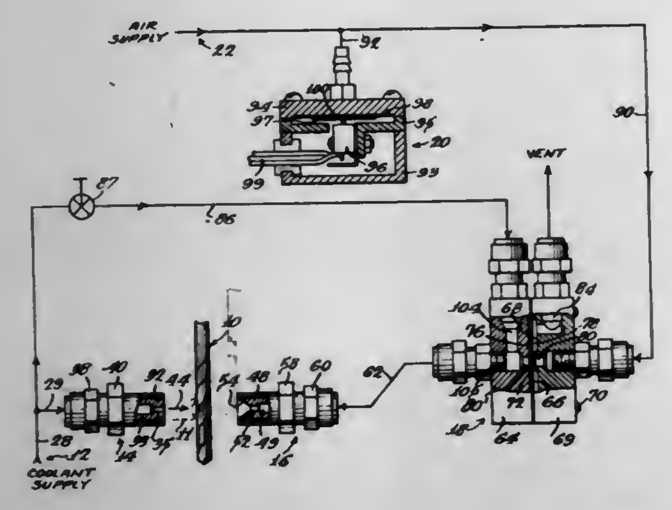
A. Albert Alrosus, 39 Crosby St., Lowell, Mass.
Filed Feb. 17, 1969, Ser. No. 799,612
Int. Cl. B43k *5/10*
U.S. Cl. 401—199 **2 Claims**



A marking or writing instrument in which the nib is fabricated from extremely fine, hairlike stainless steel fibers which are arranged in a random, compact bundle. The bundle is located within and protrudes outwardly of an outlet orifice formed in the flexible tip of the container in which the marking fluid is stored. A closure cap having tapered, internal threads screws onto the flexible tip of the marker to compress the tip and closes the interstices between the fibers of the nib contained therein to seal the orifice.

3,609,053
BROKEN TOOL DETECTOR

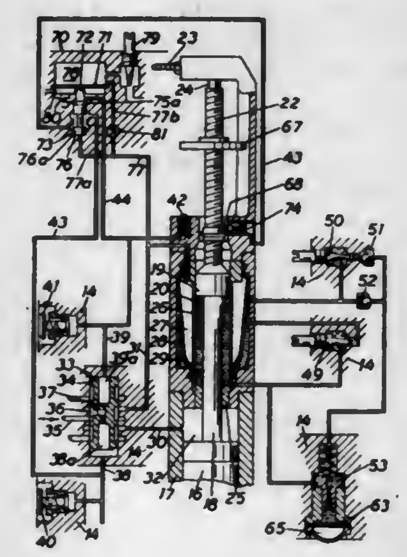
Richard F. Klem, Wheaton, Ill., assignor to ITE Imperial Corporation
Filed Apr. 29, 1969, Ser. No. 820,094
Int. Cl. B23b *49/00;* **G01d** *21/00*
U.S. Cl. 408—16 **4 Claims**



A coolant and broken tool detecting circuit wherein the coolant for the tool is detected when the tool breaks. The circuit includes a supply nozzle for directing coolant against the tool and a receiver nozzle on the opposite side of the tool which receives coolant when the tool is broken. There is provided a diaphragm sensor communicating with the receiver nozzle for sensing pressure changes therein and indicating when the tool is broken, and there being also provided a supply of liquid to the receiver nozzle continuously for the purpose of purging the receiver nozzle of any contamination.

3,609,054
POWER OPERATED DRILLING UNIT

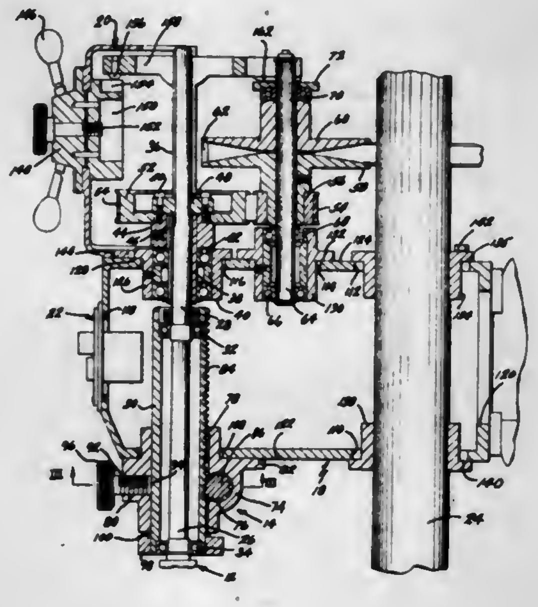
Bengt Ebbe Harald Nyman, Rockford, Ill., assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Sept. 3, 1969, Ser. No. 854,942
Claims priority, application Sweden, Sept. 10, 1968, 12128/68
Int. Cl. B23b *39/10, 47/22*
U.S. Cl. 408—17 **9 Claims**



A step drilling unit is provided. It has a power means for feeding and retracting a drill. Each step of drilling is timed by a pneumatic timing device which vents a control passage of an air-distributing valve so that the valve shifts from a position for effecting feed movement to a position for effecting retraction.

3,609,055
DRILL PRESS

Andrew C. Luff, 2025 Chevy Chase Blvd., and John E. Barnett, 747 Keenway Circle, both of Kalamazoo, Mich.
Filed Mar. 11, 1969, Ser. No. 806,251
Int. Cl. B23b *39/00, 47/00*
U.S. Cl. 408—135 **11 Claims**



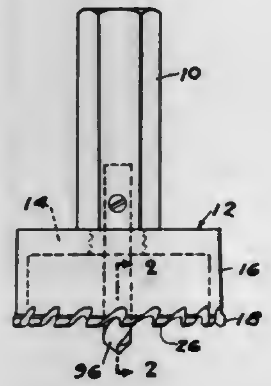
This disclosure relates to a drill press having a quill assembly, a drive shaft, and a support column fixed to a central lightweight cast housing through flanged collars. The top and bottom surfaces of the central housing are machined flat and parallel. The flange collar surfaces in contact with the top and bottom of the central housing are also machined flat and at right angles to the bore to mate with the machine surfaces of the case housing to thereby ensure precise alignment of the quill assembly, drive shaft and support column within the cast housing, and to provide an inexpensive way of replacing worn parts.

The quill assembly has a longitudinal vertical bore in which the quill slides. A pressure screw abuts the quill to lock the same in any desired position.

A positive drive is provided to the drive shaft by the use of a gear belt which is connected to a power source through a variable drive mechanism.

3,609,056
HOLE CUTTER

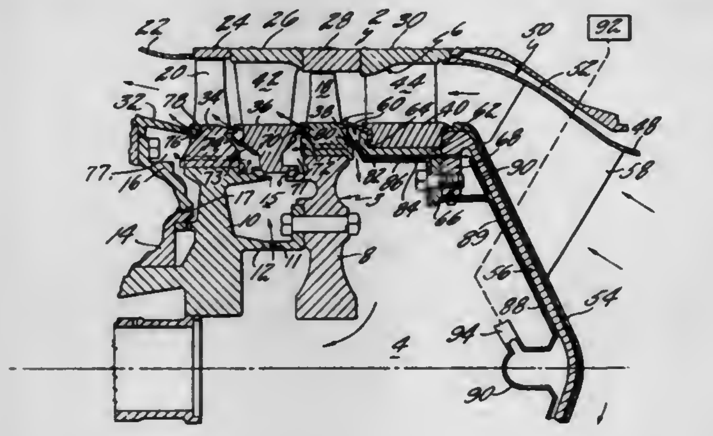
Everett D. Hougen, 6956 N. Odell Ave., Chicago, Ill.
Filed June 5, 1969, Ser. No. 830,650
Int. Cl. B23b *51/04*
U.S. Cl. 408—204 **29 Claims**



An annular hole cutter having a relatively thin, cylindrical sidewall with a plurality of teeth formed in the thickened lower edge thereof. The teeth have cutting edges extending across the full width of the thickened edge. The cutting edges have two radially inclined portions which intersect in a crest so as to cut a V-shaped groove. An upwardly and radially outwardly inclined gullet is formed between successive teeth, the gullet opening at its upper end into an annular chip clearance space in the groove above the thickened edge of the sidewall.

3,609,057
TURBINE COOLANT FLOW SYSTEM

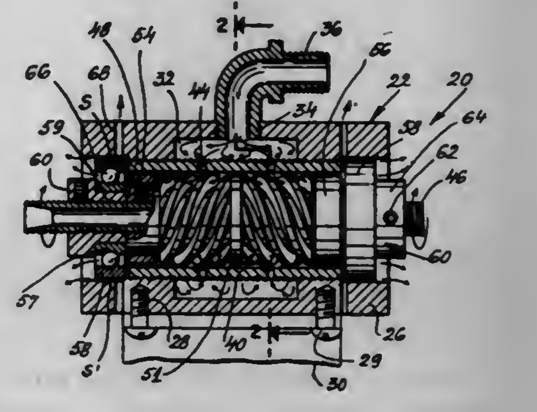
Leland J. Radtke, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed June 15, 1970, Ser. No. 46,366
Int. Cl. F01d *1/04, 5/06;* **F03b** *11/00*
U.S. Cl. 415—59 **8 Claims**



A two-stage turbine is disclosed having a vane upstream of a first stage turbine and a vane between the two turbine stages. A hot gas flows into the turbine from a hot gas generator and it exhausts from an exit end. Sealing means are provided between the rotating turbines and the fixed structure forming the inner side of the annular hot gas flow passage through the turbine. A chamber is formed adjacent the sealing means at the inlet to the first stage turbine. A coolant is directed to said chamber with the pressure regulated so that in operation fluid will flow inwardly through the sealing means from the hot gas flow passage to said chamber. The fluid mixture from the chamber passes to the rear side of the turbine disk where the pressure is now greater than the pressure in the hot gas flow passage so that at the sealing means at the rear side of the first stage turbine the coolant flows into said passage. In the second stage turbine, the pressures of the coolant and hot gases are such that the coolant flows outwardly into the hot gas flow passage. A dome-shaped manifold receives coolant from a supply and directs it through passageways to the chamber. The sizing of the sealing means at various locations controls the amount of leakage flow. The invention herein described was made in the course of or under a contract with the Department of the Air Force.

3,609,058
TURBINE MOTOR HAVING BALANCED GAS LUBRICATED ROTOR

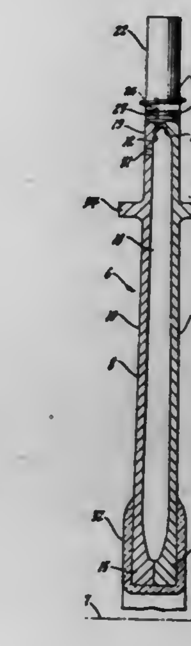
Balazs K. Tarsoly, 32 Engelke Ave., Huntington Station, N.Y.
Filed Sept. 8, 1969, Ser. No. 855,933
Int. Cl. F01d *3/00, 3/04, 5/08*
U.S. Cl. 415—104 **6 Claims**



A gas-driven motor has a cylindrical rotor provided with helical vanes. The rotor has end bearings which are lubricated and cooled by spent gas passing out of opposite ends of the rotor. Pressurized gas is fed to a stationary cylindrical housing in which the rotor is mounted. In the housing the gas is distributed circumferentially around the rotor by a cylindrical manifold.

3,609,059
ISOTHERMAL WHEEL

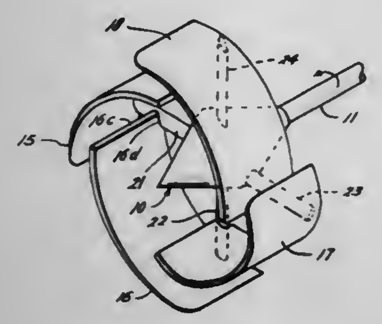
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 3, 1969, Ser. No. 863,638
Int. Cl. F01d *5/08*
U.S. Cl. 416—95 **3 Claims**



A rotor wheel for a compressor operating at relatively high temperatures is made up of two disks enclosing a cavity between them and mounting blades at the rim of the wheel. A scoop tube projecting into the air path deflects air into the cavity within the wheel, within which it circulates and is exhausted near the rim of the wheel at the lower pressure face of the wheel. The circulating air reduces temperature gradients between the hot rim and the hub portion of the wheel.

3,609,060
MARINE PROPELLER

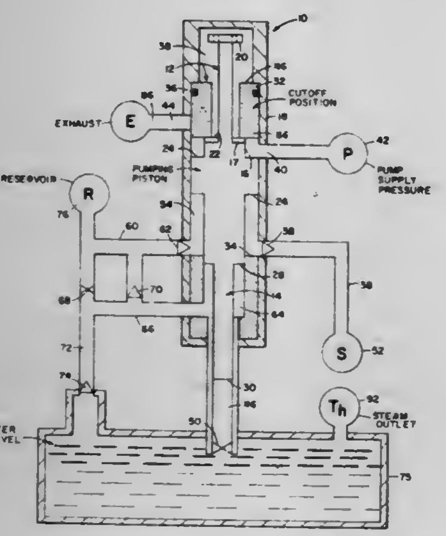
Alberto Angel, 8606 Morley, Houston, Tex.
Filed July 14, 1969, Ser. No. 841,345
Int. Cl. B63h *1/16*
U.S. Cl. 416—179 **8 Claims**



A hub having an enlarged midsection and tapered forward and rearward portions is adapted to be attached to a propeller drive shaft. A plurality of outwardly extending arm members support a plurality of curved blades in a spaced-apart manner from the hub. The blades are positioned for squeezing water inwardly toward the rotational axis of the propeller during rotation of the propeller for increasing the water pressure adjacent the rearward portion of the hub for producing a desired forward thrust for the propeller.

3,609,061
AUTOMATIC LIQUID LEVEL CONTROL SYSTEM

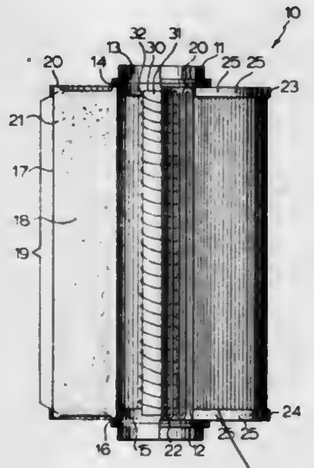
Jerry A. Peoples, 2419 Greenhill Drive N.W., Huntsville, Ala.
Filed Jan. 7, 1969, Ser. No. 789,543
Int. Cl. F04b *49/00, 35/00*
U.S. Cl. 417—36 **7 Claims**



A reciprocating, gas-driven, direct-acting, pumping system for maintaining a predetermined liquid level in a pressure vessel.

3,609,062
GETTER PUMP

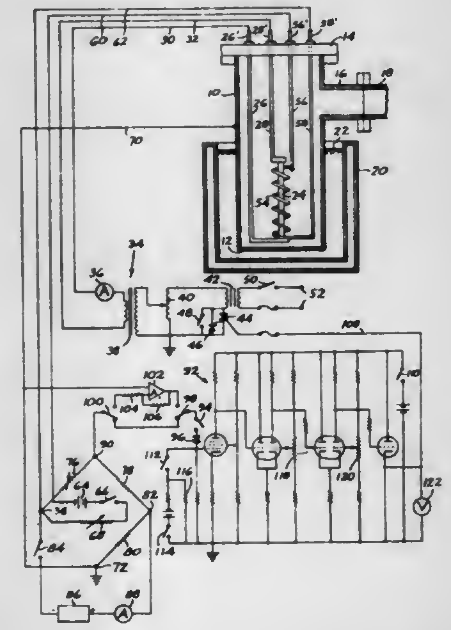
Mario Zucchinelli, and Bruno Ferrario, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed Oct. 14, 1969, Ser. No. 866,336
Claims priority, application Italy, Oct. 28, 1968, 844739/68
Int. Cl. F04b *37/02;* H01k *1/52*
U.S. Cl. 417—48 **7 Claims**



A getter pump having a central axis and a nonevaporable getter material coated on a radially folded substrate. These pumps are useful for producing and maintaining vacuum in closed vessels wherein they sorb active gases.

3,609,063
SUBLIMATION PUMP AND METHOD OF REGULATING IT

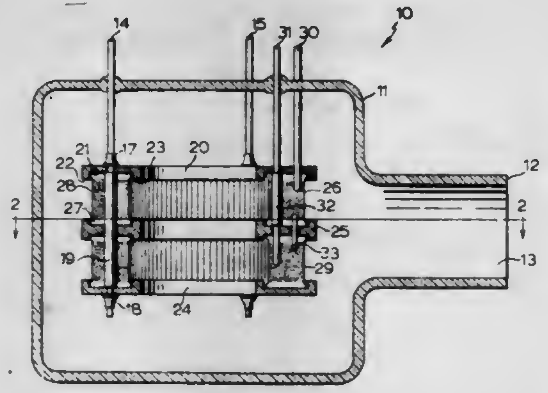
Thomas A. Jennings, Sutton Coldfield, England, assignor to Hull Corporation, Hatboro, Pa.
Filed Mar. 6, 1970, Ser. No. 17,158
Int. Cl. F04b *37/02*
U.S. Cl. 417—51 **9 Claims**



In a sublimation pump the cooled gas-adsorbing metal surface of the pump cylinder and a heated metal filament are made the anode and cathode, respectively, of a space-charged limited current diode which is included in a bridge circuit for detection of changes in its current-voltage characteristics. Potential differences across the bridge circuit resulting from changes in extent of adsorption of gas and deposition of vaporizable metal on the anode are amplified and utilized to control the source which effects heating of the vaporizable metal in the cylinder.

3,609,064
GETTER PUMP WITH DIRECT RESISTANCE HEATING OF GETTER STRIP

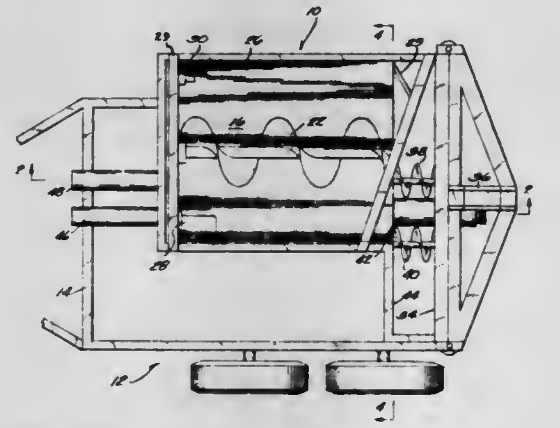
Tiziano A. Giorgi, and Bruno Ferrario, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed Nov. 21, 1969, Ser. No. 878,812
Int. Cl. F04b *37/02;* B01d *53/26, 39/00*
U.S. Cl. 417—51 **11 Claims**



A getter pump comprising a substrate of high ohmic resistance; a nonevaporable getter material embedded in the substrate; and means for causing an electrical current to flow through the substrate.

3,609,065
CONCRETE PUMP

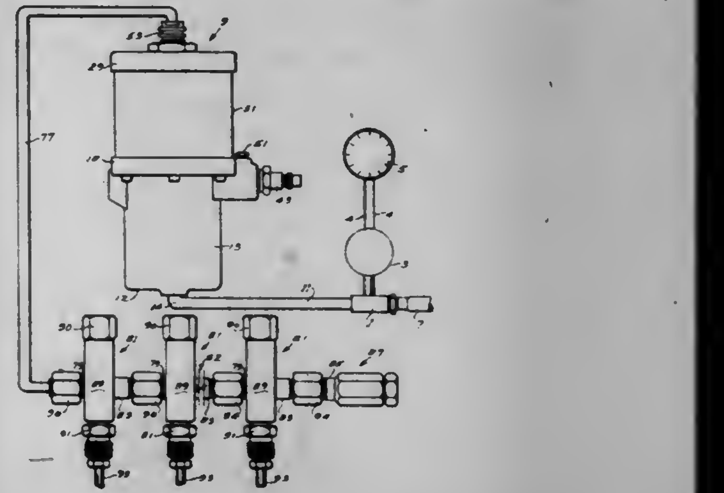
Francis C. Wilson, 8330 N. Poplar Drive, Milwaukee, Wis.
Filed Aug. 19, 1969, Ser. No. 851,348
Int. Cl. F04b *23/14*
U.S. Cl. 417—203 **10 Claims**



Concrete mix is power fed into two concrete cylinders having pistons operating in timed reciprocation with a discharge tube which swings into alignment with the cylinders so that as the concrete in one cylinder is being forced into the discharge tube, the other cylinder is being filled. The discharge tube is disposed between two power infeed screws which swing with the tube so that one of the screws is aligned with one of the cylinders while the other cylinder is being emptied.

3,609,066
LUBRICANT INJECTION SYSTEM

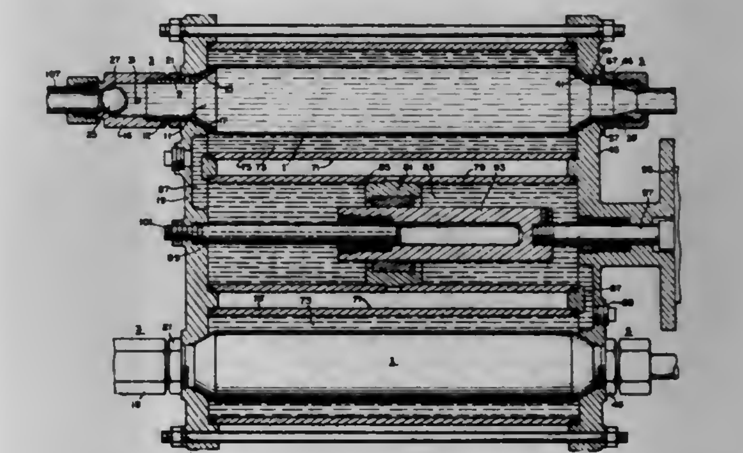
Jerome B. Wegmann, St. Louis County, Mo., assignor to McNeil Corporation, Akron, Ohio
Filed Nov. 13, 1969, Ser. No. 876,358
Int. Cl. F04b *17/02;* F16n *7/34*
U.S. Cl. 417—344 **10 Claims**



A lubricant supply line from a lubricant pump supplies a number of serially connected injectors, each of which has a connection with a bearing to be lubricated. A timing arrangement cyclically starts and stops the pump to supply and to release pressure in the lubricant supply line. Each injector is constructed so that, when the inlet pressure thereto rises, an accurately measured amount of lubricant is forced to its bearing connection and the risen inlet pressure is serially applied to the next injector in the series so that it subsequently forces a like measured amount of lubricant to its bearing connection. An accumulator is connected to the outlet of the last injector and becomes operative after the last injector has functioned. Thereafter the pump stops to release built-up pressure which causes serial recharging of the injectors to ready them for accurately measured lubrication during the next cycle. During this recharging event, only the first injector returns a relatively small amount of lubricant to the pump and each injector receives its recharge from the next one, except the last one which receives its recharge from the accumulator. The accumulator also serves as a malfunction indicator for the system.

3,609,067
DOUBLE-ACTING PUMP

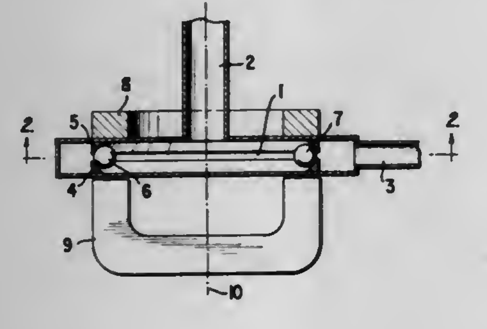
Allen C. Wright, Moraga, Calif., assignor to Utility Products, Inc.
Filed Dec. 18, 1969, Ser. No. 886,313
Int. Cl. F04b *35/02*
U.S. Cl. 417—389 **7 Claims**



A double acting pump for abrasive or like material, involving a pair of flexible tubes, each adapted to be cyclically pulsed by surrounding pump fluid which is flow connected to a pump fluid chamber, the pulsing being alternately accomplished by a reciprocal displacement piston, which, when reciprocated, alternately displaces pump fluid in the pump fluid chambers.

3,609,068
CENTRIFUGAL PUMP

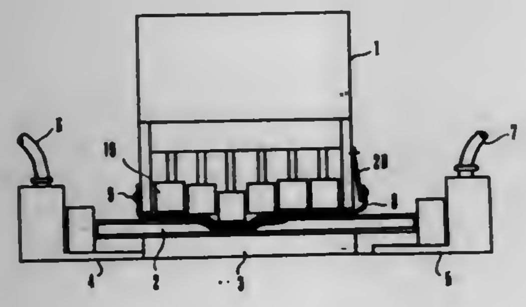
Rene Fays, deceased, late of Maisons-Laffitte, France (by Reine Marguerite Fays, Renee Helene Fays, Rolande Jose Fays, heirs, 34 Bis, rue de la Muette, 78 Maisons-Laffitte, France)
Filed Mar. 4, 1969, Ser. No. 871,814
Int. Cl. F04d *13/02*
U.S. Cl. 417—420 **15 Claims**



Disclosed herein is a centrifugal pump having a sealed circular chamber and an annular raceway in the chamber adjacent the periphery thereof. Roller elements are freely positioned within said raceway and these roller elements are rotated on the raceway by a rotating magnetic field positioned outside the chamber. An inlet near the center of the chamber administers fluid to the pump which centrifugally forces the fluid out an outlet adjacent the periphery of the chamber by the rotation of the roller elements.

3,609,069
PERISTALTIC PUMP FOR CONVEYING LIQUIDS IN CHEMICAL APPARATUS

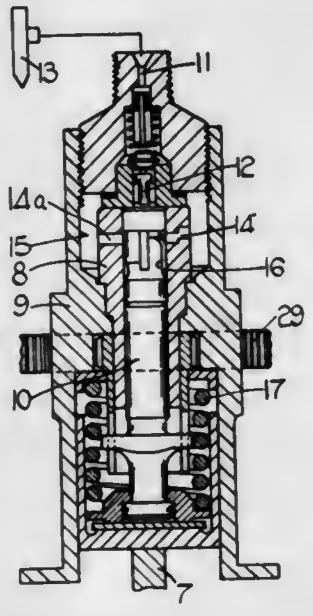
Alfred Martinelli, Zurich, Switzerland, assignor to Polymetron Ltd., Glattbrugg, Switzerland
Filed Nov. 17, 1969, Ser. No. 877,300
Claims priority, application Switzerland, Mar. 21, 1969, 4279/69
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—474 **6 Claims**



A peristaltic pump for conveying liquids in chemical apparatus having a plurality of plungers. A flexible layer of a material such as polytetrafluorethylene is arranged under tension between the plungers and the hoses containing the liquid to be pumped. The flexible layer of material adapts itself to the level of the surfaces of the individual plungers and, thereby increases the service life of the hoses.

3,609,070
FUEL INJECTION PUMPS

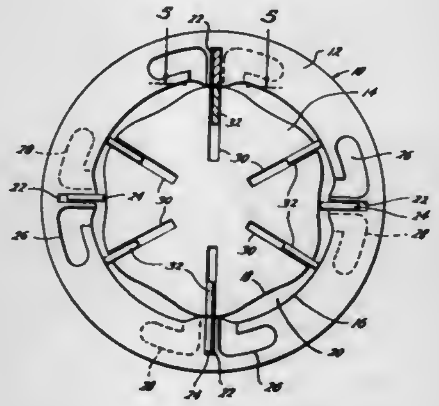
Stanley Robert Bagshaw, Hemel Hempstead, England, assignor to C.A.V. Limited, Warple Way, Acton, London, England
Filed Sept. 9, 1969, Ser. No. 856,369
Claims priority, application Great Britain, Sept. 24, 1968, 45242/68
Int. Cl. F04b *7/04, 39/10*
U.S. Cl. 417—494 **1 Claim**



A fuel injection pump includes a pump barrel in which is reciprocably mounted a plunger which has a helical or like groove communicating with a pumping chamber defined at the end of the plunger, there being provided in the pump barrel a spill port through which fuel can escape from the pumping chamber when the port is exposed by the groove, the spill port being formed in such a manner as to define a wall which is presented to the flow of fuel through the spill port whereby the velocity of such flow is minimized.

3,609,071
VANES FOR FLUID POWER CONVERTER

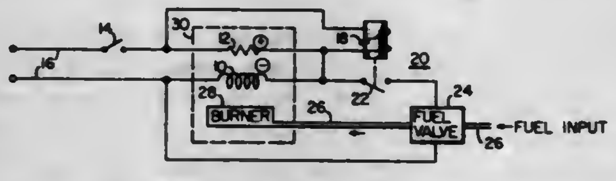
Robinson W. Brown, San Antonio, Tex., assignor to United Hydraulics Incorporated, San Antonio, Tex.
Filed Dec. 10, 1969, Ser. No. 883,764
Int. Cl. F01c *1/00*
U.S. Cl. 418—221 **9 Claims**



A self-pressurizing reversible vane for use in a fluid pump or motor in which the width of the vane in a radial cross section is less than the width of the slot thereby allowing fluid pressure to flow into the vane-receiving slot and around the vane to act on the bottom of the vane to provide a self-loading action. The vane having sides contoured to coact with and seal with the sides of the slot and freely movable sideways in the slot thereby allowing the pump or motor to reverse. A vane being teardrop shaped in cross section and having straight sides with rounded ends with the small end extending out of the slot thereby reducing the friction of the pressure-loaded vane. In fluid motors and pumps having vane valve elements in both the stator and rotor interaction noise and interference between the vanes may be reduced by placing the longitudinal axis of the vanes on at least one of the rotor and stator at an angle to a radially extending plane through the axis.

3,609,072
ELECTRIC IGNITER SYSTEM

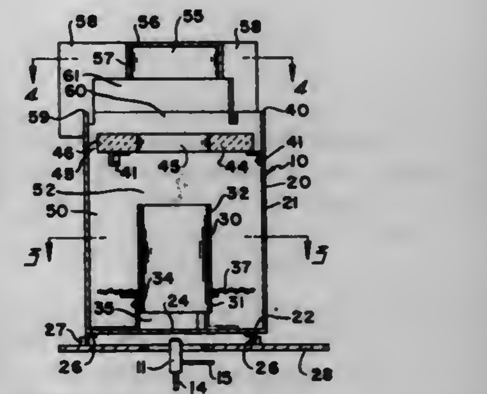
James R. Willson, Garden Grove, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed July 30, 1969, Ser. No. 845,954
Int. Cl. F23n *5/14*
U.S. Cl. 431—66 **13 Claims**



An electric igniter system for a fuel burner including an electrical resistance type igniter, wherein the resistance element is of a type having a negative temperature coefficient and is coupled to a thermistor having a positive temperature coefficient. An electrically operated fuel valve is energized only after the igniter and thermistor resistances have been changed by heat from the igniter to values corresponding to the generation of fuel ignition temperatures by the igniter.

3,609,073
OIL BURNER APPARATUS

Edgar C. Robinson, North Vancouver, British Columbia, Canada, assignor to Dickinson's Limited, Burnaby, British Columbia, Canada
Filed Feb. 24, 1969, Ser. No. 801,445
Claims priority, application Canada, Feb. 26, 1968, 013,330
Int. Cl. F23l
U.S. Cl. 431—116 **22 Claims**



A fuel pump unit and burner combination, an air oil mixture being recirculated vertically upwards through a central blast chamber of said burner from there outwardly and downwardly through a surrounding chamber and then again through said blast chamber for preheating prior to combustion, a refractory ring and inversion cap being positioned in the surrounding chamber and spaced above the blast chamber said unit having means for delivering only low pressure primary air and oil at atmospheric pressure to said burner.

CHEMICAL

ERRATA

For Classes 44—62 and 44—69 see:
Patent Nos. 3,608,231 and 3,608,232

3,609,074
FLAME-EXTINGUISHING COMPOSITIONS COMPRISING 1,2-DIBROMO-TETRAFLUOROETHANE

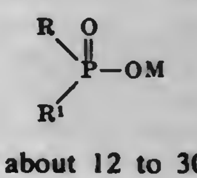
Nicolino Rainaldi, Mestre, and Pierluigi Fatutto, Venezia, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed May 26, 1969, Ser. No. 827,959
Claims priority, application Italy, May 28, 1968, 17,004 A/68
Int. Cl. A62d *1/00*
U.S. Cl. 252—3 **5 Claims**

Flame-extinguishing foam-forming composition containing 5–25 percent by weight of a bromine-containing halogen-saturated alkane of low carbon number (C_1 to C_8), preferably symmetrical 1,2-dibromotetrafluoroethane. The composition also contains substances conventional in foaming, liquid, flame-extinguishing compositions, e.g., water, emulsifiers or foam-stabilizing surface-active agents, propellants, antifreezing liquids, corrosion inhibitors, buffer substances, thickening and carrying agents.

3,609,075
CLEANING AND SOFTENING DETERGENT COMPOSITIONS

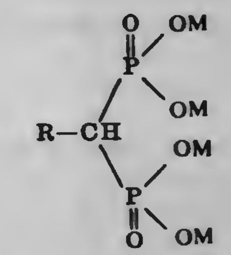
Melvin A. Barbera, Mount Healthy, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed June 25, 1968, Ser. No. 739,631
Int. Cl. D06m *13/28;* **C11d** *3/065*
U.S. Cl. 252—8.6 **11 Claims**

Detergent compositions containing a synthetic organic nonsoap detergent and an organo-phosphorus softener compound which provide conjoint cleaning and softening properties are described. The organo-phosphorus compounds employed in an amount of about 1 to 15 percent of the composition include alkylphosphinic compounds having the formula



$$RR^1P(=O)-OM$$

wherein R is alkyl of about 12 to 30 carbon atoms, R^1 is hydrogen or alkyl of one to about 30 carbon atoms, and M is a water-solubilizing cation, e.g., hydrogen, alkali metal, ammonium or substituted-ammonium or alkyl of about one to about eight carbon atoms; and alkyldiphosphonic compounds having the formula



$$R-CH[P(=O)(OM)_2]_2$$

wherein R is alkyl of about 12 to about 30 carbon atoms and each M is a water-solubilizing cation, e.g., hydrogen, alkali metal, ammonium. substituted ammonium or alkyl of one to about eight carbon atoms. Also disclosed is a process of conjointly washing and softening textile materials which comprises washing textiles at a temperature of about 40° to about 180° F. with an aqueous solution of a detergent composition of the present invention, said solution having at least about 16 p.p.m. of the organo-phosphorus softener compound.

3,609,076
METHOD OF PREPARING OVER-BASED ALKALINE EARTH SULFONATES

Albert R. Sabol, Munster; Eli W. Blaha, Highland, and Cecil G. Brannen, Highland, all of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 15, 1968, Ser. No. 767,833

Int. Cl. C10m *1/40, 1/24, 1/10*

U.S. Cl. 252—33.3 **8 Claims**

Overbased, i.e., highly basic, alkaline earth sulfonates are prepared by reacting a preferentially oil-soluble sulfonic acid with a basic alkaline earth compound in the presence of small amounts of an ammonium salt of a C_1 to C_7 aliphatic acid.

3,609,077
LUBRICANT COMPOSITIONS

Walter V. Breitigam, Wood River, and Hans Low, East Alton, both of Ill., assignors to Shell Oil Co., New York, N.Y.

Filed Nov. 18, 1968, Ser. No. 776,776

Int. Cl. C10m *1/46*

U.S. Cl. 252—32.5 **4 Claims**

Novel haloalkyl substituted pyrophosophonic acid derivatives and their amine salts impart, inter alia, extreme-pressure properties to lubricant compositions especially to lubricant compositions used in gas-turbine engines.

3,609,078
CORROSION INHIBITED GREASE COMPOSITION

Donald D. Carlos, Crown Point, Ind.; Robert H. Jordan, Chicago Heights, and Thomas H. Webb, Hazel Crest, Ill., assignors to Atlantic Richfield Company

Filed Aug. 13, 1968, Ser. No. 752,188

Int. Cl. C10m *1/54;* **C09k** *3/00*

U.S. Cl. 252—40.7 **19 Claims**

Corrosion and rust inhibitors for lubricating greases are prepared by Friedel-Crafts-catalyzed interpolymerization of a mono-1-alkene, an olefinically unsaturated carboxylic acid (or ester thereof) wherein the olefinic bond is at least 2 carbon atoms away from the carboxyl group and, optionally, a conjugated diene hydrocarbon. Preferably, the mono-1-alkene is normal and has about 14 to 21 carbon atoms, the unsaturated acid has about 10 to 21 carbon atoms and, if the ester is used, is esterified with a lower alkanol, and the diene has 4 to 5 carbon atoms. The corrosion and rust inhibitors for lubricating greases are prepared by condensation of these polymers with an essentially aliphatic polyamine having up to about 11 amino groups, at least one of which is primary, e.g., pentaethylene hexamine.

3,609,079
SILICONE LUBRICANTS

Martin J. Devine, 2560 Prescott Road, Havertown, Pa., and Edward R. Lamson, Greentree Road, R.D. 4, Sewell, N.J.

Filed Dec. 13, 1968, Ser. No. 783,537

Int. Cl. C10m *1/52, 1/50, 1/38*

U.S. Cl. 252—46.3 **6 Claims**

Lubricant compositions having increased lubricity are obtained by forming a mixture of a major amount of a silicone lubricant and a minor amount of a sulfur containing compound dissolved in the silicone and including at least two sulfur atoms per molecule. According to a preferred form of the invention, from 1 to 10 parts by weight of di-tertiary-nonyl polysulfide are admixed with from 99—90 parts by weight of a silicone oil to provide a new composition which functions properly as a lubricant under loads as high as 240 kilograms when employing the Shell 4-Ball EP machine. Without the polysulfide additive, the silicone oil is not useful as a lubricant under loads exceeding about 40 kilograms when employing the Shell 4-Ball EP machine.

3,609,080
LUBRICANT, GREASE AND HYDRAULIC FLUID

Joachim Dazzi, Riehen/Basle, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.

Filed May 26, 1969, Ser. No. 827,880

Claims priority, application Switzerland, May 29, 1968, 7972/68

Int. Cl. C10m *1/38, 1/32*

U.S. Cl. 252—47.5 **8 Claims**

Lubricants, greases and hydraulic fluids are described which consist of, or comprise as an essential constituent substituted imidazolidin-2-ones or pyrimidin-2-ones.

A preferred lubricant contains 69 percent to 77 percent of N,N′-didodecylimidazolidin-2-one and 31 percent to 23 percent of N,N′-di-octyl-5-methylimidazolidin-2-one.

3,609,081
ORGANIC COMPOSITIONS CONTAINING SECONDARY C_6 TO C_9 TRIALKYL PHENOLS, OR THEIR MIXTURES, AS ANTIOXIDANTS

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 710,784, Mar. 6, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 556,577, June 19, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 510,395, Nov. 29, 1965, now abandoned. This application Oct. 17, 1969, Ser. No. 867,369

Int. Cl. C10m *1/20*

U.S. Cl. 252—52 **10 Claims**

Organic compositions are provided containing secondary C_6 to C_9 trialkyl phenols, or their mixtures, as antioxidants for preventing oxidative deterioration of metal surfaces.

3,609,082
ELECTROSTATIC DEVELOPER PARTICLES CONTAINING RESIN, COLORANT, METAL SALT AND PHTHALATE

Joseph H. Moriconi, Rochester; Frank M. Palermiti, Pittsford, and Burton B. Jacknow, Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 5, 1967, Ser. No. 643,396

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **10 Claims**

A finely divided toner comprising a colorant, a thermoplastic resin comprising a vinyl resin, a solid ester of o-phthalic or m-phthalic acid and a solid metal salt of a fatty acid.

3,609,083
HEAT TREATMENT OF NICKEL ZINC COBALT FERRITE

Paul Irving Slick, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 684,628, Nov. 21, 1967. Filed Mar. 17, 1970, Ser. No. 20,416

Int. Cl. C04b *35/30*

U.S. Cl. 252—62.62 **8 Claims**

This is a method for improving the magnetic properties, and in particular the product of the permeability and the quality factor, for a nickel zinc cobalt ferrite, within the frequency range of 1.5 to 20 megahertz. It is a heat treatment consisting of the steps of; precooling, comprising either rapid cooling or cooling in an oxygen-poor atmosphere to a temperature above the Curie point and thereafter slowly cooling to room temperature in an oxygen-rich atmosphere. The resulting product is useful as a core material in inductors at high frequency.

3,609,084
LITHIUM FERRITE COMPOSITION FOR MAGNETIC MEMORY ELEMENTS AND MANUFACTURING PROCESS THEREOF

Norbert Loye, Montreuil-Sous-Bois, France, assignor to Compagnie Des Ferrites Electroniques-Cofelec, Paris, France

Filed May 15, 1968, Ser. No. 729,430

Claims priority, application France, May 18, 1967, 106,813

Int. Cl. C04b *35/26*

U.S. Cl. 252—62.59 **4 Claims**

A composition comprising by mole percent:

Fe_2O_3: 50 to 80 percent; Li_20: 8 to 18 percent, at least one oxide chosen from the following group: MgO, Al_2O_3, CaO, Cr_2O_3, NiO, CuO, ZnO, CdO: 0 to 10 percent; Mn0: 0 to 40 percent; SiO_2 up to 5 percent. The temperature of 1,200° C. is never exceeded in the course of the preparation.

The Curie point is above 500° C.

3,609,085
POLYESTER FUNCTIONAL FLUID COMPOSITIONS

Frank H. Langenfeld, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 682,546, Nov. 13, 1967, now Patent No. 3,573,097, which is a continuation-in-part of application Ser. No. 516,077, Dec. 23, 1965, now abandoned. This application Mar. 16, 1970, Ser. No. 20,103

Int. Cl. C09k *3/00;* **C10m** *3/20;* **C23f** *11/08*

U.S. Cl. 252—79 **8 Claims**

Compositions comprising a synthetic ester hydraulic fluid and a small amount of water exhibit the ability and control damage to mechanical members in contact with said compositions. The compositions have many uses, among which are their use as hydraulic fluids.

3,609,086
ARSENIC TRIOXIDE CORROSION INHIBITOR FOR ABSORPTION REFRIGERATION SYSTEM

Robert J. Modahl, Galesville, and Paul J. Lynch, La Crosse, both of Wis., assignors to The Trane Company

Division of Ser. No. 744,913. Filed Sept. 15, 1969, Ser. No. 872,802

Int. Cl. C09k *3/06;* **C23f** *11/18*

U.S. Cl. 252—68 **6 Claims**

Evolution of hydrogen and corrosion of iron and copper construction materials in a closed, substantially anaerobic refrigeration system of an absorption refrigeration machine is successfully controlled by addition of an arsenic trioxide inhibitor to the lithium bromide absorbent solution. The absorbent solution is maintained at a basicity of from 0.1N to 0.5N based on a 60 percent lithium bromide solution.

3,609,087
SECONDARY ALCOHOL ADDITIVES FOR LITHIUM BROMIDE-WATER ABSORPTION REFRIGERATION SYSTEM

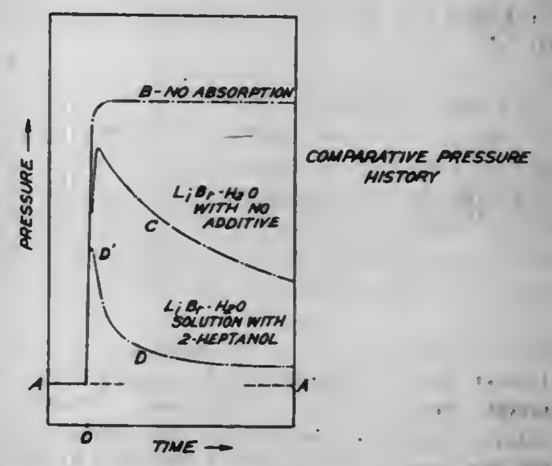
Chang W. Chi, Chicago; Robert A. Macriss, Deerfield, and William F. Rush, Arlington Heights, all of Ill., assignors to The American Gas Association, Inc.

Filed Feb. 1, 1968, Ser. No. 702,294

Int. Cl. C09k *3/06*

U.S. Cl. 252—69 **5 Claims**

A refrigerant-absorbent solution as a working fluid for use in absorption refrigeration systems that produces a substantial increase in the overall capacity of the refrigeration machine by improving the heat transfer in the absorber, by promoting dropwise condensation of the refrigerant vapor on the exterior surfaces of the condenser tubes and by improving purging of relatively noncondensible gases of the absorption machine. The working fluid comprises water as the refrigerant in combination with lithium bromide as the absorbent to which is added additives such as 4-heptanol, decyl alcohol, 2-phenoxyethanol, nonanol, 3-methyl-2-heptanone, methyl octanoate, 3-methyl-2-heptanol, 1-heptanol, 1-octanol, 2-hexanol, 2-octanol, 2-methyl-2-hexanol, 2-methyl-2-heptanol, 6-methyl-2-heptanol, and 2-heptanol. These additives are supplied to the lithium bromide-water fluid in the range of 50 to 1,000 parts per million on a weight basis of the lithium bromide-water solution.



3,609,088
METHOD OF PREPARING AGGLOMERATED DETERGENT COMPOSITION

Clark A. Sumner, Downey, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation of application Ser. No. 764,634, Oct. 11, 1968. This application May 21, 1969, Ser. No. 826,481

Int. Cl. C11d *7/56*

U.S. Cl. 252—99 **5 Claims**

A method of producing agglomerates of detergent ingredients by charging particulate detergent ingredients into an agglomeration zone and maintaining a falling curtain of said ingredients in said zone, contacting said particulate material in said falling curtain with liquid material to agglomerate said particulate material, maintaining a tumbling bed of agglomerating ingredients at the base of said falling curtain and withdrawing agglomerated material from said agglomeration zone.

3,609,089
PROCESS FOR CLEANING ROAD VEHICLES AND COMPOSITION

Clifford M. Cantrell, Cincinnati, Ohio; David P. MacDonald, Ludlow, Ky., and Millard J. Laugle, Cincinnati, Ohio, assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 22, 1967, Ser. No. 662,300

Int. Cl. C11d *1/22*

U.S. Cl. 252—137 **5 Claims**

Process for cleaning road film from road vehicles with a dilute aqueous solution of a cleaning composition. The cleaning composition is a mixture of 15–90 parts condensed phosphate, 2–40 parts alkaline builder, 5–60 parts alkali metal chloride, 1–25 parts higher alkylbenzene sulfonate, 1–15 parts of fatty lower alkanolamides, 1–10 parts polyethyoxylated fatty alcohols or alkylphenols, and 1–30 parts of a hydrotropic agent.

3,609,090
BUILT DETERGENT COMPOSITIONS CONTAINING HYDROXY ETHER SULFONATES

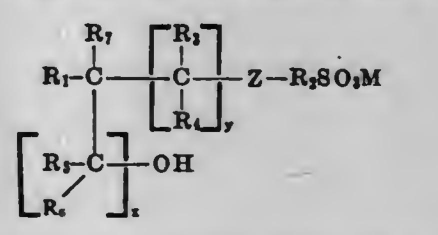
Bjorn Sundby, Highland Park, and Harold Eugene Wixon, New Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,172

Int. Cl. C11d *3/065, 1/12*

U.S. Cl. 252—138 **11 Claims**

A detergent composition comprising a compound having the formula



wherein:

(1) R_1 is a straight or branched higher alkyl group of C_6 to C_{30}, and preferably C_{10} to C_{22};

(2) R_2 is a straight or branched alkyl of C_3 to C_{12}, and preferably C_3 to C_6;

(3) R_3 to R_7 are, independently, hydrogen or straight or branched alkyl of C_1 to C_{16}, and preferably hydrogen or lower alkyl of C_1 to C_4;

(4) Z is oxygen (—O—) or sulfur (—S—);

(5) x and y have the values 0 to 1 and $x+y=1$; and

(6) M is a cation such as hydrogen, alkali metal, ammonium, substituted ammonium or amine and preferably a water-solubilizing, salt-forming group. The hydroxy oxa (or thia) sulfonates of the detergent composition provide both detergency and fabric-softening characteristics and are hereinafter referred to generally as hydroxy ether sulfonates.

3,609,091
STABILIZED SOLVENT

Eleanor Harden (nee Boothman), Widnes, England, and Robert Stewart Gow, Stevenston, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 459,880, May 28, 1965, which is a continuation of application Ser. No. 852,522, , now abandoned. This application Nov. 20, 1969, Ser. No. 878,541

Int. Cl. C09d *9/00;* **C11d** *7/50;* **C23q** *5/02*

U.S. Cl. 252—171 **20 Claims**

There is provided a composition of 1,1,1-trichloroethane which has as stabilizer therefor an alkyl or alkoxyalkyl ester of nitric acid which contains less than 5 carbon atoms per molecule and mixtures thereof. The stabilizer may be in the amount of 0.5 to 10 percent by weight of the 1,1,1-trichloroethane. Additional stabilizers may be included in the composition, among which are acrylonitrile and butene oxides.

3,609,092
ALKALI METAL PHOSPHATE COMPOSITION AND PROCESS FOR PRODUCING SAME

Keith J. Smith, Lockport, and Harold S. Eldridge, Kenmore, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Dec. 26, 1967, Ser. No. 693,066

Int. Cl. C01b *25/30;* **C02b** *5/04;* **C23f** *14/02*

U.S. Cl. 252—175 **9 Claims**

An incompletely molecularly dehydrated alkali metal polyphosphate composition prepared by heating an alkali metal phosphate mixture having a ratio of alkali metal oxide to P_2O_5 within the range of about 1.15 to 1.40:1 and an Na_2O to K_2O ratio which is not substantially in excess of about 6:1, the heating of the mixture being carried out at a temperature within the range of about 100° C. to 500° C., at atmospheric pressure, for a period sufficient to obtain a product having an ignition loss which is not substantially greater than about 5% by weight of the product. The resulting polyphosphate composition has good water solubility and sequestering action.

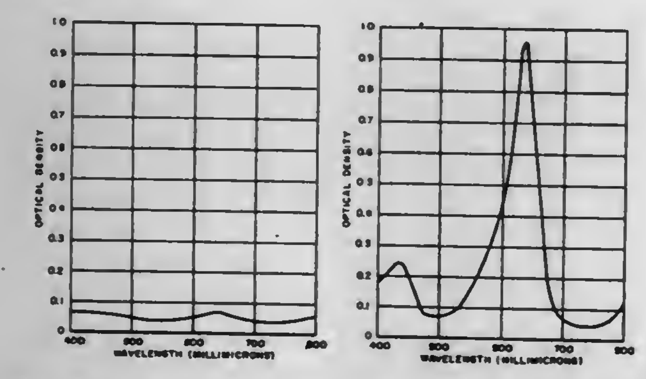
3,609,093
PHOTOCHROMIC RADIATION DOSIMETER

Larry A. Harrah, Albuquerque, N. Mex.

Filed Sept. 11, 1968, Ser. No. 758,959

Int. Cl. G02c *7/10;* **G02b** *5/20*

U.S. Cl. 252—300 **5 Claims**



A photochromic radiation dosimeter comprising a homogeneous mixture of a poly(halostyrene) host and a compound selected from the general structure of triarylmethane carbinols, ethers or azides substituted in one or more of the aryl moieties with hydroxyl or amine auxochromes.

3,609,094
YTTERBIUM-ACTIVATED STRONTIUM PHOSPHATE PHOSPHORS

Francis N. Shaffer, Towanda, Pa., assignor to Sylvania Electric Products Inc.

Filed Oct. 15, 1968, Ser. No. 767,728

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **1 Claim**

Compounds of the ytterbium-activated strontium phosphate are novel and useful blue-emitting phosphors under cathode-ray and X-ray excitation.

3,609,095
URANIUM DIOXIDE ARTICLE AND METHOD OF PRODUCING THE SAME

Brian S. Wyatt, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Feb. 24, 1969, Ser. No. 801,809

Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 **7 Claims**

The invention relates to the production of uranium dioxide articles such as nuclear fuel elements and ceramic shapes and which comprise a powdered mixture of UO_{2+X} and U or Pu metal, wherein X is the amount of excess O_2 required to produce, from said mixture, stoichiometric UO_2 when subjected to reaction conditions under irradiation.

One of the problems incidental to the use of nuclear fuel elements containing vibration packed mixtures of uranium dioxide (UO_2) powders is the shrinkage of the UO_2 that occurs at the high temperatures generated in the fuel element during irradiation. The maximum packed densities thus far obtained in nuclear fuel elements, made by vibration packing inside a metal sheath a mixture of different size fractions of UO_2 powders, are in the range of 88–92 percent of the theoretical density. The UO_2 powder is commonly prepared by crushing previously sintered or fused blocks of UO_2. During irradiation of such an element, the UO_2 powder tends to sinter with resultant shrinkage of the UO_2 body . This shrinkage could impair heat transfer between fuel and sheath and might eventually result in the collapse of the fuel-sheathing when this is insufficiently thick to be self-supporting in the reactor coolant pressure.

3,609,096
COMPOSITION FOR EMULSIFYING HYDROCARBONS

Georges Henri Salomone, 14 Avenue Pierre ler de Serbie, Paris, 16eme, France

Filed Aug. 12, 1968, Ser. No. 751,764

Claims priority, application France, Apr. 3, 1968, 146,840

Int. Cl. B01f *17/00;* **C11d** *3/04, 7/08*

U.S. Cl. 252—352 **3 Claims**

A composition for emulsifying hydrocarbons with fresh water or brackish water or sea water consists essentially of 30 to 70 percent by weight of strong mineral acid, 15 to 35 percent by weight of alkali metal salt or alkaline earth metal salt, and 15 to 35 percent by weight of a hydrophilic organic substance such as molasses or unrefined sugar or pancreatic peptone. It is especially useful for cleaning away petroleum products.

3,609,097
CATALYST REGENERATION

Herbert Koppe, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 5, 1968, Ser. No. 742,945

Claims priority, application Germany, July 6, 1967, M 74655

Int. Cl. B01j *11/04*

U.S. Cl. 252—419 **1 Claim**

A steam injector is used to circulate regenerating gas through a catalyst bed to burn off carbonaceous deposits on the catalyst.

3,609,098
HALOESTER AND CUPROUS SALT POLYMERIZATION CATALYST SYSTEMS

James D. Brown, Bartlesville, Okla., assignor to Phillips Petroleum Company

Division of Ser. No. 610,466, Jan. 20, 1967. Filed Aug. 21, 1969, Ser. No. 852,107

Int. Cl. C08f *7/02*

U.S. Cl. 252—429 R **5 Claims**

Compositions of matter prepared by the admixture of an ester of a halogenated carboxylic acid with a cuprous salt.

3,609,099
METHOD OF ACTIVATING IMPREGNATED CATALYST

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 761,322, Sept. 20, 1968, now abandoned , and a continuation-in-part of Ser. No. 837,340, June 27, 1969, now abandoned. This application Sept. 8, 1969, Ser. No. 856,143

Int. Cl. B01j *11/82, 11/06*

U.S. Cl. 252—435 **19 Claims**

Composites formed by the impregnation of refractory oxide supports with thermally decomposable salts of catalytically active metals are activated to produce highly active catalysts by heating the composites at a controlled rate to the prescribed calcination temperature while intimately contacting the composites with at least about 1 and preferably at least about 2 s.c.f.m. of injected air per pound of composite having an initial temperature below about 500° F.

3,609,100
BLOCK COPOLYMERS OF POLAR MONOMERS

Theodore F. Niemann, Brecksville, Ohio, assignor to The BF Goodrich Company, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,961

Int. Cl. C08f *15/38*

U.S. Cl. 252—431 R **6 Claims**

Polar monomers can be polymerized to obtain block copolymers by the sequential addition of the polar monomers. The polymerization is initiated with an organolithium compound in combination with a heterocyclic compound containing a sulfur heteroatom. Acrylonitrile, methacrylonitrile and alkyl acrylates and methacrylates are copolymerized to two- and three-block copolymers with an initiator system consisting of an alkyl lithium compound and five- or six-membered heterocyclic compound or fused heterocyclic ring system derived therefrom, where the heteroatom is sulfur which may be unsubstituted or contain one or two oxygen atoms bonded thereto but external to the ring.

3,609,101
PROCESS AND CATALYST FOR THE BLOCK COPOLYMERIZATION OF POLAR MONOMERS

Theodore F. Niemann, Brecksville, Ohio, assignor to The BF Goodrich Company, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,962

Int. Cl. C08f *15/38*

U.S. Cl. 252—431 **4 Claims**

Polar monomers can be copolymerized to obtain block copolymers by the sequential addition of the polar monomers when the polymerization is initiated with an organolithium compound in combination with a compound containing a sulfinyl or sulfonyl group. Acrylonitrile, methacrylonitrile and alkyl acrylates and methacrylates are copolymerized to two- and three-block copolymers with alkyl lithium-diphenyl sulfone or alkyl lithium-diphenyl sulfoxide initiator systems.

3,609,102
MULTICOLORED TRANSPARENT POLYMER GEL EMOLLIENT BASES, WITH OIL-MISCIBLE DYES, FOR OIL-SOLUBLE COSMETICS, PERFUME AND PHARMACEUTICALS

Mitchell L. Schlossman, Rockaway, N.J., assignor to Paris Cosmetics, Inc.

Filed Oct. 2, 1969, Ser. No. 863,356

Int. Cl. G01n *31/22;* **A61k** *7/00;* **C11b** *9/00*

U.S. Cl. 252—522 **7 Claims**

The composition comprises a first polar phase and a second nonpolar phase. The second phase is comprised of a plurality of discrete macroscopic bodies dispersed throughout the first phase. The first phase comprises a polar solvent having a polymer dissolved therein. The polymer imparts a Bingham yield value to the composition which is sufficient to retain the second phase in dispersion. The bodies impart to the composition an optical effect which can be enhanced by incorporating into said bodies differing colors.

3,609,103
HYDROCARBON CONVERSION CATALYSTS CONTAINING DISPERSED CLAY

Elroy M. Gladrow, and Warren M. Smith, both of Baton Rouge, La., assignors to Esso Research and Engineering Company

Continuation of application Ser. No. 657,055, July 31, 1967, now abandoned. This application Nov. 28, 1969, Ser. No. 876,191

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **19 Claims**

The attrition resistance of hydrocarbon conversion catalysts comprising a crystalline aluminosilicate zeolite distributed throughout a clay-containing matrix, preferably a matrix comprising a siliceous gel and a clay, is improved by first dispersing the clay to form particles having a prescribed size distribution prior to its combination with the other two components. The improved product and its use in hydrocarbon conversion reactions is described.

3,609,104
ELECTRICALLY CONDUCTIVE GASKET AND MATERIAL THEREOF

John E. Ehrreich, Watertown, and Adrian R. Reti, Cambridge, both of Mass., assignors to Ercon, Inc., Cambridge, Mass.

Filed Feb. 15, 1968, Ser. No. 705,593

Int. Cl. H01b *1/06;* **C08f** *1/84*

U.S. Cl. 252—511 **30 Claims**

An article loaded with a filler providing good electrical or heat conductivity is formed by mixing the filler with particles of nonflowing compressible resin, as well as a sufficient amount of flowable resin. The flowable resin is then hardened. The nonflowing resin particles concentrate the filler particles in a network of high conductivity pathways and in this way they provide high conductivity in the macrostructure with a very low overall concentration of filler particles; and at the same time they enhance the resilience of the finished article. They also prevent settling of the filler particles prior to hardening, thereby maintaining a fairly homogeneous dispersion of the filler.

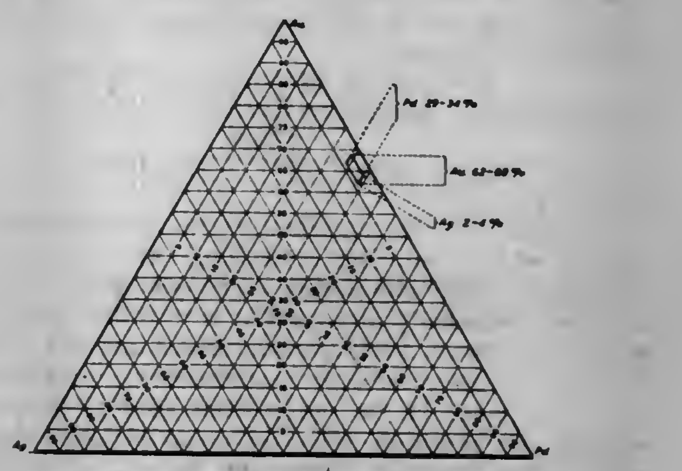
3,609,105
METALIZING MATERIAL

Sandford S. Cole, Jr., West Caldwell, N.J., assignor to Alpha Metals Inc., Jersey City, N.J.

Filed June 8, 1970, Ser. No. 44,416

Int. Cl. H01b *1/02;* **B44d** *1/02*

U.S. Cl. 252—514 **7 Claims**



A metallizing composition for forming electrically conductive areas on dielectric materials, which areas bond securely to the dielectric base materials, and which areas form secure bonds with conductive and mechanical attachments, the composition being a mixture by weight of approximately 63.7 percent gold, 32.3 percent palladium, 4.0 percent silver.

3,609,106
ANTIMONY CARBOXYLATES AND ALCOHOLATES AS CATALYSTS IN PRODUCING POLYESTER-POLYURETHANE POLYMERS

Anthony Joseph Papa, St. Albans, and William Robert Proops, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,751

Int. Cl. C08g *41/00*

U.S. Cl. 260—2.5 AB **6 Claims**

The production of polyester-polyurethane products is improved by the use of antimony carboxylates and antimony alcoholates, such as antimony triisopropoxide and antimony octoate, as catalysts. The products have improved thermal properties and can be used in those applications wherein urethane foams are conventionally employed and improved thermal properties are desired.

3,609,107
SELF-EXTINGUISHING POLYURETHANE FOAMS

Nicodemus E. Boyer, Parkersburg, W. Va., and Marvin P. Weaver, Belpre, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 23, 1969, Ser. No. 827,160

Int. Cl. C08g *51/50, 22/44, 51/30*

U.S. Cl. 260—2.5 AJ **7 Claims**

A polyurethane foam composition containing dialkyl hydroxyalkanephosphonates incorporated therein. The phosphonate compounds are utilized as integral parts of the polyurethane polymeric chain and are chemically combined therewith to lend fire-retardant characteristics to the polyurethane composition.

3,609,108
RUBBER MODIFIED WITH TRIS-SUBSTITUTED RESORCINOL COMPOUNDS

Alfred J. Kolka; Wun T. Tai, and Roy H. Moult, all of 440 College Park Drive, Monroeville, Pa.

Division of Ser. No. 565,380, July 15, 1966, abandoned. Filed Jan. 31, 1969, Ser. No. 813,353

Int. Cl. C08c *9/00*

U.S. Cl. 260—3 **2 Claims**

Novel rubber compositions having increased adhesion to fabrics and lower modulus value and the method of their preparation are disclosed. The addition of certain tris-substituted resorcinol compounds to rubber containing resorcinol, a resorcinol resin or other polymerizable reinforcing additive provides the above-described properties.

3,609,109
HARDENABLE POLYESTER POLYCONDENSATES

Klaus Plesske, Wiesbaden-Biebrich; Alfred Kuhlkamp, Hofheim, and Dieter Zingel, Wiesbaden-Biebrich, all of Germany, assignors to Chemische Werke Albert, Wiesbaden-Biebrich, Germany

Filed Dec. 6, 1968, Ser. No. 781,980

Claims priority, application Germany, Dec. 8, 1967, P 17 20 424.9

Int. Cl. C08g *17/007, 17/10;* **C09d** *3/64*

U.S. Cl. 260—22 **11 Claims**

A process for the manufacture of a hardenable polycondensate which comprises esterifying (a) a polymer of a low molecular weight containing carboxylic groups, (b) a saturated or olefinically unsaturated carboxylic acid or mixture thereof having up to 25 carbon atoms and (c) a polyhydric alcohol with up to 10 carbon atoms to yield a polyester with an acid number in the range from 30 to 120, and further reacting the resulting polyester at an elevated temperature with a mono-epoxide compound having up to 20 carbon atoms, a hardenable polycondensate consisting essentially of a polyester having an acid number in the range from 30 to 120 and derived from the components (a) to (c), a mixture thereof with a reactive resin and a hardened product thereof.

3,609,110
COMPOSITION FOR ELECTROPHORETIC DEPOSITION

Ju Kumanotani, Chofu-shi, Tokyo-to, Japan, assignor to Kansai Paint Company Limited, Kanzaki, Amagasaki-shi, Hyogo-ken, Japan

Filed Nov. 6, 1967, Ser. No. 680,973

Claims priority, application Japan, Nov. 7, 1966, 41/73164

Int. Cl. C09d *3/00*

U.S. Cl. 260—29.7 **12 Claims**

In a coating composition adapted for electrophoretic deposition containing an aqueous medium and a resinous binder dispersed therein, the improvement comprising the resinous binder being a modified polybutadiene glycol prepared by reacting a polybutadiene glycol having hydroxyl group at both ends of the polymer main chain and a number average molecular weight of 200 to 10,000 with acid anhydride to produce a half ester of the polybutadiene glycol and neutralizing the resultant half ester with a base to turn it water dispersible.

3,609,111
COMPOSITION FOR ELECTROPHORETIC DEPOSITION

Ju Kumanotani, Chofu-shi, Japan, assignor to Kansai Paint Company Limited, Kanzaki, Amagasaki-shi, Hyogo-ken, Japan

Filed Nov. 6, 1967, Ser. No. 680,988

Claims priority, application Japan, Nov. 7, 1966, 41/73163

Int. Cl. C09d *3/00*

U.S. Cl. 260—29.7 **10 Claims**

In a coating composition adapted for electrophoretic deposition containing an aqueous medium and a resinous binder dispersed therein, improvement comprising the resinous binder being a modified butadiene polymer prepared by reacting a butadiene polymer of a number average molecular weight of 200 to 5,000 with an α,β-ethylenically unsaturated monocarboxylic acid and neutralizing the resultant adduct with a base to turn it water-dispersible.

3,609,112
UREA-URETHANE COMPOSITIONS FROM 1-AMINO-3-AMINOMETHYL-3,5,5-TRIMETHYL CYCLOHEXANE

Herbert M. Schroeder, and Paul C. Stievater, both of Williamsville, N.Y., assignors to Tertron Inc.

Filed June 30, 1967, Ser. No. 656,615

Int. Cl. C08g *22/00*

U.S. Cl. 260—30.2 **34 Claims**

A urea-urethane composition is prepared by reaction of 1-amino-3-aminomethyl-3,5,5-trimethyl cyclohexane with urethane prepolymer.

3,609,113
POLY-(ARYLENE-TRIKETOIMIDAZOLIDINES) AND PROCESS FOR PREPARING THE SAME

Gerhard Schade, Witten-Bommern, and Franz Blaschke, Witten-Ruhr, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Witten-Ruhr, Germany

Filed Apr. 4, 1969, Ser. No. 813,761

Claims priority, application Germany, Apr. 6, 1968, P 17 70 146.1

Int. Cl. C08g *22/08, 51/34, 51/44*

U.S. Cl. 260—30.2 **19 Claims**

Poly-(arylene-triketoimidazolidines) are prepared by reacting approximately diamine amounts of bis- (oxalic acid-monoalkyl ester-monoamide) of an aromatic diamine with an aromatic diisocyanate in a polar organic solvent at an elevated temperature. The polymers melt at about 310° C. up to > 400° C. with decomposition. Organic solvent solutions thereof can be used for the production of high-temperature resistant films and fibers as well as coatings for metals. Wire insulating varnishes can also be prepared therefrom.

3,609,114
MOLDABLE INTERPOLYMERS, CAST PRODUCTS THEREOF AND APPARATUS FOR THE PROCESSING THEREOF

Elvin M. Bright, Sr., 15940 Valley Vista Blvd., Encino, Calif.

Filed Nov. 28, 1967, Ser. No. 686,170

Int. Cl. C08g *51/26*

U.S. Cl. 260—30.4 EP **10 Claims**

A transparent and/or internally colorable, thermosetting, molded article curable at room temperature and having the capability to embed up to 90 percent of high density particles suspended by micronized silica or, alternately, contain internally visible objects, providing an article of manufacture including both structural and art objects. Typically, the article is polymerized from a clear fluid mixture of bisphenol-A-type epoxy resin and alkyl acrylate monomer dissolved in glycidyl esters of low viscosity, plus a viscosity-lowering catalyst such as N-aminoethyl piperazine; the resulting interpolymer is characterized by workability of 150 percent to 300 percent elongation without stress when 75 percent polymerized. The polymer characteristically does not recede from mold face in casting and hence may be formed with fine engravinglike surface configurations. Wafer-thin castings of flexible, incompletely cured polymer may be permanently bonded to rigid surfaces by coating with silicone resin adhesive and silicone polymerization catalyst. Also provided are unique apparatus and a process for molding wafers, plaques and the like of the invention composition and for laminating the same permanently to another body while completing polymerization of the composition in intimate contact with an adhesive also undergoing polymerization.

3,609,115
PROPELLANT BINDER

George D. Sammons, and Liles G. Herring, both of Waco, Tex., assignors to North American Rockwell Corporation

Filed Sept. 30, 1963, Ser. No. 312,782

Int. Cl. C08f *45/44;* **C08g** *51/44*

U.S. Cl. 260—32.4 **12 Claims**

This invention relates to solid propellant formulations. More particularly, it relates to a novel binder for utilization in such solid propellants.

3,609,116
MOLDABLE SHIM MATERIAL FOR DIMENSIONAL AND AERODYNAMIC SURFACE CONTROL OF AEROSPACE STRUCTURE

Jack E. Thomas; Harold P. Owen; Wallace S. Hay, and Jack W. McNeilly, all of Fort Worth, Tex., assignors to General Dynamics Corporation

Filed Dec. 6, 1968, Ser. No. 781,913

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **3 Claims**

A moldable shim material comprised of specific epoxide resins, buna-N-rubber, filler materials and curing catalysts, which when mixed together in the specified proportions provide superior strength, adhesion and thermal resistance qualities; characteristics which are particularly desirable for structures utilized in aerospace applications.

3,609,117
POLYESTER RESINS AND PROCESSES FOR PREPARING SAME

William H. Deis, Belmont; Wesley Werner Ness, San Bruno, and Gerald Bohm, Sacramento, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of application Ser. No. 587,658, Oct. 19, 1966, now abandoned. This application Feb. 6, 1970, Ser. No. 9,092

Int. Cl. C08k *1/06*

U.S. Cl. 260—40 R **4 Claims**

Magnesia having an iodine number greater than 100, a particle size of 0.4–3 microns, and containing about 86–96 weight percent of MgO for use as a chemical thickening agent in polyester resin systems.

3,609,118
POLYESTERS STABILIZED WITH A PHOSPHONITE

Eberhard Pilz, Bobingen; Klaus Hoheisel, Wiesbaden-Biebrich, and Eberhard Werner, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 2, 1968, Ser. No. 780,559

Claims priority, application Germany, Dec. 4, 1967, P 16 94 549.6

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.7 **2 Claims**

This invention relates to a thermostabilized linear polyester or copolyester containing 0.001 to 5 percent by weight, based on the weight of the diester component, of phenyl diphenoxy phosphine as a thermostabilizer.

3,609,119
POLYESTERS STABILIZED WITH THIOPHOSPHITES

Eberhard Pilz, Bobingen uber Augsburg; Klaus Hoheisel, Wiesbaden-Biebrich, and Eberhard Werner, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

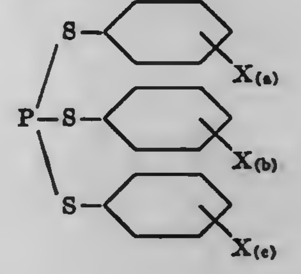
Filed Dec. 2, 1968, Ser. No. 780,572

Claims priority, application Germany, Dec. 4, 1967, P 16 94 548.5

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.7 **8 Claims**

This invention relates to a thermostabilized linear polyester or copolyester containing 0.001 to 5 percent by weight, calculated on the weight of the diester component employed, of a stabilizer having the formula



wherein

a, *b*, and *c* are integers between 1 and 5, preferably 1 to 3,

X is a straight-chain or branched-chain or cyclic saturated hydrocarbon group having not in excess of 10, preferably one to four, carbon atoms, particularly methyl or tert. -butyl groups, or an aromatic group, particularly a phenyl group.

3,609,120
NOVEL CHEMICAL COMPOUNDS AND STABILIZED HALOGEN-CONTAINING RESINS

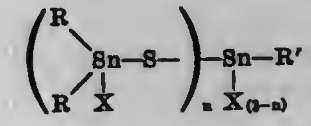
Peter Albert Theodore Hoye, Stourbridge, and Donald Albert Wood, Quinton, Birmingham, both of England, assignors to Albright & Wilson, Limited, Oldbury near Birmingham, England

Filed Feb. 24, 1969, Ser. No. 801,825

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 **8 Claims**

This invention is one of novel compounds of the formula



$$\left(\begin{matrix} R \\ R \end{matrix} \!\! > \underset{X}{Sn}-S- \right)_n -\underset{X_{(3-n)}}{Sn}-R'$$

wherein R and R′ are hydrocarbons, X is an organic radical such as a hydrocarbon bonded to a tin atom through a sulfur atom and *n* is an integer of less than 4, and of halogen-containing polymers stabilized against the deteriorative effects of heat by the presence therein of said novel compounds.

3,609,121
CURABLE EPOXY RESIN COMPOSITIONS CONTAINING NOVEL DISECONDARY DIAMINES

Friedrich Lohse, Allschwil; Rolf Schmid, Muenchenstein, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed July 30, 1968, Ser. No. 748,590

Claims priority, application Switzerland, Aug. 9, 1967, 11217/67

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 **11 Claims**

Curable epoxy resin mixtures suitable for use as casting, impregnating or laminating resins or binders, coacting or sealing compositions, characterized in that they contain I. a diepoxy compound containing two 1,2-epoxyethyl residues, (II) a disecondary diamine of the formula

$$R_1-NH-CH_2-CH_2-CH_2-O-[R_3-O]_{n-1}CH_2-CH_2-CH_2-NH-R_2$$

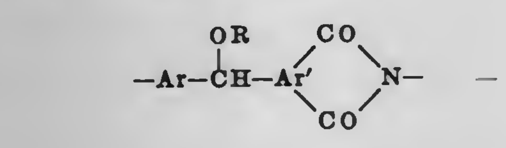
in an amount of 0.3 to 0.9, preferably 0.5 to 0.8 equivalent of active hydrogen atoms linked with nitrogen for every equivalent of epoxide groups of the diepoxy compound (I), in which formula R_1 and R_2 each represents a saturated carbocycle or cyclic system which may be unsubstituted or substituted by alkyl groups, containing at least five cyclic carbon atoms; R_3 represents the residue of a glycol or polyglycol from which the terminal hydroxyl groups have been removed, and $n=1$ or 2, and (III) a polyamine containing at least three active hydrogen atoms linked with nitrogen in an amount of 0.2 to 0.8, preferably 0.4 to 0.6 equivalent of active hydrogen atoms linked with nitrogen for every epoxide equivalent of the diepoxy compound (I).

3,609,122
NITRO-SUBSTITUTED HYDROXY-BENZENE GLYCIDYL ETHERS AND CURED PRODUCTS THEREOF
Gerald J. Fleming, Bowie, Md.
Filed Jan. 31, 1969, Ser. No. 795,745
Int. Cl. C08g *30/04*
U.S. Cl. 260—47 EP **9 Claims**

Glycidyl ethers derived from the reaction of an epihalohydrin and a nitro-substituted hydroxy-benzene compound and cured products thereof, which are useful as ablative materials.

3,609,123
NEW AROMATIC POLYIMIDES, THEIR MANUFACTURE AND USES
Guy Rabilloud; Bernard Sillion, and Gabriel De Gaudemaris, all of Grenoble, France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil Malmaison (Hauts de Seine), France
Filed Mar. 10, 1969, Ser. No. 805,857
Claims priority, application France, Mar. 21, 1968, 144,875
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **30 Claims**

Having a variety of uses, including the production of varnishes, films, fibers, adhesives, and cross-linked structures, there are provided polymers of

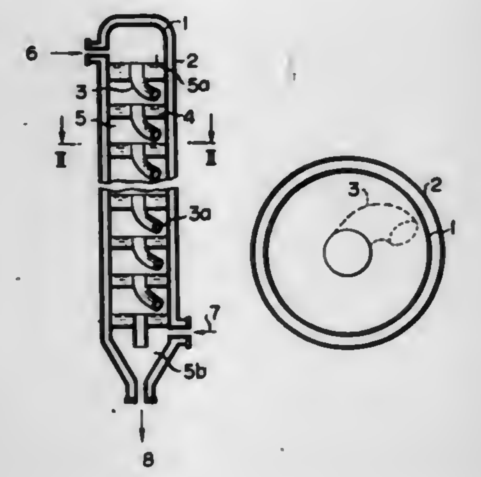


in which Ar is a divalent aromatic radical, the two valences of which are connected to distinct carbon atoms, Ar′ is a trivalent aromatic radical, the three valences of which are connected to distinct carbon atoms, the two valences connected to the CO groups being in ortho position with respect to one another, and R is selected from the group consisting of a hydrogen atom, alkyl, alkylcarbonyl, aryl, arylcarbonyl, alkyliminocarbonyl, aryliminocarbonyl and trimethylsilyl.

3,609,124
PROCESS FOR STABILIZING POLYOXYMETHYLENES
Jacob Ackermann; Franco Ferre, and Giorgio Anessi, all of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy
Filed July 25, 1968, Ser. No. 747,430
Claims priority, application Italy, Aug. 1, 1967, 19065-A/67
Int. Cl. C08g *1/24*
U.S. Cl. 260—67 FP **10 Claims**

During the stabilization of a polyoxymethylene by means of a carboxylic acid anhydride in a liquid reaction medium, the concentration of monomeric formaldehyde in the vapor phase in equilibrium with the liquid phase is maintained at a value of from 1 to 50 percent (preferably 1–20 percent) by weight, whereby degradation of the polyoxymethylene is substantially reduced.

3,609,125
POLYESTERIFICATION PROCESS AND APPARATUS
Yoshihisa Fujimoto; Yoshio Kimura; Iwao Terasaki, and Takanobu Kitago, all of Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Apr. 21, 1969, Ser. No. 817,938
Claims priority, application Japan, Apr. 24, 1968, 43/27090
Int. Cl. C08g *17/01*
U.S. Cl. 260—75 **3 Claims**



A process for producing polymers of medium degree of polymerization from polymerizable liquid, which comprises continuously passing the polymerizable liquid and vaporous byproducts through a vertical series of reaction zones, each maintained at a temperature to promote polymerization, successively from the uppermost reaction zone to the lowermost reaction zone by pressure difference between the vaporous byproducts in the adjacent reaction zones and gravity of the liquid, and causing said liquid and vaporous byproducts to flow as a stream from the upper reaction zone onto the liquid surface in the lower reaction zone, said stream being so directed as to produce rotating current in the liquid in said lower reaction zone, whereby agitation of said liquid is produced; and an apparatus for carrying out the above process, comprising a reaction vessel including a vertical series of reaction chambers each having bottom and sidewalls, an inlet connected to the uppermost chamber to supply the polymerizable liquid into the vessel, an outlet connected to the lowermost chamber to discharge polymerized liquid and vaporous byproducts from the vessel, and connecting tubes each connecting one of the chambers with the one located immediately therebelow, each of said connecting tubes having its upper end situated above the bottom wall of the upper chamber so as to define depth of the liquid contained therein and its lower end situated above the surface of the liquid contained in the lower chamber and so directed as to produce rotating current in the liquid.

3,609,126
PROCESS FOR PRODUCING WATER-SOLUBLE THERMOSETTING POLYMER
Hiroshi Asao, Yokohama; Fujio Yoshida, Yokohama; Kenichi Tomihara, Tokyo; Mikio Akimoto, Yokohama, and George Kubota, Tokyo, all of Japan, assignors to Toho Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 6, 1968, Ser. No. 710,734
Claims priority, application Japan, Mar. 8, 1967, 42/14208
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 **7 Claims**

A process for producing a water-soluble thermosetting polymer by reacting a dibasic carboxylic acid with a polyalkylene polyamine, then an alkylene oxide and then an epihalohydrin in successive steps.

3,609,127
PREPARATION OF POLYMERISABLE POLYCARBONAMIDE COMPOSITION
Vincent Matthews, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Filed May 22, 1968, Ser. No. 731,317
Claims priority, application Great Britain, May 25, 1967, 24420/67
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 SC **9 Claims**

A process for the manufacture of a polymerisable composition comprising water, a low molecular weight polyamide derived from a first diamine having from 2 to 12 carbon atoms and a first dicarboxylic acid having from 6 to 12 carbon atoms, and the salt of a second said diamine with a second said dicarboxylic acid, which process comprises heating a high molecular weight polyamide derived from the first said diamine and the first said dicarboxylic acid with an aqueous solution of the second said dicarboxylic acid and neutralizing the resulting solution with the second said diamine.

3,609,128
METHOD OF PRODUCING NITRILE POLYMERS
Iral B. Johns, Marblehead, Mass., assignor to Monsanto Research Corporation, Saint Louis, Mo.
Filed Oct. 24, 1969, Ser. No. 871,343
Int. Cl. C08f *1/72, 1/76, 3/74*
U.S. Cl. 260—78.4 N **5 Claims**

Method for producing polymers of nitriles, especially perfluoroglutaronitrile and acetonitrile, in the presence of catalytic materials such as, graphite, nickel chloride, metal cyanocoordination compounds, e.g., copper phthalocyanine, at elevated temperatures, and in some cases, elevated pressures.

3,609,129
METHOD OF POLYMERIZING ACRYLONITRILE IN THE PRESENCE OF AN ALKALI METAL ALCOHOLATE OF AN α-HYDROXYALKYLAMINE
Valentina Nikolaevna Krasulina, prospekt Morisa Toreza, 102, korp. 5, kv. 267, Leningrad; Anna Valentinovna Novoselova, Tramvainy prospekt, 32, kv. 5, Leningrad; Alexei Andreevich Korotkov, deceased, late of Leningrad; Maria Julievna Lekakh, administratrix, Naberezhnaya Chernoi rechki, 10, kv. 7, Leningrad (of said Alexei Andreevich Korotkov, deceased), and Sergei Alexeevich Korotkov, administrator, Naberezhnaya Chernoi rechki, 10, kv. 7, Leningrad, U.S.S.R. (of said Alexei Andreevich Korotkov, deceased)
Filed June 14, 1968, Ser. No. 738,730
Int. Cl. C08f *3/76, 15/22*
U.S. Cl. 260—85.5 **6 Claims**

Polyacrylonitrile is produced by polymerizing acrylonitrile in the presence of a novel catalyst at a temperature of −80° C. to 40° C. The catalyst is an alkali metal alcoholate of an α-hydroxyalkylamine.

3,609,130
POLYMER AND PROCESS OF MAKING SAME
John A. Manson, Bethlehem, Pa., and George L. Moore, South Plainfield, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation of application Ser. No. 671,145, Sept. 27, 1967, now abandoned. This application Apr. 23, 1970, Ser. No. 29,730
Int. Cl. C08f *1/13, 17/00, 27/16*
U.S. Cl. 260—87.3 **7 Claims**

A copolymer of vinyl acetate and bicycloheptadiene, which can be converted by hydrolysis to a vinyl alcohol copolymer, is produced by polymerizing vinyl acetate and bicycloheptadiene in the presence of a radical initiator.

3,609,131
COPOLYMERS OF VINYL CHLORIDE AND OLEFINS AND PROCESSES FOR THEIR PREPARATION
Philippe Lalet, Orthez; Guy Tsouladze, Pau, and Henri Fassy, Orthez, all of France, assignors to Societe Anonyme dite: Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France
Filed Dec. 23, 1968, Ser. No. 786,388
Claims priority, application France, Dec. 29, 1967, 134,501
Int. Cl. C08f *3/30;* **C09f** *3/00*
U.S. Cl. 260—87.5 C **6 Claims**

Vinyl resins are prepared by copolymerizing vinyl chloride in the presence of at least one branched olefin having at least seven carbon atoms. The use of C_7, C_9, C_{12} and C_{15} olefinic isomers is specifically described. The process is preferably performed in aqueous suspension between 30° C. and 80° C. and at a pressure less than 20 atmospheres.

The new copolymers have good properties of shock resistance, working and solubility and are of application in fields where vinyl chloride resins are used.

3,609,132
WATER-SOLUBLE COPOLYMER AND ITS USE AS A PIGMENT RETENTION AID
Andrew G. Tsuk, and Charles C. Kirk, both of Laurel, Md., assignors to W. R. Grace & Co.
Filed Jan. 26, 1970, Ser. No. 5,965
Int. Cl. C08f *15/02, 27/16*
U.S. Cl. 260—85.7 **2 Claims**

This invention relates to a novel cationic water-soluble polyvinyl alcohol prepared from a water-soluble vinyl acetate/N-vinyl-N-methyl acetamide copolymer by hydrolysis. The hydrolyzed copolymer significantly enhances the retention of pigment particles by the cellulose fibers in a paper pulp slurry.

3,609,133
METHOD OF PRODUCING VINYL HALIDE POLYMERS IN THE PRESENCE OF HYDROXYL-OR MERCAPTO-ALKYLSULFOXIDE EMULSIFIERS
Anthony J. Castro, Oak Park, and Eugene J. Miller, Jr., Wheaton, both of Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.
Filed Feb. 12, 1969, Ser. No. 798,811
Int. Cl. C08f *3/22, 3/30, 15/08*
U.S. Cl. 260—92.1 **13 Claims**

An improved process for producing dispersion grade vinyl halide polymers of small particle size through the use of sulfoxide polymerization emulsifiers thereby obviating the necessity for separation of the polymer from water by precipitation or by use of solvents.

3,609,134
AZO PIGMENTS CONTAINING A 4-CARBOXAMIDO PHENOMORPHOLENE-(3) GROUP
Rudolf Mory, Dornach, Switzerland, assignor to Ciba-Geigy A.G., Basle, Switzerland
Filed Sept. 24, 1968, Ser. No. 762,163
Claims priority, application Switzerland, Oct. 10, 1967, July 25, 1968, 14143/67;11205/68
Int. Cl. C09b *29/36, 35/18;* **D06p** *1/04*
U.S. Cl. 260—152 **14 Claims**

Compounds of the formula

$$R_1—N=N—R_2—CONH—R_3$$

in which R_1 and R_3 each represents an aryl or a heterocyclic residue, at least one of the residues R_1 and R_3 being a phenomorpholone-(3) residue, and R_2 represents a hydroxynaphthalene residue in which the azo, hydroxy and carboxylic acid amide groups are in 1,2,3-position or the residue of an enolizable or enolized ketomethylene compound are valuable pigments which are useful for coloring plastics and lacquers in fast yellow-to-red shades of excellent fastness properties.

3,609,135
WATER-INSOLUBLE BENZIMIDAZOLONE CONTAINING MONOAZO DYESTUFFS

Joachim Ribka, Offenbach am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius, Bruening, Frankfurt am Main, Germany

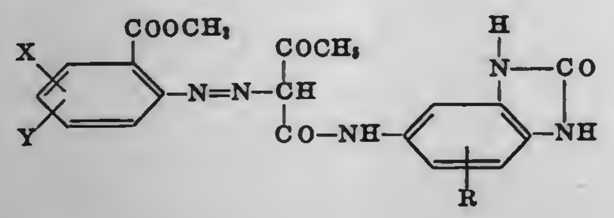
Filed Nov. 7, 1969, Ser. No. 874,992

Claims priority, application Germany, Nov. 9, 1968, P 18 08 015.4

Int. Cl. C09b *29/32*

U.S. Cl. 260—152 **10 Claims**

Water-insoluble dyestuffs of the general formula



wherein X represents a hydrogen or halogen atom, a methyl, trifluoromethyl, methoxy or nitro group, Y a hydrogen or halogen atom and R a hydrogen or halogen atom, a methyl or methoxy group.

Said pigments can be used, for instance, for dyeing or printing plastics, caoutchouc, natural and synthetic resins, textile fibrous materials or paper. Furthermore, they can be employed for the preparation of printing inks, lacquers and dispersion paints. The novel pigments possess good to very good fastness properties.

3,609,136
WATER-SOLUBLE DYE SALTS OF AZO-PYRIMIDINE DYESTUFFS

Hans Wegmuller, Riehen; Jacques Voltz, Riehen, and Gunter Kaupp, Binningen, Baselland, all of Switzerland, assignors to J. R. Geigy A. G., Basel, Switzerland

Filed May 20, 1968, Ser. No. 730,607

Claims priority, application Switzerland, May 24, 1967, 7388/67

Int. Cl. C09b *29/36, 62/24;* **D06p** *1/38*

U.S. Cl. 260—154 **11 Claims**

Water-soluble dye salts of cationic 5-arylazo pyrimidine dyestuffs wherein one of the carbon atoms in 2-, 4- and 6-positions of the pyrimidine nucleus is substituted by an aliphatic, cycloaliphatic or carbocyclic aromatic radical bound by way of an —0— or —S—bridge to the pyrimidine nucleus and the remaining carbon atoms in the aforesaid positions are substituted by aliphatically, cycloaliphatically or carbocyclicaromatically monosubstituted amino groups and which dyestuffs contain one external quaternary ammonium group; such dyestuffs being useful for dyeing and printing of synthetic acid-modified polymeric materials, and particularly for the dyeing of blended fabrics consisting of unmodified and acid-modified synthetic polyamide fibers, because they dye the latter with good fastness to light and also to wet treatments, and at the same time reserve well the unmodified polyamide fibers in the blended fabric.

3,609,137
PROCESS FOR THE PRODUCTION OF AN AESCIN-RICH CONCENTRATE OF ACTIVE MATERIAL FROM HORSE-CHESTNUT SEEDS

Hans Georg Menssen, Geyen, Manstedtener, and Hans Honerlagen, Frankfurt-Praunheim, both of Germany, assignors to A. Nattermann & Cie GmbH, Braunsfeld, Germany

Filed May 23, 1969, Ser. No. 827,141

Claims priority, application Austria, May 31, 1968, A 5230/68

Int. Cl. C07c *173/00*

U.S. Cl. 260—210.5 **2 Claims**

An aescin-rich concentrate is obtained from horse chestnuts by comminutating the horse chestnuts, then extracting with acidified water for 1 to 2 hours and discarding the first extract, then again extracting the pretreated horse chestnuts using a low molecular weight alcohol, ketone or aqueous alcohol ketone, and finally drying the second extract.

ERRATUM

For Class 260—215 see:
Patent No. 3,609,377

3,609,138
1-ARYL-3-BENZAZEPINES

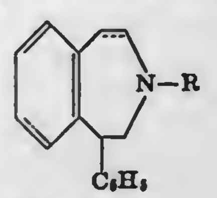
Robert Paul Mull, Florham Park, and George De Stevens, Summit, both of N.J., assignors to Ciba Corporation, Summit, N.J.

Continuation-in-part of application Ser. No. 523,969, Feb. 1, 1966, now abandoned. This application Dec. 22, 1967, Ser. No. 692,640

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 **3 Claims**

3-Aliphatically substituted 1-aryl-1,2-dihydro- or 1,2,4,5-tetrahydro-3-benzazepines, e.g. those of the formula



R = aliphatic or araliphatic radical

N-oxides, quaternaries and salts thereof are central nervous system depressants.

3,609,139
SUBSTITUTED DIBENZDIAZONINES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Apr. 1, 1969, Ser. No. 812,304

Int. Cl. A61k *27/00;* **C07d** *57/12*

U.S. Cl. 260—239 DD **6 Claims**

Dibenzdiazonines, e.g., 5-phenyl-7H-dibenz[b,g] [1,5] diazonine, have been prepared which are useful as CNS stimulants.

3,609,140
1-CARBOBENZOXY-1,4-DIAZACYCLOHEPTYL-5-IMINO ACETIC ACID DERIVATIVES

Rudolf G. Griot, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 356,641, Apr. 1, 1964, Pat. No. 3,351,629. Filed Sept. 12, 1967, Ser. No. 698,074

Int. Cl. C07d *53/02, 57/00*

U.S. Cl. 260—239 BC **2 Claims**

The Compounds are of the class of 1,4,8--triazabicyclo-[5,3,0]decen$\Delta^{7,8}$-10-ones, useful as CNS represents and sedatives.

3,609,141
MAGNESIUM SLAT OF 5-METHYL-3-(2,6-DICHLOROPHENYL)-4-ISOXAZOLYL-PENICILLIN

Hiroshi Fujisawa, 2-1, Karikuchidai Tarumi-ku, Kobe, Hogo; Keiichi Sugimoto, 2-2, Tsukumodai, Suita, Osaka; Katsuo Aoki, 3-1-6; Minamikoshien Nishinmiga, Hyogo; Tai Matsuzawa, 5-18, Tsukumodia, Suita, Osaka; Seizo Kawaziri, 441 Kawazono-cho, Suita, Osaka; Hiroyuki Mima, 64 Kizuyama-cho, Hyogo, and Nobuyuki Kitamori, 5-18, Tsukumodai, Suita, Osaka, all of Japan

Filed Feb. 17, 1969, Ser. No. 799,607

Claims priority, application Japan, Feb. 19, 1968, Feb. 7, 1969, 43/10454;44/9600

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **1 Claim**

Magnesium salt of 5-methyl-3-(2,6-dichlorophenyl)-4-isoxazolyl-penicillin demonstrates antimicrobial activity.

3,609,142
BECKMANN REARRANGEMENT OF CYCLIC KETOXIMES TO LACTAMS

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 14, 1966, Ser. No. 586,659

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 **10 Claims**

Amides are produced from ketoximes by Beckmann rearrangement in hydrogen fluoride medium at temperature between 0° to 75° C. using a carboxylic acid or anhydride catalyst.

3,609,143
ISOCYANATE ADDUCTS AND PREPARATION THEREOF

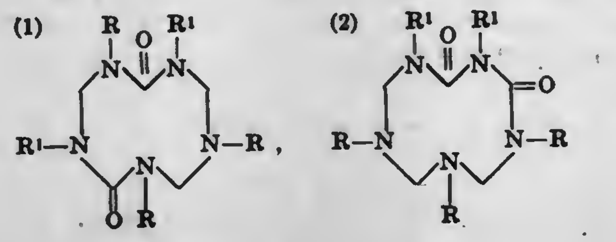
John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, Saint Louis, Mo.

Filed Mar. 16, 1967, Ser. No. 623,541

Int. Cl. A01n *9/22;* **C07d** *55/64*

U.S. Cl. 260—239.3 **11 Claims**

Phytotoxic and soil sterilant compounds of the formula $(CH_2{=}N-R)_3(R^1NCO)_2$ and having either of the following structures:



and

(3) mixtures of (1) and (2),
wherein R is alkyl having a maximum of 4 carbon atoms and R^1 is selected from the group consisting of mono- and dihalosubstituted phenyl and mononitrosubstituted phenyl.

3,609,144
1,4,6-OXADIAZOCINES

Richard W. Hein, Ridgefield, Conn., assignor to Escambia Chemical Corporation, Pace, Fla.

Filed June 20, 1968, Ser. No. 738,400

Int. Cl. C07d *87/54*

U.S. Cl. 260—239.3 **8 Claims**

Production of the novel compounds 4H,6H-3,3,8,8-tetramethyl-2,5,7 trioxo-1,4,6-oxadiazocine, halogen derivatives thereof, and 4H,6H-3,3,8,8-tetramethyl-2,7-dioxo-5-thio-1,4,6-oxadiazocine. The compounds 4H,6H-3,3,8,8-tetramethyl-2,5,7, trioxo-1,4,6-oxadiazocine and 4H,6H-3,3,8,8-tetramethyl-2,7-dioxo-5-thio-1,4,6-oxadiazocine are both useful as crease resistant agents for cloth and are believed to have worthwhile sedative and hypnotic properties whereas the N,N-dihalo derivatives of 4H,6H-3,3,8,8-tetramethyl-2,5,7 trioxo-1,4,6-oxadiazocine are useful as bactericides.

3,609,145
1H-1,4-BENZODIAZEPINE-1-SULFONAMIDES

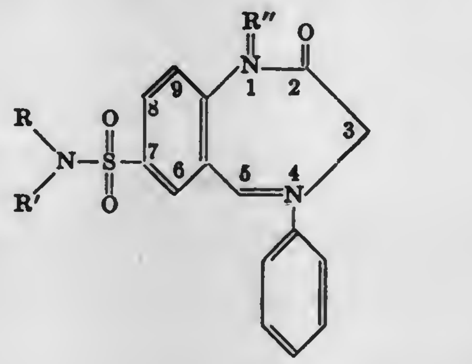
Robert B. Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 10, 1969, Ser. No. 790,441

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **3 Claims**

Novel 1H-1,4-benzodiazepine sulfonamides of the formula:



VI

wherein R, R′ and R″ are selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, inclusive, are prepared from p-nitrobenzenesulfonamide and its N-alkylated derivatives by (1) condensation with phenylacetonitrile, (2) catalytic hydrogenation, and (3) condensation with ethyl glycinate hydrochloride. The novel products of above formula VI having central nervous depressant and antibacterial activity are useful to tranquilize mammals, e.g., animals during shipping, and are administered in oral or injectable forms.

3,609,146
SUBSTITUTED BENZODIAZEPINONE DERIVATIVES

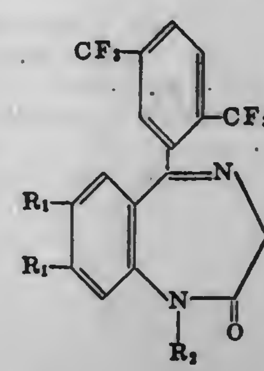
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Nov. 1, 1968, Ser. No. 772,825

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **5 Claims**

The invention concerns benzodiazepinone derivatives of the formula



wherein R_1 is hydrogen, methyl, or halogen of atomic weight about 19 to 36, and R_2 is hydrogen, lower alkyl, or dialkylaminoalkyl, and to processes for their production.

The compounds are useful tranquilizers as indicated by their pharmacological activity in animals.

3,609,147
3-HETEROCYCLIC IMIDO-5-SUBSTITUTED-2,4,6-TRIIODO BENZOIC ACIDS AND DERIVATIVES THEREOF

James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 715,558, Mar. 25, 1968, now abandoned. This application Mar. 19, 1969, Ser. No. 808,653

Int. Cl. C07d *93/10*

U.S. Cl. 260—243 **5 Claims**

3-Amino-2,4,6-triiodobenzoic acids optionally substituted in the 5-position by amino or carboxy or a derivative thereof react with dibasic acid anhydrides to give the corresponding cyclic imides (A), which can be hydrolyzed to the corresponding anilic acids (B). The latter can be further alkylated on the anilide nitrogen atom. Compounds A and B are useful as cholecystographic and urographic agents.

3,609,148
HERBICIDAL PYRIDO[1,2-A]-S-TRIAZINE-DIONES

Karl Hoegerle, Basle; Christian Vogel, Binningen near Basle, and Jurg Rumpf, Binningen near Basle, all of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

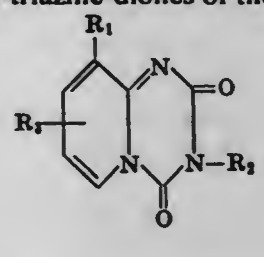
Filed Apr. 22, 1969, Ser. No. 818,432

Claims priority, application Switzerland, May 6, 1968, 6700

Int. Cl. C07d *57/04*

U.S. Cl. 260—248 **6 Claims**

Pyrido[1,2-a]-s-triazine-diones of the formula



wherein

R_1 represents hydrogen, halogen, nitro, lower alkyl, lower alkoxy, or halogenalkyl,

R_2 represents straight- or branched-chain alkyl, lower alkenyl, lower alkynyl, cycloalkyl, alkoxyalkyl or halogenalkyl, and

R_3 represents hydrogen, halogen, nitro, lower alkyl, lower alkoxy or halogenalkyl,

are disclosed as herbicidally active compounds. A method of controlling undesirable plant growth with the aid of such compounds and compositions containing them are also described.

3,609,149
METHOD FOR PRODUCING ORGANIC ISOCYANATE POLYMERS

Yutaka Matsui, Hyogo; Kiyoshi Yasuda, Osaka, and Jugo Goto, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Sept. 10, 1969, Ser. No. 856,833
Claims priority, application Japan, Sept. 11, 1968, 43/65366
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 NS **8 Claims**

This invention relates to the production of isocyanate polymers. Xylylene ω, ω'-diisocyanate trimers are produced that are devoid of 1-nylon-type polymers. Xylylene ω, ω'-diisocyanate is contacted with a trimerization catalyst and a 1-nylon-formation suppressor selected from acid amides, acid imides, ureides, thioureides or mixtures thereof.

3,609,150
VINYL 2,2-DIMETHYL-3-MARPHOLINOCARBONYLCYCLOBUTANE ACETATE

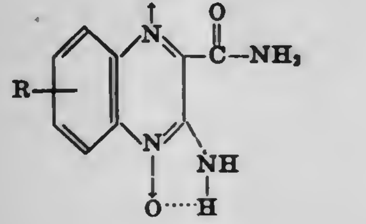
Glen W. Hedrick, Lake City, Fla., and Frank C. Magne, New Orleans, La.
Division of Ser. No. 647,343, June 30, 1967, Pat. No. 3,544,529.
Filed Aug. 6, 1969, Ser. No. 870,850
Int. Cl. C07d *87/36*
U.S. Cl. 260—247.2 B **1 Claim**

The invention provides certain vinyl ester amides of pinic acid, particularly vinyl 2,2-dimethyl-3-morpholinocarbonylcyclobutane acetate, which can be prepared by selective amination followed by vinyl interchange, and are copolymerizable with vinyl chloride.

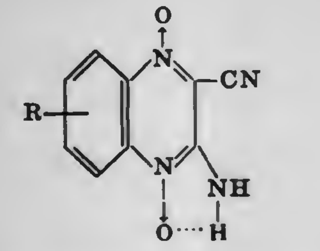
3,609,151
2-AMINO-3-CARBAMIDO-QUINOXALINE-DI-N-OXIDES AND THEIR PRODUCTION

Florin Seng, Cologne; Kurt Ley, Odenthal; Karl Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed July 3, 1968, Ser. No. 742,168
Claims priority, application Germany, July 26, 1967, F 53057
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 **8 Claims**

2-Amino-3-carbamido-quinoxaline-di-N-oxides of the formula



are produced by hydrolising the corresponding 2-amino-3-cyano-quinoxaline-di-N-oxides of the formula



in an acidic solution wherein R is hydrogen, halogen, lower alkyl or lower alkoxy. The compounds are useful in treatment of infections from grampositive and gramnegative bacteria and are administered in the general range of 25 mg./kg. orally or parenterally.

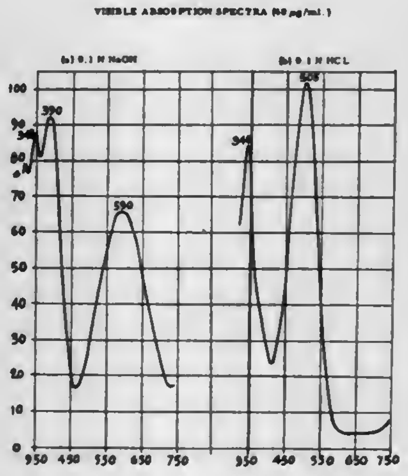
3,609,152
CERTAIN 2-AMINO-3,4-DIHYDROGEN-INAZOLIN-4-ONES AND 4-THIONES

Hans-Jurgen E. Hess, and Gerald F. Holland, both of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.
Continuation of application Ser. No. 576,549, Sept. 1, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 442,205, Mar. 23, 1965, now abandoned. This application Jan. 28, 1970, Ser. No. 7,347
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.5 R **17 Claims**

Substituted 2-amino-3,4-dihydroquinazoline-4-one and substituted 2-amino-4-(3H)-quinazolinethionone and their utility as antihypertensive agents.

3,609,153
1 HYDROXY 6 METHOXY PHENAZINES

Fred D. Cook, Edmonton, Alberta; Oliver E. Edwards, Ottawa, Ontario; Douglas C. Gillespie, Ottawa, Ontario, and Edwin R. Peterson, Ottawa, Ontario, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Continuation-in-part of application Ser. No. 538,639, Mar. 30, 1966, now abandoned. This application Apr. 20, 1967, Ser. No. 632,455
Int. Cl. C07d *51/80*
U.S. Cl. 260—267 **4 Claims**



Unsymmetrical 1-hydroxy-6-substituted phenazines and their N-oxides have been prepared from 1,6-disubstituted phenazines by forming the 1-hydroxy compound and oxidizing to form the 10-oxide and the 5,10-dioxide. The substituent in the 6 position is preferably lower alkoxy but may also be lower alkyl. The 1-hydroxy-6-substituted-5,10-dioxide compounds are antibiotics useful inter alia in agriculture. Myxin is the name given to the microbiologically produced compound, employing strains CBRI 903 and 904, type 3C Sorangium.

3,609,154
2-(ARYLPROPYL)-1,2,3,4-TETRAHYDROISOQUINOLINES, INTERMEDIATES AND PROCESSES

Graham Alwyn Fothergill, Knebworth, and John Mervyn Osbond, The Ryde, Hatfield, both of England, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.
Filed Nov. 12, 1968, Ser. No. 775,583
Claims priority, application Great Britain, Nov. 30, 1967, 54477/67
Int. Cl. C07d *33/38*
U.S. Cl. 260—289 R **12 Claims**

2-(Arylpropyl)-1,2,3,4-tetrahydroisoquinolines, prepared inter alia, by condensing the corresponding 1,2,3,4-tetrahydroisoquinolines and arylpropyl halides, are described. The end products are useful as analgesics and amoebicides.

3,609,155
1-PARA-CHLOROPHENYL-1,5,6,7,8,8a-HEXAHYDROIMIDAZO[1,5-a]PYRIDINES AND INTERMEDIATES THEREFOR

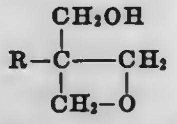
Albert J. Frey, Essex Fells, and Robert E. Manning, Mountain Lake, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
Division of Ser. No. 672,990, Oct. 5, 1967, Pat. No. 3,467,662.
Filed Apr. 15, 1969, Ser. No. 816,404
Int. Cl. C07d *49/34*
U.S. Cl. 260—293 DD **5 Claims**

This disclosure pertains to novel 1-substituted 2-unsubstituted imidazopyridines, for example 1-p-chlorophenyl-3-loweralkylthio-1,5,6,7,8,8a-hexahydroimidazo[1,5-a]pyridene. These compounds are useful as hypotensive agents.

3,609,156
PROCESS FOR PREPARING 1,3-PROPANEDIOL DERIVATIVES

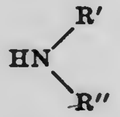
Hideaki Munakata; Kazuo Watanabe; Yoshikazu Arimatsu, and Masakazu Tanaka, all of Otsu-shi, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan
Filed Jan. 12, 1970, Ser. No. 2,404
Claims priority, application Japan, Jan. 18, 1969, 44/3557
Int. Cl. C07d *29/16*
U.S. Cl. 260—294.7 **4 Claims**

Process for preparing 1,3-propanediol derivatives which comprises reacting an oxetane compound of the formula:



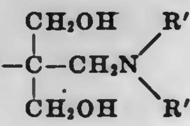
$$\begin{array}{c} CH_2OH \\ | \\ R-C-CH_2 \\ |\qquad | \\ CH_2-O \end{array}$$

wherein R is a lower alkyl group substituted or not with halogen, aryl, hydroxyl, lower alkoxy or aryloxy with an amine of the formula:



$$HN\begin{array}{l} R' \\ R'' \end{array}$$

wherein R' is a hydrogen atom, a lower alkyl group or a cycloalkyl group and R'' is a lower alkyl group or a cycloalkyl group or, when taken together with the adjacent nitrogen atom, they represent a nitrogen containing saturated heterocyclic group in the presence of a phenol to give a 1,3-propanediol compound of the formula:



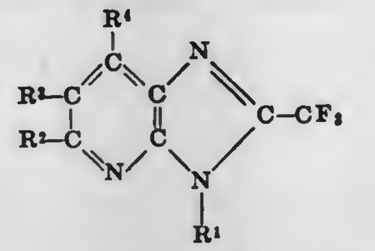
$$R-\underset{CH_2OH}{\overset{CH_2OH}{C}}-CH_2N\begin{array}{l} R' \\ R'' \end{array}$$

wherein R, R' and R'' are each as defined above.

3,609,157
SUBSTITUTED IMIDAZOPYRIDINES

Leslie Thomas Allan, Cambridge; Geoffrey Tattersall Newbold, Saffron Walden, and Albert Percival, Hauxton, all of England, assignors to Fisons Pest Control Limited, Harston, Cambridgeshire, England
Filed May 17, 1968, Ser. No. 729,899
Claims priority, application Great Britain, May 23, 1967, 23803/67
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 **5 Claims**

Substituted imidazopyridines of the formula



and physiological active salts and N-oxides thereof, wherein R^1 represents R^5 or $COOR^5$ wherein R^5 represents alkenyl of 2 to 4 carbon atoms, alkynyl of 2 to 4 carbon atoms, aralkyl of 7 to 13 carbon atoms or cycloalkyl of 3 to 6 carbon atoms and wherein R^2, R^3 and R^4 are the same or different and represent hydrogen, halogen, alkyl of 1 to 6 carbon atoms, nitro or cyano are biocidally active and are particularly useful as herbicides.

3,609,158
CERTAIN SUBSTITUTED (PYRIDYL)-OXY ACETIC ACID DERIVATIVES

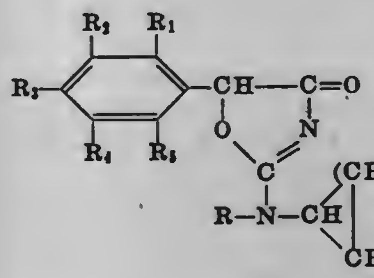
Florence E. Torba, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 17, 1969, Ser. No. 807,980
Int. Cl. C07d *31/34*
U.S. Cl. 260—295 **2 Claims**

Disclosed as novel compounds are (trifluoromethyl)pyridine derivatives which are substituted by a hydroxy, mercapto, alkoxy, loweralkenoxy, aryloxy, alkylthio, arylthio, alkylsulfonyl, arylsufonyl, amino, hydrazino or oxyloweralkanoic acid or acid derivative group and optionally by chlorine and/or fluorine. Any remaining positions on the pyridine ring are taken up by hydrogen. The compounds have utility as herbicides and as active constituents of various miticidal, anthelmintic, fungicidal and bacteriocidal compositions.

3,609,159
5-PHENYL-2-CYCLOPROPYLAMINO-4-OXAZOLINONE, AND PROCESS FOR MAKING THE SAME

Don Pierre R. L. Guidicelli, Val de Marne, and Henry Najer, Paris, both of France, assignors to Les Laboratoires Dausse, Paris, France
Continuation-in-part of application Ser. No. 580,908, Sept. 21, 1966, now abandoned , Continuation-in-part of application Ser. No. 348,296, Feb. 28, 1964, now abandoned. This application July 21, 1967, Ser. No. 655,002
Int. Cl. C07d *85/30*
U.S. Cl. 260—307 A **2 Claims**

New 5-aryl-2-cycloalkylamino-4-oxazolinones of the formula:

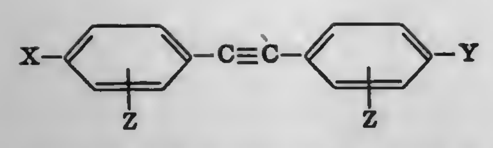


in the form of racemate or optical isomer and its acid addition salts, wherein R_1, R_2, R_3, R_4 and R_5 are each hydrogen, halogen, trifluoromethyl, lower alkyl, lower alkoxy, amino, amino substituted by one or two alkyl, cycloalkyl or aryl radicals, or by an aliphatic, alicyclic or aromatic acyl radical, an aliphatic, alicyclic or aromatic acyl radical, alkylmercapto, sulphonamido, mono- or di-substituted sulphonamido, cyano, or a substituted or unsubstituted carbamoyl radical; *n* is 1, 2, 3 or 4; and R is hydrogen, lower alkyl, cycloalkyl, or lower ω-hydroxyalkyl are useful as stimulants of the central nervous system and as anorexic agents.

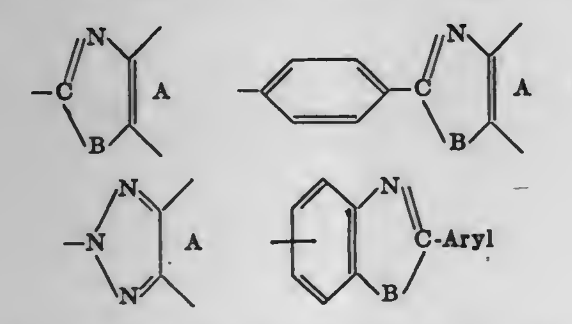
3,609,160
P,P'-BIS(BENZOXAZOLYL) TOLAN DERIVATIVES

Hans Rudolf Meyer, Basel; Peter Liechti, Binningen; Kurt Weber, Basel, and Adolf Emil Siegrist, Basel, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed Aug. 9, 1967, Ser. No. 659,343
Claims priority, application Switzerland, Aug. 15, 1966, 11756/66
Int. Cl. C07d *49/38, 55/04;* **C01d** *85/48*
U.S. Cl. 260—307 D **2 Claims**

The invention relates to new tolan derivatives of the general formula



where Z stands for a hydrogen atom, a free or functionally modified carboxyl group, a free or functionally modified sulfonic acid group, Y for one of the groupings



or for an s-triazinyl residue bound through a cyclic carbon atom, a pyrazolyl, oxdiazolyl, thiadiazolyl, furyl, thienyl, cumaryl, quinazolyl, pryidyl or pyrimidyl residue, in which groupings A represents a benzene or naphthalene residue condensed with the heterocycle in the indicated manner, and B represents a bridge member -O-, -S-, or NQ-, where Y stands for hydrogen or an unsubstituted or substituted alkyl group, and X stands for a group Y, a hydrogen or halogen atom, in alkoxy group, an unsubstituted or substituted alkyl group or aryl group, an aralkyl, amino, alkylamino, ureido group, a substituted ureido group, a urethane, carboxylic acid ester or amide group or an acylamino group.

3,609,161
THERMOSETTING ACRYLICS CONTAINING OXAZOLINE GROUPS

Rostyslaw Dowbenko, Gisbonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sept. 6, 1967, Ser. No. 665,745
Int. Cl. C07d *85/36*
U.S. Cl. 260—307 4 Claims

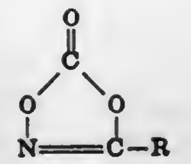
Novel polymerizable unsaturated oxazoline compounds are obtained by dehydrating a hydroxyalkyl-substituted aminoethanol and esterifying or transesterifying the resulting alcohol with an ethylenically unsaturated monocarboxylic acid, an ester of such an acid, or an ethylenically unsaturated monocarboxylic acid halide. Preferred embodiments include 2,4-dialkyl-2-oxazoline-4-alkyl acrylates and methacrylates. Polymers of such compounds, and particularly their interpolymers with other ethylenic monomers provide thermosetting film-forming compositions, useful as protective coatings and adhesives.

Vinyl interpolymers are useful in coatings because of their excellent durability and weatherability, solvent resistance, and adhesion. However, it is difficult to obtain vinyl polymers having the combination of properties necessary to provide coatings of overall utility for many applications. For instance, cured coatings of sufficient adhesion and hardness tend to have insufficient flexibility for many desired uses, and compositions having suitable application characteristics often are deficient in coating properties. Thus, polymers which can provide improvement in several properties without sacrificing others are of continuing and increasing interest.

3,609,162
CYCLOALIPHATIC MONO (NITRILE CARBONATES)

Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Crown Point, Ind., assignors to Atlantic Richfield Company, New York, N.Y.
Continuation-in-part of application Ser. No. 651,380, July 6, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 502,328, Oct. 22, 1965, now abandoned. This application Dec. 5, 1968, Ser. No. 781,586
Int. Cl. C07d *85/06*
U.S. Cl. 260—307 13 Claims

The disclosure is of compounds of the formula

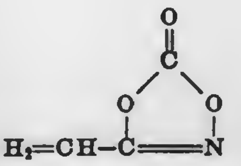


wherein R is a cycloaliphatic radical. The synthesis can be performed by reacting the corresponding hydroxamic acids with phosgene. The compounds can be decomposed to yield the corresponding cycloaliphatic monoisocyanates.

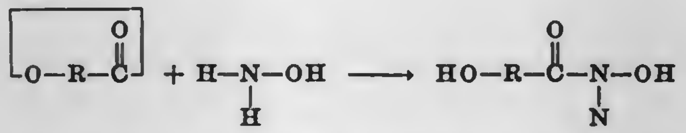
3,609,163
PROCESS FOR PREPARING 5- VINYL-1,3,4-DIOXCAZOL-2-ONES

Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Crown Point, Ind., assignors to Atlantic Richfield Company
Continuation-in-part of application Ser. No. 681,925, Nov. 9, 1967, now Patent No. 3,480,595, Continuation-in-part of application Ser. No. 592,285, Nov. 7, 1966, now abandoned. This application Feb. 10, 1969, Ser. No. 798,186
Int. Cl. C07d *85/00*
U.S. Cl. 260—307 15 Claims

A multistep process for preparing ethylenically unsaturated cyclic nitrile carbonate compounds such as ethene nitrile carbonate,

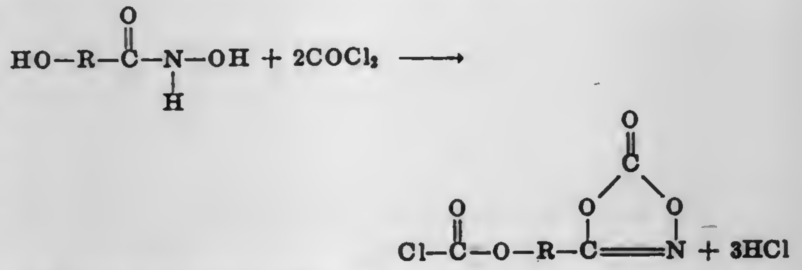


is disclosed. A lactone is first reacted with hydroxylamine to obtain a hydroxyl group-containing monohydroxamic acid:



$$\boxed{\mathrm{O{-}R{-}\overset{\overset{O}{\|}}{C}}} + \mathrm{H{-}\underset{\underset{H}{|}}{N}{-}OH} \longrightarrow \mathrm{HO{-}R{-}\overset{\overset{O}{\|}}{C}{-}\underset{\underset{N}{|}}{N}{-}OH}$$

The hydroxamic acid is then phosgenated to obtain a cyclic nitrile carbonate group-containing chloroformate:



The chloroformate is then contacted with an organic, tertiary amine having a pK value below about 5 to effect decarboxylation and dehydrochlorination of the chloroformate and production of an ethylenically unsaturated cyclic nitrile carbonate compound such as ethene nitrile carbonate, shown above.

3,609,164
PROCESS FOR PREPARING -BUTOXYCARBONYL COMPOUNDS

Munetugu Miyoshi, Nishinomiya-shi, and Takanobu Oonishi, Osaka-shi, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
Filed May 29, 1968, Ser. No. 732,888
Claims priority, application Japan, Mar. 27, 1968, Mar. 17, 1968, 43/19,862;43/19,861
Int. Cl. C07c *125/04*
U.S. Cl. 260—309 8 Claims

t-butoxycarbonyl compounds as for example t-butoxycarbonylhydrazide or t-butoxycarbonylamino acid, are prepared by reacting hydrazine or an amino acid directly with t-butoxycarbonyl chloride. The reaction is conducted in an aqueous medium, usually at a temperature of −10° to 30° C.

3,609,165
1,3-DIAZABICYCLO [3.1.0] HEX-3-ENES

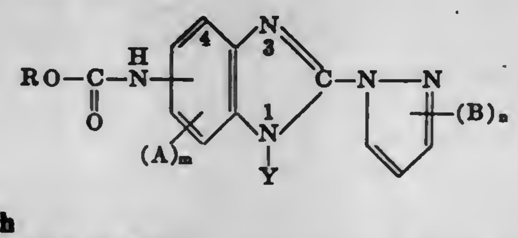
Harold W. Heine, Lewisburg; Richard H. Weese, Morrisville, and Robert A. Cooper, Knoxville, all of Pa., assignors to Research Corporation, New York, N.Y.
Filed July 19, 1968, Ser. No. 745,980
Int. Cl. C07d *49/30*
U.S. Cl. 260—309.6 1 Claim

4,6-diaryl-1,3-diazabicyclo [3.1.0] hex-3-enes are made by reacting trans-2-aryl-3-aroylaziridines with aldehydes and ketones in ammoniacal alcohol. The new compounds and their acid addition salts are photochromic.

3,609,166
CARBAMIC ACID ESTERS OF BENZIONIDAZOLES

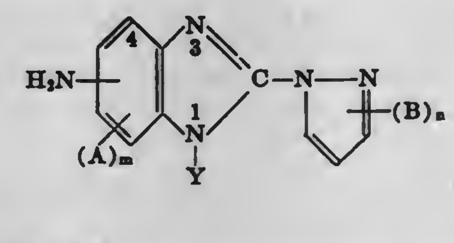
Walter Gauss, Cologne-Stammheim; Heinz Herlinger, Korb/Waiblingen; Herbert Thomas, Wuppertal-Elberfeld, and Manfred Plempel, Wuppertal-Elberfeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 19, 1968, Ser. No. 753,716
Claims priority, application Germany, Aug. 29, 1967, F 53346 IVd/12p
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 17 Claims

Carbamic acid esters are provided which, inter alia, have anthelmintic action against nematodes and fungicidal activity against *Aspegillus niger*, *fumigatus* and *nidulans*, *Trichophyton* species and *Candida albicans* at concentrations as low as 4 γ/ml. The esters have the formula:



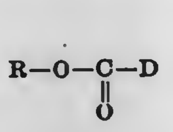
in which

Y is hydrogen or alkyl,
A and B are the same or different and are each hydrogen, halogen, nitro, lower alkyl or lower alkoxy,
m and *n* are 1 or 2, and
R is substituted or unsubstituted aliphatic, aralkyl, aryl or heterocyclic, and are prepared by reacting an amine of the formula:



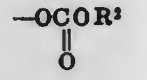
in which

Y is hydrogen or alkyl,
A and B are the same or different and are each hydrogen, halogen, nitro, lower alkyl or lower alkoxy, and
m and *n* are 1 or 2, with a carbonic acid derivative of the formula:



$$\mathrm{R{-}O{-}\underset{\underset{O}{\|}}{C}{-}D}$$

in which
R is unsubstituted or substituted aliphatic, aralkyl, aryl, or a heterocyclic radical, and
D is halogen, OR^1 or



$$\mathrm{{-}O\underset{\underset{O}{\|}}{C}OR^2}$$

wherein R^1 and R^2 are the same or different and have any of the above meanings of R, or
R and D further being the residual constituents of the ring system of glycol carbonate and benzocatechol carbonate.

3,609,167
IBENZO[b,e] THIEPINES

Charles L. Zirkle, Berwyn, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.
Filed Apr. 2, 1962, Ser. No. 184,513
Int. Cl. C07d *67/00*
U.S. Cl. 260—327 B 3 Claims

Disclosed are dibenzo [*b*,*e*]-oxepin and dibenzo [*b*,*e*] thiepin-11-one useful as intermediates for the preparation of corresponding 11-aminoalkylated derivatives which have pharmaceutical activity.

3,609,168
THIADIAZEPINES

Raymond Bourdon, and Sylvie Ranisteano, both of Paris, France, assignors to Societe d'Etudes, de Recherches et d'Applications, Scientifiques et Midicales E.R.A.S.M.E. (Societe Anonyme Francaise), Paris, France
Filed Aug. 8, 1967, Ser. No. 659,001
Claims priority, application Great Britain, Aug. 12, 1966, 36306/66
Int. Cl. C07d *93/00*
U.S. Cl. 260—327 R 3 Claims

The invention comprises derivatives of 2,7-dihydro-3,6-diphenyl-thiadiazepine; these derivatives have pharmaceutical interest as choleretics, though the parent compound has previously shown no medical properties. Preparation of the derivatives constituting the novel compounds of the invention involves four steps, comprising fixation of desired substituents on an aromatic ring, acylation, fixation of a sulfur atom and cyclization. Detailed examples of this preparation are given, together with information on the chemical and medical properties of the compounds.

3,609,169
METHOD OF PREPARING 3,9-BIS-(AMINOALKYL)-2,4,8,10-TETROXASPIRO [5,5]UNDECAN

Kazumi Iijima, Kawasaki-shi; Yoshioki Komachiya, Yokohama-shi, and Eiji Negoro, Kawasaki-shi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed May 8, 1968, Ser. No. 727,686
Claims priority, application Japan, May 12, 1967, 42/30131
Int. Cl. C07d *15/04*
U.S. Cl. 260—340.7 3 Claims

The yield of 3,9-bis(aminoalkyl)-2,4,8,10-tetroxaspiro [5,5] undecanes from the catalytic hydrogenation of the corresponding 3,9-bis(cyanoalkyl)-2,4,8,10-tetroxaspiro [5,5]undecanes is increased over known methods, and the recovery of the product from the hydrogenation mixture is facilitated if the dinitrile is hydrogenated in the molten condition in the presence of ammonia and a Raney cobalt or nickel formate catalyst in the absence of a solvent or diluent.

3,609,170
PROCESS FOR OPTICAL RESOLUTION AND PRODUCTS RESULTING THEREFROM

Edward Warren Cantrall, New City, N.Y.; Charles Krieger, Clifton, N.J., and Robert Bruce Brownfield, Fairfield, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of application Ser. No. 753,889, Aug. 20, 1968, now abandoned. This application May 20, 1969, Ser. No. 826,256
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.4 9 Claims

This invention relates to the optical resolution of racemic organic compounds using 2-aminobutanol as the resolving agent. The process is particularly useful in the resolution of keto and hydroxysteroids. The steroids are useful as estrogens or progestational agents or convertible into such agents.

3,609,171
11-HALOGEN-SUBSTITUTED STEROIDS

Henry Laurent; Ulrich Kerb; Karl Heinz Kolb; Rudolf Wiechert, and Erich Gerhards, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

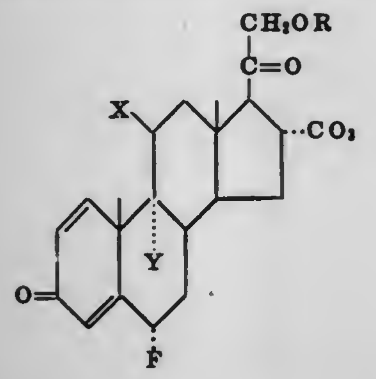
Filed Aug. 15, 1968, Ser. No. 753,034

Claims priority, application Germany, Aug. 16, 1967, P 16 43 036.7

Int. Cl. C07c *169/30*

U.S. Cl. 260—397.45 **26 Claims**

11-halogen-substituted-steroids of the formula



wherein R is hydrogen or a cyl and X and Y are halogen, the molecular weight of Y being at least equal to that of X.

The products of the invention are useful for pharmaceutical applications to reduce inflammations.

3,609,172
NEW STEROID DERIVATIVES

Gianfranco Intelisano, Milan, Italy, assignor to Italchemi-Instituto Chimico Farmaceutico S.r.l., Milan, Italy

Filed Oct. 23, 1968, Ser. No. 770,081

Claims priority, application France, Oct. 21, 1968, 126488

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.45 **4 Claims**

New 21-esters of steroids of formula $St—OCO\ (CH_2)_5—NH—COCH_3$ wherein St represents a steroid residue from pregnadiene series, the ester group being attached to the carbon at 21- position of the steroid residue. These compounds have a more useful antianaphylactic and antiinflammatory activity than the starting steroids. They are prepared by reacting the suitable steroid with E-acetamidocaproyl chloride in an organic solvent, in the presence of a hydrogen-chloride-binding agent.

3,609,173
TRICYCLOHEXYLTIN PHENOLATES AND THE PREPARATION THEREOF

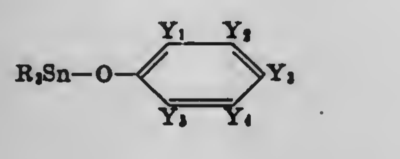
Bernard G. Kushlefsky, Edison, N.J., and Wendall K. Whitney, Midland, Mich., assignors to M & T Chemicals Inc., Greenwich, Conn., by said Kushlefsky and The Dow Chemical Company, Midland, Mich., by said Whitney

Filed Aug. 2, 1968, Ser. No. 749,625

Int. Cl. C07f *7/22;* **A01n** *9/24*

U.S. Cl. 260—429.7 **18 Claims**

This invention comprises novel tricyclohexyltin compounds of the formula



wherein R is cyclohexyl and Y_{115} are the same or different and Y is selected from the group consisting of alkyl, aryl, cycloalkyl, halogen, nitro, mercapto, cyano, and hydrogen such that not more than four Y substituents are hydrogen. This invention also comprises methods of preparing said novel compounds. This invention also comprises pesticidal compositions containing as active components said novel compounds.

3,609,174
W-TRICHLOROMETHYL-FLUOROALKYLSILANES

Arthur G. Smith, and Yung Ki Kim, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 1, 1969, Ser. No. 846,956

Int. Cl. C07f *7/08, 7/12*

U.S. Cl. 260—448.2 R **4 Claims**

Organopolysiloxanes, containing

$$CCl_3(CF_2)_nCH_2CH_2SiO—$$

units, prepared from novel silanes such as $Cl_2C(CF_2)_2CH_2CH_2Si\ (CH_3)X_2$, where X is OH or a hydrolyzable radical, are disclosed as nonflammable fluid lubricants and nonflammable elastomers.

3,609,175
NEW SUBSTITUTED THIOCARBAMATES

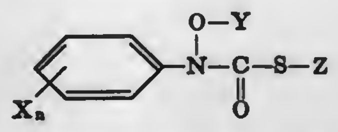
Sidney B. Richter, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Oct. 27, 1967, Ser. No. 678,529

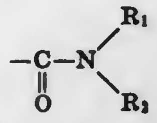
Int. Cl. C07c *155/08*

U.S. Cl. 260—455 A **10 Claims**

A compound of the formula:



wherein *n* is an integer of from 0 to 5; X is selected from the group consisting of a halogen, an aliphatic radial, nitro, acyl, acyloxy, hydroxy and alkoxy; Y is selected from the group consisting of hydrogen, alkyl, phenyl and a carbamoyl radical of the formula:



wherein R_1 and R_2 independently are selected from the group consisting of hydrogen, alkyl and phenyl; and Z is selected from the group consisting of an aliphatic radical, a cycloaliphatic radical, aryl and aralkyl. These compounds are useful as fungicides and nematocides.

3,609,176
PROCESS FOR OXIDIZING SATURATED HYDROCARBONS USING APPARATUS THEREFOR

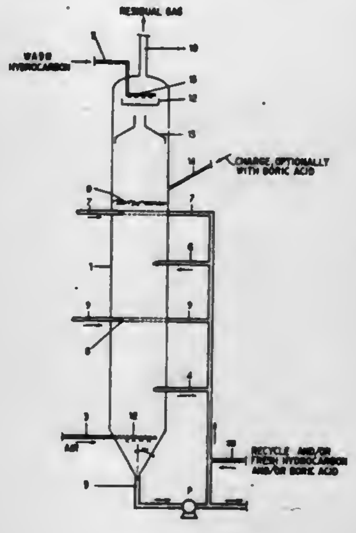
Jacob Alagy, Celle St. Cloud; Bernard Cha, Chatou, and Cornelis Keon, Mareil Marley, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison (Hauts de Seine), France

Filed June 27, 1967, Ser. No. 649,191

Claims priority, application France, July 7, 1966, Jan. 10, 1967, Mar. 30, 1967, 68,651;90,608;100,912

Int. Cl. C07f *5/04;* **C07c** *35/08*

U.S. Cl. 260—462 A **14 Claims**


RESIDUAL GAS
WASTE HYDROCARBON
CHARGE, OPTIONALLY WITH BORIC ACID
AIR
RECYCLE AND/OR FRESH HYDROCARBON AND/OR BORIC ACID

Hydrocarbon is oxidized in the presence of a boron compound wherein a portion of the liquid phase is continuously withdrawn and then reinjected tangentially as a stirring liquid into the reaction zone to provide a vertical movement which minimizes deposition of boron compounds and tarry products.

3,609,177
TRIFLUOROMETHYLPHENYL THIOCARBAMIC ACID PHENYL ESTERS

Walter Traber, Riehen; Alfred Margot, Basel, and Jean-Jacques Gallay, Birsfelden, Basel Land, all of Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

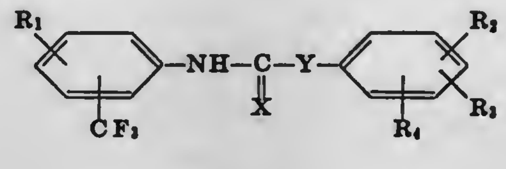
Filed May 12, 1966, Ser. No. 549,497

Claims priority, application Switzerland, May 18, 1965, May 18, 1965, May 18, 1965, 6926/65;6927/65;6928/65

Int. Cl. C07c *155/08, 125/06;* **A61k** *27/00*

U.S. Cl. 260—455 **9 Claims**

There are disclosed carbamates and thiocarbamates of the formula



in which each of R_1 and R_2 independently represents hydrogen, halogen or halogenoalkyl; R_3 represents hydrogen, halogen, nitro, cyano, hydroxyl, amino, carbamoyl, sulfamoyl phenoxy or sulfonic acid group, alkyl, alkenyl, halogenoalkyl, aralkyl, alkoxy, alkylthio, alkoxyalkyl, alkylthioalkyl, alkylsulphinyl, alkylsulphonyl, S-alkylsulphonylamino, alkylsulphamoyl, dialkylsulphamoyl, alkylcarbamoyl, dialkylcarbamoyl, alkylamino, dialkylamino, acylamino, acyl or carbalkoxy; R_4 represents hydrogen, halogen or alkyl; and X and Y each independently represents oxygen or sulfur. These compounds and their salts have anthelmintic properties and can be incorporated into animal feeds.

3,609,178
KETOXIME SILOXANES CURABLE WITH AMINOORGANOSILANES

Robert N. Thomas, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 1, 1969, Ser. No. 881,289

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **22 Claims**

Ketoxime functional siloxane polymers are mixed with aminoorganoalkoxysilanes to provide a composition which cures at room temperature by exposure to moisture and is stable in the absence of moisture. The composition cures to a material which has improved adhesion to substrates, such as metal, is harder and has improved solvent resistance. The composition can be used as a protective film, such as paint or varnish.

3,609,179
LOWER ALKYL 9-CARBOXYLATES OF 9-(TERT.-AMINOBUTYNYL) FLUORENES

John F. Cavalla, Isleworth; Roy Simpson, Taplow, and Alan C. White, Windsor, all of England, assignors to John Wyeth & Brother Limited, Taplow, England

Filed Jan. 31, 1968, Ser. No. 701,824

Claims priority, application Great Britain, Feb. 13, 1967, 6777/67

Int. Cl. C07d *87/26;* **C07c** *101/04*

U.S. Cl. 260—471 A **5 Claims**

Fluorene and Xanthene compounds bearing at the 9-position (1) a carboxyl derivative, e.g., an ester, amide, substituted amide, or hydroxymethyl and (2) a 4-tertiaryamino-2-butynyl substituent are useful as antiulcer, anti-inflammatory, anticonvulsant, and analogesic agents. The corresponding quaternary salts, e.g., their methiodides, are similarly useful.

3,609,180
PROCESS FOR PREPARING CARBOXYLIC ACID ESTERS OF UNSATURATED ALCOHOLS

Hiroshi Shigematsu, 2-6, 1-chome, Muronoki-machi Iwakuni-shi, Yamaguchi-ken, and Yasushi Shibahara, 12-35, 2-chome, Shinmachi, Otake-shi, Hiroshima-ken, both of Japan

Filed Aug. 22, 1966, Ser. No. 573,825

Claims priority, application Japan, Aug. 27, 1965, Oct. 23, 1965, Nov. 17, 1965, Dec. 21, 1965, Mar. 7, 1966, 40/51945;40/64964;40/70241;40/78364;41/13546

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **17 Claims**

A process for preparing the corresponding carboxylic acid esters of unsaturated alcohols by contacting olefins with aliphatic carboxylic acids in the presence of a gas selected from the group consisting of oxygen and oxygen-containing gases, using as catalyst a palladium salt and a copper salt, the improvement which comprises effecting the reaction in the presence of an organo-quaternary ammonium compound, said ammonium compound being one which does not have hydrogen directly linked to nitrogen and which can form under reaction conditions a carboxylic acid-soluble complex with said palladium salt.

3,609,181
POLYESTERS OF POLYOXYTETRAMETHYLENE GLYCOL AND CERTAIN DIOIC ACIDS

Hyman R. Lubowitz, Canoga Park; Charles J. Rogers, Carmichael, and Raymond A. Lynch, Rancho Cordova, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed May 28, 1964, Ser. No. 371,156

Int. Cl. C07c *69/48, 69/50*

U.S. Cl. 260—485 G **6 Claims**

1. The process of making polyesters comprising the steps of heating a polyoxytetramethylene glycol having 10 to 15 oxytetramethylene groups with a dioic acid selected from the group consisting of sebacic, isosebacic, and azelaic acids, the anhydrides of said acids, and mixtures thereof at a temperature of 300° to 550° F.

6. The product formed by the process of claim 1.

3,609,182
PRODUCTION OF CYCLOOCTYL FORMATE CYCLOOCTANOL AND CYCLOOCTANONE

James Albert Baker, 5 Dove House Crescent, Farnham Royal, Slough, Buckinghamshire, and Robert Stevens, 7 Hurst Road, Slough, Buckinghamshire, both of England

Filed Dec. 6, 1967, Ser. No. 688,335

Int. Cl. C07c *45/16, 67/04, 69/06*

U.S. Cl. 260—497 R **7 Claims**

A new route to the solvents and intermediates cyclooctanol and cyclooctanone via cyclooctyl formate is disclosed. Cyclooctyl formate may be made by acylating cyclooctene with formic acid, preferably without a catalyst, the better conversion and simplified procedure allowing the formate to be obtained at a fraction of the cost of the corresponding acetate.

3,609,183
α-[p-(DIMETHYLAMINOALKYL)PHENYL]-4-METHOXY-α′-NITROSTILBENE COMPOUNDS

Horace A. DeWald, and Martin L. Black, both of Ann Arbor, Mich., assignors to Parke Davis & Company, Detroit, Mich.

Filed Jan. 8, 1969, Ser. No. 789,950

Int. Cl. C07c *97/06*

U.S. Cl. 260—501.18 **5 Claims**

α-{*p*-[4-(Dimethylamino)butyl]phenyl}-4-methoxy-α′-nitro-stilbene and α- P-[5-(dimethylamino)pentyl]Phenyl - 4-methoxy-α′-nitrostilbene and acid-addition and quaternary ammonium salts thereof, useful as pharmacological agents that exhibit antiprogestational, hypocholesteremic, and antifertility activity; and their production by reacting a 1-[P-(dimethyl-aminoalkyl)phenyl]-1-(compound or a α-[p-(dimethylaminoalkyl)phenyl]with nitric acid.

3,609,184

1-SUBSTITUTED-3-INDENYLACETIC ACID AND ESTERS

Nobuyoshi Miyai, Takarazuka-shi; Kei Takahashi, Takarazuka-shi, and Hisao Yamamoto, Nishinomiya-shi, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka-shi, Osaka-fu, Japan

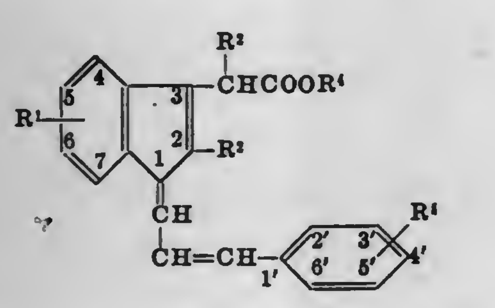
Filed Sept. 10, 1968, Ser. No. 758,697

Claims priority, application Japan, Sept. 11, 1967, 42/58538

Int. Cl. C07c *65/14, 69/76*

U.S. Cl. 260—520 3 Claims

Indene derivatives of the formula:



wherein R^1 is hydrogen, halogen, lower alkyl, lower alkoxy or lower alkylthio, R^2 is hydrogen or lower alkyl, R^3 is hydrogen, lower alkyl or phenyl, R^4 is hydrogen, lower alkyl or phenyl (lower) alkyl and R^5 is hydrogen, halogen, lower alkyl or lower alkoxy. The compounds are useful as anti-inflammatory agents.

3,609,185

PRODUCTION OF ORGANIC ACIDS

Bertram Yeomans, Hessle, Alan Frederick Parkes, Holderness, Hull, both of, England, assignor to B. P. Chemicals, (U.K.) Limited, London, England

Filed June 23, 1969, Ser. No. 835,778

Claims priority, application Great Britain, June 29, 1968, Jan. 6, 1969, 3/222/68;778/69

Int. Cl. C07c *55/02*

U.S. Cl. 260—533 A 12 Claims

Di-neocarboxylic acids are produced by reaction of an α,α^1 dialkyl substituted monoolefin in which the alkyl groups are separated by at least three carbon atoms, or an unconjugated α,α^1 dialkyl substituted diolefin with formic acid in the presence of concentrated sulfuric acid or with carbon monoxide in the presence of a mineral or Lewis acid.

3,609,186

BORYL SULFONATES AND SULFATES

Swiatoslaw Trofimenko, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1968, Ser. No. 753,855

Int. Cl. C07f *5/02*

U.S. Cl. 260—545 R 12 Claims

Dihydrocarbylboryl sulfonates and bis(dihydrocarbylboryl) sulfonates and sulfates, e.g., diethylboryl p-toluene sulfonate, bis(diethylboryl) 4,4'-biphenyldisulfonate and bis(diethylboryl) sulfate, useful as transfer agents for the hydrocarbylboryl groups, are prepared by reaction between selected hydrocarbylboranes and an anhydrous sulfonic or sulfuric acid.

3,609,187

N,N-DISUBSTITUTED TRIFLUOROMETHANESULFONAMIDES

George G. I. Moore, White Bear Lake, and Alvin C. Conway, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 14, 1969, Ser. No. 816,090

Int. Cl. C07c *143/74*

U.S. Cl. 260—556 F 8 Claims

By reacting N-alkyl- and N-alkenyltrifluoromethanesulfonamides with certain aroyl halides or anhydrides there are obtained N-aroyl-N-alkyl- and N-aroyl-N-alkenyltrifluoromethanesulfonamides having physiological activity as anticonvulsant agents.

3,609,188

4-DEDIMETHYLAMINO-4-SUBSTITUTED-AMINO-6-DEMETHYLTETRACYCLINES

Robert Carlyle Esse, Pearl River, N.Y., and George Madison Sieger, Montvale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 380,668, July 6, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 305,829, Aug. 30, 1963, now abandoned , which is a continuation-in-part of application Ser. No. 233,946, Oct. 29, 1962, now abandoned. This application Oct. 29, 1964, Ser. No. 407,540

Int. Cl. C07c *103/19*

U.S. Cl. 260—559 AT 22 Claims

This disclosure describes compounds of the class of 4-dedimethylamino-4-substituted-amino-6-demethyltetracyclines useful as antibacterial agents.

3,609,189

NOVEL MULTIFUNCTIONAL HYDROXY COMPOUNDS AND METHODS FOR THE PREPARATION THEREOF

Clarence R. Bresson, and Raymond L. Cobb, both of c/o Phillips Petroleum Company, Bartlesville, Okla.

Dvision of Ser. No. 492,892, Oct. 4, 1965, now Patent No. 3,414,617.

Filed Aug. 5, 1968, Ser. No. 749,990

Int. Cl. C07c *103/00*

U.S. Cl. 260—561 4 Claims

N-alkylated derivatives of 2-amino-2-hydrocarbylthiomethyl-1-1,3-propanediols, useful as flotation agents, rubber modifiers, and chelating agents in the separation of metals, are produced by reacting 2-amino-2-hydrocarbylthiomethyl-1,3-propanediols with organic halides. Thiols can be produced by reacting arylmethylated or alkarylmethylated derivatives of the above compounds with an alkali metal in the presence of ammonia.

3,609,190

POLYAMINATED DERIVATIVES OF POLYCHLOROPOLYPHENYLBENZENES

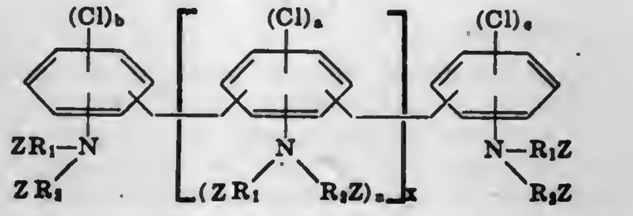
Lucien Sobel, Grenoble, and Ludovic Parvi, Pont de Claix, both of France, assignors to Ugine Kuhlman, Paris, France

Continuation-in-part of application Ser. No. 424,848, Jan. 11, 1965, now abandoned. This application Nov. 24, 1967, Ser. No. 685,306

Int. Cl. C07c *91/42*

U.S. Cl. 260—570.5 1 Claim

A polyaminated derivative of polychlorinated polyphenylbenzenes higher than diphenyl, useful as an anti-ignition additive in polymer-type materials such as polyesters and having a general formula:



prepared at a temperature between 70° and 300° C. by the reaction of an aminated compound containing members R_1Z and R_2Z with at least one polyhalogenated polyphenylbenzene R_1Z and R_2Z are members selected from the group consisting of an atom of hydrogen and a functional group formed by a radical R_1 and R_2 and by a terminal group Z, said radicals R_1 and R_2 being selected from the group consisting of a saturated aliphatic having from two to eight carbon atoms and an aromatic, said terminal group Z being a member selected from the group consisting of —OH, $—NH_2$, CH_3.

3,609,191

POLYETHYLENE IMINE BORANES AND THEIR PREPARATION

Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.

Filed June 4, 1969, Ser. No. 834,584

Int. Cl. C07c *87/20*

U.S. Cl. 260—583 A 3 Claims

This invention relates to polyethylene imine boranes. They are prepared by reacting a polyethylene imine having a

molecular weight from 600 to 100,000 with $THF:BH_3$ in tetrahydrofuran. The presently preferred boranes are prepared as above indicated using a polyethylene imine having a molecular weight between 600 and 1800. The solvent and reactants should be as anhydrous as possible. The properties vary with the amount of amino groups which are complexed to borane groups. Thus, the boranes made by reacting 1 BH_3 group for each 4 to 100 amino groups are viscous liquids which are fairly soluble in water and organic solvents including benzene. They are very substantive to anionic substrates and are useful for reductive bleaching and as stabilizing agents for cellulose, clay, etc. When a greater number of amino groups are converted to borane groups, such as 1 borane group for each 2 to 4 amino groups of the polyethylene imine, the products are extremely viscous polymers or solids. These products also retain slight water solubility (1 to 5%) and are useful where a more concentrated reducing activity is desired.

3,609,192

PRODUCTION OF ALK-1-EN-5-ONES AND ALK-1-EN-5-ALS

Werner Hoffman, and Heinrich Pasedach, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

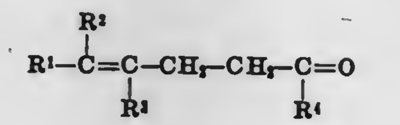
Filed Mar. 28, 1969, Ser. No. 811,598

Claims priority, application Germany, Mar. 30, 1968, P 17 68 099.8

Int. Cl. C07c *49/76, 49/20, 49/24*

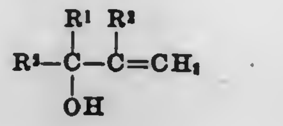
U.S. Cl. 260—590 3 Claims

Production of alk-1-en-5-ones and alk-1-en-5-als having the general formula (I):



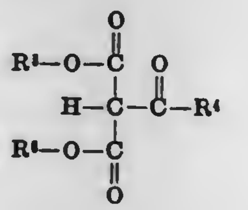
$$R^1-\overset{R^2}{\overset{|}{C}}=\underset{\underset{R^3}{|}}{C}-CH_2-CH_2-\underset{\underset{R^4}{|}}{C}=O \qquad (I)$$

in which R^1, R^2 and R^3 each denotes a hydrogen atom or a hydrocarbon radical having from one to 40 carbon atoms which may be joined together in pairs to form five-membered to seven-membered rings and which may contain oxygen atoms as heteroatoms and in which R^4 denotes a hydrogen atom or a hydrocarbon radical having one to 40 carbon atoms which may also contain oxygen atoms as heteroatoms. Said compounds I being formed by reacting an allyl alcohol having the formula (II):



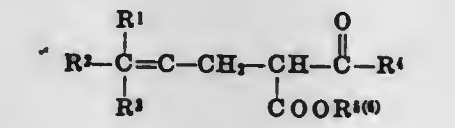
$$R^3-\underset{\underset{OH}{|}}{\overset{R^1}{\overset{|}{C}}}-\overset{R^2}{\overset{|}{C}}=CH_2 \qquad (II)$$

at a temperature of from 50° to 350° C. with an acyl malonate having the formula (III):



$$H-\underset{\underset{R^6-O-\underset{\underset{O}{\|}}{C}}{|}}{\overset{\overset{R^5-O-\overset{\overset{O}{\|}}{C}}{|}}{C}}-\overset{\overset{O}{\|}}{C}-R^4 \qquad (III)$$

in which the radicals R^5 and R^6 denote identical or different alkyl groups having from 1 to 8 carbon atoms, and the resultant intermediate product having the general formula (IV):



$$R^2-\underset{\underset{R^3}{|}}{\overset{R^1}{\overset{|}{C}}}=C-CH_2-\underset{\underset{COOR^{5(6)}}{|}}{CH}-\overset{\overset{O}{\|}}{C}-R^4 \qquad (IV)$$

is hydrolyzed and decarboxylated.

3,609,193

PROCESS OF COUPLING ALDEHYDES AND KETONES

John Charles Leffingwell, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of application Ser. No. 595,004, Nov. 17, 1966, now abandoned. This application Apr. 30, 1969, Ser. No. 820,629

Int. Cl. C07c *49/76, 49/26, 49/12*

U.S. Cl. 260—590 8 Claims

A process for producing coupling products from aldehydes and ketones by treating such compounds with manganese dioxide or nickel peroxide.

3,609,194

POLYPHENYLEMETHYL PHOTOCHROMIC COMPOUNDS

Gerard Ernest Gerhardt, Warren Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 16, 1968, Ser. No. 729,515

Int. Cl. C07c *49/76*

U.S. Cl. 260—591 5 Claims

A class of photochromic compounds characterized by the formula:

$$A—CH_2—B$$

wherein A is a moiety of an aromatic compound A—H having an efficient rate of intersystem crossing from the singlet state to the triplet state, and B is a moiety of a linear polyphenyl having the first triplet state below the first triplet state of A—H.

3,609,195

PREPARATION OF AROMATIC ALDEHYDES BY OXIDATION

Ellis K. Fields, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 597,869, Nov. 30, 1966, now abandoned. This application Apr. 10, 1969, Ser. No. 815,201

Int. Cl. C07c *47/52*

U.S. Cl. 260—599 3 Claims

A process for preparing aromatic aldehydes which process consists of oxidizing substituted or unsubstituted toluene, xylene, pseudocumene with a molecular oxygen-containing gas in the presence of 0.1 to 25 moles of nitrobenzene.

3,609,196

ETHER COMPOUNDS

Ross C. Terrell, Plainfield, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Continuation of application Ser. No. 727,004, May 6, 1968, now abandoned. This application Mar. 2, 1970, Ser. No. 15,308

Int. Cl. G07c *43/00, 43/12*

U.S. Cl. 260—614 F 1 Claim

The present invention relates to the novel compounds 1,1,2,2-tetrafluoroethyl trichloromethyl ether ($CHF_2CF_2OCCl_3$); 1,1,2,2-tetrafluoroethyl dichloromethyl ether ($CHF_2CF_2OCHCl_2$); and 1,1,2,2-tetrafluoroethyl fluorochloromethyl ether ($CHF_2CF_2OCHFCl$). The compounds are prepared through selective stepwise chlorination and fluorination of 1,1,2,2-tetrafluoroethyl methyl ether. The compounds are useful as anesthetics and as solvents and dispersants of fluorinated materials.

3,609,197

PREPARATION OF A TERPENE ALCOHOL

John C. Leffingwell, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Mar. 8, 1968, Ser. No. 711,500

Int. Cl. C07c *35/18;* **C11b** *9/00*

U.S. Cl. 260—631.5 1 Claim

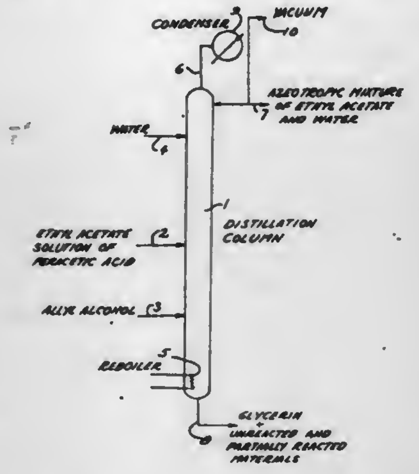
This invention relates to the synthesis of terpinene-4-01. Terpinene-4-01 is an unsaturated tertiary terpene alcohol which occurs naturally in a number of essential oils. It finds use as a component in synthetic essential oils which are compounded for use as flavors or perfumes.

3,609,198
PROCESS FOR THE CONTINUOUS MANUFACTURE OF GLYCERIN BY SIMULTANEOUS REACTION AND WATER-ADDITION AZEOTROPIC DISTILLATION

Kazuo Yamagishi, Tokyo; Osamu Kageyama, Iruma-gun, Saitama; Hideo Arai, Iruma-gun, Saitama, and Hideaki Masaki, Ohtake-shi, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Jan. 2, 1969, Ser. No. 788,360
Claims priority, application Japan, Feb. 14, 1968, 43/9265
Int. Cl. B01d *3/36;* **C07c** *31/22*
U.S. Cl. 260—635 H **7 Claims**

A process for producing glycerin by a reaction between peracetic acid and allyl alcohol, without using a catalyst, in which a lower fatty acid ester solution of peracetic acid and allyl alcohol are fed into a distillation column and water is fed into the distillation column at a higher position so that an azeotropic mixture of the lower fatty acid ester and water is removed from the top of the column and an aqueous solution of glycerin is removed from the bottom of the column.

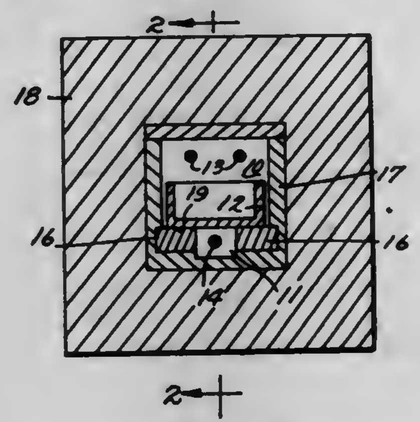

CONDENSER
9
VACUUM
10
6
AZEOTROPIC MIXTURE OF ETHYL ACETATE AND WATER
7
WATER
4
1
DISTILLATION COLUMN
ETHYL ACETATE SOLUTION OF PERACETIC ACID
2
ALLYL ALCOHOL
3
5
REBOILER
GLYCERIN + UNREACTED AND PARTIALLY REACTED MATERIALS
8

ELECTRICAL

3,609,199
PUSH-THROUGH FURNACE WITH GRAPHITE ROD HEATING

Fritz Krall, Hanau/Main, and Fritz Kalbfleisch, Lieblos, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Aug. 29, 1969, Ser. No. 854,149
Claims priority, application Germany, Sept. 27, 1968, P 17 83 069.2
Int. Cl. F27b *9/06, 9/36*
U.S. Cl. 13—20 **2 Claims**

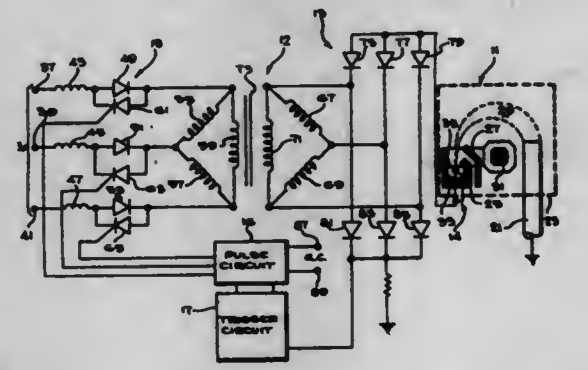


An electrically heated push-through furnace for the sintering of powder metallurgy molded parts and containing an elongated chamber is provided with a plurality of graphite rods parallel to the longitudinal axis of the chamber. The rods do not touch the walls of the chamber.

3,609,200
POWER SUPPLY

Emmett R. Anderson, Berkeley, Calif., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 675,902, Oct. 17, 1967, now Patent No. 3,544,913. This application July 23, 1970, Ser. No. 57,514
Int. Cl. H05b *7/00*
U.S. Cl. 13—31 **5 Claims**

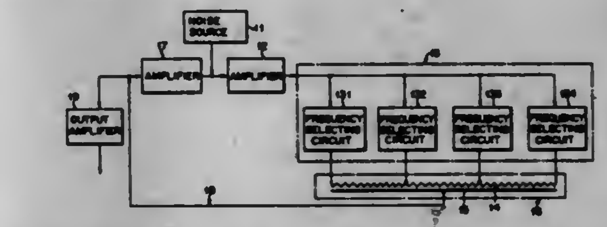


A power supply is described for use with an electron gun employed in an electron beam furnacc system. The power supply includes a transformer and a rectifier connecting the secondary of the transformer to the electron beam gun for supplying current thereto. The power supply also includes a semiconductor-switching circuit connected to the primary of the transformer for supplying current to the primary. The switching circuit is controlled by a pulsing circuit, and a trigger circuit is controlled by a pulsing circuit, and a trigger circuit is connected to the pulsing circuit and to means for sensing a rise in current to the electron gun in the presence of an arc. Upon the sensing of such rise in current, the trigger circuit disables the pulsing circuit to thereby render the switching circuit inoperative and cut off current to the electron beam gun.

3,609,201
VARIABLE PITCH NARROW BAND NOISE GENERATOR

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Aug. 19, 1970, Ser. No. 65,240
Claims priority, application Japan, Aug. 22, 1969, Aug. 22, 1969, Aug. 22, 1969, Aug. 22, 1969, 44/66102;44/66103;44/66104;44/66105
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.01 **11 Claims**

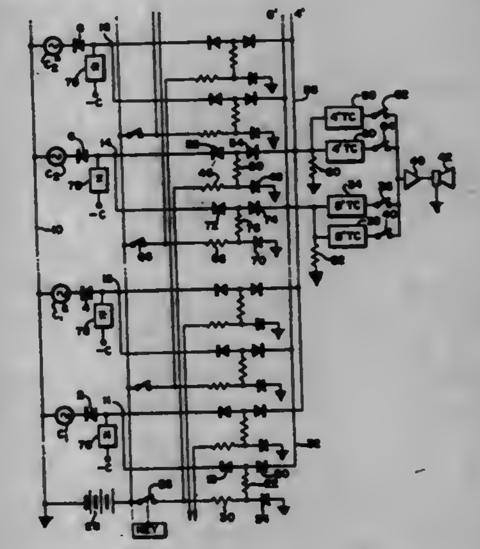

NOISE SOURCE
11
AMPLIFIER
AMPLIFIER
OUTPUT AMPLIFIER
FREQUENCY SELECTING CIRCUIT
FREQUENCY SELECTING CIRCUIT
FREQUENCY SELECTING CIRCUIT
FREQUENCY SELECTING CIRCUIT

A variable pitch narrow band noise generator comprising a noise signal source for generating a noise signal containing broad band frequency components; an amplifier for amplifying the noise signal from the source; a filter consisting of a plurality of frequency-selecting circuits supplied in common with the amplified noise signal from the amplifier, selecting different band-pass frequency components and connected in parallel in the order of the center frequency of frequency ranges of the band-pass frequency components; a normally open type variable resistor assembly consisting of an elongated resistor element and a similarly elongated flexible conductive contact element disposed adjacent to each other; a signal-circulating circuit for feeding a noise signal derived from the filter with depression of the flexible conductive contact element of the variable resistor assembly back to the amplifier so as to produce the noise signal in a narrower band form; and an output amplifier for amplifying the resultant narrow band pitch noise signal obtained from the signal-circulating circuit, whereby there can be easily obtained particularly from the output amplifier a noise signal having such a pitch sensation as is observed in a husky voice and containing a certain narrow band frequency components, the signals being capable of varying in pitch continuously as desired.

3,609,202
ELECTRONIC ORGAN GATING SYSTEM

Alfred J. Bissonette, Terrace Park, Ohio, and Walter Munch, Jr., Covington, Ky., assignors to D. H. Baldwin Comapny, Cincinnati, Ohio

Filed Apr. 8, 1966, Ser. No. 541,380
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **12 Claims**



A gating system for electronic music, wherein a pair of gates is employed to gate each tone signal, the gates being in cascade for each tone signal, and each pair of gates utilizing a common first gate directly connected to a tone signal generator, followed by two parallel gates, one proceeding to a 4′ bus and one to an 8′ foot bus.

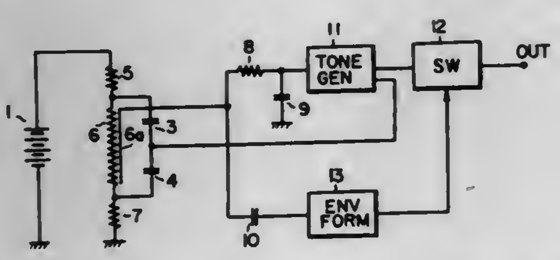
3,609,203
PARTAMENTO MUSICAL INSTRUMENT HAVING A SINGLE TONE AND ENVELOPE CONTROL

Takeshi Adachi, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Oct. 6, 1969, Ser. No. 864,047

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.01 **1 Claim**



An electronic musical instrument capable of rendering tones of a monophonic continuous scale comprises a performance member including an elongated resistor and an opposing flexible contact wherein a DC current and an AC current are supplied to the elongated resistor and a mixed signal consisting of a DC control signal and an AC control signal is taken out from the flexible contact under the manipulation of the performance member, the DC control signal being varied in magnitude in correspondence to the manipulating position along the performance member, a variable frequency tone generator delivering a tone of a pitch corresponding to the magnitude of the DC component of the mixed signal obtained from the performance member, an envelope forming circuit driven by the AC component of the mixed signal for rendering an envelope signal corresponding thereto, and a switching circuit for switching a tone signal from the tone generator in accordance with the envelope signal, whereby a tone signal having a desired keying (switching) envelope can be obtained from the musical instrument.

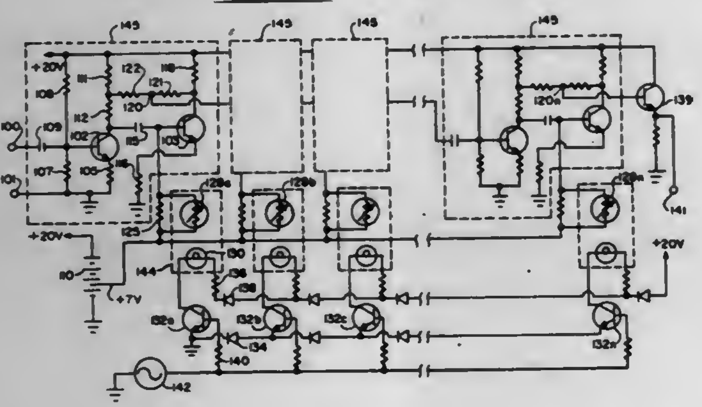
3,609,204
VIBRATO SYSTEM FOR ELECTRICAL MUSICAL INSTRUMENT

Richard H. Peterson, 11748 Walnut Ridge Drive, Palos Park, Ill.

Filed Oct. 6, 1969, Ser. No. 864,026

Int. Cl. G01h *1/04*

U.S. Cl. 84—1.25 **2 Claims**



The invention relates to systems for imposing vibrato effects on electrical signals, as from the output of an electronic organ, electric guitar or other electrical musical instrument. A series of resistance-capacitance (RC) phase-shifting networks are connected in cascade, each of which, when enabled, is capable of producing a predetermined phase shift at any given frequency. The phase shift produced by all of the individual networks is cumulative. The individual phase-shifting networks are sequentially enabled seriatim, and then disabled seriatim, to produce a close approximation to true frequency modulation.

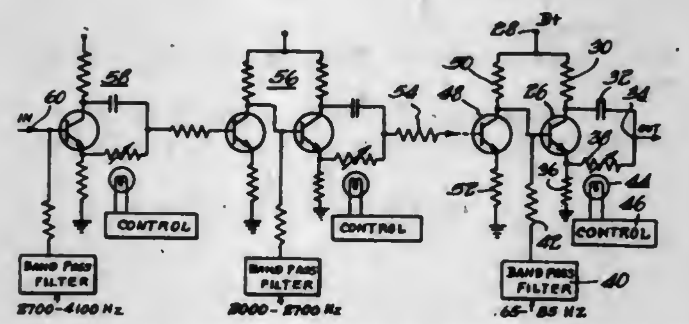
3,609,205
ELECTRONIC MUSICAL INSTRUMENT WITH PHASE SHIFT VIBRATO

Harold O. Schwartz, and Anthony C. Ippolito, both of North Tonawanda, N.Y., assignors to The Wurtilzer Company, Chicago, Ill.

Filed May 15, 1970, Ser. No. 37,634

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.25 **14 Claims**



Organ or the like electronic musical instrument tones are subjected to a phase-shift vibrato utilizing a plurality of series connected stages of phase shifting, each stage comprising a capacitor and a light-dependent resistor respectively connected to the collector and emitter of a transistor. The resistance of the light-dependent resistor is varied by a lamp excited at a vibrato frequency. Different frequency bands are connected to individual stages such that the higher the frequency range of the band the larger the number of stages the band is passed through.

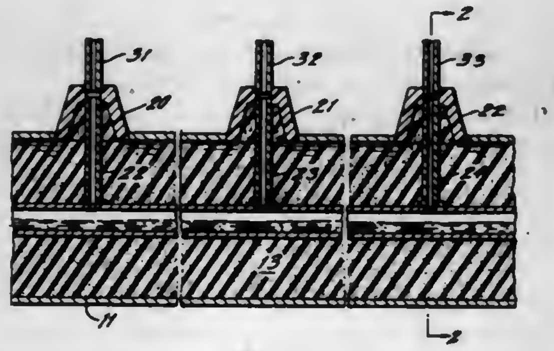
3,609,206
EVAPORATIVE COOLING SYSTEM FOR INSULATED BUS

Lorne D. McConnell, Radnor, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Jan. 30, 1970, Ser. No. 7,165

Int. Cl. H01b *7/34*

U.S. Cl. 174—15 C **6 Claims**



The interior of a hollow elongated bus, which is embedded in insulation material, receives a refrigerant which is vaporized by the heat generated by current flow in the bus. A plurality of vapor conductors extend into the bus at longitudinally spaced locations along the bus and are terminated by a condenser.

3,609,207
HIGH-VOLTAGE ELECTRICAL CABLES

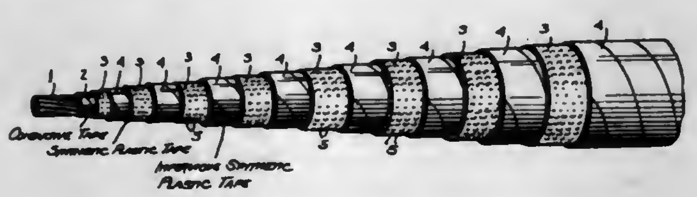
Gabriele Maschio, Southampton, England, assignor to Pirelli Societa Per Azioni, Milan, Italy

Filed July 10, 1968, Ser. No. 743,778

Claims priority, application Italy, July 17, 1967, 18470A/67

Int. Cl. H01b *7/02, 9/06*

U.S. Cl. 174—25 **6 Claims**



High-voltage electrical cables having tapes of synthetic plastic material which form separating insulating layers. The tapes are formed with protuberances which facilitate the flow of insulating fluid through the cables.

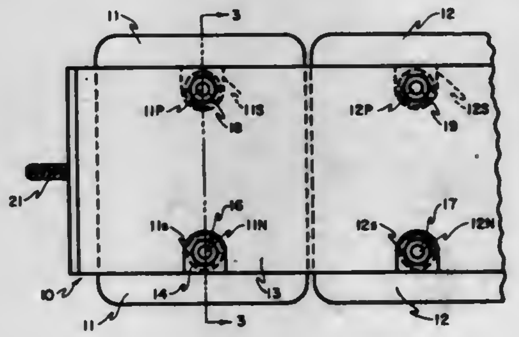
3,609,208
MAGNETICALLY COMPENSATED CONNECTOR FOR ELECTRICAL CIRCUITS

Joseph L. Winpisinger, Fairview Park, Ohio, assignor to Lorain Products Corporation

Filed Sept. 21, 1970, Ser. No. 73,961

Int. Cl. H01b *7/08*

U.S. Cl. 174—32 **8 Claims**



A magnetically compensated conductor pair for connecting a plurality of circuit elements in parallel. A pair of conductors each having a thickness which is small in relation to the length and width thereof are insulated from one another by a sheet of a nonconductive material disposed therebetween. The terminals of each circuit component are connected only to predetermined respective conductors, the connections of each pair of component terminals being located so as to establish a symmetrical terminal distribution about the points where the conductors are connected to an external circuit. As current flows into one component terminal through one conductor and out of the other component terminal through the other conductor, the current distribution established in one conductor is equal and opposite to that established in the other conductor, on a point-by-point basis, along substantially the entire length and width of both conductors. This results in a mutual cancellation in the magnetic flux produced by current in the conductor pair and, thereby, in a reduction in the self-inductance thereof.

3,609,209
SPACER DAMPER

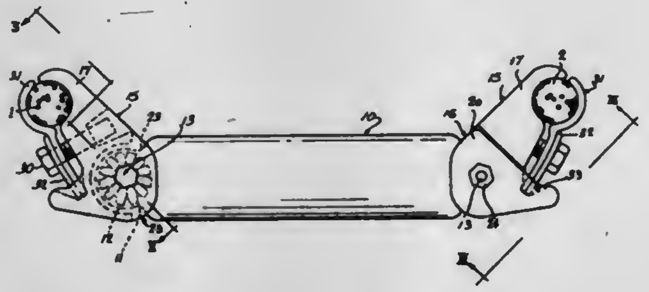
Herbert James Houston, Oakville, Ontario; Robert Gordon Baird, Burlington, Ontario; Kenneth Dale Bolt, Burlington, Ontario, and Adolf Gretzinger, Ancaster, Ontario, all of Canada, assignors to N. Slater Company, Division of Slater Steel Industries Limited

Filed June 3, 1969, Ser. No. 830,002

Claims priority, application Canada, Apr. 9, 1969, 048,169

Int. Cl. H02g *7/12, 7/14*

U.S. Cl. 174—42 **11 Claims**



A cable damper for damping vibrations in two parallel electrical cables has a main body and two arms mounted thereon. The arms carry cable clamping means for holding the two cables and are mounted on the body by pivotal mountings which allow for pivotal movement of the arms only about predetermined axes parallel to the cables held by said arms. The pivotal mountings for the arms include resilient energy absorbing means biasing the arms into neutral positions in which positions the arms are inclined to the common plane of said cables. The inclinations are such that the range of angular movement of an arm about said neutral position such as can be caused by vibrations of a cable attached thereto lies between planes through the pivotal aXis of said arm respectively parallel to and perpendicular to said common plane.

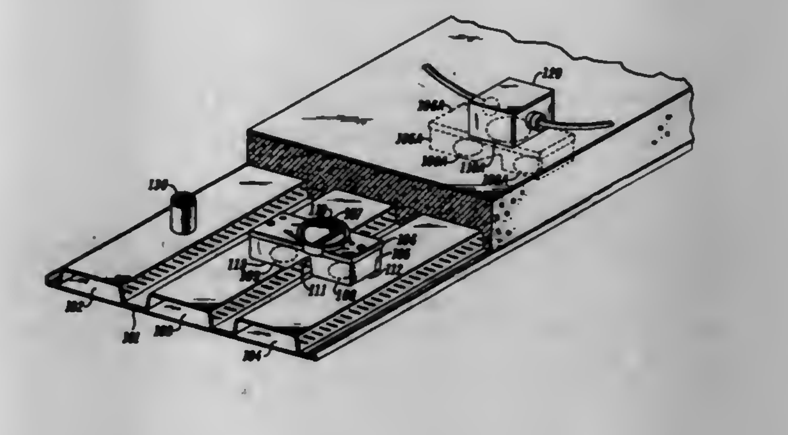
3,609,210
MULTIPLE SERVICE FLOOR BOX

Kenneth Edwin Guritz, 570 Emerald Harbor Drive, Sarasota, Fla.

Filed June 26, 1970, Ser. No. 50,119

Int. Cl. H02g *3/08, 3/28*

U.S. Cl. 174—49 **8 Claims**



A floor service fitting for use with cellular steel floor building construction. The service fitting comprises a base member having two isolated compartments. The base member is proportioned to bridge between two cells of the cellular steel floor. The bottom of each compartment has a relatively large opening. Corresponding openings are placed in adjacent cells of the cellular steel floor and the base is secured with the openings in the two compartments directly above the openings in the adjacent cells. The base is securely anchored to the adjacent cells to provide a good mechanical and electrical connection. The two isolated compartments are separated by an integral divider which has an elongated slot along the length thereof for receiving a metal separator. The service fitting further comprises a cap member which is adapted to be physically and electrically secured to the base member and comprises a relatively large opening centered above the divider. The cap member and the base member in one instance are proportioned so that the upper surface of the cap member coincides with the upper surface of the concrete which is poured over the cellular floor. In another example, a separate adjustable member is adapted to engage the cap member and its upper surface coincides with the upper surface of the concrete.

3,609,211
DUCT WITH POWER AND COMMUNICATIONS OUTLET

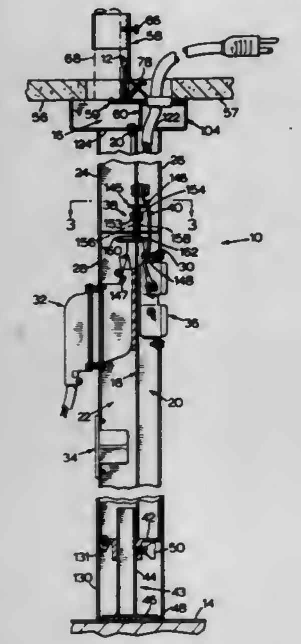
Adrian P. Van Herk, Thornhill, Ontario, Canada, assignor to Medland Enterprises, Toronto, Ontario, Canada

Filed Aug. 28, 1970, Ser. No. 67,924

Int. Cl. H02g *3/04*

U.S. Cl. 174—49 **10 Claims**

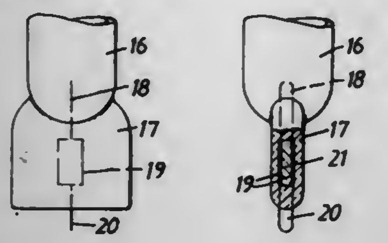
A service column for attachment to a suspended ceiling having inverted T-section girders to provide services at a work area. The column includes an upright main member attached by its upper end to a clamping bracket assembly which is adapted to be attached to the girders for longitudinal sliding movement on the girders. The clamping bracket assembly includes a fastener for locking the assembly to the girder in any predetermined position. Covers on the main member house service outlets, and the column has an adjustable foot for locating the column on a floor.



3,609,212
SEALS FOR ELECTRICAL DEVICES

Frank Lewis, London, England, and John Willoughby Thomas Wright, deceased, late of Leicester, England (by Audry Mabel Wright and Denis Wilfred Clarke, legal executors), assignors to British Lighting Industries Limited, London, England

Filed July 1, 1969, Ser. No. 840,597
Claims priority, application Great Britain, July 1, 1968, 31,324/68
Int. Cl. H01j *5/38*
U.S. Cl. 174—50.62 **12 Claims**

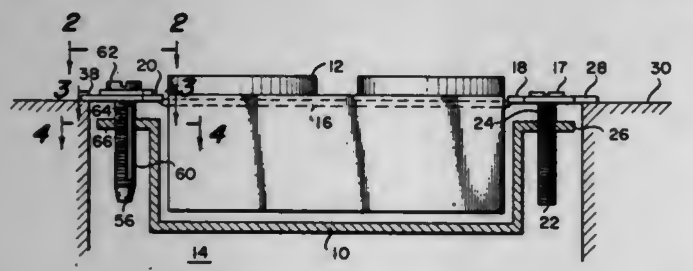


A pinched seal for envelopes of electrical devices having a plurality of lead-in conductors, in which a layer of material of lower softening point than the envelope is placed between foil portions of the lead-in conductors to form a sandwich so that during the formation of the pinched-seal the material between the foils flows as readily as the material outside the foils even though it is at a lower temperature.

3,609,213
AUTOMATIC GROUNDING FOR RECEPTACLE

Paul H. Winter, 303 Robineau Road, Syracuse, N.Y., and Paul W. Herzog, 127 Martin St., Syracuse, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,047
Int. Cl. H05k *5/02*
U.S. Cl. 174—51 **6 Claims**

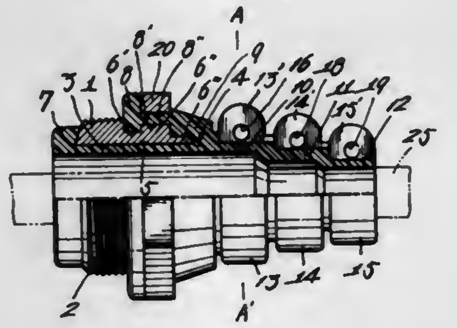


A slotted grounding strap is mounted across the spaced parallel legs of the end portion of a receptacle mounting strap and a screw is snugly and resistently carried in the slot. The screw is threadedly mounted in the mounting ear of a flush-type box to secure the receptacle in the box and provide an automatic low resistance electrical path between the mounting strap and the box.

3,609,214
CORD HOLDER

Tadao Totsuka, 9, 35, 2-Chome Johoku Hamamat-su, Shizuoka-ken, Japan

Filed Apr. 30, 1969, Ser. No. 820,503
Claims priority, application Japan, July 26, 1968, 43/63547
Int. Cl. H01r *13/58*
U.S. Cl. 174—65 R **10 Claims**

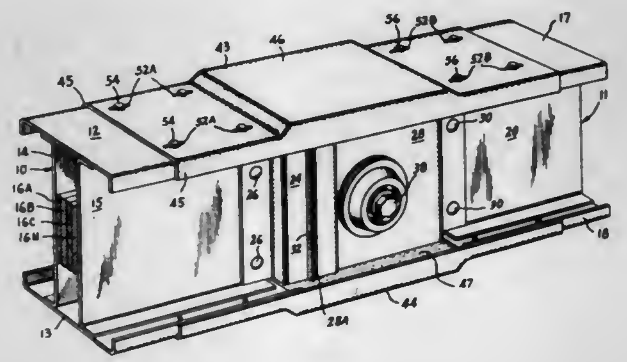


A cord holder having a rigid annular member adapted to be attached to the casing of an electric appliance and a deformable insulation hollow insulation member fitted in the annular member. The hollow member includes a plurality of sections having different diameters for receiving electric cords having different diameters and provided with integral tightening pieces surrounding the outer periphery of said sections and adapted to receive tightening bolts.

3,609,215
ELECTRIC POWER BUSWAY WITH THERMAL EXPANSION ABSORBING JOINTS

Walter Giger, Jr., Wethersfield; Robert A. Fulop, Torrington, and Robert L. McCrevey, Canton, all of Conn., assignors to General Electric Company

Filed May 7, 1969, Ser. No. 822,476
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 B **25 Claims**

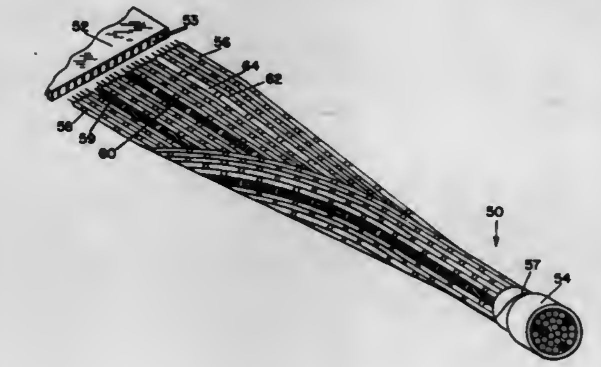


An electric power busway including joints having means allowing relative longitudinal movement of the bus bar sections and having generally planar bus bar contact surfaces, the contact surfaces being scored or grooved to provide lubricant reservoir spaces. Lubricant trapped in the reservoir spaces permits longitudinal movement of the bus bars with respect to each other occurring because of thermal expansion, without excessive wear of the contact surfaces and without harmful increase of electrical resistance and consequent excessive heating of the joint. The construction makes possible a busway system having a large number of busway sections, without use of special thermal expansion-absorbing sections as required by busway systems with prior art-type joints.

3,609,216
TWISTED CABLE

Albert R. Copp, Hudson, Mass., assignor to Surprenant, Inc., Jaffrey, N.H.

Filed June 26, 1970, Ser. No. 50,029
Int. Cl. H01b *7/00, 7/08*
U.S. Cl. 174—113 R **5 Claims**

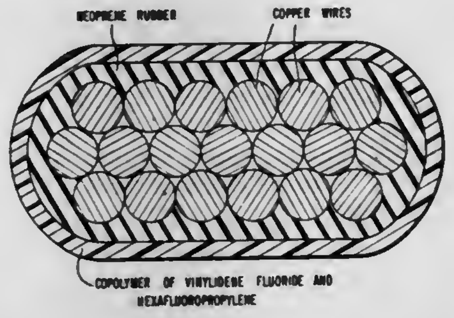


A cable comprises a twisted flat cable and an outer retaining jacket. If a portion of the jacket is removed at the end of the cable, the cable can be readily flattened to facilitate connection procedures.

3,609,217
ELECTRIC SUPPLY CABLES FOR ELECTRIC FURNACES

Piero Gaja, Turin, Italy, assignor to Cear S.p.A, Turin, Italy

Filed Oct. 22, 1969, Ser. No. 868,486
Claims priority, application Italy, Oct. 23, 1968, 53592 A/68
Int. Cl. H01b *7/00*
U.S. Cl. 174—120 **2 Claims**



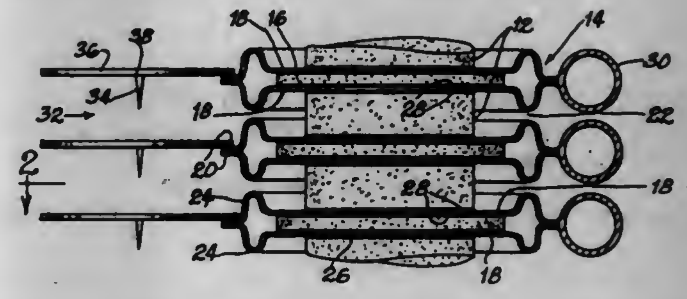
Supply cables for electric furnaces, of the type in which a number of metal filaments are embedded in a neoprene casing, are protected against high heat and are made wear resistant, by forming on the neoprene sheath an outer sheathlike covering of a copolymer of vinylidene fluoride and hexafluoropropylene.

3,609,218
HIGH VOLTAGE ELECTRICAL INSULATORS WITH FLASHOVER CONTROL MEANS

Raymond G. Herb, Madison, and James A. Ferry, Middleton, both of Wis., assignors to National Electrostatics, Middleton, Wis.

Filed Nov. 3, 1969, Ser. No. 873,216
Int. Cl. H01b *17/48;* **H02n** *1/00;* **H05h** *7/00*
U.S. Cl. 174—141 **4 Claims**

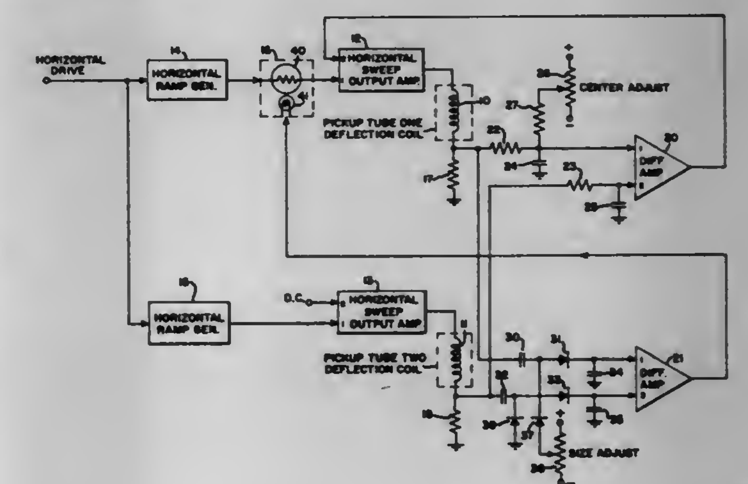
The disclosed insulator comprises a series of cylindrical insulating members with barrier cushions interspersed therebetween. Each barrier cushion comprises an insulating disk of greater diameter than the insulating members. Conductive disks are disposed between the insulating members and the insulating disks. Each barrier cushion comprises a pair of such conductive disks, having outer edge portions welded together along an annular joint. The barrier cushions prevent propagation of a spark along the length of the insulator. The conductive disks have laterally projecting convolutions of generally cylindrical curvature, forming spark gaps. The spacing between the adjacent convolutions represents the least spacing between the electrically conductive disks of adjacent barrier cushions.



3,609,219
SYSTEM FOR REGULATION OF COLOR TELEVISION CAMERA SIZE AND CENTERING CURRENTS

Max H. Diehl, Manlius, N.Y., assignor to General Electric Company

Filed Jan. 22, 1970, Ser. No. 4,901
Int. Cl. H04n *5/44*
U.S. Cl. 178—5.4 **12 Claims**

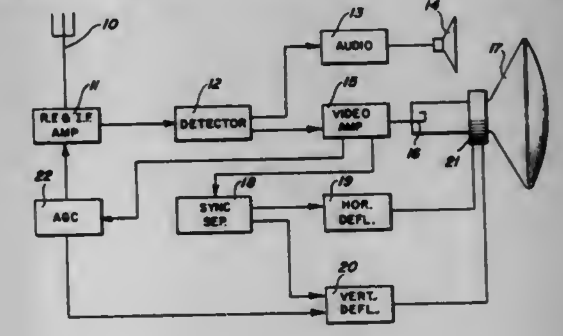


Long-term registration stability in multiple tube television color cameras is improved by minimizing differential changes in sweep size and centering. A comparison of the average and peak-to-peak amplitudes of current in the deflection coils of one tube to the average and peak-to-peak amplitudes of current in the deflection coils of the second tube in a two-tube color camera, or to the average and peak-to-peak amplitudes of current in the deflection coils of the second and third tubes in a three-tube color camera, is made, and DC error voltages for size and centering are derived and applied to the sweep circuitry in a manner to minimize drift.

3,609,220
VERTICAL SCAN CIRCUIT

Lawrence R. Poel, Elmhurst, Ill., assignor to Warwick Electronics Inc.

Filed June 3, 1969, Ser. No. 829,934
Int. Cl. H04n *5/04*
U.S. Cl. 178—7.3 R **9 Claims**



A vertical scan circuit for a television receiver in which a free-running oscillator is synchronized by the vertical synchronizing component of the received signal. The free-running frequency of the vertical oscillator is varied in accordance with the amplitude of the received television signal.

3,609,221
VIDEO SIGNAL IDENTIFICATION CIRCUIT

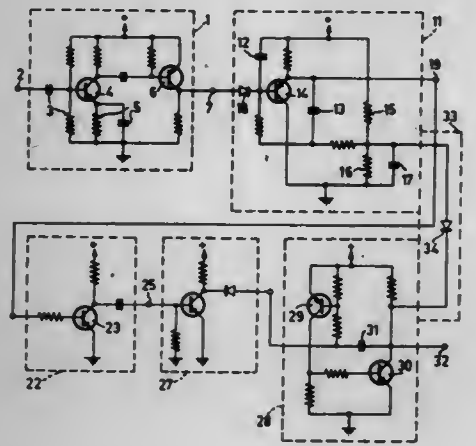
Erich Langer, Maria-Enzersdorf, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,250

Claims priority, application Austria, July 11, 1968, A6701/68

Int. Cl. H04n *1/38*

U.S. Cl. 178—7.3 R **7 Claims**



A video signal identification circuit provides a control signal to indicate the absence of either line or field pulse synchronizing signals within a video signal. The line and field pulse groups are separated from the input video signal and selected portions of the field pulse group are suppressed. The remaining line and field pulses are then used as a input to a monostable sawtooth generator which has a natural period exceeding a line period. The output of the sawtooth generator provides an input to a threshold circuit which outputs the control signal in response to the predetermined input signal.

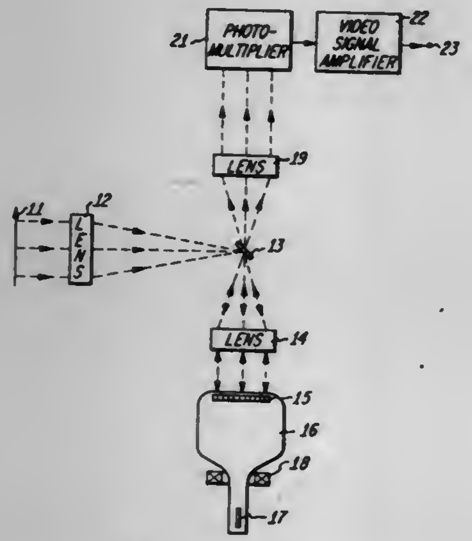
3,609,222
ELECTRO-OPTICAL IMAGE FORMING SYSTEM

Walter Joseph Howarth, Trenton, N.J., assignor to RCA Corporation

Filed Apr. 13, 1970, Ser. No. 28,354

Int. Cl. H04n *5/38, 9/08;* **G03b** *21/00*

U.S. Cl. 178—5.4 BD **7 Claims**



Light from a subject illuminates the reflecting member of electronic scanning apparatus the elemental areas of the reflecting member being selectively deformable by an unmodulated electron beam to direct reflected subject-derived light past a stop in a schlieren projection system and onto video signal-developing means.

3,609,223
VIDEO TAPE RECORDER DEVICE UTILIZING SINGLE MAGNETIC HEAD

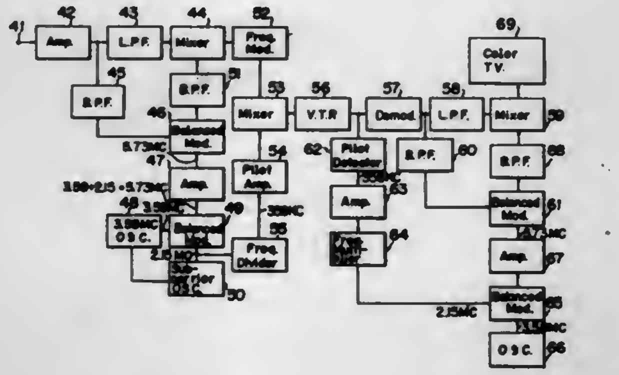
Hisao Tajiri, Sagamihara-shi, and Shigeo Tanaka, Kawasaki-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 7, 1967, Ser. No. 681,186

Claims priority, application Japan, Nov. 12, 1966, Nov. 14, 1966, July 14, 1967, Sept. 4, 1967, 41/74062;41/74418;42/45039;42/56373

Int. Cl. H04n *5/78;* **G11b** *5/04*

U.S. Cl. 178—5.4 CD **9 Claims**



A video tape recorder device for use with color television signals including luminance and chrominance signal components which are to be recorded on a magnetic tape and reproduced therefrom, utilizing a pilot signal for obtaining color television signals free from phase variation, and utilizing a quasi-subcarrier wave for reducing the bandwidth of the color television signals to be recorded on the magnetic tape and reproduced therefrom relative to the bandwidth of the original color television signals.

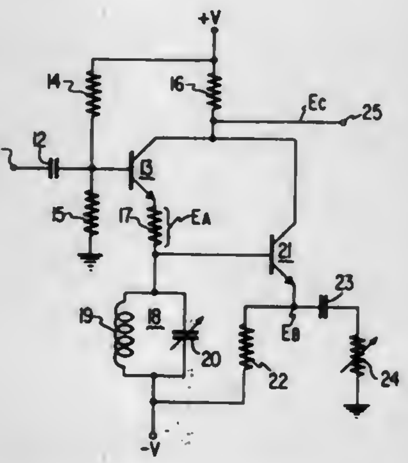
3,609,224
COLOR TELEVISION VIDEO SIGNAL PROCESSING APPARATUS

John Joseph O'Toole, Cherry Hill, N.J., assignor to RCA Corporation

Filed Mar. 21, 1969, Ser. No. 809,107

Int. Cl. H04n *5/38*

U.S. Cl. 178—5.4 R **15 Claims**



Apparatus is provided for separating portions of color television video signals on a frequency selective basis. First and second frequency component signals are separated by a single resonant circuit and applied to separate processing stages. The processed component signals are recombined to form composite video signals.

3,609,225
VARIABLE RATE FACSIMILE SYSTEM

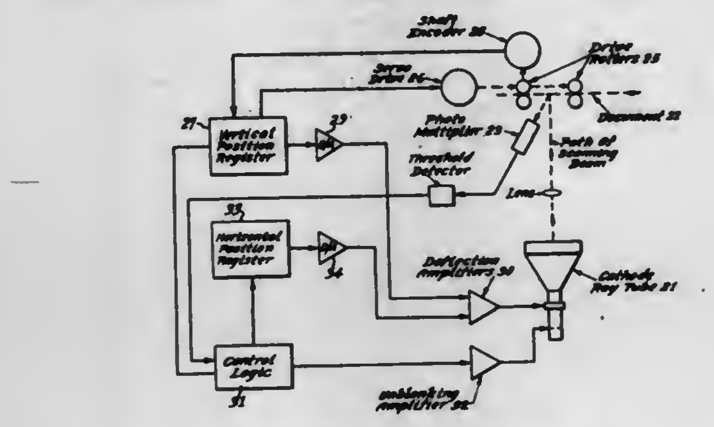
Langdon B. Stallard, Flushing, N.Y., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Oct. 14, 1969, Ser. No. 866,286

Int. Cl. H04n *1/04, 3/22, 5/36*

U.S. Cl. 178—7.7 **6 Claims**

A variable rate facsimile system characterized by scanning and recording mechanisms which traverse a fixed raster pattern but whose scanning and recording rates vary according to the information content of the graphic material. The data is compressed by a known run length coding technique to effect redundancy reduction. Scanning of the copy to be transmitted and reproduction of the copy at the recorder employ cathode-ray tube flying spot scanners whose spot deflection is controlled by horizontal and vertical digital counters each driving a digital/analog converter.



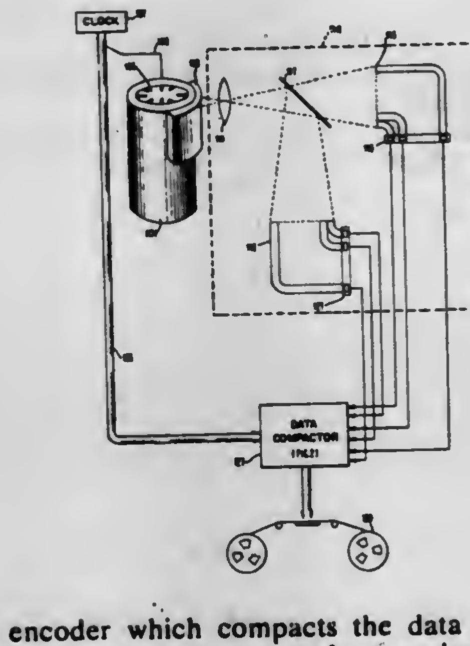
3,609,226
DATA COMPACTOR

Donald R. Thompson, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 11, 1969, Ser. No. 815,308

Int. Cl. H04n *1/40, 1/06, 7/12*

U.S. Cl. 178—6 **4 Claims**



A data encoder which compacts the data necessary for recording the lines on a document by scanning a set of contiguous regions of equal area. The data compactor examines first a region group of two regions in one direction. A second comparator then examines three of these outputs for two regions in a second perpendicular direction and produces an output dependent upon their content. Storage means then record the output of the second comparator.

3,609,227
RANDOM ACCESS AUDIO/VIDEO INFORMATION RETRIEVAL SYSTEM

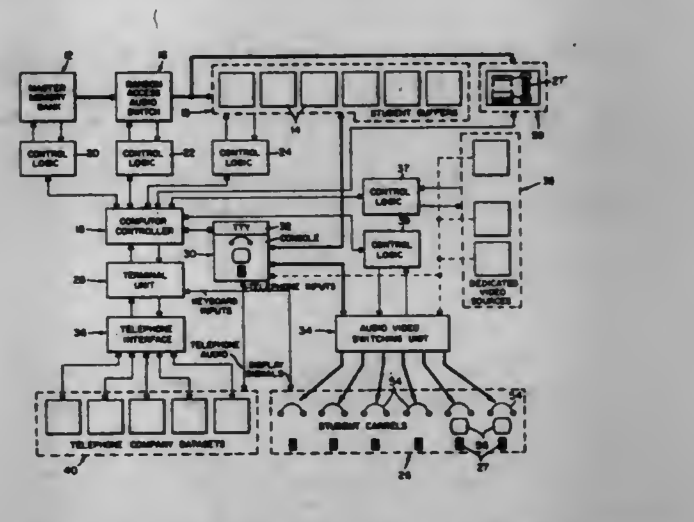
Maynard J. Kuljian, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sept. 9, 1968, Ser. No. 758,559

Int. Cl. H04n *1/28;* **G09b** *5/06;* **G11b** *5/86*

U.S. Cl. 178—6.6 A **19 Claims**

A random access retrieval system particularly adaptable as an instructional resource center, wherein master recording mediums feed audio or audio/video information recorded thereon in the form of selected programs to individual recording mediums, at the request of an individual located at one of a plurality of information request positions. The programs are selected on a time-sharing basis utilizing control logic generally in the form of computer/controller means which integrates all system operations, e.g., commands the operation of all recording mediums and operates the audio/video switching systems. The time-sharing concept allows program requests to be made simultaneously and not be held for more than 30 seconds, with the total waiting time for transfer of a program not exceeding 60 seconds in the particular retrieval system described herein by way of example only. To this end, programs are recorded on the master recording mediums at a selected slow speed, but are transferred to the individual recording mediums at a selected relatively fast speed, to provide the essentially instant information retrieval. The individual recording mediums may have an extra track for the responses or comments of the requestor. Various embodiments and modifications are available in accordance with the invention concepts.



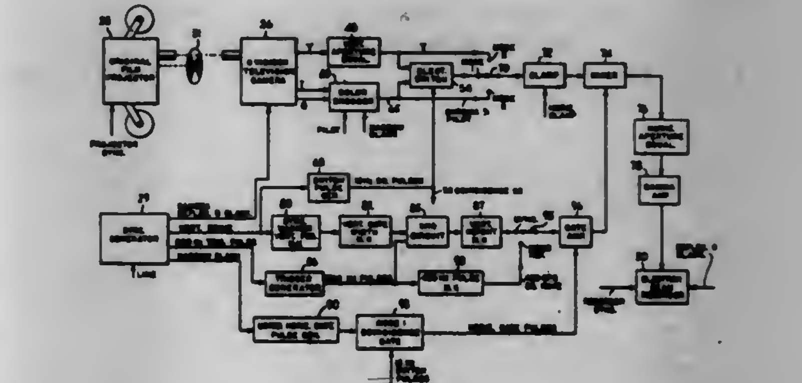
3,609,228
VIDEO FILM AND FILM-RECORDING APPARATUS

Peter C. Goldmark; Robert A. Castrignano; John M. Hollywood, and Donald W. Ridley, all of Fairfield County, Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Nov. 15, 1968, Ser. No. 776,137

Int. Cl. H04n *5/86*

U.S. Cl. 178—6.7 **19 Claims**



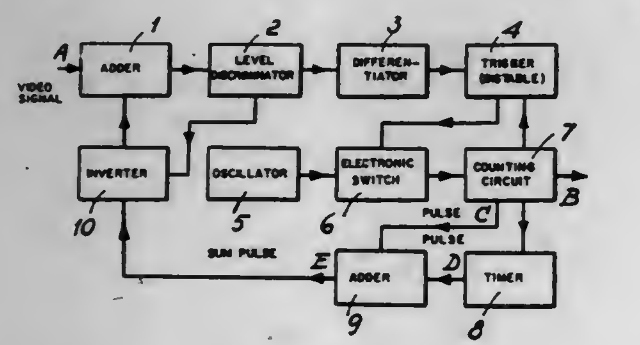
Electronic system for producing a motion picture record containing two adjacent successions of picture frames separated by an intermediate strip containing synchronizing or reference information to be used by scanning apparatus during reproduciotn. The synchronizing information comprises a narrow window-type mark disposed in the intermediate strip in a precise predetermined location with respect to the frames, and reference information, which can also appear in a margin adjacent the frames, may comprise alternating relatively opaque and transparent portions. Additionally, the intermediate strip or margin of the record adjacent the frames of one of the successions contains a record of reference carrier waveform in the event that those frames carry a representation of color information in the form of modulation of a carrier.

The system includes means for generating a signal at a predetermined time following the initiation of each vertical scanning sequence of the video source and a second signal in predetermined time relation to the horizontal scanning rate of the video source. Upon time coincidence of the generated signals, an output signal is mixed with the video signal and fed to the modulating input of a recording beam used in making the record. This results in recorded synchronizing or reference indicia in the intermediate strip or margin of the record medium.

3,609,229

APPARATUS FOR THE HIGH-SPEED TRANSMISSION AND RECEPTION OF TWO-LEVEL IMAGES

Virgilio Mosca, Via Cesare Batteste 11, and Maria Bonfa, Via Orazio 7, both of Milan, Italy
Filed Oct. 21, 1968, Ser. No. 769,445
Claims priority, application Italy, Oct. 26, 1967, 22019A/67
Int. Cl. H04n *3/32*
U.S. Cl. 178—6.8 **2 Claims**

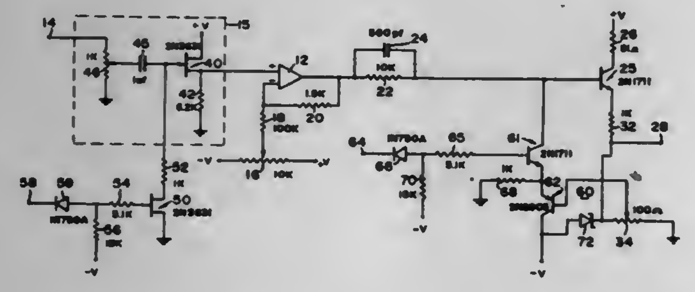


This disclosure relates to an apparatus for the high-speed transmission and reception of two-level images in which a video signal is transmitted to a receiver and scanned in order to detect the presence of level transitions, the scanning point being stopped upon detection of a level transition for the time necessary to send an impulse to the receiver and then caused to continue its motion at high speed.

3,609,230

BROADBAND VIDEO PROCESSOR WITH VERY HIGH INPUT IMPEDANCE

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and James W. Wood, 197 S. Park Victoria Drive, Milpitas, Calif.
Filed June 24, 1968, Ser. No. 739,391
Int. Cl. H04n *5/16;* **H03f** *3/16*
U.S. Cl. 178—7.1 **2 Claims**



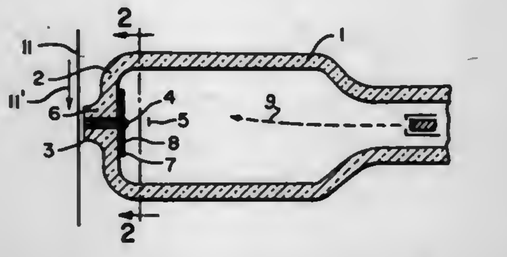
A broadband video processor is disclosed. It includes a very-high-input impedance stage which incorporates a field effect transistor. The processor is relatively immune to ambient noise. Also, the high impedance enables the use of a small input capacitor which accounts for fast DC restoring.

3,609,231

ELECTRON TUBE MANUSCRIPT READER

Kazuyoshi Nagao, Yokohama, and Reiji Hirano, Tokyo, both of Japan, assignors to American Optical Corporation, Southbridge, Mass.
Filed Sept. 29, 1969, Ser. No. 861,855
Int. Cl. H04n *1/00*
U.S. Cl. 178—7.2 **4 Claims**

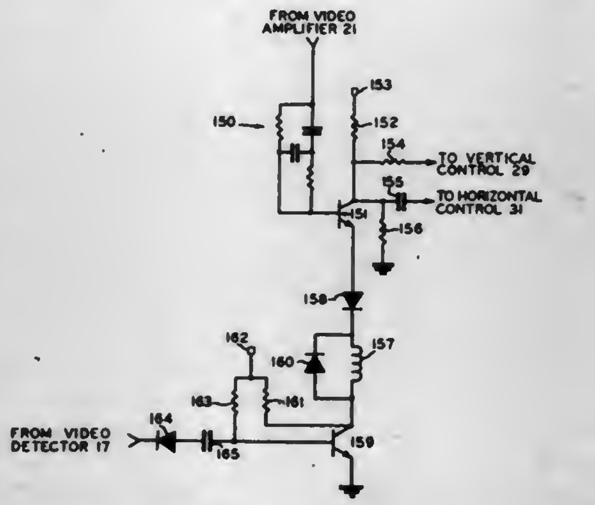
A cathode-ray tube for electro-optically reading a moving manuscript. The tube includes a long and thin strip of juxtaposed light-conducting fibers extending through its face with corresponding opposite ends of the fibers disposed internally and externally of the tube envelope. Internal ends of the fibers are coated with a light sensitive electron-emissive material which is surrounded by a layer of electroluminous material. A manuscript moved across the strip of light-conducting fibers externally of the tube is read by scanning the coating of electroluminous material along the length of the strip of fibers with an electron beam produced within the tube. Light from the luminous layer, in passing through the tube face, illuminates the manuscript along the outer face of the strip of light-conducting fibers and light reflected from the manuscript in amounts characterized by the subject matter to be read therefrom is transmitted back into the tube by the strip of light-conducting fibers. The light sensitive electron-emissive material at the innermost ends of the fibers emits a pattern of electrons corresponding to the pattern of intensities of light received thereby. These electrons are collected by a target within the tube and produce an electrical charge in the target which may be used as an electrical reading signal per se or converted into other forms of reading information.



3,609,232

TRANSISTORIZED CONTROL CIRCUITRY FOR TELEVISION RECEIVER

Joseph Edward Thomas, Batavia, N.Y., assignor to Sylvania Electric Products Inc.
Continuation-in-part of application Ser. No. 690,146, Dec. 13, 1967. This application May 4, 1970, Ser. No. 34,482
Int. Cl. H04n *5/10*
U.S. Cl. 178—7.3 **10 Claims**



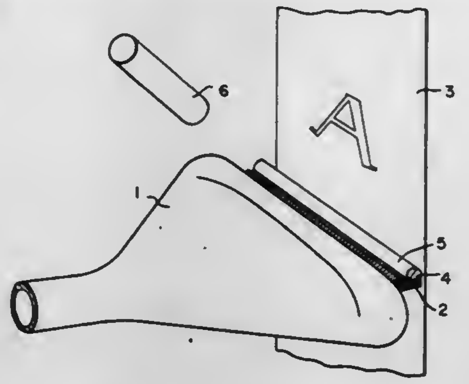
Transistorized automatic gain control and sync separator circuitry which increases the input impedance of the sync separator at high frequencies, such as random noise condition, and prevents loss of sync under conditions of high random noise level. The increased sync separator impedance at high frequency noise level is accomplished without any high frequency loading of the video amplifier from which the sync separator signal is obtained.

3,609,233

ELECTRON TUBE FACSIMILE APPARATUS

Kazuyoshi Nagao, Yokohama, Japan, assignor to American Optical Corporation, Southbridge, Mass.
Filed Sept. 29, 1969, Ser. No. 861,848
Int. Cl. H04n *1/00*
U.S. Cl. 178—7.2 **5 Claims**

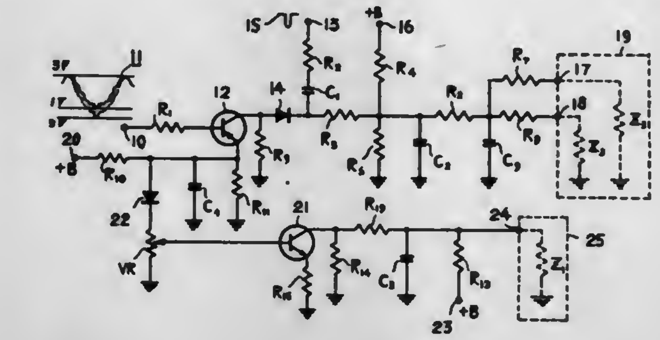
A cathode-ray tube is provided with a light-transmitting face comprised of a rectangular strip of optical fibers having a long and narrow light-emitting end across which a manuscript is moved for photoelectrically copying subject matter thereon. A flying spot of light produced within the tube is transmitted through the strip of fibers onto the manuscript and portions of this light reflected from the manuscript are received by a prism-lens system adjacent the emitting end of the strip of fibers. This system then directs the reflected light onto a photoelectric transducer for conversion into an electrical signal which is useful as an electrical reading of the manuscript or convertible into other forms of facsimile information.



3,609,234

DELAYED AGC CIRCUIT

Atsumi Hirata, Tokyo, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan
Filed Apr. 8, 1969, Ser. No. 814,417
Claims priority, application Japan, Apr. 8, 1968, 43/27685
Int. Cl. H04n *5/52*
U.S. Cl. 178—7.3 DC **4 Claims**

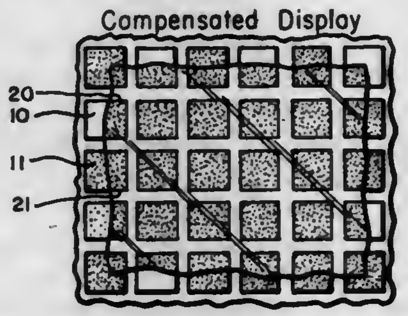


An automatic gain control circuit is disclosed, the circuit being capable of varying an input voltage of a circuit amplifying an AGC voltage by means of a variable resistor, which voltage is to be fed to a high frequency stage of a television receiver. Accordingly, the location of a rising point where the AGC voltage makes a distinct increase on an input-signal intensity AGC voltage characteristic is likewise varied.

3,609,235

MASK COMPENSATION FOR MATRIXED-ELEMENT FLAT-PANEL TELEVISION DISPLAY

Samuel P. Sawyer, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Oct. 16, 1969, Ser. No. 866,978
Int. Cl. H04n *5/72;* **H01j** *5/16, 61/40;* **H01k** *1/26*
U.S. Cl. 178—7.85 **3 Claims**

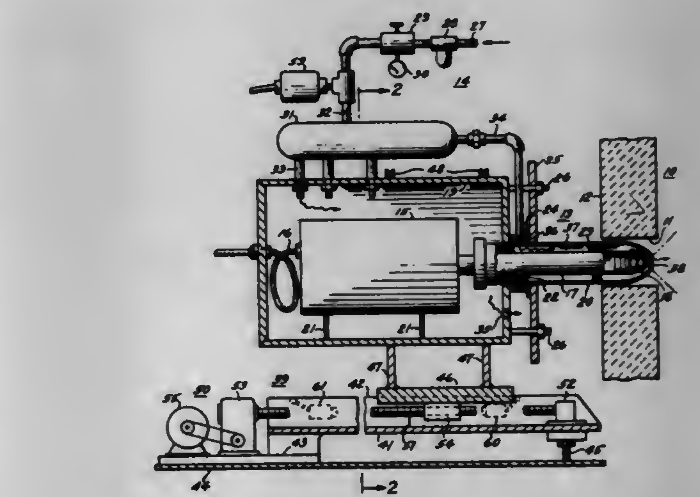


A flat-panel television display of matrixed emitting, controlling or reflecting image elements which differ in light output per unit excitation is compensated by a mask having transmitting areas of a size and configuration corresponding to those of the image elements which vary inversely in transmissivity from area to area with the brightness of each corresponding display element.

3,609,236

APPARATUS FOR TELEVISING THE INTERIOR OF HAZARDOUS CHAMBER

Wesley H. Hellman, Baltimore, Md., assignor to Bethlehem Steel Corporation
Filed Sept. 30, 1968, Ser. No. 763,678
Int. Cl. H01j *29/89*
U.S. Cl. 178—7.92 **8 Claims**

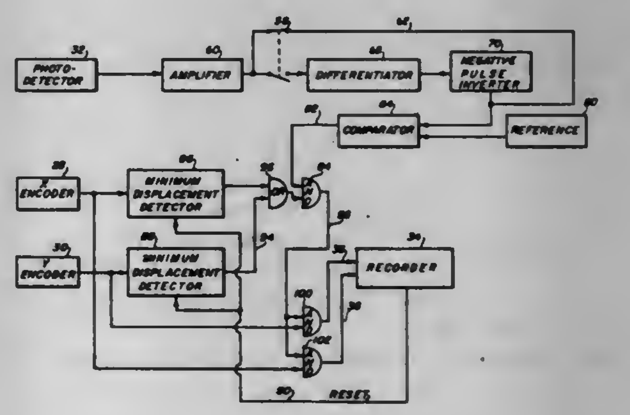


A cooled and purged television camera and lens assembly is mounted on a powered operator adjacent an apertured hazardous chamber. The powered operator is adapted to extend and retract the lens into and out of the aperture. Control means acts on the operator to cause automatic retraction of the lens upon loss of the cooling and purging media. Provisions are made for limiting lens movement by the powered operator.

3,609,237

LINE OR EDGE DIGITIZING SYSTEM WITH MEANS FOR AUTOMATICALLY OUTPUTTING ONLY DATA TRULY REPRESENTATIVE OF THE LINE OR EDGE BEING DIGITIZED

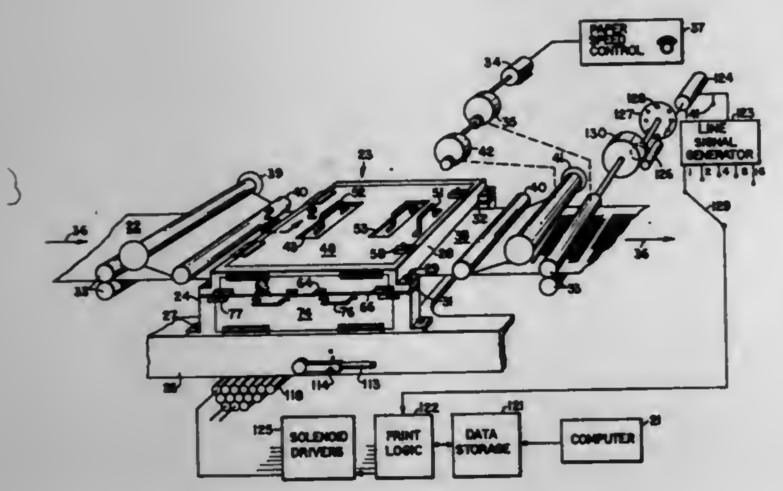
Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.
Filed Jan. 27, 1969, Ser. No. 793,974
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **10 Claims**



A digitizer for providing digital information defining the coordinates of points located along a line or edge of a map, drawing, template or other similar artwork includes a reticle manually movable along the line or edge and an associated set of optical and electronic components for automatically outputting coordinate information only when the reticle is properly positioned over the line or edge being digitized. Two modes of operation are possible—one in which the signal to output coordinate information is produced by the crossing of the line being digitized, and another in which the output of coordinate information is enabled only after a certain increment has been traversed by the reticle in either the X or Y axis from the point at which information was previously outputted.

3,609,238
HIGH-SPEED DATA PRINTOUT

Carl F. Hodel, Berkeley, Calif., assignor to DHM Research & Development Corporation, San Francisco, Calif.
Filed Aug. 16, 1968, Ser. No. 753,114
Int. Cl. H04l *17/30;* G01d *15/16*
U.S. Cl. 178—25 25 Claims

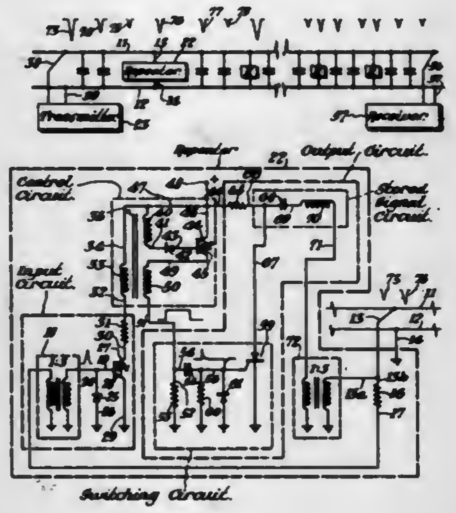


Signals identifying alphanumeric characters for a plurality of lines of printing are temporarily stored in a memory while recording paper moves through a printing station having a plurality of rows of character-imprinting elements. Each row is comprised of identical character-imprinting elements and the number of rows is at least equal to the number of distinct characters which may be printed. A control system repetitively examines the memory to detect momentary coincidences between positions on the moving paper and any imprinting elements of any row which correspond to a character to be imprinted at those positions. The control system activates the appropriate imprinting elements as such coincidences occur to effect a very fast multiline form of printout. The rows of imprinting elements are defined on a flat stationary unitized member which may readily be removed and replaced and in which individual rows may be replaced as a unit and the associated actuating elements are also unitized for rapid replacement. Line spacing is adjustable and the system is adaptable to the printing of graphical or pictorial data.

3,609,239
FAIL-SAFE PULSE REPEATER

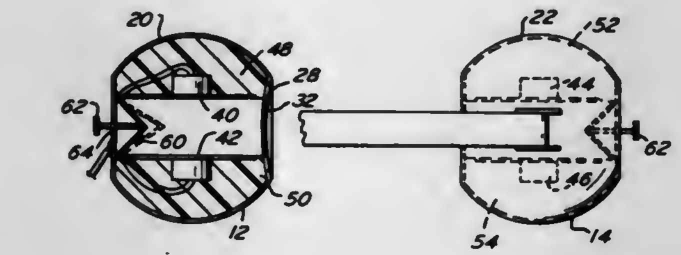
Richard D. Campbell, Harmarville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Dec. 15, 1969, Ser. No. 885,084
Int. Cl. H04l *25/20, 25/52*
U.S. Cl. 178—70 R 10 Claims

The invention relates to a fail-safe signal repeater for receiving and repeating a signal from and to an electrically continuous rail. The signal repeater includes an input circuit electrically coupled to the electrically continuous rail to receive the signals to be repeated. A signal-repeating output circuit is electrically coupled to the rail to provide the repeated signal. Finally there is a control circuit which is electrically coupled respectively to the input circuit and the signal-repeating output circuit to thereby initiate the repeated signal while simultaneously providing a period of non-response for the repeater for a predetermined period of time after the signal to be repeated is received and repeated.



3,609,240
STEREOPHONIC HEADPHONES

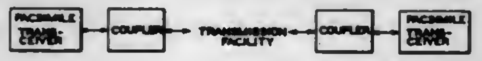
Jon S. Fixler, Philadelphia, Pa., assignor to Industrial Patent Development Corp., Philadelphia, Pa.
Filed Mar. 18, 1970, Ser. No. 20,680
Int. Cl. H04r *1/10*
U.S. Cl. 179—1 G 7 Claims



Stereophonic headphones mount pairs of audio transducers (speakers) on an opposing front to back axis relative to the head of a listener to create a greater panorama of sound.

3,609,241
ELECTRONIC COUPLER CIRCUIT

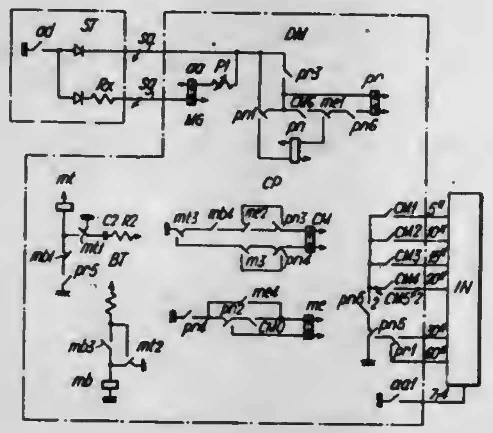
Alton F. Riethmeier, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed June 8, 1967, Ser. No. 644,682
Int. Cl. H04m *11/06*
U.S. Cl. 179—4 8 Claims



An electronic coupler for converting facsimile graphic communication information signals directly applicable to be transmitted over direct distance dialing telephone lines, and vice versa. In the automatic unattended transmit or receive modes, the coupler automatically answers a call made over the direct distance dialing telephone lines and after proper handshaking signals commences the transmitting or printing operation. In the attended mode, switching to transmit or receive provisions can be made upon operator decision of document transmission during a normal telephone conversation with equipment coupled to the coupler and the telephone lines.

3,609,242
AWAITING CALL INDICATOR SYSTEM

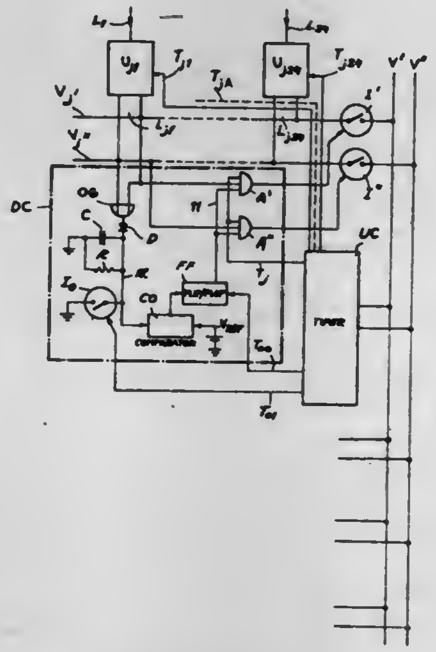
Francois Le Prince, Sainte-Genevieve-des-Bois, and Andre Boury, Paris, both of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed July 28, 1969, Ser. No. 845,213
Claims priority, application France, Aug. 1, 1968, 161,443
Int. Cl. H04m *3/36*
U.S. Cl. 179—8 A 3 Claims



Awaiting call indicator system is associated with PABX operators' desks. It enables measuring the duration of public network incoming lines congestions and makes it possible to estimate at any moment the number of awaiting calls. It displays the measurements made with the help of a luminous indicator, this latter to be so-called "call-awaiting thermometer."

3,609,243
PROTECTIVE CIRCUITRY FOR TELECOMMUNICATION SYSTEM

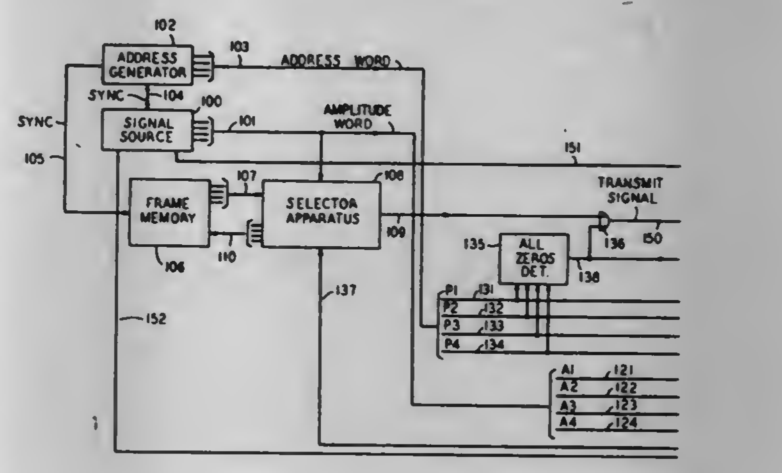
Aldo Perna, Milan, Italy, assignor to Societa' Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy
Filed Dec. 1, 1969, Ser. No. 881,153
Claims priority, application Italy, Dec. 4, 1968, 24570 A/68
Int. Cl. H04j *3/14*
U.S. Cl. 179—15 BF 7 Claims



In a time-allocation telephone system with 96 local lines served by a common switching channel via four two-wire branch channels each allotted to a respective group of 24 lines, an integrating network counts the number of phases in a 100-phase clock cycle during which either wire of a particular branch channel is energized. If the number of unit charges stored in the integrating network during a cycle exceeds the maximum number (48) possible during normal operation, a comparator also receiving a fixed reference voltage trips a flip-flop to inhibit the transmission of switching signals to the main channel from the branch channel in the following cycle. At the beginning of each new cycle, the flip-flop is reset with immediately following discharge of the integrating network.

3,609,244
CONDITIONAL REPLENISHMENT VIDEO SYSTEM WITH VARIABLE LENGTH ADDRESS CODE

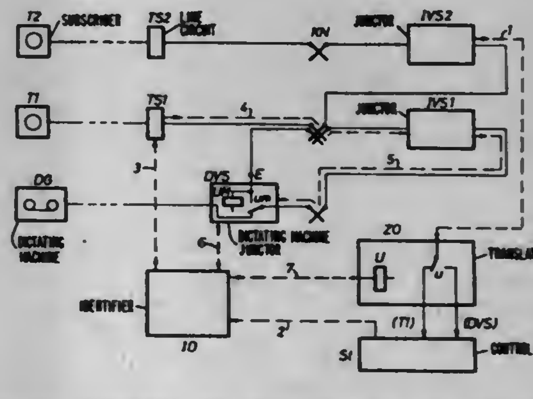
Frank W. Mounts, Colts Neck, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Dec. 18, 1969, Ser. No. 886,324
Int. Cl. H04b *1/66*
U.S. Cl. 179—15.55 R 16 Claims



The amplitude of a sample from a signal having frame-to-frame redundancy is transmitted only if the amplitude differs significantly from the amplitude of a corresponding sample having the same time position in a previous frame interval. An address word is assigned to each sample to indicate the position of that sample within a group of samples. Group synchronization is maintained between the transmitter and receiver by forcibly transmitting the last sample in each group whether or not that sample represents a significant change. The value of each address word indicates the length of the interval between the location of its respective sample and the end of the group. Only those bits of an address word which are necessary to locate the sample in the interval between the last-transmitted sample and the end of the group are transmitted to the receiving location. A control word whose bit values indicate which bits of the next address word must be transmitted is developed from each address word and is stored until the next selected address word in response to an indication that its corresponding address word has been selected for transmission.

3,609,245
ARRANGEMENT FOR ENABLING AN EXISTING CALL TO BE TEMPORARILY INTERRUPTED

Kurt Richter, Stuttgart-Rot, and Horst Woller, Korntal, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed May 14, 1969, Ser. No. 824,445
Claims priority, application Germany, May 21, 1968, P 17 62 299.0
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 B 4 Claims



The circuit enables an existing call to be interrupted without being cancelled. This is of particular significance for subscribers connected via their telephone sets to a dictating machine or a teaching machine for some length of time. According to another aspect the same interruption facilities are provided for interrupting a call to another subscriber after the call has lasted a predetermined, minimum time.

3,609,246

RADIOTELEPHONE COMMUNICATION SYSTEM

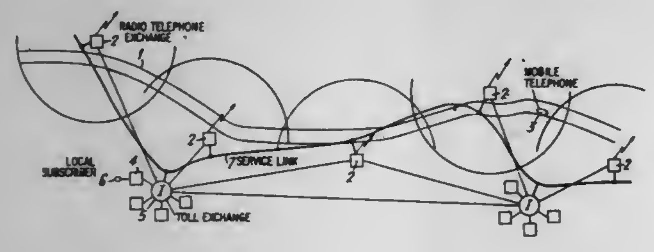
Jean Jacques Muller, Garches; Andre Jean Henquet, Boulogne/Seine, and Pierre Maurice Commegrain, Montrouge, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 30, 1968, Ser. No. 725,424

Claims priority, application France, May 5, 1967, 105 371

Int. Cl. H04q *7/00*

U.S. Cl. 179—41 A **7 Claims**



This system provides for automatic communications between the subscribers of public telephone networks and mobile sets over a large land area (or along a highway) covered by a plurality of radiotelephone exchanges. A call from a network exchange for a mobile is first transmitted to all these radio exchanges by a service-bus line. When one of the radio exchanges reaches the mobile in its area, it signals itself to the calling exchange and only then the calling exchange proceeds with the extension of the telephone toll connection to that radio exchange.

3,609,247

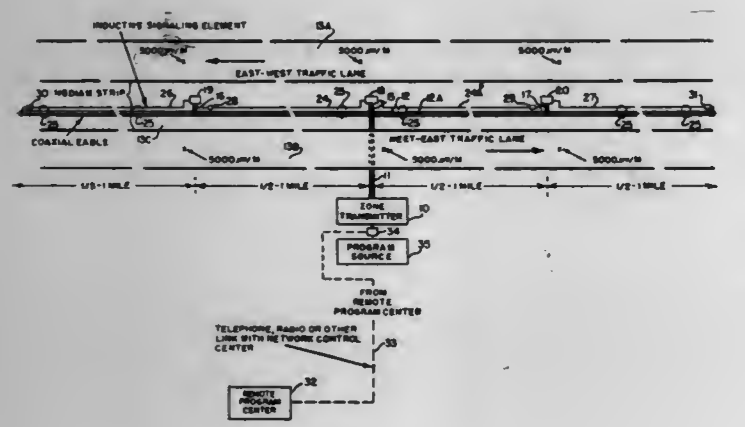
INDUCTIVE CARRIER COMMUNICATION SYSTEMS

William S. Halstead, New York, N.Y., assignor to Carrier Communication, Inc., New York, N.Y.

Filed Apr. 21, 1967, Ser. No. 632,699

Int. Cl. H04b *5/00, 5/02*

U.S. Cl. 179—82 **3 Claims**



An integrated multiple-function communication system for highways, railroads and other applications, the system comprising a wideband coaxial trunk cable with associated amplifier/repeaters for long-distance point-to-point transmission of a plurality of carrier signals combined with inductive-signaling means including frequency converter/amplifiers each having an input physically coupled to the coaxial trunk cable and an output coupled to an inductive-signaling conductor, the latter disposed within the trunk-cable structure or electrically related thereto whereby a relatively uniform electromagnetic field of a desired strength is established along a highway or other service zone for inductive carrier communication with vehicles, roadside call boxes and other devices located in proximity to the cable which interconnects with a control or terminal point.

3,609,248

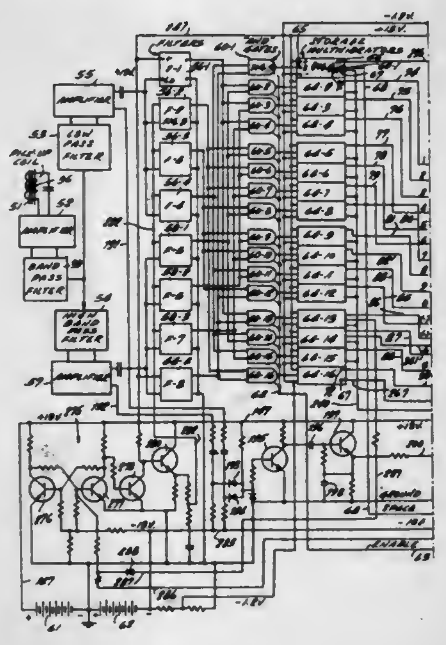
PRINT OUT CONTROL CIRCUIT FOR TELEPHONE TRANSACTION SYSTEM

Arnold M. Wolf, Brooklyn, and John G. Richter, Yonkers, both of N.Y., assignors to Electrospace Corporation, Glen Cove, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,515

Int. Cl. H04m *11/06, 1/24*

U.S. Cl. 179—84 VF **6 Claims**



A system is described for buying materials or services by transferring funds in a bank from the buyer's deposit account to the seller's account. The transfer of funds is accomplished by means of a "touch-tone" telephone receiving set equipped with a printing means. A computer at the bank receives digital orders from the receiving set and records the transfer at that location. Each purchaser is provided with a secret purchaser number on a telephone operating card and the entire operation is performed in the presence of the purchaser and a representative of the seller or store. A ticket is carried by the printing means to receive a message from the bank representing the transaction.

3,609,249

KEY TELEPHONE SYSTEMS USING PUSHBUTTON OR ROTARY DIALS

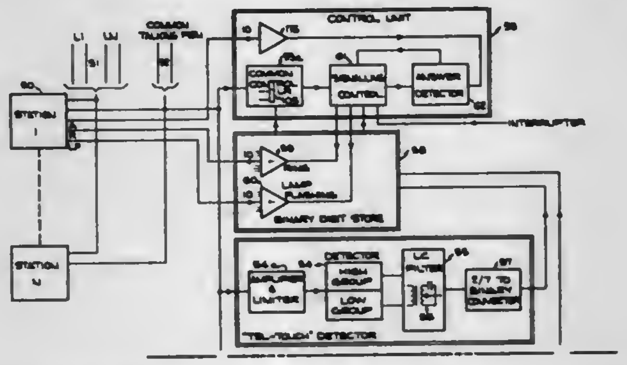
Edouard Pinede, Gueiph, Ontario, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,289

Claims priority, application Canada, Apr. 23, 1969, 049,568

Int. Cl. H04m *1/50*

U.S. Cl. 179—99 **10 Claims**



A key telephone system is made for operation with either pushbutton or rotary dial equipment. Initially, digital signals are sent to one of two receivers which responds exclusively to pushbutton or rotary dials, respectively. These two receivers are connected to a common control circuit which supervises ringing and provides answer supervision to operate the key system, per se.

3,609,250

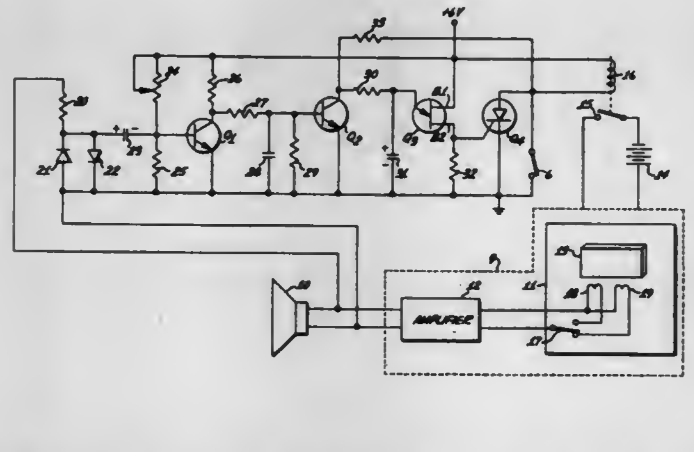
APPARATUS FOR DELIVERING AN AUDIBLE MESSAGE FROM A VENDING MACHINE IN RESPONSE TO AN OPERATOR ACTIVATION

Robert E. Morris, Phoenix, Ariz., assignor to Houston G. Smith, a part interest

Filed Nov. 7, 1969, Ser. No. 874,917

Int. Cl. G11b *15/18*

U.S. Cl. 179—100.1 C **2 Claims**



In order to deliver an advertising message to a vending machine user prior to his selection of a particular vended item, apparatus is provided responsive to the deposit of coins in the vending machine to institute playback of a prerecorded message through endless tape cartridge playback apparatus under the control of a timing circuit. The timing circuit is adapted to respond to the end of the message for turning off the playback apparatus until it is activated again by the next deposit of coins. In a variant configuration, the message playback is instituted by pressing a button incorporated into a display of merchandise.

3,609,251

PROGRAM-SELECTING MEANS FOR ENDLESS MAGNETIC TAPE REPRODUCING APPARATUS

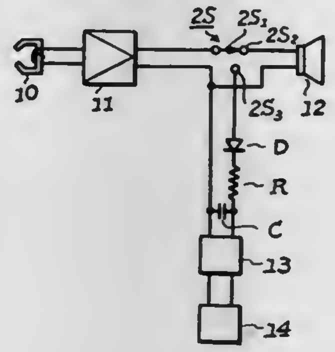
Itsuki Ban, No. 829, Higashi-Oizumi-machi, Nerima-ku, Tokyo, Japan

Filed Oct. 3, 1968, Ser. No. 764,862

Claims priority, application Japan, Oct. 3, 1967, Oct. 3, 1967, 42/63288;42/63289

Int. Cl. G11b *15/44*

U.S. Cl. 179—100.2 **8 Claims**



Program-selecting system for an endless magnetic tape reproducing apparatus wherein a particular program recorded on the tape can be selected automatically for almost immediate playback independent of its position thereon. By using a sensing circuit to generate an output signal every time an unrecorded area between programs is detected, by comprising in a comparison circuit the number of generated outputs with a preselected number corresponding to the sequential location of the desired program upon the tape and by having an output generated every time a comparison is achieved, the output causing the tape feed to switch from a fast rate of feed to a governed rate of feed, a program-selecting system is created that provides for the automatic playback of a particular program recorded on an endless magnetic tape.

3,609,252

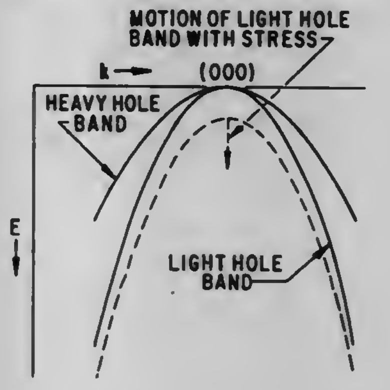
TRANSDUCER APPARATUS AND SYSTEM UTILIZING INSULATED GATE SEMICONDUCTOR FIELD EFFECT DEVICES

Max E. Broce, McKinney; Derek Coleman, Dallas, and Jack P. Mize, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 610,991, Jan. 23, 1967, now abandoned. This application Feb. 24, 1970, Ser. No. 14,744

Int. Cl. H04r *23/00;* **H01l** *11/14*

U.S. Cl. 179—100.41T **11 Claims**



A transducer apparatus wherein the source to drain conductance of an insulated gate semiconductor field effect device is modulated by the application of mechanical stress to the channel layer of the device. Specific transducer modifications include microphone pickups and phonopickups. The pickup may include preamplifiers in either discrete or integrated circuit form.

3,609,253

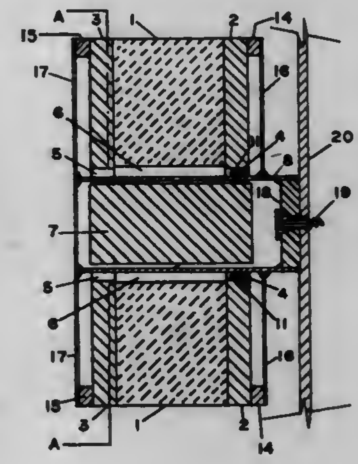
LOUDSPEAKER WITH IMPROVED VOICE COIL SUSPENSION

William J. Ashworth, Route 2, New Albany, Miss.

Filed May 3, 1968, Ser. No. 726,434

Int. Cl. H04r *9/04*

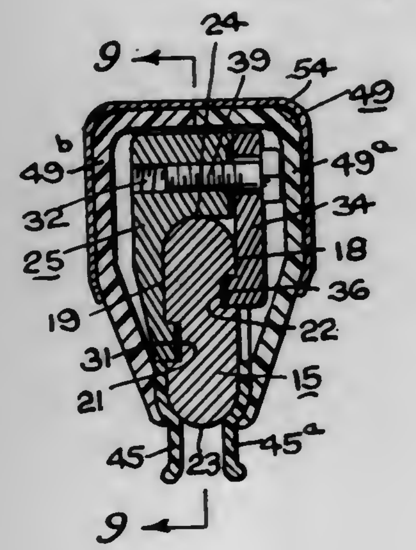
U.S. Cl. 179—115.5 R **4 Claims**



A loudspeaker driver having its voice coil wound on a movable bobbin that is flexibly supported at both of its ends, with the bobbin resiliently suspended in such a manner where only an in-and-out movement is permitted.

3,609,254
CURRENT CONDUCTOR SPLICE JOINT

Roland M. Caldwell, Lynchburg, Va., assignor to H. K. Porter Company, Inc., Lynchburg, Va.
Filed Dec. 12, 1969, Ser. No. 884,626
Int. Cl. B60m *1/24*
U.S. Cl. 191—44.1 **3 Claims**

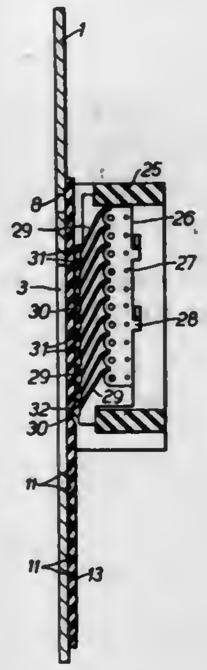


Proximate end portions of a pair of electrical conductors of generally S-shaped configuration in transverse cross section are jointed in longitudinally aligned end-to-end relation by a connector providing good mechanical and electrical connection between the coupled conductors. The conductors are fitted with U-shaped insulating sheaths which extend along the full length of each conductor and have laterally spaced depending flanges or lips extending freely beyond one longitudinal edge of the conductor. These sheaths, in the regions of the interconnected end portions of the conductors, are cut away to accommodate the above-mentioned connector without, however, destroying the integrity of their channel-forming flanges or lips so that when the conductors are joined together the ends of the sheaths abut one another at the center of the joint and thereby provide the guide channel with continuous smooth surfaces of uninterrupted run of current collector from one conductor to its adjoining conductor. A two-part insulating cover for the splice joint extends over the abutting end portions of the conductor sheaths in such manner as to leave freely exposed the current collector guide channel. Coacting indexing means are provided in the joint cover and conductor sheaths to accurately secure the cover in position against longitudinal displacement thereof relatively to the spliced joint.

3,609,255
SLIDING SWITCH PROGRAMMER FOR CONTROLLING MULTIPLE SWITCHES

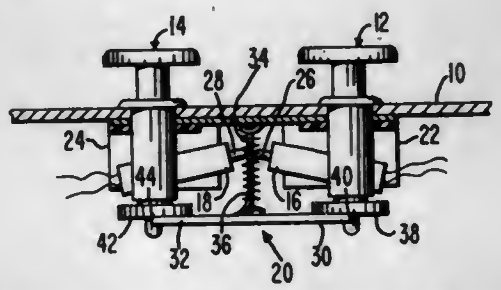
John Covell Collier, Farnworth, and David William Rickards, Stanmore, both of England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 25, 1969, Ser. No. 860,930
Claims priority, application Great Britain, Sept. 27, 1968, 45877/68
Int. Cl. H01h *9/00*
U.S. Cl. 200—1 R **5 Claims**

A programming unit designed as a variable input unit for a data transmission system incorporates a number of sliders which are able to be moved to various positions to set up a program. A switch matrix situated behind the sliders is operated by the sliders to set up a signal pattern which can be transmitted serially by a separate switch.



3,609,256
DUAL SWITCHING DEVICE

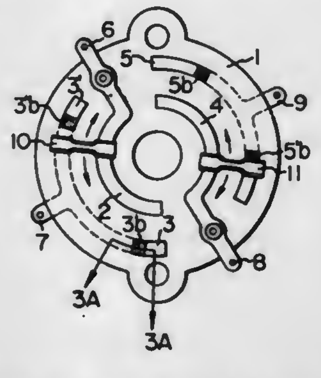
Hilliard R. Di Veto, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed June 15, 1970, Ser. No. 45,998
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 E **8 Claims**



A dual switching device is provided with a pair of switches individually actuatable by a tripedal actuating level rockable about either one of a pair of plungers by the other, each switch being actuated mutually exclusive of the other by a respective plunger, neither switch being actuated by both plungers operating in mutual conjunction.

3,609,257
SLIDE SWITCH

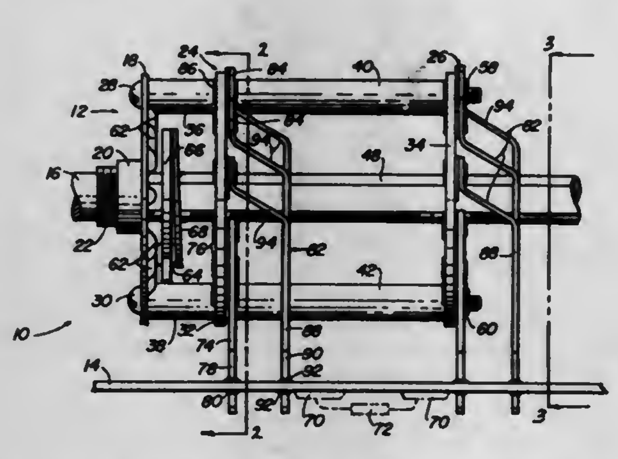
Sei Jinsenji, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Jan. 27, 1970, Ser. No. 6,165
Claims priority, application Japan, Feb. 12, 1969, 44/12112
Int. Cl. H01h *1/02, 1/06, 19/58*
U.S. Cl. 200—11 D **4 Claims**



A slide switch in which either of fixed or movable contact elements have electrically high resistance portions formed at portions where fixed and movable contact elements start to contact with each other and at portions where fixed and movable contact elements start to move away from each other.

3,609,258
ELECTRIC SWITCH AND PRINTED CIRCUIT BOARD CONSTRUCTION WITH IMPROVED TERMINAL CONNECTION MEANS

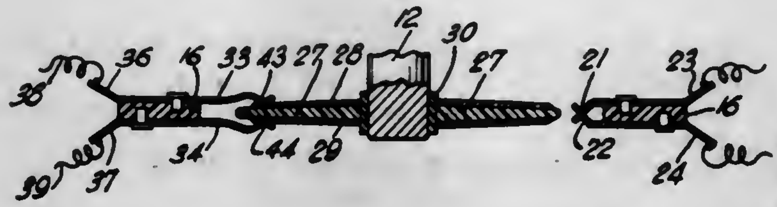
Gerald H. Leland, Dayton, Ohio, assignor to Ledex, Inc., Dayton, Ohio
Filed Sept. 29, 1969, Ser. No. 861,579
Int. Cl. H01h *19/58, 9/02*
U.S. Cl. 200—11 D **11 Claims**



Two sets of printed circuit terminal lugs are used with a wafer switch. The terminal lugs connected to the wafer switch at points closest to the printed circuit board have a generally planar configuration. Each of the other lugs has an intermediate portion projecting away from the wafer switch whereby all of the possible switch positions on the wafer switch can be connected by a terminal lug to a printed circuit board without electrical contact between the lugs or other switch parts.

3,609,259
ELECTRICAL WAFER SWITCH ASSEMBLY WITH IMPROVED ROTOR CONTACT STRUCTURE

Kalman Drebin, Brooklyn, N.Y., assignor to I Jordan Kunik, New York, N.Y., a part interest
Filed Oct. 30, 1969, Ser. No. 872,504
Int. Cl. H01h *1/22, 19/58*
U.S. Cl. 200—11 D **10 Claims**

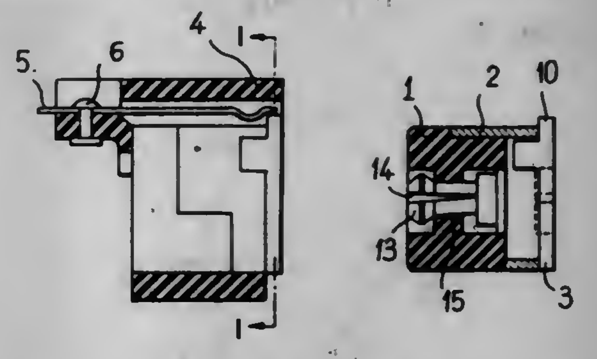


An electrical switch of the rotary wafer type which permits interruptions and measuring the circuit conditions in any selected one of a plurality of continuously running circuits.

3,609,260
CYLINDRICAL SWITCH FOR IGNITION AND STARTING OF ENGINES AND OTHER USES

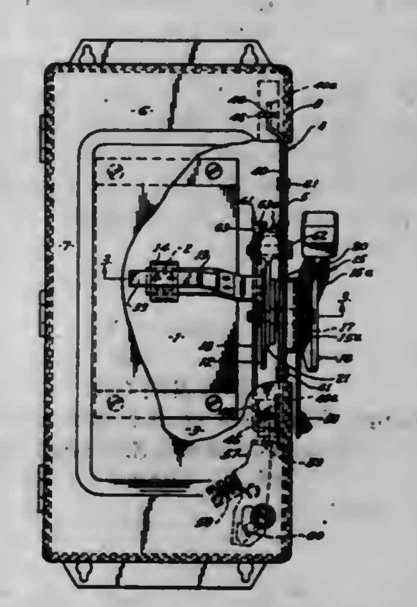
Paul Lipschultz, Croissy-sur-Seine, France, assignor to Societe D'Exploitation Des Brevets Neiman S. A., Neuilly-sur-Seine, (Hauts de Seine), France
Filed June 23, 1969, Ser. No. 835,377
Claims priority, application France, July 15, 1968, 159209
Int. Cl. H01h *27/06*
U.S. Cl. 200—44 **5 Claims**

This arrangement relates to a locking device such as a cylindrical switch for ignition and starting of an engine and other like uses. The switch has an insulated, hollow cylindrical stator with a plurality of contact blades mounted on the inner surface parallel with the cylinder axis and connected to ignition and starting means and other accessories. A rotor is positioned in the hollow stator and comprises an insulated cylinder carrying a conductive plate having a shape formed in steps to ensure contact with the blades. An insulated driving element, controlled by the locking device, is assembled by resilient fitting means to the rotor. A cam on the driving element engages with the blades to selectively break the connections.



3,609,261
EXTERNAL ACTUATOR HANDLE MECHANISM FOR ENCLOSED CIRCUIT BREAKERS

Tadeusz J. Rys, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.
Filed May 15, 1970, Ser. No. 37,521
Int. Cl. H01h *9/20*
U.S. Cl. 200—50 A **5 Claims**



An exterior operating handle is mounted on the wall of the enclosure of an enclosed-type circuit breaker and is drivingly connected to the operating handle of the circuit breaker. The cover is normally latched in closed position by a manually operable latch.

Interlock means normally interlock the exterior handle, cover, and enclosure wall in a manner such that (a) when the cover is latched closed, the exterior handle can be operated to open and close the circuit breaker contacts, selectively; (b) when the cover is unlatched and the exterior handle in in ON position, the interlock means becomes operative to prevent opening of the cover; and (c) when the cover is unlatched or open and the exterior handle is in OFF position, the interlock becomes operative to prevent moving the exterior handle to ON position.

If the contacts of the circuit breaker become welded together in closed position while the exterior handle is in ON position, and the exterior handle is moved manually to OFF position and the cover is then unlatched, the interlock means, which normally prevent moving the handle to ON position while the cover is unlatched, are defeated for an instant so as to permit the exterior handle to return automatically to ON position, thus preventing a false indication, and then become active again to interlock the cover and enclosure with the exterior handle in ON position.

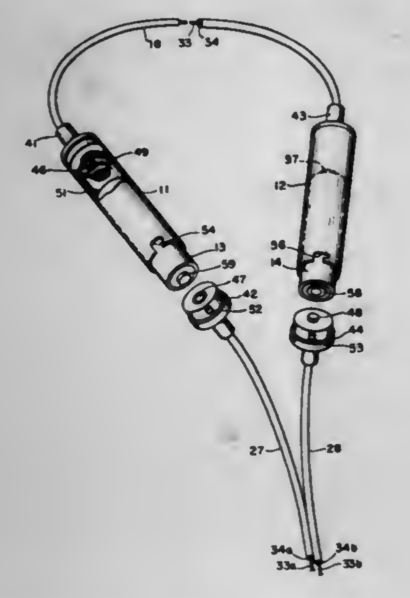
3,609,262
NECK-CARRIED BATTERY PACK

John E. Hotchkiss, Corte Madera, Calif., assignor to Hotchkiss Instruments, Inc.

Continuation-in-part of application Ser. No. 755,661, Aug. 27, 1968. This application May 13, 1969, Ser. No. 824,215

Int. Cl. H01h *35/00*

U.S. Cl. 200—52 **8 Claims**



A lightweight battery pack adapted to be worn around a user's neck for detachable connection to and powering of a portable electric instrument and being characterized by a pair of battery receptacles secured together in spaced relation by an electrical cord for placement around the user's neck to support the battery receptacles on laterally opposite sides thereof forward of the user's shoulders. The battery receptacles are preferably provided with electrical contacts formed to connect the batteries to produce an electrical circuit in which current will flow with predetermined polarity only upon positioning of the batteries in a predetermined relative orientation.

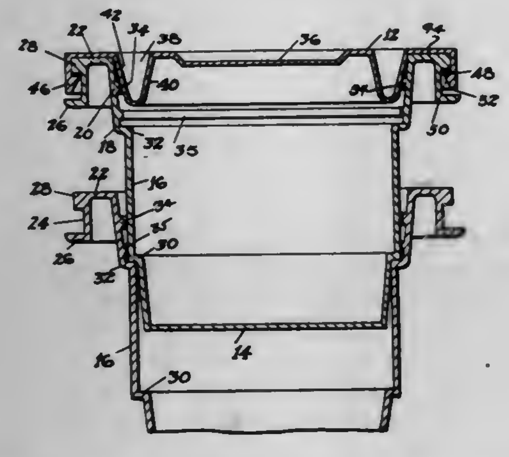
3,609,263
PLASTIC CONTAINERS AND COVER CLOSURES THEREFOR

Sandro Clementi, 928 West St., Leominster, Mass.

Filed May 6, 1970, Ser. No. 35,032

Int. Cl. B65d *43/10*

U.S. Cl. 220—60 R **6 Claims**



A resilient plastic container and a cover therefor with interlocking engagement at the periphery of the cover and the container, wherein the edge of the container is in an inverted U-form having an outer member with a terminal outstanding rim and an abutment in spaced relation; said cover including a U-shaped trough having an outer member terminating in a flat flange extending outwardly with a downturned extension having a rearwardly facing projection for snapping in under the abutment on the container in closed position of the cover therewith; and an interiorly directed bead on the container for frictional engagement with the outer element of said U-shaped channel at the periphery of the cover.

3,609,264
DIRECTION-SIGNAL-CANCELLING MECHANISM

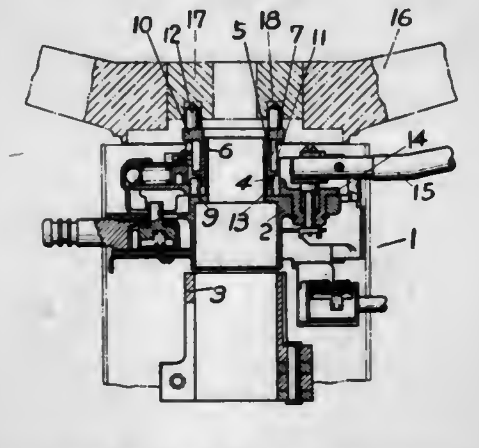
Masaru Suzuki, Hekikai-gun, and Yoshihiro Kawai, Nagoya, both of Japan, assignors to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gun, Aichi-ken, Japan

Filed Mar. 31, 1970, Ser. No. 24,101

Claims priority, application Japan, Sept. 13, 1969, 4,487,296

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.34 **3 Claims**



A direction-signal-cancelling mechanism which is releasably assembled into the direction-signal-indicating apparatus of a vehicle, comprises an axially projecting tubular column integral with the base of said indicating apparatus and having a bore diameter sufficient a steering shaft to extend therethrough, an annular cam member having a bore diameter also sufficient for the steering shaft to extend therethrough and provided at its periphery with at least one axially extending lobe and at its upper end with at least one axially extending pin which is integral with said cam member sn engageable in a counterbore provided in the steering wheel for interconnecting the cam member and the steering wheel when said wheel is rotated and said pin and counterbore come into alignment with each other, either one of said tubular column and said cam member being insertedly mounted on the other so as to permit said cam member to be axially slidable and rotatable and to permit said lobe to project radially outwardly to engage a latch means on the indicating apparatus to effect automatic cancelling of the vehicle's direction signals, a spring means compressed between a flange provided on the cam member and the tubular column yieldably urging the cam member as a whole upwardly towards the steering wheel, and a flange provided on either one of said tubular column or said cam member limiting the extent of the upward movement of said cam member.

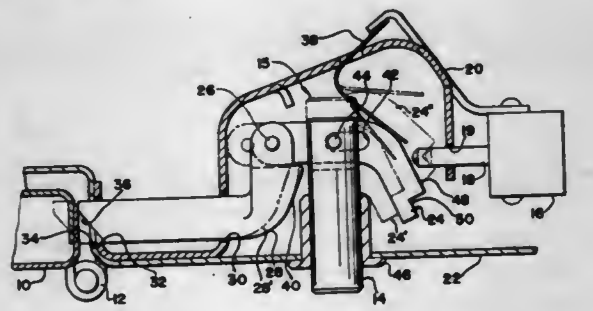
3,609,265
DUAL-ACTUATED SWITCH-OPERATING MECHANISM

Siegfried Garbe, North Canton, and Joseph F. Oles, Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed June 25, 1970, Ser. No. 49,665

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.62 **5 Claims**



This invention in the preferred form relates to a dryer door switch-operating mechanism which in major part comprises a single-operation member adapted for both axial and rotary motion. Operation of the member requires both motions and in sequential order of first axial motion caused by closing of the door and then rotary motion created by manual reset to close the switch.

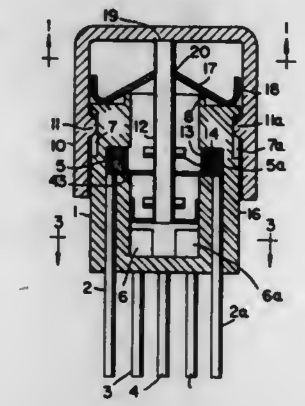
3,609,266
SNAP MECHANISM FOR USE WITH AN ELECTRICAL SWITCH, VALVE OR THE LIKE

Eli Raitport, 1807 Mower St., Philadelphia, Pa.

Filed Apr. 18, 1969, Ser. No. 821,547

Int. Cl. H01b *3/12*

U.S. Cl. 200—67 **9 Claims**



1. Electrical snap switch with a spring in the form of a closed loop freely located within the body.

2. Snap mechanism electrical and fluid, with a memory; consisting of a body, terminals, pusher operator and a cup-shaped snapping member which has at least two relaxed positions substantially different from each other.

3,609,267
ELECTRIC LOAD CHANGEOVER SWITCH WITH MOVABLE CONTACTS INSERTABLE IN A ROTARY SHAFT, AND ARC DISCHARGE CHANNELS

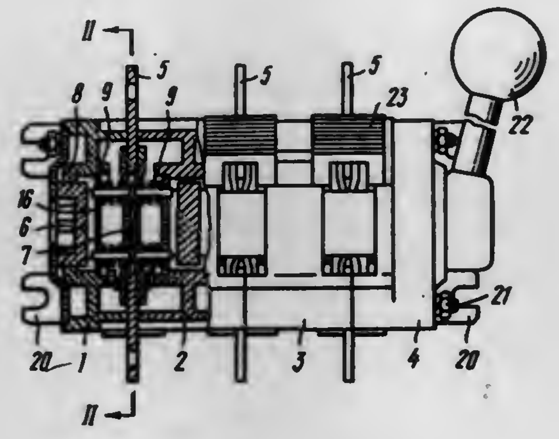
Nikolai Ivanovich Egorov, ulitsa Lenina, 397/5, kv. 74; Jury Grigorievich Kron, ulitsa Mira, 324A, kv. 4; Jury Ivanovich Moiseev, ulitsa Mira, 463, kv. 72, and Jury Alexandrovich Putov, ulitsa Mira, 270, kv. 11, all of Stavropol, U.S.S.R.

Filed Aug. 27, 1969, Ser. No. 853,252

Claims priority, application U.S.S.R., Aug. 27, 1968, 1265425

Int. Cl. H01h *19/40, 9/08*

U.S. Cl. 200—155 **2 Claims**



An electric load switch, comprising a set of blocks each formed of an insulating material having fixed contacts located in them and a changeover shaft extending through these blocks with movable contacts mounted on it, wherein the switch is simple in design and comparatively small in size, reliable in operation, and easily assembled for a plurality of poles of an electric circuit due to the presence of unified or connectable elements.

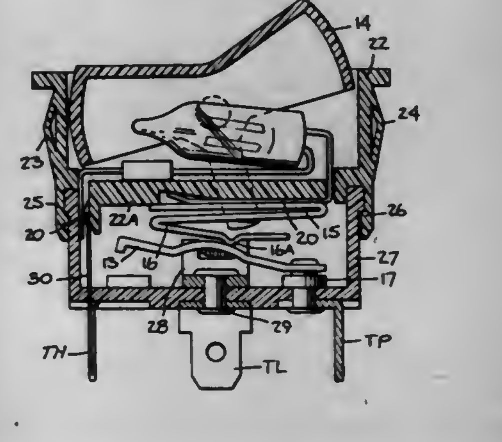
3,609,268
INTEGRATED ROCKER-SWITCH AND INDICATOR-LIGHT UNIT

Gil C. Sanchez, 2915 Miles Ave., Bronx, N.Y.

Filed May 25, 1970, Ser. No. 40,205

Int. Cl. H01h *9/18*

U.S. Cl. 200—167 A **6 Claims**



An integrated electrical rocker-switch and indicator-light unit including an actuator pivotally mounted in an insulating box, the actuator being hollow and being formed of translucent plastic material within which is disposed an indicator lamp in series with a resistor. The arrangement is such that when the actuator is manually shifted to the "on" state, the switch contacts associated therewith are closed and the lamp is illuminated, and when shifted to the "off" state, the switch contacts are opened and the lamp is deenergized.

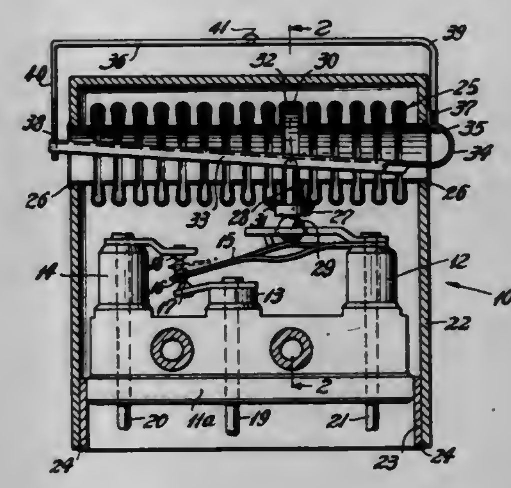
3,609,269
HERMETICALLY SEALED SWITCH

Robert R. Hellman, Bridgeport, Conn., assignor to Wesport Development of Manufacturing Company, Inc., Milford, Conn.

Filed Apr. 17, 1970, Ser. No. 29,444

Int. Cl. H01h *9/04*

U.S. Cl. 200—168 G **7 Claims**



An hermetically impervious electrical switch of the snap action type that is enclosed in a container and is actuated by distortion of the sidewall of a tube.

3,609,270
ELECTRIC REVERSING SWITCH

Jorgen Jorgensen, Sonderborg, and Tage S. Basse, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

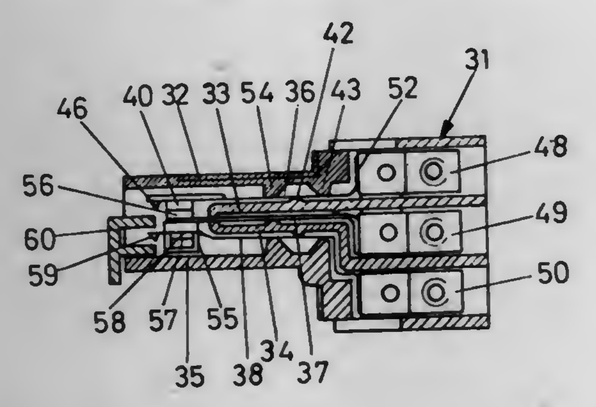
Filed Jan. 15, 1970, Ser. No. 3,045

Claims priority, application Germany, Feb. 14, 1969, P 19 67 418.1

Int. Cl. H01h *13/36*

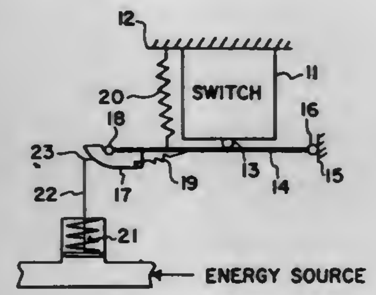
U.S. Cl. 200—67 D **1 Claim**

The invention relates to an electric reversing switch assembly having at least one fixed contact and a pair of movable contacts. The assembly includes a main contact actuating arm and a snap-action spring, such as an omega spring, attached to the actuating arm. The movable contacts have lugs and are resiliently biased towards the fixed contact. An actuating element connected to the actuating arm lifts one of said movable contacts from the fixed contact while allowing the other of the movable contacts to abuttingly engage the fixed contact.



3,609,271
PRESSURE-OPERATED ELECTRICAL SWITCH RESPONSIVE TO A PRESSURE DECREASE AFTER A PRESSURE INCREASE

Frederick W. Gibson, Hampton, Va.
Filed Dec. 1, 1969, Ser. No. 881,041
Int. Cl. H01h *43/28, 35/24*
U.S. Cl. 200—81 R 3 Claims

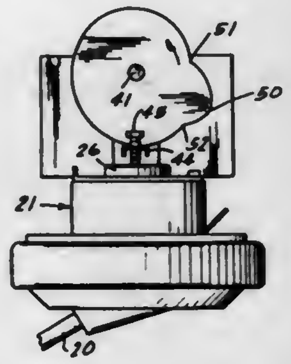


A pressure-operated electrical switch with means to hold the switch closed until the pressure increases to a first predetermined value and then decreases to a second predetermined value at which time the holding means is released and the switch is opened. The holding means consists of a rod pivoted at one end with a tension spring attached near the other end of the rod. The releasing means includes a pawl attached to the other end of the rod, a compression spring subjected to the pressure, a second rod with one of its ends attached to said compression spring and with a hook on its other end to slip over said pawl and pull the pivoted rod away from the switch.

3,609,272
PRESSURE SWITCH WITH ADJUSTING CAM OF PARTICULAR CONFIGURATION

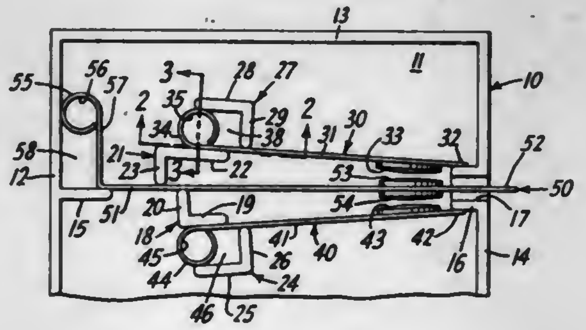
Douglas A. Heaps, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 10, 1969, Ser. No. 875,426
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 WM 5 Claims

A pressure-responsive switch assembly, particularly suitable for use in automatic washing machines, embodying a fluid-pressure-responsive diaphragm, a switch arm operated by movement of the diaphragm, a pair of contacts selectively engageable by the switch arm depending upon the position of the diaphragm, with biasing means for applying a variable biasing force on the diaphragm in opposition to the fluid pressure acting thereon, in combination with a cam having its periphery in camming engagement with the biasing means, the cam having a projection thereon arranged to depress the biasing means sufficiently to move the switch arm from engagement with one of the contacts to a reset position in which it engages the other of the contacts, with means for rotating the cam in one direction only, the cam being so formed as to provide incremental changes in the pressure on the biasing means upon rotation thereof so that rotation of the cam through one complete revolution serves to momentarily place the switch assembly in its reset position.



3,609,273
TERMINAL-ENDED SPRING BLADE CONTACT ARM SECURING MEANS

Claude V. Koch, Two Rivers, and Donald G. Storms, Manitowoc, both of Wis., assignors to AMF Incorporated
Filed July 27, 1970, Ser. No. 58,609
Int. Cl. H01h *1/58*
U.S. Cl. 200—166 CT 9 Claims

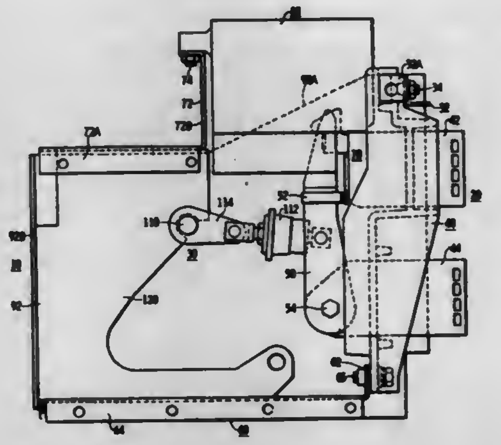


In a switch, a case having at least one external wall with integral wall means extending therefrom inwardly into the case, at least one spring blade contact arm in the case having a free contact end and a terminal end with a tubular terminal portion which extends laterally across the end of the blade, the wall means and the terminal end of the spring blade contact arm defining a pocket closed at the bottom by the external wall, and a dielectric material substantially filling the pocket and acting to prevent separation of the contact arm and case.

3,609,274
CIRCUIT BREAKER INCLUDING IMPROVED SUPPORTING FRAME

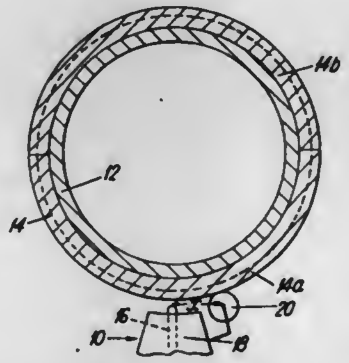
Fred Bould, Pittsburgh, and Nagar J. Patel, East McKeesport, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 27, 1970, Ser. No. 6,242
Int. Cl. H01n *9/02*
U.S. Cl. 200—168 A 9 Claims

A circuit breaker comprising a supporting frame structure including a rear wall portion and a bottom support plate projecting outwardly therefrom. The rear wall portion includes an upper crossmember and a plurality of insulating support members which project downwardly from the upper crossmember to be joined to the bottom support plate. Separable contact means are mounted on the insulating support members.



3,609,275
BUTT WELDING OF TUBE PLATES AND THE LIKE

Daniel F. T. Roberts, Bexley; Terence R. Wilkins, Northolt, and John Graham, Hartlepool, all of England, assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Feb. 24, 1970, Ser. No. 13,469
Int. Cl. B23k *11/06*
U.S. Cl. 219—60 A 6 Claims

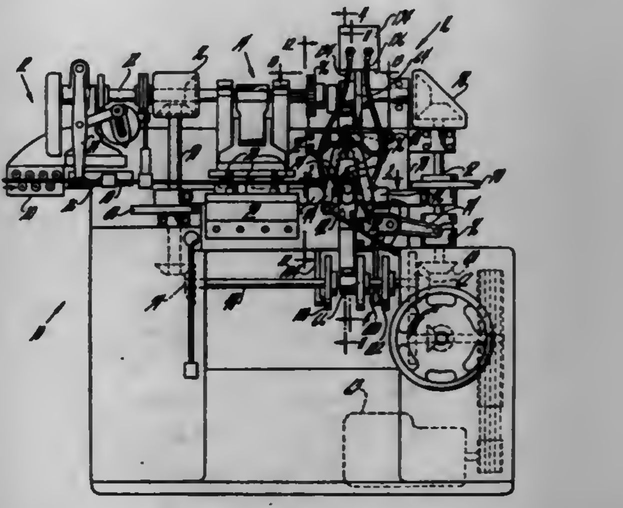


The invention relates to the butt-welding of parts such as tubes, plates or the like. When such parts are butt-welded using a filler wire, it often happens that this will break or snap out of position and so cause a faulty weld. According to the invention, the welding torch has a heat-resisting shoe or roller which resiliently bears against the filler wire closely in front of that part of the wire being melted by the arc so retaining the wire in position.

3,609,276
MACHINE FOR PRODUCING WELDED BEARINGS AND THE LIKE

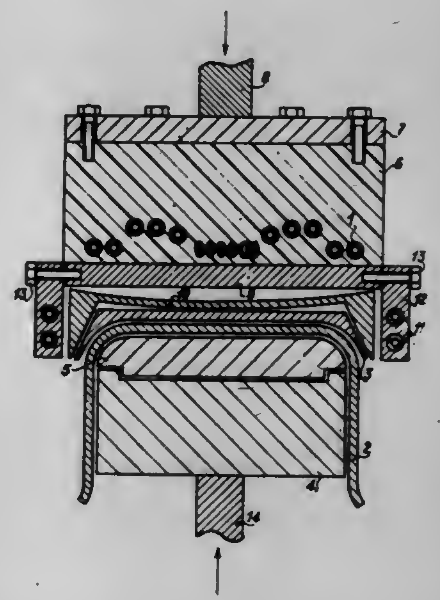
Erman V. Cavagnero, Torrington, Conn., and Joseph F. Loftus, Springfield, Ohio, assignors to Torin Corporation, Torrington, Conn.
Division of Ser. No. 721,672, Apr. 16, 1968, Pat. No. 3,562,473. Filed June 8, 1970, Ser. No. 44,480
Int. Cl. B23k *1/16*
U.S. Cl. 219—64 7 Claims

A high production machine of the vertical four-slide type for intermittently advancing strip stock, severing blanks therefrom, forming the same into bearing races and welding end portions thereof together. The machine has a projecting horizontal mandrel with three work stations therealong respectively for preforming, forming and preheating and/or welding. A cutoff anvil, transfer pins, broaching tools, and an expandable mandrel section are provided all with rear motion drive action and a welding mechanism is adapted for both preheat and weld operation adjacent the expandable mandrel section. A bearing race discharge track extends from the welding station to an induction furnace.



3,609,277
BRAZING PRESS PARTICULARLY FOR BRAZING EXTENDED SURFACES HAVING RELIEVED CORNERS TO A MATCHING PLATE

Bernard Dallet, Savigny-sur-orge; Jacques Doucerain, Paris, and Jean Moulin, Ris-Orangis, all of France, assignors to Societe de Traitements Electrolytiques et Electrothermiques (S.T.E.L.)
Filed July 13, 1970, Ser. No. 54,281
Claims priority, application France, May 14, 1970, 7017659
Int. Cl. H05b *5/00*
U.S. Cl. 219—6.5 6 Claims

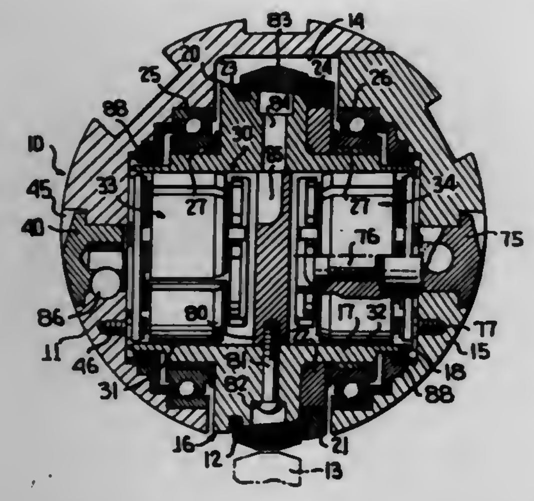


To unite surfaces with relieved corners, such as the bottoms of shaped cooking utensils, pots, pans or skillets, to a heat distribution plate, an intermediate or buffer plate having a slightly concave, thin central region is applied around the plate to be brazed, or fused to the bottom of the utensil, the buffer plate having peripheral edges matching the edges of the plate; and the press further includes peripheral heating coils, for example energized by high frequency, to provide additional high frequency induction heating at the edges.

3,609,278
TUBE-WELDING APPARATUS

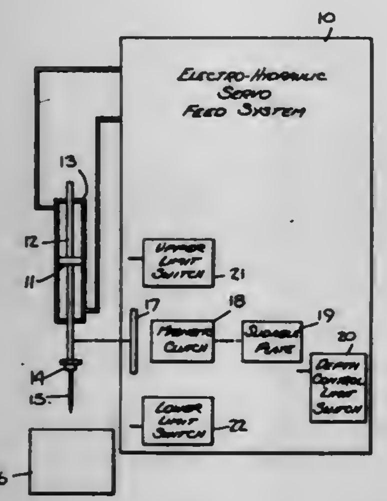
John T. Cary, 3144 Wilshire Ave., Markham, Ill.
Division of Ser. No. 841,812, July 15, 1969. Filed Nov. 6, 1970, Ser. No. 87,375
Int. Cl. B23k *11/06*
U.S. Cl. 219—66 2 Claims

This disclosure has to do with a tube-welding apparatus which includes a horn and a rotary internal electrode mounted within the horn for cooperation with an external electrode. The internal electrode is carried by a rotary support member which, in turn, is coupled to the horn by a rotary electrical joint. Means are provided for quickly replacing elements of the electrical joint and also for replacing components thereof which are subject to wear.



3,609,279
WEAR-RESPONSIVE ELECTRODE-WITHDRAWAL CONTROL SYSTEM FOR AN ELECTRICAL DISCHARGE MACHINE

George G. Giesbrecht, Kitchener, and Gino Campagnola, Waterloo, Ontario, both of Canada, assignors to Uniroyal Inc., New York, N.Y.
Filed Aug. 18, 1969, Ser. No. 850,879
Int. Cl. B23p *1/14*
U.S. Cl. 219—69 G **3 Claims**

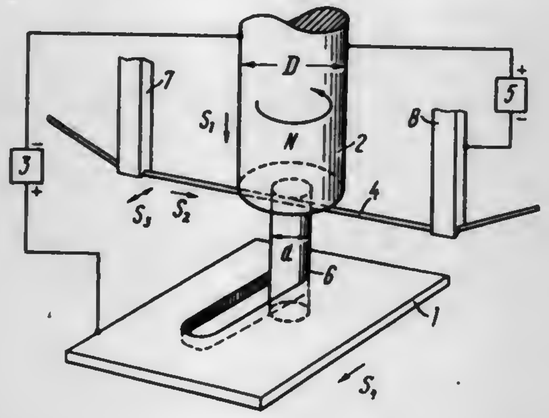


In an electrical discharge machine, an electrohydraulic servosystem positions an electrode near a workpiece to erode the workpiece until a depth control limit switch is actuated by a mechanism coupled through a magnetic clutch to the electrode-carrying member. After the electrode is worn to such an extent that it must be replaced a second limit switch is actuated before the actuation of the depth control limit switch, causing a withdrawal of the electrode to an upper position where the electrode can be replaced after completion of the erosion made during the positioning of the electrode when the second limit switch is actuated.

3,609,280
METHOD OF MAKING APERTURES AND SLOTS IN ELECTRICALLY CONDUCTIVE WORKPIECES BY EDM

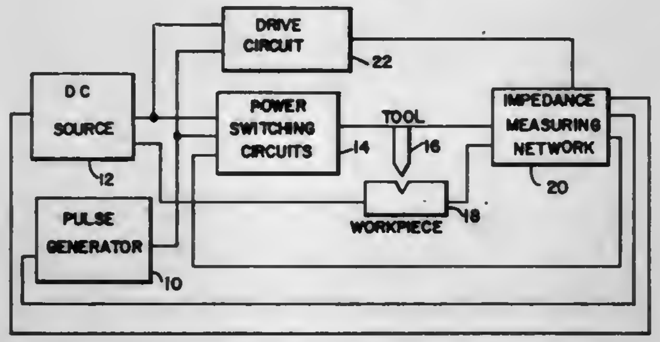
Evgeny Vasilievich Kholodnov, ulitsa Vokzalnaya, 21, kv. 30, Fryazino Moskovskoi oblasti, U.S.S.R.
Filed Nov. 4, 1969, Ser. No. 873,856
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 M **3 Claims**

A method of forming an aperture in an electrically conductive workpiece by a spark-eroding technique, comprises rotating an electrode tool while simultaneously the work displacing the same axially along its axis of rotation towards the workpiece to bring a working portion of the tool into proximity with the workpiece to form an aperture in the workpiece while concurrently introducing an additional electrode tool between the workpiece and the first electrode tool at an end face thereof, to produce a desired shape for the working portion of the first electrode tool. The additional electrode tool can be displaced longitudinally thereof, to compensate for wear of the additional electrode in the course of formation of the working portion of the first tool. Also the additional electrode can be displaced transversely to vary the diameter of the working portion of the first tool and thereby vary the diameter of the aperture which is formed in the workpiece.



3,609,281
METHOD AND APPARATUS FOR DETECTING SHORT CIRCUITS IN THE MACHINING GAP IN AN EDM PROCESS

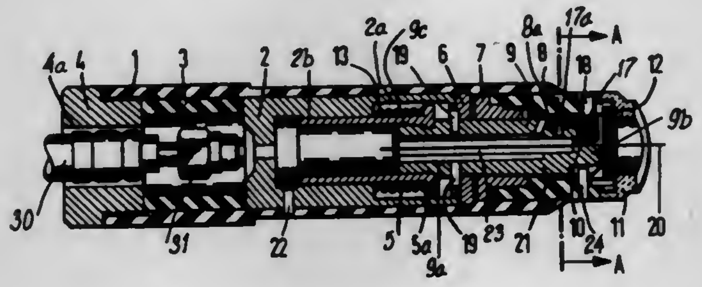
Harry D. Kauffman, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Dec. 15, 1969, Ser. No. 885,027
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 C **7 Claims**



A method and apparatus for accurately determining the presence and magnitude of a short circuit condition in an electrodischarge machining (EDM) process. An electrically conductive tool and an electrically conductive workpiece are connected to a pulse-producing power supply and positioned in a dielectric medium to form a machining gap therebetween. The machining gap is placed in an impedance-measuring circuit as the impedance to be measured. The impedance-measuring circuit checks the gap condition by measuring the impedance of the machining gap between pulses from the power supply. In the embodiment disclosed, changes in gap impedance between output pulses are detected by a modified wheatstone bridge. During the time between pulses, a voltage less than the ionization voltage is applied to the bridge. If there is no short circuit condition, the bridge is balanced; and the bridge output is zero. A short circuit condition will cause an imbalance in the bridge producing a resultant error signal on the bridge output. This output is fed back within the power supply causing a change in its output parameters which will tend to alleviate the short circuit condition.

3,609,282
MICROWELDING TORCH

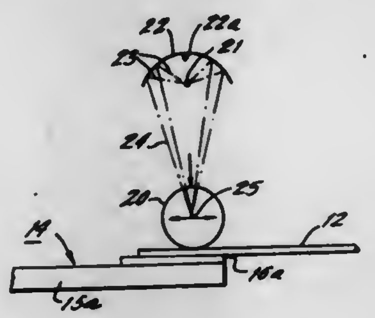
Hermann Trattner; Fritz Brosamle, and Friedrich Wustner, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Mar. 7, 1969, Ser. No. 805,296
Claims priority, application Switzerland, Mar. 15, 1968, 3874/68
Int. Cl. B23k *9/28*
U.S. Cl. 219—75 **10 Claims**



A electrode clamp that is received by and readily detachable from a machine held microwelding torch insulating body member comprises a broad, easily adjustable clamp means holding a plurality of nonmelting electrodes whereby a plurality of connection points on articles being manufactured can be welded by consecutively opening and closing the welding circuits of the electrodes and the points of connection.

3,609,283
METHOD AND APPARATUS FOR SOLDERING INSULATED WIRE

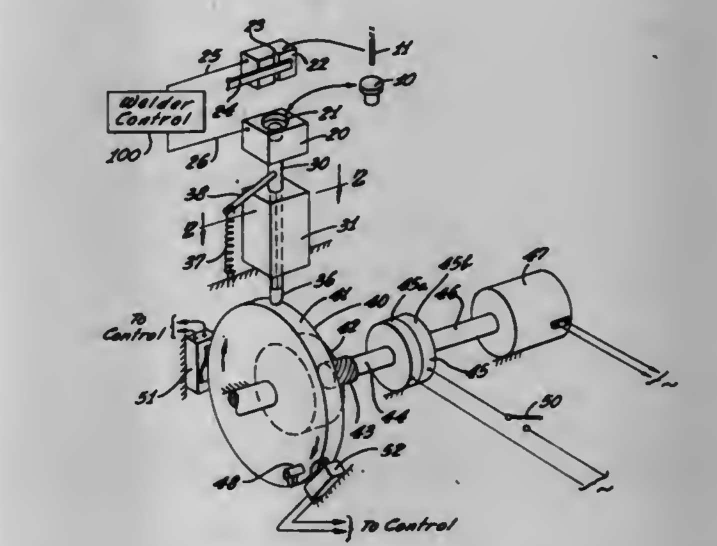
Bernard J. Costello, Ringoes, N.J., assignor to Argus Engineering Company, Hopewell, N.J.
Filed Oct. 29, 1969, Ser. No. 872,232
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 **9 Claims**



A method and apparatus for stripping and soldering very fine insulated wire. A number of such wires may be stripped and soldered simultaneously whereby the insulated wires are each positioned above an associated terminal pad, a radiation transparent rod is firmly urged against all of the wires and is vibrated preferably in a reciprocating fashion, in a direction parallel to the length of the wires, substantially simultaneously with the application of radiation from a heat source which simultaneously irradiates all of the wires and their associated pads through the radiation-transmissive element. The radiation focused upon the wires causes a solder predeposited upon the terminal pads to melt and wet the pads, and also heat the wire whereby the insulation is softened to the point where it is split by the reciprocating force and is floated away by the solder which runs through the ruptured insulation and up and around the bare wire to form an excellent solder joint between the wire and pad, and wherein the heat applied is sufficient to form a good solder joint and yet insufficient to damage any neighboring heat-sensitive elements.

3,609,284
WELDER

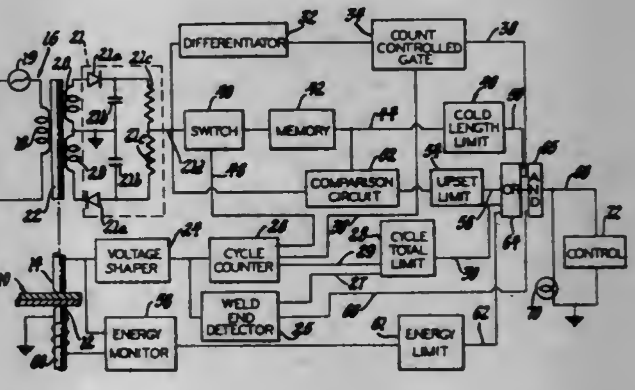
Delbert L. Phillips, Malibu, and Lewis Clark Feightner, Chatsworth, both of Calif., assignors to New Twist Connector Corporation, Santa Monica, Calif.
Filed Mar. 25, 1968, Ser. No. 715,773
Int. Cl. B23k *11/04*
U.S. Cl. 219—97 **13 Claims**



One of two small workpieces that are to be welded together is slidingly mounted in a fixed workholder and the other is firmly gripped by a movable workholder. To carry out an operating cycle, the movable workholder is reciprocated by two lobes of a cam that makes one revolution when momentarily connected to a relatively large mass that rotates at constant velocity. Initially the first slidable workpiece is placed at random at a position that is advanced slightly from the position desired for the welding operation but the first reciprocation of the second workpiece is against the slidable workpiece to retract it precisely to the desired position for a welding operation. In carrying out the second reciprocation, the two workpieces are charged by capacitance and as the gap between the two workpieces narrows a high frequency pulse triggers an arc between the two workpieces and the continued advance of the second workpiece crowds the two workpieces together for final fusion.

3,609,285
METHOD AND APPARATUS FOR MONITORING WELD QUALITY

August F. Scarpelli, Warren, and Frederick J. Trulson, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 4, 1968, Ser. No. 757,320
Int. Cl. B23k *11/24*
U.S. Cl. 219—109 **9 Claims**



A circuit for monitoring spot welding is responsive to electrode separation and welding current and voltage to monitor the weld soft point and upset, the cold length of the parts, the number of cycles of welding current, and the energy consumed in producing the weld nugget. A reject signal is provided if any of the five parameters fall outside of predetermined limits. A special feature is the upset circuitry which uses a memory circuit and a comparison circuit to compare the initial electrode separation with the final separation.

3,609,286

PROCESS FOR TREATMENT OF ALUMINUM AND ALLOYS OF ALUMINUM FOR RESISTANCE WELDING

Yves Bresson, Coublevle; Roger Lorain, Issoire, and Marcel Brillant, Fontenay le Fleury, all of France, assignors to Cegedur GP, Paris, France

Filed Nov. 13, 1968, Ser. No. 775,524

Claims priority, application France, Nov. 17, 1967, 128,587

Int. Cl. B23k *11/00, 35/36*

U.S. Cl. 219—117 R **3 Claims**

The treatment of the surfaces of aluminum and alloys of aluminum to improve the cleaning frequencies in resistance welding by application to the surfaces of a mineral oil mixture containing at least 60 percent by weight naphthenes with the remainder comprising paraffinic hydrocarbons with or without a small amount of additives in the form of dopes of unctuous viscosity or anticorrosive materials.

3,609,287

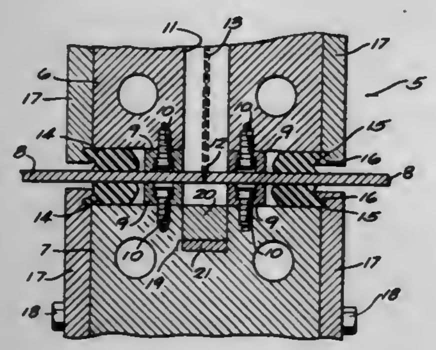
METHOD AND APPARATUS FOR ELECTRON BEAM WELDING

John F. Hinrichs, Menomonee Falls, and John J. Chyle, deceased, late of Milwaukee, Wis. (by Marion D. Chyle, executrix), assignors to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 718,296, Mar. 4, 1968, now abandoned. This application Jan. 22, 1970, Ser. No. 4,859

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EB **5 Claims**



This invention relates to a method of welding low carbon steel using an electron beam. The portion of the workpiece being welded is located in an evacuated welding zone and a deoxidizing metal backup member is disposed in spaced relation to the joint to be welded. During welding, the electron beam vaporizes a portion of the deoxidizing metal and the release of the metal vapor aids in increasing the soundness of the weld.

3,609,288

ELECTRON BEAM SEAM-FINDING METHOD AND APPARATUS

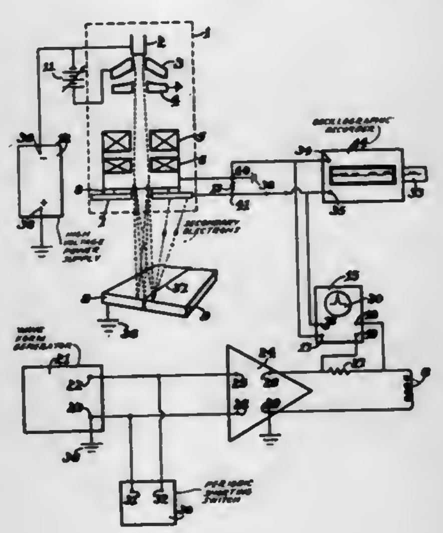
Albert M. Sciaky, Palos Park, Ill., assignor to Welding Research, Inc., Chicago, Ill.

Filed Dec. 18, 1968, Ser. No. 784,574

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EM **9 Claims**

The present invention is for a method for determining the point of impingement of an electron beam with reference to the position of the seam between the two parts which are to be welded as may be used in the electron beam welding process. The electron beam is oscillated along a line transverse to the seam or along any other convenient path which traverses the seam. Secondary electrons emitted from the surface of the workpieces being scanned by the oscillating beam are collected by an electrode mounted above the work surface. The changes in secondary electron current through the electrode are displayed on the face of the cathode-ray oscilloscope whose horizontal sweep is controlled by the oscillator which is generating the electron beam scanning waveform. The signal generator or oscillator which produces the scanning signal is periodically shorted for preset intervals so that the beam remains in its "at rest" position during these intervals and the horizontal sweep is also "at rest" during these intervals so that a bright marker spot is displayed on the cathode-ray oscilloscope which defines the rest position of the electron beam as it strikes the work. By moving the workpieces with respect to the electron beam in a direction transverse to the seam, this marker spot may be brought to superimpose over the pattern of secondary emission current at a point which indicates the minimum secondary emission. This is the point at which the beam is striking the workpieces at the seam.



3,609,289

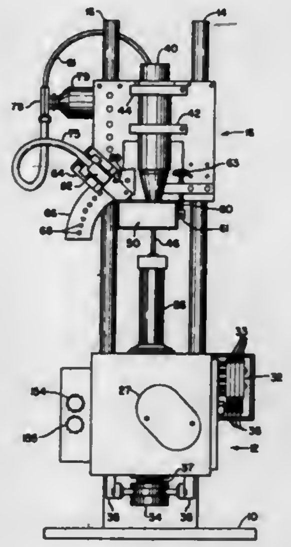
WELDING APPARATUS

Kenneth J. Hathaway, Nashua, N.H., assignor to Air Control Industries, Inc., Nashau, N.H.

Filed Dec. 11, 1969, Ser. No. 884,074

Int. Cl. B23k *9/00*

U.S. Cl. 219—130 **15 Claims**



An automatic welding apparatus includes a housing that is pivotably and slidably mounted to a base and a spindle, adapted for reception of a workpiece, is rotatably and slidably mounted to the housing. A carriage having a torch, a heat sink and a finger slidably and rotatably mounted thereto is slidably supported by the shafts affixed o the housing. The working end of the torch is formed with an opening and a plurality of ports are radially disposed about the opening. An electrode extends through the opening and an inert gas exhausts through the ports. A voltage sensor generates a signal representative of the spatial relationship between the torch and the workpiece, the slidable movement of the torch being responsive to the voltage sensor signal. Programmable cam means, preset for tacking or continuous welding, is provided for switching the arc current, and means are provided for ejecting the workpiece out of the spindle upon completion of the welding cycle.

3,609,290

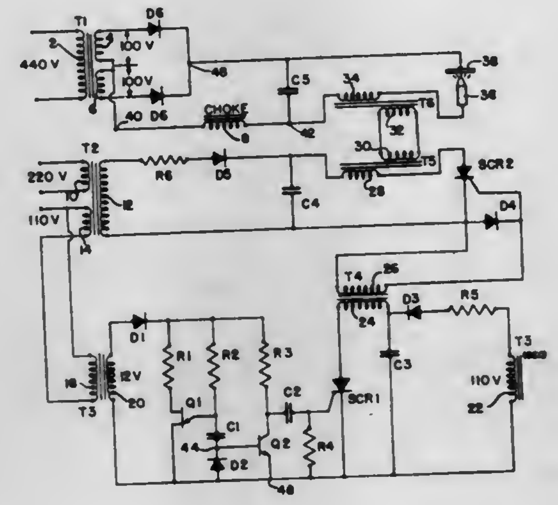
ELECTRIC ARC CONTROL SYSTEM

Gerald A. Lawrence, Detroit, Mich., assignor to La-Mark Corporation, Detroit, Mich.

Filed Dec. 13, 1968, Ser. No. 783,633

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R **8 Claims**



An all solid-state electric arc starting and control system which may be used for electric welding or cutting operations. The control system includes a three-stage amplification of the output of a unijunction transistor relaxation oscillator. This produces a high frequency control current which regulates the main heavy duty welding current, and will serve to automatically restart the electric arc should the main welding current fail.

3,609,291

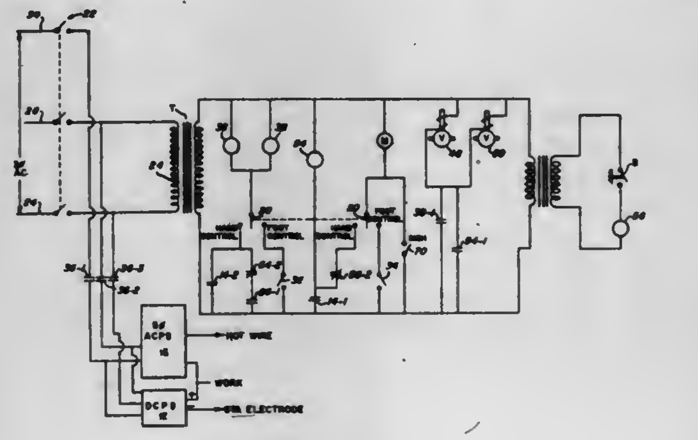
ARC WELDING CONTROL SYSTEM FOR A MANUAL TORCH

Frank J. Pilia, Short Hills, and John F. Saenger, Jr., Springfield, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,824

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R **2 Claims**



A control system for a manually operated welding torch housing a nonconsumable electrode and a consumable wire electrode including a power supply having a DC and AC output, the DC output being connected in circuit relation with the nonconsumable electrode and a workpiece, the AC output being connected in circuit relation with the consumable electrode and the workpiece, feeding means for the consumable electrode, and a single manually operated selector switch which controls both the delivery of power to the consumable and nonconsumable electrode and the consumable electrode feeding means.

3,609,292

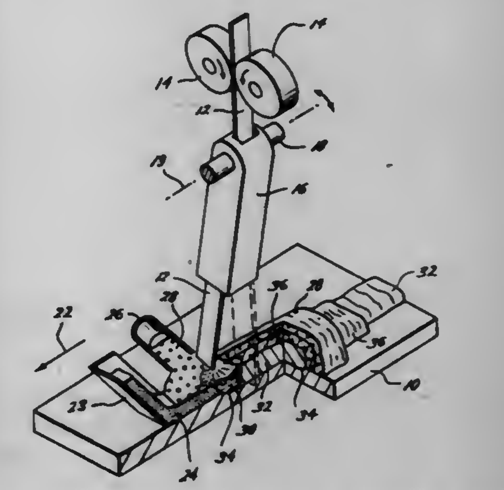
OSCILLATING STRIP BULKWELDING

Roman F. Arnoldy, Houston, Tex., assignor to R. I. Patents, Inc., Houston, Tex.

Filed Feb. 24, 1969, Ser. No. 801,374

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **10 Claims**



The present invention encompasses a method of welding which utilizes in the preferred embodiment a consumable strip electrode having dimensions in the range of approximately one-half inch in width and from 0.001 to 0.015 inches in thickness, and which electrode is moved parallel to the base metal that is being welded. In addition, the strip electrode is oscillated in a path of travel that is generally perpendicular to the parallel movement of the electrode relative to the base metal. A layer of granular alloy material is laid on the base metal in order to give a weld bead having a specific composition with a closely controlled analysis. To achieve an operation having a high capacity with a variety of compositions being available for the weld, the granular material is fed at a granular-to-electrode weight ratio of approximately 1-to-1 to 3-to-1.

3,609,293

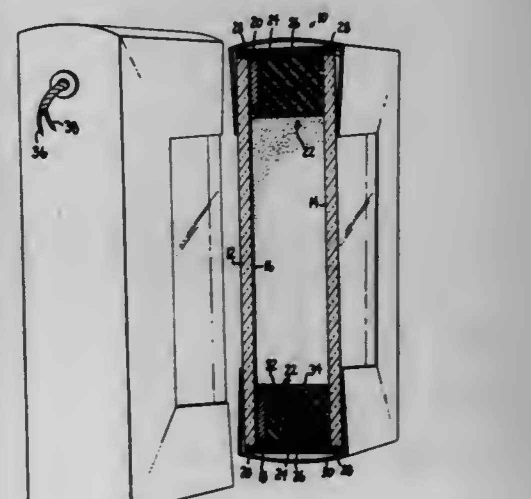
ELECTRICALLY HEATED MULTIPLE GLAZED WINDOW

John L. Stewart, Apollo, and George H. Bowser, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1969, Ser. No. 846,847

Int. Cl. H05b *1/00*

U.S. Cl. 219—200 **21 Claims**



A heated, multiple glazed insulating unit having a marginal edge spacer element composed of electrically insulting material.

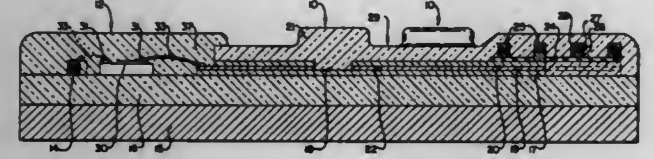
3,609,294
THERMAL PRINTING HEAD WITH THIN FILM PRINTING ELEMENTS

Richard C. Cady, Jr., and Robert M. Whiteley, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Continuation of application Ser. No. 672,131, Oct. 2, 1967, now abandoned. This application Oct. 10, 1969, Ser. No. 866,140

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **10 Claims**



A thermal printing head with thin film printing elements for marking a thermally sensitive record material is disclosed. A number of electrically resistive strips are etched from an electrically resistive material (for example, tantalum) which is formed on an electrically nonconductive substrate. An electrically conductive material, such as gold, is deposited over the tantalum strips. One area of the gold along each gold strip is then selectively etched by an etchant which does not affect the tantalum layer. The gold layer is now divided into two separate electrode portions. One electrode portion of each strip is connected to an isolation element, such as a semiconductor diode, a silicon controlled rectifier, or a semiconductor threshold device. The isolation element may be chip mounted, or it may be formed by semiconductor fabrication techniques. The isolation element is supported by the same substrate which supports the tantalum strips. The other electrode portion of each strip is connected to a second level electrical conductor, which is electrically insulated from the first level electrodes that pass under this electrical conductor by a thin dielectric layer.

A protective overcoating layer is deposited over the entire structure. One embodiment of the present invention employs a protective overcoating layer of a material having a substantial thermal conductivity and a substantial electrical resistivity which is shaped to provide a raised area over each of the resistive tantalum printing elements, so as to provide a plurality of selectively heat-concentratable raised areas for printing.

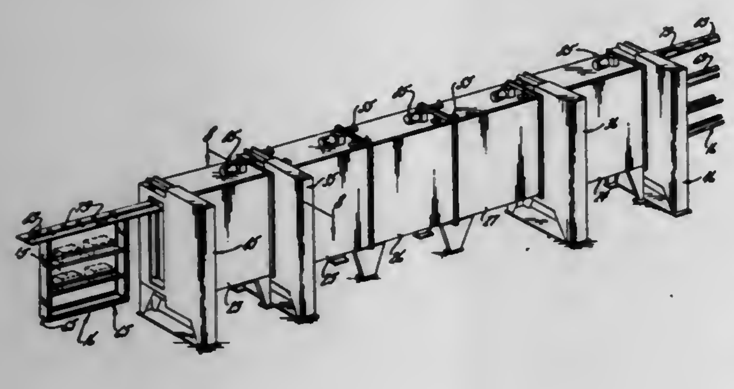
3,609,295
HEATING APPARATUS WITH WORKPIECE CARRIERS

Irvin P. Bielefeldt, Rockford, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed July 1, 1970, Ser. No. 51,612

Int. Cl. F27b *9/06*

U.S. Cl. 219—388 **12 Claims**



Workpieces advanced into and heated radiantly within a series of end-to-end chambers are supported by movable carriers with reflective shielding packs which concentrate the radiant heat on the workpieces to promote rapid and uniform heating of the workpieces. In one embodiment, auxiliary heating elements are supported on the carriers themselves and are energized differentially as the carriers are advanced into the different chambers.

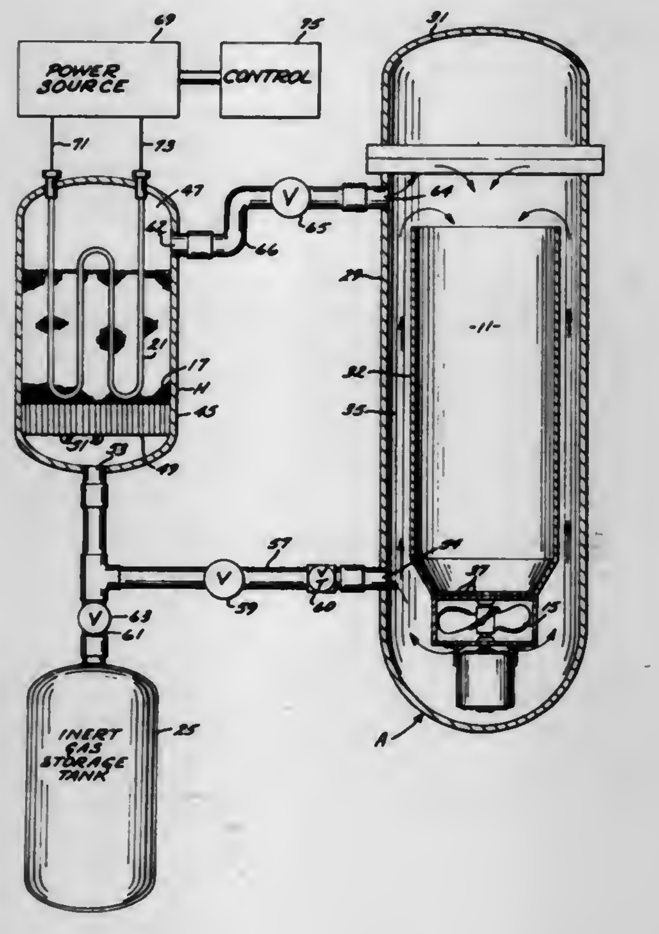
3,609,296
ELECTRICALLY HEATED AUTOCLAVE APPARATUS

Joe B. Blair, Artesia, Calif., assignor to Fuel Engineering, Torrance, Calif.

Filed Mar. 27, 1970, Ser. No. 23,276

Int. Cl. F27d *11/02*

U.S. Cl. 219—400 **4 Claims**



An autoclave apparatus comprising an autoclave forming a product-receiving chamber having an inlet port in one end and an outlet port in the opposite end and being, further, formed with an access opening. An electrically heated heat exchanger is formed with a chamber which contains heat storage means and such chamber has an inlet in one end and an outlet in the opposite end. Conduits connect the inlet to the autoclave with the outlet from the heat exchanger and the outlet of the autoclave with the inlet to the heat exchanger. Means is provided for supplying gas to the system whereby such system may be pressurized with the gas and such gas circulated through the autoclave and in heat-exchange relationship with the heat storage means to heat such gas to an elevated temperature thereby providing an atmosphere in the product-receiving chamber of the desired temperature and pressure.

3,609,297
MOISTURE WARMING DEVICE

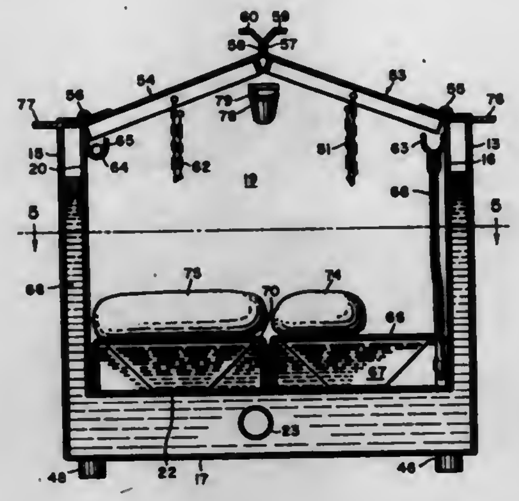
Petros D. Christopoulos, 363 Woodmere S. E., Grand Rapids, Mich.

Filed Feb. 24, 1969, Ser. No. 801,359

Int. Cl. F27d *11/00*

U.S. Cl. 219—439 **5 Claims**

A water-jacketed container with heat supplied to the jacket space to heat water in the interior primarily by conductive heat-transfer through the interior container wall. Articles are supported above the level of the water in the interior, which is isolated with respect to pressure from the jacket water to permit side-jacketing above the level of the interior water. Condensate drainage for unjacketed surfaces maintains the articles free of liquid water.



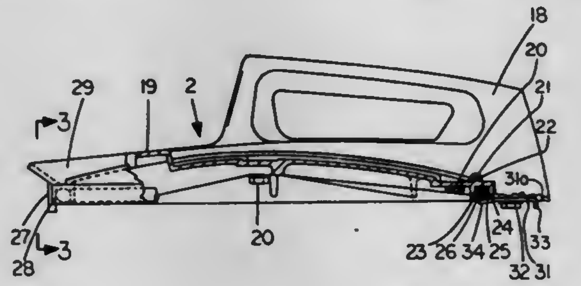
3,609,298
ELECTRICALLY HEATED KETTLE WITH DISASSEMBLY CONTROL MEANS

Gerald J. Adamson, 18 Parkcrest, Scarborough, Ontario; Ian F. Norton, 272 St. Clements Avenue, Toronto; John W. Miller, 49 Thorncliffe Park Drive, Apartment 603, Toronto, Canada; John C. Fagan, 16 Wyndmoor Drive, Philadelphia, Pa., and John L. Eaton, Jr., 617 Delaware, Delanco, N.J.

Filed June 17, 1970, Ser. No. 48,583

Int. Cl. F27d *11/02*

U.S. Cl. 219—441 **9 Claims**



An electric kettle comprising a container component, a lid component and a control component with the lid component being releasably interrelated with the container component at front and rear portions of the kettle and with the control component being releasably interrelated with the container component in the rear portion of the kettle and being positioned with respect to the container component and the lid component so that the control component must be released before release of the lid component from the container component can be had. The container component includes a fixed heating element with an external thermostat sensing projection and a pair of projecting male terminal elements; the lid component includes a handle and pouring spout; and the control component includes a pair of female terminal elements in electrical connection with a power supply cord and mating with the male terminal elements, and a thermostat assembly with a projecting clamp to engage the thermostat sensing projection. The kettle thus provides a componentized assembly wherein any of the components may be readily cleaned or replaced by the user.

3,609,299
NAVIGATIONAL COMPUTER

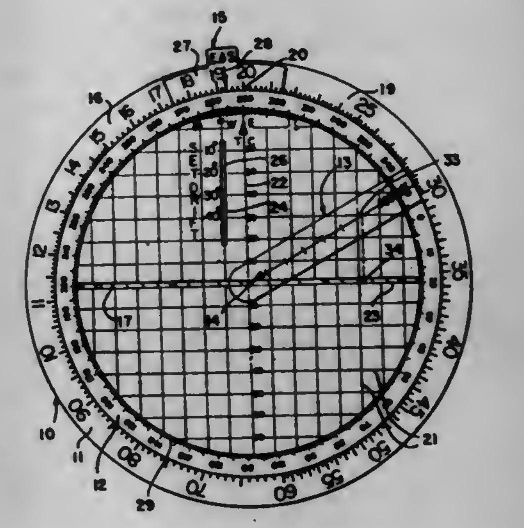
Jerauld G. Wright, 10 Wren Road, Ottawa, Ontario, Canada

Filed Mar. 30, 1970, Ser. No. 23,800

Int. Cl. G06c *27/00*; G06g *1/08*

U.S. Cl. 235—61 NV **20 Claims**

A computer for solving aerial navigational problems in which the effect of wind speed and direction must be taken into account, wherein calibrated drift marks are provided in association with the airspeed scale. When the computer is set to any given airspeed and the information relating to wind speed and direction is registered, the calibrated drift marks give an immediate reading of the corresponding drift angle. The computer comprises a number of superimposed concentric discs which are mutually rotatable and which bear scales and cursors by means of which the required information can be derived. The computer may include means for correcting for magnetic variation in compass headings, pressure-altitude/temperature in airspeeds, and may also include scales for performing time/distance calculations.



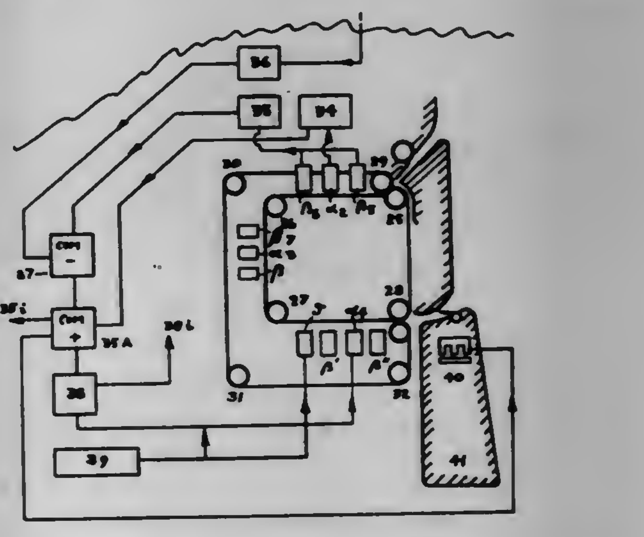
3,609,300
AUTOMATIC FARE CHARGING DEVICE

John Wolfgang Halpern, 2 Field Court, London, W.C.1, England

Continuation of application Ser. No. 629,046, Feb. 10, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 261,529, Feb. 27, 1963, now abandoned , and a continuation-in-part of 659,196, Feb. 16, 1967, now abandoned. This application May 13, 1969, Ser. No. 827,095

Int. Cl. G06k *21/00*

U.S. Cl. 235—61.7 R **21 Claims**



A token having electrically operable storage means is accepted and stored data is read from the token, data compared, and passenger fare computed.

3,609,301
STAR WHEEL RECORD READER HAVING WHEEL TIP ALIGNING MEANS

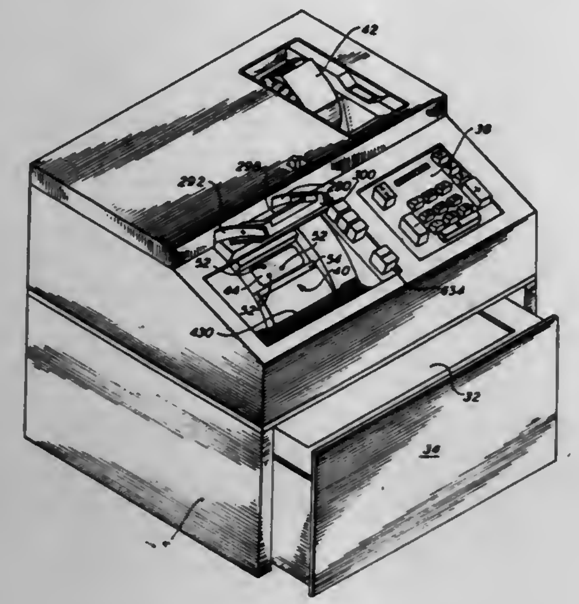
John F. Henderson, Essex County, N.J., assignor to Litton Business Systems, Inc., Belleville, N.J.

Filed Aug. 7, 1969, Ser. No. 848,271

Int. Cl. G06r *7/04*

U.S. Cl. 235—61.11 C **18 Claims**

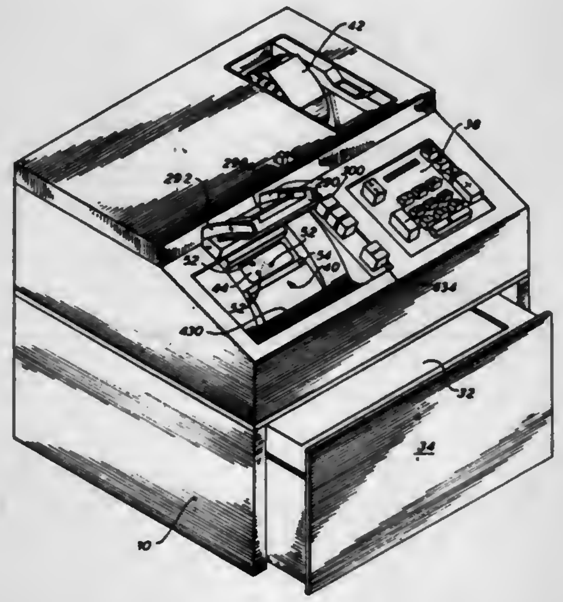
Information, in the form of perforations carried by a record card, is gathered by a system which includes an information storage unit housed in proximity to, and for coaction with, a record reader, and a keyboard entry device. The information storage unit magnetically records on tape the information transmitted to it from either the reader or the keyboard. The reader, through the use of star wheels, reads the perforated data one column at a time and transmits same through appropriate logic to the storage unit. The star wheels are mounted in cantilever fashion on first conductive springlike elements which urge the wheels into coaction with the record and the perforations carried thereby. When a star wheel encounters a perforation its springlike element moves into contact with a second conductive element to close a circuit. Said second conductive element is formed to yield when contacted by said first element to insure proper seating of the star wheel in the perforation and subsequent coaction thereof with other perforations. The star wheels are mounted in a stationary manner; while the record, after being laid upon a receiving bed, is moved in an arcuate path and in such a manner that it is locked in its position, sensed by the star wheels, returned to its initial position, and subsequently ejected from the reader. If the data sensed is unacceptable to the logic the record remains on the reading bed as an indication thereof. The operator, thereafter can enter the data through the intermediary of the keyboard entry device.



3,609,302
RECORD READER HAVING PARTICULAR RECORD HOLDER AND HOLDER CARRYING MEANS

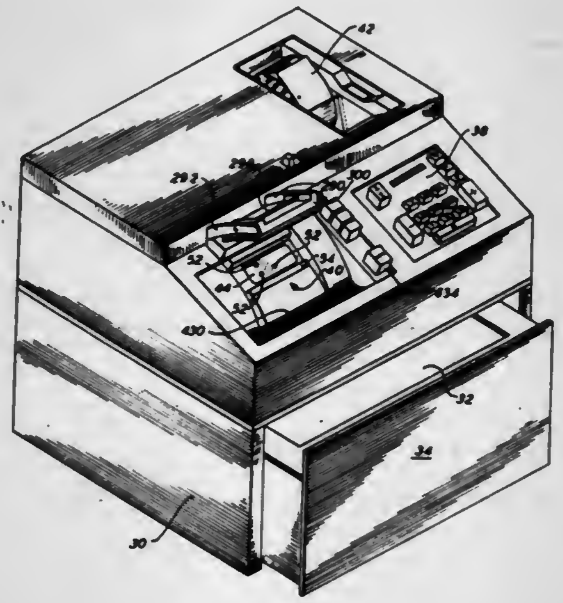
Edward C. Marshall, Upper Montclair; Vincent Corsini, Pequannock; John H. King, Chatham, and Russell W. Larson, Montville, all of N.J., assignors to Litton Business Systems, Inc., Belleville, N.J.
Filed Aug. 7, 1969, Ser. No. 848,315
Int. Cl. G06r *7/04*
U.S. Cl. 235—61.11 C **10 Claims**

Information, in the form of perforations carried by a record card, is gathered by a system which includes an information storage unit housed in proximity to, and for coaction with, a record reader, and a keyboard entry device. The information storage unit magnetically records on tape the information transmitted to it from either the reader or the keyboard. The reader, through the use of star wheels, reads the perforated data one column at a time and transmits same through appropriate logic to the storage unit. The star wheels are mounted in cantilever fashion on first conductive springlike elements which urge the wheels into coaction with the record and the perforations carried thereby. When a star wheel encounters a perforation its springlike element moves into contact with a second conductive element to close a circuit. Said second conductive element is formed to yield when contacted by said first element to insure proper seating of the star wheel in the perforation and subsequent coaction thereof with other perforations. The star wheels are mounted in a stationary manner; while the record, after being laid upon a receiving bed, is moved in an arcuate path and in such a manner that it is locked in position, sensed by the star wheels, returned to its initial position, and subsequently ejected from the reader. If the data sensed is unacceptable to the logic the record remains on the reading bed as an indication thereof. The operator, thereafter can enter the data through the intermediary of the keyboard entry device.



3,609,303
RECORD READER HAVING EJECTOR WITH EJECT INHIBIT MEANS

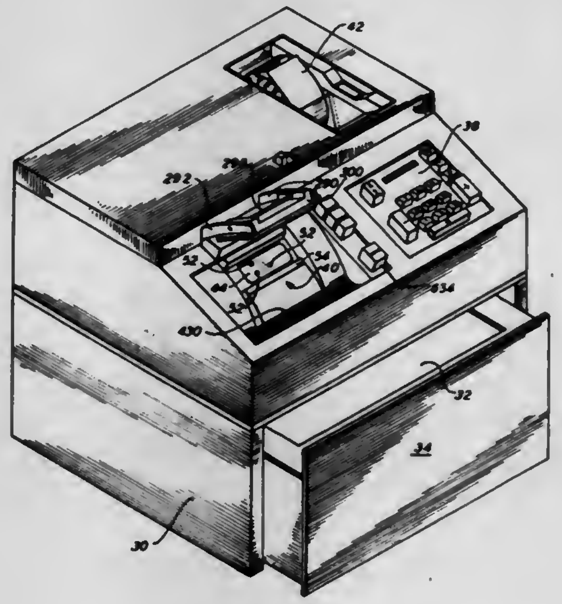
Edward C. Marshall, Upper Montclair, and John H. King, Chatham, both of N.J., assignors to Litton Business Systems, Inc., Belleville, N.J.
Filed Aug. 7, 1969, Ser. No. 848,306
Int. Cl. G06r *7/04*
U.S. Cl. 235—61.11 C **15 Claims**



Information, in the form of perforations carried by a record card, is gathered by a system which includes an information storage unit housed in proximity to, and for coaction with, a record reader, and a keyboard entry device. The information storage unit magnetically records on tape the information transmitted to it from either the reader or the keyboard. The reader, through the use of star wheels, reads the perforated data one column at a time and transmits same through appropriate logic to the storage unit. The star wheels are mounted in cantilever fashion on first conductive springlike elements which urge the wheels into coaction with the record and the perforations carried thereby. When a star wheel encounters a perforation its springlike element moves into contact with a second conductive element to close a circuit. Said second conductive element is formed to yield when contacted by said first element to insure proper seating of the star wheel in the perforation and subsequent coaction thereof with other perforations. The star wheels are mounted in a stationary manner; while the record, after being laid upon a receiving bed, is moved in an arcuate path and in such a manner that it is locked in position, sensed by the star wheels, returned to its initial position, and subsequently ejected from the reader. If the data sensed is unacceptable to the logic the record remains on the reading bed as an indication thereof. The operator, thereafter can enter the data through the intermediary of the keyboard entry device.

3,609,304
INFORMATION GATHERING SYSTEM

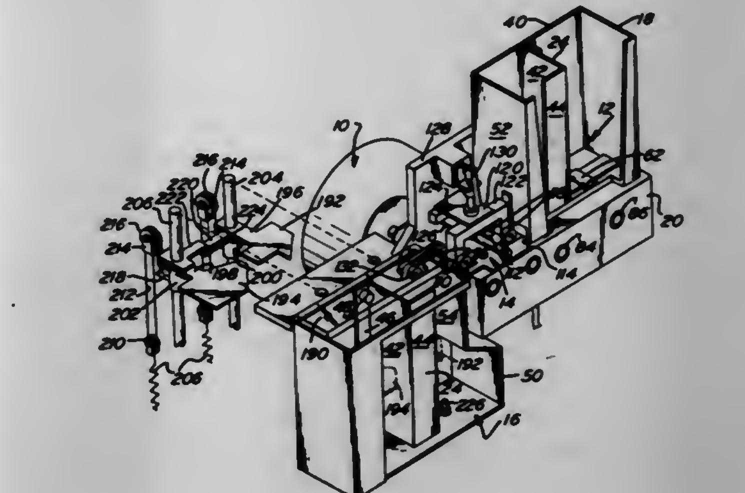
Edward C. Marshall, Upper Montclair, N.J., assignor to Litton Business Systems, Inc., Belleville, N.J.
Filed Aug. 7, 1969, Ser. No. 848,316
Int. Cl. G06r *7/04*
U.S. Cl. 235—61.11 C **16 Claims**



Information, in the form of perforations carried by a record card, is gathered by a system which includes an information storage unit housed in proximity to, and for coaction with, a record reader, and a keyboard entry device. The information storage unit magnetically records on tape the information transmitted to it from either the reader or the keyboard. The reader, through the use of star wheels, reads the perforated data one column at a time and transmits same through appropriate logic to the storage unit. The star wheels are mounted in cantilever fashion on first conductive springlike elements which urge the wheels into coaction with the record and the perforations carried thereby. When a star wheel encounters a perforation its springlike element moves into contact with a second conductive element to close a circuit. Said second conductive element is formed to yield when contacted by said first element to insure proper seating of the star wheel in the perforation and subsequent coaction thereof with other perforations. The star wheels are mounted in a stationary manner; while the record, after being laid upon a receiving bed, is moved in an arcuate path and in such a manner that it is locked in position, sensed by the star wheels, returned to its initial position, and subsequently ejected from the reader. If the data sensed is unacceptable to the logic the record remains on the reading bed as an indication thereof. The operator, thereafter can enter the data through the intermediary of the keyboard entry device.

3,609,305
CARD READER

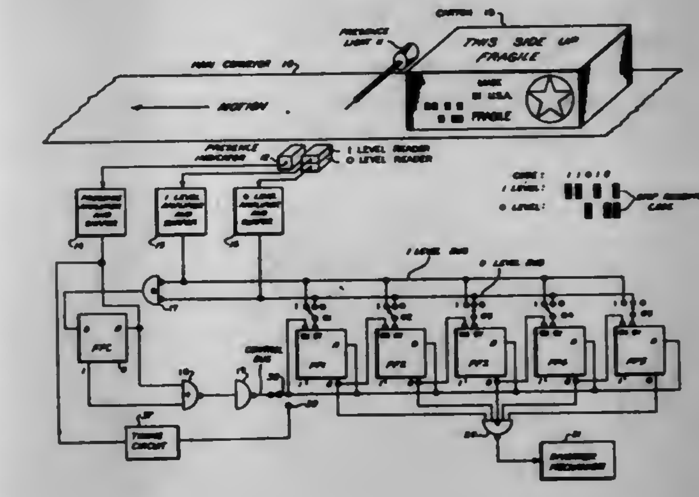
Cecil J. Davis, and Robert T. Matthews, both of West Chester, Pa., assignors to Bridge Data Products Inc., Philadelphia, Pa.
Filed Oct. 29, 1969, Ser. No. 870,621
Int. Cl. B65h *1/00;* **G01m** *21/30;* **G06k** *7/10*
U.S. Cl. 235—61.11 E **19 Claims**



A card reader both 80 and 96 column punched cards and includes a feeder and stacker that can feed and stack both types of cards.

3,609,306
SEQUENTIAL CODE READER

Lawrence W. Langley, Severna Park, Md., assignor to General Electric Company
Continuation of application Ser. No. 419,662, Dec. 21, 1964, now abandoned. This application Dec. 8, 1969, Ser. No. 883,234
Int. Cl. G06k *7/10;* **G01n** *21/30*
U.S. Cl. 235—61.11 E **21 Claims**



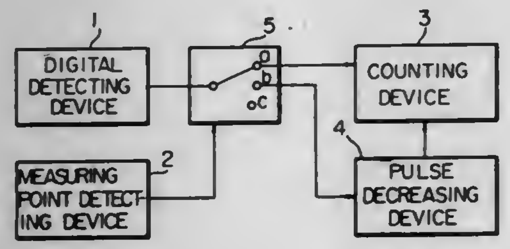
A sequential reading code recognition system for recognizing the code on moving objects to regulate the movement of these objects as the codes thereon are recognized. Three scanners are employed for each station. The first scanner detects the presence of an object and enables the outputs of the other two code reading scanners to be received by the storage unit. The storage unit for the code recognition system for each station contains a preset code. When the code on the object corresponds to the preset code on a bit-by-bit basis an action initiating output is generated.

3,609,307

DIGITAL MEASURING SYSTEM

Yasushi Totsuka, and Shin-ichi Kamachi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 13, 1970, Ser. No. 036,873
Claims priority, application Japan, May 14, 1969, 44/36709
Int. Cl. G06m *3/10*
U.S. Cl. 235—92 DN **6 Claims**



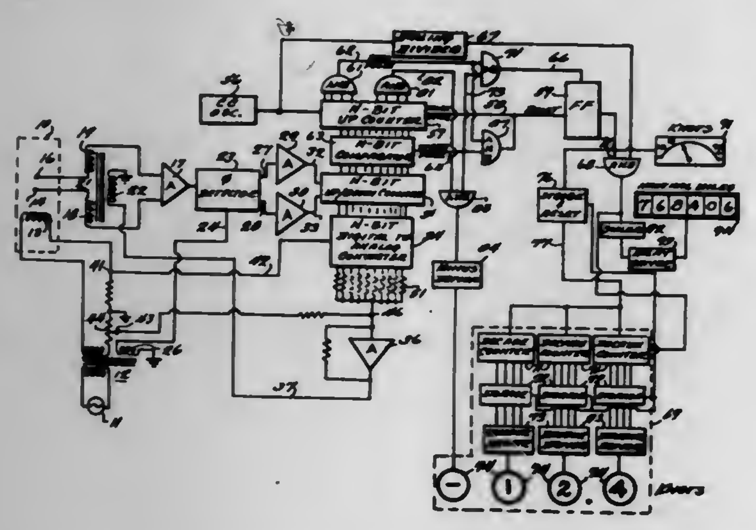
Digital measuring system for digitally determining the position of the center of two specifically set two measuring points in an object to be detected successively during the measuring operation. The system comprises a digital detecting device for generating pulses during the measuring operation, a counting device for receiving the pulses from the digital detecting device so as to obtain measured value in terms of the number of pulses counted by the counting device, a measuring point detecting device for generating a first pulse when the preceding one of the two measuring points is detected thereby while a second pulse is generated when the succeeding one of the two measuring points is detected, a gate circuit for receiving the pulses from the digital detecting device and the measuring point detecting device, and a pulse decreasing device adapted to erase the alternating pulses in the series of input pulses supplied thereto so that the number of the output pulses of the pulse decreasing device is reduced to half the number of the input pulses thereof. The gate circuit has a first, a second and a third terminal, the first terminal being directly connected to the counting device while the second terminal is connected to the pulse decreasing device which is in turn connected to the counting device.

3,609,308

DIGITAL MEASURING SYSTEMS

Stanley G. Lemon, and Charles M. Donoho, both of Annapolis, Md., assignors to Chesapeake-Instrument Corporation, Shadyside, Md.

Filed Apr. 23, 1968, Ser. No. 723,438
Int. Cl. H03k *13/02;* **G06m** *3/06;* **H03k** *21/36*
U.S. Cl. 235—92 PS **9 Claims**



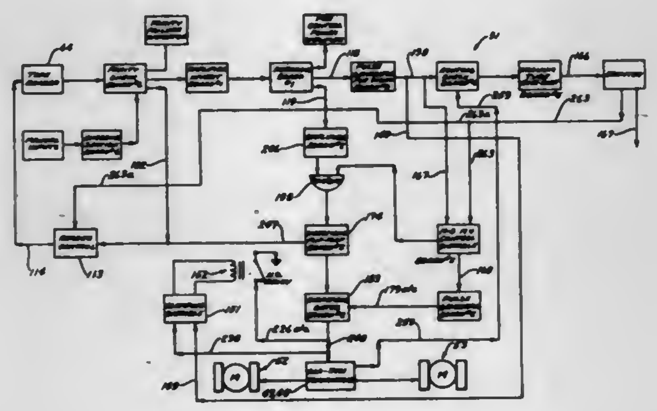
A system for determining and displaying both positive and negative speed of a rodmeter in relation to surrounding fluid is described. Depending upon whether the direction of movement of the rodmeter is forward or backward, the phase of the output of the rodmeter is either in phase with a reference signal or 180° out of phase with the reference signal. An error signal is generated between the sensed rodmeter signal and a response signal, the latter being generated by the error signal; and in order for the response signal to always be of such a phase with respect to that of the rodmeter signal so as to enable the generation of an error voltage signal proportional to the difference in amplitudes therebetween, a first reference signal is applied to a digital-to-analog converter and a second reference signal 180° therefrom is applied to a summing amplifier coupled to the output of the digital-to-analog converter. The summing amplifier output provides the response signal which changes phase by 180° whenever the phase of the rodmeter signal changes phase by 180°. Digital circuitry is also described which indicates by either analog or digital display the count registered in an up-down counter.

3,609,309

ELECTRIC PULSE COUNTER APPARATUS

Leon J. Arp, Blacksburg, Va., and Wayne C. Dowling, Sioux City, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa, by said Arp

Division of Ser. No. 637,153, May 9, 1967, Pat. No. 3,500,154.
Filed May 8, 1968, Ser. No. 727,387
Int. Cl. H03k *21/36*
U.S. Cl. 235—92 PE **5 Claims**



This invention pertains to the electrical circuitry for a counter apparatus which accepts a command number in the form of a sequence of digits in the usual manner, i.e., the most significant first, and then decrements from the command number down to zero, the circuitry comprising a plurality of cold cathode glow transfer tubes conventionally electrically connected in a left-to-right arrangement with a borrowing gate for each pair of adjacent tubes, including an inhibitor against borrowing during the loading of the tubes, only, and including further a gating distributor circuit for loading the tubes from left-to-right with the last tube loaded being the units tube, and wherein the gating circuit to the units tube is left open after loading of the counter, the circuit including a pulse generator for generating a plurality of pulses transmitted through the gating circuit to the units tube for decrementing the tubes from the command number down to zero, at which time a signal is emitted from the apparatus, using the borrowing gate for decrementing purposes.

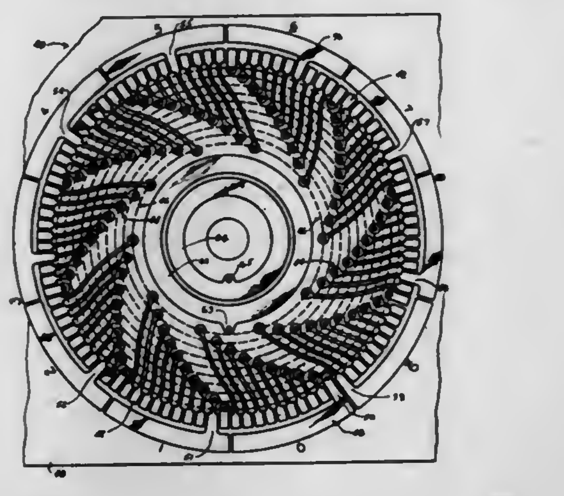
3,609,310

TIMER WITH MULTIPLE WIRE OUTPUT FOR READOUT

Louis Cetran, Newington; Gerhard A. Foerster, Woodbridge, and William P. Ryan, Bethany, all of Conn., assignors to Mite Corporation, New Haven, Conn.

Filed Mar. 28, 1969, Ser. No. 811,545
Int. Cl. H03k *21/18*
U.S. Cl. 235—92 EA **17 Claims**

A timer driven by a clock motor has a multiple wire output for readout (punched holes, displayed digits, printed digits, et.). A pawl operates a ratchet wheel having a number of teeth corresponding to a desired maximum two digit number, and turns two rotary switches. One is a units rotary switch with a ring of short contact equaling the desired maximum number. The short contacts are in groups corresponding to 0–9, 0–9, etc., with a remainder when needed. The secondary rotary switch is a tens rotary switch having a wiper arm which is moved over a ring of long contacts each corresponding to ten short contacts, but the last long contact corresponds to the remainder, if any. The number of long contacts equals the number of groups of short contacts, and all contacts are printed on the front face of a printed circuit board. The back face of the board is printed with conductors which connect all contacts representing like digits. Because the contacts are arranged in a ring, there is an automatic reset to zero. The maximum number may be 99 for tenths and hundredths of an hour, or it may be 59 for minutes, with the clock motor output shaft turning 100 or 60 revolutions per hour respectively. The first shaft operates the pawl of a second ratchet wheel once for each revolution of the first shaft, and the second wheel has 24 teeth. A second printed circuit board has third and fourth rotary switches driven by the second ratchet wheel one revolution a day. There are contacts for a maximum of 23 followed by reset to 00. The combined maximum then is 23.99 with reset to 00.00 for a 24 hour day. For a readout in hours and minutes the maximum number is 23:59 with reset to 00:00.

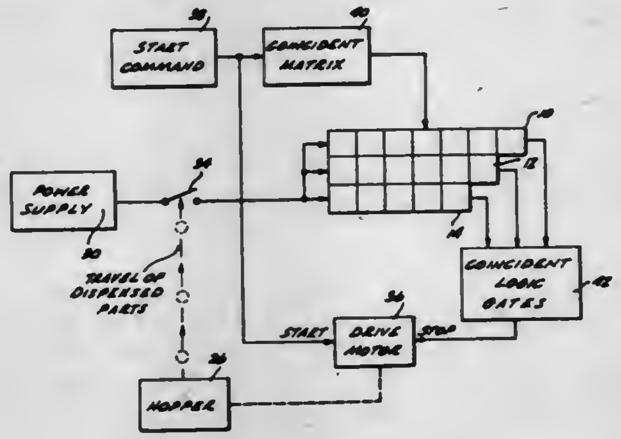


3,609,311

COINCIDENT COUNTING SYSTEM

Ronald G. Wayne, Canoga Park, Calif., assignor to Centaur Mini Computer Devices Inc., New York, N.Y.

Filed May 26, 1969, Ser. No. 827,690
Int. Cl. H03k *21/36, 23/02*
U.S. Cl. 235—92 NG **6 Claims**



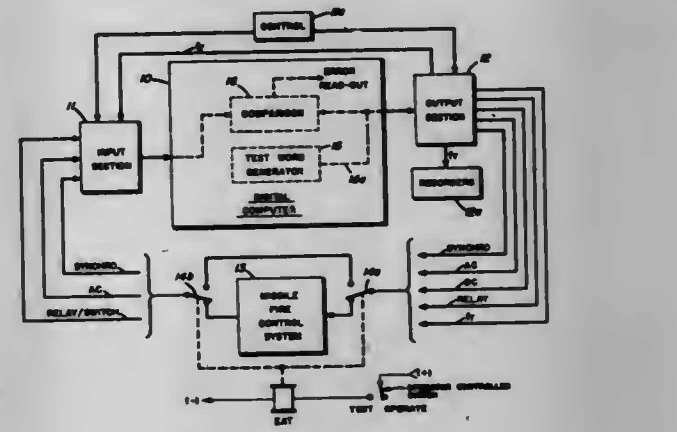
A coincident counting system is described which comprises a plurality of ring counters, each ring counter having dissimilar number of bit stages. Each initial bit stage of each ring counter is only coincident on each full cycle of operation, thereby indicating maximum count. By proper selection logic, coincidence of each bit in each register may be selected to vary the count. A single input switch increments all ring counters simultaneously until selected coincidence occurs.

3,609,312

DATA CONVERSION AND CONTROL SYSTEM

Robert K. Higgins, Silver Spring, and Andrew T. Sheets, Burtonsville, both of Md.

Filed Mar. 11, 1968, Ser. No. 712,068
Int. Cl. G06f *15/50, 11/04*
U.S. Cl. 235—150.2 **14 Claims**



A data conversion and control system comprising an input and an output section, which function to establish compatibility between an inherently analog missile fire control system or the like and a general purpose digital computer and thereby form a closed-loop, digital type fire control system. More specifically, means are provided at the input to the digital computer for converting all of the input data signals from the fire control system, regardless of their form, into a digital format acceptable by the computer and, moreover, such conversion operations are performed accurately, in reduced data conversion time. Also, means are provided at the input to the computer for making, where necessary, determinations of the algebraic sign of the input analog data signals and of the angle of input synchro data signals, for later use in the digital computer. At the output of the computer, means are provided to accept the digital outputs therefrom and convert them, where appropriate, into the various types of control signals normally associated with the missile fire control system. The present invention also provides for connecting the computer in a novel end-around test mode for the purpose of checking that both the input and output sections of the proposed data conversion and control system are operating properly. The proposed data conversion and control system of the present invention is particularly adapted for use with the fire control system for the Talos missile and provides a more accurate control of the doppler frequency guidance control signal communicated, by the fire control system, to the missile, in such a manner that there is a quicker acquisition of the target, by the missile.

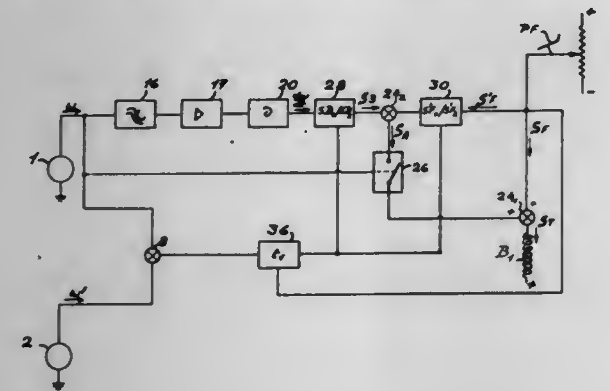
3,609,313

REGULATION SYSTEM FOR THE HYDRAULIC CONTROL OF BRAKING OF A VEHICLE WITH PNEUMATIC TIRES

Rene Lucien, Neuilly-sur-sein, France, assignor to Societe Anonyme dite, Messier, Paris, France

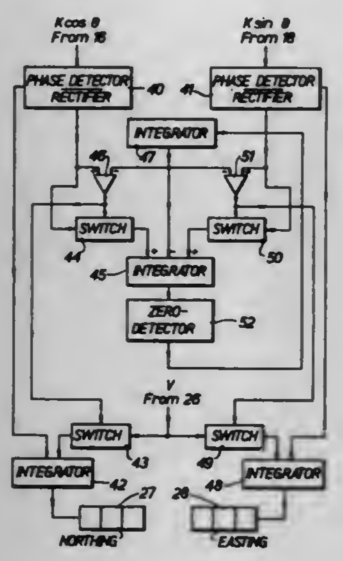
Filed Jan. 15, 1969, Ser. No. 796,636
Claims priority, application France, Jan. 16, 1968, 136,271
Int. Cl. G06g *7/70;* **B60t** *8/12*
U.S. Cl. 235—150.24 **10 Claims**

A regulation system for the hydraulic control of braking of a vehicle with pneumatic tires, comprises first, second and third regulation circuits and the slip computer, a first regulation circuit acting as a function of the deceleration of the vehicle, and of the pilot's order, the second circuit being for integral regulation with respect to a wheel slip having a predetermined reference value proportional to the pilot's order, and the third circuit being for regulation as a function of the slip, with a continuously variable gain and preferably having a parabolic form. The computer is intended to receive at its inputs the signals representing the angular speed ω of the vehicle and ω' of a braked wheel, and it multiplies their difference by the sum of a constant and a factor proportional to ω reduced by a factor proportional to the logarithm of ω. The first or deceleration regulation circuit has two levels of gain, one for a fraction of the pilot's signal and the other for the vehicle-speed signal, these two gains being reduced when the slip exceeds a predetermined reference value, these reductions in gain being locked after a certain time-delay. Means are provided for rendering all the regulation circuits inoperative at low running speed of the vehicle.



3,609,314
TIMING MEANS

Edward William Anderson, Prestbury, Cheltenham, England, assignor to Smiths Industries Limited, London, England
Division of Ser. No. 650,544, June 30, 1967, Pat. No. 3,541,853.
Filed Dec. 18, 1969, Ser. No. 886,243
Int. Cl. G01c *22/02*; **G06g** *7/78, 7/18*
U.S. Cl. 235—150.27 **6 Claims**

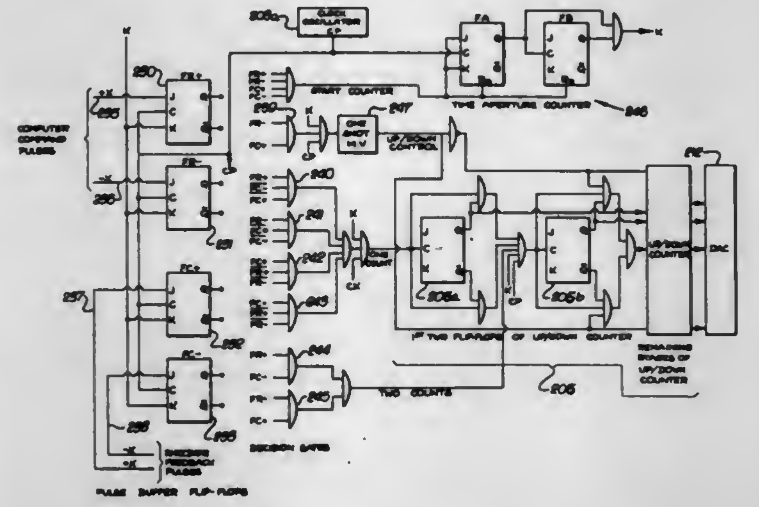


Timing means derives from input signals representative of $K \cos \theta$ and $K \sin \theta$ a signal having a period in accordance with factor K. The input signals are integrated in an integrator which also integrates in an opposite sense a voltage increasing progressively with time from an initial value. When the integral accumulated by the integrator reaches a predetermined value the said voltage is returned to its initial value. The input signals are integrated once during each progression of the said voltage for periods in accordance with respectively $\cos \theta$ and $\sin \theta$ so that the progressions of the said voltage vary in accordance with the factor K.

3,609,315
AUTOMATIC DRAFTING CONTROL

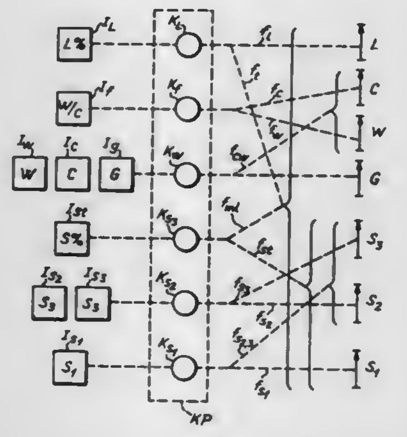
Waldo I. Rogers, Arcadia, Calif., assignor to California Computer Products, Inc., Anaheim, Calif.
Filed July 7, 1969, Ser. No. 839,394
Int. Cl. G05b *19/30*
U.S. Cl. 236—151.1 **8 Claims**

The invention concerns numerical control of drafting head movement in an X-Y coordinate system, wherein rapid and precise travel of the head to desired position, or over a range of positions, is achieved. Control apparatus is connected to be responsive to directing (input) and feedback pulses to change the count in a counter so as to control the drive of the head to desired position; and the control apparatus includes logic means responsive to timewise nearly coincident directing and feedback pulses to provide an output discriminating the nearly coincident pulses and operable to control passage of pulses to the counter.



3,609,316
COMPOSITE MIXTURE BATCHING

Noel M. H. Brosset, Le Vesinet, France, and Johan Winther, Bronderslev, Denmark, assignors to Pedershaab Maskinfabrik A/s, Bronderslev, Denmark
Filed May 23, 1967, Ser. No. 640,571
Claims priority, application France, May 24, 1966, 62732
Int. Cl. G06g *7/12*
U.S. Cl. 235—151.2 **27 Claims**



The present disclosure is directed to a method of using an analogue computing device for proportioning a plurality of components of a batch mixture in obtaining a composition exhibiting desired physical properties.

3,609,317
VARIABLE FREQUENCY AUDIO FREQUENCY MODULATOR FOR R.F. SPECTROMETER

William Siebert, Jr., Santa Clara County, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Jan. 29, 1970, Ser. No. 6,876
Int. Cl. G01n *27/78*; **G01r** *33/08*
U.S. Cl. 235—151.3 **6 Claims**

The radio frequency spectrometer is disclosed employing a variable frequency audio frequency field modulator for producing a variable frequency sideband which can be stepped through the resonance line under analysis in precisely controlled small audio frequency increments under the control of a digital computer. The precisely controlled audio frequency for the modulator is derived from a radio frequency crystal and is divided by a certain divisor as determined by a computer which feeds the number into a counter which

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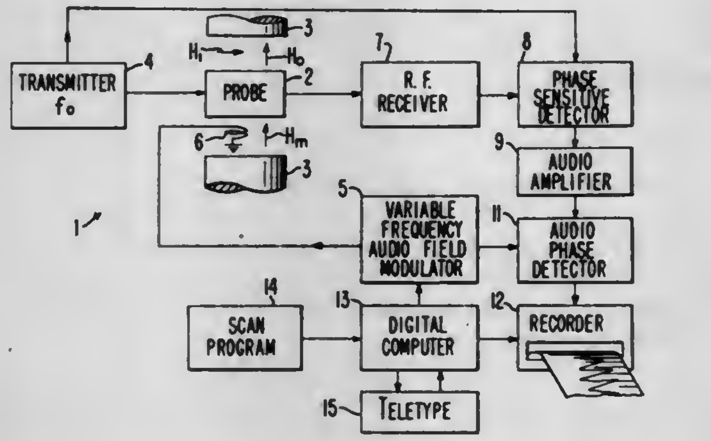
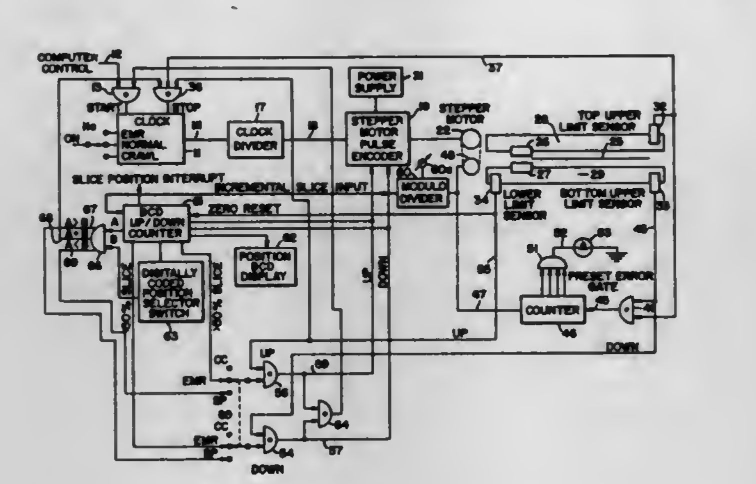
serves as the divider. The quotient output of the divider is employed to trigger a square wave generator, the output of which is filtered to produce a sinusoidal audio frequency output which is fed to the field modulator. The computer calculates new divisors for each of the successive audio frequency outputs.



3,609,318
DIGITAL CONTROL SYSTEM FOR SCANNING SHEET MATERIAL

Eugene R. Anderson, Saratoga, Calif., assignor to Measurex Corporation, Santa Clara, Calif.
Filed Feb. 13, 1969, Ser. No. 799,066
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.3 **8 Claims**

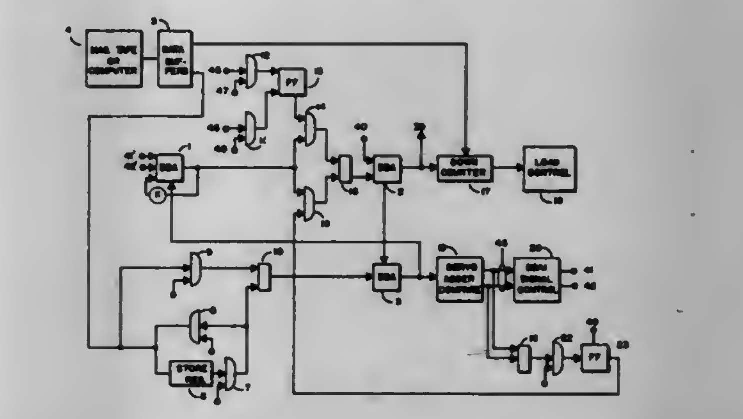


Digital control system for scanning sheet material having provision for computer control, scanning head alignment error detection, control of scan increments, off-sheet demand and single-point positioning.

3,609,319
DIGITAL PLOTTER IN WHICH PLOTTING SPEED IS OPTIMIZED IN TERMS OF A CURVE-FITTING TECHNIQUE

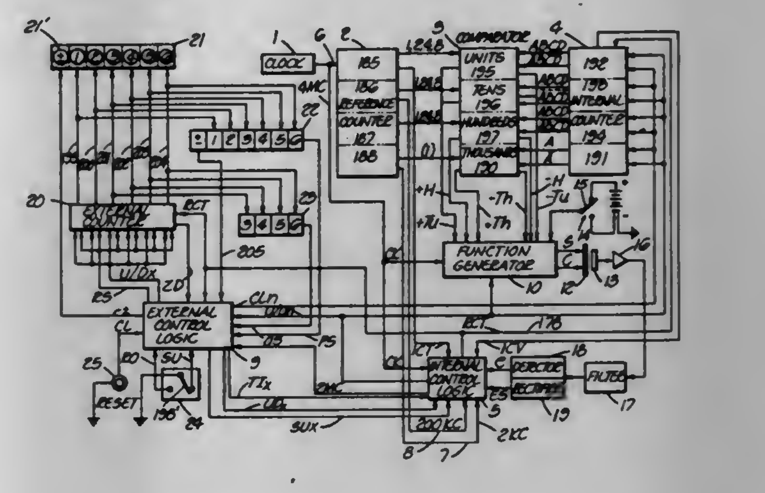
William Clifford, Jr., Middletown; John G. Demko, New Shrewsbury, and William K. Kindle, West Long Branch, all of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.
Continuation-in-part of application Ser. No. 725,418, Apr. 30, 1968, now abandoned. This application Dec. 3, 1968, Ser. No. 789,632
Int. Cl. G06b *15/46*
U.S. Cl. 235—151.11 **10 Claims**

Plotting of digital data is accomplished by optimizing plotting speed in terms of a curve-fitting technique. Segments of a curve whose x and y end points are specified, are defined in terms of a set of parametric equations represented by third order polynomials with distance as the independent variable. The curvature of these segments is then developed. Optimum plotting speed is then determined considering the requisite degree of curvature and the physical limitations of the plotter such as arm and pen mass and motor torque. This optimum plotting speed determines the rate of generation of the parametric equations in x and y and drives the system through a hybrid servosystem for the independent variable distance. Thus, the plotter is driven to the desired data points with a geometry independent of velocity.



3,609,320
POSITION-MEASURING SYSTEM

Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, Carson City, Nev.
Filed Mar. 24, 1969, Ser. No. 809,533
Int. Cl. G05b *19/32*; **H03k** *13/02*
U.S. Cl. 235—151.11 **30 Claims**

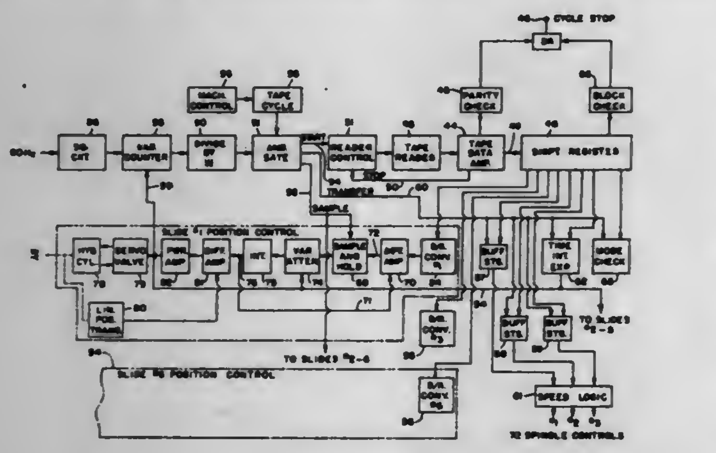


In a position measuring system a digital readout indicates the position of a movable machine member relative to a reference zero on a workpiece attached to the other machine member. The system uses a measuring device having a plurality of equally spaced measuring cycles. A reference position in these cycles herein is designated as sine zero, the workpiece reference position being offset by an amount Δ from one of these sine zero's. The contents of an internal counter controlled by the measuring device represent the position of the movable member between two adjacent sine zero's. An external counter and display indicate the actual position of the movable member with respect to the part zero.

3,609,321
TAPE INPUT CONTROL SYSTEM FOR MACHINE TOOL

Richard Hood Campbell, Jr., Gilford, N.H., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed Apr. 8, 1969, Ser. No. 814,350
Int. Cl. G06f *15/46, 15/20*; **G06g** *7/48*
U.S. Cl. 235—151.11 **14 Claims**

A control system for a multiple-spindle automatic machine having a plurality of reciprocable tool-bearing slides which are simultaneously operable, wherein seriate position information for each slide, contained on a preprogrammed tape, is converted to continuous signals for control of position loop servos which actuate the slides. Sample and hold circuits receive discrete difference position information and maintain same for application to integrator circuits which develop the continuous control signals. Introduction of input information occurs on a variable time basis dependent upon the programmed operating characteristics of the integrator circuits

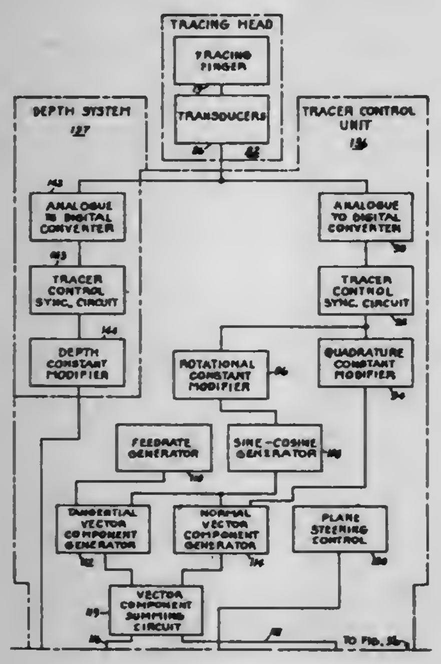


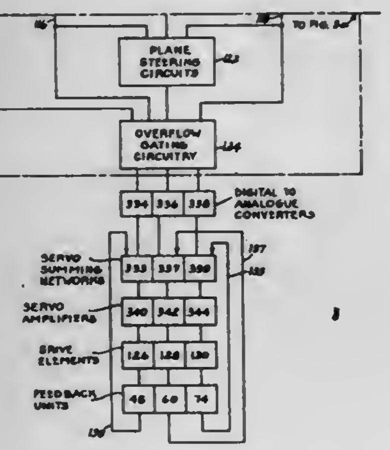
which in turn provide the variations of the control signals and thus control the rates of movement of the slides. Integrated circuit and solid state component technology is utilized throughout the control system which features a unique sample and hold circuit.

3,609,322
DIGITAL TRACER CONTROL

Lonnie A. Burnett; Norman D. Neal; George L. Wissel, and Harold D. Wiebe, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 17, 1969, Ser. No. 824,344
Int. Cl. B23q *35/12*; **G06f** *15/46*
U.S. Cl. 235—151.11 9 Claims


TRACING HEAD
TRACING FINGER
TRANSDUCERS
DEPTH SYSTEM
TRACER CONTROL UNIT
ANALOGUE TO DIGITAL CONVERTER
TRACER CONTROL SYNC. CIRCUIT
DEPTH CONSTANT MODIFIER
ROTATIONAL CONSTANT MODIFIER
QUADRATURE CONSTANT MODIFIER
FEEDRATE GENERATOR
SINE-COSINE GENERATOR
TANGENTIAL VECTOR COMPONENT GENERATOR
NORMAL VECTOR COMPONENT GENERATOR
PLANE STEERING CONTROL
VECTOR COMPONENT SUMMING CIRCUIT

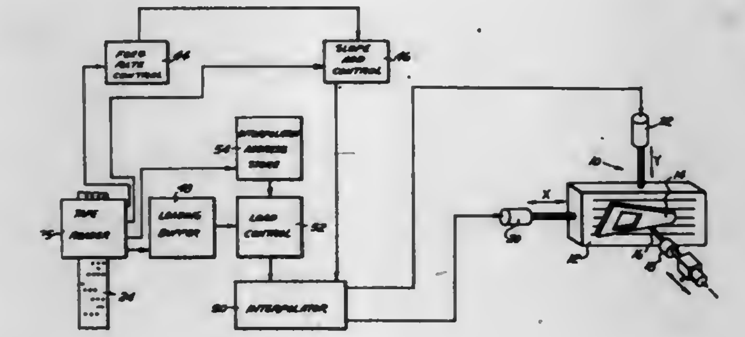


A digital tracer control responsive to inputs from a tracing head for controlling servomechanism inputs of a machine. From the tracing transducers, the system immediately converts the analogue tracing signal into a digital representation. Through the use of digital differential analyzers or modifications thereof, output pulse rates are obtained analogous to tracer error and suitable for use in machine servosystems. The system is capable of tracing a three-dimensional model in any plane within a coordinate system defined by the machine axes.

3,609,323
INTERPOLATING SERVOMECHANISM CONTROL SYSTEM WITH OPERATIONS CARRIED OUT IN BINARY CODED DECIMAL FORMAT DUE TO A "PLUS-SIX" CORRECTION FACTOR

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation

Filed May 23, 1969, Ser. No. 827,285
Int. Cl. G05b *19/18*; **G06f** *15/46*
U.S. Cl. 235—151.11 9 Claims



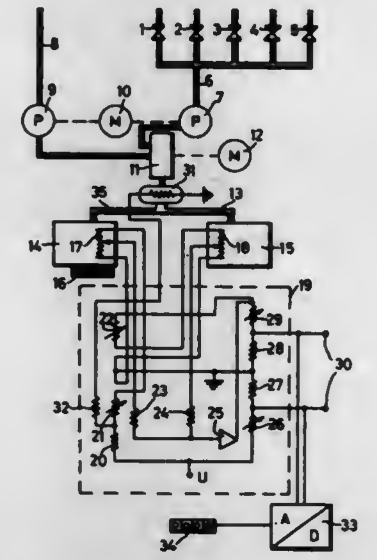
An electronic position control system for use for controlling continuous path machining operations wherein a cutting tool is moved relatively to a workpiece along a path which depends on the component motions of the servomechanisms moving the cutting tool and the workpiece relatively to each other. The individual servomechanisms displacing the cutting tool and the workpiece relatively to each other along each axis are adapted to be actuated by a controller according to the number of pulses received at their input, and the pulses are derived from input numerical data in binary coded decimal form indicating the increments of motion to the final relative position of the cutting tool, such numerical data being continually added one digit at a time to a remainder and each pulse supplied to each servomechanism being the result from the overflow of such addition. Each time a carry occurs, or a sum greater than nine is obtained for a digit, the number six is automatically added to the addition remainder to provide an arithmetically correct sum in binary coded decimal form which is stored in the remainder register for further addition with the integrand until an appropriate number of pulses in each train is supplied at the output of the controller.

3,609,324
METHOD AND APPARATUS FOR MEASURING THE PURITY RATIO OF INTERMEDIATE PRODUCTS IN SUGAR MANUFACTURE

Meinrad Machler, Ellwangen, and Horst Loffler, Oberkochen, both of Germany, assignors to Carl Zeiss-Stiftung, Heidenheim on Brenz, Wurrtemberg, Germany

Filed Feb. 5, 1969, Ser. No. 796,782
Claims priority, application Germany, Feb. 10, 1968, P 16 98 292.6
Int. Cl. G01n *21/00, 21/40*
U.S. Cl. 235—151.35 17 Claims

The proportion of sucrose in the whole of the dissolved substances of intermediate products in sugar manufacture is measured by: measuring the refractive index n of a sample of an intermediate product, measuring the polarimetric rotation α of the same sample and then combining these measurements in the relationship $\alpha/n-n_o$ to produce a "purity quotient" (n_o being the refractive index of pure water.) The numerical value of this quotient varies with the temperature of the sample. Therefore the temperature of the sample is maintained constant within a certain range and an additional temperature correction is effected. In a preferred form of apparatus for performing the measuring method, the resultant of the calculation of the quotient is reproduced in both

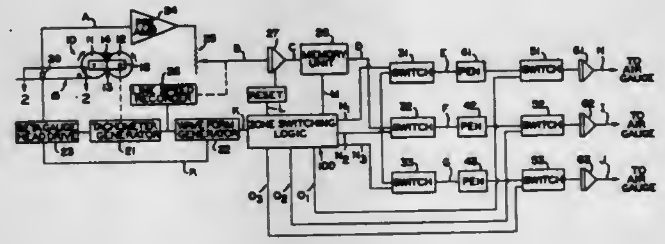


analog and digital form respectively for controlling automatic process control computers and for actuating a device for indicating the measurements in visible form.

3,609,325
SYNCHRONIZED AVERAGING SYSTEM FOR BETA GAUGE CONTROL OF CALENDER SYSTEMS

John R. McCarty, Akron, and John A. Guldan, Hudson, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 29, 1969, Ser. No. 829,043
Int. Cl. G05d *5/02*; **G06g** *7/18*
U.S. Cl. 235—151.35 16 Claims



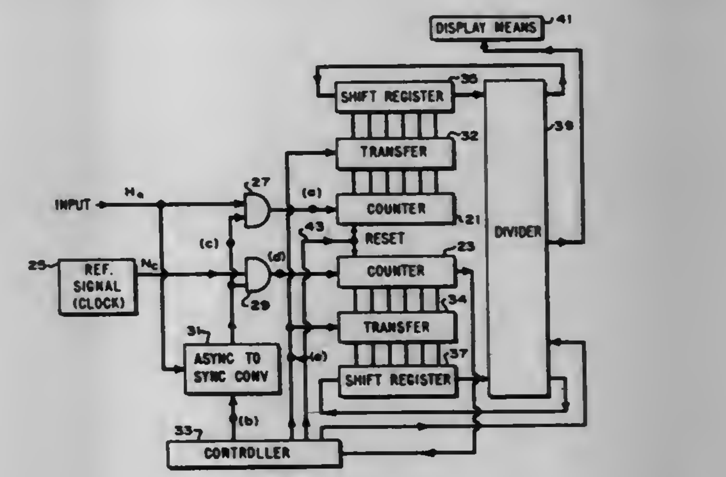
A system for electronically controlling a physical characteristic of the output sheet material of a calender. A beta gauge is moved laterally across the width of the output sheet at a rate synchronous with the line speed of the calender, and performs average error computations in a plurality of zones of the sheet. The beta gauge error signal, indicating any deviation in the physical characteristic, may actuate a control system to compensate for the error and can induce movement of a recording pen for visual monitoring.

3,609,326
COUNTING APPARATUS AND METHOD USING SEPARATE COUNTERS FOR REFERENCE AND UNKNOWN SIGNAL

Alan S. Bagley, Los Altos Hills, and France Rode, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 22, 1969, Ser. No. 793,114
Int. Cl. G01r *23/10*
U.S. Cl. 235—152 3 Claims

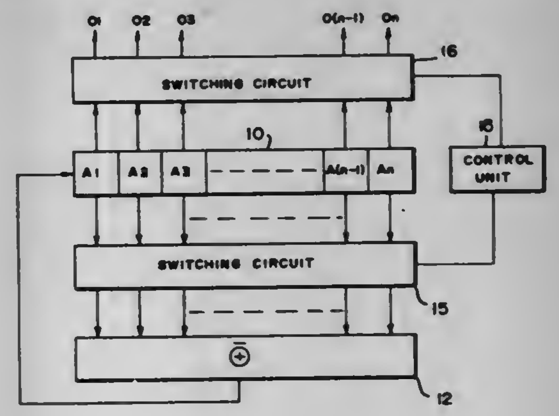
Improved apparatus and method for determining the rate of recurrence of input events involves counting recurring input events and recurring reference events for a period of time that is determined by the desired length of measurement period, and the timing of the input events. The desired output indication of recurrence rate of input events is provided by arithmetically dividing the arbitrary number of input events occurring within the measurement period by the arbitrary number of reference events occurring within the same measurement period.



3,609,327
FEEDBACK SHIFT REGISTER WITH STATES DECOMPOSED INTO CYCLES OF EQUAL LENGTH

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Marvin Perlman, Granada Hill, Calif.

Filed Oct. 22, 1969, Ser. No. 868,529
Int. Cl. H03k *1/00*; **G06f** *11/00*
U.S. Cl. 235—152 9 Claims



A feedback shift register (FSR) comprising a shift register of n stages, with the outputs of selected stages being mod-2 added in a feedback unit. The complement of the unit is fed back to the register's input stage. The number of outputs, which are fed back, is always odd, equaling a number which is one less than 2, raised to a number representing the number of 1's in the binary representation of n. The actual stages which are fed back are defined by the exponents of the terms X in the expansion of the term $(X+1)^n$. Such an FSR produces disjointed multistate cycles, each of a length 2^l, where

$$2^l - 1 < n+1 < 2^l.$$

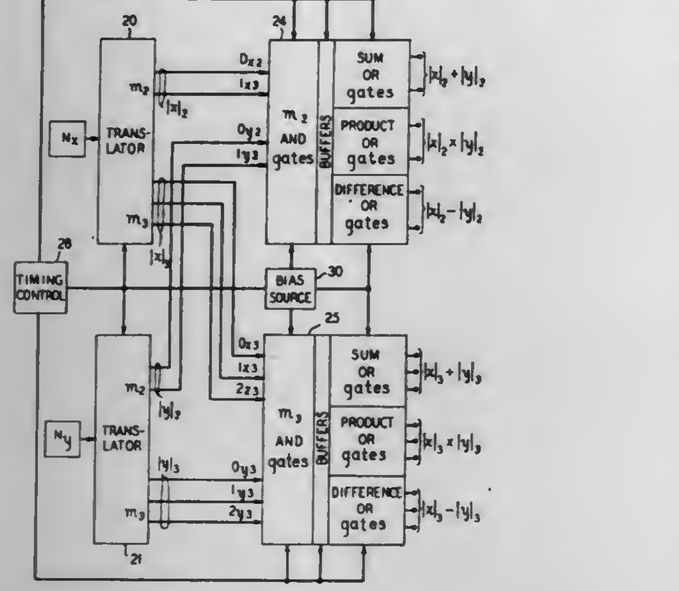
If n is other than a power of 2, complementary states appear in different cycles. However, if n is a power of 2, complementary states appear 180° apart in the same cycle.

3,609,328
MULTIAPERTURE FERRITE RESIDUE ARITHMETIC UNIT

Robert B. Kieburtz, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 19, 1968, Ser. No. 785,291
Int. Cl. G06f *7/48*; **G11c** *11/08, 5/08*
U.S. Cl. 235—156 8 Claims

A residue arithmetic unit is developed from multiaperature ferrite structure logic gates. Each gate is an assembly of windings on a separate aperture of a multiaperture ferrite structure. The gates are interconnected so that groups of information pulses representing two input residue numbers are applied to and are stepped through the gates in response to clock pulses, which also impart amplification to the information pulses. Output pulses represent the results of residue arithmetic operations performed on the input numbers.



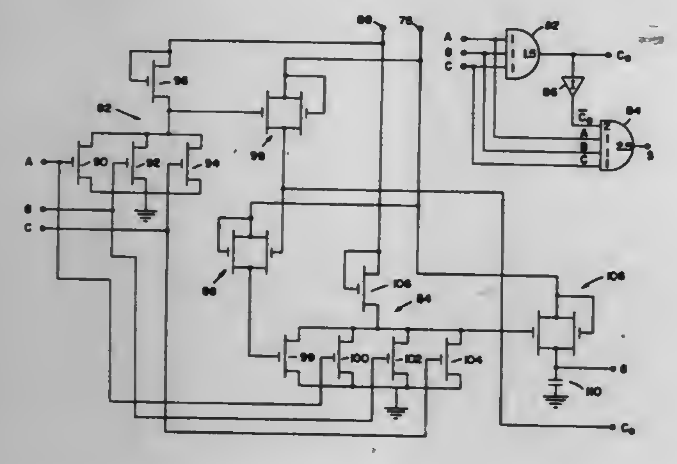
3,609,329
THRESHOLD LOGIC FOR INTEGRATED FULL ADDER AND THE LIKE

Harold M. Martin, South Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed May 5, 1969, Ser. No. 821,756

Int. Cl. G06f *7/50*; **H03k** *19/08*, *19/42*

U.S. Cl. 235—176 **16 Claims**



Threshold logic functions are carried out by the use of an insulated-gate field effect transistor (IGFET) connected as a sampler transistor in series with a not-clock input and a parallel combination of several data input IGFET's. The sampler transistor and the data input transistor combination form a voltage divider whose center tap is connected to the input of an IGFET inverter operated from a clock input. By using data input IGFET's with different "on" resistances, the data inputs can be selectively weighted, and a full adder circuit can be constructed with only 15 components, all of which are IGFET's, and all of which can be manufactured on a single chip.

3,609,330
SIMULATION DEVICE FOR CALCULATION OF WATER DISCHARGE AND LEVELS IN RIVER AND CANAL BEDS AT TRANSIENT FLOWS

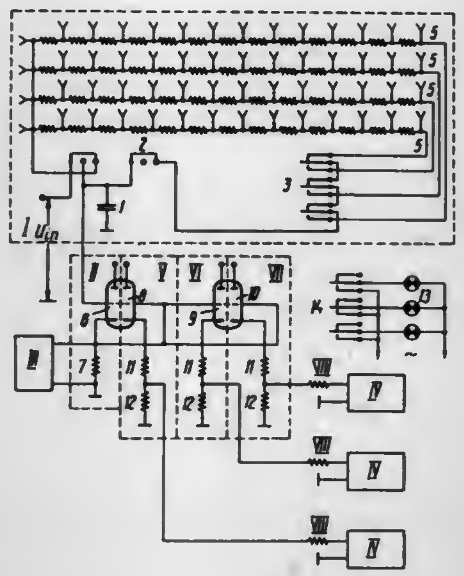
Anatoly Nikolaevich Volosevich, Moscow, U.S.S.R., assignor to Nauchno-Issledovatelsky Institut Gidrometerorologicheskogo Priborostroinia, ulitsa Razina, Moscow, U.S.S.R.

Filed June 17, 1968, Ser. No. 737,671

Int. Cl. G06g *7/57*

U.S. Cl. 235—184 **3 Claims**

A simulating device for calculating water discharge and levels in river and canal beds at transient flows, comprises at least one threshold-setting device and at least two RC networks. Each of the RC networks includes a capacitor and at least two resistors connected to the capacitor via contact groups of the relay of the threshold device. A basic decoupling module separates the RC networks by means of its input being connected to said capacitor of the first RC network and by its output being connected to the input of the other RC network. The time constants of the RC networks are changed at certain voltages by connecting another resistor of the same network to the capacitor through the contact groups of the threshold-setting device. An additional decoupling module is connected to the basic decoupling module and to the input of the threshold-setting device.



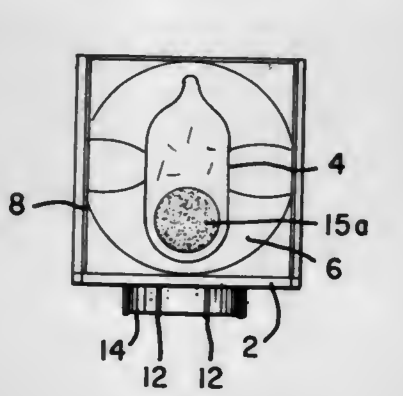
3,609,331
PHOTOFLASH LAMP

William C. Fink, Williamsport, and John W. Shaffer, Montoursville, both of Pa., assignors to Sylvania Electric Products Inc.

Filed June 26, 1968, Ser. No. 740,242

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **6 Claims**



A flashcube in which readily visible indicators are provided for identifying a flashed lamp. The indicator material is responsive to the heat generated by the flashlamp to thereby be deposited on the window of the flashcube and define a noticeable colored area thereon.

3,609,332
PHOTOFLASH LAMP ARRAY WITH REFLECTOR-LAMP MODULE

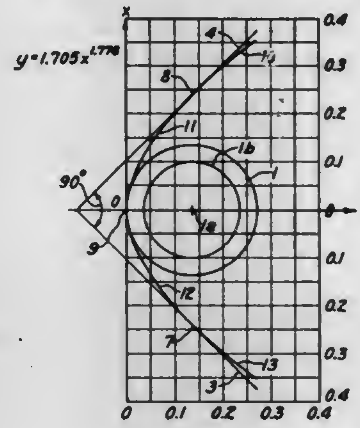
Donald R. Schindler, Burton, Ohio, assignor to General Electric Company

Filed Dec. 16, 1968, Ser. No. 784,066

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **7 Claims**

A photoflash lamp-reflector module for use in a photoflash array for providing optimum optics in a minimum of space where the light source is comparatively large relative to the reflector surface. The module consists of a reflector with a parabolic-type surface for essentially its entire effective reflecting area and a tubular photoflash lamp positioned in the innermost part of the reflector transversely of the axis thereof with the reflector essentially tangent to the lamp. The reflector has an angle relative to its optical axis in the direction of light projection of approximately 45° at a point on that portion of the reflector which is adjacent the centerline of the lamp and extends forwardly of the lamp axis.



3,609,333
FLASHBULB HOLDER FOR PHOTOGRAPHIC FLASHGUNS

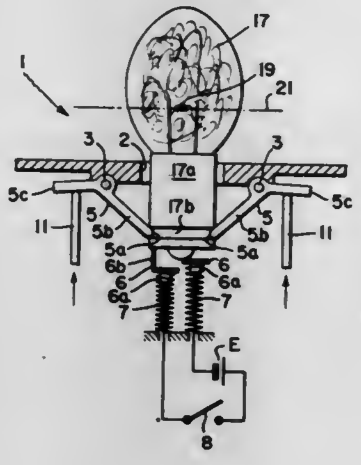
Masahiko Iwaki, Fujisawa-shi, and Hazime Kogawa, Tokyo, both of Japan, assignors to Honeywell Inc.

Filed Feb. 26, 1969, Ser. No. 802,545

Claims priority, application Japan, Mar. 11, 1968, 43/15756

Int. Cl. H01r *13/62*

U.S. Cl. 240—1.3 **3 Claims**



A flashbulb holder for a photographic flashgun is shown having a housing with an opening into which various-sized flashbulbs are inserted between a pair of pivoted holding members mounted on opposite sides of the opening. A pair of base contact members engage the flashbulbs, as they are inserted between the holding members, for urging the bases of the flashbulbs against the inner edges of the holding members. A potential source connects to the base members for selectively energizing the flashbulbs.

3,609,334
MOUNTING MEANS FOR VARIOUS FLASHBULBS AND FLASHCUBES WITHIN A PHOTOGRAPHIC FLASHGUN

Masahiko Iwaki, Fujiswa-shi, Japan, assignor to Honeywell Inc., Minneapolis, Minn.

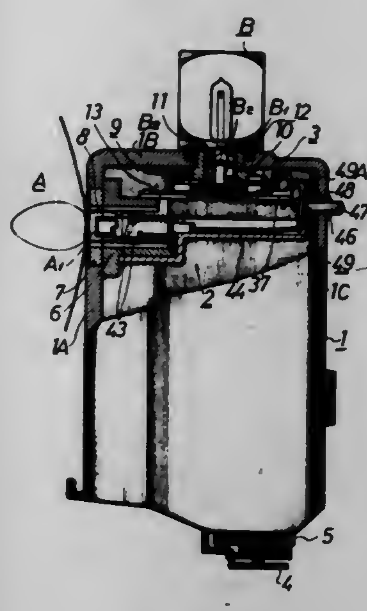
Filed Sept. 22, 1969, Ser. No. 859,893

Claims priority, application Japan, Sept. 21, 1968, 68354/68

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **4 Claims**

A flashgun for mounting various flashbulbs and flashcubes is shown having a housing with a first socket into which the flashcube is inserted. A resiliently mounted U-shaped locking member yields as the flashcube is inserted between the pawled arms thereof for locking the flashcube against the urging of an ejection spring within the socket. Depression of a pushbutton contacts the resiliently mounted locking member and frees the flashcube for ejecting it from the socket. A second socket is provided into which various-sized flashbulbs are inserted between a pair of pivoted holding members mounted on opposite sides of the socket. A pair of base contact members engage the flashbulbs, for urging the base of the flashbulbs against the inner edges of the holding members. Depression of the pushbutton contacts the pivoted holding members and frees the flashbulb for socket ejection.



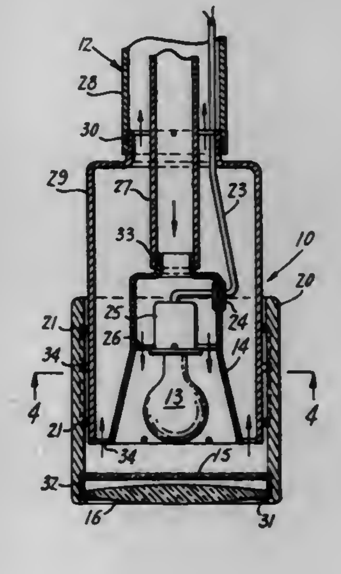
3,609,335
HIGH INTENSITY SURGICAL LIGHT

Paul M. Kelly, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Aug. 8, 1969, Ser. No. 848,435

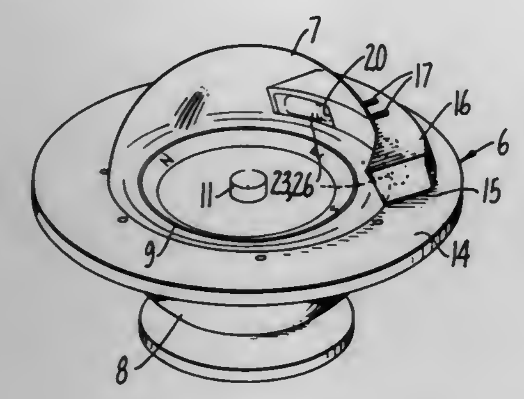
Int. Cl. A61g *13/00*

U.S. Cl. 240—1.4 **11 Claims**



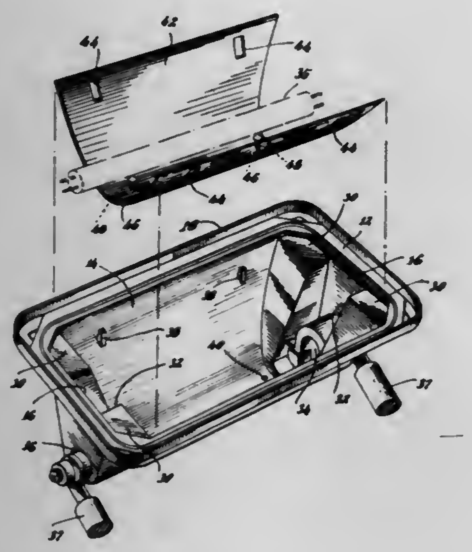
A surgical light capable of being positioned in close proximity to an operating site. The light is made up of a high intensity bulb, a lens, a filter, and a lens holder, in combination with a cooling means for the high intensity light. A part of the light may be removed from sterilizing.

3,609,336
COMPASS LIGHT
Albert Coppola, Scarboro, Maine, assignor to The Eastern Company
Filed Apr. 22, 1970, Ser. No. 30,904
Int. Cl. G01d *11/28*
U.S. Cl. 240—2.1 **2 Claims**



Means are provided in cooperative association with a transparent compass dome for illuminating the compass card mounted for rotation in a compass bowl.

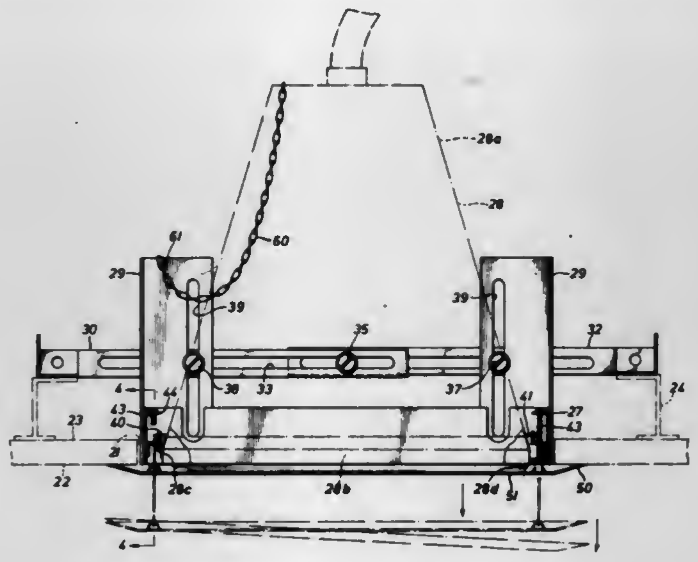
3,609,337
FLOODLIGHT REFLECTOR-RETAINING MEANS
Tarek Adra, La Canada, and Robert P. Draper, Burbank, both of Calif., assignors to Harvey Hubbell, Incorporated, Bridgeport, Conn.
Filed Sept. 20, 1968, Ser. No. 761,113
Int. Cl. F21p *5/00*
U.S. Cl. 240—3 **9 Claims**



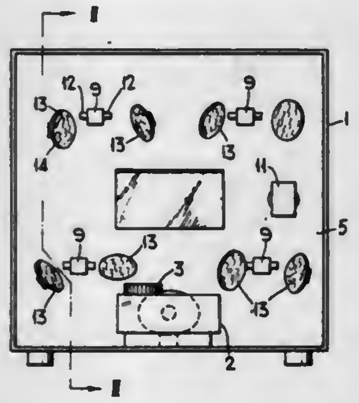
A cast metal floodlight body is provided with an arcuate cavity and integral internal reflector-mounting hooks. The reflector trough positioned within the cavity is a resilient sheet having slots adjacent parallel edges to receive the cast hooks. Securing screws retain the reflector trough in position and cooperate with the mounting hooks to shape it.

3,609,338
LIGHT FIXTURE
Robert M. Kripp, Houston, Tex., assignor to Esquire, Inc., New York, N.Y.
Filed Sept. 18, 1968, Ser. No. 760,566
Int. Cl. F21s
U.S. Cl. 240—9 **27 Claims**

A light fixture assembly including an open-ended frame adapted to be disposed within a recess in a ceiling and a light fixture whose lower light-transmitting end is adapted to be received in the frame. A pair of extendible and retractable bars are mounted on the frame and extend generally horizontally along opposite sides thereof for supporting the frame from the ceiling when it is so disposed therein. A means is provided for adjusting the elevation of each bar relative to its adjacent side of the frame, and thus the elevation of the lower end of the frame relative to the lower end of the ceiling recess. The light fixture is supported from the frame, when it is so received therein, by means of rails extending along and connected to opposite sides of the frame by leveling screws which provide a fine adjustment for disposing the lower end of the fixture substantially flush with the ceiling. The separation between the lower ends of the ceiling recess and the fixture is normally covered by a trim plate which is suspended from the frame in such a manner that it may be lowered and then moved to a position permitting access to a light-transmitting window across the lower end of the housing, whereby the window may be moved to a position permitting relamping and the like within the fixture housing. The upper end of the fixture housing is narrower in its lower end so that it may be lifted above the supporting rails on the frame and tilted to a position for passing through the frame.



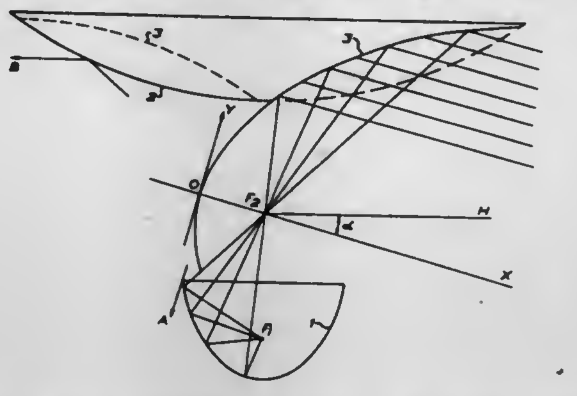
3,609,339
DISPLAY SYSTEM
Victor S. Smith, Channing House, Wargrave, Berkshire, England
Filed Apr. 7, 1969, Ser. No. 813,953
Claims priority, application Great Britain, Apr. 10, 1968, 17410/68
Int. Cl. F21p *5/04*
U.S. Cl. 240—3.1 **3 Claims**



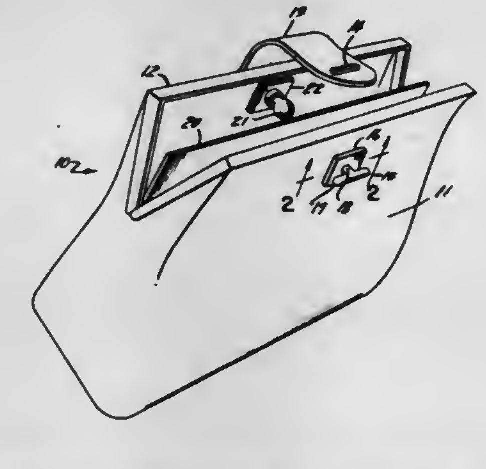
A stationary light source projects light onto a translucent screen via two laterally spaced rotating reflectors, each having a reflective surface of crinkled metallized plastic.

3,609,340
IMPROVEMENTS IN LIGHTING UNITS
Lars Bertil Habro, Lidingo, Sweden, assignor to AB Vagbelysning, Stockholm, Sweden
Filed Apr. 17, 1969, Ser. No. 816,963
Claims priority, application Sweden, Apr. 23, 1968, 5396/68
Int. Cl. F21m *3/04*
U.S. Cl. 240—41.1 **3 Claims**

A lighting unit consists of an elliptic rotational reflector having the light source positioned in one focal point, and a convex reflector facing the elliptic rotational reflector and serving for polydirectionally radiating the light rays which are emitted by the light source and pass through the other focal point of the elliptic rotational reflector. The convex reflector has at least one cup-shaped inwardly bulging recess which reflects the light rays impinging thereon at least essentially parallel.

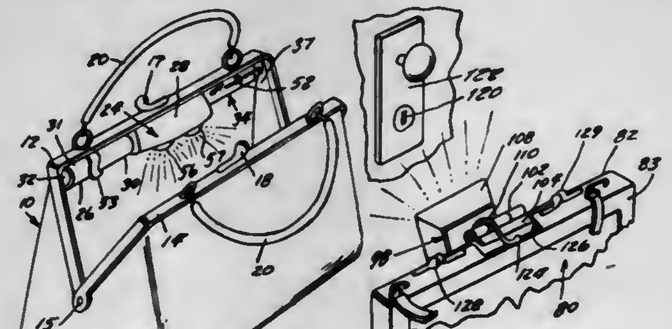


3,609,341
ILLUMINATED HANDBAG
Stanley C. Castaldo, 704 North Lake Pleasant Road, Apopka, Fla.
Filed Jan. 14, 1970, Ser. No. 2,793
Int. Cl. A45c *15/06*
U.S. Cl. 240—6.45 P **7 Claims**



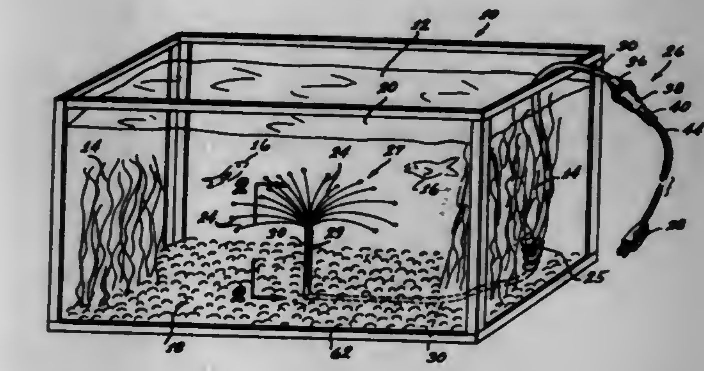
A ladies' handbag apparatus having inside compartments which may be illuminated by an electrical light circuit having a plurality of light bulbs which may be selectively or simultaneously switched on for lighting individual compartments of the handbag. The switch is actuated by a rotatable clasp for latching the handbag closed so that the lights in the handbag will be turned off when the bag is in its normally closed position and turned on when the clasp is rotated to its normally open position for the handbag.

3,609,342
LIGHT FOR LADIES HANDBAG
Maria Wisniewski, 819 68th St., Brooklyn, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,753
Int. Cl. A45c *15/06*
U.S. Cl. 240—6.45 P **3 Claims**



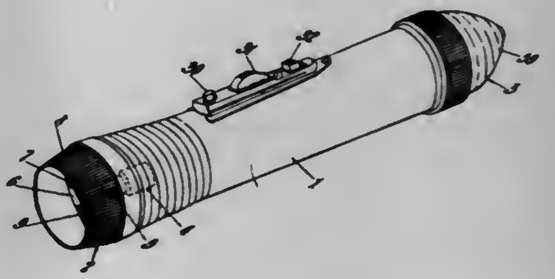
A lighting unit for placement in a ladies handbag embodying a support structure that carries a battery, a light bulb housing and an off-on switch. The entire unit is self-contained and is secured within the handbag adjacent one of the upper open ends thereof so as to be readily accessible for replacement of the battery and/or the light bulb and which will in no way interfere with the normal contents contained within the handbag. With the switch in "on" position the light from the light bulb housing will be directed into the interior of the handbag to illuminate the same. The light bulb housing may either be integral with the support structure or made as a separate entity hinged thereto and formed to be swung from it inside position to an outside position over and across the adjacent top open end of the handbag should it be desired to direct the light on an exterior object such as the key-receiving opening of a door lock. The conductors connecting the battery, light bulb and switch are all contained within the support structure.

3,609,343
DECORATIVE LIGHT DISPLAY
Mark K. Howlett, Santa Ana, Calif., assignor to Poly-Optics, Inc.
Filed Feb. 13, 1969, Ser. No. 805,971
Int. Cl. F21s *5/00;* **A47q** *33/06*
U.S. Cl. 240—10 **10 Claims**



A light display for use within a fishtank or the like for decorative or lighting purposes, the tank having a viewing area sufficiently translucent to allow a view therethrough of its contents, wherein there are provided a plurality of optical fibers with their light-emitting end faces toward the viewing area. A light source is positioned adjacent the opposite ends of the fibers and an opaque sheath is provided extending from the light source to the directing means.

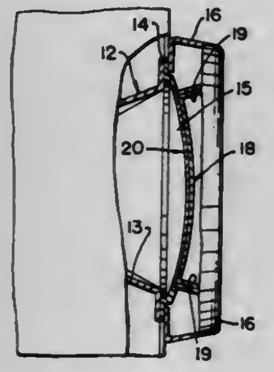
3,609,344
FLASHLIGHT WITH INDEPENDENT BLINKER
Pak Hung So, Hong Kong, assignor to Honour Metal Manufacturing Co. Limited, Shamshuipo, Kowloon, Hong Kong
Filed Mar. 17, 1969, Ser. No. 807,741
Claims priority, application Great Britain, Mar. 18, 1968, 13058/68
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.66 **1 Claim**



An electric flashlight having independently operable continuous and blinker bulbs mounted at opposite ends of a tubular barrel. A contact assembly is removably located at one end of the barrel and has two coaxially arranged contact elements. The first contact element rests on the edge of the barrel and a blinker bulb electrically connects the first contact element to the second contact element. Two separate switches are mounted for controlling the bulbs.

3,609,345
DISPOSABLE FOG LENS FOR LAMPS

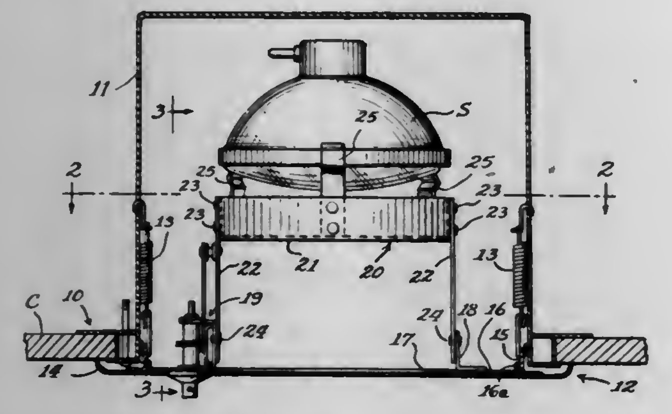
Alvin H. Perkiss, 21705 Snow, Dearborn, Mich.
Filed Oct. 14, 1968, Ser. No. 767,372
Int. Cl. F21v *17/04, 9/00, 13/04*
U.S. Cl. 240—46.19 **1 Claim**



A disposable fog lens for automobile head lamps is constituted by a circular disc of flexible transparent or translucent sheet material, tinted in amber and backed by a tacky-coated, transparent flexible mounting sheet, by which the tinted disc area is removably held peripherally over a head lamp, as at the surrounding bezel of the latter. A protective masking sheet of flexible foil covers the entire area of the unit on the side of the disc opposite the mounting sheet, being stripped from them when the device is removably applied to the lamp.

3,609,346
RECESSED LIGHTING FIXTURE WITH TILTING SPOTLIGHT

Alvin R. Lund, Carpentersville, and Jack Kaufman, Chicago, both of Ill., assignors to Markstone Manufacturing Company
Filed Apr. 29, 1969, Ser. No. 820,100
Int. Cl. F21s *1/06*
U.S. Cl. 240—78 HA **11 Claims**

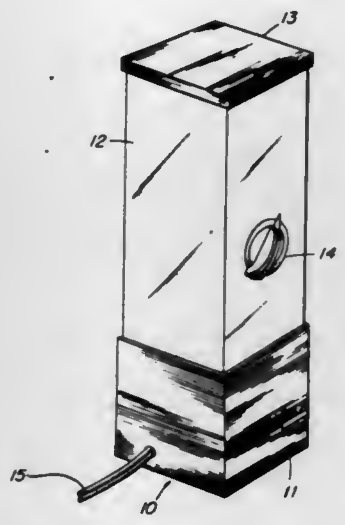


A recessed lighting fixture of the type in which a lamp support frame is mounted in a housing on a horizontal pivot axis for directing light from a lamp in the frame through an opening in the bottom of the housing at different angles, with adjusting means for rocking the frame about its pivot axis in the form of an adjusting member which is mounted in the bottom part of the housing for linear movement, actuating means operatively connected to the adjusting member for imparting linear movement to the latter by manual manipulation from below the housing, and link means connecting the adjusting member to the lamp supporting frame so that movement of the adjusting member rocks the frame about its pivot axis.

3,609,347
NYCTOPHOBIA LAMP

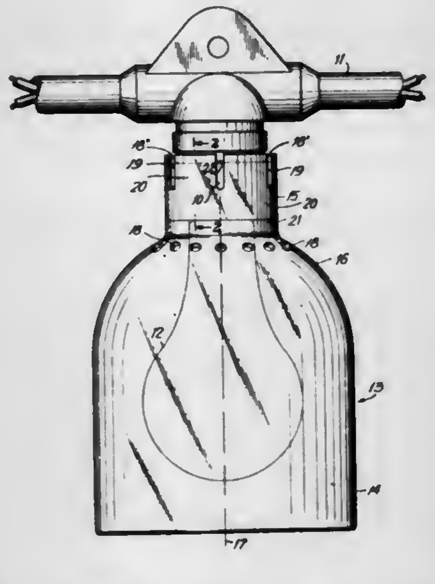
David A. Kopenhaver, P.O. Box 1, Deal, N.J.
Filed Aug. 1, 1968, Ser. No. 749,440
Int. Cl. F21s *1/12*
U.S. Cl. 240—81 R **6 Claims**

This application discloses a lamp mounted within a translucent shade and connected to a mechanically operated rheostat which automatically to a predetermined minimum wattage, a timer is directly connected to the rheostat and manually settable to a desired position. As the timer runs down, the rheostat is rotated, thereby diminishing the wattage supplied to the bulb.



3,609,348
GUARD FOR ELECTRIC LIGHT BULBS

Anthony D. Marasco, Norwalk, Conn., and Paul C. Savoca, Massepequa, N.Y., assignors to J. B. Nottingham & Co., Inc., New York, N.Y.
Filed June 13, 1968, Ser. No. 736,720
Int. Cl. F21v *15/00*
U.S. Cl. 240—102 R **1 Claim**

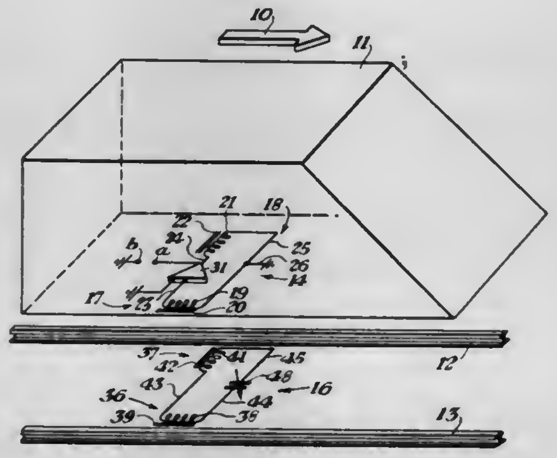


A lamp guard made of transparent or translucent rigid resin, and is continuous in form, is made capable of being snapped over a socket to enable an inwardly extending bead to pass behind an edge of the socket, by being open slotted at a number of points in its circumference at its reduced socket-engaging end, the guard being approximately bell shaped with the socket-engaging portion connected by a flaring section with a cylindrical portion of larger diameter, the flaring portion being provided with ventilating slots whose upper edges overhang their lower edges to prevent entry of rain water.

3,609,349
PRECISION PRESENCE DETECTOR

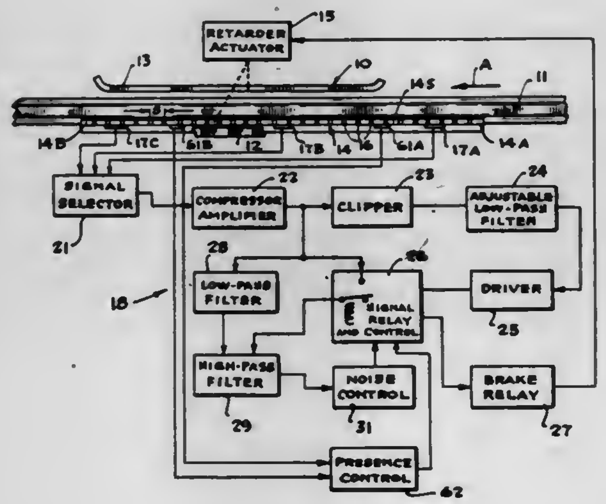
Emil F. Brinker, Churchill Borough, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Dec. 23, 1969, Ser. No. 887,551
Int. Cl. B61l *25/02*
U.S. Cl. 246—124 **15 Claims**

This disclosure relates to a precision presence detector having an oscillating amplifying means which is normally in a nonoscillating condition. The oscillating means includes a first and a second inductive sensing element which are positioned in a predetermined relationship with each other so that essentially zero magnetic coupling normally exists between the two sensing elements. The presence detector also employs an inert type of tuning means which is normally tuned to a given frequency. The tuning means includes a first and a second tuned inductive element which are spaced in the same predetermined relationship as the inductive sensing elements. Thus, the oscillating amplifying means will begin oscillating whenever the first and second tuned inductive elements of the tuning means are substantially directly aligned with and in proximity to the first and second inductive sensing elements.



3,609,350
RAILWAY RETARDER CONTROL SYSTEM

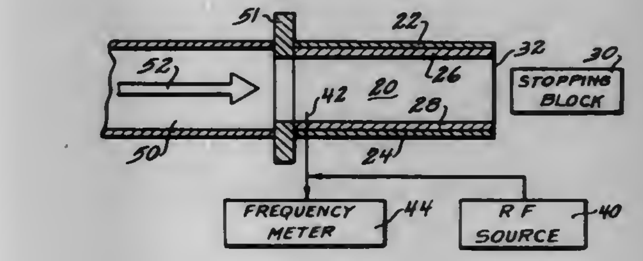
Rosser L. Wilson, Mahwah, N.J.; Robert W. Convey, Oakland, N.J., and Earl E. Frank, Tallman, N.Y., assignors to Abex Corporation, New York, N.Y.
Filed Aug. 26, 1969, Ser. No. 853,129
Int. Cl. B61l *1/04*
U.S. Cl. 246—182 A **9 Claims**



A control system for a railway car retarder comprising an elongated notched sensing rail engaged by an overhanging part of a car wheel (the wheel flange or the outer edge of the wheel tread), with a control that determines car speed in accordance with vibration of the sensing rail. Resilient mounting is used for the sensing rail, to minimize wear and provide vibration isolation, with dampening to avoid mechanical resonance at frequencies in the operating speed range. A separate car presence detector, actuated by the sensing rail, is included.

3,609,351
TRAVELING WAVE PARTICLE SEPARATOR INCLUDING A RECTANGULAR WAVEGUIDE LINED WITH A DIELECTRIC MATERIAL

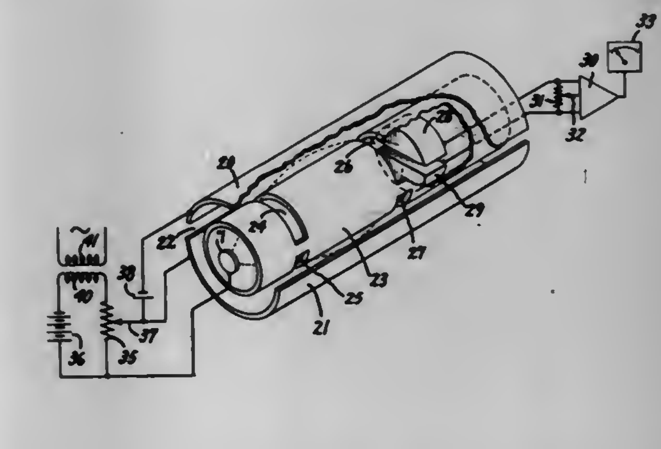
John W. Dawson, Clarendon Hills, and Robert L. Kustom, Oak Lawn, both of Ill.
Filed July 2, 1969, Ser. No. 838,433
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 DS **5 Claims**



A tunable RF power source is connected to a particle deflecting structure comprising a waveguide mounted to pass a particle beam therethrough and lined with a dielectric material for reducing the phase velocity of electromagnetic waves within the waveguide. The frequency of the RF source is tuned so that the phase velocity of the electromagnetic waves propagating in the waveguide equals the velocity of desired particles in the particle beam. During passage of the particle beam through the waveguide the electromagnetic waves continuously interact with the beam, but only the desired particles receive a net deflection relative to the other particles in the beam.

3,609,352
SECONDARY ELECTRON ENERGY ANALYZING APPARATUS

Lawrence A. Harris, Schenectady, N.Y., assignor to General Electric Company
Filed May 18, 1970, Ser. No. 37,967
Int. Cl. H01j *37/00;* **G01n** *23/00*
U.S. Cl. 250—49.5 AE **8 Claims**



A secondary electron energy analyzer employs a pair of spaced coaxial cylinders with entrance and exit slots in the inner cylinder, the distance between the slots and the potential between the cylinders being such that secondary electrons emitted from a specimen located at a point on the axis of the cylinders enter the space between the cylinders at the entrance slot and are focused at the exit slot. An electron multiplier is located within the inner cylinder to receive the focused electrons. The outer cylinder may be split into two portions, each with its individual slots and operated at slightly different potentials, so that electrons of different energies are focused at the two exit slots, measurement of the difference in the outputs from the two portions yielding the derivative of the energy distribution curve of secondary electrons.

3,609,353

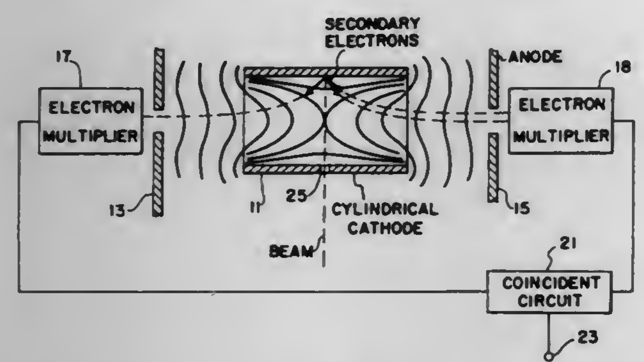
COINCIDENCE APPARATUS FOR DETECTING PARTICLES

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration in respect to an invention of, and Frederick A. White, Schenectady, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,364

Int. Cl. G01t *1/16*

U.S. Cl. 250—49.5 **9 Claims**



This disclosure describes an apparatus for detecting particles. Particles, depending on their nature, pass through either an aperture in or the walls of a cylindrical cathode. The particles create secondary emissions when they impinge on the opposite side of the cathode from their point of entry. The secondary emissions pass out the ends of the cylindrical cathode, through apertures in anodes, and impinge on the electrodes or dynodes of electron multiplier tubes located adjacent to the apertures in the anodes. The output of the electron multiplier tubes are connected to a coincidence circuit. Due to the symmetry of the overall system, an equal number of secondary emissions are focused by an electrostatic field and impinge on each electron multiplier tube; hence, emissions lower than the noise level of a single electron multiplier tube can be detected.

3,609,354

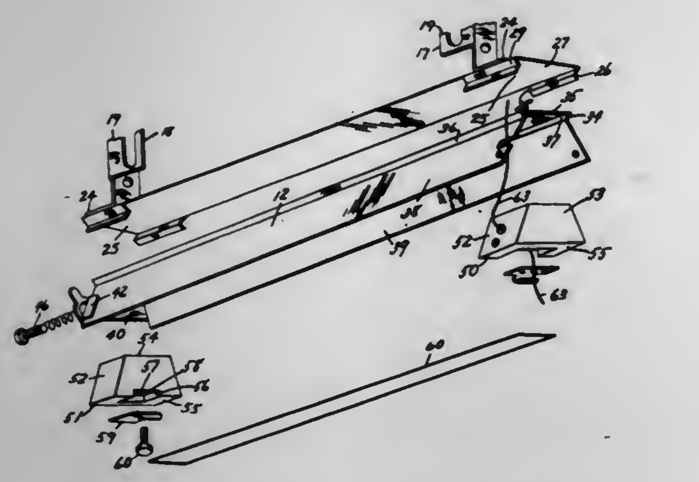
CORONA ASSEMBLY FOR ELECTROSTATIC COPY MACHINES

David L. Herman, 63 Catherine Road, Scarsdale, N.Y.

Filed June 18, 1969, Ser. No. 834,336

Int. Cl. G03g *13/00*

U.S. Cl. 250—49.52 C **1 Claim**



A corona assembly for use with electrostatic copy machines, including a fixed bracket element of generally trapezoidal shape, a shield element having a first portion of corresponding configuration slideably engageable therewith, a corona wire of generally rectilinear configuration, a pair of planer diverging walls surrounding said corona wire, a pair of end blocks supported by said diverging walls at the end portions thereof, and supporting said wire at each of two terminals thereof, said diverging walls allowing ionized air disposed therebetween to readily escape to reduce the possibility of arcing.

3,609,355

X-RAY MAMMOGRAPH IN WHICH THE X-RAY SOURCE AND FILM CASSETTE ARE ROTATABLE ABOUT THE SUBJECT BEING PHOTOGRAPH

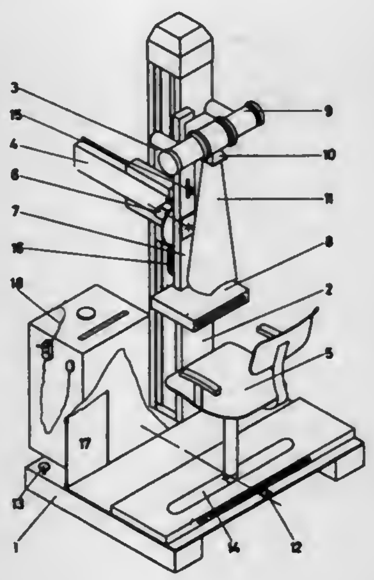
Kurt Schwarzer, Spardorf Uber Erlangen, Germany, assignor to Schick X-Ray Co., Inc., Wilmette, Ill.

Filed May 12, 1969, Ser. No. 823,845

Claims priority, application Germany, May 31, 1968, H 62 892

Int. Cl. G03b *41/16*

U.S. Cl. 250—50 **6 Claims**



The X-ray apparatus is especially well adapted for taking mammograms; that is, X-ray pictures of the female breast. A single upright supporting column and a patient chair are mounted on a platform. The column supports a counterbalanced vertically movable member which in turn supports a horizontally movable arm. A head is adjustably rotatable about the horizontal axis of the arm. An X-ray source and a cassette carrier are mounted on opposite portions of the head. The arm is movable horizontally toward and away from the front of the chair, which is movable horizontally along the platform at right angles to the movement of the arm. The X-ray source is preferably movable along the head, toward and away from the cassette carrier for making mammograms in which the breast is compressed. A control console is preferably mounted on the platform and is screened from the X-ray source by a protective wall.

3,609,356

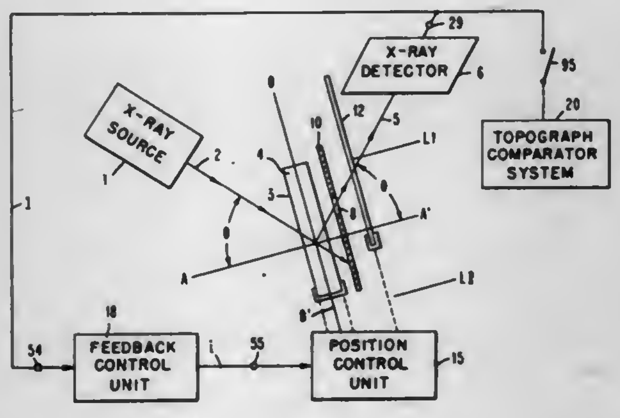
FEEDBACK CONTROLLED SCANNING MICROSCOPY APPARATUS FOR X-RAY DIFFRACTION TOPOGRAPHY

Guenther H. Schwuttke, Poughkeepsie, and Leo J. Van Meliaert, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1968, Ser. No. 784,052

Int. Cl. G01n *23/20*

U.S. Cl. 250—51.5 **14 Claims**



Disclosed is apparatus for forming topographs of large crystalline areas using X-ray diffraction microscopy techniques. The apparatus includes an X-ray source which directs an X-ray beam at a crystal which is mounted on a position control unit. The position control unit includes a scanning goniometer for translating the crystal and a low friction device for rotating the crystal both with respect to the incident X-ray beam. A beam detector is positioned to detect a diffracted beam as it leaves the crystal. The X-ray detector is connected to the position control unit through a feedback control unit. The feedback control unit operates by introducing a small input perturbation signal into the position control unit thereby causing the crystal to rotate back and forth and causing the diffracted X-ray beam to have an X-ray component which results from the input perturbation signal. The feedback control unit operates to monitor the intensity of the diffracted X-ray beam and the perturbation component thereof so as to adjust automatically the angular position of the position control unit toward an angle (the Bragg angle) which causes the X-ray detector to detect a maximum intensity.

3,609,357

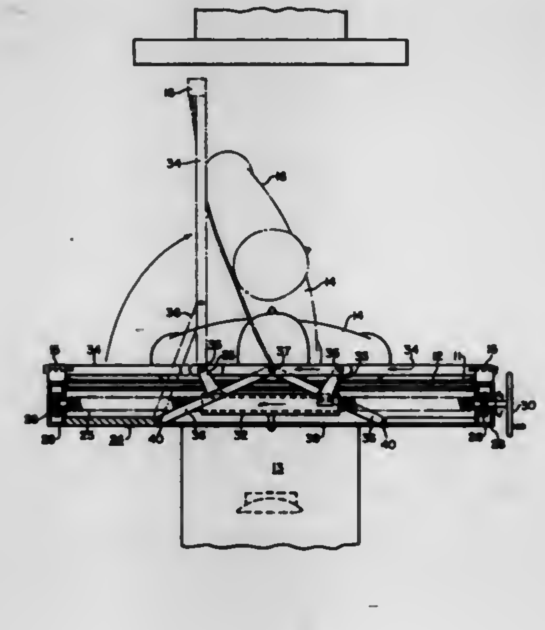
PATIENT-TILTING DEVICE FOR AN X-RAY TABLE

William E. M. Jones, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1969, Ser. No. 820,089

Int. Cl. G01n *23/00*

U.S. Cl. 250—55 **7 Claims**



Described is an improved device for use atop such as an X-ray examination table to tilt the supine patient about an axis extending lengthwise of the table top. A thin, flexible, semistiff, X-ray-transparent, normally flat, sheetlike member accepts the supine patient thereon and overlies the table top for support. Elongated rigid lift rods attached to opposite side edges of the sheetlike member provide for vertical actuation thereof. Actuating mechanisms at opposite ends of the rods provides for selective degrees of raising of one lift rod while translating the other rod laterally inward along the table top. The sheetlike member and side rods are removable as a unit to act as a patient carrier if desired.

3,609,358

HAND HELD X-RAY GUIDE

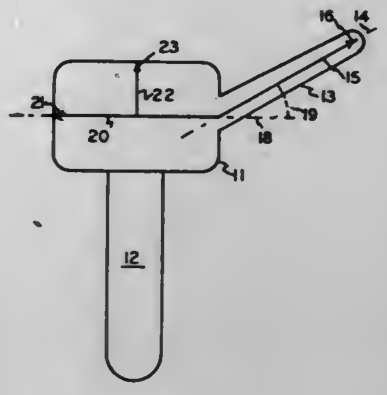
Benedict J. Salesi, 710 Radnor Ave., Pine Beach, N.J.

Filed Apr. 9, 1970, Ser. No. 27,000

Int. Cl. G01n *21/00*

U.S. Cl. 250—64 **5 Claims**

A hand held X-ray guide is provided for the proper exposure and alignment of X-ray photography of dental patients that includes a member having a handle and an extension for an alignment for the film with respect to the patients ear and teeth.



3,609,359

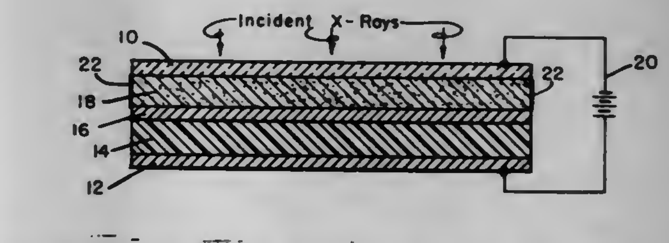
X-RAY IMAGE INTENSIFIER WITH ELECTRON MICHROCHANNELS AND ELECTRON MULTIPLYING MEANS

Eugene Wainer, and Richard A. Fotland, both of 2905 East 79th St., Cleveland, Ohio

Filed Jan. 8, 1969, Ser. No. 789,866

Int. Cl. G03b *41/16*

U.S. Cl. 250—65 R **38 Claims**



An apparatus for the amplification of X-ray images which comprises a layered structure which can be adapted to fit in the usual cassette and having an X-ray-sensitive film composition in close proximity to a multiplying layer, which achieves its multiplication through the formation and acceleration of electrons and/or ions or charged particles as a consequence of direct or filtered impact of X-rays on such layered structure which includes the multiplying layer.

3,609,360

NEGATIVE PROJECTION TRANSPARENCIES AND METHOD

Joseph A. Wiese, Jr., 3 M. Center, St. Paul, Minn.

Filed Sept. 15, 1969, Ser. No. 858,172

Int. Cl. G01n *21/34*

U.S. Cl. 250—65 T **7 Claims**

Clear-colored film products, which are decolorized at image areas by thermographic heating to form negative projection transparencies of positive originals, contain a colored reaction product of a color precursor and a volatilizable acid. The colored compound is decomposed and the liberated acid is volatilized and removed at the heated image areas, leaving a clear colorless transparent image.

3,609,361

METHOD AND APPARATUS FOR EXTERNAL STANDARDIZATION OF LIQUID SCINTILLATION SAMPLES

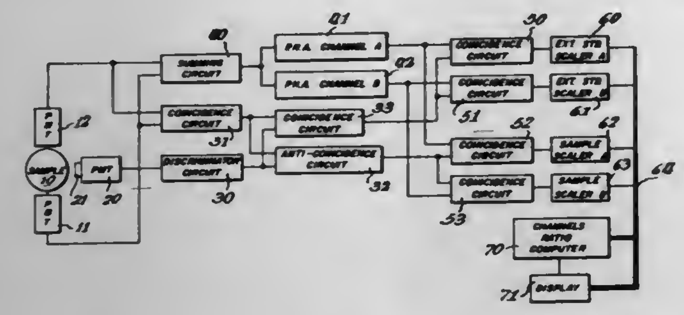
Phillip Shevick, Evanston, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Sept. 20, 1968, Ser. No. 761,129

Int. Cl. G01t *1/20*

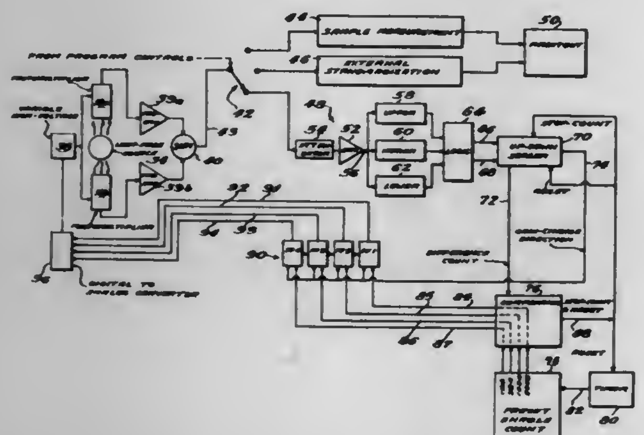
U.S. Cl. 250—71.5 **14 Claims**

A radioactive source material of the type producing substantially coincident penetrating and nonpenetrating radiations is dispersed throughout a scintillating medium positioned external and adjacent to a liquid scintillation sample. A substantial number of the penetrating radiations produce scintillations in the sample and substantially all of the nonpenetrating radiations produce tag scintillations in the external medium. Separate detectors for sample and tag scintillations produce either coincident or anticoincident output pulses depending upon whether the detected event is a standardizing or a sample event, and logic circuitry is provided to count, simultaneously or in sequence, sample pulses and standardizing pulses.



3,609,362
ERROR CORRECTION IN RADIOACTIVE SAMPLE MEASUREMENTS

Barton H. Laney, Deerfield, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.
Filed Feb. 8, 1968, Ser. No. 703,938
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 **17 Claims**



A liquid scintillation counting system with provision for measuring the efficiency correction of each primary sample measurement without intervening change of transducer gain is also provided with frequent standardization of transducer gain to eliminate efficiency change due to gain change from both the primary measurement and the efficiency correction measurement. Gain measurement and correction are made by circuits comparing the cumulative differential count on opposite sides of a standard alpha-particle spectrum peak with limit values numerically increased in successively longer portions of the counting interval. Gain correction is made in accordance with statistically probable gain error, and the counting interval is reinitiated. Particular circuits are described.

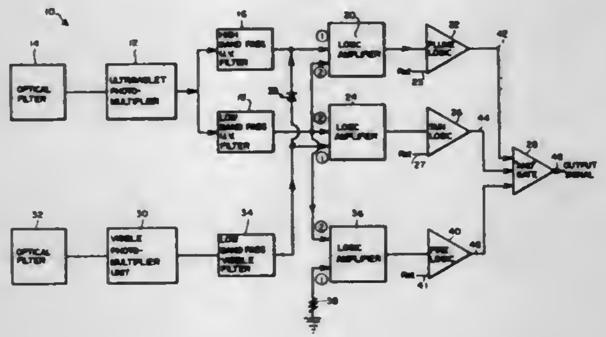
3,609,363
METHOD OF PROSPECTING FOR MINERAL DEPOSITS HAVING RADIOACTIVE GASEOUS DECAY PRODUCTS

George H. Milly, Rockville, Md., assignor to Geomet Mining and Exploration Company, Rockville, Md.
Filed Mar. 4, 1969, Ser. No. 804,219
Int. Cl. G01t *1/16*
U.S. Cl. 250—83 **4 Claims**

Prospecting, particularly prospecting for uranium, thorium and the like radioactive ore deposits having a gaseous decay product which diffuses through the earth's structure and becomes windborne.

3,609,364
HYDROGEN FIRE DETECTION SYSTEM WITH LOGIC CIRCUIT TO ANALYZE THE SPECTRUM OF TEMPORAL VARIATIONS OF THE OPTICAL SPECTRUM

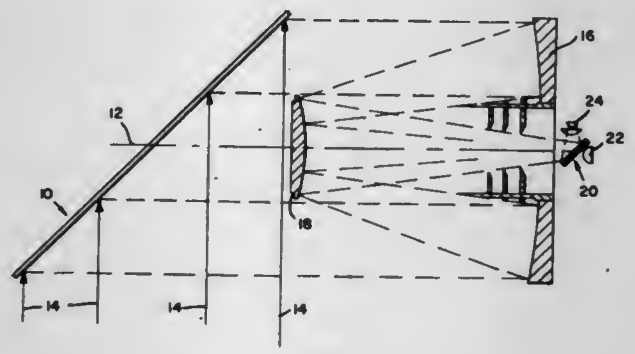
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert L. Proffit, Chatsworth, Calif.
Filed Feb. 2, 1970, Ser. No. 7,868
Int. Cl. G08b *17/12;* **G01t** *1/16;* **H01j** *39/12*
U.S. Cl. 250—83.3 UV **5 Claims**



A hydrogen fire detector for use on a high altitude rocket. A hydrogen fire is detected by the ultraviolet radiation of the hot oxygen-hydrogen radical produced by hydrogen combustion, while the device selectively filters out ultraviolet radiation from other sources. The detection system senses both temporal variation and steady state radiation. Discrimination against engine exhaust plume radiation is accomplished by monitoring temporal variation. Solar discrimination is accomplished by a two-color technique whereby radiation is detected by two photomultiplier tubes, one filtered to accept visible radiation and the other filtered to accept ultraviolet radiation. The photomultiplier tubes control input to logic that produces an output signal only when a hydrogen fire is viewed.

3,609,365
RADIOMETER ARRANGEMENT AND CONTROL CIRCUIT THEREFOR

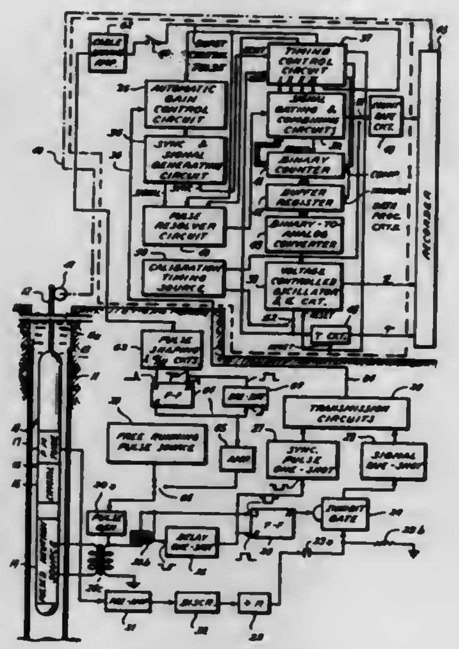
Frank R. Malinowski, and James S. Lee, both of Santa Barbara, Calif., assignors to Santa Barbara Research Center, Goleta, Calif.
Filed Sept. 1, 1967, Ser. No. 665,025
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 **9 Claims**



The invention is directed to a radiometer arrangement which may be utilized to periodically scan a source of electromagnetic radiation and provide an electrical output signal accurately related to the radiation emanating from the source. A control circuit is provided to synchronize the transmission of radiation information with the rotary action of the arrangement during successive scans. A DC signal amplifier is employed and means are provided to restore the amplifier to a base level periodically, thus eliminating false information that could be generated within the system by amplifier drift.

3,609,366
SYSTEMS FOR NEUTRON DECAY TIME WELL LOGGING

Robert J. Schwartz, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Nov. 1, 1968, Ser. No. 772,540
Int. Cl. G01v *5/00*
U.S. Cl. 250—83.3 **34 Claims**

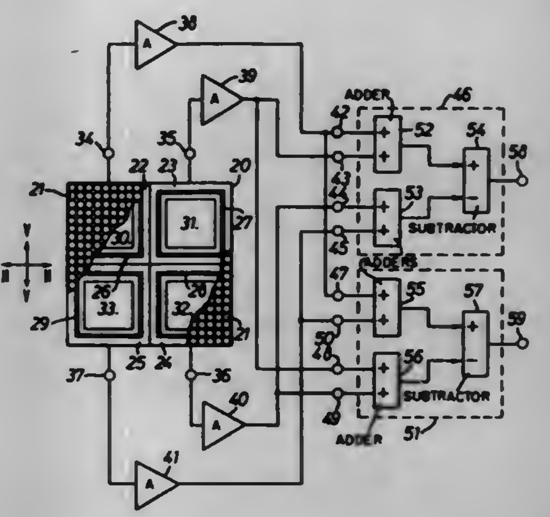


In accordance with an illustrative embodiment of the present invention, a well-logging exploring device includes a pulsed neutron source which is repetitively energized to irradiate a formation with neutrons and means for generating a sync pulse representative of the time of termination of such irradiation. In response to this irradiation, a nearby scintillation counter generates signal pulses at a rate representative of the neutron population in the media surrounding the exploring device. The sync and signal pulses are then transmitted to the surface of the earth. At the surface of the earth, signal-processing circuits operate to accurately distinguish the sync and signal pulses and resolve any signal pulses which may have become merged due to the relatively low frequency response of the cable. These resolved signal pulses are then applied to computing circuits which operate to determine the rate of decay of the neutron population in the formation by determining the rate of change of the signal pulse repetition rate. In this connection, the signal pulses are weighted and then gated to a binary counter during a cycle of adjustable time intervals. By appropriately selecting the relationship of the time intervals to one another and the factors by which the signal pulses are weighted during each time interval, the accumulated count in the counter after each cycle of time intervals will be representative of the rate of decay of the neutron population and is used to determine the time intervals. The sync pulses synchronize the surface electronics with the repetitive irradiation of the formation with neutrons.

3,609,367
STATIC SPLIT PHOTOSENSOR ARRANGEMENT HAVING MEANS FOR REDUCING THE DARK CURRENT THEREOF

Donald Robert Barron, Sunbury-on-Thames, England, assignor to Electric & Musical Industries Limited, Hayes, Middlesex, England
Filed Sept. 4, 1969, Ser. No. 856,896
Claims priority, application Great Britain, Sept. 4, 1968, 42,151/68
Int. Cl. G01j *3/00;* **G02b** *5/14*
U.S. Cl. 250—83.3 H **5 Claims**

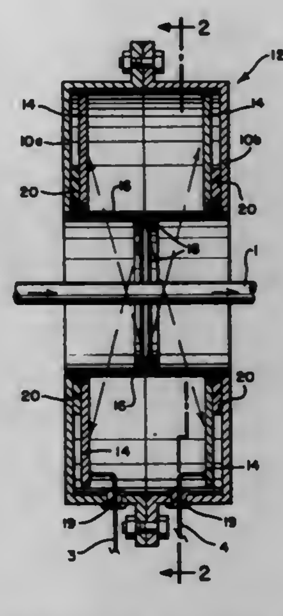
A static split photosensor arrangement includes a split optical system lying between an incidence plane and an emergence plane. The optical system comprises a plurality of optical fibers having diameters which taper from a relatively large diameter at the incidence plane to a relatively small diameter at said emergence plane. The fibers are so arranged that their relatively large diameter ends form a substantially continuous receiving surface for incident photon energy in said incidence plane, and their relatively small diameter ends form a plurality of groups in said emergence plane, each of said groups communicating uniquely with one of a plurality of surfaces sensitive to incident photon energy, the sensitive surfaces being arranged in a plane parallel to said emergence plane. Because of the tapering diameters of the optical fibers,



the combined areas of the plurality of sensitive surfaces is less than the area of the receiving surface and therefore, while the system remains substantially continuous with regard to the reception of photon energy, the sensitive surfaces may be separated by a sufficient distance to enable the insertion of a guard ring surrounding each of the sensitive surfaces, thereby reducing the edge leakage component of dark current.

3,609,368
APPARATUS AND METHOD FOR CHECKING THE DIAMETER OF ELONGATED STRUCTURES

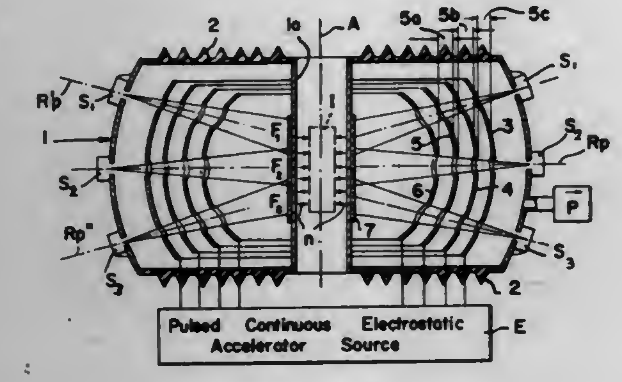
Jurgen Knorr, Dresden; Helmut Loffler, Dresden, and Wolfgang Vogel, Weinbohla, all of Germany, assignors to VEB Kabelwerk Oberspree (KWO), Berlin-Oberschoneweide, Germany
Filed Apr. 9, 1968, Ser. No. 719,980
Int. Cl. G01t *1/18;* **G01n** *23/02*
U.S. Cl. 250—83.6 **15 Claims**



Apparatus and method for checking the diameter of elongated structures, such as cables and insulated conductors, without contact and destruction, in a continuous manner, by passing the structure axially through an ionization device, providing radioactive radiation which impinges on the structure while it passes through the chamber, allowing the radiation to be weakened by its passage through the structure and to act upon electrode means also disposed in the chamber, and measuring the ionization current generated by the electrode means, the current being representative of the diameter of the structure as it passes through the device.

3,609,369
NEUTRON GENERATOR WITH RADIATION ACCELERATION

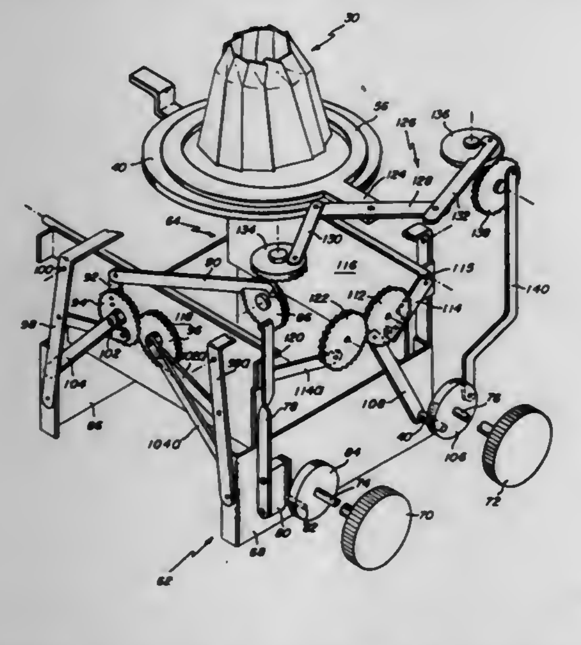
Petrica Croitoru, Bucharest, Romania, assignor to Institutul de Fizica Atomica (IFA), Bucharest, Romania
Filed Apr. 9, 1968, Ser. No. 719,887
Claims priority, application Romania, Apr. 10, 1967, 53519
Int. Cl. G21g *3/04*
U.S. Cl. 250—84.5 **9 Claims**



Method of and apparatus for generating high neutron flux at a sample zone maintained at atmospheric pressure and surrounded by an annular evacuated generator housing along whose inner peripheral wall is provided a neutron emitter target. An annular array of ion-particle sources or an annular ion source surrounds the annular target to direct radial charged-particle beams thereagainst. The acceleration may be effected by radially spaced accelerator plates disposed between the source and the target within the chamber or by radio waves supplied to the chamber; the latter is then constituted as a coaxial resonant cavity.

3,609,370
RADIATION COLLIMATOR FOR USE IN X-RAY SYSTEMS

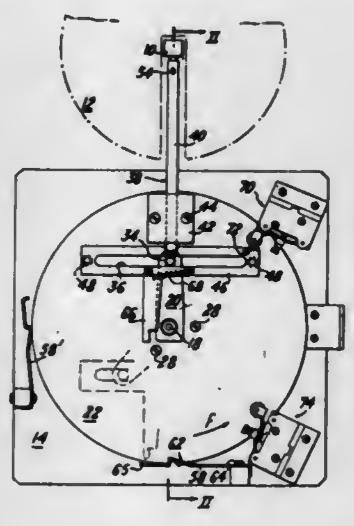
Leonard F. Peyser, Briarcliff Manor, N.Y., assignor to The Machlett Laboratories Incorporated, a wholly owned subsidiary of Ratheon Company, Springdale, Conn.
Filed Dec. 23, 1969, Ser. No. 887,602
Int. Cl. G03b *41/16*; G21f *5/02*; H01j *35/16*
U.S. Cl. 250—105 **4 Claims**



Collimating apparatus for regulating the cross-sectional size and shape of a beam of radiation which comprises a first shutter device adapted to be positioned adjacent the source of radiation and a pair of associated plane shutter devices cooperatively connected with the first shutter device whereby when either of the plane shutter devices is operated the first shutter will simultaneously be operated, the means by which the plane shutter devices are interconnected with the first shutter device being such that the cross-sectional size and shape of the beam passing through the collimator will be controlled by the plane shutter device, and the first shutter will intercept marginal radiation but will not intercept the primary to such an extent as will decrease the size of the beam regulated by the plane shutter devices.

3,609,371
MECHANISM FOR POSITIONING A RADIOACTIVE SOURCE IN A LIQUID SCINTILLATION COUNTER

Jean Claude Jacob, Plaisir, France, assignor to Intertechinique S.A., Plaisir, France
Filed June 11, 1968, Ser. No. 736,073
Int. Cl. G01t *7/08*
U.S. Cl. 250—106 **6 Claims**



A mechanism for positioning a standard gamma emitter for use as an external standard in a liquid scintillation spectrometer as adapted to move the emitter between a shielded position in a metal body and an operative position close to a sample to be standardized. The mechanism comprises a rotatable disk, an arm carrying the emitter and connected to a motor by a driving mechanism which successively moves the emitter radially inward with respect to the disk, along a part circular path along with the disk and radially outward upon energization of the motor.

3,609,372
SHAPED POLYMERIC SHIELD AGAINST NEUTRON AND GAMMA RADIATION

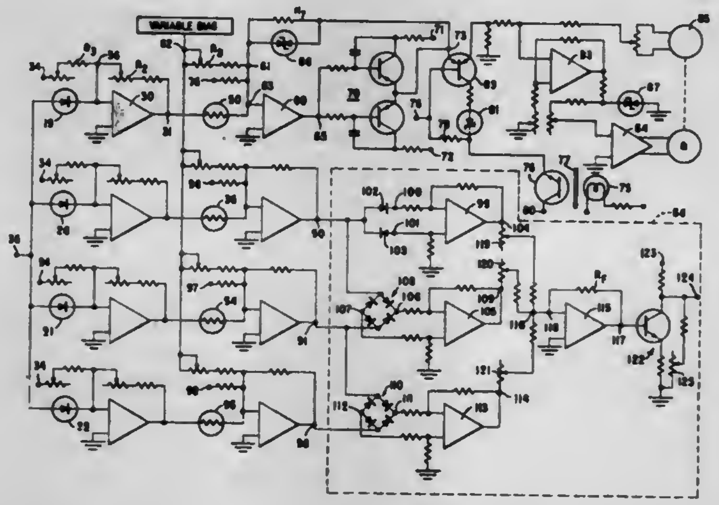
Reinhard Ernst Vogel, Munich,Harlaching, Germany, assignor to Friedrich Marxen, Vaduz, Grand Duchy of Liechtenstein, a part interest
Continuation-in-part of application Ser. No. 596,764, Nov. 25, 1966, now Patent No. 3,434,978. This application Sept. 6, 1968, Ser. No. 758,107
Int. Cl. G21f *1/10*
U.S. Cl. 250—108 **14 Claims**

A polymeric material having a shielding effect against radiation is provided in the form of any shaped body which may be a plate, flexible sheet, or of any other desired shape, which body consists essentially of a synthetic plastic material including synthetic rubber, or of natural rubber, having distributed therethrough and intimately mixed therewith an effective amount of at least one compound of a saturated fatty acid being solid at room temperature and having at least 9 carbon atoms with at least one metal selected from the group consisting of lead, bismuth, tungsten, zirconium, iron, tin, cadmium, lithium and barium.

3,609,373
PHOTOELECTRIC SENSORS AND CIRCUITRY FOR EDGE-GUIDING SYSTEMS FOR SEWING MACHINES

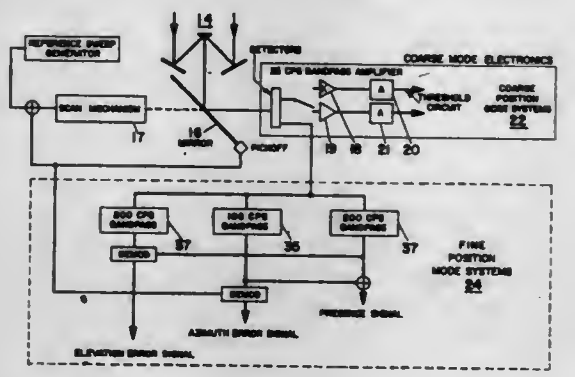
Dhimat R. Desai, Somerville, and Carl T. Aquilino, Middlesex, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed May 18, 1970, Ser. No. 38,281
Int. Cl. G05b *5/00*
U.S. Cl. 250—202 **11 Claims**

A photoelectric sensor system is described for generating information signals related to the actual edge position, transparency and edge curvature of the material to be sewn by a sewing machine in an edge-guiding system. Photodiodes, preferably of the PIN type, are used in a bar-type geometry for the sensors which have a special spaced arrangement relative to the needle. Signal processing involving operational amplifiers is used in connection with a reference sensor which continuously monitors the material transparency to correct for the transparency error and produces a single steering servo signal which is a true measure of edge position deviation from a desired position. A plurality of sensors, positioned in increasingly spaced relation to and in advance of the needle, generate signals related to the edge positional error at these advanced positions. These error signals are then processed by special circuits to yield signals containing advanced edge curvature information at the various sensor positions. Finally a single composite signal is derived from the component signals with proper weighting of the contribution of each component signal to the composite signal in accordance with the relative distances of the sensors from the needle. This composite signal may be derived as a voltage or as a current and then used to control the optimum feeding rate of the sewing machine by any conventional speed control system which responds proportionally to the variation of a single signal. The edge curvature information is thus continuously updated in advance of the needle so that the feed rate can be changed in time responsively to the curvature complexity to permit more or less time as needed for the steering servo to make proper correction just before each stitch is made.



3,609,374
WEIGHTED SCAN STAR SCANNER

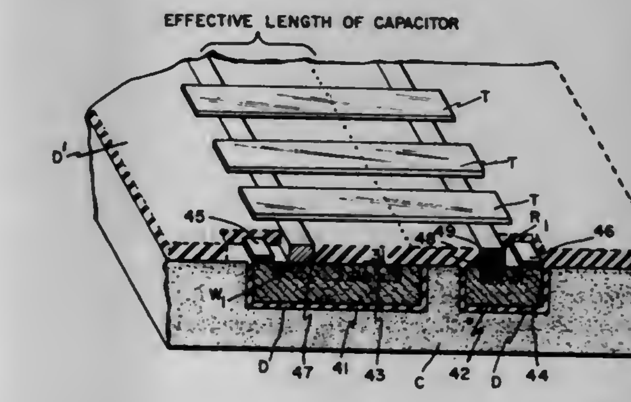
Philip Gevas, Roseland, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.
Filed Feb. 24, 1967, Ser. No. 619,889
Int. Cl. G01s *5/16*
U.S. Cl. 250—203 R **7 Claims**



Possible incident star energy is directed onto a deflecting mirror as a beam which will systematically reflect said beam upon one of a plurality of detector elements arranged in a linear array, generating a signal. This signal is amplified and fed to a level detector. When a predetermined threshold is exceeded, the output of the level detector activates a trigger. The trigger activates a flip-flop which causes the scanner to reverse and rescan the limited area where the possible stars occurred. This time, the signal is passed through another channel wherein the time constant for the filter is increased by about three, (the number of rescans). This results in an improvement in the signal to noise ratio of about at the point in question. The level detector trigger associated with the second channel is set at a higher threshold. When this trigger is activated, the acquisition problem is solved and the probability of star presence is over 0.99. This second channel trigger enables a second flip-flop switching the scanner to the fine mode, whose purpose is merely of more accurately defining the position of the star in the search field. In the fine mode, when the signal from the star is centered, an output at one frequency may be provided whereas an increasingly large off-axis error signal in another frequency may be provided for offcenter both in azimuth and elevator. These error signals act on the scanner so as to move the scanner in line with the star scanned.

3,609,375
SOLID STATE LINEAR PHOTOSENSOR

Murray Bloom, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed July 19, 1968, Ser. No. 746,072
Int. Cl. H01l *15/00*
U.S. Cl. 250—211 **5 Claims**

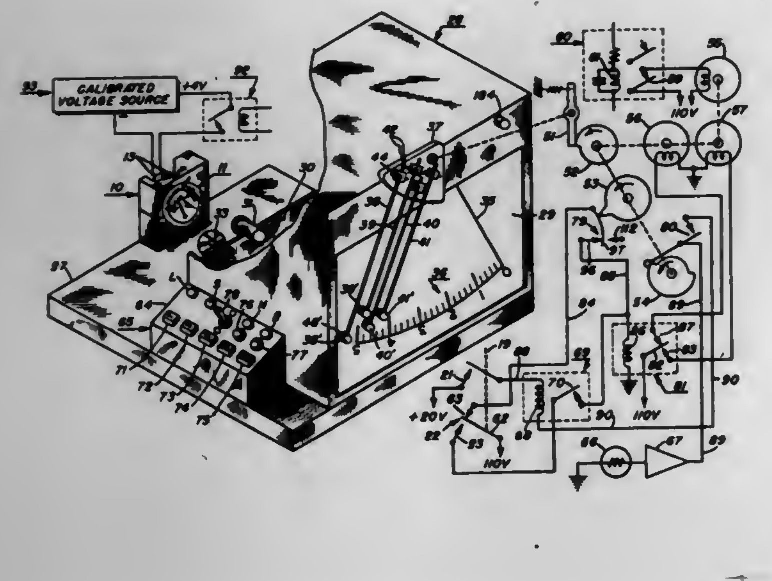


There is disclosed a linear solid-state photosensor which exhibits avalanche multiplication and which has a resolution capability comparable to that of silver halide photography. The photosensor is of the type which is suitable for use in a slit image camera of the type commonly carried by airplanes, satellites, or any other moving vehicle which can position the image forming slit so that the scene to be photographed passes by it. In this event, of course, the movement of the scene relative to the camera replaces the more conventional movement of the film relative to the camera's optical axis. The photosensor of this invention replaces the film of the camera in such applications and is capable of providing a direct conversion of the light image to electrical signal output in a manner analogous to that of a television camera. There is also disclosed herein a method of manufacturing the linear solid-state photosensor so as to achieve the desired resolution.

3,609,376
AUTOMATIC CALIBRATING APPARATUS FOR ELECTRICAL INSTRUMENTS

Earl S. Seely, Boonton, and William J. Jauch, Denville, both of N.J., assignors to RFL Industries, Inc., Boonton, N.J.
Filed May 21, 1970, Ser. No. 39,468
Int. Cl. G01d *5/34*
U.S. Cl. 250—215 **15 Claims**

Apparatus for automatically charging and treating the permanent magnet of an electrical instrument having a pointer movable over a preprinted scale. A plurality of photoconductive cells are mounted for positioning along a viewing screen upon which an enlarged image of the instrument scale and pointer are projected. The photocells respond to the light passing through the screen and effect operation of associated circuitry and components for first charging the instrument magnet to saturation and then treating the magnet to final strength such that the instrument thereafter provides an accurate measurement of an electrical voltage applied thereto.



3,609,377

METHOD FOR PREPARING ALKALI METAL SALTS OF CELLULOSE SULFATE AND STABILIZED ALKALI METAL SALTS OF CELLULOSE SULFATE

David J. Pettitt, and Jerome Edward Murray, both of San Diego, Calif., assignors to Kelco Company, San Diego, Calif.
Continuation-in-part of application Ser. No. 780,899, Dec. 3, 1968, now abandoned. This application June 16, 1970, Ser. No. 46,831
Int. Cl. C08b *5/14*
U.S. Cl. 260—215 **34 Claims**

Improved process for preparing alkali metal salts of cellulose sulfate, said process comprising adding at least about a stoichiometric quantity of a powdered alkali metal salt of a weak inorganic acid, e.g., a carbonate, bicarbonate, borate, phosphate or silicate, to a reaction mixture containing cellulose sulfate in admixture with a lower N-dialkyl amide, water formed from the sulfation reaction, and optionally a diluent other than a lower N-dialkyl amide. A controlled quantity of water is added to the reaction mixture in conjunction with the addition of the alkali metal salt of a weak inorganic acid and alternatively, part or all of the added water may be introduced as chemically bound water in the alkali metal salt. The amount of water is sufficient to promote contact between the reactants but insufficient to form a pasty reaction mass. The neutralization reaction is conducted with agitation until neutralization is essentially completed which is accompanied by a pH change from highly acid to about 7.0 or above.

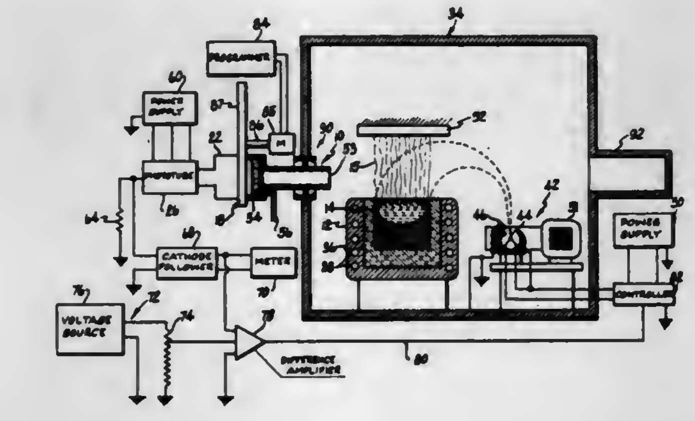
Method for preparing salts of cellulose sulfate having improved stability by coprecipitating said cellulose sulfate salts with an excess of an alkali metal salt of a weak inorganic acid in an effective amount to provide a stabilizing quantity of the salt of the weak inorganic acid in the precipitated product. Preferably, the excess of the salt of a weak inorganic acid is sufficient to provide at least about 0.1 percent by weight of the salt of the weak inorganic acid in the precipitated product. The coprecipitation may be carried out in the presence of divalent cations which enhance the coprecipitation and increase the percentage of the salt of the weak inorganic acid in the product.

A cellulose sulfate salt having improved stability, said salt containing an excess of a salt of a weak inorganic acid in an effective quantity to stabilize the cellulose sulfate salt. Preferably, the salt of the weak inorganic acid is present in an amount of at least about 0.1 percent by weight.

3,609,378

MONITORING OF VAPOR DENSITY IN VAPOR DEPOSITION FURNANCE BY EMISSION SPECTROSCOPY

Hugh Roscoe Smith, Jr., Piedmont, Calif., assignor to Air Reduction Company, Incorporated
Filed Oct. 31, 1966, Ser. No. 590,736
Int. Cl. G02f *1/28*
U.S. Cl. 250—217 **11 Claims**

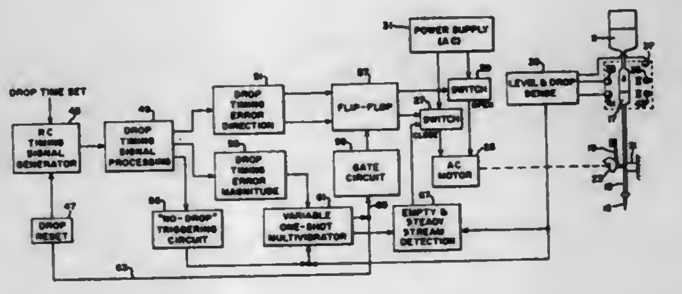


The rate of vapor deposition in a vacuum furnace heated by electron bombardment is monitored or controlled. The vapor is ionized, preferably by the same electron bombardment as produces it. The ionized vapor radiates light which is detected at one or more locations within the furnace, preferably by a photomultiplier optically coupled by a light pipe to the interior of the furnace. The light detector produces a signal indicative of the intensity of the light detected and, hence, of the vapor density. Optical filters may be used to pass light of frequency characteristic of particular elements, so that the relative intensity of the particular elements in the vapor may be selectively detected. The signals may be recorded or used to control the heating and, hence, vapor density, as by controlling the electron emission from an electron gun.

3,609,379

PHOTOELECTRIC DROP SENSING AND TIMING CONTROL FOR INTRAVENOUS FEED AND OTHER FLOW CONTROL APPLICATIONS

Herbert John Hildebrandt, Baldwinsville, N.Y., assignor to General Electric Company
Filed May 13, 1969, Ser. No. 824,162
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **14 Claims**

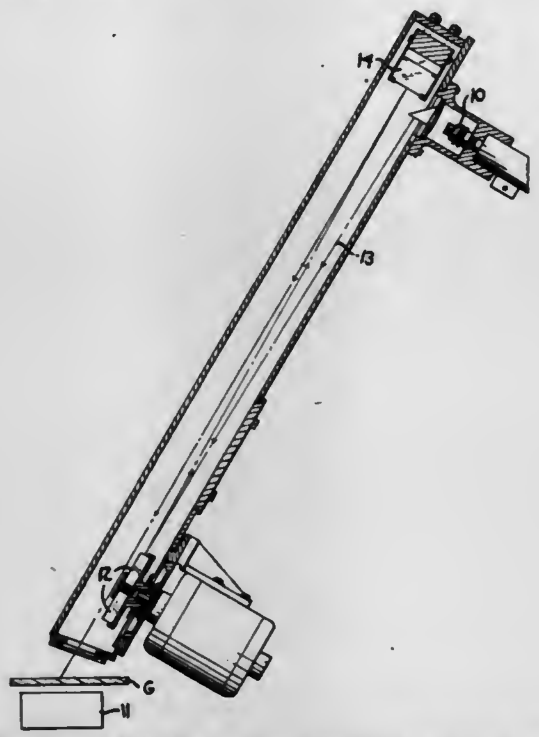

DROP TIME SET
POWER SUPPLY (A C)
DROP TIMING ERROR DIRECTION
FLIP-FLOP
SWITCH
SWITCH
LEVEL & DROP SENSE
DROP TIMING SIGNAL PROCESSING
DROP TIMING ERROR MAGNITUDE
GATE CIRCUIT
A C MOTOR
DROP RESET
"NO-DROP" TRIGGERING CIRCUIT
VARIABLE ONE-SHOT MULTIVIBRATOR
EMPTY & STEADY STREAM DETECTION

This disclosure is of a fluid flow rate control for intravenous feed and like applications wherein flow occurs in dropwise fashion. Drops are sensed photoelectrically by interruption of a light beam incident upon a photocell, the resulting fluctuations in output of the cell being detected and utilized for closed loop control of a flow adjustment device operative to correct any drop timing error detected. The control circuitry described includes means enabling discrimination between discrete drops and a steady stream or column of liquid as occasionally is experienced in intravenous feed apparatus, and means enabling discrimination also as between the primary or main drop and small secondary drops which sometimes form with and trail immediately after the main drop and which, if sensed, introduce errors into the drop timing measure obtained. For purposes of shutting off flow just prior to exhaustion of the fluid supply, means are provided for sensing fluid level at some point in the system indicative of the approach of this condition, such sensing being accomplished by photoelectric means arranged to afford reliable indication of fluid level irrespective of the transparency or opacity of the particular fluid involved. Means also are provided for shutting off flow in the event of photosensor light source failure.

3,609,380

RADIATION SENSITIVE DEFECT SCANNER FOR TRANSPARENT MATERIALS

Hugh E. Shaw, Jr., New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 29, 1968, Ser. No. 779,729
Int. Cl. G01n *21/32*
U.S. Cl. 250—219 **9 Claims**



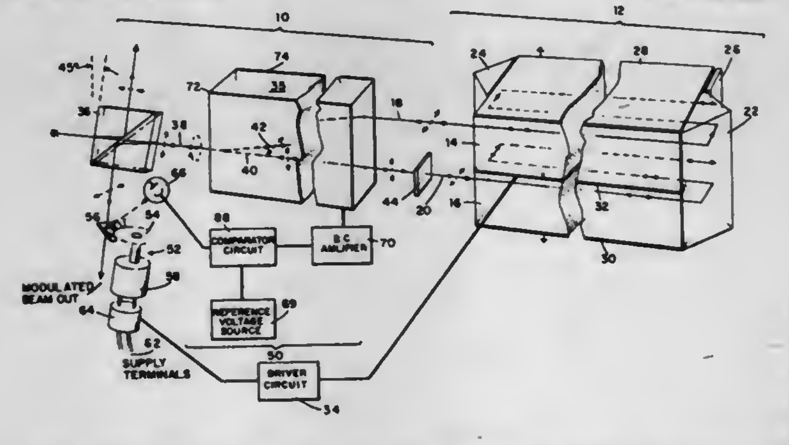
A method and apparatus for detecting defects in glass by scanning glass sheets with a beam of highly collimated light to detect defects in the glass interpositioned between a stationary collimated light source and a stationary detection device, as the defects interrupt the light beam.

A collimated light source, a scanning prismatic mirror, and a light responsive detection source comprises the system. A multisided prismatic mirror is interpositioned between the light source and the detection device to provide an effective light path which is longer than the distance between the source and the detector, and scans the glass.

3,609,381

ELECTROOPTIC LIGHT MODULATOR WITH BIREFRINGENT BEAMSPLITTER-RECOMBINER

Edward D. Hartfield, Los Altos, Calif., assignor to Technical Operations, Inc., Burlington, Mass.
Filed July 31, 1968, Ser. No. 749,111
Int. Cl. G02f *1/20, 1/26*
U.S. Cl. 250—225 **14 Claims**

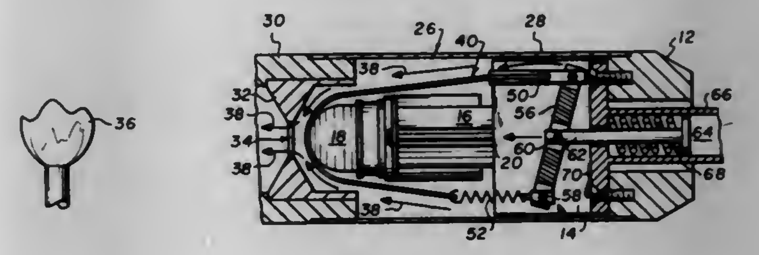


This disclosure depicts an electrooptic light modulator comprising a novel birefringent beamsplitter-recombiner transmitting a pair of orthogonally polarized beam components to a pair of field-controlled anisotropic crystals. Each of the pair of light beams from the beamsplitter is directed along a reiterative light path through a crystal and returned by means of an end mirror to the point of entrance of the beam into the crystal. After leaving the crystals, the beam components are reunited by the beamsplitter-recombiner; the composite beam is analyzed by a Glan prism. Thermal drift responsive means monitoring the operating point of the modulator controls a compensating DC bias potential applied across the beamsplitter medium.

3,609,382

LIGHT DETECTOR WITH CLEANING AND TESTING MEANS

William J. Moore, and Donald J. L. Lin, both of Dallas, Tex., assignors to Forney Engineering Company, Dallas, Tex.
Filed Aug. 15, 1969, Ser. No. 850,603
Int. Cl. G01d *5/36*
U.S. Cl. 250—232 **6 Claims**

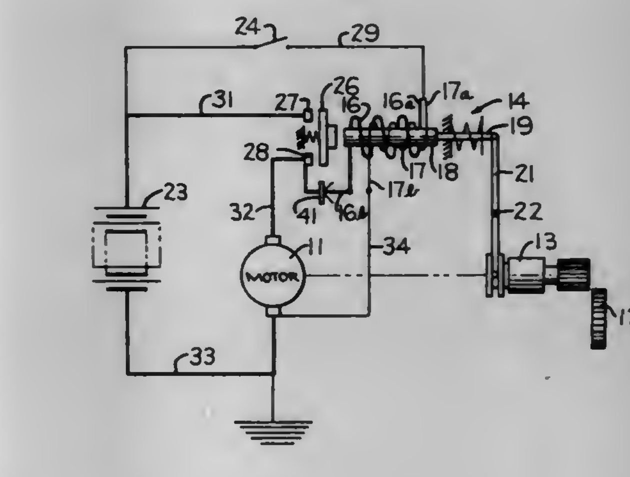


A furnace flame detector having a light-sensitive tube which can be periodically wiped clean and blocked off from the flame light to be tested. A web has a wiper section in contact with the tube and is connected with an actuating mechanism for periodically moving the wiper section over the tube. The wiper section has a centrally located aperture which permits the flame light to impinge on the sensing tube, so that when the wiper section is moved over the tube, it is cleaned and the flame light is intermittently blocked off to permit the tube to be tested.

3,609,383

SOLENOID-OPERATED STARTING MOTOR

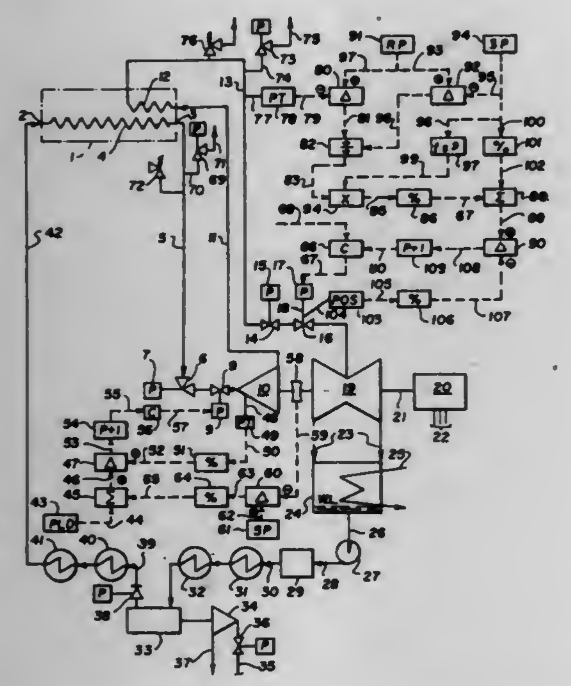
James P. Welsh, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 18, 1970, Ser. No. 73,481
Int. Cl. H02p *1/10*
U.S. Cl. 290—38 R **3 Claims**



In a solenoid circuit for a staring motor, a solenoid has both a pull-in coil and a hold-in coil for positioning an armature to effect engagement and disengagement of the starting motor with an engine. Shifting of the armature also closes a parallel circuit between an electrical source and the starting motor. A diode is arranged in series with one end of the pull-in coil to prevent reverse current flow through the pull-in coil and the development of a magnetomotive force therein counter to force developed by the hold-in coil.

3,609,384
CONTROL MEANS FOR STABILIZING A STEAM-DRIVEN REHEAT-TYPE TURBINE GENERATOR AFTER SUDDEN RUNBACK OF ELECTRIC GENERATION

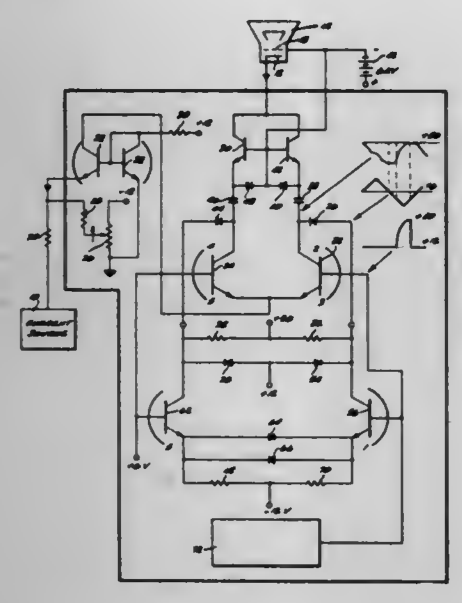
Charles Strohmeyer, Jr., Wyomissing, Pa., assignor to Electrodyne Research Corporation, Reading, Pa.
Filed Sept. 3, 1969, Ser. No. 854,883
Int. Cl. H02p *9/04*
U.S. Cl. 290—40 **7 Claims**



The invention provides a means of minimizing acceleration of a steam-driven reheat-type turbine generator after sudden partial runback of electric generation as a result of stored energy in the turbine driver whereby flow of reheated steam to the reheat turbine through the intercepter valves is controlled as a function of upstream pressure and similarly steam flow to the high pressure turbine is controlled by pressure of said high pressure turbine to regulate electrical output after runback and while simultaneously releasing surplus energy.

3,609,385
LOW-TO-HIGH VOLTAGE CURRENT COUPLER CIRCUIT

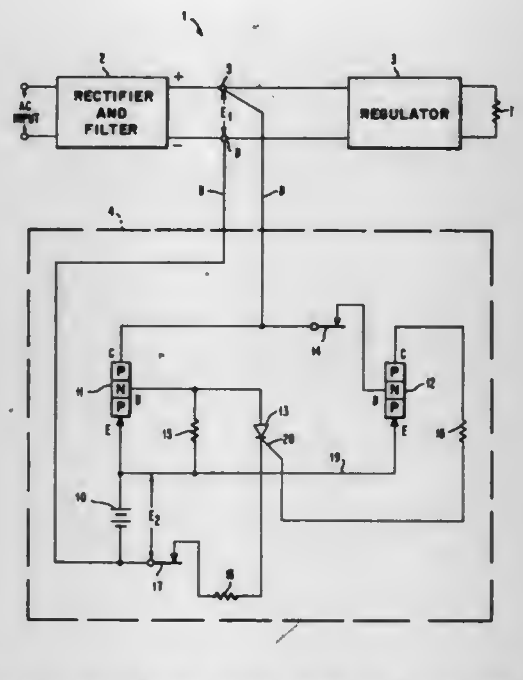
Ted W. Berwin, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 6, 1969, Ser. No. 868,664
Int. Cl. H02j *1/00*
U.S. Cl. 307—49 **9 Claims**



A circuit is provided which can apply a current which exists at a low voltage to the input terminal of apparatus, such as a cathode-ray tube, which must be biased at a high voltage.

3,609,386
APPARATUS FOR PROVIDING UNINTERRUPTED POWER TO A LOAD

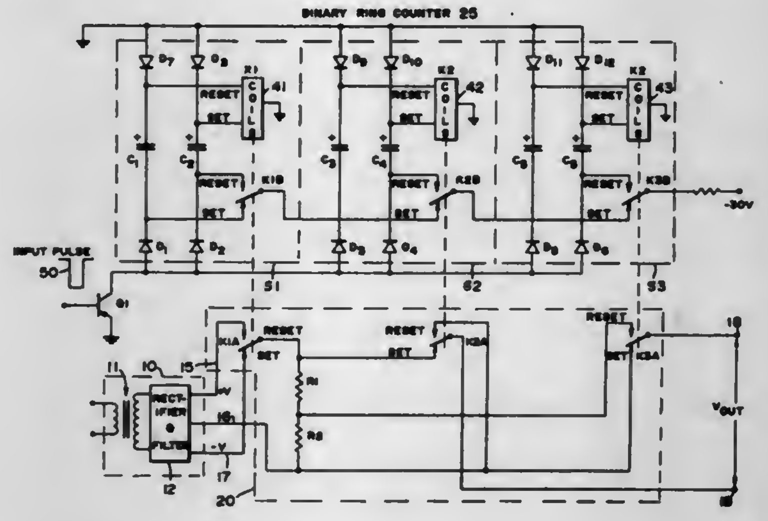
Alvin M. Patlach, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,626
Int. Cl. H01f *1/00*
U.S. Cl. 307—66 **16 Claims**



Apparatus for switching power sources to a load without interruption is disclosed. The apparatus includes a source of rectified and filtered AC, a regulator, and a load. The AC source feeds DC power of given voltage to two terminals. A sensing and power delivery circuit is connected to these same two terminals to provide power from a DC source when the power from the AC mains suffers a degradation. The sensing and power delivery circuit includes a saturable switching transistor which switches the battery across the above-mentioned two terminals when a sensing circuit detects a change in the rectified and filtered AC. The sensing circuit controls a controlled rectifier which closes a current path around the battery permitting the switching transistor to saturate thereby effectively placing the DC source across the load terminals. A battery charging arrangement is also shown.

3,609,387
REFERENCE VOLTAGE-SWITCHING UNIT

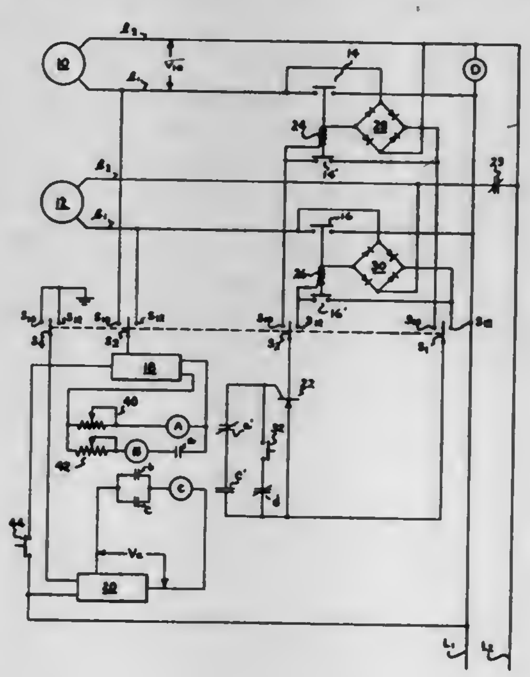
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Edgar S. Davis, Pasadena, Calif.
Filed Mar. 23, 1970, Ser. No. 21,906
Int. Cl. H03k *23/03*
U.S. Cl. 307—81 **9 Claims**



A reference voltage-switching unit comprising a dual DC voltage power supply which provides +V DC and −V DC voltages across three of its output terminals, one of which is assumed to be at ground. The three terminals are connected to two unit output terminals through a switching unit which includes a voltage divider and three sets of SPDT contacts. The positions of the three sets of contacts are controlled as a function of the binary states of three stages of a three-stage ring counter. As the counter advanced through its eight-state cycle, the positions of the three sets of contacts vary so that the voltage across the unit output terminals follows a cyclically recirculating pattern including the values of +V, +V/2, O, −V/2,−V · −V/2 O and +V/2.

3,609,388
AUTOMATIC PARALLELING CIRCUIT

Stuart F. Hemmenway, Scotia, and William H. Turner, Jr., Schenectady, both of N.Y., assignors to General Electric Company
Filed June 24, 1970, Ser. No. 49,317
Int. Cl. H02j *3/38*
U.S. Cl. 307—87 **10 Claims**

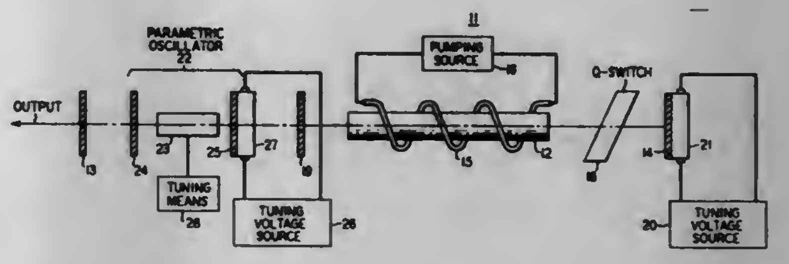


A circuit for automatically paralleling AC generators. Upon detecting a first, small differential voltage between a main bus and the corresponding terminal of an off-line generator a first relay is actuated, applying the differential voltage to a second relay. When the differential voltage attains a second, higher value a circuit for energizing mechanical contactors is partially completed. As the differential voltage subsequently lessens, the first relay drops out, completing the energization of the circuit and the mechanical contactors. The dropout voltage of the first relay is such that the increment of time necessary for the differential voltage to fall from the first relay dropout voltage to zero is substantially the same as the time necessary for the actuation of the contactors.

3,609,389
PASSIVE PULSE TRANSMISSION MODE OPERATION IN A Q-SWITCHED LASER HAVING AN INTERNAL PARAMETRIC OSCILLATOR

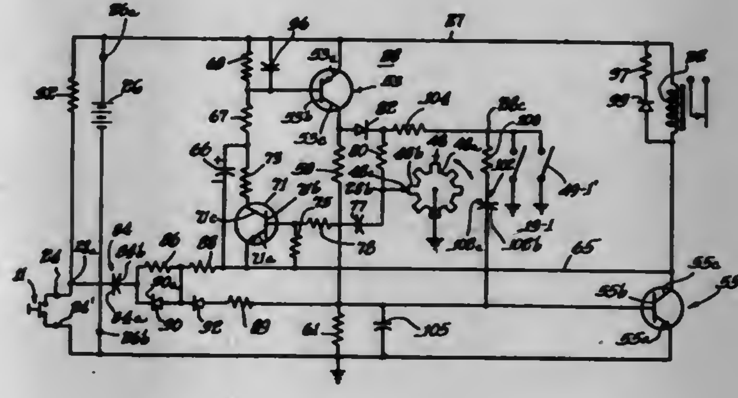
John Ernst Bjorkholm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Jan. 15, 1970, Ser. No. 3,140
Int. Cl. H03f *7/04*
U.S. Cl. 307—88.3 **6 Claims**

Passive pulse transmission mode (PTM) operation is established in a Q-switched laser by means of a parametric oscillator located within the resonator of the laser which functions as a pump for the oscillator. The oscillator is adapted to deplete the pump at the moment the incavity pump power reaches a maximum, resulting in highly efficient conversion of pump power to signal and idler power. In one embodiment, one of the laser reflectors is made highly transmissive to the nonresonant signal radiation, and the oscillator is made singly resonant (SRO) at the idler frequency, resulting in a substantial fraction (ideally at least one-half) of the laser power being coupled out of the cavity in twice the round trip time of the laser resonator, but at the signal wavelength. Since the SRO is tunable, the short, high power output pulse is also tunable from the pump wavelength to longer wavelengths. Other embodiments utilizing doubly resonant oscillators and ring-type configurations are also disclosed.



3,609,390
TRIGGER CIRCUIT

Harold Feldman, Skokie, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.
Division of Ser. No. 732,253, May 27, 1968, Pat. No. 3,539,894.
Filed May 27, 1970, Ser. No. 40,790
Int. Cl. H01h *9/30*
U.S. Cl. 307—134 **4 Claims**

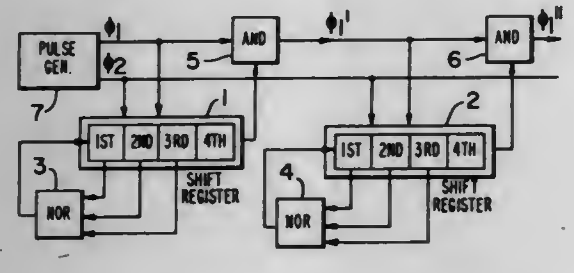


A trigger circuit having a particular (but not its only) utility in operating a garage door motor coupled to a garage door through a slip clutch. The trigger circuit has two operating states which respectively deenergize and energize the motor. The trigger circuit is operated between its motor deenergizing and energizing states by successive operation of manually operable contacts and is reset to its motor deenergizing state automatically and independently of the contacts when the slip clutch output shift slows down to a given speed. The trigger circuit is provided with a feature which inhibits contact chattering from operating the trigger circuit in the same manner as said successive operation of the manually operable contacts.

3,609,391
TIMING PULSE GENERATOR

Isao Hatano; Yashuhiko Tabata, and Masatoshi Mitsui, all of Kyoto-fu, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Kyoto-fu, Japan
Filed June 5, 1969, Ser. No. 830,618
Claims priority, application Japan, June 5, 1968, 43/38895
Int. Cl. H03k *19/08*
U.S. Cl. 307—208 **10 Claims**

A timing pulse generator having a plurality of two-phase registers to generate timing pulses of desired pulse width. Each register furnishes an output from only one stage thereof on the strength of a read-in pulse and memory pulse, and the output from the stage that furnishes the output is circulated,



while the output from the last stage of one shift register is utilized as the read-in pulse for the subsequent shift register.

3,609,392

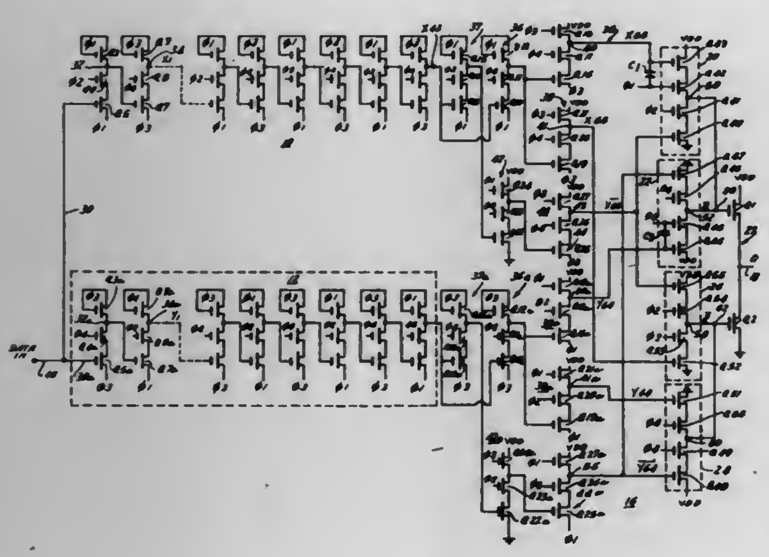
DYNAMIC SHIFT REGISTER SYSTEM HAVING DATA RATE DOUBLING CHARACTERISTIC

Attila Tetik, New York, N.Y., assignor to General Instrument Corporation, Newark, N.J.

Filed Aug. 21, 1970, Ser. No. 66,010

Int. Cl. G11c *19/00*

U.S. Cl. 307—221 **4 Claims**



A shift register system capable of operating at data rates which are double the clock signal rate comprises first and second registers which receive first and second unique clock signals in reverse order respectively. Data is alternately sampled by the first register during the first clock signal and by the second register during the second clock signal. An output stage, including register output signal inverting circuitry, is provided to reconstitute the data at the system output in a manner which substantially reduces the system DC power dissipation.

3,609,393

BIDIRECTIONAL DYNAMIC SHIFT REGISTER

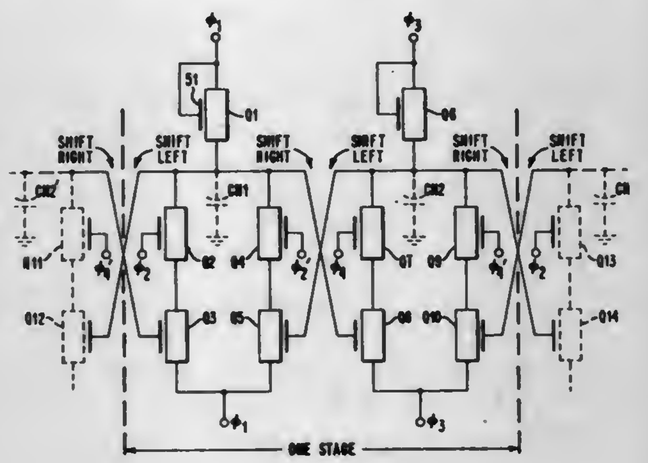
Ying L. Yao, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,754

Int. Cl. G11c *19/00*

U.S. Cl. 307—221 **24 Claims**

A bidirectional dynamic shift register using MOSFET's. Each stage of the shift register contains sections having storage elements for retention of data. Bidirectional means interconnect the sections and also adjacent stages. The bidirectional means controls the direction of flow of data by control of the status of any storage element in accordance with the status of the preceding storage element. That is, the state of the transferee storage element is determined by the state of the transferor storage element. Overlapping or nonoverlapping clock pulses can be used, as well as any number of clock phases.



3,609,394

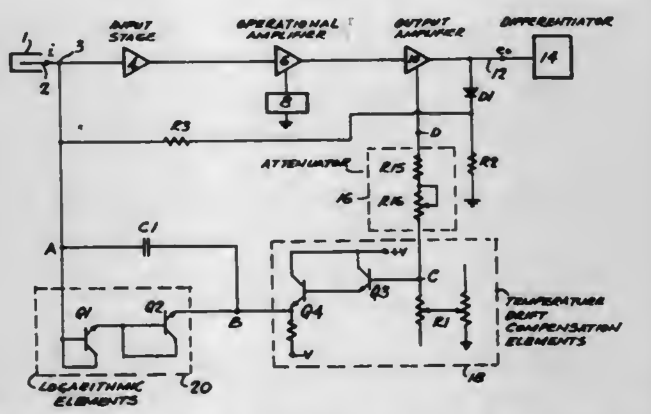
LOGARITHMIC AMPLIFIER

Colin G. Lennox, Pinawa, Manitoba, Canada, and Tomozo Furukawa, Ibaraki-ken, Japan, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Dec. 28, 1965, Ser. No. 517,014

Int. Cl. G06g *7/12*

U.S. Cl. 307—230 **6 Claims**



A logarithmic amplifier capable of operating with input currents as low as 10^{111} amps having a capacitor feedback loop for smoothing out fluctuations at very low current inputs and a second feedback loop consisting of a resistor and diode to switch in the resistor at very low outputs to limit the time constant of the parallel connection of the feedback capacitor and logarithmic transistor elements to reduce output fluctuations at switch-on.

3,609,395

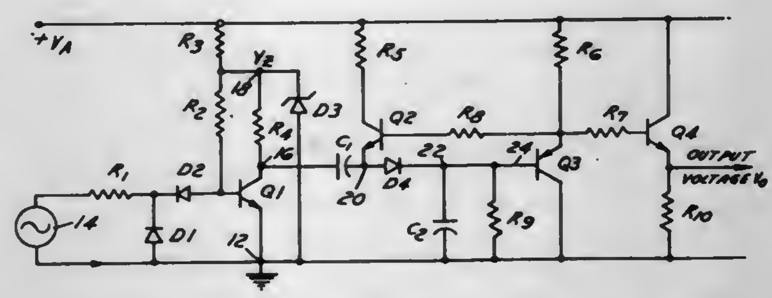
FREQUENCY TO VOLTAGE CONVERTER CIRCUIT

Zbigniew J. Jania, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 2, 1970, Ser. No. 68,837

Int. Cl. G01r *23/02;* **H02h** *7/20*

U.S. Cl. 307—233 **12 Claims**



An improved frequency to voltage conversion circuit is described. The unimproved basic circuit comprises a transistor, two capacitors, a resistor, and a diode. The improved circuit includes transistor means connected to the base of the transistor in the basic circuit to provide temperature compensation and to reduce or eliminate transient conditions. Additional transistors, diodes, and resistors are provided to effect protection against supply voltage transients, to provide additional temperature compensation where necessary, to assure the presence of an adequate signal to operate the frequency to voltage converter, and to provide the overall circuit with a high input impedance and a low output impedance.

3,609,396

PULSE-SELECTING CIRCUIT

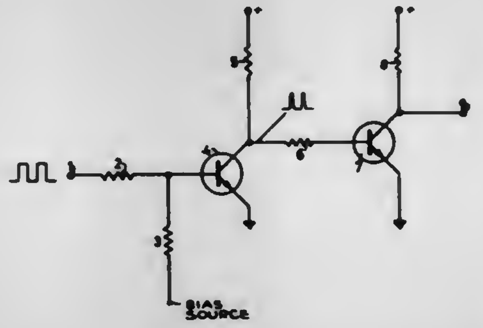
Gerhard Gunter Gassmann, Berkheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 15, 1969, Ser. No. 816,285

Claims priority, application Germany, Apr. 27, 1968, P 17 62 197.5

Int. Cl. H03k *5/20*

U.S. Cl. 307—234 **2 Claims**



Pulses of different duration or frequency are coupled to the input of two series-connected transistors each having a different nonconducting delay time. The output pulses having a duration or frequency within a predetermined range of duration or frequency are removed from the second transistor. The nonconducting delay time of the second transistor is greater than the period of the pulses to be selected and the nonconducting delay time of the first transistor is shorter than the duration of the pulses to be selected.

3,609,397

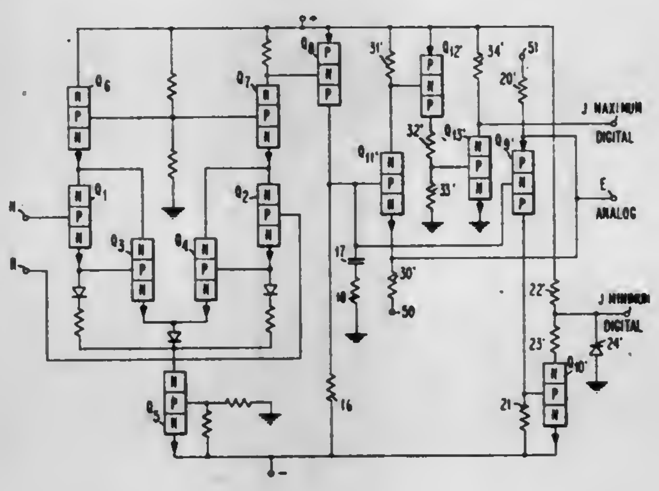
SIGNAL-CLASSIFYING CIRCUIT

Louis F. Zaman, III, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,580

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 **7 Claims**



A system for identifying and selecting the maximum or minimum value of a single signal or a subset of signals from among a larger set of signals. The system includes an amplifier for each subset of signals. The outputs of the amplifiers are connected in common. Feedback loops from the common output to an input cause all amplifiers, except the one with the largest input signal, to operate in the nonlinear region. Each amplifier is monitored to determine whether or not it is operating linearly.

3,609,398

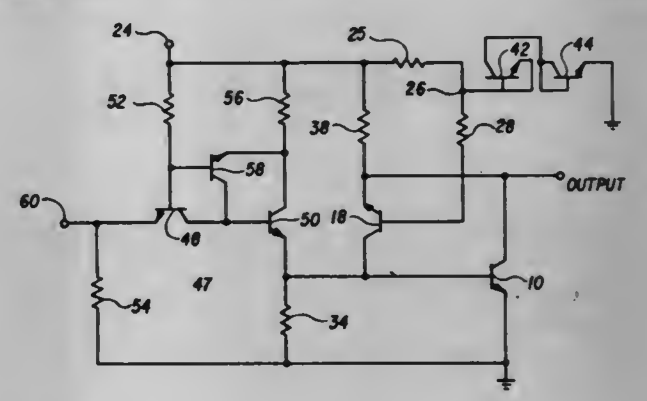
HIGH-SPEED INTEGRATED LOGIC CIRCUIT

John William Kronlage, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1968, Ser. No. 788,205

Int. Cl. H03k *5/08*

U.S. Cl. 307—237 **7 Claims**



High-speed logic switching is accomplished by employing an antisaturation clamped, prebiased output stage in a logic circuit of transistors having a high internal cutoff frequency. An output transistor in a logic circuit is shunted between the base and collector electrodes with a clamping transistor which shunts excess base drive to the collector electrode, thus preventing saturation thereof. When in a nonamplification mode, the clamping transistor comprises part of a voltage divider network that prebiases the base electrode of the output amplifier. This divider network is connected to a reference voltage in a circuit including series-arranged diodes.

3,609,399

TRICOLOR IMAGE PHOTODIODE PICKUP ARRAY

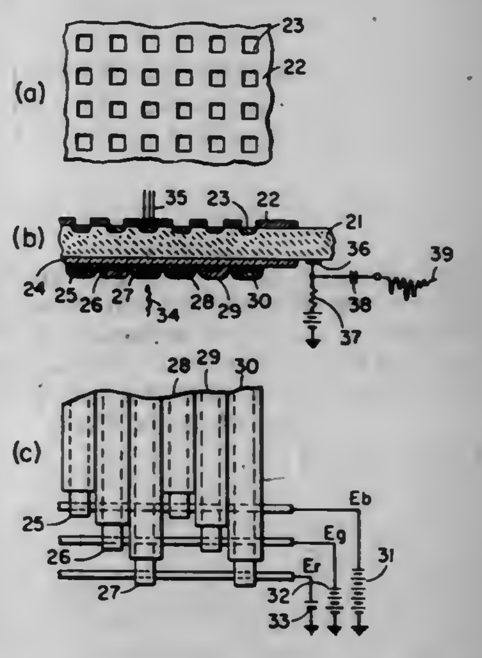
Masafumi Hanaoka, and Yasuo Minowa, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 26, 1970, Ser. No. 5,804

Claims priority, application Japan, Jan. 31, 1969, 7687/69

Int. Cl. H01j *31/30;* **H01l** *15/02*

U.S. Cl. 313—66 **6 Claims**

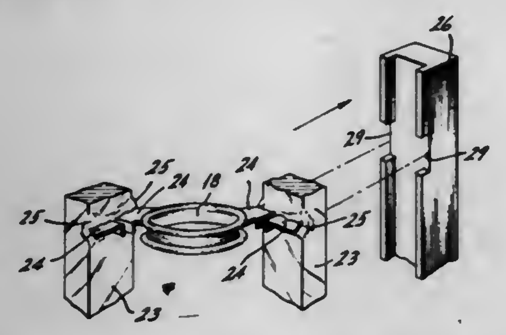


An improved target device for a tricolor image pickup device comprises a photodiode-array formed on one surface of a substrate. A transparent insulator layer is formed on the other surface of the substrate and a plurality of transparent electrodes on which filters are mounted, are mounted on the insulator layer at locations corresponding to the photodiode-array.

3,609,400
PLURAL ELECTRON GUN ASSEMBLY

Bruce G. Marks, Lansdale; Thomas P. Hodge, Lansdale, and Glenn Werst, Perkasie, all of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Nov. 3, 1969, Ser. No. 873,263
Int. Cl. H01j *25/50, 29/02, 1/92*
U.S. Cl. 313—70 C **3 Claims**

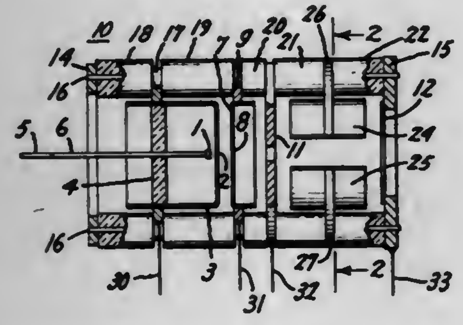


An electron gun for a color cathode-ray tube includes three sets of axially aligned cylindrical grids supported upon glass side rods by radially projecting studs of different widths. In fabrication of the gun, and during a beading operation in which the side rods are in molten state, each of the side rods is supported in a beading trough including notched wall sections in the regions of insertion of the relatively wider ones of the studs into the rods. The notched sections accommodate formation of strain-relieving bulges in the regions of wider stud insertion in the molten rods.

3,609,401
LINE FOCUS ELECTRON GUN

Lawrence A. Harris, Schenectady, N.Y., and Norman D. Punsky, Cambridge, Mass., assignors to General Electric Company

Filed Mar. 9, 1970, Ser. No. 17,416
Int. Cl. H01j *1/88, 29/02, 29/46*
U.S. Cl. 313—82 **8 Claims**

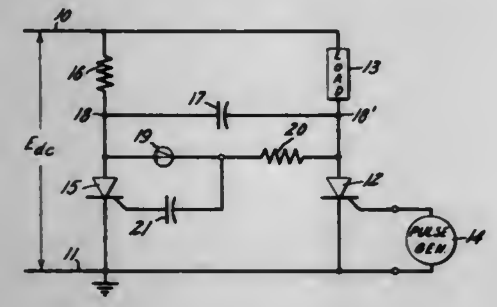


An electron gun transforms a round beam of electrons into a sheet beam by employing a pair of curved deflecting plates positioned between two spaced anodes of a final unipotential lens of the gun.

3,609,402
MONOSTABLE MULTIVIBRATOR WITH DUAL FUNCTION COMMUTATION AND TIMING CAPACITOR

Armand P. Ferro, Troy, and William P. Kornrumpf, Schenectady, both of N.Y., assignors to General Electric Company

Filed Nov. 3, 1969, Ser. No. 873,561
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 M **7 Claims**

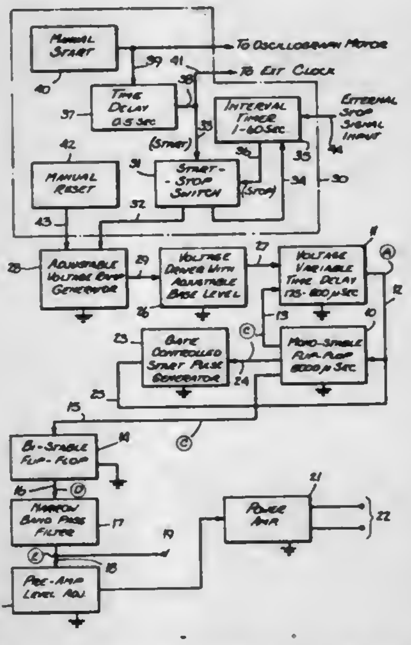


A two-thyristor capacitor-commutated multivibrator exhibiting monostable behavior is characterized by a voltage-sensitive gating circuit including a breakover switching device responsive to the commutating capacitor voltage. After a predetermined time delay the auxiliary thyristor fires to commutate off the load thyristor.

3,609,403
RATE OF CHANGE OF FREQUENCY GENERATOR

Edwin R. Eberle, Great Neck, N.Y., assignor to Consolidated Edison Company of New York, Inc., New York, N.Y.

Filed Nov. 5, 1968, Ser. No. 773,523
Int. Cl. H03k *5/00*
U.S. Cl. 307—261 **16 Claims**

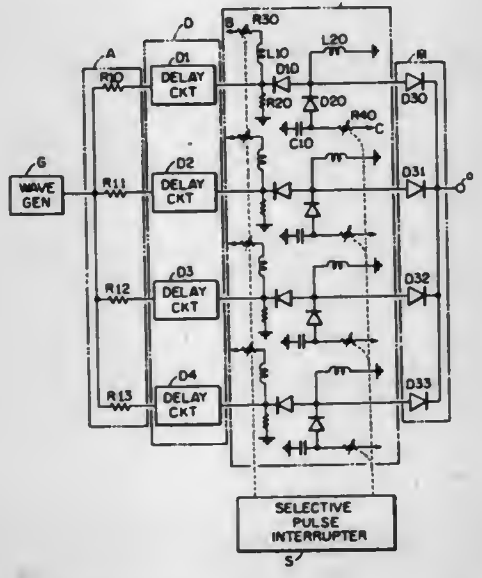

MANUAL START
TO OSCILLOGRAPH MOTOR
TO EXT CLOCK
TIME DELAY 0.5 SEC
INTERVAL TIMER 1-60 SEC
EXTERNAL STOP SIGNAL INPUT
(START)
MANUAL RESET
START-STOP SWITCH
(STOP)
ADJUSTABLE VOLTAGE RAMP GENERATOR
VOLTAGE DRIVER WITH ADJUSTABLE BASE LEVEL
VOLTAGE VARIABLE TIME DELAY 175-800 μ SEC
GATE CONTROLLED START PULSE GENERATOR
MONO-STABLE FLIP-FLOP 8000 μ SEC
BI-STABLE FLIP-FLOP
NARROW BAND PASS FILTER
POWER AMP
PRE-AMP LEVEL ADJ
A
C
D
E
22

The voltage from a ramp generator, under the control of a control circuit, is superimposed upon an adjustable base frequency selecting voltage and utilized to control the time delay afforded by one stage of a 2-stage ring-type oscillatory system. The second stage provides a fixed time interval which when added to the delay provided by the first stage determines the period of one-half cycle of the desired output signal. The asymmetric signals from the oscillatory circuit control a bistable flip-flop whose symmetrical output is filtered to provide a sinusoidal test signal.

3,609,404
WORD PULSE GENERATING DEVICES USING SUCCESSIVE DELAY FOR PULSE FORMATION

Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Company Limited, Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 858,075
Claims priority, application Japan, Sept. 20, 1968, 43/67544
Int. Cl. H03k *5/00*
U.S. Cl. 307—261 **5 Claims**

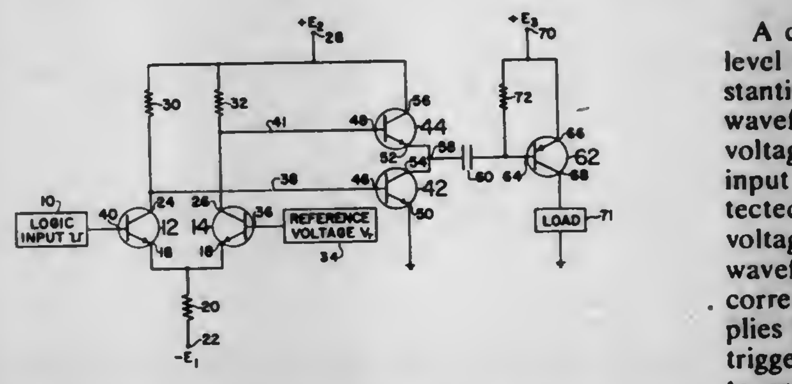


A clock pulse generator for word pulses is comprised of a signal generator, a distributor to divide the signal generated by the signal generator into a plurality of outputs, a plurality of parallel circuits connected to receive the divided signals, each circuit including a serially connected delay circuit and a pulser, and a mixer to combine outputs from the parallel circuits characterized in that the respective parallel circuits have equal delay time difference.

3,609,405
SHARP RISE-AND-FALL TIME, HIGH-AMPLITUDE PULSE GENERATOR

Jon M. Surprise, Mogadore, and Charles D. Blust, Stow, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Feb. 3, 1969, Ser. No. 795,799
Int. Cl. H03k *5/12*
U.S. Cl. 307—263 **6 Claims**

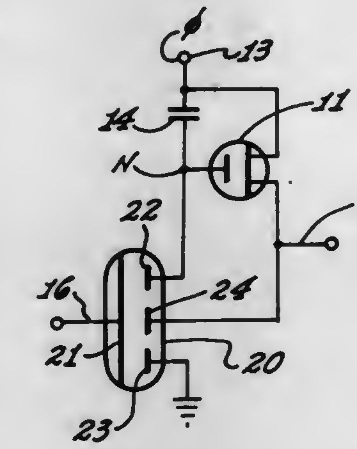


A pulse circuit switches in response to a bipolar digital logic input pulse to provide a sequential on-drive off-drive current thru low-impedance charge and discharge paths to drive an output semiconductor circuit. The output semiconductor circuit responds to the on-drive off-drive current and switches to provide a low-impedance charge path for a high-amplitude, high-speed output current pulse.

3,609,406
INTEGRATED CIRCUIT INVERTER

Terry R. Walther, Sunnyvale, Calif., assignor to Electronic Arrays Inc., Mountain View, Calif.

Filed Feb. 16, 1970, Ser. No. 11,565
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **12 Claims**

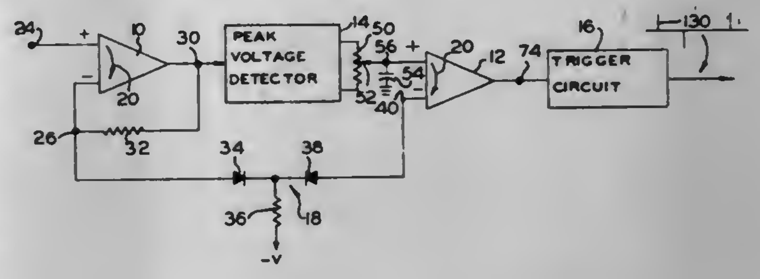


A push-pull inverter is disclosed with MOS-FET devices; a pair of FET's is connected between two terminals, the function serves as output. One FET of the pair has its gate connected to a pulse source through a capacitor and to the drain electrode another FET device which may be partially incorporated in the other one of the pair. The latter device has common grounded source and common gate to receive input. Two of such inverters can be cross coupled to establish a bistable device, or they can be serially connected as doubly inverting buffer, operated in either case by a common clock. Two such inverters can be serially connected and operated by alternating clocks and with coupling circuitry interposed for node separation to establish a shift register stage.

3,609,407
AUTOMATIC TRIGGER LEVEL CONTROL CIRCUIT

Valdis E. Garuts, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed June 9, 1969, Ser. No. 831,626
Int. Cl. H03k *5/20, 5/00*
U.S. Cl. 307—264 **11 Claims**

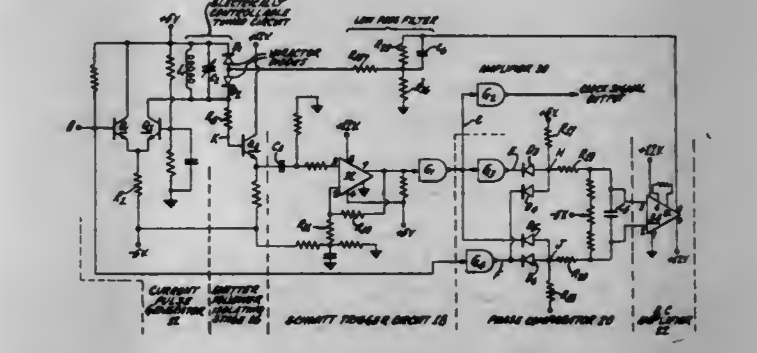


A circuit is disclosed for automatically varying the trigger level of a trigger circuit in order to maintain this level substantially proportional to the amplitude of a series of similar waveforms of an input signal. A peak detector provides a voltage substantially proportional to the peak voltage of the input waveforms. A manually adjustable fraction of the detected voltage is delivered to a control circuit as a control voltage to cause selection of increments of the input waveforms crossing a signal voltage level of these waveforms corresponding to the control voltage. The control circuit supplies control signals corresponding to such increments to a trigger circuit at a signal level which causes the trigger circuit to produce trigger pulses when the varying voltages of the input waveforms cross a signal level within the selected increments. This signal level remains substantially proportional to the peak voltage of the input signal waveforms even though this peak voltage changes.

3,609,408
CLOCK PULSE GENERATOR

Lewis Rand Motisher, Canoga Park, and Emil Engel, Los Angeles, both of Calif., assignors to RCA Corporation

Filed Sept. 30, 1969, Ser. No. 862,207
Int. Cl. H03k *17/00*
U.S. Cl. 307—269 **4 Claims**



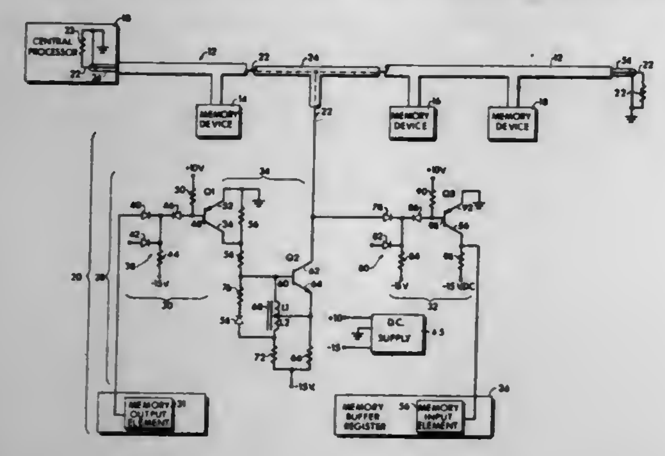
Signals such as pulses derived from binary data signals are employed to excite a tuned circuit. When the frequency *nf* to which the tuned circuit is tuned differs from *n* times the actual frequency *f* of the binary data signals, a control signal is produced which is employed to tune the tuned circuit in a sense and amount to reduce the control signal to zero. Clocking signals synchronous with the binary data signals may be derived from the tuned circuit.

3,609,409
DATA TRANSMISSION CIRCUIT

Richard L. Best, Wayland, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

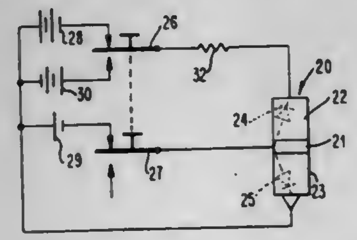
Filed Aug. 10, 1965, Ser. No. 478,545
Int. Cl. H03k *3/30, 19/22*
U.S. Cl. 307—275 **11 Claims**

A data transmission circuit for transmitting pulses from a data unit over a buss includes a regenerative pulse amplifier that responds to gated pulses from the data unit by applying pulses of predetermined amplitude and shape to the buss. The amplifier includes a PN junction in series with its connection to the buss, with this junction being reverse biased in the absence of a pulse from the amplifier so as to present a high impedance to the buss. Regeneration is accomplished by means of an autotransformer which simplifies the amplifier circuit.



3,609,410
SWITCHING CIRCUITS UTILIZING MINORITY CARRIER INJECTION IN A SEMICONDUCTOR DEVICE

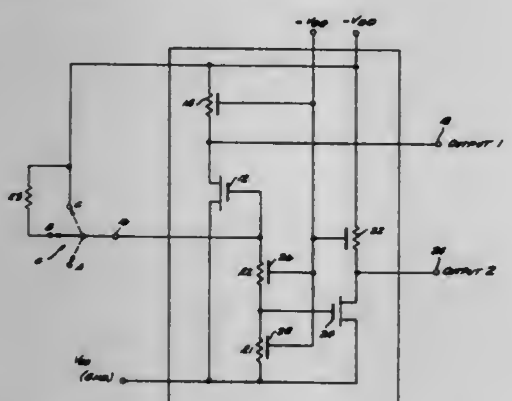
Jerry Saia, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 14, 1966, Ser. No. 586,775
Int. Cl. H03k *3/26*
U.S. Cl. 307—300 **4 Claims**



A family of circuits characterized by storage mode operation in a switching circuit employs minority carrier injection from the base into the collector region of a semiconductor device. The minority carrier charge stored in the collector thereafter causes amplified forward collector-emitter current when forward collector potential is applied. Particular examples of the circuit family include inverters, single-shot circuits, transistor oscillators and electronic switching in general.

3,609,411
MOSFET LEVEL DETECTOR

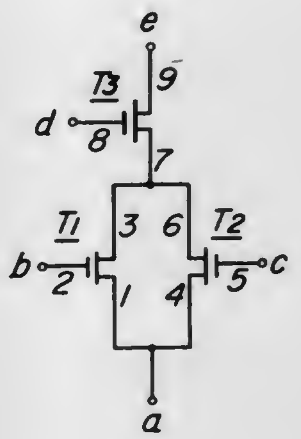
Stephen P. F. Ma, Santa Monica, and Thomas J. Kosco, Harbor City, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed July 6, 1970, Ser. No. 52,495
Int. Cl. H03k *5/20*
U.S. Cl. 307—304 **4 Claims**



A metal oxide semiconductor field effect transistor (MOSFET) circuit of a type that can be constructed on a single semiconductor substrate. The circuit detects which of three possible conditions is applied to a single input. The circuit will provide a two-bit digital output signal indicative of the input condition. The circuit includes two MOSFET inverters and a MOSFET resistor divider network.

3,609,412
INTEGRATED IGFET SIGNAL CONVERTER CIRCUIT

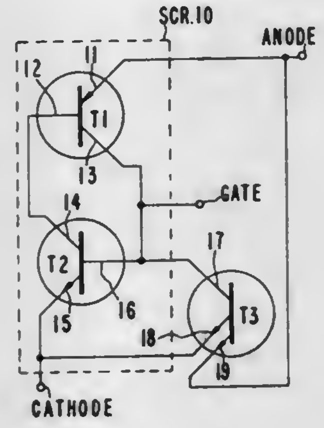
Tomisaburo Okumura, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan
Filed Sept. 16, 1969, Ser. No. 858,468
Claims priority, application Japan, Sept. 19, 1968, 6897/68
Int. Cl. H01l *19/00*
U.S. Cl. 307—304 **3 Claims**



An integrated circuit element comprising two insulated-gate field-effect transistors connected in parallel and another insulated-gate field-effect transistor connected in cascade thereto, which works stably as a converter, e.g. a local oscillator or a frequency converter element in a radio or television receiver and which can be easily designed because few outgoing electrode lead wires are necessary for integration.

3,609,413
CIRCUIT FOR THE PROTECTION OF MONOLITHIC SILICON-CONTROLLED RECTIFIERS FROM FALSE TRIGGERING

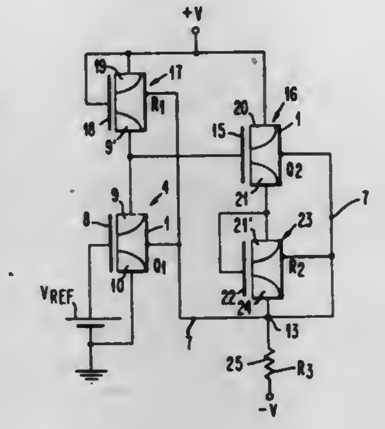
Richard Q. Lane, La Honda, and John S. MacDougall, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mt. View, Calif.
Filed Nov. 3, 1969, Ser. No. 874,533
Int. Cl. H02h *7/20*
U.S. Cl. 307—305 **7 Claims**



Power supply voltage transients are prevented from turning on a silicon-controlled rectifier by use of a dual-emitter current switch to short circuit a given PN junction within the silicon-controlled rectifier for the duration of each transient.

3,609,414
APPARATUS FOR STABILIZING FIELD EFFECT TRANSISTOR THRESHOLDS

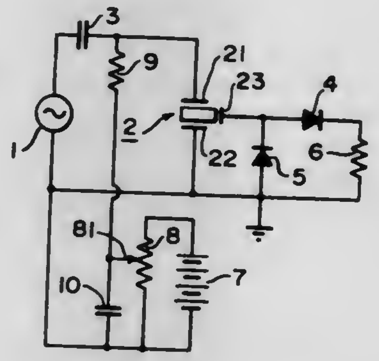
Peter Pleshko, Waldwick, N.J., and Lewis M. Terman, South Salem, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 20, 1968, Ser. No. 753,923
Int. Cl. H03k *17/14*
U.S. Cl. 307—310 **7 Claims**



Apparatus is disclosed which permits the adjustment and stabilization of field effect transistor threshold voltages so that the variation in threshold voltages due to fabrication nonuniformities are reduced to a minimum. This is accomplished by utilizing one of a plurality of field effect devices on a semiconductor chip as a sensor to detect changes in the characteristics of the devices, from whatever cause. A feedback circuit provides a signal which adjusts the voltage applied to the semiconductor chip or substrate and returns the threshold voltage to some nominal value. Several circuit arrangements are shown which accomplish the desired result. A plurality of chips each having a sensor and associated feedback circuitry is also disclosed indicating the environment in which the concept of the present invention is used most advantageously.

3,609,415
PIEZOELECTRIC TRANSFORMER CIRCUITS

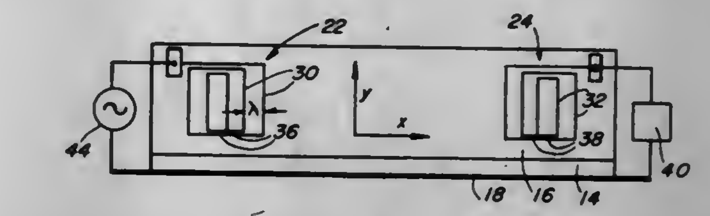
Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company Limited, Nishirokug, Ohoto-ku, Tokyo, Japan
Filed July 13, 1970, Ser. No. 54,385
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **8 Claims**



In a piezoelectric transformer circuit wherein a high voltage is produced at the output electrode of the piezoelectric transformer by applying a driving voltage of a frequency equal or close to the resonance frequency of the piezoelectric transformer across the driving electrodes thereof, a DC voltage is impressed upon the driving electrode to vary the resonance frequency to regulate the output voltage characteristics.

3,609,416
MICROACOUSTIC SURFACE-WAVE TRANSDUCER

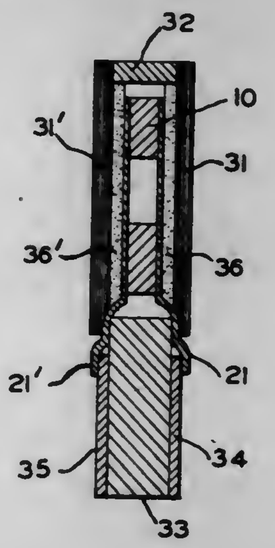
Max Epstein, Highland Park, Ill., assignor to Northwestern University, Evanston, Ill.
Filed Aug. 12, 1970, Ser. No. 63,131
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.2 **11 Claims**



A surface-wave transducer, fulfilling in a single structure the requirements of both electric and acoustic matching. There is also disclosed a convenient technique for the transduction of signals having a wide frequency bandwidth. The transducer used can be produced utilizing simple photoetching techniques and may be employed at extremely high frequencies.

3,609,417
PIEZOELECTRIC CERAMIC RING RESONATOR

Yuichi Kaname, and Kingo Wada, both of Osaka-fu, Japan, assignors to Mitsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Jan. 20, 1970, Ser. No. 4,201
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.5 **1 Claim**

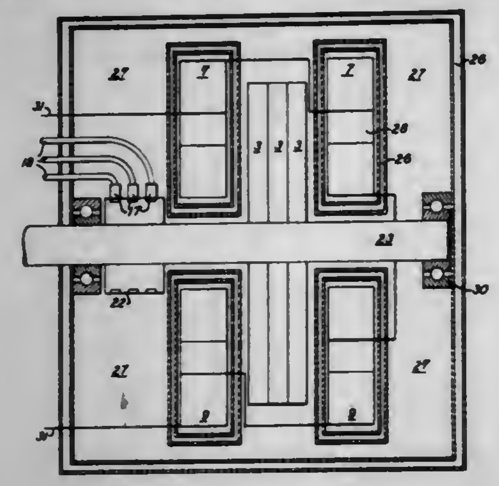


A piezoelectric ceramic resonator adapted for an IF filter comprises a piezoelectric ceramic thin ring having two electrodes applied to opposed major surfaces, and two conductive plates secured to each electrode, each of the conductive plates consisting essentially of a lead stem and a conductive ring similar in the size and shape to the piezoelectric ceramic ring. The ceramic ring is a fundamental resonant frequency of radial vibration mode.

3,609,418
MECHANICAL POWER TRANSMISSION SYSTEMS

Edward Halas, P.O. Box 2682, Detroit, Mich.
Continuation-in-part of application Ser. No. 492,110, Oct. 1, 1965, now Patent No. 3,521,091, dated July 21, 1970. This application Sept. 30, 1969, Ser. No. 862,195
Int. Cl. H02k *9/197, 49/04, 51/00*
U.S. Cl. 310—10 **22 Claims**

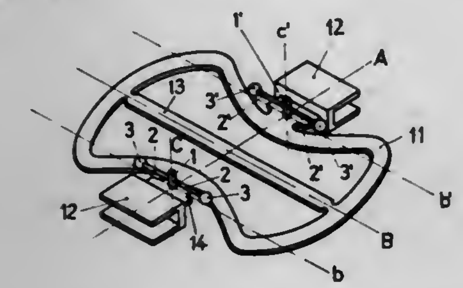
A foil strip-type conductor for producing a magnetic field which is immersed in a fluid such as liquid nitrogen or helium cooled to cryogenic temperatures, the liquid being in moving contact with each strip of the conductor. A power transmission system having primary means for producing a magnetic field which is a superconductive foil coil immersed in a liquid coolant such as helium and secondary means responsive to the magnetic field which is maintained at cryogenic but not necessarily a superconductive temperature by a liquid coolant such as nitrogen and which rotates within an enclosure containing such coolant.



3,609,419
MECHANICAL RESONATORS FOR STANDARD FREQUENCY OSCILLATORS

Andre Greuter; Arpad Korom, and Peter Donatsch, all of Zurich, Switzerland, assignors to Gesellschaft, zurForderung der Forschung an der Eidgenossischen Technischen Hochschule, Zurich, Switzerland

Filed Jan. 30, 1970, Ser. No. 7,008
Claims priority, application Switzerland, Feb. 5, 1969, 1728/69
Int. Cl. H02k *33/00*
U.S. Cl. 310—25 **18 Claims**



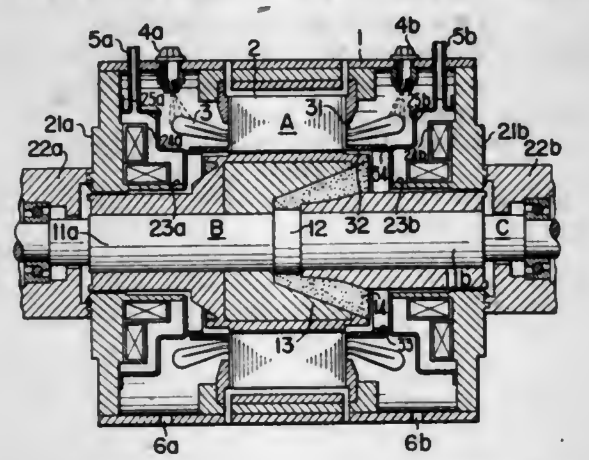
A mechanical resonator comprising a primary vibrator having a spring member with two axes of symmetry at right angles and two vibration masses coupled to the spring member and arranged to vibrate in mutually opposite senses with the centers of vibration thereof arranged to move on a rectilinear path which coincides with one of said axes. An even number of pairs of secondary vibrators are carried by said primary vibrator with at least one pair of said secondary vibrators associated with each of said vibration masses of the primary vibrator. The centers of vibration of the two secondary vibrators which together form each pair are arranged to move with components of motion parallel to the said axis of symmetry coincident with the path of of the vibration masses of the primary vibration which are in the same sense, and with components of motion at right angles to this axis of symmetry which are mutually opposed.

3,609,420
LIQUID-COOLED DYNAMOELECTRIC MACHINES

Junpei Inagaki, Yokohama-shi; Moriyoshi Sakamoto, Yokohama-shi; Tsuneo Nakakita, Kawasaki-shi; Yasuaki Kanda, Tokyo, and Hiroyuki Kitamura, Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd, Kawasaki-shi, Japan

Filed Sept. 29, 1969, Ser. No. 861,601
Claims priority, application Japan, Oct. 1, 1968, Oct. 1, 1968, Oct. 1, 1968, Oct. 1, 1968, Oct. 1, 1968, 43/70781;43/70873;43/70874;43/70879;43/70880
Int. Cl. H02k *9/19*
U.S. Cl. 310—54 **5 Claims**

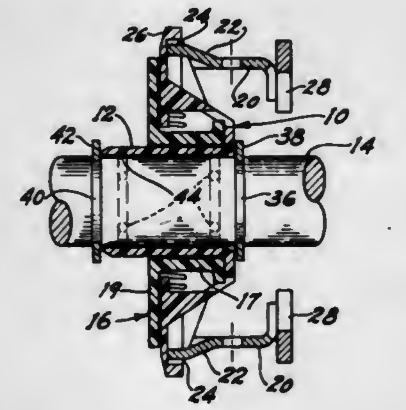
A liquid-cooled dynamoelectric machine wherein the rotor is enclosed by a liquid-tight nonmagnetic cylindrical shielding member and cooling liquid is sprayed directly upon high-temperature portions of the stator such as end turns of the armature winding.



3,609,421
CENTRIFUGAL ACTUATOR

Eugene F. Hildebrandt, Ferguson, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 21, 1970, Ser. No. 39,355
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 **5 Claims**

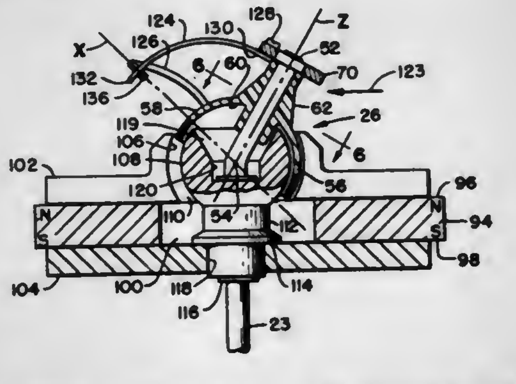


A centrifugal starting switch actuator for AC electric motors mounted on a motor shaft for rotational movement thereon between two angularly spaced stops, there being means providing a light frictional drag between the shaft and actuator, the actuator being positively accelerated to switch actuation speed as the motor is accelerated to running speed by engagement with one of the stops and thereafter at running speed is free to drift between the angularly spaced stops against the light frictional drag as the motor shaft is accelerated and decelerated by motor torque pulses, whereby motor torque pulses which would otherwise rattle hinged actuating members are absorbed.

3,609,422
WOBBLE ELEMENT MOTOR

Robert W. Nordin, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 17, 1969, Ser. No. 885,780
Int. Cl. H02k *7/06*
U.S. Cl. 310—82 **27 Claims**

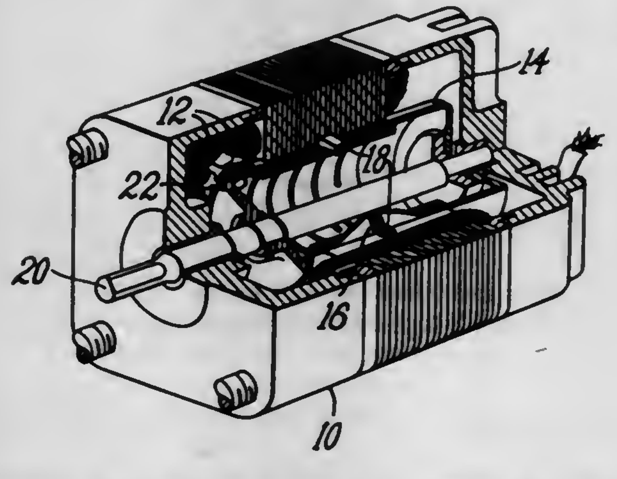


An inductance coil structure of spherical configuration comprises a movable element for driving the motor. It is wobbleably mounted concentrically of an angularly offset section of the output shaft of the motor for generating motor output torque responsively to the wobbling. A permanent magnet provides a spherical airgap within which magnetic flux induced by current flow in the coil structure coacts with the flux field of the magnet to wobble the movable element. Serially connected coils of said structure are disposed in opposed quadrants of the configuration to simultaneously push and pull the movable element and produce the wobble movement their in any selected direction, thereby to selectively vary the extent and direction of shaft movement about its axis of rotation.

3,609,423
BRIDGING STRIP FOR DEFLECTABLE ARMATURES

Willard B. Spring, Topsfield, and Walter R. Woodward, Carlisle, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed June 25, 1970, Ser. No. 49,835
Int. Cl. H02k *7/00*
U.S. Cl. 310—82 **5 Claims**

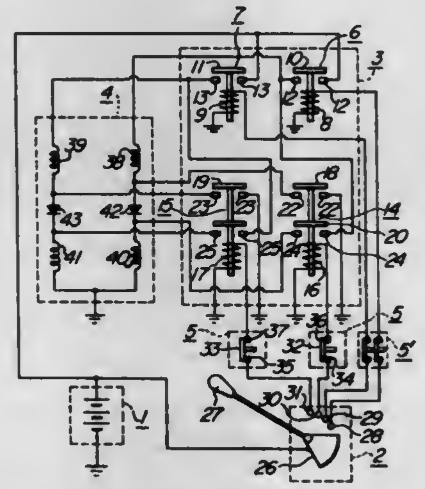


Magnetic material has a unique configuration to reduce reluctance and improve performance of stepping or synchronous motors of the type employing deflectable armatures. Specifically, for instance, to reduce or eliminate nonuniformity of peripheral airgap the outer convolution or a portion thereof of the magnetic strip has its thickness gradually diminishing towards its outer end and/or is provided, at the length of such convolution from its end, with a radial, widthwise extending projection of substantially the same dimension as the thickness of the material at that end. Alternatively, concentric bridging tubes may be employed. A longitudinal slit pattern may be used to reduce eddy currents.

3,609,424
EDDY CURRENT-TYPE RETARDER

Tadao Murakami, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 6, 1970, Ser. No. 35,060
Claims priority, application Japan, May 9, 1969, 44/35167
Int. Cl. H02k *49/04*
U.S. Cl. 310—93 **8 Claims**

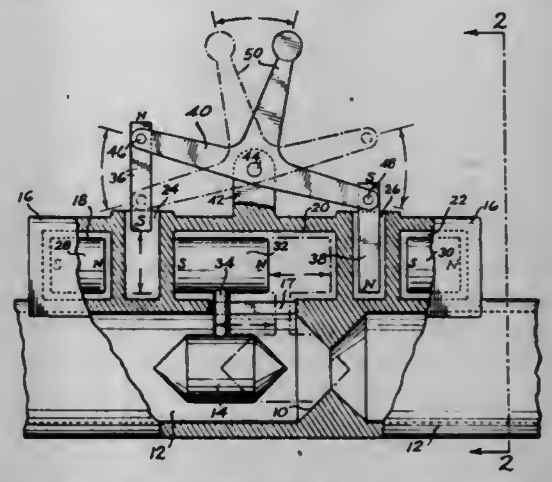


An eddy-current-type retarder wherein individual exciting coils are shiftably connected in series or in parallel with each other to obtain quick deceleration or slow deceleration as desired without degrading the utility of said exciting coils and the electric circuit is so arranged that the function of the retarder is automatically shifted from quick deceleration to slow deceleration within a safe range, as the temperature of said exciting coils rises.

3,609,425
RECIPROCATING MAGNET MOTOR

Francis R. Sheridan, 170-23 Pacific Ave., Spanaway, Wash.

Filed Apr. 7, 1970, Ser. No. 26,324
Int. Cl. H02k *49/10*
U.S. Cl. 310—103 **6 Claims**

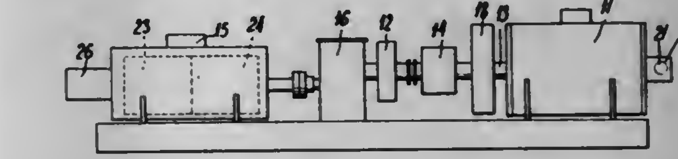


A reciprocating magnetic actuator comprises first and second magnets and mounting means mounting the same in fixed, spaced, aligned relation with unlike poles facing each other. First guide means are interposed between and aligned with the first and second magnets. A third magnet is freely reciprocatable therein, being aligned with the first and second magnets and arranged with its poles facing unlike poles thereof. Stops at each end of the first guide means arrest the reciprocation of the third magnet at predetermined travel limits. Fourth and fifth magnets are interposed between the stops and the first and second magnets respectively. They are arranged substantially normal to the latter with like poles facing the like poles of the third magnet. Reciprocating drive means advance the fourth and fifth magnets alternately into the fields of force of the third magnet, thereby causing its reciprocation in the guide means. The force thus generated is used to drive a selected appliance through a power takeoff carried by the third magnet.

3,609,426
INERTIA-DRIVEN STANDBY ELECTRIC GENERATOR UNIT

Richard Gaul, Metz, Moselle, France, assignor to Paul Racaniere, Nimes, France

Filed Apr. 30, 1969, Ser. No. 820,353
Claims priority, application France, May 17, 1968, 152,176
Int. Cl. H02k *17/44*
U.S. Cl. 310—112 **15 Claims**



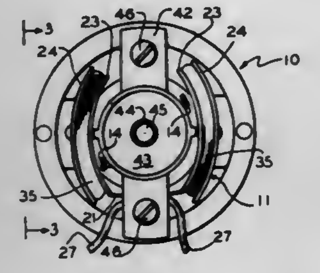
A flywheel rotated above the mound speed of a generator is selectively coupled to the generator through a variable-speed clutch upon power failure to keep the generator speed constant during the time it takes to substitute a standby power source.

3,609,427
FIELD COIL STRUCTURE FOR ELECTRIC MOTOR

Max E. Lautner, Alexandria Bay, and George Hale Smith, Sackets Harbor, both of N.Y., assignors to Bomax Division, Gould Inc., Watertown, N.Y.

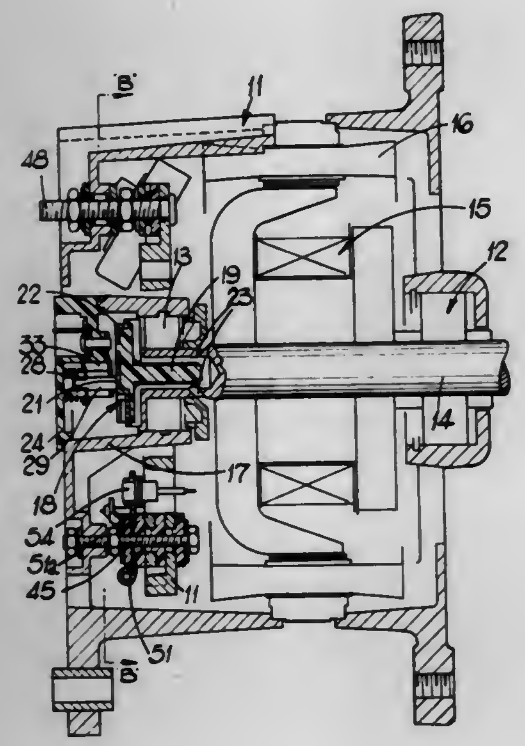
Filed May 13, 1970, Ser. No. 36,766
Int. Cl. H02k *3/52*
U.S. Cl. 310—194 **3 Claims**

An electric motor has a stator ring and a separate stator yoke spaced therefrom and having pole tip projections adapted to be pressed in place inside the ring. A stator coil supporting structure of bendable plastic has a pair of bobbins with central apertures therethrough in which the pole tip projections are adapted to fit and radially projecting flanges adapted to extend along the inner and outer sides of a coil wound on each bobbin. An integral connecting strip is joined to one side of each inner bobbin flange for supporting the crossover wire between the coils, the structure being adapted to be bent on either side of the connecting strip into a generally U-shape. The strip has tubular securing portions for the inner ends of a pair of lead wires and has a projecting tab adapted to be bent and folded down over the crossover wire, a portion of the tab being adapted to snap into a recess formed between the tubes by projections on the tubes.



3,609,428
DYNAMO ELECTRIC MACHINE HAVING IMPROVED SLIPRING ASSEMBLY

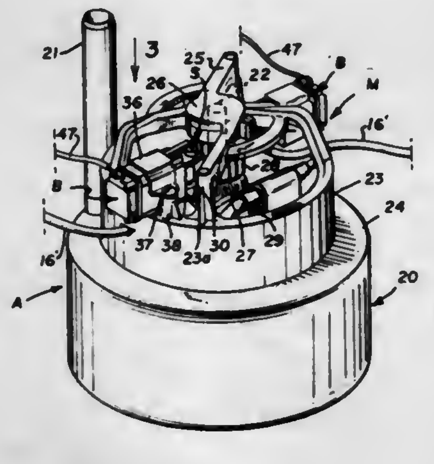
Herbert John Thomas Cotton, "Lea Mount" 195, Alcester Road, Hollywood, and Robert Hemmings, 49 Masters Lane, Halesowen, both of England
Filed Jan. 9, 1970, Ser. No. 1,642
Claims priority, application Great Britain, Jan. 13, 1969, 1880/69
Int. Cl. H01v *39/06*
U.S. Cl. 310—232 **5 Claims**



This invention relates to dynamo electric machines. The dynamo electric machine includes a frame which supports a pair of bearings. A rotor shaft is journaled for rotation in the bearings, and carries a rotor assembly. A slipring assembly is also carried by the rotor shaft, and a brush assembly is provided, the brushes of which engage the slipring assembly. One end of the rotor shaft extends beyond one of the bearings, and is formed with an axial bore. The slipring assembly includes an integral spigot which is engaged as an interference fit in the bore in the rotor shaft, the spigot serving to support the slipring assembly on the rotor shaft so that the slipring assembly rotates with the rotor shaft. The slipring assembly is electrically connected to the rotor windings by way of leads which extend through the bearing, and so rotate with the shaft.

3,609,429
BRUSH WEAR INDICATOR

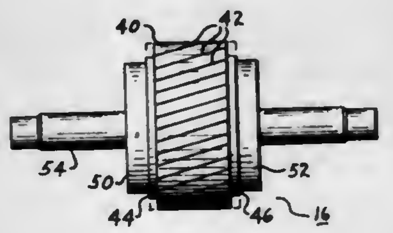
Harris A. Thompson, P.O. Box 916, Boulder, Colo.
Continuation-in-part of application Ser. No. 714,555, Mar. 20, 1968, now Patent No. 3,523,288. This application Feb. 2, 1970, Ser. No. 7,539
Int. Cl. H02k *13/00*
U.S. Cl. 310—246 **10 Claims**



A brush wear indicator for an electric motor including a switch which is held in an open, or closed, state by a pin contacting and biased against a side of a motor brush. The switch trips to initiate a warning device whenever the brush is nearly worn out and lets the pin drop over an edge of the brush. A switch may be used with one or with each brush and when used with both, either switch will actuate the warning device. The warning device may be a light adapted to burn steadily or it may continually flash by including a flasher means in the warning device circuit.

3,609,430
ARMATURE WITH HIGH RESISTANCE END RINGS AND HEAT DISSIPATION ARRANGEMENT

James F. Buffington, R.R. #3, Plymouth, Ind.
Filed Oct. 9, 1969, Ser. No. 864,979
Int. Cl. H02k *1/22*
U.S. Cl. 310—265 **2 Claims**

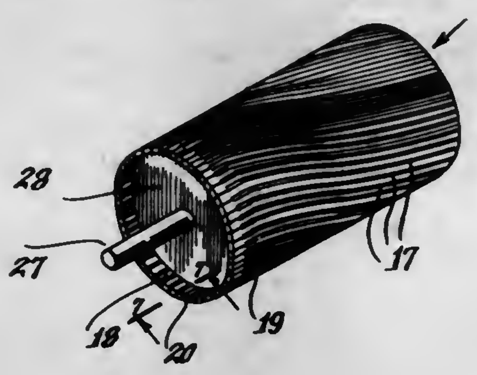


An armature including high-resistance end rings and a disk-shaped member located on each of the two ends of the core of the armature for obtaining an efficient starting and smooth running motor and increasing the life of the motor. The end rings are of a smaller diameter than the core of the rotor.

3,609,431
HOLLOW PRINTED CIRCUIT ARMATURE

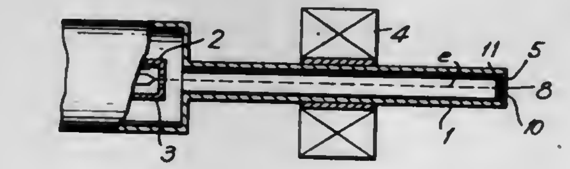
Joshua Lifschitz, Stamford, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed July 25, 1969, Ser. No. 844,884
Int. Cl. H02k *1/22*
U.S. Cl. 310—266 **4 Claims**

A printed circuit armature wherein the conductors are printed on one face of an insulated support member, and which member is adapted to be folded into opposing leaf portions and then rolled into a cylinder whereby the conductors are arranged on the inner and outer surfaces of the cylinder.



3,609,432
THIN TARGET X-RAY TUBE WITH MEANS FOR PROTECTING THE TARGET

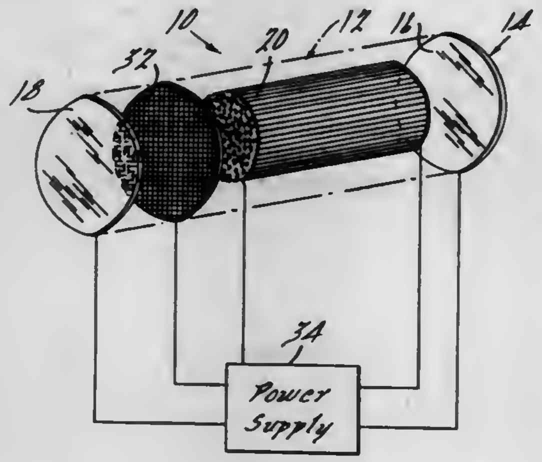
Yoshihiro Shimula, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan
Filed Nov. 8, 1968, Ser. No. 774,396
Int. Cl. H01j *35/08, 35/16, 35/33*
U.S. Cl. 313—59 **11 Claims**



In X-ray tubes having thin targets such as foils, a problem is encountered in the deterioration of the foils, due to heat caused by bombardment by an electron beam. The invention avoids this deterioration in accordance with the one embodiment by providing water-cooled blocks in contact with the target and provided with openings through which the electron beam and/or emitted X-rays can pass and in accordance with another embodiment by providing an antioxidizing coating on the target.

3,609,433
PROXIMITY-FOCUSED IMAGE STORAGE TUBE

M. David Freedman, Southfield, Mich., assignor to The Bendix Corporation
Filed Sept. 29, 1969, Ser. No. 861,748
Int. Cl. H01j *31/26, 31/50*
U.S. Cl. 313—65 R **5 Claims**



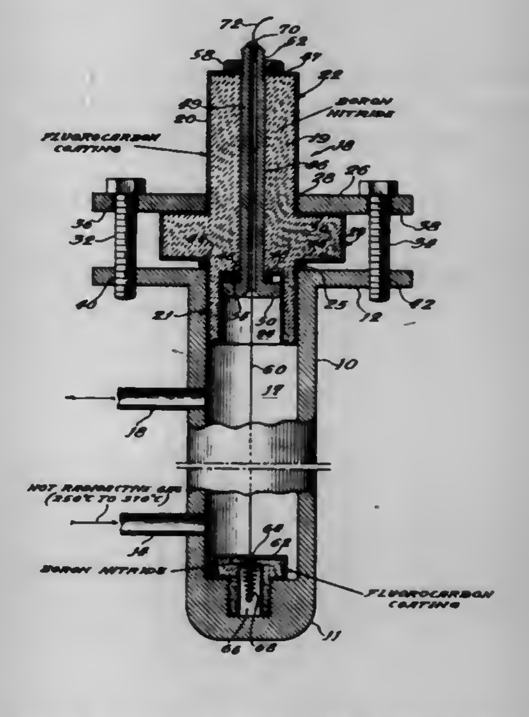
A proximity-focused image storage tube having a high-potential readout surface, a passageway structure spaced from the readout surface for transmitting electrons to the readout surface, and a thin, nonconductive charge storage surface formed on the input end of the passageway structure. The passageway structure comprises an array of glass tubes. A first conductive surface is disposed on the input end of the array between the glass tubes and the storage surface. A second conductive surface is formed on the output end of the array. Voltage potentials are maintained on these conductive surfaces. The voltage potential of the second surface isolates the storage surface from the field produced by the high-potential readout surface so that the storage surface can be placed very close to the high-potential readout surface. The storage tube described herein therefore provides a highly focused output image because readout electrons will travel only short distances from one surface to another and therefore have little opportunity to defocus. A potential gradient is maintained between the two conductive surfaces during readout to provide both electron multiplication and a collimated electron output flow from each passageway. The electron multiplication allows an image to be read out of this tube for a relatively long time without degrading the stored image because relatively few electrons need approach the storage surface to produce a given output signal.

ERRATA

For Classes 313—70 and 313—82 see:
Patent Nos. 3,609,400 and 3,609,401

3,609,434
HIGH-TEMPERATURE PROPORTIONAL COUNTER AND INSULATOR CONSTRUCTION THEREFOR

Daniel S. Berry, Chicago, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.
Filed July 19, 1967, Ser. No. 654,601
Int. Cl. H01j *39/26, 39/28*
U.S. Cl. 313—93 **5 Claims**

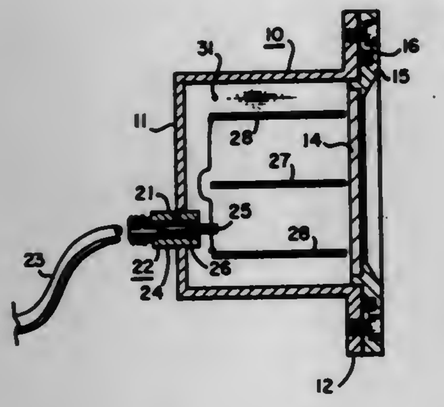


A boron nitride core is coated with polytetrafluorethylene (Teflon) or a similar fluorocarbon resin to form a composite gas-sealant insulator for use at temperatures up to about 370° C., highly resistant to mechanical deformation or chemical attack. A flow proportional counter incorporating the insulator construction is employed as a detector in gas chromatography.

3,609,435
FAST-RESPONSE IONIZATION CHAMBER FOR DETECTING IONIZING RADIATION FROM 0.1 TO 60 ANGSTROMS

Randolph G. Taylor, Washington, D.C., and John Lewis, Jr., Falls Church, Va.
Filed Oct. 30, 1968, Ser. No. 771,793
Int. Cl. H01j *39/26, 39/28*
U.S. Cl. 313—93 **4 Claims**

This invention is directed to an ionization chamber having a rectangular housing including therein spaced anode plates with a centrally located cathode. This ionization chamber has a fast response for detection of ionizing radiation in various bands from 0.1 to 60A depending on the gas filling and window material (for example 0.5–3.0A uses a 50-mil-thick beryllium window and 2 atm, of krypton) with a fast recovery. Fast response is brought about by the relationship of the cathode to the anodes in which the spacing and electric field is uniform along the length of and on opposite sides of the cathode. The chamber is filled with a gaseous filling selected from one of the following, nitrogen, carbon tetrachloride, xenon, nitrogen, krypton or argon and is provided with a removable beryllium, Mylar or aluminum window through which the ionizing radiation enters the chamber.



3,609,436

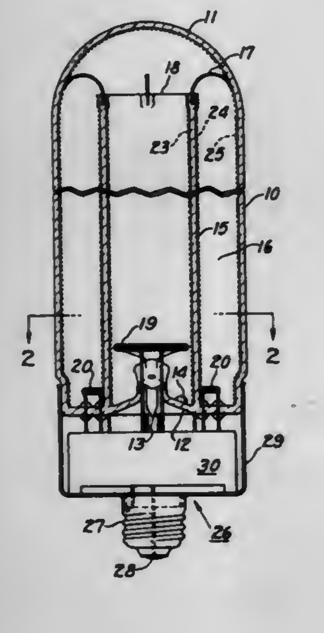
FLUORESCENT LIGHT SOURCE WITH A PLURALITY OF SEQUENTIALLY ENERGIZED ELECTRODES

John H. Campbell, Mentor, Ohio, assignor to General Electric Company

Filed Apr. 21, 1969, Ser. No. 817,736

Int. Cl. H01j *7/04*

U.S. Cl. 313—204 **6 Claims**



This invention relates to a fluorescent lamp with an elongated discharge path of annular or flat cross section and with a multiplicity of at least four sequentially energized electrodes at one end of the discharge path in combination with switching means, preferably of the solid state-type for energizing the electrodes.

In a preferred embodiment of the invention the lamp has a single base at one end and the auxiliary equipment for operating the lamp is arranged within the lamp base.

3,609,437

ELECTRIC DISCHARGE LAMP COMPRISING CONTAINER OF DENSELY SINTERED ALUMINUM OXIDE

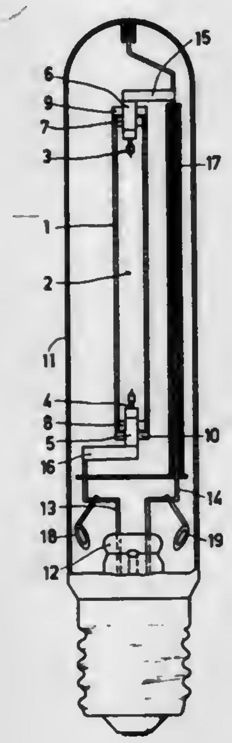
Taeke Tol, and Bertus De Vrijer, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1968, Ser. No. 711,763

Claims priority, application Netherlands, Mar. 31, 1967, 6704681

Int. Cl. H01j *17/16*

U.S. Cl. 313—220 **11 Claims**



Electric gas discharge lamp having an envelope of densely sintered aluminum oxide and employing an alkali metal vapor as the discharge medium. A current supply member for an electrode assembly is sealed in each end of the envelope by means of a sealing element of densely sintered aluminum oxide which is sintered to the inner wall of the envelope and is provided with an aperture into which a cylindrical current lead-in supporting at one end an electrode assembly is secured in a gastight manner. The current lead-in member is provided with a cover for the envelope which is sealed to the latter by a sealing glass having a melting point higher than 800° C. and lower than the melting point of the aluminum oxide or the current supply member.

3,609,438

ELECTRON GUN WITH NICKEL GRID PLATE AND COPPER-NICKEL ALLOY GRID CYLINDER

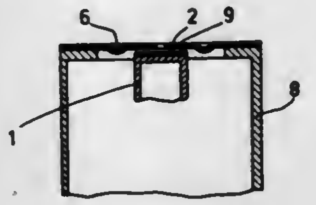
Johannes Van Esdonk, and Johannes Petrus Hornman, both of Emmasingel, Eindoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed May 5, 1970, Ser. No. 34,650

Claims priority, application Netherlands, May 24, 1969, 6908004

Int. Cl. H01j *1/14, 1/48, 19/06*

U.S. Cl. 313—311 **3 Claims**



An electron gun the first perforated electrode of which, which surrounds the cathode, consists of a perforated plate of nickel which is secured to a cylinder consisting of a copper-nickel alloy. (FIG. 3.)

3,609,439

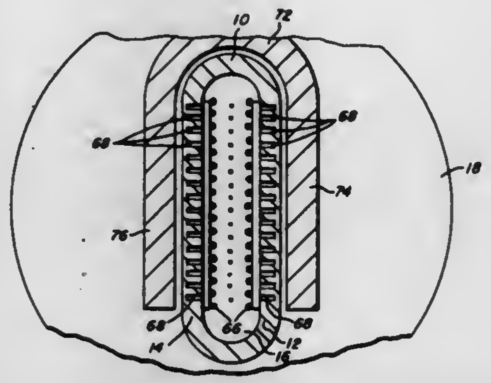
ANODE HAVING SPACED CAVITIES FOR SUPPRESSION OF SECONDARY EMISSION

Barry M. Singer, New York City, N.Y., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Feb. 27, 1969, Ser. No. 802,797

Int. Cl. H01j *1/36, 1/40, 43/28*

U.S. Cl. 313—352 **2 Claims**



A magnetically focused beam power tube having an anode provided with means for suppressing secondary emission, which means comprises Faraday cage-type cavity structures having magnetic shielding for providing substantially magnetic-free regions within the cavities.

3,609,440

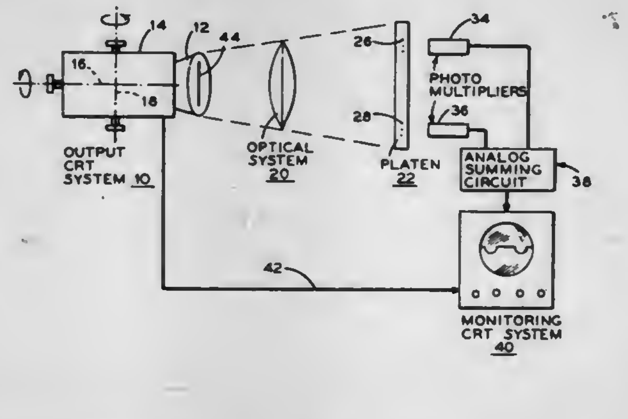
METHOD FOR ALIGNING A SCANNING LIGHT BEAM ON A PLATEN

Ronald F. Cooper, Warrenton, Va., assignor to Alphanumeric Inc., Lake Sucess, N.Y.

Filed May 26, 1969, Ser. No. 827,527

Int. Cl. H01j *29/70*

U.S. Cl. 315—10 **1 Claim**



A horizontal line trace on the face of a first cathode-ray tube display is projected onto a platen. The image of the trace is to sweep over a given line on the platen. The given line is defined by two displaced nonuniformly contoured apertures in the platen. The light passing through the apertures is visually displayed as waveforms on a monitoring cathode-ray tube display and the first cathode-ray tube display is repositioned in accordance with the displayed waveforms until particular waveforms are displayed indicating the image of the trace is sweeping over the given line on the platen.

3,609,441

FIELD-EFFECT VIEWING STORAGE TUBE

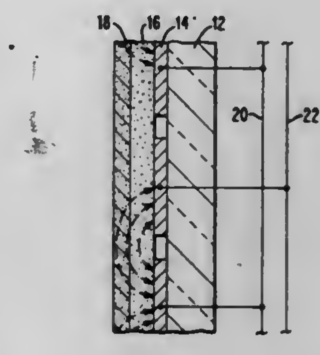
Euval S. Barrekette, New York City, N.Y., and Herbert B. Baskin, Yorktown, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 16, 1969, Ser. No. 833,445

Int. Cl. H01j *29/22*

U.S. Cl. 315—12 **8 Claims**

An improved halftone charge-controlled viewing storage tube which uses the field-effect principle is described. The tube is characterized as having as its face plate a panel comprising a light transparent support plate, a light transparent conductive coating on one side of such support plate a first electroluminescent material layer disposed over the conductive coating and a layer of a uniform mixture of a second electroluminescent material and a photoconductor is disposed over the first electroluminescent layer. The first electroluminescent material is selected to emit light in the visible range of the electromagnetic spectrum, while the second electroluminescent material is sealed to emit light in the near ultraviolet region of the electromagnetic spectrum.



Large panels 12 × 12 inches and larger can be used to give sharp clear images. Additionally, high writing speed is obtained in the storage tube. Information can be stored or can be disposed without being stored. Also, the storage tube is capable of providing long viewing times.

3,609,442

CATHODE-RAY TUBE WITH INCREASED DEFLECTION SENSITIVITY

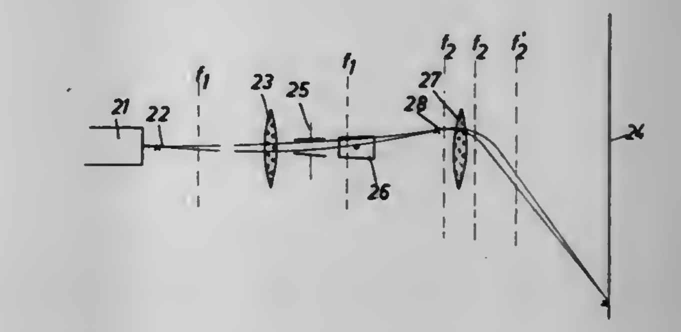
Klaus Schaffernicht, Ulm an der Danube, Germany

Continuation of application Ser. No. 482,533, Aug. 25, 1965, now abandoned. This application Dec. 12, 1968, Ser. No. 785,049

Claims priority, application Germany, Aug. 27, 1964, T26891

Int. Cl. H01j *29/46, 29/56*

U.S. Cl. 315—17 **17 Claims**



A cathode-ray tube provided with an electron gun and a target electrode as well as a first image-forming lens, disposed in the path of the electron beam produced by the gun, for producing an intermediate image of the cross section of a selected point along the beam, which image is no greater than three times as large as the beam cross section, and a second image-forming lens disposed in the path of such beam downstream of the first lens in the direction in which such beam is traveling, for reproducing such intermediate image on the target electrode.

3,609,443

DUAL RESOLUTION GRAPHIC SYMBOL GENERATOR

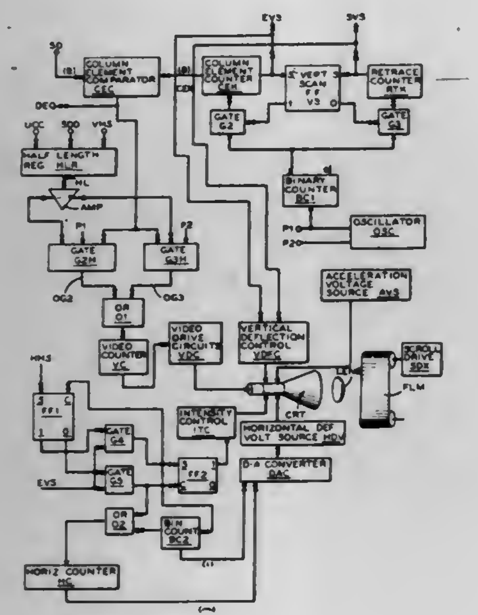
Solomon Manber, Sands Point, N.Y., assignor to Alphanumeric, Incorporated, Lake Success, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,058

Int. Cl. H01j *29/70*

U.S. Cl. 315—18 **15 Claims**

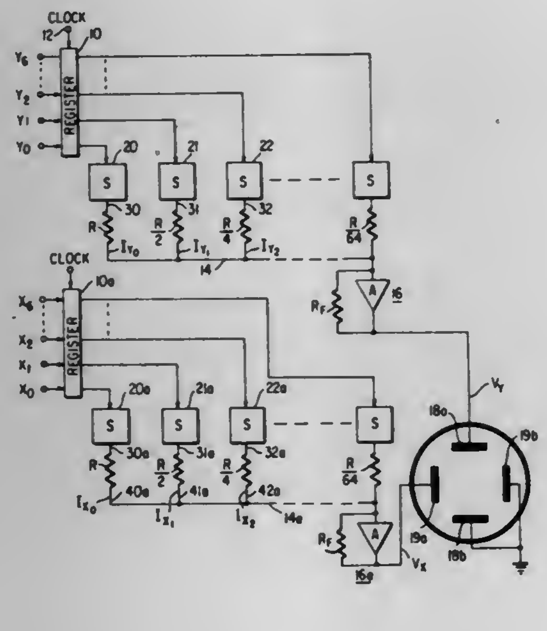
A graphic symbol generator includes a cathode-ray tube assemblage disposed opposite a photosensitive film. The electron beam of the cathode-ray tube assembly while being driven in a raster scan mode, is intensity modulated in accordance with stored coded combinations of binary signals which represent the graphic symbol. Provisions are made to control the line density or resolution of the scan in two dimensions during the generation of the graphic symbol as an array of parallel line segments.



3,609,444
CONSTANT TIME STROKE GENERATOR

Raymond Charles Van Den Heuvel, Northridge, Calif., assignor to RCA Corporation

Filed June 6, 1969, Ser. No. 831,130
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 **7 Claims**

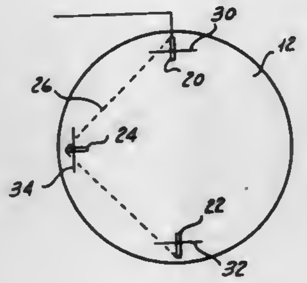


A plurality of waves are produced, each in response to a different digit of a binary number. A wave may be of constant amplitude and have one of two values or may be increasing or decreasing from one of these values to the other depending upon whether, since a preceding time interval, the digit represented by the wave has not or has changed its value. The waves are added, each with a weight corresponding to a different power of two, to provide the deflection waveform to be applied, for example, to the X-deflections means of a cathode-ray tube. In analogous fashion, the weighted sum of a second plurality of waves serves as the deflection waveform for the Y-deflection means of the cathode-ray tube.

3,609,445
ELECTRONIC IMAGE STABILIZATION SYSTEM

Peter R. Williams, Wilton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 14, 1969, Ser. No. 824,573
Int. Cl. H01j *29/76*
U.S. Cl. 315—21 R **15 Claims**

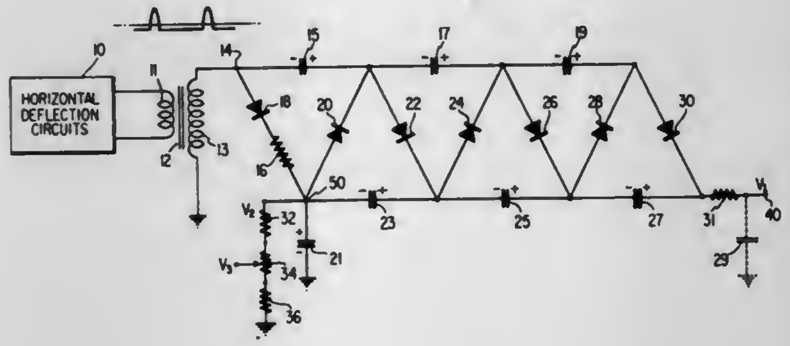


A system for orienting the image presented on the face of a display tube in which time error signals indicating vertical, lateral and rotational displacements of the image, produced by comparing internally generated reference pulses with sense pulses generated as the electron beam passes over electrodes in the tube face, are then converted to analogue voltage error signals which are fed to the tube deflection system to restore the image to a predetermined orientation on the tube face.

3,609,446
POWER SUPPLY UTILIZING A DIODE AND CAPACITOR VOLTAGE MULTIPLIER FOR TRACKING FOCUSING AND ULTOR VOLTAGES

Neal Wesley Hursh, and John Joseph McArdle, both of Indianapolis, Ind., assignors to RCA Corporation

Filed June 2, 1969, Ser. No. 829,499
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 **8 Claims**



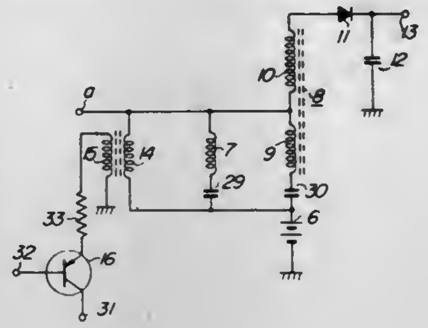
A television receiver high voltage power supply includes an ultor voltage output and an output voltage at some potential lower than the ultor voltage. The supply is responsive to kinescope beam current to vary the proportionate magnitudes of the high and lower voltages at some predetermined ratio.

3,609,447
HIGH VOLTAGE REGULATION CIRCUIT FOR A COLOR TELEVISION RECEIVER

Ryoichi Hirota, Yokohama; Tooru Fujishima, Yokohama; Gentaro Miyazaki, Fujisawa-shi; Tadahiko Iwasaki, Kamakura-shi; Mitsuharu Akatsu, Yokohama, and Tomoo Kinoshita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1969, Ser. No. 809,244
Claims priority, application Japan, Mar. 27, 1968, 43/19393
Int. Cl. H01j *29/76*
U.S. Cl. 315—27 **18 Claims**

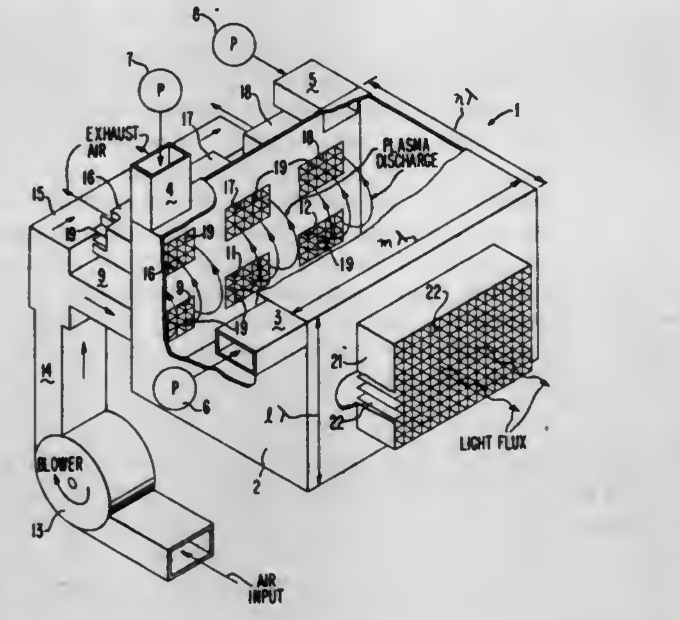
A high-voltage regulation circuit for a color television receiver comprising a horizontal deflection yoke, a high-voltage circuit and a variable inductance element connected in parallel with said horizontal deflection yoke, thereby controlling the inductance of said variable inductance element in response to the variation of a high voltage of the high-voltage circuit.



3,609,448
HIGH-POWER PLASMA GENERATOR EMPLOYED AS A SOURCE OF LIGHT FLUX AT ATMOSPHERIC PRESSURE

Norman H. Williams, San Francisco, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Jan. 14, 1970, Ser. No. 2,709
Int. Cl. H01j *7/46, 19/80*
U.S. Cl. 315—39 **8 Claims**



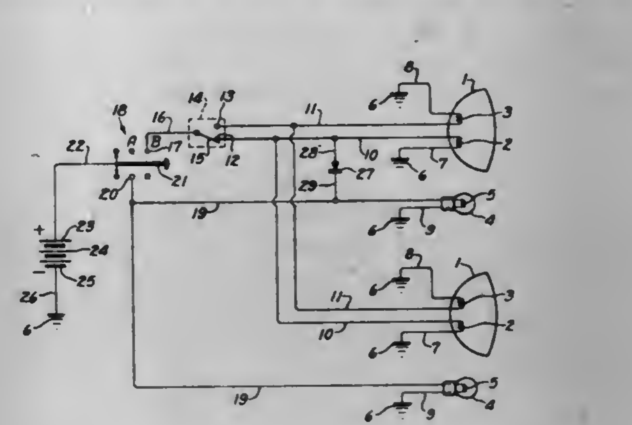
A multimode cavity resonator includes a duct system for directing a gas stream through the resonator. Electromagnetic power is supplied to the resonator for establishing a plasma discharge in the air stream within the resonator. Light flux generated by the plasma at atmospheric pressure is transmitted through an optically transparent wall portion of the cavity to a utilization region outside of the cavity. The gas ducts and the optically transparent wall of the cavity include a cluster of conductive tubes dimensioned to be cut off at the operating frequency of the cavity.

3,609,449
VEHICLE HEADLIGHTING AND STANDBY PARKING LIGHT SYSTEM

Joseph F. Vercellotti, Novelty, Ohio, assignor to General Electric Company

Filed Feb. 6, 1969, Ser. No. 797,047
Int. Cl. B60g *1/04*
U.S. Cl. 315—82 **5 Claims**

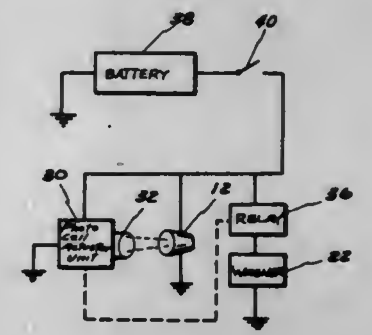
In a vehicle headlighting system including a head lamp and a parking lamp each containing a filament, along with a conventional two-position main switch for selectively operating either the parking lamp or the head lamp, a junction diode is connected across the hot sides of the filaments in the respective lamps so as to block current passage through the head lamp filament but permit current passage through the parking lamp when the main switch is in the first one of its two operating positions, and permit current passage through both the head lamp and the parking lamp when the main switch is in the second one of its two operating positions, thereby assuring continued operation of the parking lamp in the event the head lamp filament should become ruptured and the head lamp rendered inoperative.



3,609,450
AUTOMATIC HEADLIGHT-WASHING SYSTEM

Atlee S. Hart, Huntington Woods, Mich., assignor to Lindor Electronics, Inc., Huntington Woods, Mich.

Filed Feb. 20, 1969, Ser. No. 800,930
Int. Cl. F21m *3/00*; **B60s** *1/56*; **G05b** *11/16*
U.S. Cl. 315—82 **8 Claims**

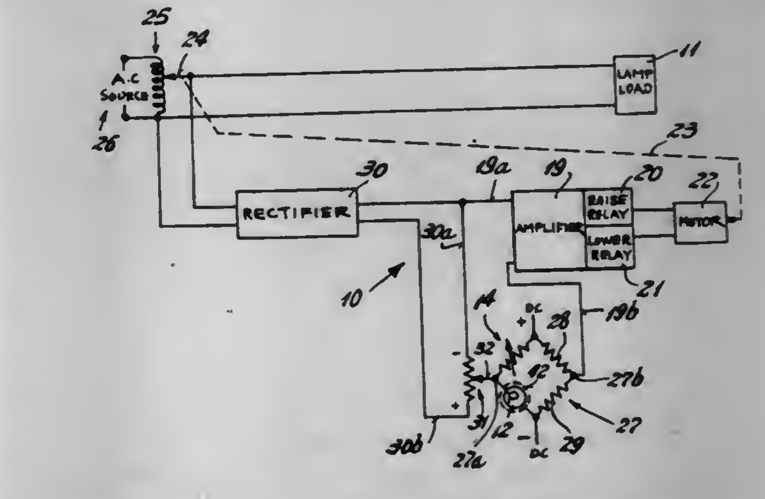


A vehicle headlight washer that is automatically actuated by a photocell actuator whenever the intensity of the light being passed through the headlight lens is reduced to a predetermined level by road grime and the like.

3,609,451
AUTOMATIC ILLUMINATION CONTROL SYSTEM RESPONSIVE TO TOTAL ILLUMINATION

Raymond G. Edgerly, Jr., Bristol, and Peter J. Zanini, Jr., Avon, both of Conn., assignors to The Superior Electric Company, Bristol, Conn.

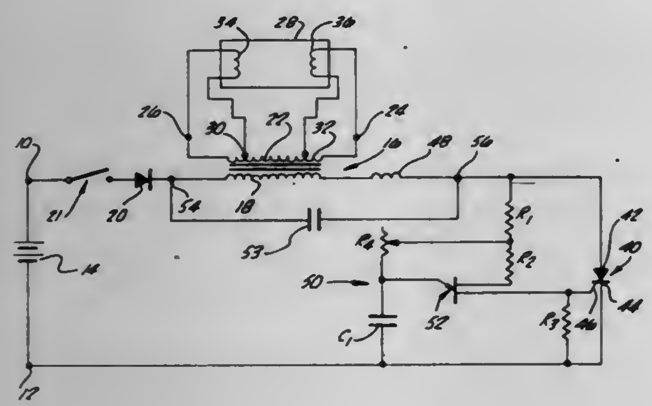
Filed Feb. 16, 1968, Ser. No. 706,128
Int. Cl. H05b *37/02, 41/36, 34/64*
U.S. Cl. 315—151 **2 Claims**



A system for sensing the total amount of illumination in an area from both uncontrolled and controlled sources and automatically adjusting the amount of artificial light supplied to maintain a substantially constant value of total illumination and in which the system enables the relative adjusting of the importance of the uncontrolled light to the controlled light that is being sensed to reduce the effect of abnormal conditions caused by the uncontrolled light on the system.

3,609,452
LAMP DRIVER CIRCUIT

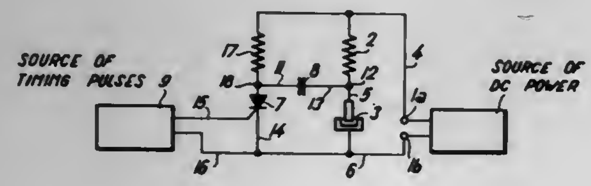
Clifford D. Skirvin, Pomona, Calif., assignor to Radiant Industries, Inc., North Hollywood, Calif.
Filed June 6, 1969, Ser. No. 830,958
Int. Cl. H05b *37/00*
U.S. Cl. 315—238 **21 Claims**



An inverter or converter circuit is described for controlling the power to a suitable load such as a gas or vapor discharge lamp. The circuit includes a transformer having a secondary winding coupled to the load and a primary winding connected to a direct-current voltage source by a controlled rectifier such as a silicon-controlled rectifier. A variable-frequency trigger circuit, e.g., a relaxation oscillator, controls the switching rate of the controlled rectifier and the magnitude of the power delivered to the load. An inductive reactance independent of the transformer is connected in series with the primary winding. A capacitive reactance is connected in parallel with the inductive reactance and primary winding to form a resonant tank circuit for providing commutation of the switching device independently of the load impedance.

3,609,453
CIRCUIT ARRANGEMENT FOR PRODUCING INTERRUPTED CURRENT FOR ELECTRICAL SPARK APPARATUS

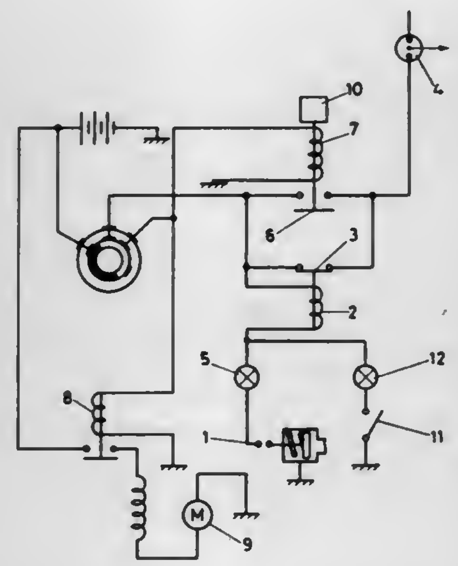
Jan Hladik, Nove Mesto Nad Vahom, Czechoslovakia, assignor to Vyskumny ustav mechanizacie a automatizacie, Nove Mesto nad Vahom, Czechoslovakia
Filed Dec. 30, 1968, Ser. No. 787,701
Int. Cl. B23k *1/00, 1/08*
U.S. Cl. 315—240 **10 Claims**



A discharge capacitor is connected in series circuit arrangement with a switching element across a spark gap and provides pulses of opposite polarity from pulses supplied to the spark gap by a power source via a resistor. A charging resistor is connected to a common point in the connection between the switching element and the discharge capacitor.

3,609,454
ANTISEIZING SAFETY DEVICE FOR MOTOR OR THE LIKE VEHICLES

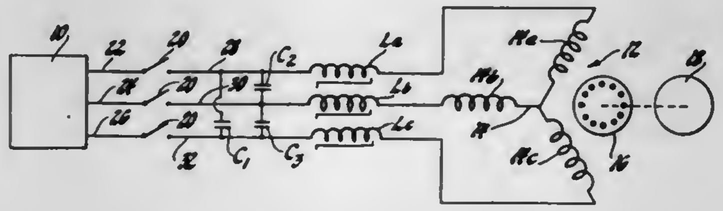
Valmarino Capitanio, Canal Regio 2949B, Venezia, Italy
Filed Apr. 21, 1969, Ser. No. 817,668
Claims priority, application Italy, May 2, 1968, 61567/68
Int. Cl. H02l *7/18*
U.S. Cl. 317—9 B **2 Claims**



A safety device for motor vehicles includes an electric contact which is controlled by bellows responding to oil pressure and which controls by means of a relay the opening of the ignition circuit of the engine when oil pressure is excessive. The contact closes automatically when oil pressure drops below the safety limit. An auxiliary contact is controlled by a relay connected with the starting motor and is connected with a time switch to keep the ignition circuit closed during the starting of the engine until oil pressure is raised to a normal value. Another contact controls the first-mentioned relay and is used to open the ignition circuit when temperature of oil or water becomes excessive.

3,609,455
SYSTEM FOR PREVENTING VOLTAGE BUILDUP DURING REGENERATION AFTER DEENERGIZATION IN INDUCTION MOTORS

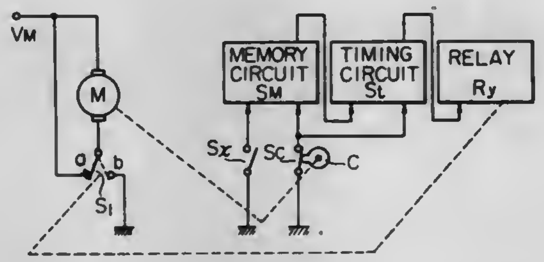
Jalal T. Salihi, Birmingham, and George J. Spix, Clawson, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 4, 1970, Ser. No. 8,560
Int. Cl. H02h *9/00*
U.S. Cl. 317—13 R **4 Claims**



A system for the prevention of voltage buildup in an induction motor which may be caused by the interchange of energy between capacitors connected across the motor winding and the motor winding after the motor is deenergized. In this system, saturable reactors are connected between the capacitors and the motor winding to prevent voltage buildup. The reactors are saturated by voltage supplied from the power source while the motor is energized thus providing minimum impedance to current supplied to the motor. On the other hand, the initial regeneration voltage of the motor when it is disconnected from the supply is inadequate to cause saturation of the reactors. Accordingly, the reactors prevent the interchange of energy between the motor winding and the capacitors, thereby precluding the generation of destructive voltages during periods of regeneration.

3,609,456
ELECTRIC CIRCUIT FOR PREVENTING THE BURNING OF AN ELECTRIC MOTOR

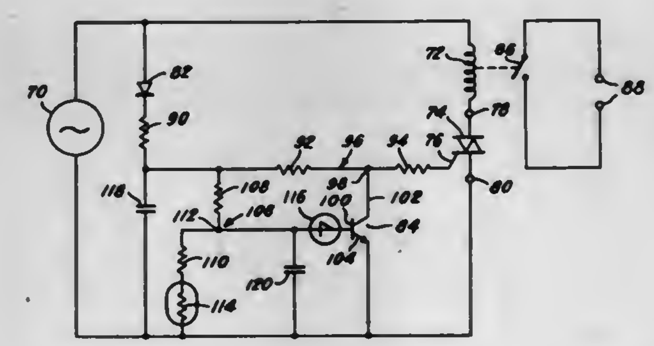
Masao Kayaguchi, and Yuji Ikuno, both of Tokyo, Japan, assignors to Olympus Optical, Ltd., Shibuya-ku, Tokyo, Japan
Filed May 11, 1970, Ser. No. 35,974
Claims priority, application Japan, May 14, 1969, 44/37130
Int. Cl. H02h *7/08*
U.S. Cl. 317—13 R **4 Claims**



Electric circuit for preventing the burning of an electric motor energized by an electric source through the electric circuit. The electric circuit has a memory circuit actuated by a setting input pulse and reset by a resetting input pulse, a timing circuit connected to said memory circuit so as to be actuated thereby when the same is actuated while the timing circuit is rendered to be inoperative when the memory circuit is reset or a resetting input pulse is applied to the timing circuit, a relay connected to the timing circuit so as to be energized when the same is actuated, and a switch operatively coupled with the relay so as to energize the motor when the relay is energized while the motor is deenergized by the switch when the relay is deenergized, thereby permitting the motor to continue to be driven upon application of the setting input pulse to the memory circuit until the resetting input pulse is applied thereto. The timing circuit comprises a monostable multivibrator having a predetermined holding time which is selected to be suitable for preventing the burning of the motor under the overloaded condition. Thus, the motor is automatically deenergized after the energization thereof by virtue of the holding time before the resetting input pulse is applied to the memory circuit under the overloaded condition of the motor, while the reenergization of the motor by applying a further setting input pulse to the memory circuit is prevented until a resetting input pulse is applied to the memory circuit prior to the application of the further setting input pulse thereto.

3,609,457
THERMAL PROTECTIVE SYSTEM UTILIZING FAULT-RESPONSIVE SHUNT MEANS FOR A NORMALLY CONDUCTING TRIAC

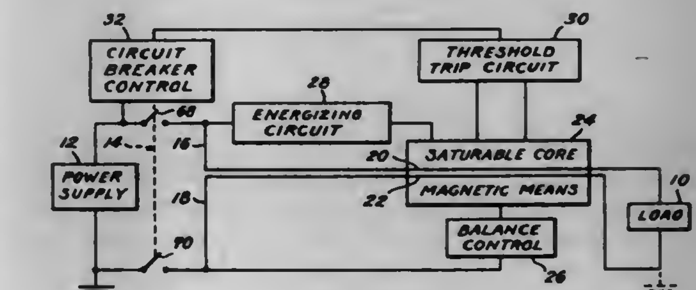
David J. Squiers, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 29, 1969, Ser. No. 828,889
Int. Cl. H02h *7/08, 5/04*
U.S. Cl. 317—13 C **6 Claims**



A protective system is disclosed for selectively controlling power supplied to a load in response to variations in a sensed environmental parameter, such as temperature. The system includes an AC power switch, having a control element for controlling its conduction. The AC power switch is serially connected to a load to supply power thereto, when the AC power switch is conductive, while a DC signal is applied to the control element to control the conduction of the AC power switch. A selectively energizable unidirectional switch means is coupled to the control element of the AC power switch for selectively shunting the DC signal, when the unidirectional switch is conductive, so as to remove the DC signal from the control element of the AC power switch, rendering the AC power switch nonconductive and disrupting the power being supplied to the load. Control of the conduction of the unidirectional switch means is effected by a sensor coupled thereto, having an electrical property which varies in response to variations in the environmental parameter.

3,609,458
ELECTRONIC SAFETY SYSTEM

Thomas C. Penn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 15, 1970, Ser. No. 37,562
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **14 Claims**

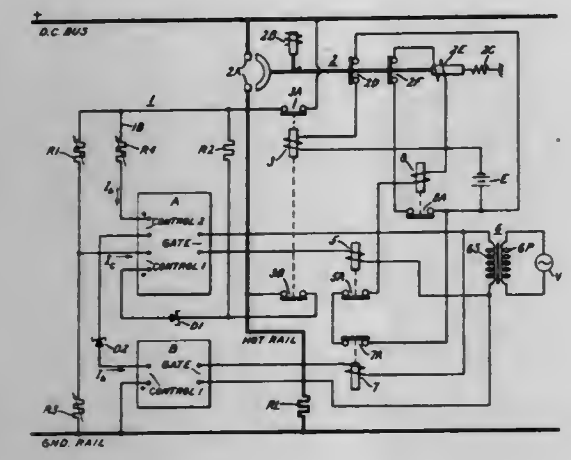


An electronic safety system is disclosed for detecting leakage of electrical signals from a load circuit to ground in order to selectively disrupt the supply of power to the load circuit. A pair of electrical conductors couple the load circuit to the source of power. Adjacent sections of the electrical conductors intermediate the load circuit and the power supply are inductively coupled to a selectively energizable saturable core magnetic means, which is connected to an energizing circuit adapted to establish a magnetic field within the saturable core magnetic means. Means are coupled to the saturable core magnetic means for sensing affects on the magnetic field resulting from the presence of unequal currents in the adjacent sections of the conductors, the unequal currents being due to the leakage of current from one of the conductors to ground. Such affects generate an electrical output signal, which may be utilized for effecting operation of a circuit breaker to disrupt the power being supplied to the load.

3,609,459
VARIABLE VOLTAGE COMPENSATED LOAD MEASURING CIRCUITS FOR CONTROLLED CLOSURE OF SINGLE-POLE DEVICES

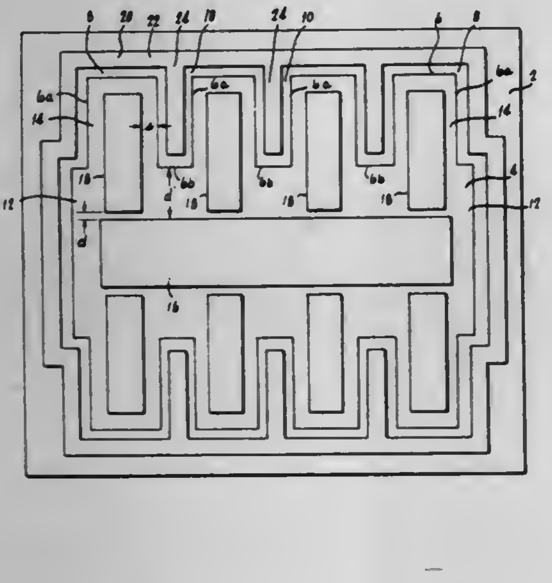
Samuel A. Thompson, Wilmington, Del., assignor to General Electric Company
Filed Feb. 24, 1970, Ser. No. 13,430
Int. Cl. H02h *3/26*
U.S. Cl. 317—23 **15 Claims**

Disclosed is a recloser relay control circuit for use in a traction system wherein a circuit breaker supplies direct current to a load from a bus supplied by a high-voltage source. Upon the occurrence of a fault in the system, the circuit breaker will open to deenergize the load. At this time, the recloser control circuit is inserted into the system to monitor the load resistance and source voltage and to prevent the circuit breaker from reclosing until these monitored parameters attain respective preselected threshold values. The control circuit includes a modified wheatstone bridge circuit utilizing a voltage-compensating subcircuit. The current flowing through the center arm of the bridge, which is a function of the source voltage and the load resistance, and the current flowing through the subcircuit, which is a function of source voltage alone, are algebraically combined in a first detector which provides a "close" signal when the load resistance is equal to or greater than the preselected threshold value. A second detector is utilized to provide a "close" signal when the source voltage equals or exceeds the preselected threshold value. The second detector utilizes the current flowing through the subcircuit as its input. Upon the contemporaneous presence of the "close" signals from each detector the circuit breaker is allowed to reclose thereby reenergizing the load. A diode is provided in the center arm of the bridge to allow the utilization of a low power resistor in the bridge branch paralleling the load resistance.



3,609,460
POWER TRANSISTOR HAVING BALLASTED EMITTER FINGERS INTERDIGITATED WITH BASE FINGERS

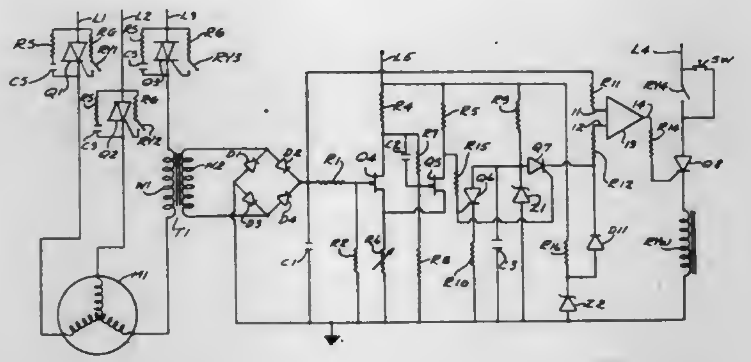
Joel Ollendorf, Springfield, and Frederick P. Jones, Flemington, both of N.J., assignors to RCA Corporation
Filed June 28, 1968, Ser. No. 740,905
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **5 Claims**



A transistor with interdigitated emitter and base fingers in which the emitter has a web portion for feeding current to the fingers, metal layers on both web and fingers, the finger portion metal layers being spaced from the web portion metal layer to introduce ballasting resistance, and the ends of the base fingers being spaced from the web metallizing a considerably greater distance than the spacing between emitter finger metallizing and the emitter-base junction.

3,609,461
APPARATUS FOR PROTECTING SEMICONDUCTOR DEVICES UTILIZING A TIME-VAPYING REFERENCE SIGNAL

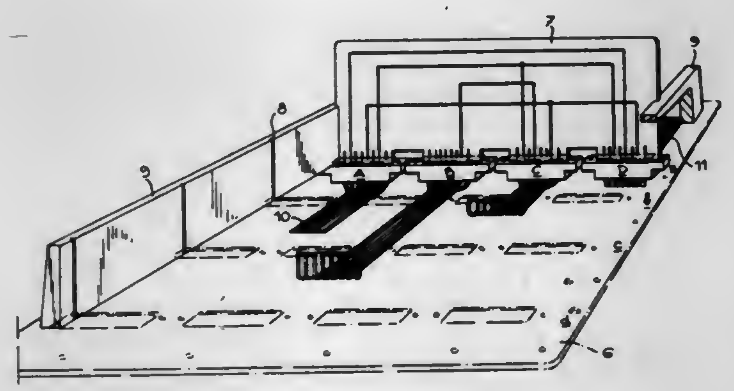
Robert E. Obenhaus, South Easton; Lyle E. McBride, Jr., Norton, and Irvin H. Farley, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed July 8, 1968, Ser. No. 743,193
Int. Cl. H02h *3/08, 7/10*
U.S. Cl. 317—33 SC **16 Claims**



Apparatus is described which measures an actual operating parameter of a gated semiconductor device while that device is being operated to control the energization of an electrical load and which causes the device to be deenergized if the value of the parameter exceeds a desired limiting value thereby preventing the device from being operated in an undesired mode.

3,609,462
INTERCONNECTION DEVICE FOR ELECTRONIC SYSTEMS

Ruy Francisco Menino De Barros, 1, Avenue de Mars, Brussels, Belgium
Filed June 26, 1968, Ser. No. 740,313
Claims priority, application Belgium, Mar. 27, 1968, 56,373
Int. Cl. H02b *1/04;* **H05k** *1/04*
U.S. Cl. 317—101 **2 Claims**

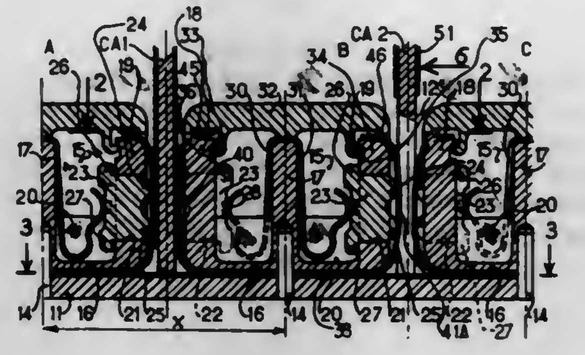


An interconnection device for electronic systems which is intended to establish interchangeable combinations of electrical connections between at least two groups of contact points. The contact points to be interconnected are connector contacts electrically connected to conductors, these connectors are so designed as to cooperate with countercontacts arranged on at least one removable insulated printed circuit board.

3,609,463
CONNECTORS FOR PRINTED-CIRCUIT CARDS

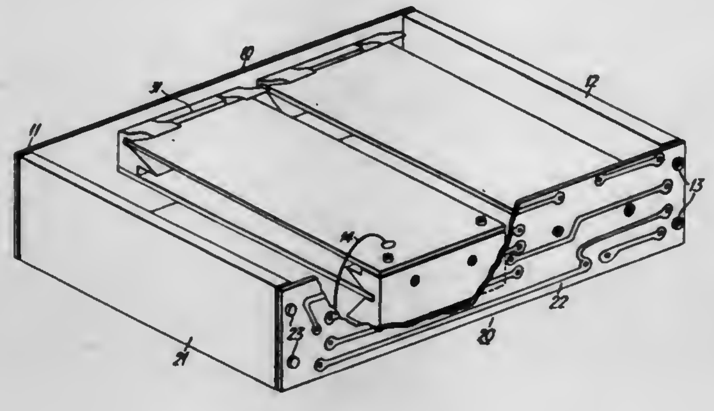
Bernard Andre Laboue, Goussainville, France, assignor to Societe Industrielle Bull-General Electric, (Societe Anonyme), Paris, France
Filed Sept. 22, 1969, Ser. No. 859,748
Claims priority, application France, Oct. 1, 1968, 168305
Int. Cl. H02b *1/02;* **H05k** *1/04*
U.S. Cl. 317—101 DH **7 Claims**

An arrangement for connecting circuits of printed-circuit cards to circuits of a connection panel, comprising connectors fixed in parallel relationship to one another on said connection panel, each connector being provided with contact blades of which one end is soldered to a conductive surface of the connection panel and each of which is arranged to be pressed against a contact surface on a card inserted between two connector elements, under the action of an insulating push member pushed by a spring independent of the contact blade.



3,609,464
CHASSIS FOR MOUNTING PRINTED CIRCUIT BOARDS

Dennis Stone, Edmonton, London, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Sept. 30, 1969, Ser. No. 862,420
Claims priority, application Great Britain, Oct. 2, 1968, 46706/68
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 DH **8 Claims**

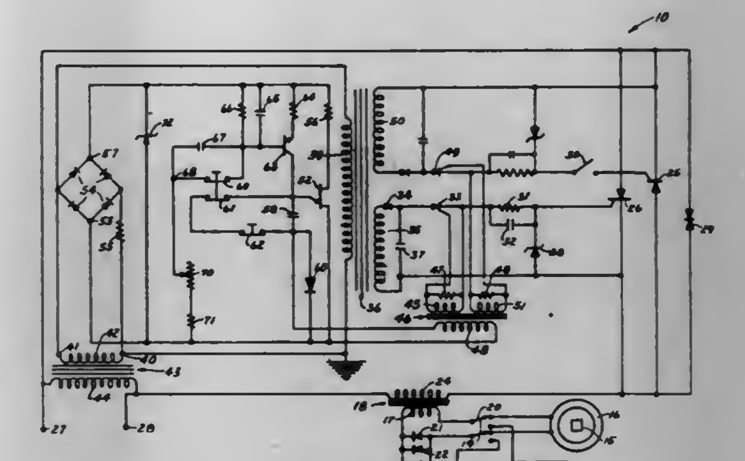


A chassis is provided for printed circuit boards. This chassis includes a framework in two sections which when connected provide a means for mounting the boards in a closely packed manner. The framework is easily separated by taking out removable fasteners to provide access to the boards for servicing.

3,609,465
MAGNETIC PARTICLE INSPECTION AND DEMAGNETIZING APPARATUS

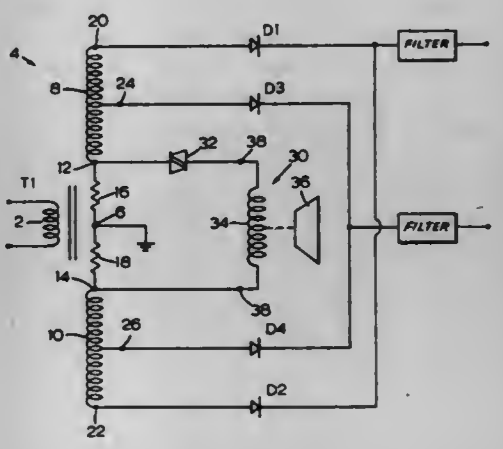
Ralph W. Gruetzmacher, River Grove; Kenneth W. Schroeder, Arlington Heights, and Bruce G. Isaacson, Park Ridge, all of Ill., assignors to Magnaflux Corporation, Chicago, Ill.
Filed Apr. 3, 1968, Ser. No. 718,429
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **4 Claims**

Apparatus for magnetic particle inspection and also demagnetization in which a coil around a part or contacts engaged with a part are coupled to the secondary of a stepdown transformer having a primary connected through oppositely poled silicon-controlled rectifiers or the equivalent to an AC source. Control signals are applied to the gates of the silicon-controlled rectifiers, preferably through a second pair of silicon-controlled rectifiers triggered by a unijunction transistor oscillator the timing of which is controlled to control either magnetizing or demagnetizing current. In magnetizing, an AC field is applied to the part which is always discontinued at the end of a half cycle with a steep wave shape such that the remnant magnetization from one part to another is uniform and the degree of concentration of particles over a defect provides an accurate indication of the character of the defeat. In demagnetization, a circuit including a capacitor is provided for gradually reducing the rate of operation of the oscillator and firing the silicon-controlled rectifiers at progressively later points to gradually reduce the magnetic field in the part and to demagnetize the part.



3,609,466
POWER SUPPLY WITH DEGAUSSING MEANS

Sotos M. Theodoulou, Toronto, Ontario, Canada, assignor to Clairtone Sound Corporation Limited, Rexdale, Ontario, Canada
Filed May 18, 1970, Ser. No. 38,183
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **4 Claims**

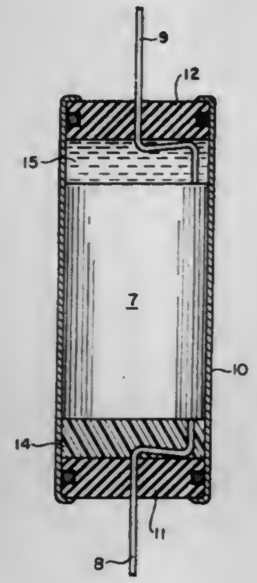


A power supply in which the secondary winding of the power transformer is split into two halves, and two thermistors are provided, one connected between each half winding and ground. A degaussing circuit, consisting of a degaussing coil and a voltage dependent resistor, is connected across the thermistors to produce an AC degaussing voltage centered about ground. Since the thermistors have identical characteristics, the power supply is not unbalanced.

3,609,467
ELECTROLYTIC CAPACITOR AND ELECTROLYTE MATERIAL THEREFOR

James H. Curtis, Columbia, S.C., assignor to General Electric Company
Filed Apr. 17, 1970, Ser. No. 29,509
Int. Cl. H01g *9/02*
U.S. Cl. 317—230 **16 Claims**

A substantially nonaqueous liquid electrolyte for electrolytic capacitors consisting essentially of a major proportion of a solvent such as ethylene glycol, a minor proportion of an ionogen which is the reaction product ester of an organic base and of an acid such as a mono-, di-, or tri-basic organic acid, or the hydroxy substituted derivatives of these acids, the ionogen preferably being dimethylethanolamine adipate (DMEA), and a small but effective amount of an alkanolamine phosphate. The concentration of the ester in the electrolyte can be from about 0.1%–25% by weight. The concentration of the alkanolamine phosphate may be about



0.1%–6.0% by weight. The electrolyte exhibits a low vapor pressure and enhanced chemical and electrical stability at elevated temperatures, and is characterized by a high breakdown voltage and long life electrical stability.

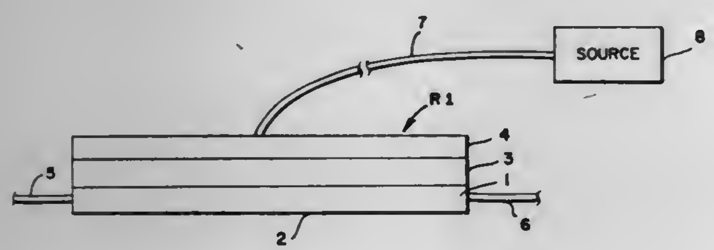
3,609,468
PASTE COMPOSITION FOR AN ELECTROLYTIC CONDENSER AND ELECTROLYTIC CONDENSER CONTAINING SAME

Yasukane Kihara, Tokyo; Ushimatsu Moriyama, Fujisawa-shi, and Yoichi Seta, Yokohama-shi, all of Japan, assignors to Tokyo Shibaure Electric Co., Ltd., Kawasaki-shi, Japan
Filed Feb. 3, 1969, Ser. No. 796,075
Claims priority, application Japan, Feb. 5, 1968, 43/6715
Int. Cl. H01g *9/02*
U.S. Cl. 317—230 **2 Claims**

A paste composition for an electrolytic condenser consisting of electrolyte compounds, ethylene glycol and polyvinyl pyrrolidone. When used as an electrolyte for an electrolytic condenser, the composition furnishes the condenser with good withstand voltage properties and stable electrical properties.

3,609,469
VOLTAGE-CONTROLLED IONIC VARIABLE RESISTOR EMPLOYING MATERIAL TRANSFER

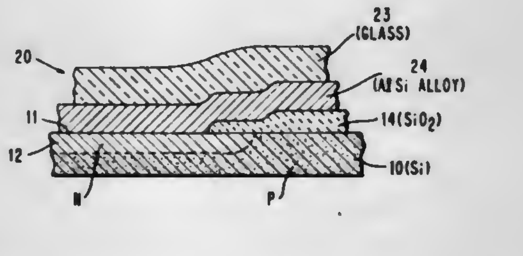
Charles Feldman, 7400 Rebecca Drive, Alexandria, Va.
Filed Dec. 22, 1967, Ser. No. 692,738
Int. Cl. H01g *9/14*
U.S. Cl. 317—231 **16 Claims**



An ionic variable resistor comprises a base metallic film, an intermediate film of a solid ionic conductor containing a cation similar to the metal comprising the base layer, and an upper film layer of the same metallic material as the base layer. A source of potential connected across the device causes transference of material from the upper layer to the lower layer, or vice versa, depending on the polarity, to effect a change in resistance in the metal films. The variable resistor may be advantageously applied by vacuum deposition to microelectronic wafers, thin film substrates, or circuit boards.

3,609,470
SEMICONDUCTOR DEVICES WITH LINES AND ELECTRODES WHICH CONTAIN 2 TO 3 PERCENT SILICON WITH THE REMAINDER ALUMINUM

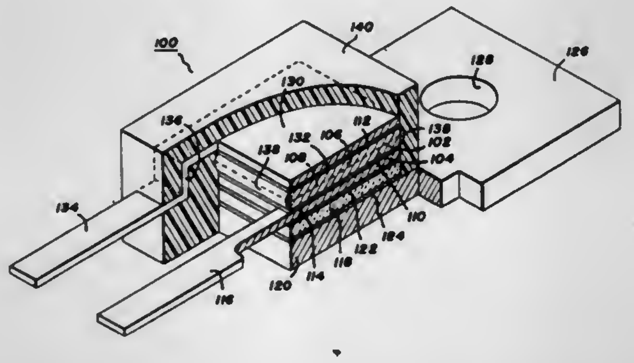
Lubertus L. Kuiper, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 474,074, July 22, 1965, Patent No. 3,382,568. Filed Feb. 19, 1968, Ser. No. 739,992
Int. Cl. H01l *5/02*
U.S. Cl. 317—234 R **1 Claim**



This is a semiconductor device provided with an electrode which contains a small percentage of the semiconductor material with the remainder of the electrode being metal.

3,609,471
SEMICONDUCTOR DEVICE WITH THERMALLY CONDUCTIVE DIELECTRIC BARRIER

Robert I. Scace, Skaneateles, and Glen A. Slack, Scotia, both of N.Y., assignors to General Electric Company
Filed July 22, 1969, Ser. No. 843,533
Int. Cl. H01l *1/12*
U.S. Cl. 317—234 R **7 Claims**



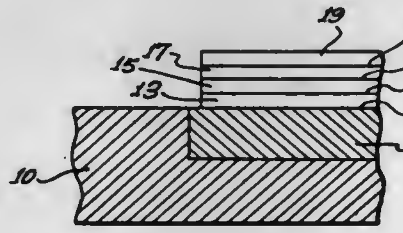
A semiconductor device is provided having a metallic heat sink to receive heat generated by internal power losses. Interposed between the semiconductive crystal in which the heat is generated and the heat sink is a thermally conductive dielectric barrier comprised of a unitary layer consisting essentially of aluminum nitride. The aluminum nitride may be in the form of a single crystal or may be polycrystalline. A stress-absorbing soft solder may be located adjacent a surface of the dielectric barrier.

3,609,472
HIGH-TEMPERATURE SEMICONDUCTOR AND METHOD OF FABRICATION

Robert F. Bailey, Los Alamitos, Calif., assignor to TRW Semiconductors, Inc., Lawdale, Calif.
Filed May 21, 1969, Ser. No. 826,543
Int. Cl. H01l *3/00*
U.S. Cl. 317—234 R **13 Claims**

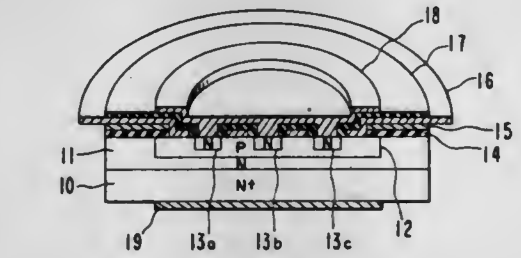
A contact for a semiconductor device capable of withstanding environments comprising high-temperature

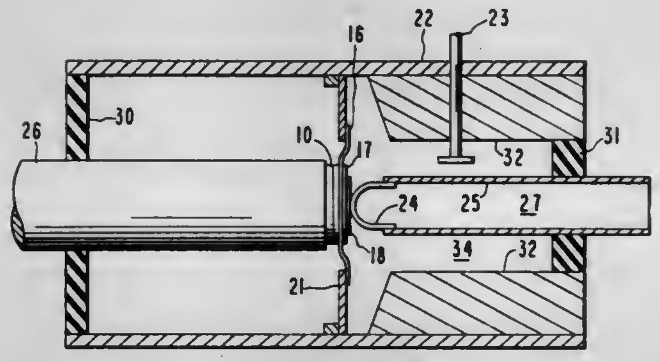
treatment, chemical attack by silicon etchants, and high oxidation ambients, and a method of fabricating said contact. A bimetallic layer comprising an alloy of platinum and nickel is disposed upon the active regions of a semiconductor device, the metal layer being in electrical contact with the semiconductor device. A layer of platinum is provided atop the platinum-nickel layer and this in turn is protected by a covering layer of rhodium. A layer of gold is then placed upon the rhodium for external connection.



3,609,473
TWO-LAYER METALLIZED HIGH FREQUENCY TRANSISTOR EMPLOYING EXTENDED CONTACTS TO SHIELD INPUT TERMINAL FROM OUTPUT TERMINAL AND MOUNTED IN A COAXIAL CABLE

Charles A. Bittmann, Los Altos, and Gary W. Parker, Los Gatos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mt. View, Calif.
Filed Sept. 2, 1969, Ser. No. 854,422
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **1 Claim**



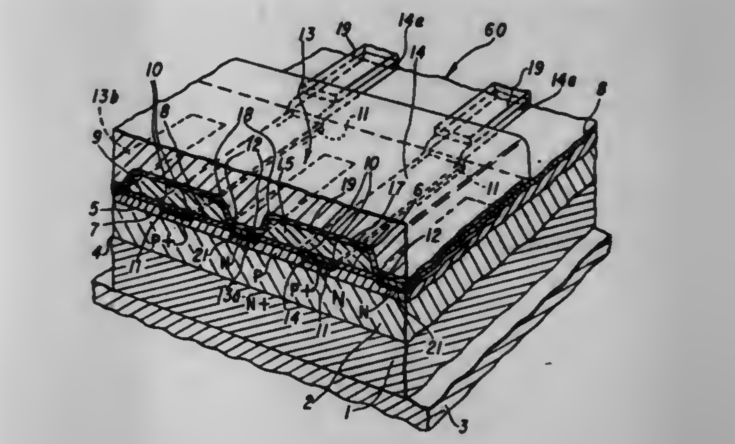


The base and emitter contacts to a high frequency transistor are formed of two separate layers of metallization separated by an intervening dielectric. Either the base or the emitter lead is formed into a circular beam diaphragm, portions of which extend beyond the semiconductor chip. This circular lead mates around its external edge with an internal diaphragm in a coaxial package to form either the base or emitter connection to the transistor.

3,609,474
SEMICONDUCTOR WITH IMPROVED HEAT DISSIPATION CHARACTERISTICS

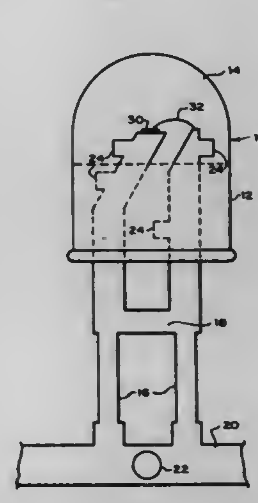
Britton T. Vincent, Jr., Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 649,320, June 27, 1967, now abandoned. This application Nov. 10, 1969, Ser. No. 871,602
Int. Cl. H01p *5/00*
U.S. Cl. 317—235 R **11 Claims**

Disclosed is a semiconductor device, such as a transistor, including an extended emitter contact with one portion thereof having a small dimension for contact to the emitter region of the device, and another relatively large heat dissipation portion overlying the base region of the transistor for heat sinking purposes. The emitter contact is separated from the base contact by a relatively thick layer of insulation which avoids degrading the electrical parameters of the device.



3,609,475
LIGHT-EMITTING DIODE PACKAGE WITH DUAL-COLORED PLASTIC ENCAPSULATION

George N. Kaposhilin, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 4, 1970, Ser. No. 34,078
Int. Cl. H01l *1/00*
U.S. Cl. 317—234 R **4 Claims**

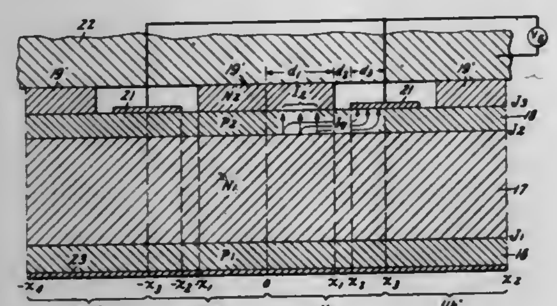


A light-emitting diode (LED) is bonded to a pair of metal leads which are attached to a metal lead frame with a plurality of lead pairs, such that its optical axis is parallel to the longitudinal axis of the leads. The device so formed is encapsulated in two colors of plastic, a clear portion over the diode to transmit light from the diode and a dark portion behind the diode to improve the diode on-off contrast and make a hermetic seal with the leads. After encapsulation individual devices are separated from each other by cutting the leads from the lead frame.

3,609,476
INTERDIGITATED STRUCTURES FOR GATE TURNOFF THYRISTORS AND FOR TRANSISTORS

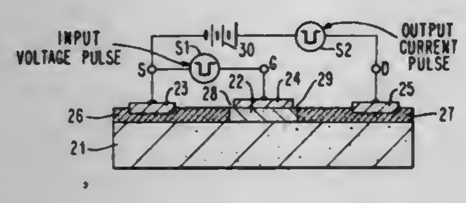
Herbert F. Storm, Delmar, N.Y., assignor to General Electric Company
Filed June 26, 1970, Ser. No. 50,228
Int. Cl. H01l *5/00, 11/00*
U.S. Cl. 317—235 R **15 Claims**

An interdigitated emitter-base (or emitter-gate) layer structure is formed in the shape of an involute on a circular wafer. Because of greater wafer utilization, higher power ratings in semiconductor devices are realized. The contours of the involute-shaped interdigitated emitter and base contact elements are identical, simplifying mask preparation, and assuring simultaneous turnoff of the entire junction area in a gate turnoff thyristor, and simultaneous turn on in a transistor.



3,609,477
SCHOTTKY-BARRIER FIELD-EFFECT TRANSISTOR

Karsten E. Drangeid, Hedingen; Theodor O. Mohr, Gattikon, Switzerland; Horst F. Statz, Peekskill, N.Y., and Waldemar Von Muench, Aachen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 11, 1968, Ser. No. 720,648
Claims priority, application Switzerland, Apr. 18, 1967, 5508/67
Int. Cl. H01o *11/14*
U.S. Cl. 317—235 R **3 Claims**

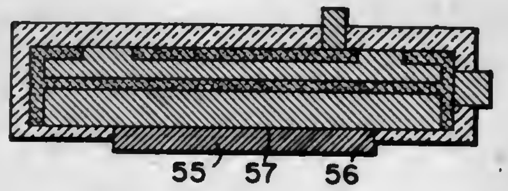


A Schottky-barrier field-effect transistor is disclosed with a semiconductor channel of relatively low conductivity between the source and drain electrodes which may be electrically influenced by a Schottky-barrier gate electrode located on the semiconductor channel. The transistor is characterized by a zone or region of higher conductivity which extends from the vicinity of the source electrode to near the gate electrode. Further, source and drain regions are conveniently provided for the transistor of semiconductor of the same conductivity type as the channel semiconductor at the Schottky-barrier electrode. Advantageously, the drain region may be made of semiconductor of high conductivity and the same conductivity type as the source region. The high conductivity region may be achieved through either diffusion or epitaxial growth technique.

3,609,478
BURIED-LAYER SEMICONDUCTOR DEVICE FOR DETECTING AND MEASURING THE ENERGY AND ATOMIC NUMBER OF IMPINGING ATOMIC PARTICLES

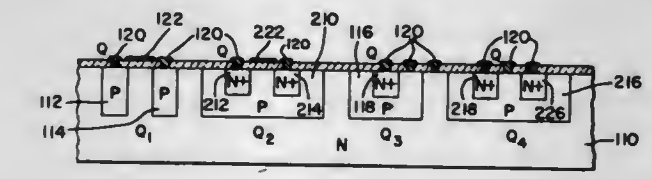
William J. King, Reading, Mass., and Frederick W. Martin, Brabrand, Denmark, assignors to Ion Physics Corporation, Burlington, Mass.
Filed Oct. 16, 1967, Ser. No. 675,688
Int. Cl. H01l *11/00*
U.S. Cl. 317—235 **1 Claim**

The present invention relates to radiation detection devices and more particularly to a solid-state device capable of detecting and measuring the energy and atomic number of impinging particles. This device contains a region imbedded completely within its body which is opposite conductivity type than the body and which is separated from the body by two distinct PN junctions. The imbedded region is produced by ion implantation and differs from such regions produced by other means in that the percentage compensation of dopant impurities between the region and all points on the surface of the body may be small, that is, 1 percent or less.



3,609,479
SEMICONDUCTOR INTEGRATED CIRCUIT HAVING MIS AND BIPOLAR TRANSISTOR ELEMENTS

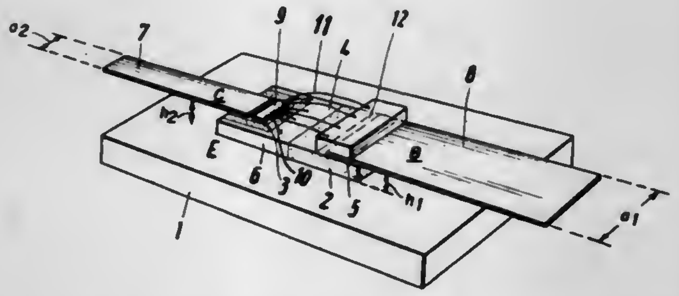
Hung Chang Lin, Silver Spring, and Karl Ka-Chung Yu, Laurel, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 29, 1968, Ser. No. 709,344
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 **1 Claim**



MIS and bipolar transistor elements are provided within a unitary body of semiconductor material wherein first and second regions of opposite conductivity type to that of the substrate provide source and drain regions between which is positioned an insulated gate electrode for the MIS transistor while in a region that may be the same as one of the source and drain regions or an additional region, elements of the bipolar transistor are provided with utilization of the substrate as a collector region or by having laterally disposed emitter and collector regions in a base region.

3,609,480
SEMICONDUCTOR DEVICE WITH COMPENSATED INPUT AND OUTPUT IMPEDANCES

Dieter Gerstner, Willsbach, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm an der Danube, Germany
Filed Aug. 28, 1968, Ser. No. 755,922
Claims priority, application Germany, Aug. 30, 1967, P 16 14 858.6
Int. Cl. H01l *5/00*
U.S. Cl. 317—235 R **14 Claims**



A four-terminal semiconductor device, i.e., a device with two input and two output electrodes, having a semiconductor element, a metallic baseplate which is connected to the semiconductor element and constitutes one of the input and one of the output electrodes, and at least two strip-shaped electrodes which are insulated from the baseplate, extend in opposite directions parallel to the baseplate, and are electrically connected to the semiconductor element. The strip-shaped electrodes have different widths and/or are spaced different distances from the metalic plate so as to provide broadband compensation for the input and output inductances and/or capacitances of the device.

3,609,481
IRON SUBSTITUTED BARIUM TITANATE FERROELECTRIC COMPOSITIONS AND CAPACITORS COMPRISING SAME

Lothar H. Brixner, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 29, 1968, Ser. No. 724,899
Int. Cl. H01g *3/06;* **C04b** *35/00*
U.S. Cl. 317—238 **2 Claims**

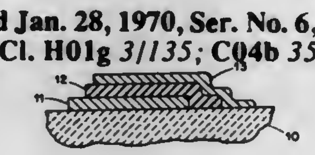
A ferroelectric composition of matter of the formula

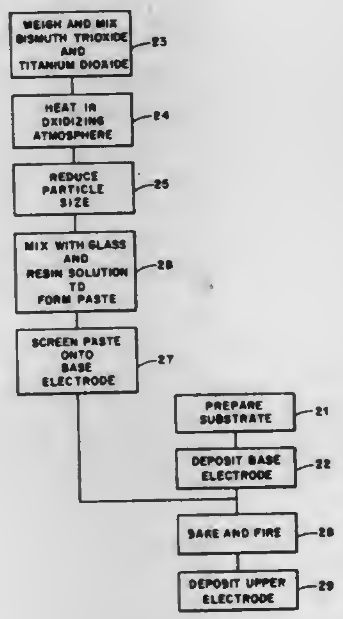
$$BaFe_xZ_{\frac{x}{2}}Ti_{1-\frac{3x}{2}}O_3$$

where Z may be W^{+6} or Mo^{+6} and x has a value from about 0.001 to about 0.03, having a tetragonally distorted perovskite crystal structure.

3,609,482
BISMUTH TITANATE FILM CAPACITOR AND METHOD OF MANUFACTURE

Frank H. Edelman, Wellesley, and Simon Ernest Mayer, Lexington, both of Mass., assignors to Sylvania Electric Products Inc.
Filed Jan. 28, 1970, Ser. No. 6,439
Int. Cl. H01g *3/135;* **C04b** *35/46*
U.S. Cl. 317—258 **11 Claims**




WEIGH AND MIX BISMUTH TRIOXIDE AND TITANIUM DIOXIDE
23
HEAT IN OXIDIZING ATMOSPHERE
24
REDUCE PARTICLE SIZE
25
MIX WITH GLASS AND RESIN SOLUTION TO FORM PASTE
26
SCREEN PASTE ONTO BASE ELECTRODE
27
PREPARE SUBSTRATE
21
DEPOSIT BASE ELECTRODE
22
BAKE AND FIRE
28
DEPOSIT UPPER ELECTRODE
29

Film capacitor of two conductive electrodes with an intervening dielectric layer of bismuth titanate and a glass binder. The capacitor is fabricated by depositing a base electrode of a gold-palladium alloy on an alumina substrate. A dielectric paste of a mixture of bismuth titanate, a lead-boro-silicate glass, and a resin solution is silk screened onto the base electrode, and then baked and fired. An upper electrode of silver is deposited on the bismuth titanate.

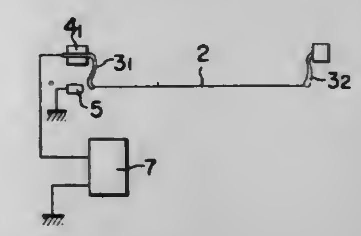
3,609,483
THICK FILM TITANATE CAPACITOR COMPOSITION

James P. Smyly, Laurens, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.
Filed July 1, 1969, Ser. No. 838,308
Int. Cl. H01g *1/01;* **C04b** *33/00*
U.S. Cl. 317—258 **4 Claims**

An improved dielectric composition for thick film capacitors and paste for making the same are provided. The composition is a mixture of a high dielectric constant material, a glass frit and modifying oxides and/or compounds blended and milled together and dispersed in a suitable vehicle. The resulting paste can be spread to give a thick film capacitor dielectric which has a dielectric constant up to 1,000. The capacitance per square inch may be in excess of 50,000 pf. per inch^2 (7,500 picofarads per square centimeter). The composition adheres well to electrodes of usually desirable metals such as gold, silver, palladium and other noble metals and has maturing temperatures consistent with the use of such metals.

3,609,484
SAFETY DEVICE FOR CHARGING DEVICE OF ELECTROPHOTOGRAPHIC APPARATUS

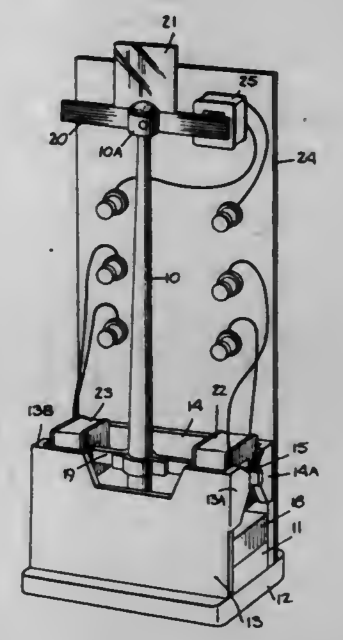
Hisashi Sakamaki, Kawasaki-shi; Yoshimasa Kimura, Tokyo, and Osamu Sawamura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed June 5, 1970, Ser. No. 43,820
Claims priority, application Japan, June 9, 1969, 44/53157
Int. Cl. G03g *15/02*
U.S. Cl. 317—262 A **4 Claims**



A charging device for use in electrophotographic apparatus has at least one corona discharge wire which is suspended on a wire retaining member. When the corona discharge wire is broken, one end of the wire retaining member is brought into contact with a short circuit electrode provided on a frame body to form a closed current loop to the ground.

3,609,485
RESONANT TORSIONAL OSCILLATORS

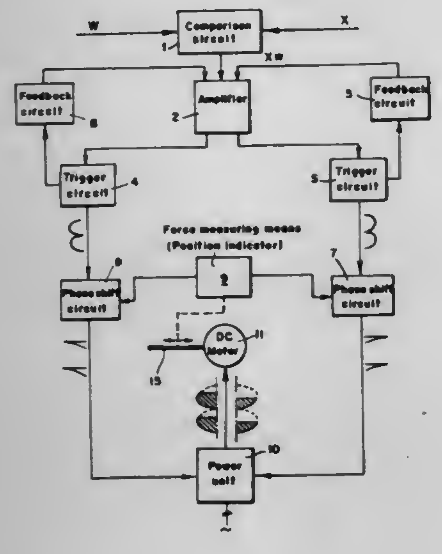
Frank Dostal, Elmhurst, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed Apr. 9, 1969, Ser. No. 814,649
Int. Cl. H02k *33/12*
U.S. Cl. 318—132 **6 Claims**



A resonant torsional oscillator adapted to serve as an optical chopper or to provide other useful functions which require a vibratory action at a high amplitude and a constant rate. The oscillator is constituted by an erect torsional rod whose base is anchored, an optical element being attached to the free end of the rod. The rod is sustained in torsional vibration by means of an electromagnetically driven armature secured to the rod, the point of attachment being adjacent the base whereby the torsional swing at the free end of the rod is amplified with respect to that at said point.

3,609,486
METHOD AND APPARATUS FOR MOVEMENT OF MECHANICAL MEMBERS BY AN ELECTRIC MOTOR

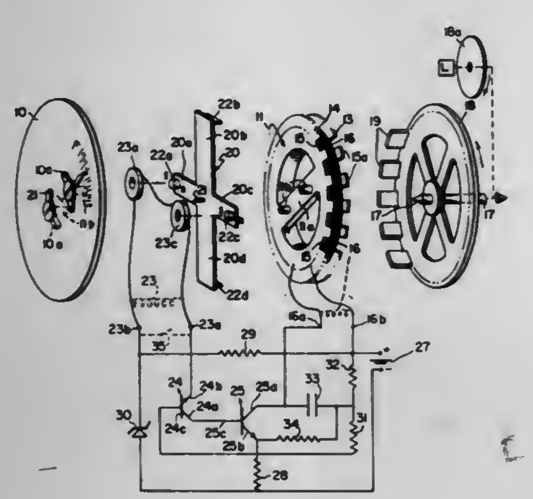
Heinrich Feldhoff, Bad Duerkheim; Georg Schlereth, Limburgerhof, Pfalz, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Land Rheinland, Pfalz, Germany
Filed Oct. 13, 1969, Ser. No. 865,940
Claims priority, application Germany, July 22, 1965, P 14 38 974.3
Int. Cl. G05b *11/28*
U.S. Cl. 318—138 6 Claims



Method and apparatus for control of DC motor directly connected to actuating element of control or regulating device with step actuation of motor by pulse modulation in trains of individual pulses whose energy content is varied in dependence on the force requirement to move the mechanical member.

3,609,487
DC MOTOR AND CONSTANT-SPEED CONTROL CIRCUIT

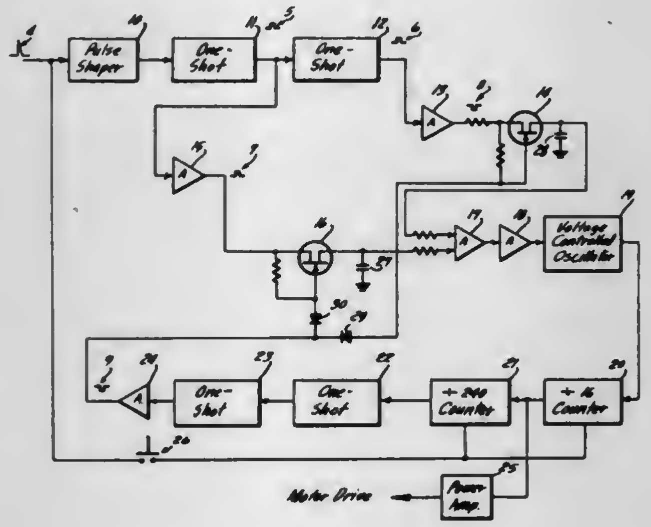
William W. Allison, Melville, N.Y., assignor to Armec Corporation, Huntington Station, N.Y.
Continuation-in-part of application Ser. No. 721,965, Apr. 17, 1968. This application Oct. 29, 1969, Ser. No. 870,577
Int. Cl. H02k *27/20*
U.S. Cl. 318—138 13 Claims



In accordance with a preferred embodiment of the invention, a DC motor is both driven and controlled through a common winding by providing a circuit which includes both power and control portions and is preferably self-oscillatory in the absence of rotor motion and at a frequency related to desired rotor speed to define, in conjunction with rotor-generated signals, limits of motor speed. The power portion includes an electronic switch and motor current limiter and the control portion includes an amplifier stage to operate the switch and two separate feedback paths are provided from the power portion to the amplifier stage. A mechanical resonator is coupled to the rotor to be excited into resonance as the motor reaches synchronous speed, and an electromagnetic pickup from the resonator feeds a signal into the amplifier stage to furnish a dominating control signal, thus synchronizing the motor to the resonator to achieve precise motor speed while enabling the motor to be either self-starting or, if desired, capable of starting with a very slight push, and to recover synchronous speed following disturbance to rotor speed for any reason including loss of power.

3,609,488
SPEED CONTROL FOR A SYNCHRONOUS MOTOR

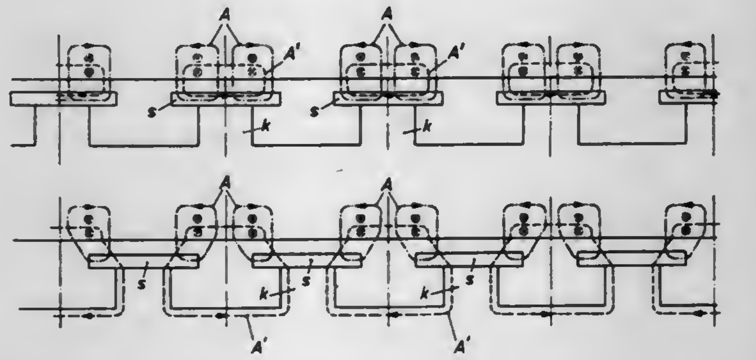
John B. Sampson, Cupertino, and Hadyn L. Smith, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Mar. 9, 1970, Ser. No. 17,676
Int. Cl. H02p *7/42*
U.S. Cl. 318—171 5 Claims



A motor control means to accomplish frequency changing which in turn achieves a speed change in a synchronous motor comprising a voltage controlled oscillator which responds to a discriminator circuit which either increases or decreases the frequency output of the oscillator in accordance with whether a synchronizing pulse is early or late with respect to an enabling pulse.

3,609,489
ARRANGEMENT FOR REDUCING POLE CORE CURRENTS IN SYNCHRONOUS MOTORS WITH SALIENT POLES

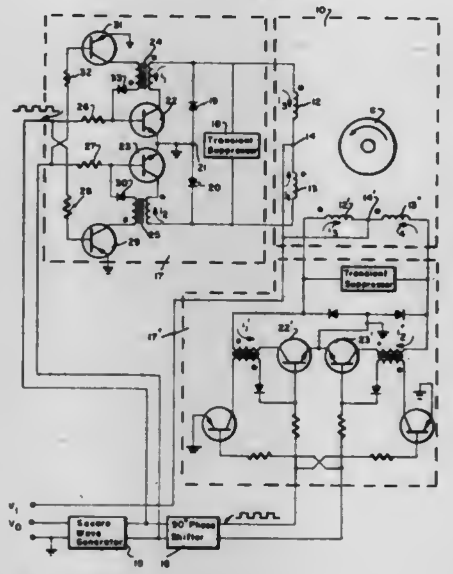
Kurt Baltisberger, Birr, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Nov. 24, 1969, Ser. No. 879,243
Claims priority, application Switzerland, Nov. 28, 1968, 17711/68
Int. Cl. H02p *1/48*
U.S. Cl. 318—173 1 Claim



A synchronous motor is provided with a rotor of the salient pole type with a permanent connection for operation with an N number of poles but the stator winding is provided with a pole switching arrangement in order to reduce the pole core currents during a starting-up operation of the motor. During the initial phase of the start from standstill to about half, i.e. synchronous speed, the stator winding is connected in such manner as would correspond to a 2N-pole arrangement on the rotor. When the half normal speed is reached, the stator winding is then reconnected to correspond to the actual N-pole arrangement on the rotor.

3,609,490
TWO PHASE MOTOR DRIVE CIRCUIT

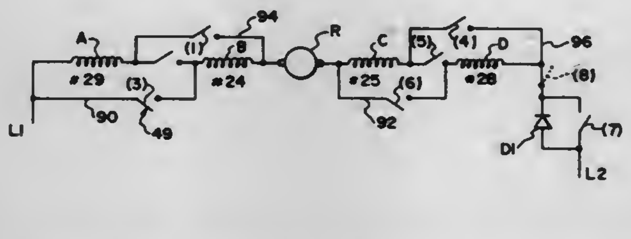
Leroy R. Keranen, Lawndale, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Mar. 16, 1970, Ser. No. 19,910
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 9 Claims



A circuit for providing base drive to the output stages of a square wave motor drive circuit. The output stage of a motor drive circuit comprises two output transistors. The collector current of each output transistor is sampled by the primaries of two current transformers wound on the same core for DC cancellation. The secondary of each current transformer drives the base of its respective output transistor.

3,609,491
SELECTABLE MODE MULTIPUSHBUTTON SWITCH

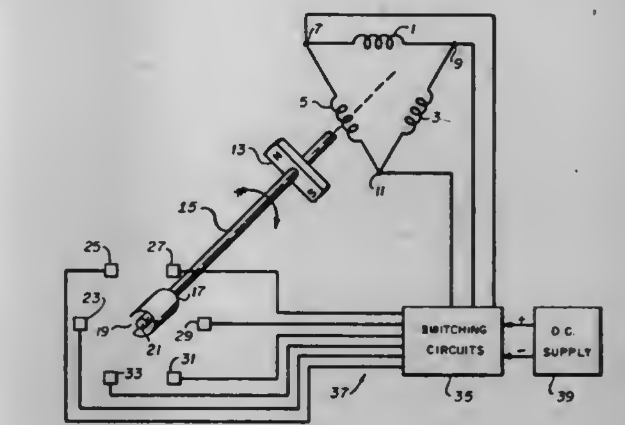
Roy L. Swanke, Newington, and Bruno M. Valbona, Avon, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.
Filed Dec. 2, 1969, Ser. No. 881,395
Int. Cl. H02p *7/10*
U.S. Cl. 318—252 15 Claims



A motor-driven appliance including a multipushbutton switch with permutatable control sliders and switches providing different speeds selectively in association with a mode control to provide either a continuous or a momentary run of the appliance when any of the speed selection pushbuttons is manually pressed. The mode control in one position returns the sliders to "OFF" position when a pushbutton is released that was being pressed, while in another position the sliders remain in a continuous run position when the pressed pushbutton is released. The mode is selected by varying the tension upon a spring which urges the return of sliders and pushbuttons to a predetermined position. The mode can be changed during operation of the liquidizer and can serve as a stop control.

3,609,492
REVERSIBLE BRUSHLESS DC MOTOR

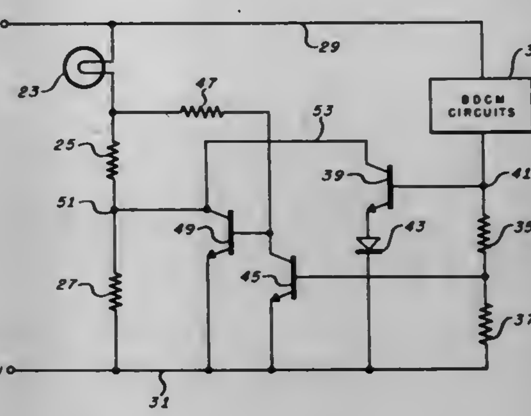
Rodney G. Rakes, Bristol, Tenn., assignor to Sperry Rand Corporation
Filed July 17, 1970, Ser. No. 55,793
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 3 Claims



An optically commutated brushless DC motor contains a multijunction closed-loop stator winding. Each junction is energized through separate switching circuits in response to illumination of a corresponding photocell. Each photocell may be coupled to either one of two switching circuits through a gate in one or the other of two groups of gates. A directional control circuit disables both groups of gates in the absence of a command signal but enables one or the other group of gates in response to a clockwise or counterclockwise command signal, respectively. The directional control circuit further contains feedback means that prevents the circuit from responding to a reverse command signal until the termination of a previously applied command signal.

3,609,493
OPTICALLY COMMUTATED BRUSHLESS DC MOTOR HAVING CONTROLLED LIGHT SOURCE

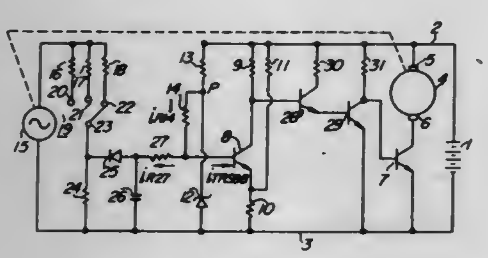
Rodney G. Rakes, Bristol, Tenn., assignor to Sperry Rand Corporation
Filed Nov. 5, 1970, Ser. No. 87,212
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 6 Claims



An optically commutated brushless DC motor includes a voltage divider in series with the commutator light source and a tapped resistor in series with the stator windings of the motor. The resistor provides a voltage drop proportional to the motor drive current. Transistor circuits are actuated in response to the voltages appearing across the resistor and arranged to provide a shunt path around a portion of the voltage divider when the motor current becomes either abnormally high or low. With a portion of the voltage divider thus shunted, the output of the light source is intensified. The increased intensity prevents underlap so as to provide extra drive during starting or stall conditions.

3,609,494
SPEED-CONTROLLING APPARATUS FOR DC MOTOR

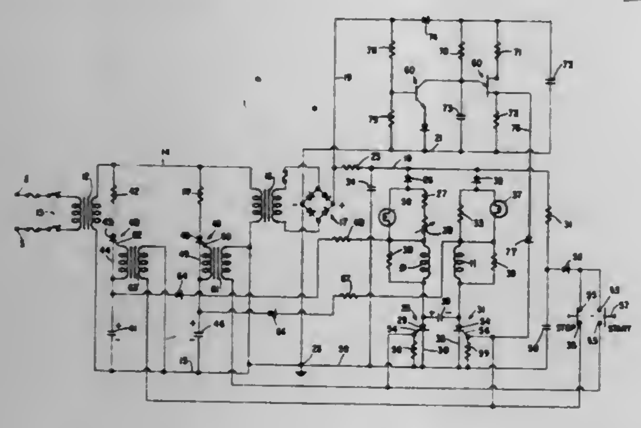
Tadashi Takahashi, and Kazuo Onishi, both of Hitachi-shi, Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Nov. 14, 1968, Ser. No. 775,806
Claims priority, application Japan, Nov. 17, 1967, 73650/67
Int. Cl. H02p *5/16*
U.S. Cl. 318—328 **12 Claims**



A speed-controlling apparatus for DC motors, wherein a closed series circuit is constituted by a DC power source, a DC motor and the emitter and collector of a first transistor, whereby the conductivity between the emitter and the collector of the transistor is controlled to thereby achieve constant speed control with respect to the DC motor. Further, a biasing circuit for supplying a constant base current to a second transistor is formed by a Zener diode and a resistor. The output of an AC generator which is mechanically conducted with said DC motor is rectified by means of a diode. The output circuit of the AC generator is combined with said biasing circuit in such polarity that the current of said biasing circuit is positively shunted by the rectified output current, so that the conductivity between the emitter and the collector of the first transistor is controlled in accordance with variation in the collector potential of the second transistor, thereby maintaining the speed of the DC motor constant.

3,609,495
CONTROL CIRCUITS FOR ELECTROMAGNETIC CLUTCH-BRAKE DRIVING DEVICES

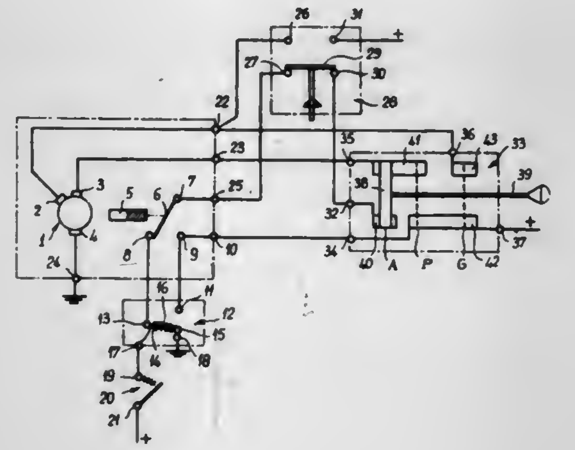
Henry A. Seesselberg, South Plainfield, N.J., assignor to The Singer Company, New York, N.Y.
Division of Ser. No. 737,543, June 17, 1968, Patent No. 3,516,526.
Filed Dec. 5, 1969, Ser. No. 882,803
Int. Cl. H02p *3/04, 3/06*
U.S. Cl. 318—368 **3 Claims**



A circuit which does not require mechanical relays is disclosed using silicon-controlled rectifiers (SCR's) for controlling manually and/or automatically the starting and stopping of a clutch-brake motor having an electromagnetically actuated clutch and brake. Each clutch turnoff brake winding is connected to a source of full wave rectified AC voltage through its own SCR and selective turnoff is effected by capacitor commutation. Momentary overexcitation of both windings is provided by alternative initial discharge therethrough of energy previously stored in respective capacitors. These capacitors are charged through separate individual SCR's from an AC voltage of a value higher than the normal DC energizing voltage used for continuously exciting the coils. The four SCR's are turned on in pairs, one SCR of each pair closes a circuit connecting the respective winding to the previously charged capacitor and thereafter to the normal DC energizing bus. Diode gates prevent adverse interaction between the capacitors and the DC bus and provide properly timed energy flow from the DC bus to the winding as soon as the capacitor voltage drops to a value slightly below the bus voltage so that there is no discontinuity in the winding excitation. The trigger pulse which turns on one SCR to energize one winding also turns on the other SCR of the pair, which latter SCR connects the capacitor for charging or storing energy which is later released for initially energizing the other winding. A no-voltage release circuit employs a unijunction transistor (UJT) as a relaxation oscillator connected to a DC supply having a large capacitor. This oscillator provides triggering pulses to the gate of the SCR which controls excitation of the brake winding. Normally, however, with full line voltage, a transistor base-biased to saturation, has its emitter-collector circuit connected across the timing capacitor of the UJT oscillator, thus normally shorting the capacitor and preventing oscillation. Upon failure of line voltage, the transistor turns off due to loss of base bias and the timing capacitor charges from the energy in the large capacitor, and the oscillator supplies a triggering pulse to the SCR for energizing the brake coil. The voltage of the previously charged capacitor now connected to the brake winding will, even in the absence of line voltage, supply a high impulse of energy to the brake coil to bring the load quickly to standstill.

3,609,496
WINDSCREEN WIPER CONTROL SYSTEMS

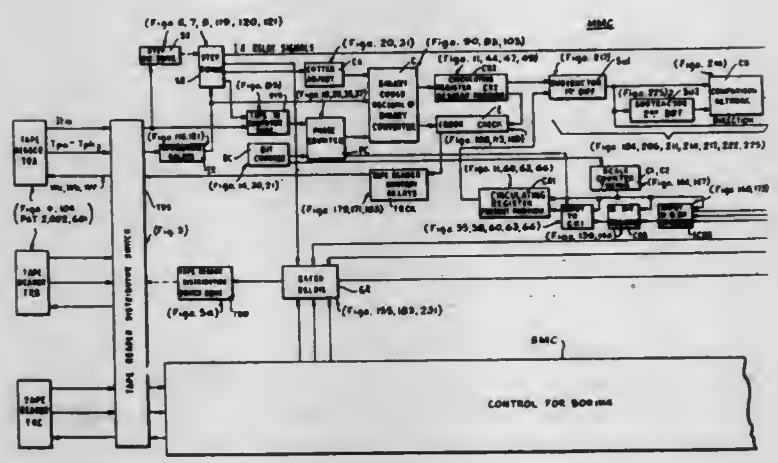
Francois Peroy, and Jean Pineau, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France
Filed Sept. 9, 1968, Ser. No. 758,380
Claims priority, application France, Sept. 18, 1967, 121,375
Int. Cl. H02p *1/04*
U.S. Cl. 318—444 **3 Claims**

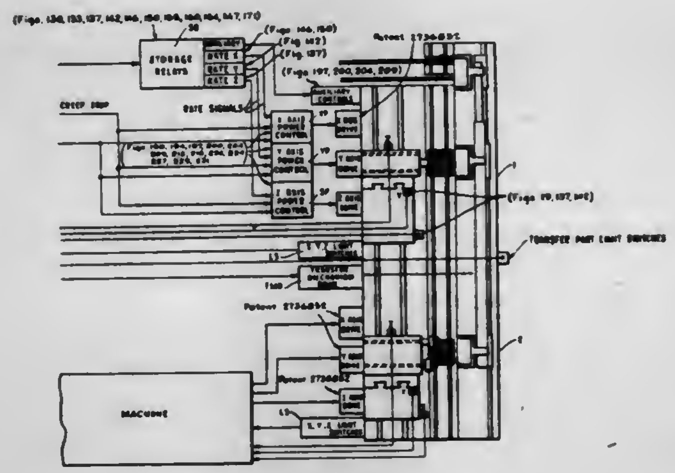


The improvement is characterized by the combination of the windscreen wiper driving motor with a reversing switch responsive to the windscreen washer pump control means, with a timelag device and with a reversing switch responsive to a fixed-stop control cam, whereby a single maneuver of a single member is sufficient for causing the motor to operate as consistent with the momentary atmospheric circumstances, an additional maneuver of said pump control means permitting modifying said motor operation, if necessary.

3,609,497
NUMERICAL CONTROL INCLUDING ZERO OFFSET AND PULSE COUNTING DIGITAL COMPARISON

Tom T. Kumagai, Gardena; William C. Leone, Palos Verdes Estate; Michael May, Los Angeles; Harold A. Shoemaker, Santa Monica, and Roy A. Howard, Manhattan Beach, all of Calif., assignors to Houdaille Industries, Inc., Buffalo, N.Y.
Division of Ser. No. 827,981, Mar. 10, 1959, Patent No. 3,245,144.
Filed Jan. 12, 1966, Ser. No. 598,525
Int. Cl. G05b *19/28*
U.S. Cl. 318—610 **7 Claims**



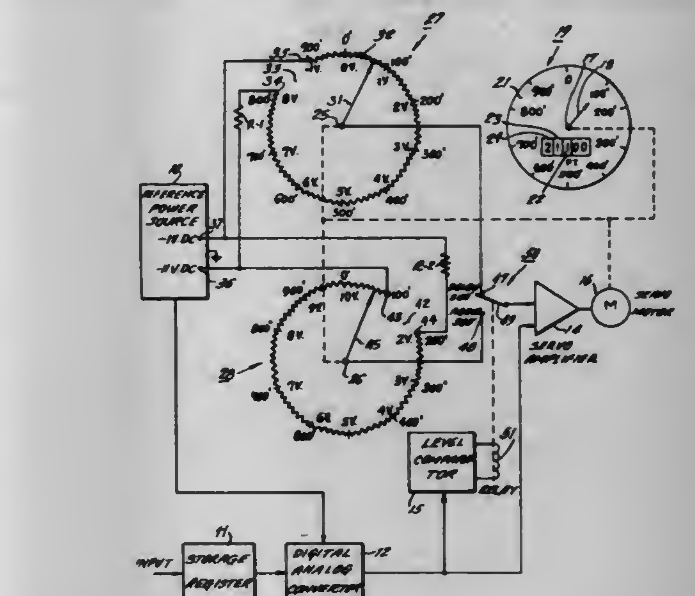


A numerically controlled positioning system for positioning a movable member, employing serial signal processing circuits having circulating registers for receiving discrete input signals representative of a desired position of the member and for receiving feedback signals of actual position of said member, in which, arithmetic combinations of the input signals, compensated as required for position offset, and the feedback signals, provide control signals for positioning the member.

3,609,498
CONVERTER FOR POSITIONING A CONTINUOUSLY ROTATABLE SHAFT UTILIZING CYCLIC DIGITAL INFORMATION

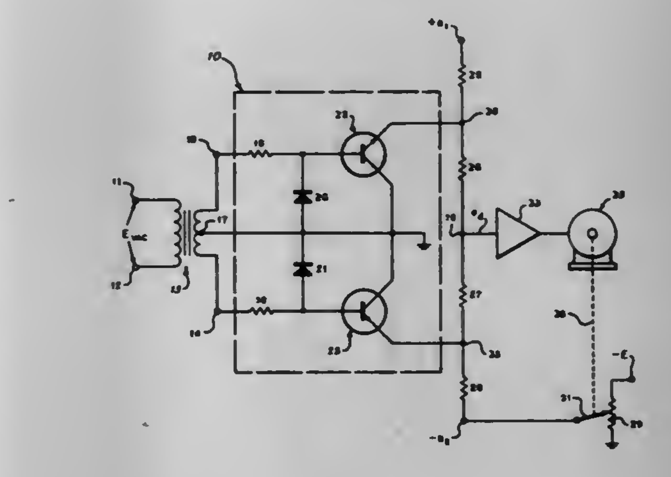
John H. Andresen, Jr., Hewitt, N.J., and James A. Fitzpatrick, Bayside, N.Y., assignors to Intercontinental Dynamics Corporation, Englewood, N.J.
Filed Dec. 5, 1969, Ser. No. 882,684
Int. Cl. G05b *1/06*
U.S. Cl. 318—665 **7 Claims**

A servomechanism for converting cyclic digital information to a continuously rotating shaft position is controlled by an error signal derived by comparing the voltage analog of the cyclic digital information and the voltage obtained from a selected one of two potentiometers, both of which have wiper arms which rotate in unison with the continuously rotating shaft. A level comparator controlled by signals from the converter which changes the digital information to an analog signal is used to select which potentiometer is connected to the servoamplifier.



3,609,499
ELECTRONIC CHOPPER CIRCUIT

Ronald C. Scheerer, Baltimore, and Roger L. Woods, Glen Burnie, both of Md.
Filed Apr. 29, 1970, Ser. No. 33,025
Int. Cl. G05b *11/12*
U.S. Cl. 318—684 **9 Claims**



A servo system utilizing an electronic chopper for producing shaft rotation indicative of the amplitude of a DC input signal. The DC signal is converted to square wave form by shunting the signal through a complementary pair of transistors to ground. A constant AC signal applied to the input bases of the transistors determines the frequency of the shunting action which in turn determines the frequency of the square wave. The square wave signal is amplified and applied to a servo motor for driving a potentiometer indicator in accordance with the amplitude of the DC input signal.

3,609,500

STEPPING MOTOR HAVING AN ODD NUMBER OF WINDINGS, THE WINDINGS BEING ENERGIZED AT ALL TIMES

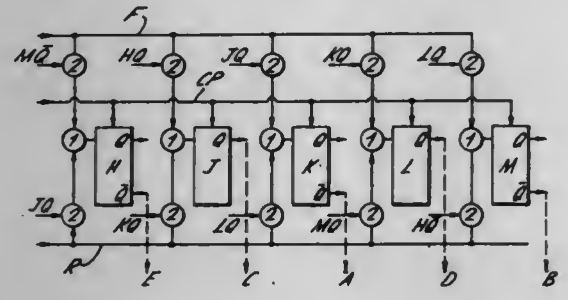
Roy Causer, Wantage, and Eric Ronald Rein, Newbury, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 5, 1969, Ser. No. 882,433

Claims priority, application Great Britain, Dec. 5, 1968, 57.923/68

Int. Cl. G05b *19/40*

U.S. Cl. 318—696 **4 Claims**



The stepping motor is wound with five star-connected field windings. Drive for five-phase operation is generated with logic circuitry having provision for forward and reverse. Increased torque as compared with a conventional three-phase system, and equal torque per step are achieved.

3,609,501

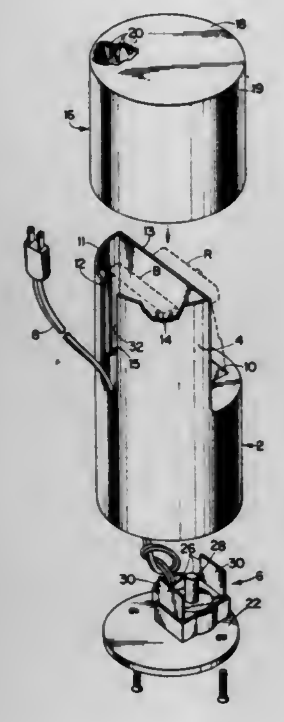
HOLDER FOR APPLIANCE AND ASSOCIATED ARTICLES

Bruce F. Ray, Danvers, and Richard J. Petrillo, Norwell, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Jan. 19, 1970, Ser. No. 3,615

Int. Cl. H02j *7/00*

U.S. Cl. 320—2 **9 Claims**



Holder for electrical appliance and associated articles, the holder including a base portion housing a battery-charging means and having a recess for receiving an appliance, and a hollowback portion extending from the base position and having runner means for slidingly receiving articles associated with the appliance.

3,609,502

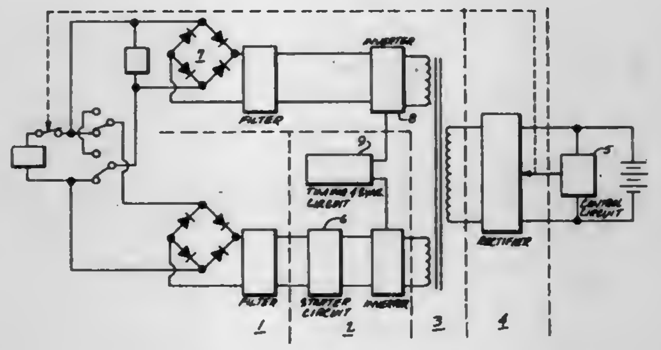
HIGH FREQUENCY BATTERY CHARGER EMPLOYING AN INVERTER

Wilford B. Burkett, Pacific Palisades, and John H. Bigbee, III, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed July 24, 1969, Ser. No. 844,469

Int. Cl. H02j *7/10*

U.S. Cl. 320—5 **20 Claims**



A charger designed to be within a specified weight limitation employs a method and circuit for rapid-charging which circuit employs an inverter for changing a direct current voltage to an alternating-current voltage having a substantially square wave form and a relatively high frequency in the order of 10,000 Hertz, and a rectifying circuit connected to the output of the inverter, for changing the high frequency alternating-current voltage to direct-current voltage for application to the battery to be charged. At least one unilateral impedance element is in the current path through the rectifying circuit with the element briefly providing a discharge path for the battery at the end of each period of forward conduction through the element.

3,609,503

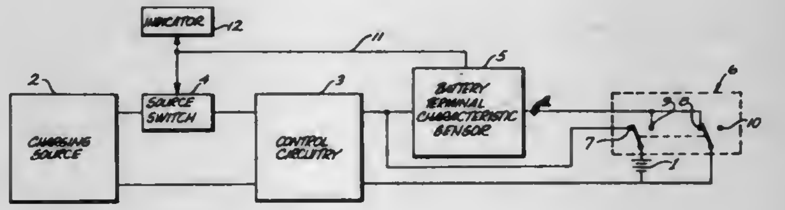
TERMINATION OF RAPID CHARGING OF BATTERIES

Wilford B. Burkett, Pacific Palisades, and Robert V. Jackson, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 612,995, Jan. 31, 1967, now Patent No. 3,517,293. This application Oct. 20, 1969, Ser. No. 870,402

Int. Cl. H02j *7/10*

U.S. Cl. 320—5 **31 Claims**



A battery is charged rapidly by alternately applying a charging current to the battery and selectively discharging the battery. During this rapid charging operation, the magnitude of charge on the battery is determined by monitoring terminal characteristics of the battery. When the monitored terminal characteristic of the battery reaches a predetermined value, the rapid charging operation is either manually or automatically terminated. Such terminal characteristics as average discharge current, energy release during a discharge interval, terminal voltage of the battery an increment of time after the start of the discharge interval, and the frequency of the discharge interval are monitored.

3,609,504

APPARATUS FOR DISCONNECTING AN AUXILIARY BATTERY FROM A MAIN BATTERY DURING DISCHARGE OF THE MAIN BATTERY

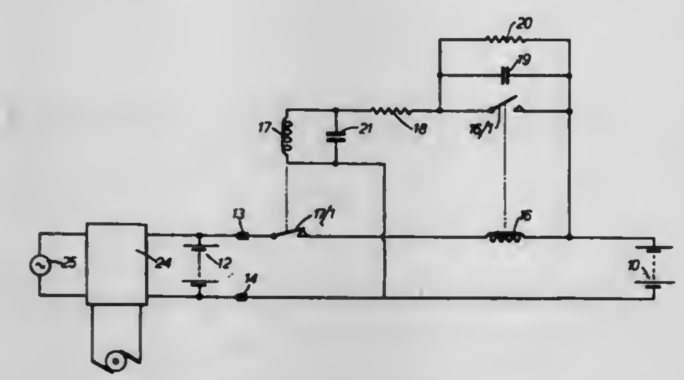
John S. N. Barker, and Ronald H. Minter, both of Northam, England, assignors to Bardic Systems Limited, Northam, Southampton, England

Filed Oct. 29, 1969, Ser. No. 872,018

Claims priority, application Great Britain, Oct. 31, 1968, 51,758/68

Int. Cl. H02j *7/00*

U.S. Cl. 320—7 **3 Claims**



In an arrangement for charging an auxiliary battery in a caravan from the charging system of a main battery driven by an internal combustion engine in a motor car, without allowing it to be discharged by the self-starter, the two batteries are connected in parallel through an overcurrent relay which disconnects the auxiliary battery if its discharge current exceeds a predetermined value. The batteries are reconnected after a period by a delayed resetting means, so that if the starter is still taking a heavy current the relay will alternately close for a short period and open for a much longer period thereby preventing discharge of the auxiliary battery.

3,609,505

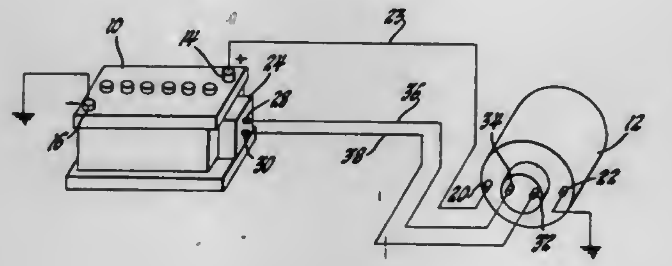
TEMPERATURE COMPENSATED VOLTAGE REGULATION SYSTEM

Glen E. Harland, Jr., and Richard E. Lavengood, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1969, Ser. No. 876,266

Int. Cl. H02j *7/14*

U.S. Cl. 320—35 **2 Claims**



A battery charging system includes a voltage regulator having a drive section and an output section. The drive section contains all of the temperature sensitive drive components of the voltage regulator. The power section contains all of the heat-producing power components of the voltage regulator. The drive section is mounted on the battery in intimate heat-conducting relationship so that the temperature sensitive drive components are compensated for variations in the temperature of the battery. The power section is mounted on the generator out of intimate heat-conducting relationship with the drive section so that the temperature sensitive drive components are not effected by the heat-producing power components.

3,609,506

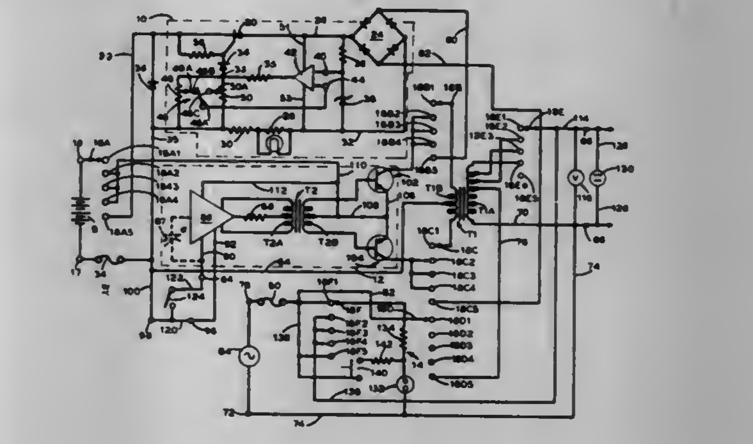
BATTERY APPARATUS

James A. Frezzolini, and James J. Crawford, both of Ringwood, N.J., assignors to Frezzolini Electronics Inc., Hawthorne, N.J.

Filed Jan. 21, 1969, Ser. No. 792,318

Int. Cl. H02j *7/04*

U.S. Cl. 320—39 **22 Claims**



Apparatus having an inverter portion for producing an alternating potential from a battery and a charger portion for charging the battery including a pair of input terminals adapted to be connected to a battery. The charger portion includes a pulse generator, a switching device for connecting the pulse generator with the input terminals in response to a control signal, voltage reference means, and regulating means for producing the control signal in response to the difference between the battery terminal voltage and the voltage reference means. The inverter portion includes an oscillator for producing an alternating signal of preselected frequency at a pair of output terminals. Switching means is provided to selectively connect the input terminals with the charger portion or the inverter portion to provide a compact and versatile device which may be used as an inverter and, after the battery has been discharged, as a charger to charge the same.

The apparatus further includes simple frequency test means for testing the frequency of the inverter output signal.

3,609,507

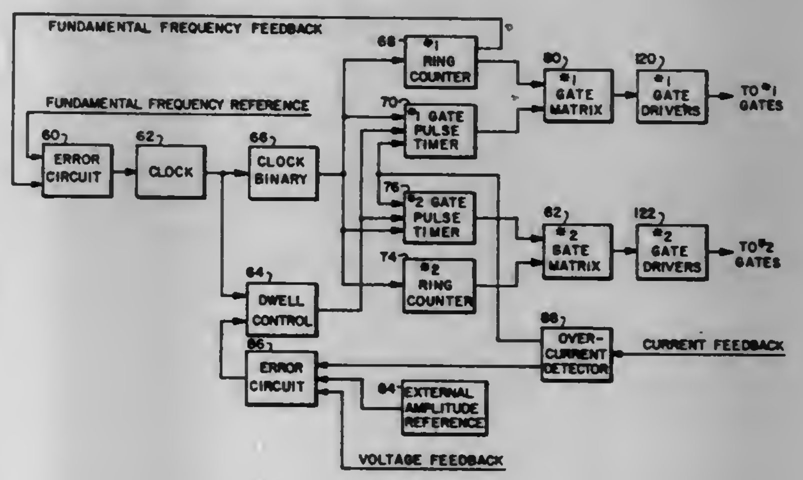
POLYPHASE INVERTER SYSTEM HAVING FAULT PROTECTION AND OUTPUT AMPLITUDE REGULATION THROUGH PULSE WIDTH MODULATION

William Hamilton Beck, Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation

Continuation-in-part of application Ser. No. 710,936, Mar. 6, 1968. This application May 5, 1970, Ser. No. 34,833

Int. Cl. H02m *1/12, 1/18, 7/52*

U.S. Cl. 321—5 **14 Claims**



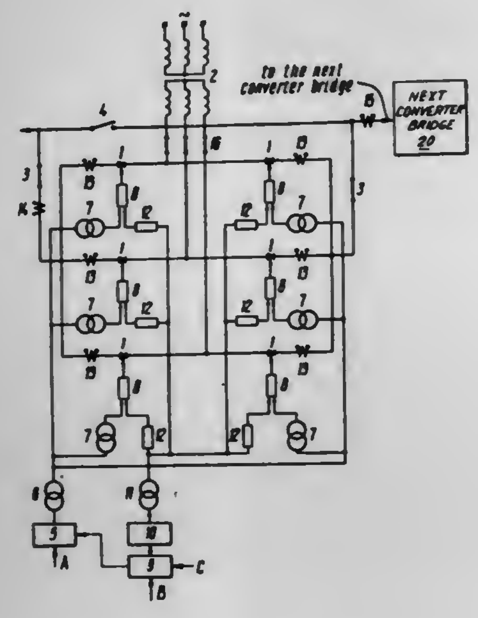
A power conditioning system which by pulse width modulation of a polyphase inverter bridge provides fault protection and output amplitude regulation.

3,609,508

CONTROLLED VALVE-TYPE CONVERTER

Kazimir Borisovich Gusakovsky, Grazhdansky prospekt, 51, kv. 25, Leningrad; Evgeny Mitrofanovich Semisalov, Kantemirovskaya ulitsa, 17, kv. 6, Leningrad; Vikenty Ivanovich Shiryaev, prospekt Engelsa, 40, kv. 26, Leningrad, U.S.S.R.; Boris Sergeevich Melik-Sarkisov, deceased, late of Leningrad, U.S.S.R. (Anna Matvenna Kirsanova, deceased, prospekt Engelsa, 40, kv. 3, Leningrad, U.S.S.R.), and Anna Matveena Kirsanova, prospekt Engelsa, 40, kv. 3, Leningrad, U.S.S.R. (of said Boris Sergeevich Melik-Sarkisov)

Filed Feb. 20, 1969, Ser. No. 801,053
Int. Cl. H02m *7/00*
U.S. Cl. 321—5 **3 Claims**



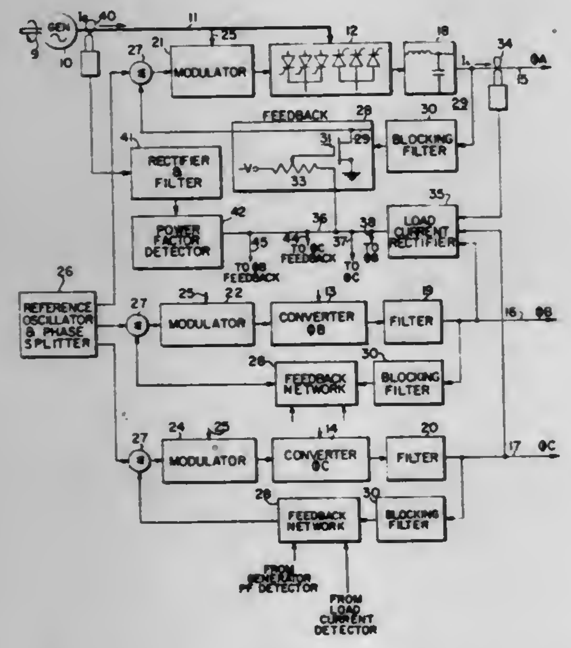
A controlled valve-type converter for substations of DC electric transmission lines with a plurality of series-connected three-phase valve-type bridges, wherein each of the devices adapted for short-time shunting of the bridge is so implemented that the operating valves of the bridge are made use of as shunting valves.

3,609,509

FEEDBACK CONTROL FOR CYCLOCONVERTER

David Logan Lafuze, Waynesboro, Va., assignor to General Electric Company

Filed Mar. 11, 1970, Ser. No. 18,539
Int. Cl. H02m *5/30*
U.S. Cl. 321—7 **19 Claims**



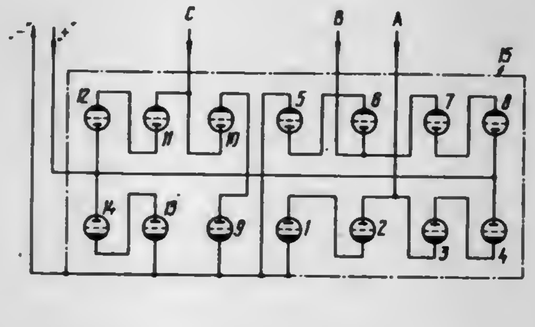
The invention relates to a circuit for reducing the magnitude of the feedback in a cycloconverter of the type incorporating a phase controlled rectifier system to provide protection both against high load current and the lagging low-power factor loads which are likely to cause miscommutation of the controlled rectifiers. In the inverting mode, the firing angle for the rectifiers is progressively retarded at high load currents and low-power factors and system perturbations are very likely. The feedback is reduced to protect the system against this eventuality. By sensing both the output current and the phase angle of the output load, the feedback is reduced if either load becomes excessive or if the power factor drops. The power factor and the load current are sensed to produce a pair of signals which are utilized to control an electrically variable resistance element in the feedback path to control the amount of feedback as a function both of the load and of the power factor.

3,609,510

RECTIFYING BRIDGE EMPLOYED FOR DC ELECTRIC TRANSMISSION LINE

Alexandr Mikhailovich Berkovsky, Nizhne-Krasnoselskaya ulitsa, 45, kv. 244, Moscow; Viniamin Efimovich Turetsky, Nizhne-Krasnoselskaya ulitsa, 45, kv. 90, Moscow; Khaim Shlemovich Grois, Lesnoi prospekt, 15, kv. 33, Leningrad, and Moisha Gershkovich Shekhtman, ulitsa Nekrasova, 60, kv. 128, Leningrad, all of U.S.S.R.

Filed Oct. 23, 1968, Ser. No. 770,024
Int. Cl. H02m *7/00*
U.S. Cl. 321—8 **2 Claims**



A rectifying bridge for a high voltage DC power transmission system comprises a plurality of rectifiers connected in two groups in each AC phase in a respective bridge arm thereof. A platform supports the rectifiers in two rows and the platform is electrically connected to the lower potential bridge pole so as to be at a potential between the higher potential bridge pole and earth potential. The rectifiers at the ends of both rows are electrically connected to the higher bridge pole, while the intermediate rectifiers in each row, between the endmost rectifiers, are electrically connected to the platform. The spacing between adjacent rectifiers is at least as great as the minimum spacing to prevent discharge therebetween.

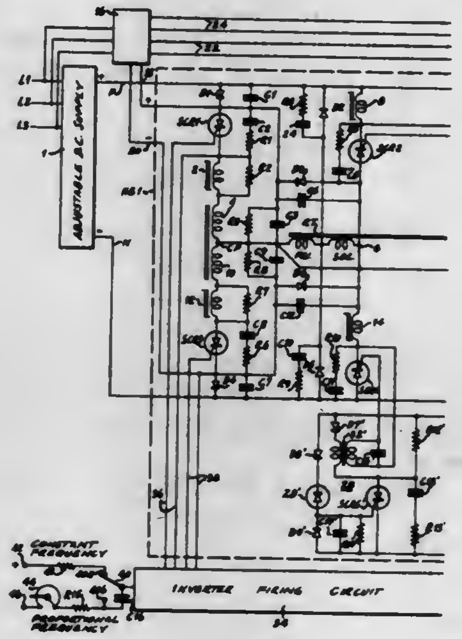
3,609,511

ELECTRONIC INVERTER HAVING PRECHARGING CONTROL AFFORDING HIGH FREQUENCY SWITCHING AT LOW OUTPUT

Robert L. Risberg, Milwaukee, Wis., assignor to Cutter-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 20, 1969, Ser. No. 867,740
Int. Cl. H02m *7/48*
U.S. Cl. 321—45 R **9 Claims**

A single or plural phase solid state inverter having a half bridge for each phase and each half bridge including a pair of power semiconductor controlled rectifiers for switching, inductance-capacitance circuits for commutation of the power SCR's, a separate and electrically isolated precharging supply for each phase, and a pair of voltage level detectors of the solid state type that allow use of the commutating energy in one part of the half bridge for charging the commutating capacitor to the required voltage level in the other part of the half bridge, above which the level detector becomes operative to allow feedback of the remaining energy to the supply, thereby to afford relatively high frequency switching in the inverter at low output voltages in an efficient manner.

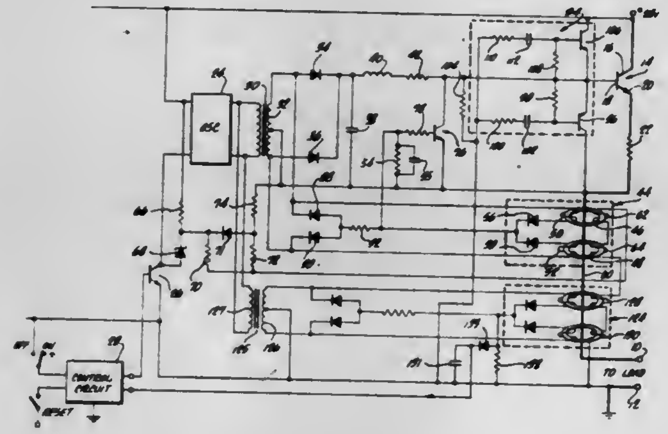


3,609,512

APPARATUS FOR CONTROLLING POWER TO A LOAD BY SENSING OVERLOAD CONDITIONS

Edward E. Lewis, Hillsborough, Calif., assignor to Leach Corporation, South Pasadena, Calif.

Filed Nov. 8, 1968, Ser. No. 774,250
Int. Cl. G05f *1/58*
U.S. Cl. 323—9 **16 Claims**



A power controller circuit for switching current on and off through a load. The controller includes a magnetic amplifier for sensing overload conditions and limiting current through a power transistor switch. A timeout circuit including a second magnetic amplifier turns off the controller after a predetermined time of operation under overload conditions. The current through the load is controlled by a bias winding on the magnetic amplifier controlled in response to the voltage across the load such that the average current under short circuit load conditions is substantially reduced over normal overload conditions.

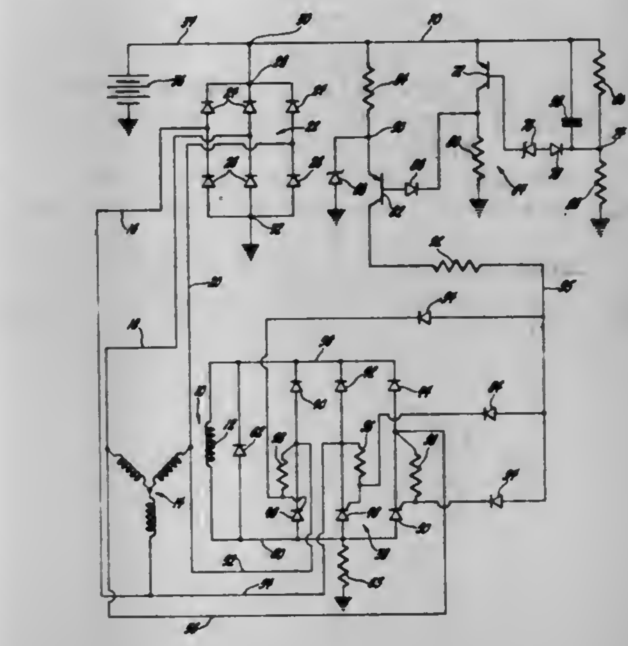
3,609,513

GENERATOR VOLTAGE REGULATOR WITH INITIAL EXCITATION MEANS

Louis J. Raver, Anderson, and Robert J. Nowakowski, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 2, 1970, Ser. No. 52,024
Int. Cl. H02p *9/08, 9/30*
U.S. Cl. 322—28 **4 Claims**

A voltage regulator for regulating the output voltage of a diode-rectified alternating current generator which is used to supply the electrical loads on a motor vehicle including charging the battery. The voltage regulator includes a field energizing bridge circuit comprised of controlled rectifiers and diodes having direct current output terminals connected with the field winding of the generator. The conduction of the controlled rectifiers is controlled by a voltage sensing circuit coupled with the gates of the controlled rectifiers and sensing the output voltage of a power bridge rectifier. A resistor is connected between one direct current output terminal of the field energizing bridge circuit and one side of the battery and this resistor provides part of a circuit for initially forward biasing the controlled rectifiers of the field energizing bridge by battery voltage.

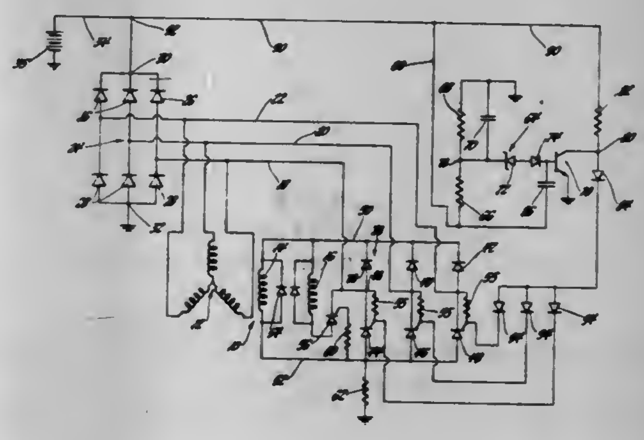


3,609,514

GENERATOR VOLTAGE REGULATOR

Robert J. Nowakowski, Indianapolis; Robert W. Campbell, Anderson, and Ronald A. Martin, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 27, 1970, Ser. No. 58,363
Int. Cl. H02p *9/30*
U.S. Cl. 322—28 **4 Claims**



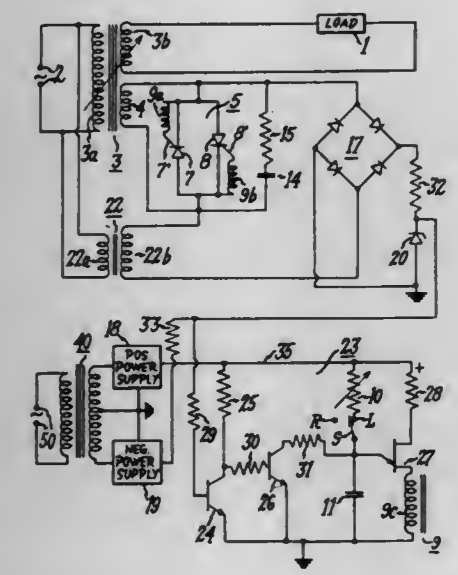
A voltage regulating system which is capable of controlling the output voltage of an alternating current generator which has a permanent magnet field, a main field winding and a reverse field winding. The voltage regulator utilizes thyristors or controlled rectifiers connected in a full-wave circuit with a plurality of diodes. The main field of the generator is connected across the direct current output terminals of the bridge circuit and its energization is controlled in accordance with the conduction of the controlled rectifiers. The reverse field winding of the generator is connected in series with another controlled rectifier having its gate-cathode circuit connected across the anode-cathode circuit of one of the controlled rectifiers of the bridge circuit. With this arrangement the controlled rectifier connected with the reverse field winding is biased conductive when the bridge controlled rectifiers are biased nonconductive and this controlled rectifier is biased nonconductive when the bridge controlled rectifiers are biased conductive. The conduction of the bridge controlled rectifiers is controlled by a circuit which senses the output voltage of the generator.

3,609,515
CONSTANT CURRENT REGULATOR WITH PHASE CONTROL SWITCHING MEANS AND DC TRIGGERING MEANS THEREFOR

Robert E. Babcock, Hendersonville, and Wayne R. Neal, Fletcher, both of N.C., assignors to General Electric Company

Filed June 27, 1969, Ser. No. 837,014
Int. Cl. G05f *3/04*

U.S. Cl. 323—6 **11 Claims**



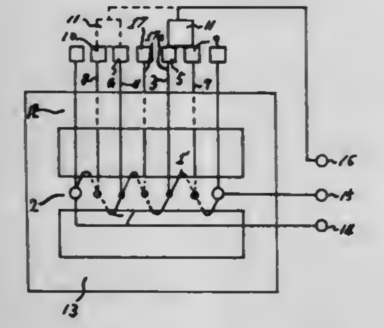
Current regulator device used for lighting circuits to control lamp brightness comprises a moving coil transformer having a main secondary winding connected to an illuminating load and an auxiliary secondary winding associated with the main secondary winding, and SCR phase control means connected to the auxiliary secondary winding for controlling the current therein and thereby the current in the main secondary winding and the load. The SCR control means are triggered by a transistor and pulse transformer circuit synchronized with the voltage from the alternating current supply which is rectified by a bridge circuit. A remote control circuit for operating the regulator to produce different brightness levels includes a plurality of parallel-connected transistor circuits having individually adjustable potentiometers.

3,609,516
SLIDE TRANSFORMER

Tsuneo Nagatoshi, 13-20, 1-chome, Yaguchi, Ofa-Ku, Tokyo, Japan

Filed Aug. 29, 1969, Ser. No. 854,050
Claims priority, application Japan, Oct. 1, 1968, 43/70821
Int. Cl. G05f *1/14*

U.S. Cl. 323—6 **3 Claims**



A slide transformer has two taps on each winding of a coil wound around the magnetic path of an iron core. The taps are connected to contacts respectively and a brush is slideable across these contacts. In a transformer with a shell-type iron core, one of these taps comes out of the upper side of the iron core, the other comes out of the lower side. In a transformer with a core-type iron core, one of the taps is connected to a contact through a hole provided in the magnetic path of the iron core, and the other is connected directly to the other contact.

ERRATUM

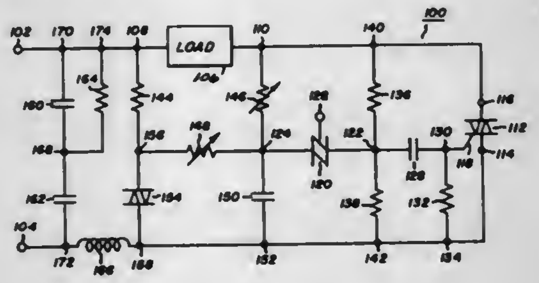
For Class 323—16 see:
Patent No. 3,609,517

3,609,517
LINE VOLTAGE COMPENSATING POWER CONTROL CIRCUIT

Francis P. Tucker, Lynchburg, Va., assignor to General Electric Company

Filed Mar. 11, 1970, Ser. No. 18,516
Int. Cl. G05f *3/04*

U.S. Cl. 323—16 **17 Claims**



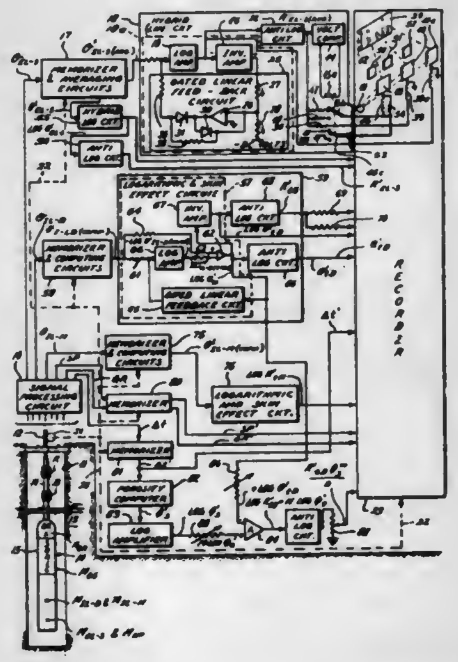
A circuit capable of controlling power application to a load while simultaneously reducing variations in line voltage employs a triac controlled by an SBS as a line switch. A potential divider and a diac referenced to opposite terminals of the SBS delay triac firing in response to line voltage increase. A resistor and capacitor attached to the triac gate protect the triac from inadvertent triggering.

3,609,518
LOGARITHMIC METHODS AND APPARATUS FOR PROCESSING WELL LOGGING SIGNALS

John H. Baker, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,563
Int. Cl. G01v *3/18*

U.S. Cl. 324—1 **11 Claims**



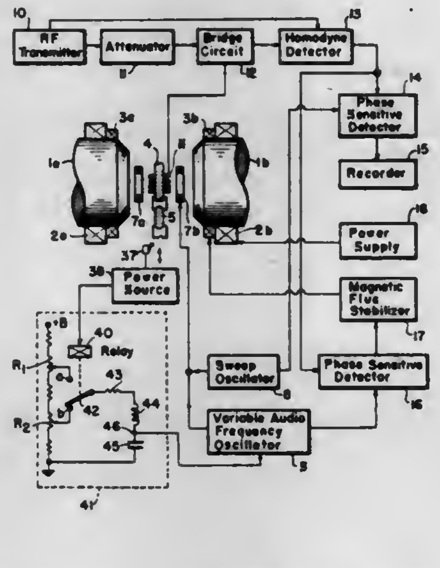
In accordance with an illustrative embodiment of the present invention, logging measurements of radially shallow conductivity from an electrode logging tool, radially deep and medium conductivity from an induction logging tool, acoustic travel time from a sonic logging tool, as well as natural gamma-ray and spontaneous potential measurements are processed for recording as a function of borehole depth. More specifically, the shallow conductivity measurement signals are averaged and applied to a hybrid logarithmic circuit which operates to form a logarithm function thereof until the signal amplitude reaches a predetermined level at which time a linear function of the measurement signals is formed. The output signals from the hybrid logarithmic circuit are recorded with three separate degrees of resolution using only two galvanometers by multiplexing two signals on one galvanometer. A speedup circuit is utilized to prevent the galvanometer retrace from appearing on the recording medium. The induction logging signals are processed by suitable computing circuits to sharpen their resolution and then applied to hybrid logarithmic and skin effect circuits which, in addition to forming the logarithmic and linear functions, provides a skin effect correction. The resulting processed induction logging measurements are recorded with differing degrees of resolution and the radially deep measurement signals are combined with acoustic travel time derived porosity measurements to produce indications of the resistivity of the formation fluids.

3,609,519
APPARATUS FOR MAINTAINING FIELD FREQUENCY CONTROL IN A GYROMAGNETIC INSTRUMENT

Toshimasa Seki; Shoichi Hayashi; Kazuo Nakagawa; Shuichi Saito, and Hiroshi Toyama, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1968, Ser. No. 777,746
Claims priority, application Japan, Nov. 22, 1967, Feb. 27, 1968, July 31, 1968, Aug. 31, 1968, 42/74981;43/12496;43/54444;43/62519
Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 **8 Claims**



An apparatus for automatically controlling the field/frequency ratio of a gyromagnetic resonance instrument during sample exchanging by automatically switching from the resonance parameters of an internal reference control within the unknown sample to the resonance parameter of an auxiliary control sample positioned within a space vacated by the unknown during exchange wherein the audio frequency, radio frequency or magnetic field are changed to compensate for deviations in the resonance parameter of the reference and control samples.

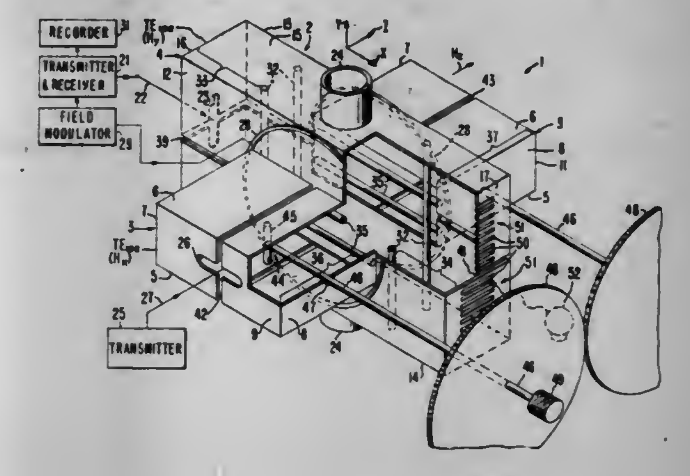
3,609,520
BIMODEL CAVITY RESONATOR FOR MICROWAVE SPECTROMETERS

Robert C. Sneed, Jr., Campbell, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Feb. 4, 1970, Ser. No. 8,651
Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 **8 Claims**

A microwave spectrometer employing a bimodal cavity resonator for electron spin resonance experiments is disclosed. The bimodal cavity includes a shared region of space and an adjacent unshared region of space, such shared region being arranged to support two spatially orthogonal modes of oscillation and the unshared region of space being arranged to support the fields of only one of the modes of oscillation to the exclusion of the other. A set of conductive rods are disposed at the boundary of the adjacent shared and unshared regions, the rods being generally parallel to the magnetic field vector of the mode of oscillation which is common to both the shared and unshared regions and being generally perpendicular to the magnetic field vector of the mode which is to be excluded from the unshared region, whereby spatial orthogonality and positioning of the magnetic field of the two modes within the shared sample volume is enhanced.

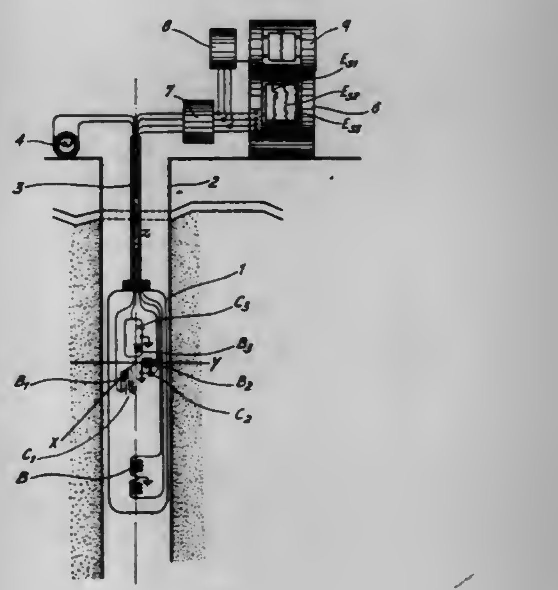


3,609,521
ELECTROMAGNETIC LOGGING DEVICE AND METHOD UTILIZING THREE MUTUALLY PERPENDICULAR COILS FOR DETERMINING THE DIP OF DISCONTINUITIES IN THE ELECTRICAL RESISTIVITY OF UNDERGROUND FORMATIONS

Robert Desbrandes, Montesson, France, assignor to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil Malmaison (Hauts de Seine), France

Filed July 8, 1968, Ser. No. 743,198
Claims priority, application France, July 12, 1967, 114175
Int. Cl. G01v *3/10, 3/18*

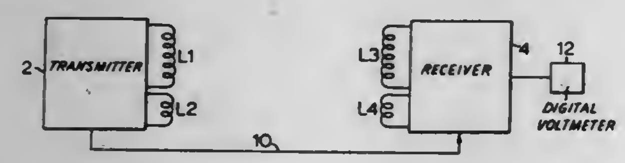
U.S. Cl. 324—6 **9 Claims**



The presence of discontinuities in the areas of the earth surrounding a borehole are determined through induction logging. Three mutually perpendicular induction coils are spaced along the axis of the borehole from a transmitter coil. The signals generated by the transmitter coil are transmitted in a direction parallel to the axis of the borehole. By measuring the ratio of the magnitude of the signals received at the mutually perpendicular receiving coils, the electrical discontinuity in the area surrounding the borehole can be determined as a function of the dip of the discontinuity.

3,609,522
HORIZONTAL LOOP ELECTROMAGNETIC PROSPECTING SYSTEM WITH TEMPERATURE COMPOSITION

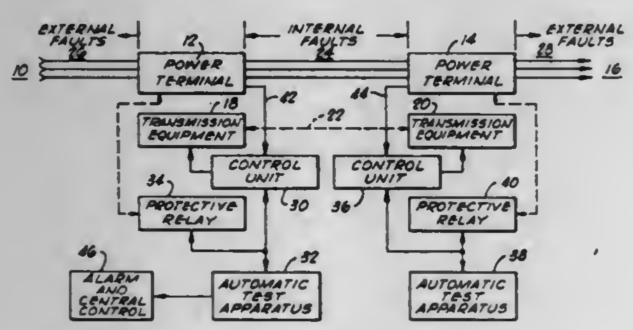
Roger W. Hutchins, Islington, Ontario, and Herman Reddering, Agincourt, Ontario, both of Canada, assignors to Huntec (70) Limited, Toronto, Ontario, Canada
Filed July 9, 1969, Ser. No. 840,429
Int. Cl. G01v *3/10*
U.S. Cl. 324—6 **15 Claims**



An absolute reading horizontal loop electromagnetic prospecting system in which the transmitted field is sampled by a reference coil concentric with and inductively coupled to the transmitter coil. The resultant reference voltage is used to adjust transmitter gain to keep transmitter output temperature independent. The receiver contains concentric, inductively coupled receiver and compensation coils, with a self-nulling servoloop connected between them employing in-phase and out-of-phase reference signals generated using the transmitter reference voltage. The servoloop detects the in-phase and out-of-phase components of the received signal, integrates them, and feeds the in-phase and out-of-phase components of the integrated signals into the compensation coil, with a free space compensation signal, to null the received signal. A digital voltmeter measures, through an optional long time constant filter, the size of the integrated signals to indicate the in-phase and out-of-phase components of the received signal.

3,609,523
AUTOMATIC TEST APPARATUS FOR PHASE COMPARISON PROTECTIVE RELAY SYSTEMS AND THE LIKE

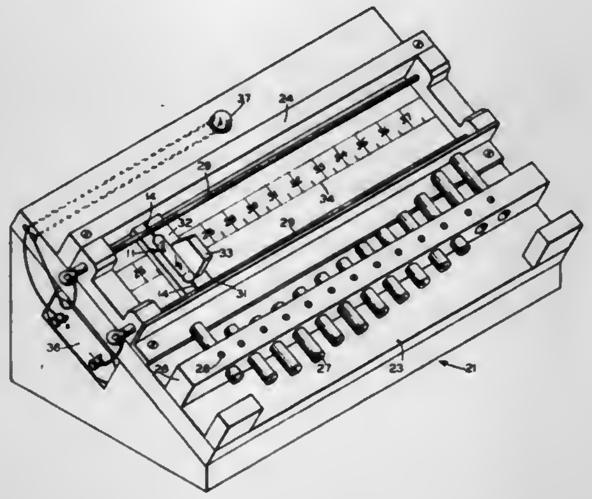
Marion D. Knox, Oklahoma City, Okla., assignor to Wayne Electronic Products Company
Filed Apr. 2, 1969, Ser. No. 812,770
Int. Cl. G01r *31/02*
U.S. Cl. 324—28 **13 Claims**



Apparatus for automatically testing protective relay system as utilized with high voltage transmission lines, the apparatus consisting of a master control unit, at a first terminal working in conjunction with one or two slave control units at adjacent terminal stations. Each of the master and slave control units are controlled through a cycle of actuation by a synchronous timer means such that a programmed series of switch closures performs a test of associated transmission and reception equipment and the respective protective relay devices to transmit starting signal, ring back, internal and external simulated faults and a selected security code. Each test control unit utilizes a time-controlled program switch which is synchronously operable to effect various test and verify operations in the control unit.

3,609,524
APPARATUS FOR DETERMINING THE "OPERATE" VALUE OF SEALED CONTACTS

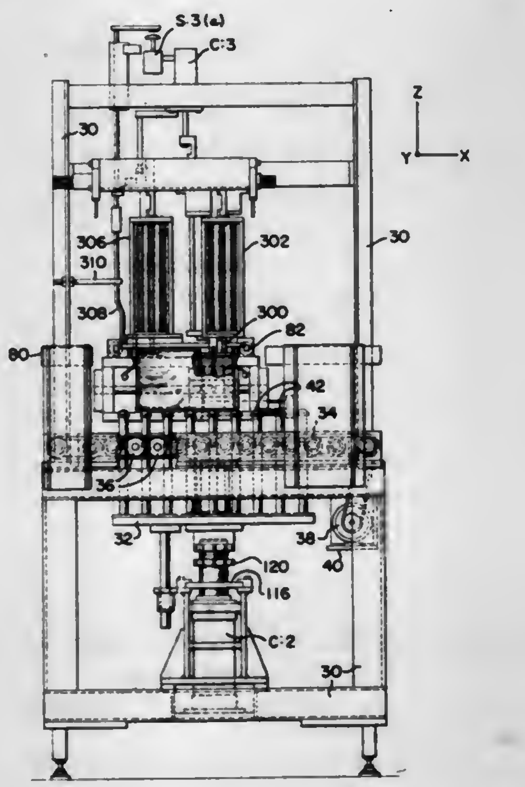
Edward J. Kazmer, Allentown, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed May 7, 1969, Ser. No. 822,669
Int. Cl. G01r *31/02*
U.S. Cl. 324—28 RS **8 Claims**



The "operate" value of a sealed contact is determined by: arranging rod-shaped permanent magnets so as to obtain an elongated magnetic field, the flux density of which increases from one end to the other; placing the sealed contact in the magnetic field; and moving the contact along the field in the direction of increasing flux density until it operates. The strength of the magnetic field at the point of operation reveals the "operate" value of the sealed contact.

3,609,525
MACHINE USED IN ELECTRICALLY TESTING BATTERY INTERCELL CONNECTORS AND TERMINAL POSTS

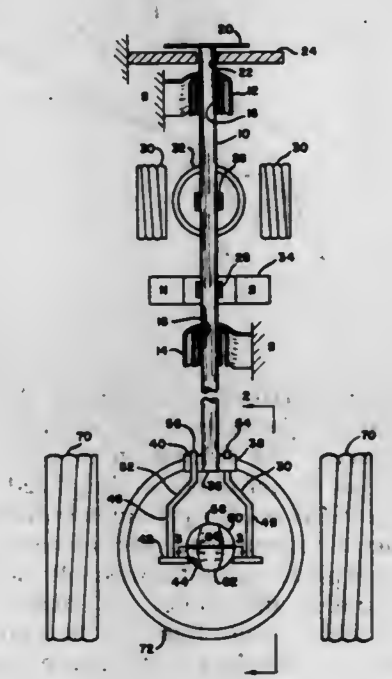
William R. Clingenpeel, Middleburg Heights; Philip C. Hungerford, Jr., Cleveland; Robert R. Hayes, Euclid, and Thomas W. Jennens, Eastlake, all of Ohio, assignors to ESB Incorporated, Philadelphia, Pa.
Continuation of application Ser. No. 643,631, June 5, 1967, now abandoned. This application Apr. 16, 1970, Ser. No. 28,226
Int. Cl. G01n *27/42*
U.S. Cl. 324—29.5 **19 Claims**



A machine used in electrically testing battery intercell connectors and terminal posts. The machine includes electrical probes which, when used with appropriate electrical test circuits, can determine whether the connectors and posts are properly constructed and connected to the cell element.

3,609,526
CONTACTLESS METHOD AND APPARATUS FOR DETERMINING ELECTRICAL RESISTIVITY

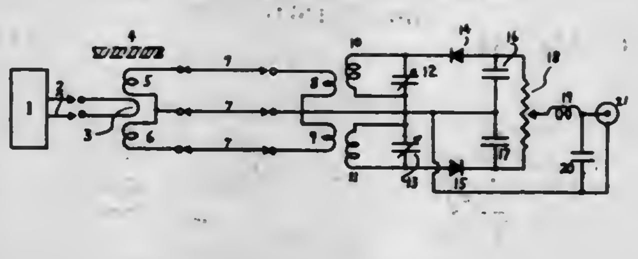
Aleksander Z. Chaberski, 717 Ellicott St., Buffalo, N.Y.
Filed June 24, 1969, Ser. No. 836,113
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 **14 Claims**



A method and apparatus for determining the electrical resistivity of a sample, which comprises; suspending the sample in a rotating magnetic field in such an orientation that the flux penetration of the sample by the field is a maximum, determining the torque imparted to the sample by the field and determining the volumetric moment of inertia of the sample whereby the resistivity of the sample can be calculated.

3,609,527
NONCONTACTING PROXIMITY GAGE UTILIZING INDUCED EDDY CURRENTS, HAVING IMPROVED DYNAMIC RESPONSE AND INTERFERENCE DISCRIMINATION

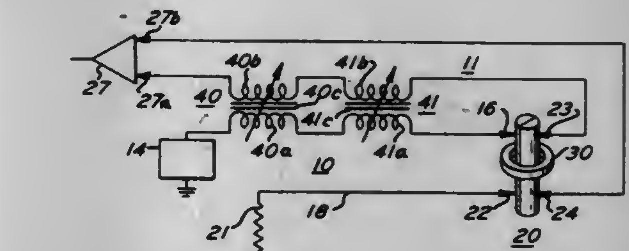
James F. Ellis, Skyland Drive, Box 248 Rte. 2, Powell, Tenn.
Filed May 26, 1969, Ser. No. 827,630
Int. Cl. G01r *33/00*
U.S. Cl. 324—40 **8 Claims**



This invention relates to distance measuring instruments utilizing the effects of induced eddy currents. It features a differential probe operating at low impedance, high frequency, and so matched to its input and output lines that it serves as a differential coupler rather than a resonance slope detector. One embodiment utilizes a tuned differential detector and another employs a phase splitter and a tuned logarithmic amplifier for fast linearized response. The use of low impedances, tight coupling, and a system of common mode rejection make the device insensitive to all signals except the desired differential carrier signal. The device is capable of very fast response in hostile environments.

3,609,528
NOISE PULSE CANCELLATION SYSTEM FORMED BY A PAIR OF TRANSFORMERS

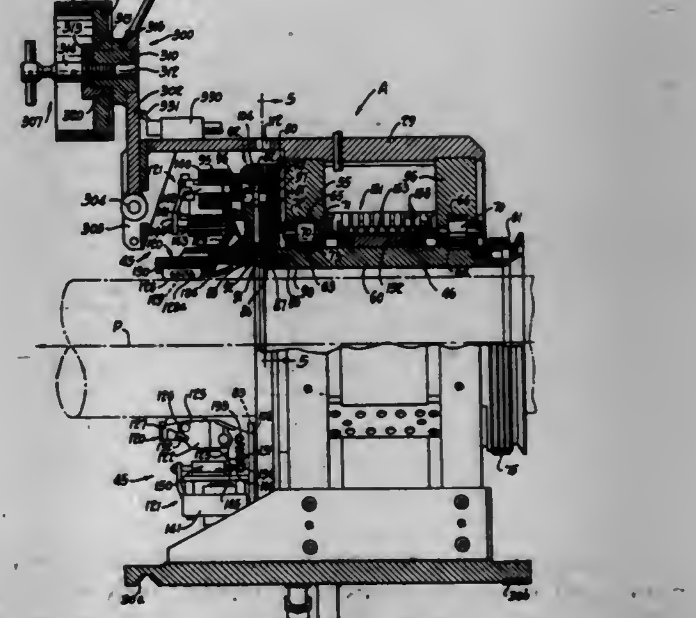
Nathan R. Smith, Willingboro, N.J., assignor to Computer Test Corporation
Filed Apr. 21, 1969, Ser. No. 817,686
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 R **8 Claims**



In testing magnetic memory cores, a core is mounted on a split conductor probe and a current pulse is applied to an input of the probe and there is produced at an output thereof an output voltage pulse and a noise pulse. A cancellation transformer is connected so that the current pulse applied to the input produces a noise cancellation pulse at the output. The magnetizing inductance of the transformer is adjusted to change the timing and amplitude of the cancellation pulse to coincide in time and amplitude with the noise pulse.

3,609,529
METHOD AND APPARATUS FOR DETECTING DEFECTS IN ARTICLES MOVING ALONG A PATH OF TRAVEL

John Skubiak, Oakland County, Mich., and John A. Toth, Cuyahoga County, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Jan. 24, 1969, Ser. No. 793,807
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **23 Claims**

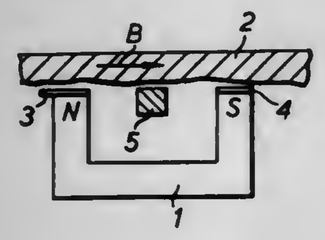


Apparatus for electrically detecting and marking defects in metal articles includes inspection devices for orbiting about a moving article to detect flaws in the article, a logic unit associated with the inspection devices for processing inspection information provided by the devices, and a marker unit operated by output signals from the logic unit to mark the locations of the flaws.

The disclosed apparatus also includes a calibration device for quick and simple calibration of the inspection devices.

3,609,530
MAGNETIC LEAKAGE FIELD FLAW DETECTOR WITH COMPENSATION FOR VARIATION IN SPACING BETWEEN MAGNETIZER AND TEST PIECE

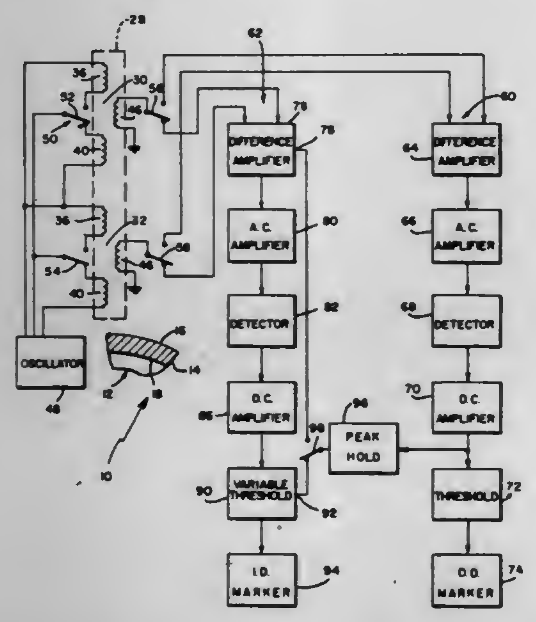
Alan Braid Johnson, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Mar. 6, 1969, Ser. No. 804,916
Claims priority, application Great Britain, Mar. 13, 1968, 12306/68
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **6 Claims**



A device for sensing magnetic discontinuities comprises a magnet for inducing magnetism in a sample, and a detector and amplifier for detecting the induced magnetism. A Hall effect crystal is included in the flux path between the magnet and the specimen. The Hall effect crystal is arranged to control the detector amplifier so as to nullify the effect of variations in the gap between magnet and specimen.

3,609,531
COMBINED LEAKAGE FIELD AND EDDY CURRENT FLAW DETECTOR

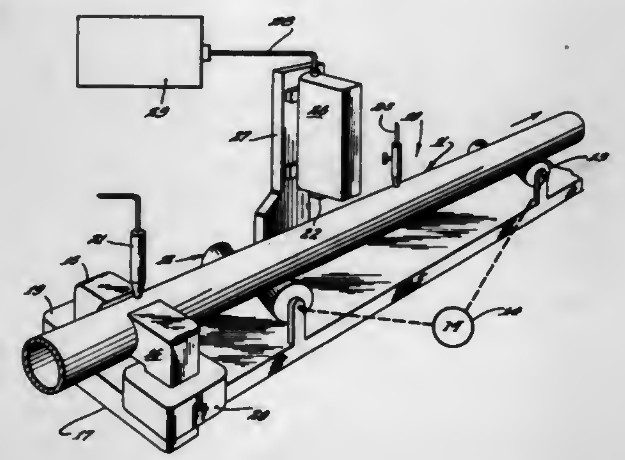
Friedrich M. O. Forster, Der Schoene Weg 144, 741 Reutlingen, Germany
Filed Oct. 25, 1967, Ser. No. 677,990
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **15 Claims**



A nondestructive testing system is disclosed herein and more particularly to means for simultaneously measuring two different characteristics of a workpiece at the same point. In the embodiments of the invention disclosed herein this is accomplished by providing a pickup probe for scanning the workpiece and substantially simultaneously sensing any fields which are reradiated from eddy currents produced in the workpiece by the probe and any magnetic stray fields produced as a result of magnetizing the workpiece. Means are also provided which are responsive to these fields for indicating whether the fields are produced by defects in the surface scanned by the probe or defects buried beneath the surface.

3,609,532
METHOD OF DETECTING INHOMOGENEITIES BY THE USE OF MIXTURES OF FLUORESCENT AND VISIBLE DYE-COLORED MAGNETIC PARTICLES

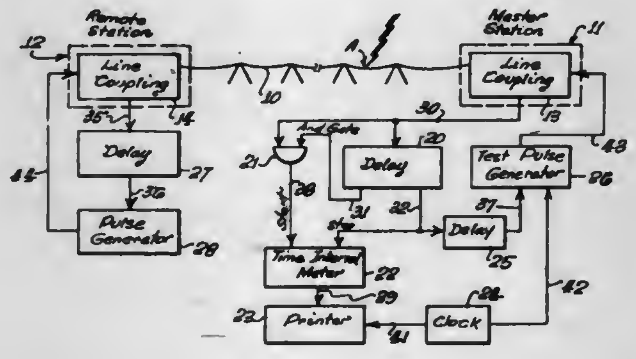
Keith M. Van Kirk, Palatine, and Kenneth P. Borrows, Chicago, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.
Filed July 25, 1969, Ser. No. 845,012
Int. Cl. G01r *33/12*
U.S. Cl. 324—38 **11 Claims**



A method using a mixture containing both fluorescent and visible dyed magnetic particles for detecting inhomogeneities in metal workpieces. The formation of adherent accumulations of the magnetic particles at localized areas where a magnetic leakage field occurs provides indications of the existence of surface or subsurface discontinuities or the like in magnetizable workpieces. The fluorescent indications are initially detected under ultraviolet, or black light, and are rendered visible under white light by the application thereto of a solvent for the visible dye to cause bleeding thereof. Preferably, the solvent contains a light-colored pigment suspended therein to afford a contrasting background for the visible color indication, and also contains a thickening agent, resin or the like to increase the viscosity of the solvent and thereby limit the extent of bleeding of the visible dye. Compositions comprising mixtures of the respective fluorescent and visible dyed particles are applied to the surface undergoing test either in dry powdered form or in the form of suspensions of such particles in a common liquid vehicle that is a nonsolvent for the particles and also for the visible dye associated with the visible dyed particles. The visible color indications formed by the subsequent application of a solvent for the visible dye, and consequent bleeding of the visible dye enable operators to carry out under ordinary, or white light, whatever scarfing or other treatment is required to remove the surface discontinuity from the workpiece or to compensate for it.

3,609,533
FAULT LOCATING SYSTEM FOR DETERMINING DISTANCE OF FAULT ON A TRANSMISSION LINE FROM A PREDETERMINED POSITION THEREON

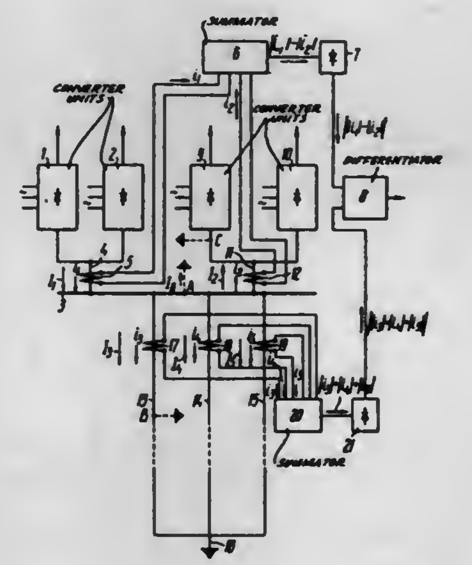
Robert J. Pardis, 1247 Carmel Drive, Simi, Calif.
Filed Dec. 11, 1968, Ser. No. 782,935
Int. Cl. G01r *31/08*
U.S. Cl. 324—52 **13 Claims**



A system for accurately and automatically determining the location of a fault occurring on a high-voltage electric power transmission line. A time interval measuring unit is located at one station on the line; the fault pulse is transmitted to the measuring unit as a first pulse through another station and a first delay. The fault pulse is transmitted to the measuring unit as a second pulse through the one station and a second delay, with the measured interval between arrival of the first and second pulses providing a measure of the distance of the fault from the one station.

3,609,534
DEVICE UTILIZING DC TRANSFORMERS FOR SELECTIVE LOCATION OF EARTH CONNECTION WITHIN BUS SYSTEM

Albert Efimovich Gurevich, Novosivkovskaya ulitsa, la, kv. 13, Leningrad, U.S.S.R.
Filed May 7, 1969, Ser. No. 822,631
Int. Cl. G01r *31/02, 31/08*
U.S. Cl. 324—52 **2 Claims**

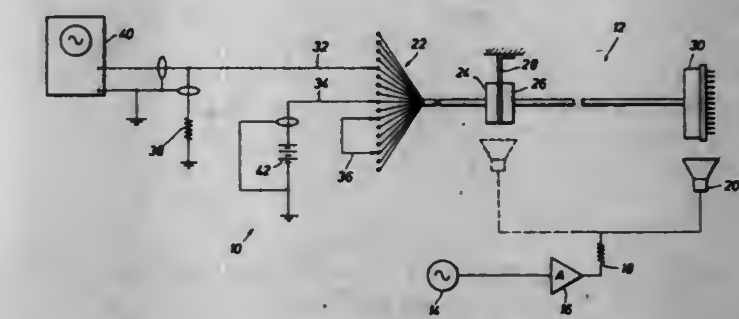


A device for selective location of an earth connection within a bus system adapted to interconnect the converter units and the external earthing of a converting substation employed in a H.T. direct-current electric transmission line, comprising DC transformers inserted both into each circuit adapted to connect the converter units of the like polarities to the bus system and into each earthing system; the secondary currents supplied from said transformers are fed to the differentiator through two summator and two rectifiers, one of the summators being adapted to effect subtraction of absolute magnitudes of the secondary currents characterizing the condition of the converter circuits of the unlike polarity, whereas the other summator is adapted to effect summing up of the absolute magnitudes of the secondary currents, characterized in that the condition of the earthing circuits. The signal produced by the differentiator is the evidence of the occurrence of an earth connection.

3,609,535
APPARATUS FOR TESTING WIRING HARNESS BY VIBRATION GENERATING MEANS

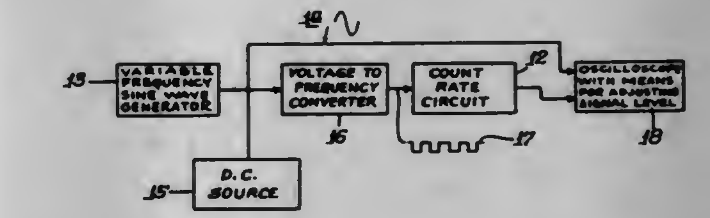
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; David E. Roberts, Joshua Tree, Calif., and Sidney M. Grieve, Van Nuys, Calif.
Filed Dec. 31, 1969, Ser. No. 889,479
Int. Cl. G01r *31/02, 31/08*
U.S. Cl. 324—52 **2 Claims**

An apparatus which tests wiring harnesses, terminal trips, sockets and plugs, which includes an audio oscillator, an amplifier, and a very substantial high-power speaker horn directed at the apparatus being tested, which is configured immediately in front of the horn, and further including a DC voltage source in series with a load impedance utilizing selected portions of the wiring harness and other associated equipment to complete a circuit therewith, and an oscilloscope viewing noise developed across the load impedance indicative of a malfunction of certain portions of said apparatus.



3,609,536
TESTING APPARATUS FOR COUNT RATE CIRCUITS USING PULSES

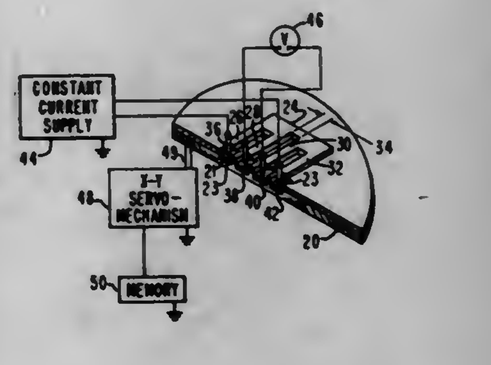
Richard A. Danofsky, and Richard A. Hendrickson, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa
Filed Dec. 14, 1967, Ser. No. 690,532
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 **7 Claims**


40
13
VARIABLE FREQUENCY SINE WAVE GENERATOR
VOLTAGE TO FREQUENCY CONVERTER
COUNT RATE CIRCUIT
12
OSCILLOSCOPE WITH MEANS FOR ADJUSTING SIGNAL LEVEL
16
17
18
15
D.C. SOURCE

The output signal of a variable frequency sine wave generator is superimposed on a DC level to generate a unipolar signal with sinusoidally varying amplitude. This signal drives a voltage-to-frequency converter which generates a train of pulses of constant amplitude and width, and has a repetition rate proportional to the instantaneous amplitude of the sine wave signal. The output signal of the voltage-to-frequency converter is fed to the input terminals of a count rate circuit under test. The accuracy with which the output signal of the count rate circuit reproduces the original sine wave signal is a measure of the frequency response of the count rate circuit.

3,609,537
RESISTANCE STANDARD

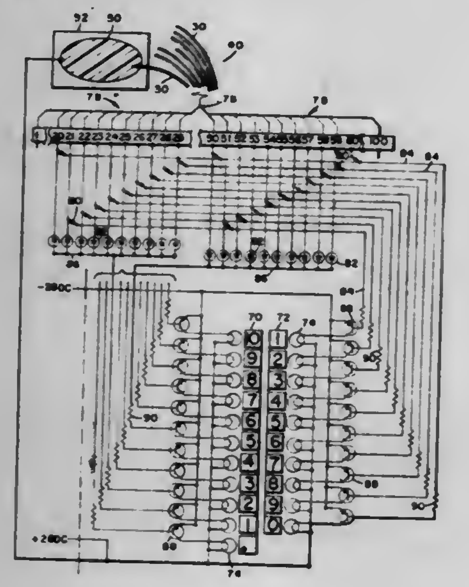
Albert M. Healy, Essex Center, and Donald M. Kenney, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 1, 1969, Ser. No. 811,933
Int. Cl. G01r *27/14, 1/02*
U.S. Cl. 324—64 **11 Claims**



A resistance standard for calibrating four-point probes used to measure resistances of semiconductor material has a metal pattern having an area of known resistance value deposited on the surface of a semiconductor wafer. Four diffused areas of opposite conductivity to the remainder of the wafer are disposed adjacent to and are electrically connected to the area of known resistance value. One point of the probe is contacted to each of the diffused areas to connect the probe to the standard. A constant current is passed through the area of known resistance and the voltage drop across the area measured. This standard is both stable and allows probe to semiconductor contact experienced in actual measurements to be duplicated during calibration of the probe.

3,609,538
DEVICE TO IDENTIFY INDIVIDUAL WIRES IN A RANDOM BUNDLE

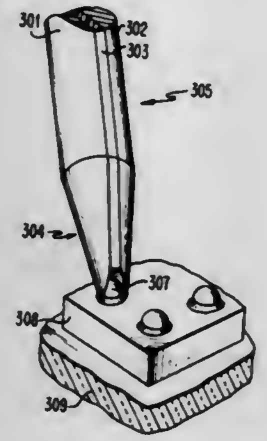
Ronald H. Schag, Orange, Calif., assignor to Thomas & Betts Corporation
Filed Apr. 4, 1969, Ser. No. 813,482
Int. Cl. G01r *31/02*
U.S. Cl. 324—66 **4 Claims**



A wire detector for determining the designation of a wire in a random bundle of wires which are connected at a first end to a group of designatory points, comprising connection means between said group of designatory points and a display device; a probe for contacting the second end of a wire in said bundle; said probe being coupled to said display device to complete a circuit through the selected wire, which causes the display device to indicate the designation thereof by displaying a predesignated symbol. The disclosure also sets forth various probes which permit wire identification without the need for prestripping or piercing of the wire insulation and which permits wire identification to be made at an extended distance.

3,609,539
SELF-ALIGNING KELVIN PROBE

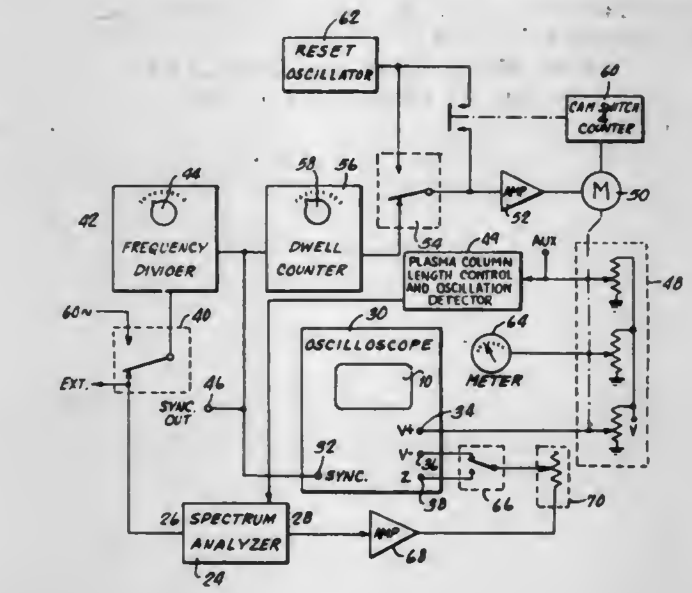
Richard J. Gunthert; Wappingers Falls, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Sept. 28, 1968, Ser. No. 755,868
Int. Cl. G01r *31/02*
U.S. Cl. 324—72.5 **3 Claims**



Electrical contact device for Kelvin probing comprising two contact bars separated by an insulator, said bars having self-aligning shaped contact ends for self-aligning upon a protruding electrical contact on the body to be probed.

3,609,540
RASTER DISPLAY METHOD AND APPARATUS

Herbert Lashinsky, Bethesda, and Robert E. Monblatt, Bowie, both of Md., assignors to Research Corporation, New York, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,400
Int. Cl. G01n *23/16*
U.S. Cl. 324—77 G **17 Claims**



Method and apparatus for displaying current and past characteristics of substantially periodic information which may have very low signal-to-noise ratio in a manner enhancing perception by the human eye. An example of such information is the output of a spectrum analyzer using in plasma studies. Also, method and apparatus for converting an oscilloscope which conventionally presents a dependent variable as a function of time into an X-Y plotter which presents the same dependent variable as a function of another variable which is independent. An inherent desirable feature is automatic adjustment of correspondence between full scale of the dependent variable and full-scale excursion of independent variable.

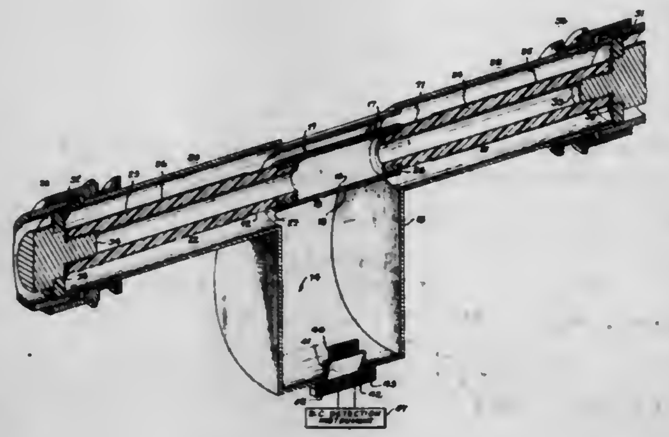
The information of interest is displayed in a raster created on a CRT oscilloscope having a long decay-time screen or by a time-exposure photograph on a standard camera attachment by externally triggering the horizontal sweep in harmonic relationship with the cycle of periodic information, stepping the vertical deflection incrementally in harmonic relationship with the same cycle, and using the periodic information for either beam-intensity modulation or vertical deflection modulation. The resulting display is in the form of a raster of horizontal scan lines in which noise appears as randomly distributed indicia while the periodic information produces an easily perceptible to the human eye ordered set of indicia. In a first application, the raster display is a plot of the periodic information in two time domains: the horizontal axis is a measure of the time of occurrence of the periodic information within a cycle, and the vertical axis is a measure of the number of cycles of occurrence. Perfectly periodic information signals produce a vertical line made up of individual indicia, while a drifting information signal produces a sloping line made up of individual indicia. The slope is a measure of the instantaneous rate of drift.

In a second application, the raster display is a plot of a dependent variable versus an independent variable, which plot is not in the time domain. The raster-display thus serves as an X-Y plotter.

The signal-to-noise ratio of the information signal may be enhanced by operating in dwell mode in which horizontal scans are repeated while the total number of displayed scan lines remains constant. Particular advantages derive from provisions for: fast advance and reset of the raster building circuit so that a partially completed experiment can be terminated and the raster display returned to initial state quickly; generating exceedingly stable staircase voltage so that a scan line taking several seconds can remain straight; indicating the current scan line position—useful when the camera attachment obscures the screen; protection of the raster from accidental erasure; automatically controlled camera operation; and automatic beam intensity adjustment when switching between using the periodic information for beam-intensity modulation.

3,609,541
RADIO FREQUENCY COAXIAL AMMETER WITH THERMAL COMPENSATION

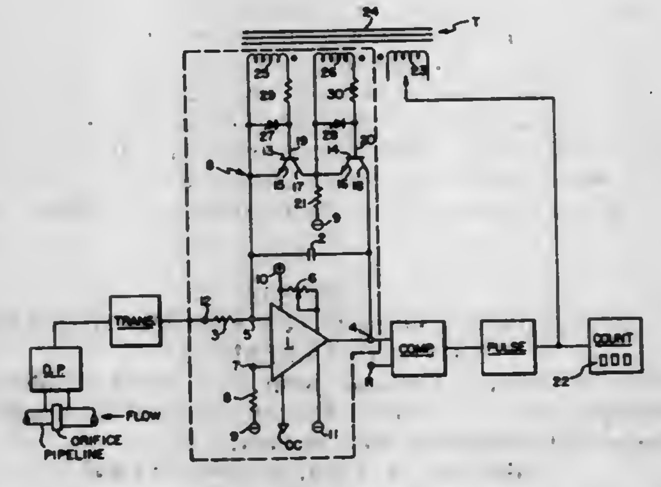
Winston W. Scott, Jr., Boulder, Colo.
Filed Jan. 20, 1970, Ser. No. 4,372
Int. Cl. G01r *21/04, 5/26*
U.S. Cl. 324—95 **9 Claims**



A cylindrical reflector, having an inner elliptical reflecting surface, is positioned in a coaxial line. A thin-film heater is connected to the center conductor of the line. The heater is located along one focal axis of the reflecting surface and the hot junctions of a thermopile are located along the other focal axis. Input current causes the heater to radiate infrared energy which is reflected and focused onto both sides of the hot junctions. The resulting electrical output of the thermopile is proportional to radiated power and consequently input current squared, and because of thermal compensation the output is substantially independent of ambient and self-heating temperature changes.

3,609,542
INSTRUMENTS HAVING INTEGRATING-TYPE CIRCUITS THEREIN

Robert H. Burke, Penfield, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed May 2, 1969, Ser. No. 821,279
Int. Cl. G01r *1/00;* H03k *17/06*
U.S. Cl. 324—111 **8 Claims**

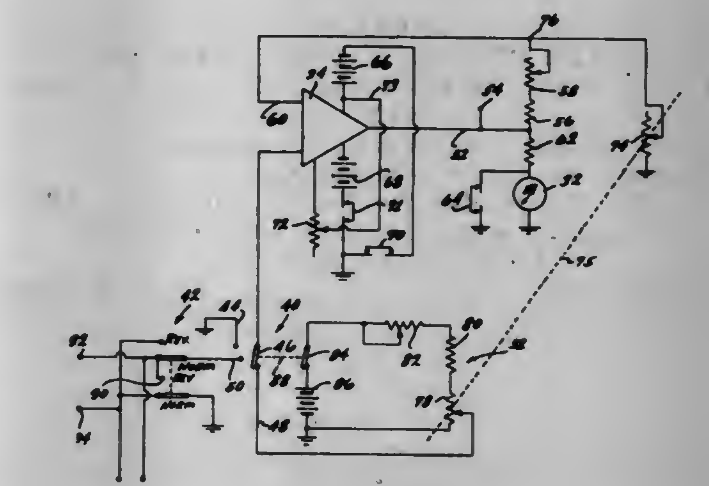


Integrating type circuit having a two-transistor capacitor-discharging switch. In "off" condition, transistor leakage current is shunted away from the capacitor.

The transistors are connected together, emitter to collector, in series across the capacitor and by a resistance connected to said emitter and said collector, to a reference potential.

3,609,543
METER SYSTEM WITH CONTINUOUSLY VARIABLE RANGE HAVING ZERO AND FULL SCALE CALIBRATION FEATURES

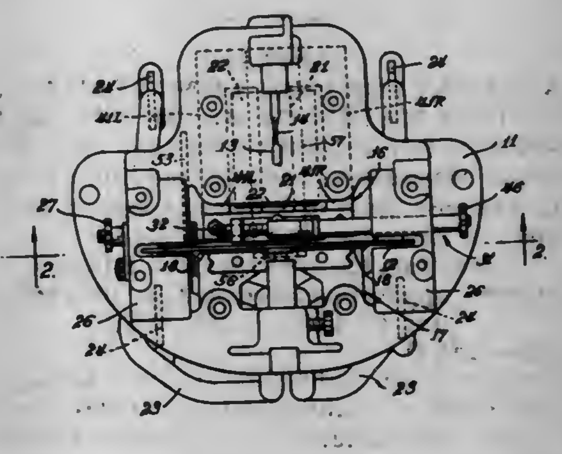
Raymond A. Whitmore, La Habra, Calif., assignor to Hy-Cal Engineering, Santa Fe Springs, Calif.
Filed June 2, 1969, Ser. No. 829,205
Int. Cl. G01r *1/30, 15/08, 35/00*
U.S. Cl. 324—123 R **4 Claims**



A meter system is disclosed incorporating a thermally insulated DC amplifier the operation of which is controlled by variable gain and trim resistors. The system also incorporates a calibration circuit for providing variable voltages in accordance with the setting of a potentiometer. The potentiometer of the calibration circuit and the variable gain resistor are ganged together to simplify calibration of the operating range for input signals applied to the amplifier, the output of which is in turn applied to a meter movement having substantial angular range. Various accessory package circuits are also disclosed for use in conjunction with the basic metering system to increase the utilization of the system.

3,609,544
WATT-HOUR METER WITH SHIFTING SCREW AS LIGHT LOAD ADJUSTMENT

James W. Milligan, West Lafayette; Russell F. Graefnitz, Lafayette, and George N. Burkhart, Jr., Brookston, all of Ind., assignors to Duncan Electric Company, Inc., Lafayette, Ind.
Filed July 9, 1969, Ser. No. 840,264
Int. Cl. G01r *11/02*
U.S. Cl. 324—138 **9 Claims.**



A watt-hour meter for alternating current is adjusted for accuracy of measurement of light loads by shifting a unitary part, preferably a screw unit, which is the only part that moves for this adjustment. The phasing plate which heretofore has been movable for light load adjustment is now fixed in position, dispensing with the relatively complicated means for achieving accurate light load adjustment by its movement. The illustrated moving adjustment structure of screw unit consists solely of a screw of magnetic metal carrying conductive sleeve means fixed thereon. The most effective part of the sleeve is copper. The screw can be turned from the front of the meter with a screwdriver and the threads are engaged under resilient tension to avoid backlash. The screw carries leakage flux between the central pole and two side poles. The movement of the screw unit varies the light load compensation by increasing the effect of the unit as to one side and decreasing it as to the other side, thus changing the magnetic dissymmetry.

3,609,545

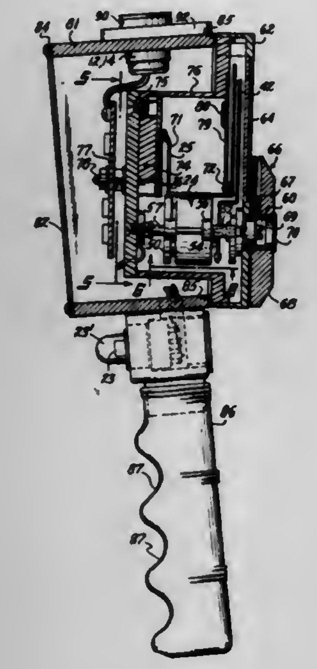
HANDHELD MEASURING INSTRUMENT WITH MULTIPLE CONTROLS OPERABLE BY THE HOLDING HAND

William E. Engelhard, Apalachin, N.Y., assignor to Pyro-Serv Instruments Inc., North Arlington, N.J.

Continuation of application Ser. No. 521,347, Jan. 18, 1966. This application Sept. 10, 1969, Ser. No. 856,854

Int. Cl. G01r *1/04, 17/02*

U.S. Cl. 324—156 **6 Claims**



A hand-grasped measuring instrument having a plurality of controls all of which are separately and selectively operable by the fingers and thumb of the hand grasping the instrument.

3,609,546

ARRANGEMENT FOR INDICATING LEAK CURRENTS IN A DIODE MATRIX BY MEANS OF CURRENT SENSORS IN THE CONDUCTORS OF THE MATRIX

Bengt-Gunnar Magnusson, Enskede, and Sture Erwin Hilding Nilsson, Vendelso, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

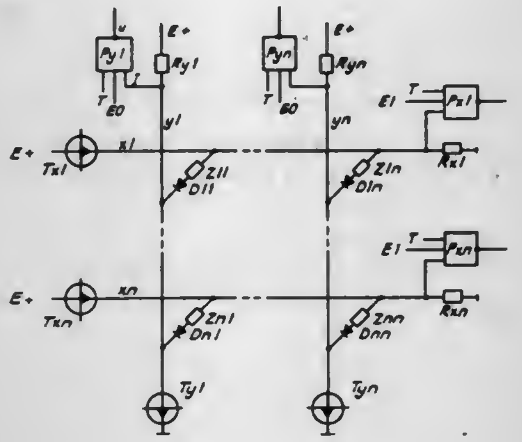
Filed Mar. 13, 1969, Ser. No. 807,037

Claims priority, application Sweden, Apr. 10, 1968, 4852/68

Int. Cl. G01r *31/02, 31/22*

U.S. Cl. 324—158 D **1 Claim**

An arrangement for indicating eventual leakage currents through the diodes of a diode matrix includes a potential-indicating means connnected to each conductor of the matrix. The deteriorating operation of any of the diodes causes a potential drop in the associated potential which signifies means indicating the conductor to which the faulty diode is connected. Each potential-indicating means is adjusted to give an indication when the potential drop reaches a value including a certain safety factor determined in advance which deviates from the potential drop resulting when a permitted current passes through the conductor.



3,609,547

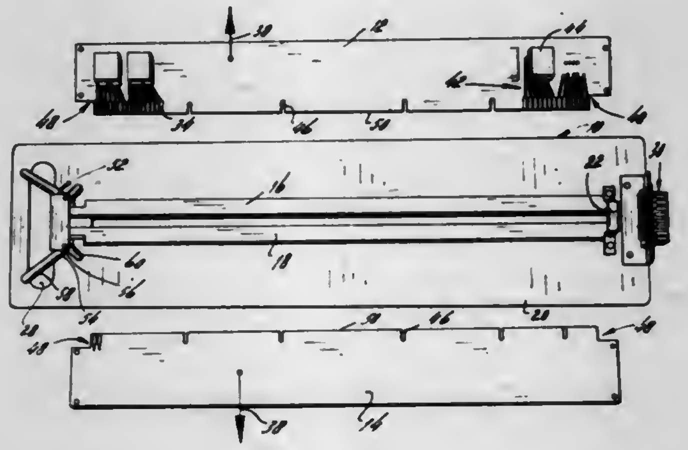
INTEGRATED CIRCUIT TEST SYSTEM

Eugene A. Slusser, RFD-1, Concord, N.H.

Filed Mar. 27, 1970, Ser. No. 23,351

Int. Cl. G01r *31/22;* **H01r** *13/62*

U.S. Cl. 324—158 F **3 Claims**



An integrated circuit test system useful for component testing in a temperature chamber or oven under high heat conditions and including a tray having incorporated thereon printed circuit and connectors and two cards, one for mounting devices on sockets for testing and the other having a device load circuitry, each card being connectable with its own printed circuit connector on the tray to permit rapid changes of both test conditions and devices. The cards are easily and rapidly interchangeable for the change of test conditions and devices with the card plug in feature, and levers are provided on the tray for coacting with the printed circuit cards to assist in removal of the cards from the connectors.

3,609,548

MONITORING APPARATUS AND METHOD FOR CYCLING ELEMENTS

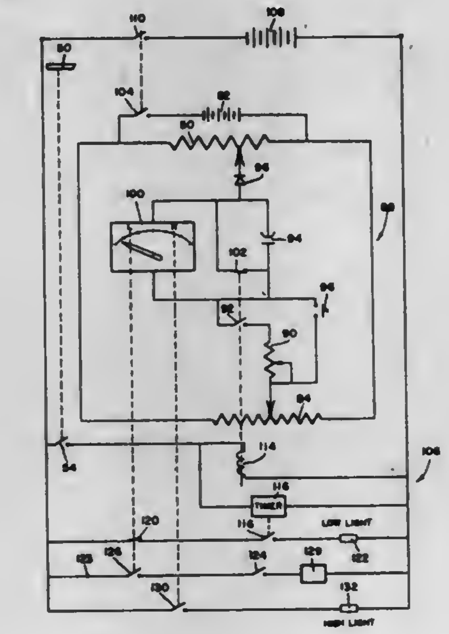
Harrie M. Allard, Nashua; John F. Carlson, Hudson, and Philip Godley, II, Wilton Center, all of N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Filed Nov. 5, 1968, Ser. No. 773,445

Int. Cl. G01p *3/56*

U.S. Cl. 324—161 **8 Claims**

This is an apparatus for monitoring the movement of a moveable member which moves from an initial position to a second position at varying speeds. A timer is actuated when the member moves from its initial position. A component in an electrical circuit connected to the member produces an electrical signal proportional to the instantaneous position of the member. An electrical indication which is responsive to the signal produces a final indication at the end of a predetermined time period which is a function of the speeds of the member. A low alarm is actuated or a high alarm is actuated if the distance of the moveable member from the initial position at the end of the predetermined time period is less or more respectively than desired.



3,609,549

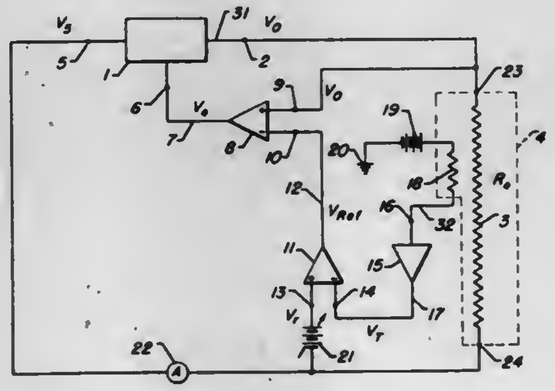
CORROSION-MEASURING DEVICE

Rudolf H. Hausler, Rolling Meadows, and Robert W. Sampson, Arlington Heights, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed June 15, 1970, Ser. No. 46,346

Int. Cl. G01n *27/04, 27/30*

U.S. Cl. 324—65 C **4 Claims**



This invention relates to an improved corrosion-measuring device in which at least a portion of a temperature sensitive voltage output means is located proximate to a corrosion test specimen. The corrosion test specimen is located in a circuit having a stable and normally constant input voltage. The extent of corrosion is determined by the decrease in current resulting from the increase in resistance of the test specimen as it corrodes over a period of time. The temperature sensitive voltage output means is at the same temperature as the test specimen and adjusts the input voltage to negate the effects of varying temperature on the current flowing through the test specimen.

3,609,550

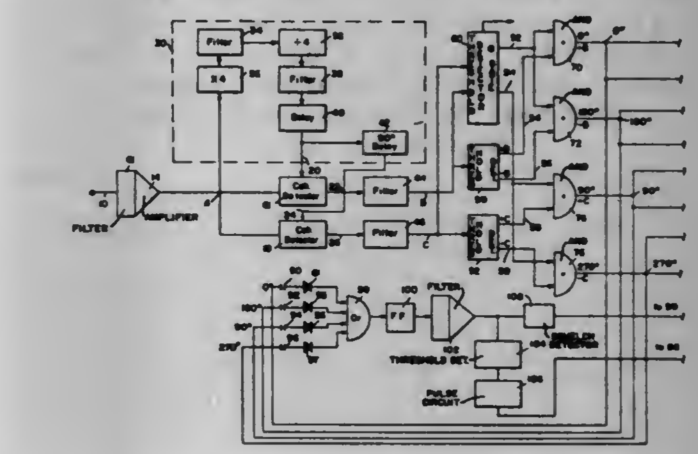
DEMODULATOR FOR TRANSMITTED PHASE MODULATED TERNARY INFORMATION

Edward Guyer, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of application Ser. No. 568,209, July 27, 1966, now abandoned. This application June 6, 1969, Ser. No. 833,886

Int. Cl. H04l *27/14*

U.S. Cl. 325—30 **4 Claims**



In a communication system which has apparatus for transmitting phase shift ternary information wherein each of the items of ternary information is transmitted by introducing through quadriphase modulation discreet phase shifts in a carrier signal there is provided a demodulator for demodulating the phase shift information. The demodulator provides for first deriving first and second reference signals wherein the first reference signal has a predetermined phase delay with respect to the carrier signal, and the second reference signal has another predetermined phase delay with respect to the first reference signal. Also provided for is the comparing of the carrier signal and the reference signals to provide a pair of output signals containing the phase shift ternary information. The pair of output signals is then converted to provide the ternary information.

This invention relates to a communication system wherein ternary information transmission is effected by phase modulating the carrier or subcarrier signals, and more particularly relates to a demodulator for the phase modulated ternary information.

3,609,551

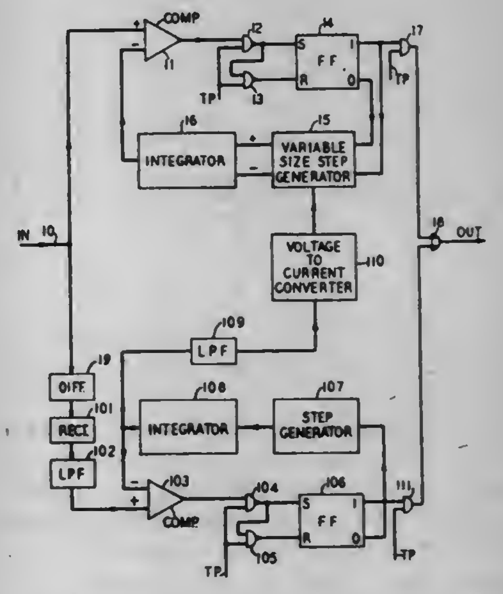
DISCRETE-CONTINUOUS COMPANDING FOR A DIGITAL TRANSMISSION SYSTEM

James M. Brown, Holmdel, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J.

Filed June 28, 1968, Ser. No. 741,180

Int. Cl. H03k *13/22*

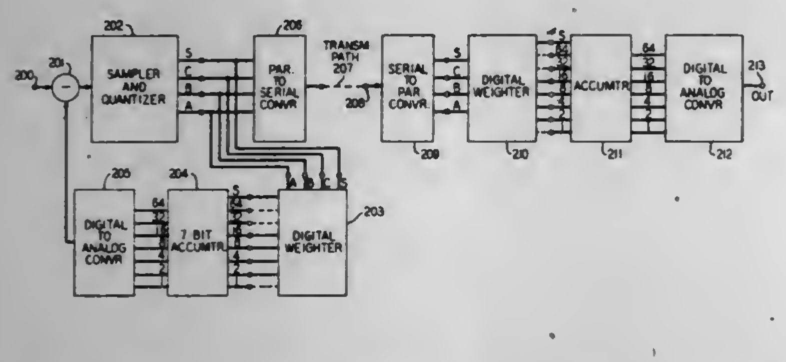
U.S. Cl. 325—38 **5 Claims**



A delta modulation transmission system is disclosed in which the message signal is, effectively, compressed at the transmitter and, effectively, complementarily expanded at the receiver. The transmitter includes a variable size step pulse generator to provide the pseudocompression and means are provided to vary the magnitude of the step pulse discretely over a part of the dynamic range of the message signal and continuously over another part of the dynamic range of the message signal.

3,609,552
DIFFERENTIAL PULSE CODE COMMUNICATION SYSTEM USING DIGITAL ACCUMULATION

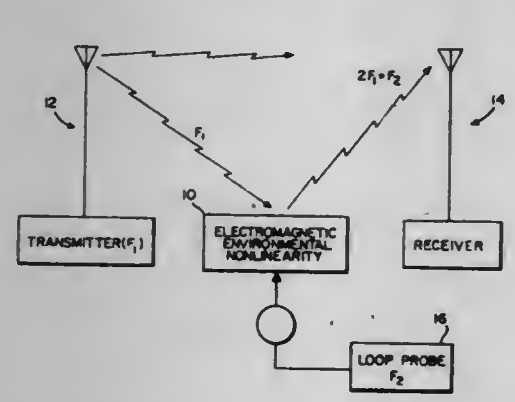
John O. Limb, New Shewsbury, and Frank W. Mounts, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 20, 1969, Ser. No. 851,639
Int. Cl. H03k *13/22*
U.S. Cl. 325—38 B **5 Claims**



A differential pulse code communication system is disclosed which digitally accumulates the difference signal in order to eliminate the matching problem inherent in prior art systems. In the transmitter the difference signals are digitally accumulated and converted to analog form for subtraction from the input signal, and at the receiver the difference signal is accumulated before it is converted to analog form to reconstruct the input signal.

3,609,553
DETECTION AND CLASSIFICATION OF NONLINEARLY GENERATED ENVIRONMENT INTERFERENCE SOURCES BY USE OF A VERIFIER SYSTEM

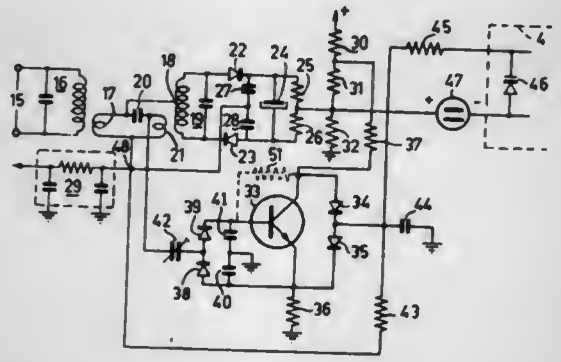
Marvin J. Frazier, Wood Dale; Sam Tumarkin, Chicago; Edwin A. Wilson, Chicago, and Raymond F. Elsner, Lombard, all of Ill.
Filed July 30, 1969, Ser. No. 846,091
Int. Cl. H04b *1/00*
U.S. Cl. 325—67 **7 Claims**



A method of locating and classifying electromagnetic interference sources in operational electromagnetic environments of communication systems. Interference sources comprising electrical nonlinearities in mechanical junctions of the structural environment of the communications system are excited by electromagnetic radiation at frequency F_1 from system transmitters and by induced signals at frequency F_2 from a loop probe held in close proximity to the sources to create harmonic and intermodulation product signals. These signals are sensed on system receiving antennas operating in the operational electromagnetic environment. The levels of the sensed signals determine whether the interference sources are interference contributors, noncontributors or localized interference sources, or parasitic elements.

3,609,554
CIRCUIT ARRANGEMENT FOR SWITCHING AN ELECTRICAL SIGNAL

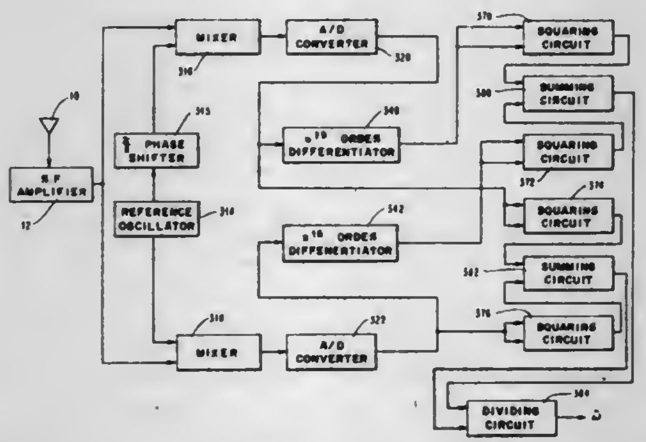
Albert Stoker, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 16, 1968, Ser. No. 767,948
Claims priority, application Netherlands, Oct. 18, 1967, 6714120
Int. Cl. H03d *3/00;* **H03k** *7/00*
U.S. Cl. 325—346 **4 Claims**



A circuit for switching a connection point from variable signal to a reference potential, employing a transistor having its control electrode connected to a variable DC voltage, and its emitter-collector path connected by resistors between a potential divider and a reference point. A pair of similarly poled diodes are connected across the emitter-collector path, the junction of said diodes connected to said connection point.

3,609,555
DIGITAL FM RECEIVER

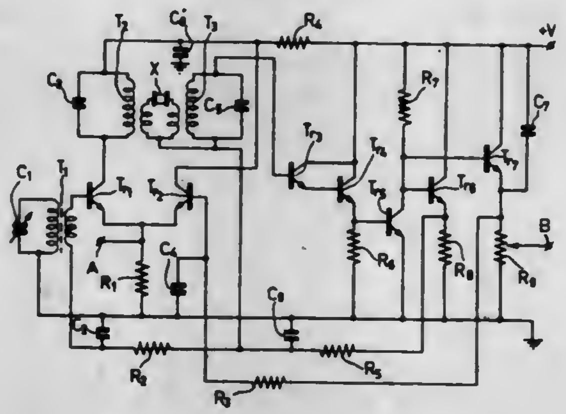
Richard Van Blerkom, Rockville; Don G. Freeman, Gaithersburg, and Richard C. Crutchfield, Potomac, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 19, 1967, Ser. No. 654,412
Int. Cl. H03d *3/00*
U.S. Cl. 325—349 **5 Claims**



A digital FM receiver for receiving information in the form of analog signals on a frequency-modulated carrier at its input and providing said information in digital form at its output. The input signal consisting of a subcarrier modulated by the analog information (baseband) is converted into digital form in an analog to digital converter and is then demodulated in a digital demodulator, providing at its output the baseband information in digital form. The invention herein described was made in the course of or under a contract with the United States Air Force.

3,609,556
FIXED BIAS SUPPLY ARRANGEMENT FOR LONG TAILED PAIR TRANSISTOR CONFIGURATION

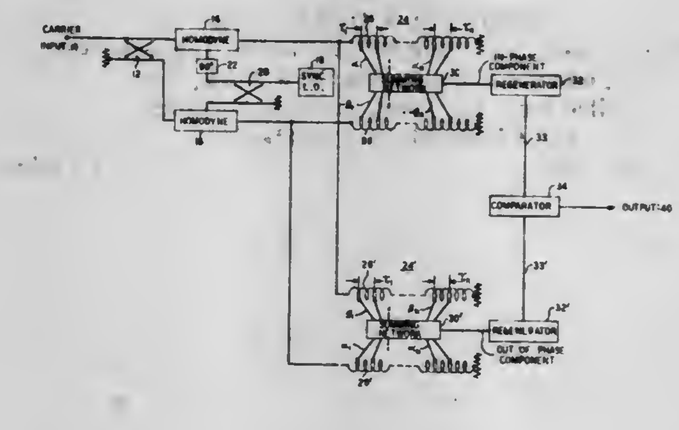
William Douglas Benson, Sutton, Surrey, and John Stuart Malcolm, West Norwood, London, both of England, assignors to U.S. Phillips Corporation, New York, N.Y.
Filed May 7, 1968, Ser. No. 727,273
Claims priority, application Great Britain, May 9, 1967, 21,421/67
Int. Cl. H04b *1/28*
U.S. Cl. 325—430 **5 Claims**



A circuit arrangement comprising a DC coupled amplifier and at least a preceding stage incorporating a pair of transistors, the bias for an electrode of each transistor of said preceding stage being derived from said DC coupled amplifier, each being determined by a multiple being on integer of the bias-emitter junction potential of transistors incorporated in said DC amplifier.

3,609,557
APPARATUS AND METHOD FOR BASEBAND DETECTION AND EQUALIZATION OF INFORMATION SIGNALS

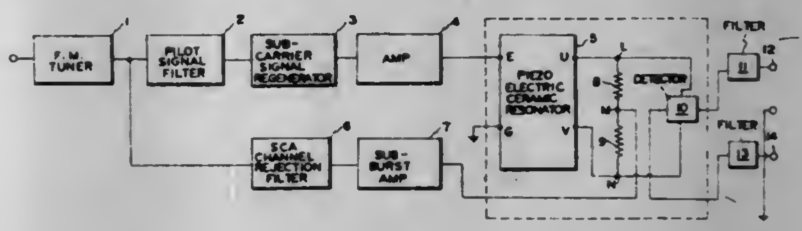
James E. Goell, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 8, 1969, Ser. No. 882,899
Int. Cl. H04b *1/16*
U.S. Cl. 325—473 **14 Claims**



Baseband detection and equalization of a signal having arbitrary modulation and distortion is achieved by linearly down-converting the signal to baseband be means of a pair of homodynes driven by a synchronous local oscillator. Each of the homodyne outputs (i.e., the in-phase and out-of-phase components) is equalized by a baseband transversal equalizer comprising a pair of delay lines having a tap separation not greater than 1/Δf, where Δf is the bandwidth over which equalization is desired. The taps of each delay line are coupled through attenuators to a summing network, the output of which is the in-phase (or out-of-phase) component equalized depending on whether the attenuation levels correspond to $(\alpha_n,-\beta_n)$ or (β_n,α_n), respectively, where α_n and β_n are, in a frequency-domain analysis, the coefficients of the Fourier series of the Fourier transform of the system component or apparatus producing the distortion. Alternatively, α_n and β_n can be determined from a time-domain analysis in which α_n and β_n are chosen such that the signal is set to zero at a sufficient number of sampling instants to allow satisfactory transmission.

3,609,558
SWITCHING DEVICE EMPLOYING A PIEZOELECTRIC CERAMIC RESONATOR

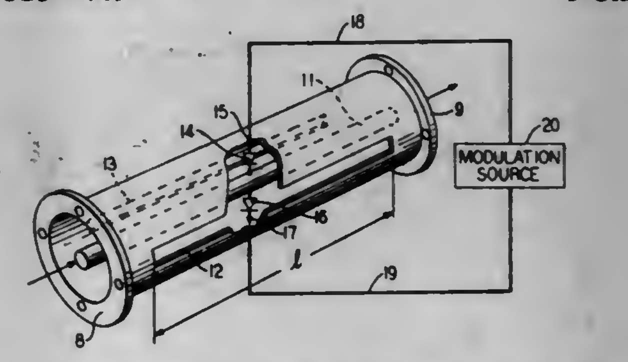
Yukihiko Ise, and Yuichi Kaname, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 23, 1969, Ser. No. 835,342
Claims priority, application Japan, June 26, 1968, 43/45343
Int. Cl. H04b *1/16;* **H03k** *3/00*
U.S. Cl. 325—487 **6 Claims**


F.M. TUNER
PILOT SIGNAL FILTER
SUB-CARRIER SIGNAL REGENERATOR
AMP
PIEZO ELECTRIC CERAMIC RESONATOR
DETECTOR
FILTER
FILTER
SCA CHANNEL REJECTION FILTER
SUB-BURST AMP

A switching device has a piezoelectric ceramic resonator having a grounded terminal, an input terminal which is supplied with a subcarrier signal to give said piezoelectric ceramic resonator a piezoelectric vibration, and two output terminals, one of which derives a first electrical signal induced from said vibration, and the other of which derives a second electrical signal which opposite in phase to said first signal. A resistor circuit has a midpoint terminal which is supplied with a composite signal including a mixture of two distinct supressed-carrier modulated signals, and two end terminals, connected across the resonator output terminals at each of which is produced a balanced signal of said composite signal. A detector has two input terminals connected to the resistor circuit end terminals one of which receives the partially demodulated first signal which is a mixture of said balanced signals and said first signal, and another of which receives the partially demodulated second signal which is a mixture of said balanced signals and said second signal, two output terminals, at one of which is produced a single distinct signal detected from said partially demodulated first signal and at the other of which is produced a single distinct signal detected from said partially demodulated second signal. Said piezoelectric ceramic resonator is a thin rectangular plate and has a resonance vibration at the frequency of said subcarrier signal.

3,609,559
COAXIAL MICROWAVE MODULATOR

James Gifford Evans, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 18, 1970, Ser. No. 47,246
Int. Cl. H04b *1/26*
U.S. Cl. 325—449 **5 Claims**

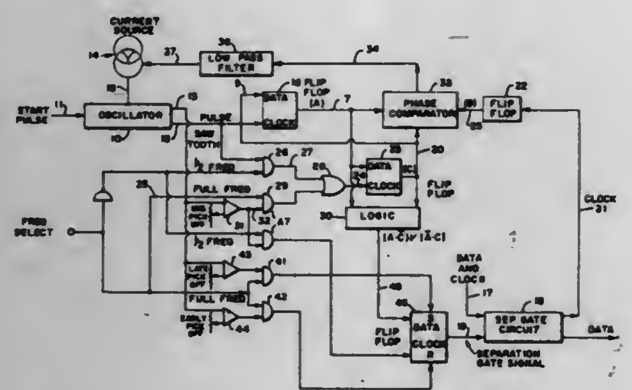


A microwave modulator is disclosed which takes the form of a microwave transmission line segment having a pair of diametrically opposed longitudinal slots cut in its outer conducting sheath. Nonlinear impedance means are positioned in the sheath and connected to the sheath at two points each of which is equidistant from all four slot extremities. Modulating waves applied across the nonlinear impedance means modulate microwaves traversing the segment.

3,609,560
DATA SEPARATION CIRCUIT FOR MAGNETIC RECORDER MEMORIES

Michael P. Greenberg, Winchester, Mass., assignor to Bedford Associates, Inc., Bedford, Mass.

Filed Jan. 9, 1970, Ser. No. 1,808
Int. Cl. H03k ***1/00, 3/04***
U.S. Cl. 328—63 15 Claims



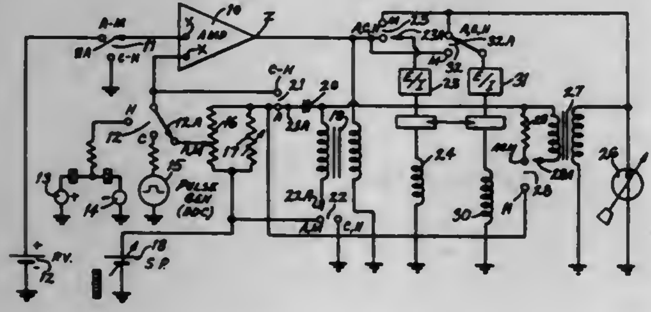
A data separation circuit providing an output separation gate signal having a frequency proportional to the average frequency of the input clock pulse signals that are recorded on a magnetic rotating memory disc. The clock pulse signals are then readily separated from data pulse signals in the recorded signal even though the exact position in time of each pulse has been altered by the recording process. The data separation circuit comprises simple, easily assembled circuitry that tracks recording frequencies read from two types of magnetic rotating memory drives, one of which records at twice the frequency of the other. A major component of the data separation circuit is a frequency controllable oscillator that simultaneously produces a sawtooth wave and a clock pulse. The oscillator clock pulse rate is compared with the input recorded clock pulse rate and the comparator output is used to control the oscillator's frequency rate.

The separation gate signal is initiated and terminated when the frequency controlled sawtooth wave attains predetermined levels. Similarly, the attainment of a predetermined level by the sawtooth wave is used in generating the feedback signal to the oscillator when operating with a high frequency memory drive. Expensive and complicated high frequency pulse logic circuits are therefore not required.

3,609,561
ELECTRONIC PROCESS CONTROLLER WITH SINGLE DIFFERENTIAL AMPLIFIER RESPONSIVE TO EITHER ANALOG OR DIGITAL SIGNALS

Hubert A. Riester, Huntington Valley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Feb. 26, 1970, Ser. No. 14,489
Int. Cl. H03k ***17/00***
U.S. Cl. 328—69 7 Claims

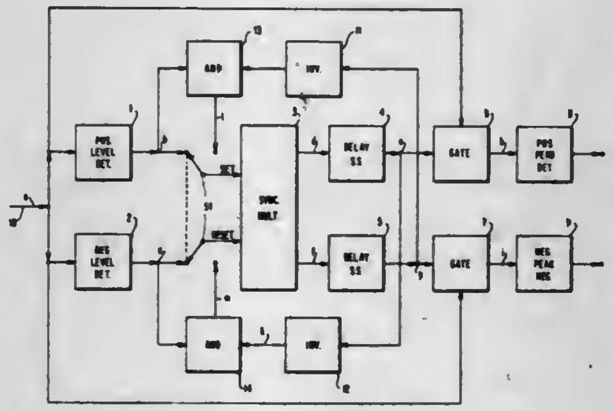


An electronic controller which is responsive to either analog or digital signals to operate a final control element in a process control loop, the controller acting in conjunction with other devices to maintain a process variable at a desired value. The controller includes a single amplifier adapted to function in conjunction with an appropriate feedback network to create an interface between a direct digital control system and to afford supplemental switching to effect either digital control, automatic analog control or manual control of the final control element.

3,609,562
SYNCHRONIZED DEMODULATOR

Peter J. Granata, Campbell, and Francis E. Mueller, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 17, 1970, Ser. No. 55,792
Int. Cl. H03d ***3/18***
U.S. Cl. 329—50 10 Claims

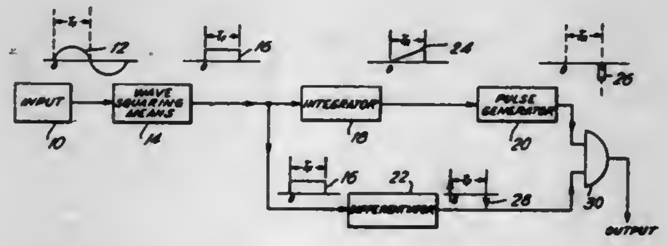


This invention relates to a demodulator used in a servopositioning system which is maintained in synchronization both during the track-seeking mode and the fine-positioning mode of operation of the servosystem. The demodulator monitors signals received from the servoed medium and obtains from this signal, positioning information between the servoed means and the servoing apparatus, while obtaining synchronization information from the same received signals. The demodulator is comprised of a positive level detector, a negative level detector, a synchronizable free-running multivibrator, delayed single shots, gates, a positive peak detector and a negative peak detector. A means for including a noise rejection means into the demodulator is also shown.

3,609,563
FREQUENCY DETECTOR

Leon Zinn, Syossit, N.Y., and Milton Bodin, Teaneck, N.J., assignors to Coditron Corporation, New York, N.Y.

Filed Nov. 12, 1968, Ser. No. 775,025
Int. Cl. H03d ***3/04;*** **H03k** ***5/20***
U.S. Cl. 329—126 5 Claims

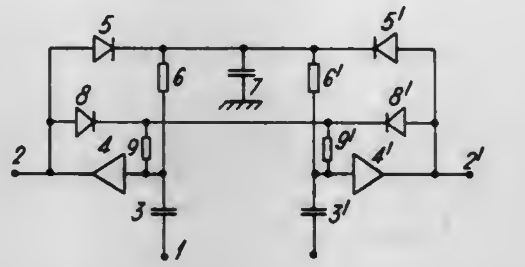


A frequency detector adapted to produce an output signal when a first intermediate signal produced by a first circuit means in response to an input signal at a time representative of the period of the desired frequency, is in time coincidence with a second intermediate signal produced by a second circuit means in response to said input signal at a time representative of the period of the frequency of said input signal.

3,609,564
COMPARISON CIRCUIT FOR ALTERNATING VOLTAGES

Karoly Galyas, Johanneschov; Benjamin Trok, Johannesbov, and Erik Lennart Skogsberg, Huddinge, all of Sweden, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,843
Claims priority, application Sweden, Oct. 4, 1968, 13411/1968
Int. Cl. H03k ***5/20***
U.S. Cl. 328—147 5 Claims

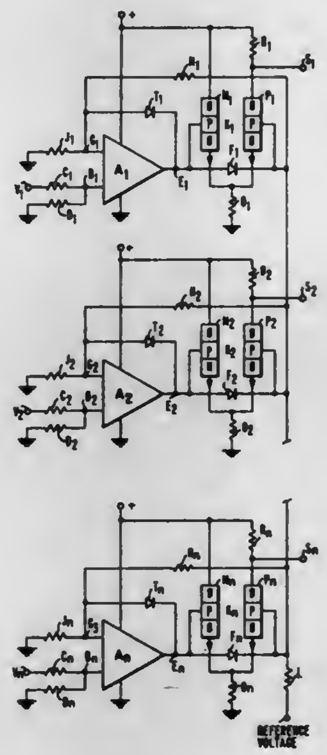


A circuit is provided for comparing alternating voltages without first rectifying them. In this circuit a capacitor and an amplifier circuit having high amplification are connected in series between each input and output terminal of the circuit, with a feedback circuit consisting of a diode device and a resistor being connected in parallel to each amplifier circuit and with the junction points of the diode devices and the resistors of the two feedback circuits being interconnected. In this manner a common threshold voltage will be achieved at the inputs of the amplifier circuits and thus, an output voltage only on the output terminal whose corresponding input terminal has been supplied with a higher input voltage.

3,609,565
EXTREME LEVEL DETECTOR

Robert W. Arnold, Hopewell, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,581
Int. Cl. H03k ***5/20***
U.S. Cl. 328—147 10 Claims

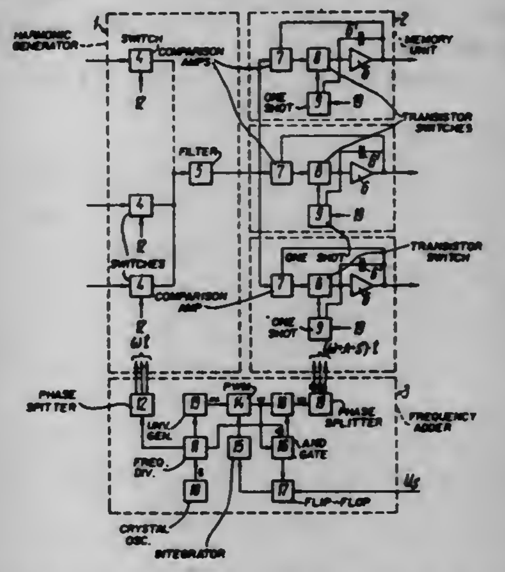


A system for identifying and selecting the maximum or minimum value signal from among a plurality of signals. The system includes an amplifier for each input signal. The outputs of the amplifiers are connected to a common load through individual diodes. A negative feedback connection is provided from the load to an amplifier input. The polarity of the voltage drop across the diodes is monitored to determine the diode which is forward biased. This indicates the amplifier with the extreme valued input signal. A second set of diodes across the amplifiers limits the output voltage to reduce overload conditions.

3,609,566
DEVICE FOR TRANSFORMATION OF VOLTAGE COORDINATES IN SIMULATION OF TRANSIENTS IN COMPLEX POWER SYSTEMS

Georgy Vasilievich Roschin, ploschad Revoljutii 3, kv. 55, Istra Moskovskoi Oblasti, U.S.S.R.

Filed Mar. 5, 1969, Ser. No. 804,404
Int. Cl. H03b ***3/00***
U.S. Cl. 328—155 3 Claims

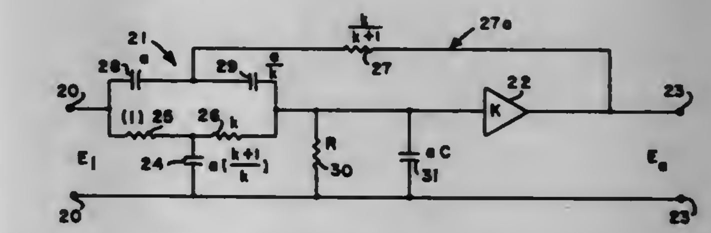


A device for electronic analogue simulation of transients in complex power systems and for transformation of voltage coordinates including the combination of a harmonic converter, memory units and a frequency adder. In checking transients in power systems, harmonic converter includes selective filter connected to the input of the analogue memory unit through a current detector or operational amplifiers with passive networks in their feedback loops.

3,609,567
RC NETWORKS AND AMPLIFIERS EMPLOYING THE SAME

James F. Webb, Administrator of the National Aeronautics and Space Administration with respect to an invention of; William J. Kerwin, and Lawrence P. Huelsman, Tucson, Ariz.

Continuation of application Ser. No. 624,611, Mar. 20, 1967, now abandoned. This application Apr. 17, 1970, Ser. No. 28,235
Int. Cl. H03f ***1/00***
U.S. Cl. 328—167 19 Claims



The active filter circuit of the present invention comprises a passive RC network and a DC voltage or operational amplifier. The resistive and capacitive elements of the passive RC network determine the location of a pair of complex conjugate zeros along the $j\omega$ axis. Connected to the RC network in shunt are a load resistor and a load capacitor. A feedback network interconnects the output of the voltage amplifier with the passive RC network. By regulating the value of the load resistor and the value of the load capacitor jointly or severally, the location of a pair of complex conjugate poles produced by the active filter can be adjusted separately and independently from the zeros. In addition thereto, the regulation of the gain of the DC voltage or operational amplifier or the changing of the feedback voltage of the DC voltage or operational amplifier adjusts independently the location of the pair of complex conjugate poles relative to the zeros.

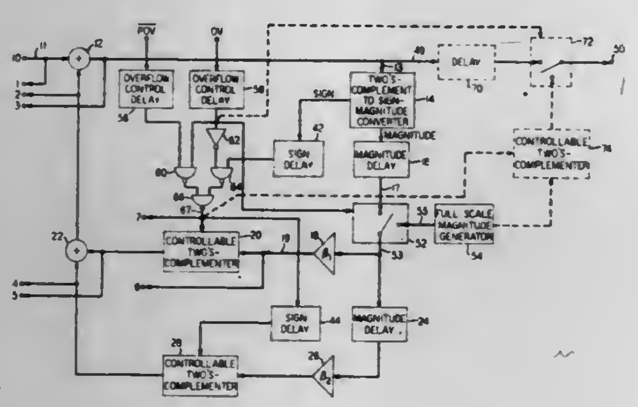
When a plurality of active filter circuits are connected in cascade, a frequency-selective amplifier is formed with the DC voltage or operational amplifiers serving additionally as isolation devices between successive active filter circuits. It is to be observed that each active filter circuit produces real frequency zeros of transmission at any desired frequency independently of the location of complex poles with respect to the zeros.

3,609,568
STABLE DIGITAL FILTER APPARATUS

Leland Brooks Jackson, Monsey, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 8, 1970, Ser. No. 44,357
Int. Cl. H04b *1/10*

U.S. Cl. 328—167 **17 Claims**


OVERFLOW CONTROL DELAY
OVERFLOW CONTROL DELAY
TWO'S COMPLEMENT TO SIGN-MAGNITUDE CONVERTER
DELAY
SIGN
SIGN DELAY
MAGNITUDE DELAY
MAGNITUDE
CONTROLLABLE TWO'S COMPLEMENTER
FULL SCALE MAGNITUDE GENERATOR
CONTROLLABLE TWO'S COMPLEMENTER
SIGN DELAY
MAGNITUDE DELAY
CONTROLLABLE TWO'S COMPLEMENTER

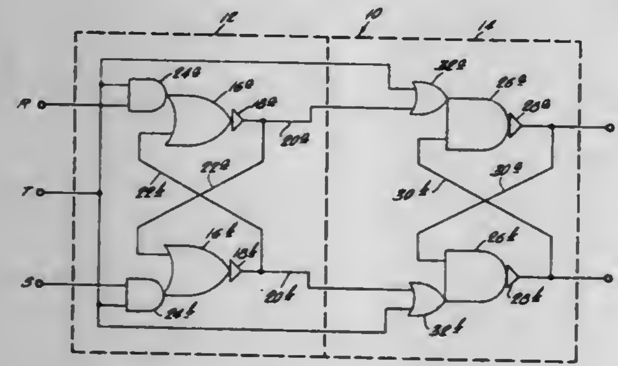
In a digital filter, arithmetic overflows are detected and their kind (whether positive or negative) determined by logical manipulation of the signs of the numeric quantities entering and leaving each arithmetic component of the filter. If net positive or negative overflow is detected, the final result of the filter operation is replaced by a positive or negative full scale numeric quantity, respectively, thereby preventing instability in the filter and suppressing output signal transients.

3,609,569
LOGIC SYSTEM

Ronald C. Todd, Somerville, N.J., assignor to Solid State Scientific Devices Corporation, Montgomeryville, Pa.

Filed July 9, 1970, Ser. No. 53,395
Int. Cl. H03k *3/26*

U.S. Cl. 328—201 **13 Claims**



A single-phase master/slave flip-flop circuit combines a pair of flip-flop networks which are mathematical duals. Each network includes a pair of gates connected in flip-flop arrangement with the inverted output of each providing the network outputs and being fed back as an input to the other gate in the flip-flop pair. The flip-flop gates in one network are AND gates and one input of each is an OR gate. This sequence of gates is reversed in the other network. It is possible to have the networks arranged in either order. Each input gate receives as an input a signal common to all four input gates and at least one other input signal. Other input signals to the input gates of one network are the output signals of the other network. The network outputs of said one network provide system outputs. Input signals to the input gates of the other network are system inputs. This circuit is applicable to RST, D, T, JK, flip-flop circuits and modifications thereof.

ERRATA

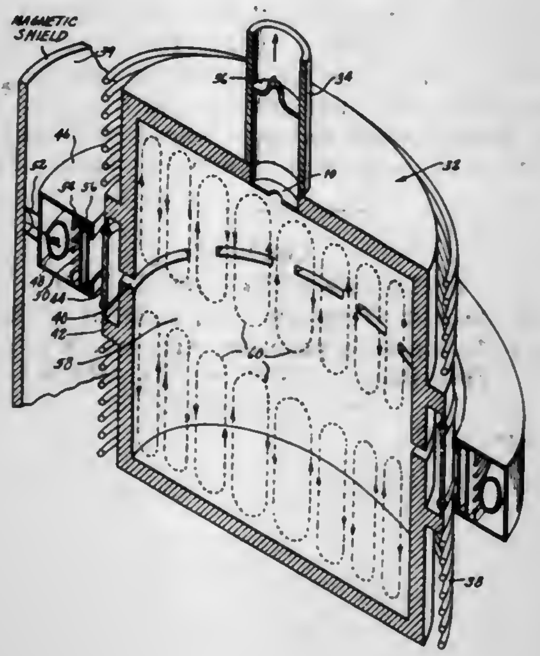
For Classes 329—50 and 329—126 see:
Patent Nos. 3,609,562 and 3,609,563

3,609,570
LIGHT EXCITED MASER

Gordon Gould, Bronx, N.Y., assignor to Control Data Corporation, Minneapolis, Minn.

Continuation of application Ser. No. 682,678, Nov. 13, 1967, now abandoned , Continuation of application Ser. No. 837,471, Sept. 1, 1959, now abandoned. This application June 17, 1968, Ser. No. 751,017
Int. Cl. H01s *3/09, 3/16*

U.S. Cl. 330—4.3 **18 Claims**



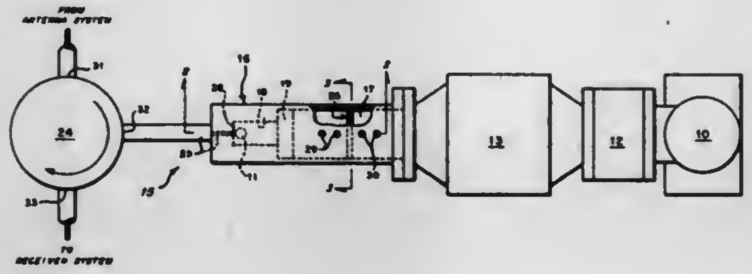
1. Apparatus for amplifying or generating microwave frequency oscillations through amplification by stimulated emission of radiation, the energy for such amplification being supplied by substantially unpolarized light or nonuniform spectral density, said apparatus comprising a radiofrequency resonant structure formed at least in part of conductive material, an enclosure at least partially coextensive with said structure, a gaseous working medium in said enclosure, said medium having atoms, ions, or molecules with a pair of energy levels separated by a value of energy substantially corresponding to a resonant frequency of said resonant structure, a source of light having spectral components exciting said pair of energy levels to higher energy levels, means causing the excitation by said light source of atoms, ions, or molecules existing in the lower of the said pair of energy levels to be greater than the excitation of those existing at the higher of said pair of levels, means for ingress of light from said source into said enclosure and means for transmitting radiofrequency energy from said resonant structure to an exterior point of utilization.

3,609,571
SIDEBAND SUPPRESSION FOR BROADBAND PARAMETRIC AMPLIFIER

Gerald Ira Klein, Westbury, N.Y., and Robert L. Zahm, Annapolis, Md.

Filed Oct. 27, 1969, Ser. No. 869,526
Int. Cl. H03f *7/04*

U.S. Cl. 330—4.9 **6 Claims**



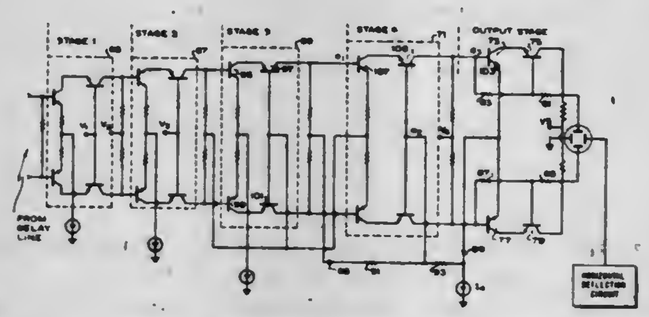
A broadband microwave parametric amplifier utilizing a resonant slot low Q filter in the pump line that creates a short circuit at all frequencies other than the pump frequency. This makes the amplifier performance completely independent of pump line source impedance.

3,609,572
SIGNALLING CIRCUIT

Alan J. De Vilbis, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 2, 1969, Ser. No. 838,532
Int. Cl. H03j *3/68*

U.S. Cl. 330—30 **2 Claims**



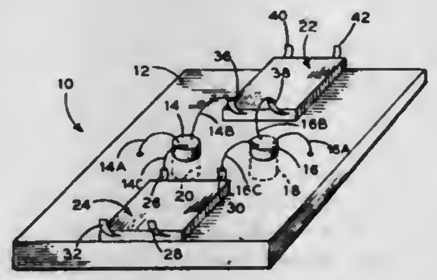
A signal circuit for an oscilloscope includes iterative gain stages and signal-controlled attenuators which may be operated as gain verniers or as channel switches for multiplexed signal mixing. Bias currents in the active elements of gain stages near the output stage are shared with the active elements of preceding stages to reduce the total quiescent current requirement.

3,609,573
BALANCED AMPLIFIER

Hugh A. Hair, Liverpool, N.Y., assignor to Anaren Microwave Incorporated, Syracuse, N.Y.

Filed May 26, 1969, Ser. No. 827,832
Int. Cl. H03f *3/14*

U.S. Cl. 330—38 M **6 Claims**



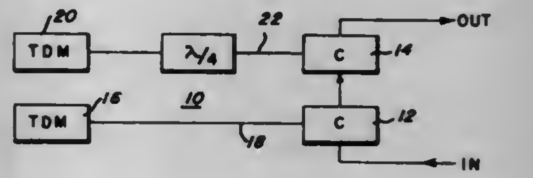
A balanced transistor amplifier is disposed on a slab of electrically and thermally conductive material. Two transistors are fixed in thermal contact with the slab. A 3 db. quadrature coupler feeds a signal from a common input to both transistors. A second 3 db. quadrature coupler feeds the amplified signals from both transistors to a common output.

3,609,574
TUNNEL DIODE AMPLIFIER

Robert G. Geissler, Cranford, N.J., assignor to Raytheon Company, Lexington, Mass.

Continuation of application Ser. No. 717,668, Apr. 1, 1968, now abandoned. This application May 26, 1970, Ser. No. 41,699
Int. Cl. H03f *15/00*

U.S. Cl. 330—61 A **7 Claims**



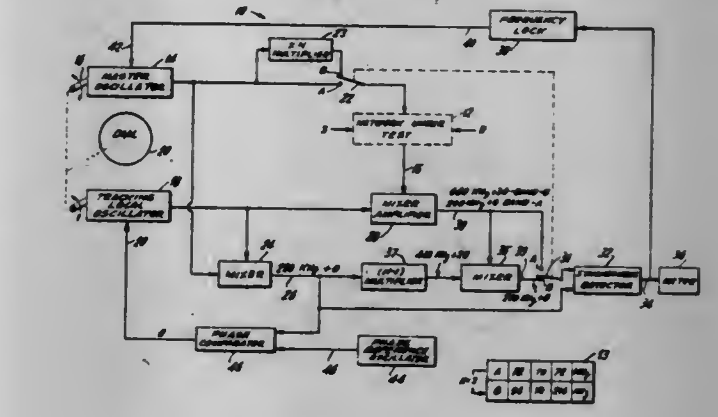
A tunnel diode amplifier circuit including a two-stage amplifier in which one of the tunnel diode stages is located one quarter of a wavelength nearer or further away from the transmission line circulators than the other. This ¼ wavelength difference provides a complementary effect with temperature of the two stages so that the net response is considerably less effected by changing temperature as compared with that of two identical stages in cascade.

3,609,575
HARMONIC SENSITIVE NETWORK FOR PHASE LOCK OF AN OSCILLATOR

Benjamin Parzen, and Russell F. Sherry, Bethpage, both of N.Y., assignors to Ovitron Corporation, Newburgh, N.Y.

Filed Mar. 3, 1970, Ser. No. 16,124
Int. Cl. Golr *29/22*

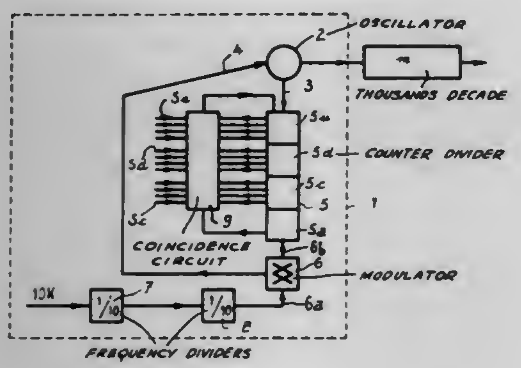
U.S. Cl. 331—2 **9 Claims**



A method and apparatus expanding the operational frequency of an instrument for measuring parameters of a circuit element such as a crystal resonator is described. A master oscillator is employed to excite a bridge circuit operatively connected to the crystal resonator and is passed through a multiplier network for high band operation of the instrument. A receiver is used to detect bridge unbalance output and employs a local oscillator tracked with the master oscillator. The local oscillator is mixed with the master oscillator to produce a first IF signal and is mixed with the output of the bridge to produce a second IF signal. A selected multiple of the first IF signal is then produced for use in the high band operation of the instrument and mixed with the second IF signal to provide a low noise IF signal representative of bridge unbalance. Synchronous detection of the low-noise IF signal provides a signal for frequency lock of the master oscillator for minimum bridge unbalance while the local oscillator is phase locked to a reference stable frequency source.

3,609,576
FREQUENCY SYNTHETIZER

Roger Charbonnier, Meudon, France, assignor to Adret Electronique, Trappes (Yvelines), France
Filed May 14, 1969, Ser. No. 824,636
Claims priority, application France, June 18, 1968, 155,393
Int. Cl. H03b *3/04*
U.S. Cl. 331—2 **6 Claims**

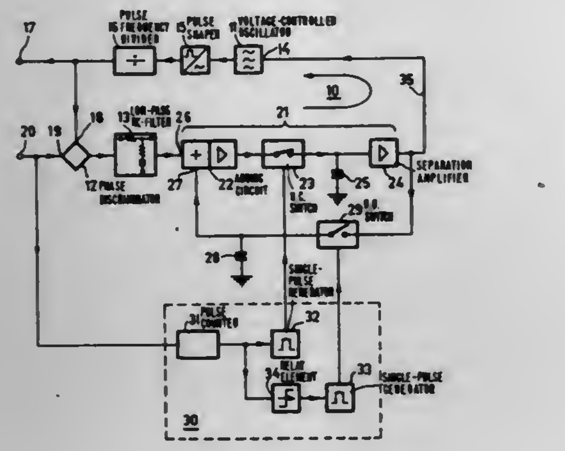


The invention broadly relates to frequency synthetizers including a plurality of decades, each of which receives an input frequency Fo+A originating from the preceding decade and provides an output frequency Fo+A/10+B, Fo being a fixed frequency and A and B being frequency increments varying by integral steps.

More specifically, the instant invention provides a frequency synthetizer of simplified construction wherein the group formed by the head decades essentially consists of a single oscillator cooperating with means for varying its frequency so as to obtain, without any beat with an intermediate frequency and without any injection of a carrier frequency, the variable frequency Fo+A to be applied to the following decades.

3,609,577
FREQUENCY CONTROL-ARRANGEMENT

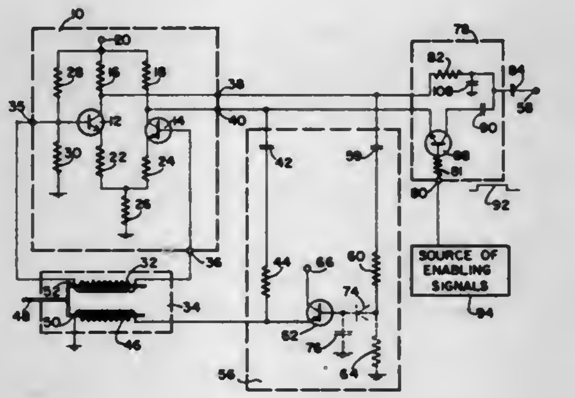
Marinus Anton Bos, Rockville, Md., assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,248
Int. Cl. H03b *3/04*
U.S. Cl. 331—17 **6 Claims**



A frequency control-arrangement for stabilizing the frequency of an oscillator having a controllable frequency on the frequency of a control-signal, in which a phase discriminator receives the control-signal and a comparison signal derived from the oscillator, said oscillator having a frequency control-input. A transmission path connects the phase discriminator to the frequency control-input of the oscillator. The frequency control-arrangement include a storage element, storage control means for storing a voltage derived from the output side of the transmission path in the storage element and means for feeding back a voltage derived from the storage element to the input side of the transmission path.

3,609,578
OSCILLATOR HAVING FEEDBACK AMPLITUDE CONTROL AND SWITCHABLE OUTPUT PHASE SHIFTER

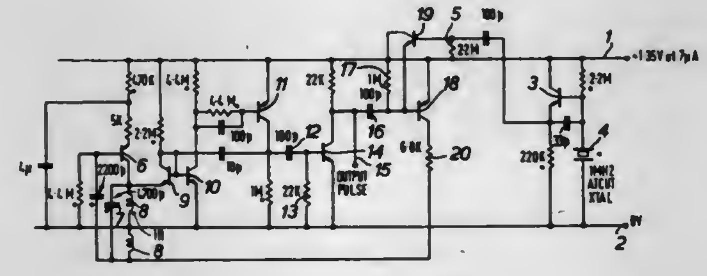
Ronald H. Chapman, Wheaton, and James J. Michalik, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 18, 1970, Ser. No. 20,625
Int. Cl. H03b *3/02, 5/30, 27/00*
U.S. Cl. 331—45 **13 Claims**



An oscillator circuit for providing a constant amplitude output tone includes a differential amplifier and a frequency-selective, feedback network. A regulating circuit is connected from an oscillator output to the feedback network, and as the output of the oscillator exceeds a predetermined threshold, the regulating circuit develops a regulating signal which is proportional to the amplitude of the output and opposite phase to the feedback signal. This regulating signal and the feedback signal interreact to provide a composite feedback signal whose amplitude is inversely proportional to the oscillator output to thereby hold the output at a preselected level. The oscillator is operable to provide a predetermined phase shift in the output tone.

3,609,579
METHOD AND APPARATUS FOR CONTROLLING ONE OSCILLATOR BY ANOTHER

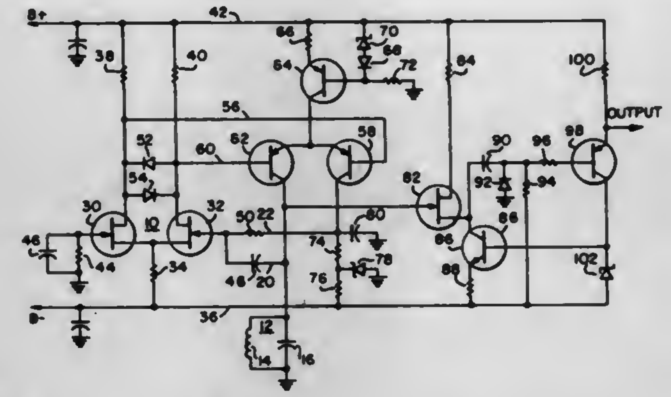
Terence R. Chappell, Brockworth; Thomas R. Heeks, Woodmancote, Cheltenham; Michael J. Rogers, Cheltenham, and John H. Shelley, Eastcombe, near Stroud, all of England, assignors to Smiths Industries Limited, London, England
Filed May 26, 1969, Ser. No. 827,662
Claims priority, application Great Britain, May 31, 1968, 26118/68
Int. Cl. H03b *3/04*
U.S. Cl. 331—46 **12 Claims**



A first high frequency stable oscillator is used to control a second lower frequency oscillator by the method of sensing the attainment of a peak value of one of the oscillating parameters of the second oscillator, applying a constraint to that parameter to inhibit temporarily the oscillation of the second oscillator, and releasing the constraint when the first oscillator next reaches a datum position in its cycle of oscillation.

3,609,580
ELECTRICAL SENSING APPARATUS

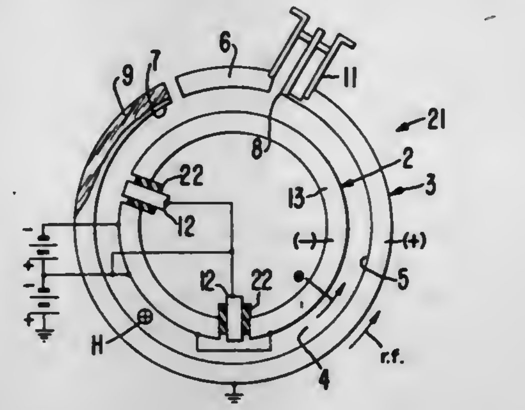
Francis T. Thompson, Murrysville, and Bruce R. Dow, Delmont, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 14, 1969, Ser. No. 876,774
Int. Cl. G01r *33/12*
U.S. Cl. 331—65 **11 Claims**



Electrical sensing apparatus such as proximity detectors and vibration pickups of the type in which the instantaneous displacement between an inductor in the tank circuit of an oscillator and a conductive object in the field of the inductor is reflected in the output amplitude of the oscillator as a function of the "Q" of the tank circuit. The oscillator incorporates a low frequency, essentially direct current negative feedback path which, in conjunction with high loop gain at oscillation frequencies, insures that the circuit will oscillate under low "Q" conditions when the inductor is closely adjacent a conductive object.

3,609,581
LOW POWER REENTRANT STREAM CROSSED-FIELD NOISE GENERATOR TUBE

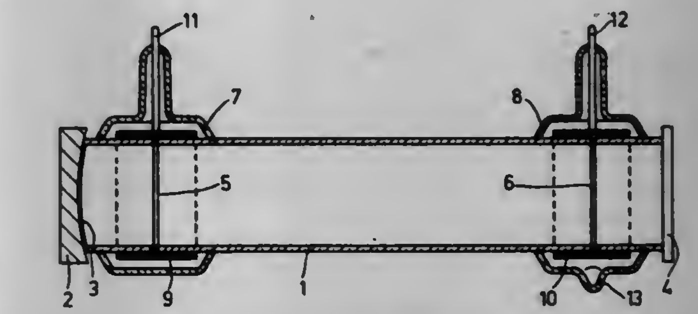
Hunter L. McDowell, Chatham, N.J., assignor to Varian Associates, Palo Alto, Calif.
Filed July 25, 1969, Ser. No. 845,000
Int. Cl. H01j *25/34;* **H03b** *29/00*
U.S. Cl. 331—78 **5 Claims**



A crossed-field reentrant stream noise generator tube is disclosed. The tube is of the circular crossed-field geometry having a cathode electrode structure coaxially disposed of an anode electrode structure to define an unobstructed crossed-field interaction region in the space between the anode and cathode such that the electron stream can circulate completely around the cathode. The cathode electrode structure includes one or more thermionic emitter buttons forming the emitting portion and the remaining portion of the cathode forms a nonemitting sole structure. A microwave circuit is formed in the anode structure facing an arcuate portion of the cathode structure. In one embodiment, the nonemitting sole portion of the cathode structure is treated to inhibit secondary emission therefrom by reducing the secondary emission ratio of the surface to less than 1. In a second embodiment, the nonemitting sole portion of the cathode structure is biased negatively relative to the thermionic emitter to prevent bombardment of the sole and thus to inhibit secondary emission therefrom.

3,609,582
DEVICE FOR PRODUCING STIMULATED INFRARED EMISSION, IRASER, BY MEANS OF AN ELECTRIC DISCHARGE IN A GAS MIXTURE CONSISTING AT LEAST PARTLY OF CARBONIC ACID AND DISCHARGE TUBE FOR SUCH A DEVICE

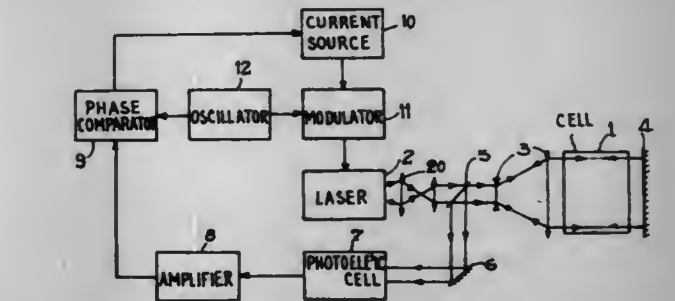
Henricus Joannes Franciscus Gerardus Smets, and Auke Gerrit van der Kool, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Feb. 14, 1969, Ser. No. 799,384
Claims priority, application Netherlands, Feb. 19, 1968, 6802368
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **5 Claims**



An infrared laser employing a discharge in carbonic acid gas in a quartz tube, the electrodes consisting of platinum cylinders surrounding interruptions in the quartz tube.

3,609,583
ARRANGEMENT FOR CONTROLLING THE FREQUENCY OF A LIGHT SOURCE USING AN ABSORPTION CELL

Henri Brun, Paris, France, assignor to Thomson-CSF
Filed Aug. 13, 1969, Ser. No. 849,834
Claims priority, application France, Sept. 30, 1968, 168,196
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **4 Claims**

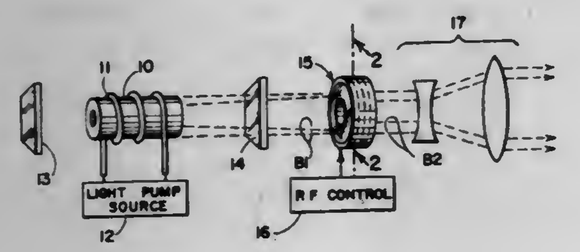


An arrangement for controlling the frequency of a monochromatic light source, wherein said light wave is caused to propagate out and back through a cell containing a gas or a vapor having an absorption line and wherein the light wave is frequency modulated and feedback loop, between the frequency-controlling means of the light source and an output collecting the wave reflected through the said cell, is provided for monitoring the frequency of said light source.

3,609,584
METHOD AND MEANS FOR COMPENSATING THERMAL LENSING IN A LASER SYSTEM

Malcolm L. Stitch, and Walter Koechner, both of Malibu, Calif., assignors to Union Carbide Corporation, New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,401
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **7 Claims**

A negative thermal circular lens is provided for compensating the thermal lensing effect inherent in output radiation generated by a solid-state laser rod of the annular configuration. The compensating thermal lens is of annular construction with metallic coatings on its inner and outer cylindrical surfaces. These coatings are heated by RF energy to develop a thermal gradient in the direction to induce stress resulting in a negative lensing effect so that the positive lensing effect in the annular laser output beam is substantially canceled.



This invention relates generally to a method and means for compensating thermal lensing in a laser system and more particularly to the compensation of laser radiation generated by solid-state-annular-type laser rods.

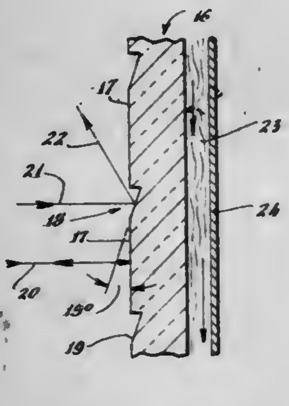
3,609,585
HIGH-POWER LASER INCLUDING MEANS FOR PROVIDING POWER OUTPUT

Robert E. Hufnagel, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 15, 1968, Ser. No. 767,787

Int. Cl. H01s *3/08*

U.S. Cl. 331—94.5 **13 Claims**



A laser including a lasing material, exciting means for producing stimulated emission at a power level higher than that which can be tolerated by semitransparent mirrors, and a pair of opaque reflective mirrors defining a resonant optical cavity. The surface of at least one of the mirrors includes a plurality of periodic fluctuations, preferably comprising grooves, separated by flat regions so that the major proportion of an incident beam coaxial with the cavity is reflected back upon itself and a proportion of the incident beam sufficient to provide a useful power output is diffractively reflected to an angle to the axis of the cavity.

3,609,586
LASER WITH PULSED TRANSMISSION MODE Q-SWITCHING

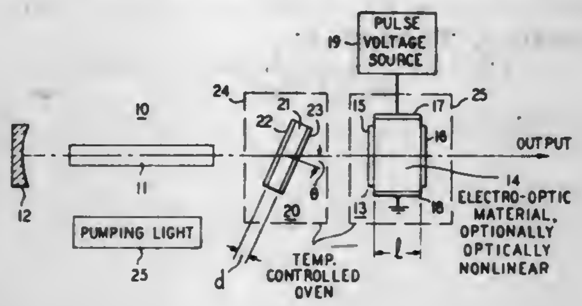
Hans G. Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed June 18, 1969, Ser. No. 834,328

Int. Cl. H01s *3/11*

U.S. Cl. 331—94.5 **4 Claims**

A Q-switched solid state laser in which the pulse is dumped from the resonator is disclosed. The laser employs a first resonant etalon for selection of a single axial mode and a second electro-optic resonant etalon for the Q-switching and pulse dumping. The second etalon is employed as the output reflector of the resonator. Cooperation of the two etalons enables switching of the resonator condition with exceptionally small voltage and risetime requirements to drive the second etalon. Advantageously, one of the etalons can simultaneously produce a desired nonlinear optical effect.



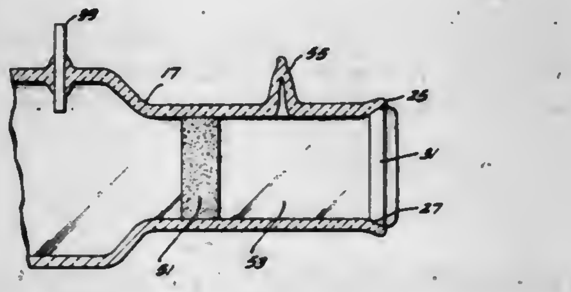
3,609,587
GAS LASER WITH ADJUSTABLE MIRROR

William P. Kolb, Jr., Manhattan Beach, and Dale E. Crane, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 27, 1969, Ser. No. 869,632

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **1 Claim**



A gas laser having an elongated plasma tube with a fixed mirror at one end and an adjustable mirror at the other end. An isolation element such as a Brewster window is disposed in the plasma tube near the adjustable mirror to create a gastight discharge compartment between itself and the fixed mirror while maintaining the regenerative path defined by and extending between the mirrors. An active laser gas is disposed in the discharge compartment and appropriate means for exciting the gas to a lasing state is provided whereby alignment of the mirrors may be accomplished while the laser is in operation.

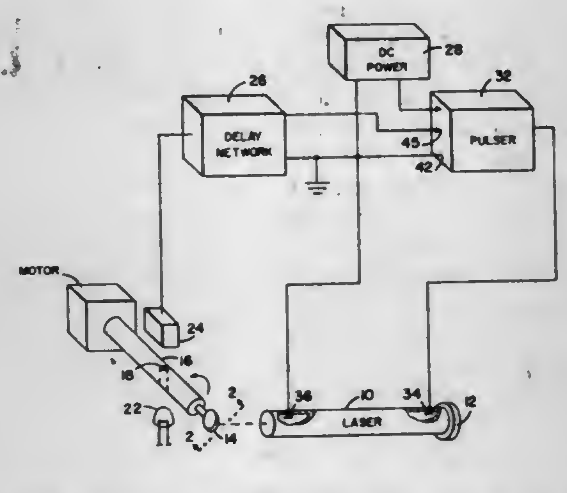
3,609,588
REPETITIVELY PULSED HIGH PEAK POWER LASER

William B. McKnight, Somerville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 30, 1969, Ser. No. 889,021

Int. Cl. H01s *3/11*

U.S. Cl. 331—94.5 **2 Claims**



A high peak power laser is repetitively pulsed by a delay circuit that is synchronized with a Q-switching circuit to provide maximum power output pulses. The laser medium has a fixed reflective mirror at one end of the cavity and a partially reflective output mirror rotating on a shaft at the other end thereof. A hole drilled through the diameter of the shaft has a light source and a photocell at opposite ends thereof. Light passes through the hole and activates the photocell once during each half cycle of shaft rotation. In response to the periodic light beam, the photocell produces an electrical pulse which is coupled to a variable delay circuit. The delay circuit triggers a laser pumping circuit, which discharges a large current through the laser medium, stimulating lasing action therein. The rotating shaft brings the output mirror into perpendicular alignment with the laser cavity and in parallel with the fixed mirror, thereby Q-switching the laser from a nonresonant mode into resonance to discharge a large energy pulse therethrough. By introducing the delay network between the periodic light reference pulse and the signal initiating the electrical discharge pulse through the laser, the delay time between the discharge current and alignment of the rotating mirror can be selected so that the laser output pulses can be varied, occuring after the electrical excitation pulses.

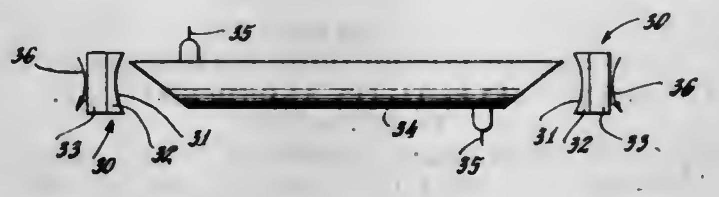
3,609,589
MIRROR FOR RESISTING THERMALLY INDUCED WARP

Robert E. Hufnagel, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 3, 1968, Ser. No. 756,855

Int. Cl. H01s *3/04*

U.S. Cl. 331—94.5 **9 Claims**



A mirror for use in conditions which produce a severe thermal gradient including a first layer having a reflecting surface of selected configuration and one or more additional layers bonded to the back of the first layer. The various layers are selected to have thicknesses and coefficients of thermal expansion such that the tendency of the mirror to warp due to the thermal gradient is opposed by, and preferably balanced by, the tendency to curve caused by differential expansion of said layers so that the selected configuration is retained over a range of gradients.

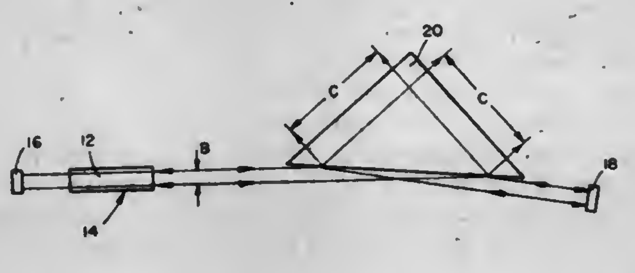
3,609,590
EXPANDED LASER BEAM OUTPUT

James L. Jernigan, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 11, 1969, Ser. No. 884,093

Int. Cl. H01s *3/08*

U.S. Cl. 331—94.5 **4 Claims**



A laser utilizing two 100 percent reflective surfaces and a prism positioned in the laser cavity between the reflective surfaces. A majority of the beam is reflected off one side of the prism and directed to a reflective surface where it reflects toward the prism while the rest of the beam is transmitted through the prism to form an elliptical output beam.

3,609,591
PULSE GENERATOR WIDTH MODULATED BY ITS FILTERED OUTPUT FOR PRODUCING SINUSOIDIAL OUTPUT

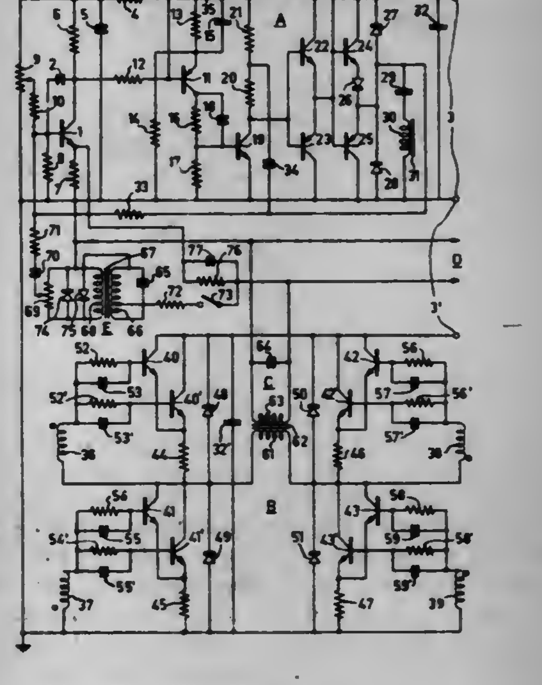
Gerrit Hendrik Van Hensbergen, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 16, 1969, Ser. No. 858,443

Claims priority, application Netherlands, Sept. 17, 1968, 6813243

Int. Cl. H03b *3/02, 5/12*

U.S. Cl. 331—108 B **8 Claims**



An electronic arrangement for generating an alternating current comprising a pulse generator having a fixed frequency which is high compared with the frequency of the alternating current to be generated, a switching amplifier by which the pulses generated by this generator are amplified, a low-pass filter by way of which the alternating current generated can be supplied to the output terminals, and a circuit tuned to the frequency of the alternating current to be generated and excited by the amplified pulses. The voltage across this tuned circuit is used to pulse-width modulate the high frequency pulses so that after buildup a strong component at the desired frequency appears at the output terminals.

3,609,592
TWO-TERMINAL AMPLIFIER ADAPTED TO BE COUPLED TO A RESONATOR

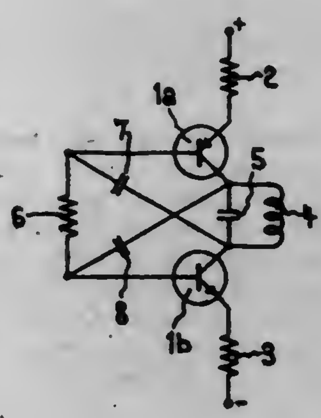
Gaston Raval, La Neuveville, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Switzerland

Filed June 11, 1969, Ser. No. 832,148

Claims priority, application Switzerland, June 19, 1968, 9132/68

Int. Cl. H03b *5/30*

U.S. Cl. 331—116 **12 Claims**

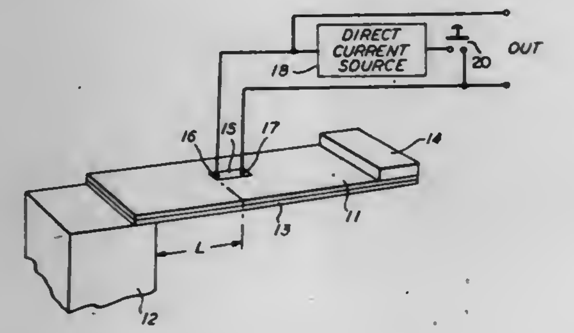


A two-terminal amplifier adapted to be connected to a resonator, the amplifier of simple and small design, particularly for use in timepieces, having two complementary transistors series-connected and a single coil coupled with a resonator and connected between the collectors of said transistors.

3,609,593
VIBRATORY REED DEVICE

Harry J. Boll, Berkeley Heights, and Martin P. Lepselter, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 25, 1966, Ser. No. 552,955
Int. Cl. H03b ***5/30***
U.S. Cl. 331—156 **8 Claims**

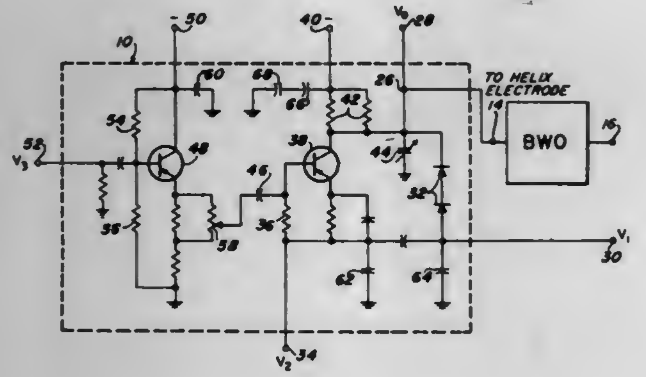


An oscillator comprising an elongated member to which a piezoresistive element is coupled, the member being capable of flexing in response to a change in temperature and having a resonant frequency of flexing vibration, said member having a minimum level of heating for producing continuous oscillation of the member at said resonant frequency, and direct current means for heating said member in response to the direct current applied to the piezoresistive element appropriate for supplying said minimum level of heating of the member and thereby to produce said oscillation of the member.

3,609,594
SOLID-STATE BACKWARD WAVE OSCILLATOR MODULATOR

Murray H. Mott, and Donald B. Kavanagh, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1969, Ser. No. 879,471
Int. Cl. H03c ***1/28***
U.S. Cl. 332—7 **2 Claims**

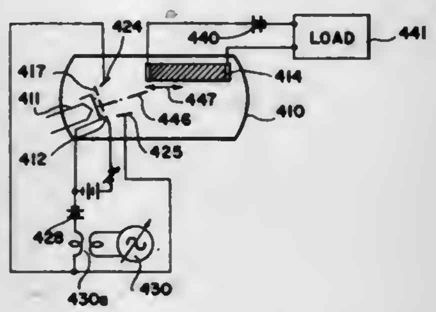


A solid-state modulator for driving a backward wave oscillator (BWO) to produce an output frequency that varies linearly with time. The modulator generates a voltage having an exponential waveform which is complementary to, i.e., matches, the turning curve of the BWO. By driving the helix of the BWO with the voltage produced by the modulator, the frequency of oscillation of the BWO can be swept through a wide frequency range in a linear manner. The modulator includes a solid-state state isolator stage and a solid-state switching stage. The circuit produces the exponential waveform by charging a capacitance during the on-time of the solid-state stages and by discharging the capacitance through an RC circuit during the off-time of the solid-state stages.

3,609,595
BEAM-CONTROL SEMICONDUCTOR OSCILLATOR

Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Tokyo, Japan

Filed Dec. 22, 1966, Ser. No. 603,971
Claims priority, application Japan, May 12, 1966, June 11, 1966, 41/30181;41/37634
Int. Cl. H01j ***31/58;*** **H03c** ***3/34;*** **H03b** ***5/12***
U.S. Cl. 332—25 **5 Claims**

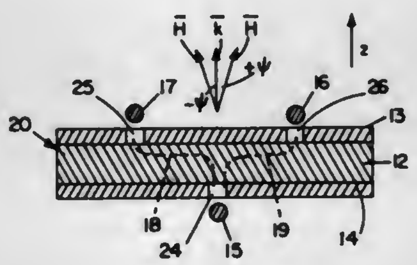


An electron beam high frequency generator and circuit arrangement in which a pencil of electrons (i.e., an electron beam) is trained at an acute angle against an elongated semiconductor bar in series with a current source and an electrode. A pair of deflector plates flank the beam to provide static or varying spreading of the latter while a grid permits control of the beam current and, therefore, the frequency of the device. By applying varying potential to the deflector plates, a modulation is superimposed upon the carrier frequency.

3,609,596
APPARATUS FOR PROVIDING TIME-DELAY FREQUENCY SELECTIVITY AND/OR SWITCHING OF WAVE ENERGY

Frederic R. Morgenthaler, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 27, 1968, Ser. No. 740,751
Int. Cl. H01p ***5/12***
U.S. Cl. 333—7 **9 Claims**



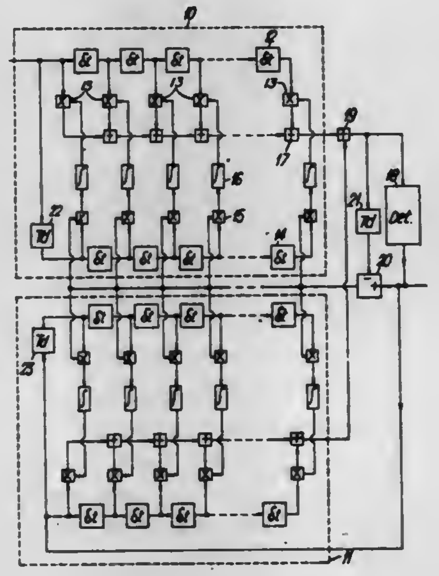
Apparatus for providing time delay, frequency selectivity and/or switching of electromagnetic wave energy, that includes, a single- or multilayer magnetic material adapted, when magnetized, to convert electromagnetic wave energy in air, for example, to spin wave energy in the material, the electromagnetic wave energy being subjected to an abrupt discontinuity in the equilibrium environmental parameters to effect such conversion. The electromagnetic wave is converted within the material to a combination of evanescent and propagating spin waves. By controlling the abruptness of said discontinuity, it is possible, as discussed herein, to control the rate of decay (α) of the evanescent wave and the wave number (k) of the spin wave thereby to control the rate of conversion and determine, further, the wavenumber of the spin wave. It has been found, for present purposes, that when $\alpha = k$, the group velocity of the spin wave is minimum, thus making possible the use of thin films to provide substantial delay.

There is also described apparatus and method in which the power within the material can be directed at some angle to the direction of the incoming wave to provide some time delay but, more importantly, to provide switching and/or filtration of an input signal; the latter apparatus and method do not ordinarily relate to thin film although thin film may be used. Further, operation is generally in the region of $\alpha>>k$.

3,609,597
SELF-ADAPTIVE EQUALIZER FOR TIME-VARYING CHANNELS

Laurence Stanley Moye, Harlow, Essex, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 21, 1968, Ser. No. 791,832
Claims priority, application Great Britain, Dec. 7, 1967, 55743/67
Int. Cl. H04b ***3/04***
U.S. Cl. 333—18 **3 Claims**

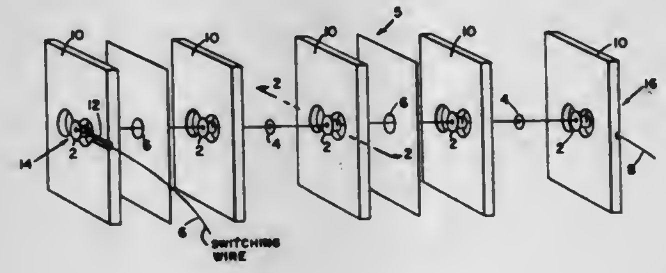


A self-adaptive equalizer is provided for use on switched telephone networks or other time-varying channels used for the transmission of digital signals. Continuous equalization of a time-varying channel is provided.

3,609,598
PERIODICALLY LOADED FERRITE PHASE SHIFTER

William G. Spaulding, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Mar. 19, 1970, Ser. No. 20,967
Int. Cl. H01p ***1/32***
U.S. Cl. 333—24.1 **4 Claims**

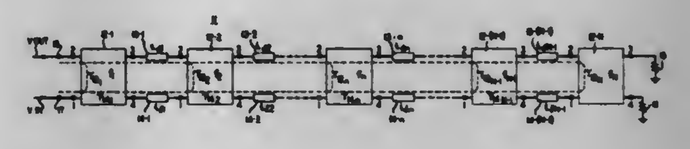


An improvement over the existing art in microwave phase shifters of the nonreciprocal class. This invention employs a toroid of ferromagnetic material which can be magnetized in at least two of its remanent states. Higher interaction with microwave energy is obtained when a periodic disturbance is introduced into the transmission line which slows the propagating wave and provides a higher degree of circular polarization in the active region of the toroid. Periodic perturbation of the electromagnetic field is accomplished by spacing partitions across the waveguide which are loaded with ferrite toroids. The dimensional spacing of the partitions is on the order of a fraction of a free-space wavelength.

3,609,599
TIME DELAY EQUALIZER UTILIZING A PLURALITY OF CASCADED DIRECTIONAL FILTERS

Robert Dean Standley, Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Mar. 18, 1970, Ser. No. 20,598
Int. Cl. H03h ***7/14***
U.S. Cl. 333—28 R **5 Claims**

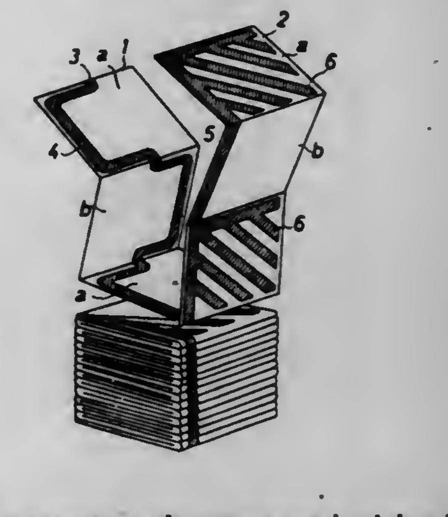


This application discloses a microwave delay equalizer which utilizes a cascade of directional filters interconnected by delay networks. Control of the delay characteristic is achieved by appropriately selecting the center frequencies and response characteristics of the filters and the delay times of the interconnecting delay networks.

3,609,600
DISTRIBUTED PARAMETERS DELAY LINE, ON FOLDED SUPPORT

Georges Kassabgi, Pregnana Milanese, Milano, Italy, assignor to General Electric Information Systems, S.p.A., Caluso (Torin), Italy

Filed Nov. 27, 1968, Ser. No. 779,428
Claims priority, application Italy, Nov. 27, 1967, 23,162A/67
Int. Cl. H03h ***7/32***
U.S. Cl. 333—31 R **14 Claims**



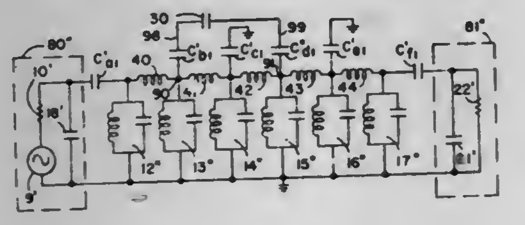
A distributed parameter electromagnetic delay line is obtained by superimposing insulating thin foldable substrates carrying conductive patterns, which form, when folded in accordionlike fashion, a helicoidal winding composed of a plurality of turns interleaved with grounded conducting areas. As an alternate construction, a single insulating substrate carrying conductive patterns on both sides may be used.

3,609,601
MONOLITHIC FILTER HAVING "M" DERIVED CHARACTERISTICS

Howard D. Phillips, Beverly Hills, and Edward M. Frymoyer, Santa Ana, both of Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Jan. 12, 1970, Ser. No. 2,208
Int. Cl. H03h ***9/00, 9/20, 9/32***
U.S. Cl. 333—72 **8 Claims**

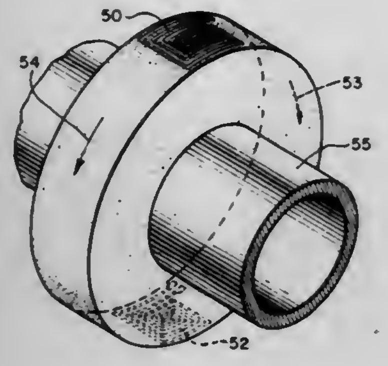
A plurality electrode pairs are formed on a monolithic crystal substrate so that the resonator formed by each electrode pair is coupled acoustically to the next successive resonator, with suitable input and output transducer means associated with the first and last resonators. Discrete capacitor means connect the first electrodes of first and second pairs of electrodes to the second electrodes of said first and second pairs of electrodes. A bridging capacitor, having an order of magnitude of said first discrete capacitor means is connected between said two first electrodes. A signal passing through this bridging capacitor is 180° out-of-phase with the signal passing through filter resonators at the upper and lower limits of the filter passband to produce attenuation poles at said upper and lower limits.



3,609,602
ACOUSTO-ELECTRIC SIGNAL TRANSLATION SYSTEM

Adrian J. De Vries, Elmhurst, and Fleming Dias, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 4, 1968, Ser. No. 710,118
Int. Cl. H03h *9/00*
U.S. Cl. 333—72 **7 Claims**



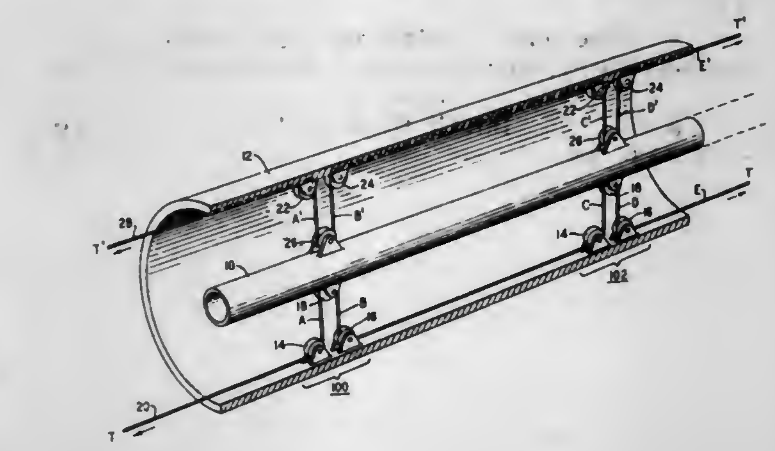
A body of piezoelectric material propagates acoustic surface waves. For launching or absorbing those waves, an electrode array is coupled to a surface portion of the body. The array includes a bifilar coil comprising a pair of windings coiled over the surface. A source or load is coupled between one end of one winding and the remote end of the other winding, with the remaining ends of both windings coupled together. The spacing between adjacent turns of the windings is effectively one-half the wavelength of the acoustic waves at the operating frequency. The bifilar winding is shown either in a form where it is coiled around a cylinder or where it is nested concentrically on a surface. In one species, an input transducer launches waves in two directions around a cylinder, and an output transducer absorbs waves coming from both of the two directions. The bifilar coil contributes an inductive reactance to compensate the clamped capacitance of the transducer.

3,609,603
WAVEGUIDE SUPPORT SYSTEM USING CONSTANT TENSION CORD AND PULLEY ARRANGEMENTS

Milton Lutchansky, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 27, 1970, Ser. No. 40,767
Int. Cl. H01p *3/12;* **F16l** *7/00, 3/20*
U.S. Cl. 333—95 **6 Claims**

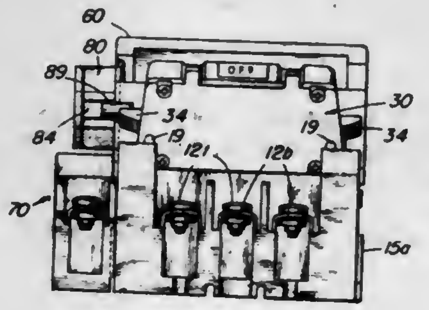
The performance of waveguide transmission lines is critically dependent upon maintenance of proper alignment of the waveguide. Thus the waveguide must be isolated from vibrations, deformations and other disturbances in the surrounding terrain. This may be accomplished by placing the waveguide in a conduit and supporting the waveguide therein by a cord and pulley arrangement.



3,609,604
ELECTROMAGNETIC CONTACTOR WITH SUPPLEMENTARY SWITCHING DEVICES AND MOUNTING THEREFOR

Harold E. Schleicher, West Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Division of Ser. No. 704,363, Feb. 9, 1968, Pat. No. 3,551,859.
Filed June 17, 1970, Ser. No. 47,082
Int. Cl. H01h *45/02*
U.S. Cl. 335—132 **6 Claims**



An electromagnetic switching device made of insulation bodies on which are supported fixed contacts, a movable contact carrier, and electromagnetic operating means.

Provision is made on the bodies for the attachment and annexation of supplementary poles and/or auxiliary smaller switches by interengagement and interlocking of the casings with formations that are provided on the main device so that when the bodies of the main device are assembled together they hold the supplementary or auxiliary devices.

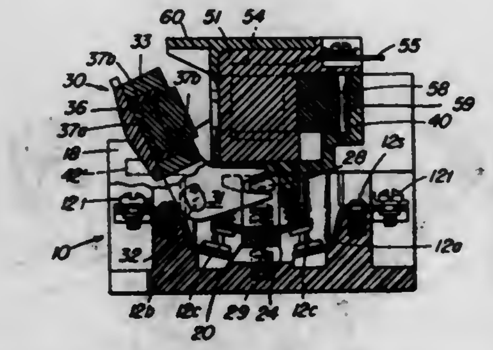
3,609,605
CUSHION MOUNTING FOR ARMATURE IN ELECTROMAGNETIC CONTACTOR

Harold E. Schleicher, West Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Division of Ser. No. 704,363, Feb. 9, 1968, Pat. No. 3,551,859.
Filed June 17, 1970, Ser. No. 46,845
Int. Cl. H01h *3/60*
U.S. Cl. 335—193 **6 Claims**

An electromagnetic switching device made of insulation bodies has a molded insulation armature which is apertured to receive a laminated armature having extensions overlying

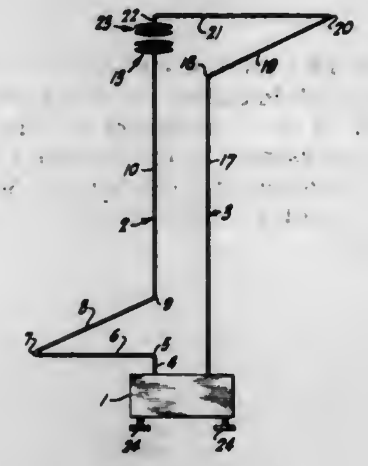
the back edges of the aperture. A cover over the back of the aperture holds the armature in place. Cushions of resilient shock-absorbing material are inserted between the back cover and the armature.



3,609,606
MAGNETIC KINETIC SCULPTURE

William D. Podesto, 2200 Sixth Ave., Seattle, Wash.

Filed Dec. 10, 1969, Ser. No. 883,697
Int. Cl. H01f *7/00*
U.S. Cl. 335—209 **5 Claims**

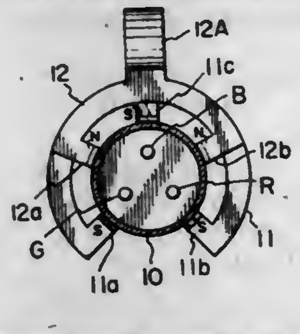


A magnetic kinetic amusement device and sculpture in which a pair of permanent magnets are separately supported by spring wires above a supporting base in spaced, substantially opposed relation with their corresponding poles adjacent each other, the supporting wires being shaped to enable universal random movement of the magnets relative to each other, and to support the magnets with their fields of force interlapping to effect prolonged random movement of the magnets due to repulsion of their corresponding poles when one magnet is forcibly moved relative to the other, and released.

3,609,607
LATERAL MAGNET ASSEMBLIES

Takeyoshi Sohma, Funabashi, Japan, assignor to Denki Onkyo Company, Limited, Nishirokuzo, Ohota-ku, Tokyo, Japan

Filed May 28, 1970, Ser. No. 41,470
Int. Cl. H01f *1/00*
U.S. Cl. 335—212 **3 Claims**

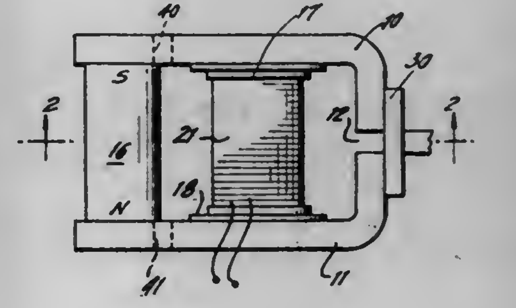


A lateral magnetic assembly adapted to be mounted on the neck of a color cathode-ray tube to adjust color electron beams is comprised by a first magnetic member having three equally spaced-apart radial projections, a second magnetic member having two radial projections each interposed between adjacent radial projections of the first magnetic members, inner ends of all radial projections terminating on a circle, a permanent magnet and clamping members formed on the first and second magnetic members to rotatably support the permanent magnet.

3,609,608
MAGNETIC LATCH

Frank J. Pokorny, Hatboro, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Feb. 19, 1970, Ser. No. 12,726
Int. Cl. H01f *7/04*
U.S. Cl. 335—230 **10 Claims**

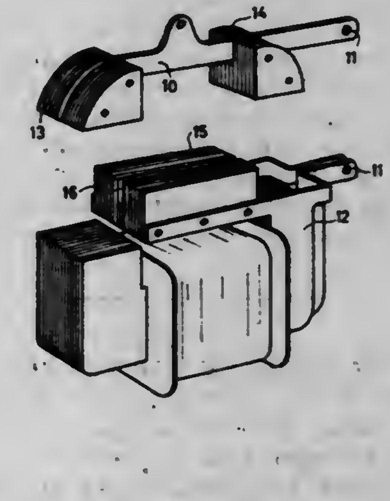


A magnetic latch for circuit interrupters in which a movable armature is attracted against pole faces in a magnetic structure by the circulating flux of a permanent magnet. A magnetic leg having a winding is magnetically in parallel with the armature and with the permanent magnet and is energized by energy derived from a circuit being protected, in response to fault conditions therein. The energization of the winding creates a flux which opposes the flux through the armature. A saturable magnetic section is provided between the coil and the permanent magnet such that the added flux of the coil saturates this section and creates a high-reluctance path between the coil and the permanent magnet path.

3,609,609
HIGH-SPEED ELECTROMAGNET

Piero Bertazzi, Caluso, Italy, assignor to General Electric Information Systems S.p.A., Caluso (Torino), Italy

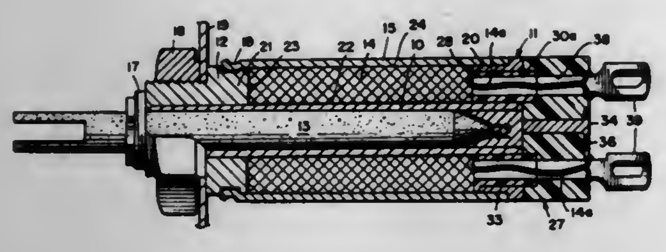
Filed Mar. 5, 1969, Ser. No. 804,585
Claims priority, application Italy, Mar. 5, 1968, 828,353
Int. Cl. H01f *7/12*
U.S. Cl. 335—249 **4 Claims**



An electromagnetic structure including a movable armature and having additional airgaps provided in the magnetic loop so that the transit time from rest position to energized position is decreased.

3,609,610
SOLENOID TERMINAL ASSEMBLY

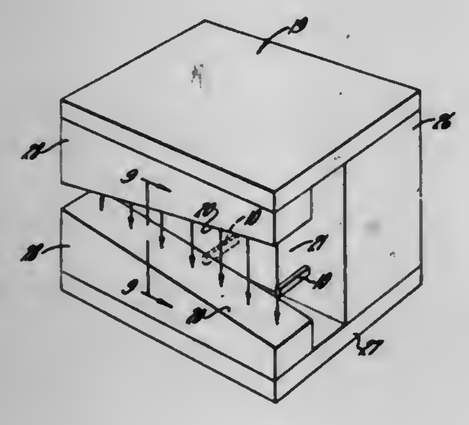
Robert W. Flentge, Roselle, Ill., assignor to Dormeyer Industries, Inc., Chicago, Ill.
Filed May 12, 1970, Ser. No. 36,564
Int. Cl. H01f *7/00*; **H01h** *45/02, 45/04*
U.S. Cl. 335—278 **14 Claims**



A terminal assembly for a tubular solenoid including a terminal cap having a pair of terminals secured thereto with openings therethrough which receive leads from the solenoid coil and may be attached to the terminals. An insulator is provided to coact with metal parts of the solenoid to enable the coil leads to be completely insulated therefrom.

3,609,611
METHOD AND APPARATUS FOR STABILIZING PERMANENT MAGNETS

Robert A. Parnell, 648 Washington St., Marengo, Ill.
Filed Sept. 26, 1969, Ser. No. 861,402
Int. Cl. H01f *13/00*
U.S. Cl. 335—284 **5 Claims**

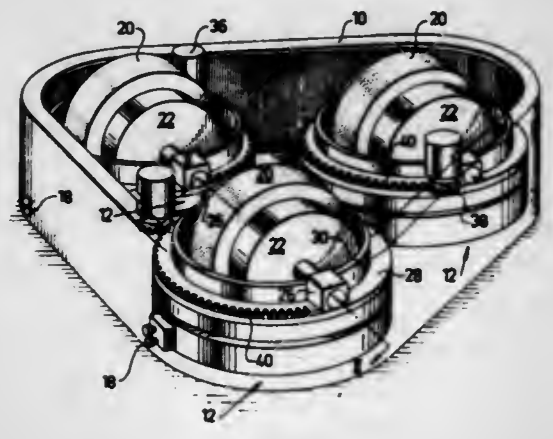


Method and apparatus for stabilizing permanent magnets, that is, reducing the flux density of a magnet in a predetermined direction to a preselected value. The magnet first is magnetized in the desired direction to a flux density greater than the preselected value and preferably to saturation. Thereafter, the magnet is progressively magnetized in a perpendicular direction and this correspondingly reduces the flux density in the desired direction. This magnetization in the perpendicular direction continues until the flux density in the desired direction has been reduced to the preselected value.

3,609,612
CARRIAGE OR TROLLEY FOR TRAVEL ALONG AN UPRIGHT WALL OF MAGNETIC MATERIAL

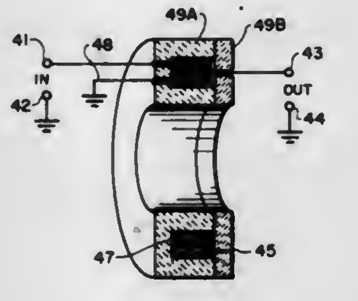
Kurt Tibbling, Solna, Sweden, assignor to Asplundpatenter Aktiebolag, Tykovagen, Lidingo, Sweden
Filed Oct. 10, 1969, Ser. No. 865,244
Int. Cl. H01f *7/20*
U.S. Cl. 335—289 **2 Claims**

Electromagnetic carriage device designed for traveling along a surface of magnetic material and having runner wheels contacting the surface, each of the runner wheels being mounted within an annular magnet, which is retained at a predetermined distance from said surface by means of the respective runner wheel.



3,609,613
LOW LOSS TRANSMISSION-LINE TRANSFORMER

Robert E. Horn, Middletown, and Octavius Pitzalis, Jr., Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 3, 1970, Ser. No. 86,498
Int. Cl. H01f *15/02, 27/28*
U.S. Cl. 336—83 **5 Claims**



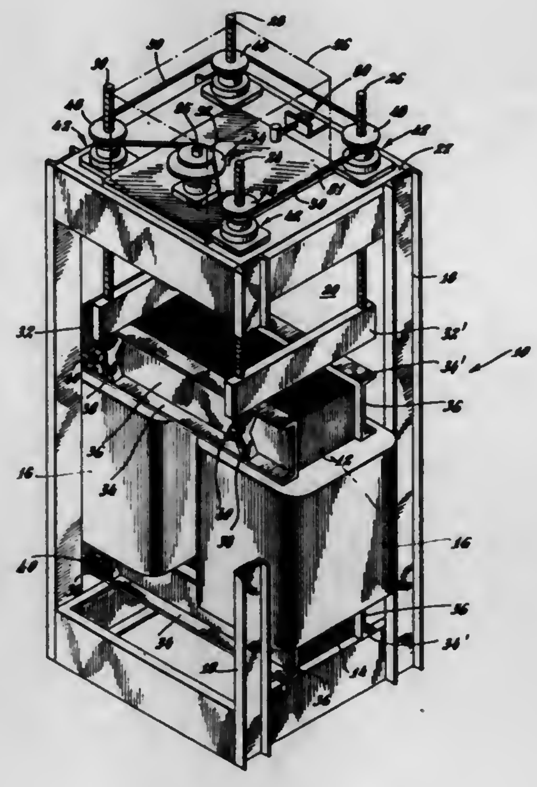
This disclosure relates to transmission-line transformers and particularly to transmission-line transformers formed of parallel-pair conductors. More particularly, this disclosure relates to parallel-stripline or ribbon-type conductors wound about the periphery of a toroidal core to form a pair of inductively coupled, series-connected loops to serve as the halves of a 4 to 1 ratio, transmission-line transformer.

3,609,614
MECHANICALLY VARIABLE HIGH REACTIVE POWER INDUCTOR FOR TESTING CAPACITIVE LOADS, SUCH AS HIGH VOLTAGE ELECTRICAL POWER TRANSMISSION CABLES

Richard Schutz, Brewster, N.Y., assignor to Hipotronics, Inc., Brewster, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,647
Int. Cl. H01f *21/06*
U.S. Cl. 336—134 **13 Claims**

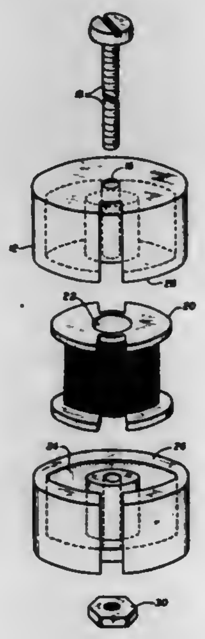
A mechanically variable high reactive power inductor is described for testing capacitive loads, such as high voltage electrical power transmission cables or large capacitors.

The inductor is formed of upper and lower separable core segments magnetically coupled to electrical windings. The cores are separated in an accurate stable manner to change the inductance of the inductor to tune the inductor into resonance with the capacitance of the load being tested to obtain effectively a series resonance condition therewith. The upper core segment is suspended from lead screws which are jointly operated by a control capable of varying speed to establish accurate gap control for improved high voltage testing capability.



3,609,615
ADJUSTABLE FERRITE CORES

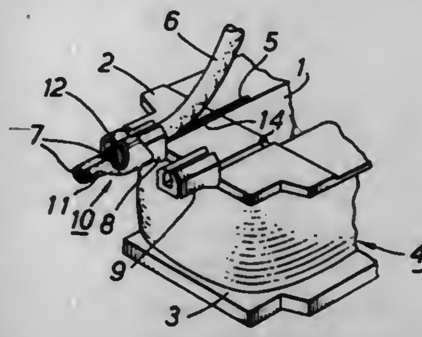
Richard G. Parker, Wallkill, and Bruce G. Tolen, Goshen, both of N.Y., assignors to Fair-Rite Products
Filed May 21, 1970, Ser. No. 39,327
Int. Cl. H01f *27/24*
U.S. Cl. 336—178 **13 Claims**



Two halves of a pot core permanently joined together by a mixture of a chemically setting adhesive material and deformable, preferably hollow, plastic type bubbles. The halves are held in position by a center screw which adjusts the parts against each other to a close tolerance fixed inductance while the gapping material therebetween cures, preferably at air or room temperature, the center screw (or outside clamps for C-cores or E-cores) may be removed after the two halves are permanently secured to each other.

3,609,616
BOBBIN ASSEMBLY

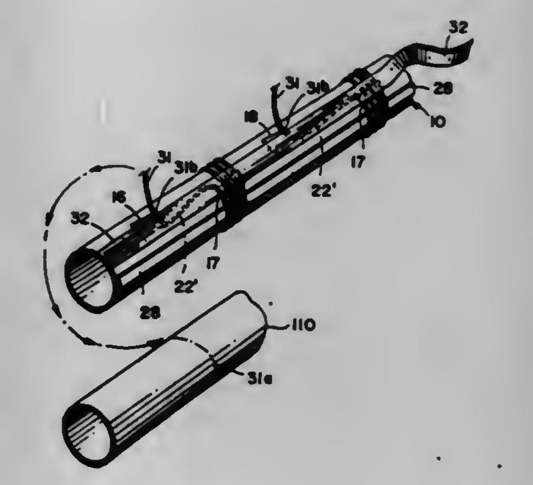
Daniel Dumeige, Amiens, France, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 4, 1970, Ser. No. 86,818
Claims priority, application France, Nov. 18, 1969, 69.39690
Int. Cl. H01f *15/10*
U.S. Cl. 336—192 **6 Claims**



A bobbin assembly comprising a flanged bobbin of electrically insulating material, a coil of enameled wire wound on the bobbin, and a supply lead electrically connected to one end of the wire of the coil, including a projection on a flange of the bobbin, and a connector element having a first portion crimped about an end portion of the wire of the coil and the supply lead and having a second portion crimped about the supply lead and the projection on the flange of the bobbin.

3,609,617
ELECTRICAL INDUCTANCE AND METHOD

Edwin C. Rechel, 85 Lancaster Road, Shirley, Mass.
Filed Nov. 12, 1970, Ser. No. 88,654
Int. Cl. H01f *15/10, 41/00*
U.S. Cl. 336—192 **5 Claims**

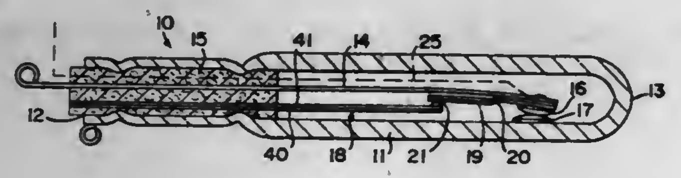


An electrical inductance is formed from a coil form provided with a pair of axially aligned, spaced-apart generally U-shaped slits which provide a pair of tabs foldable outwardly for use in anchoring the wire. A plurality of turns of wire are wound about the coil form over the opening provided by one outwardly folded tab, and the wire is then turned around the first tab and then around the other tab. A strip of tape is then laid down over the tabs and therebetween to anchor the wire in place during extraction to provide an internal lead for the inductance.

3,609,618
THERMOSTAT WITH OVERLAPPED BIMETAL CONTROL STRIPS THEREIN

Alton R. Wells, 4573 West Trade Winds Ave., Lauderdale-by-the-Sea, Fla.
Filed Apr. 29, 1970, Ser. No. 33,014
Int. Cl. H01h *37/52, 61/013, 61/06*
U.S. Cl. 337—95 **8 Claims**

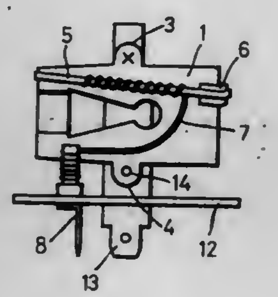
A thermostat, thermal protector, or the like is provided including a shunt strip extending into the casing in cantilever form and where a pair of opposed contacts are usually carried by the free end of the shunt arm and the inside wall of the case in opposed relation. A bimetal strip is secured as a cantilever and its free end overlaps with the free end of a second bimetal strip secured to the shunt arm adjacent the free end thereof and extending towards the secured end of the first bimetal strip to overlap the first bimetal strip and normally have the free ends thereof in pressure contact.



3,609,619
SNAP-ACTING FLASHER SWITCH

Masamitsu Nakano, Yokohama, and Kazumi Shinozuka, Itakomachi, Namekatagun, both of Japan, assignors to Nagatoshi Suzuki, Otaku, Tokyo City, Japan

Filed Oct. 24, 1969, Ser. No. 869,068
Claims priority, application Japan, Nov, 30, 1968, 103908/1968
Int. Cl. H01h *37/02, 37/46*
U.S. Cl. 337—136 **1 Claim**

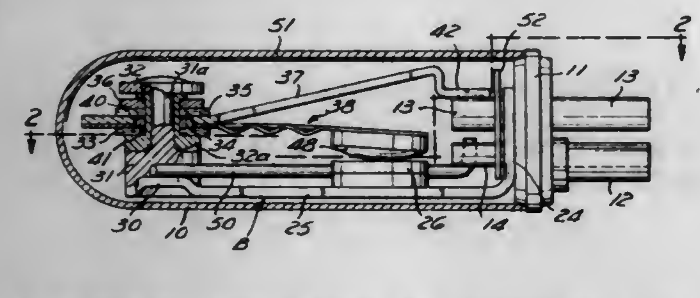


The snap-acting flasher switch comprising an insulated base, a supporting terminal and a high-resistance wire terminal carried by said base, an elongated rectangular resilient vane secured at the top to the supporting terminal. Said vane is provided with a combined circular and triangular opening and prestressed by crimping the edge adjacent to the base of the triangular opening. A thermally expansible and contractable ribbon is arranged in spaced relation along the inner face of the vane and secured under tension at its ends to the edges of the vane so as to stress the vane against the force of the prestressing thereof to hold the vane inwardly. The vane is provided with a movable contact cooperative with the stationary contact attached to the supporting terminal. Around the ribbon, a high-resistance wire is wrapped with its end electrically connected to said ribbon while the other end being connected to the terminal.

3,609,620
THERMOSTATIC SWITCH

Paul R. Lee, Mansfield, Ohio, assignor to Essex International, Inc.

Filed Oct. 13, 1969, Ser. No. 865,792
Int. Cl. H01h *61/02*
U.S. Cl. 337—102 **7 Claims**

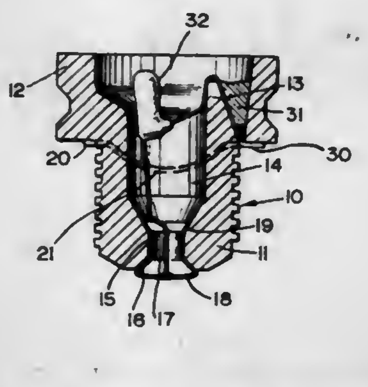


A thermostatic switch having an L-shaped metal base attached to a header which closes one end of a metal housing. Supported from the base, and insulated from it, is a cantilever-mounted bimetal switch blade carrying a mobile contact on its free end for engagement with a stationary contact on the base. A main heater extends between a terminal carried by the header and the mounted end of the bimetal switch blade at the latter's low expansion side. An auxiliary heater extends between the base and another terminal carried by the header at the high-expansion side of the switch blade. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,609,621
TIME DELAY FUSE

Paul P. Danesi, Attleboro Falls, Mass., assignor to Cable Electric Products Inc., Providence, R.I.

Filed Jan. 20, 1970, Ser. No. 4,380
Int. Cl. H01h *85/10, 85/62*
U.S. Cl. 337—166 **3 Claims**

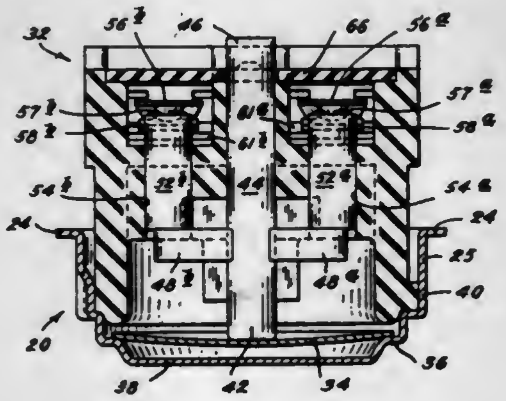


A time delay fuse which is particularly adapted to eliminate failures during a short circuit test. The device uses a high refracting silicon material admixed with a metallic salt which acts as the heat sink. This material replaces the usual additional fusable metal, but will not dissolve or vaporize during a short circuit. Pressures are reduced and the fuse will not burst or otherwise fail.

3,609,622
THERMOSTATIC DEVICE AND MEANS FOR MOUNTING SAME

John Pringle, Elizabeth Vale, and Guillermo Eugen Pecker, Elizabeth, both of Australia, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 25, 1969, Ser. No. 836,354
Claims priority, application Australia, July 1, 1968, 39,932/68
Int. Cl. H01h *37/04, 37/08, 37/54*
U.S. Cl. 337—354 **4 Claims**

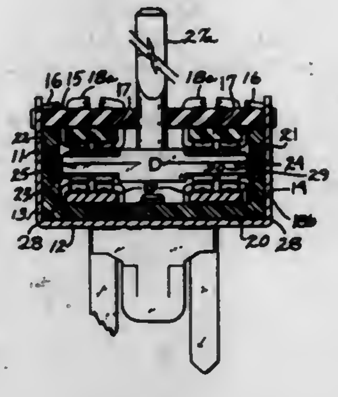


A thermostatic device including a housing containing a bimetallic disc or strip which engages a cruciform-shaped member, the cross arm of which engages a pair of pins which bear against leaf-spring-type movable contact arms while the stem of the cruciform-shaped member can form reset means providing a simple means for resetting the disc. Mans for mounting the thermostatic device include a plate supporting a plurality of springs, each spring in turn urging a housing of the thermostatic device in a direction away form the plate of the device so that when the plate is secured to a surface the temperature of which is to be sensed, the springs urge the thermostatic housing into contact with the surface.

3,609,623
VARIABLE RESISTANCE CONTROL HAVING HINGED BASED MEMBER

John Zdanys, Jr., Edwardsburg, Mich., and Norman C. Weingart, Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Dec. 22, 1969, Ser. No. 887,228
Int. Cl. H01c *9/02*
U.S. Cl. 338—183 **14 Claims**

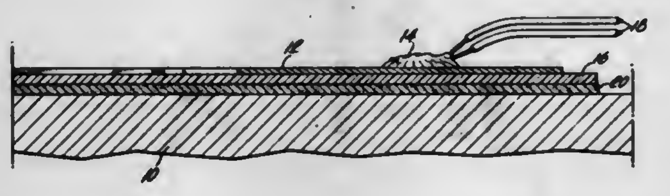


A variable resistance slide control employing a rectilinear slide carrying a contactor wipably engaging a resistance element and a conductive element supported in a housing. A pair of spaced guide means on the slider supported by resilient dielectric guide-supporting means in side members of the housing permits uniform operation of the slider. The guide-supporting means provided in the side members are of the same width throughout the entire length of the housing. The side members are integral with and hingeably secured to the bottom member. In one embodiment tolerance compensators are provided on resilient guide means of the slider for substantially eliminating pitch and yaw of the slider during movement. An operating member secured to the slider extends outwardly through a slot provided in the housing.

3,609,624
STRAIN GAGE AND METHOD OF BONDING THE GAGE TO A MEMBER UNDER TEST

Bella Nagy, Phoenixville, Pa., assignor to Vishay Intertechnology, Inc., Malvern, Pa.

Continuation of application Ser. No. 613,583, Feb. 2, 1967, now abandoned. This application Feb. 20, 1969, Ser. No. 804,357
Int. Cl. G01l *1/22*
U.S. Cl. 338—2 **8 Claims**

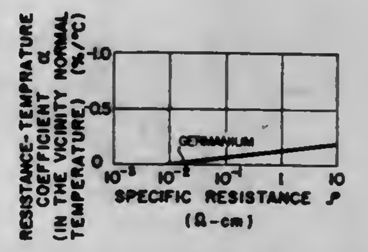


A strain gage of the electrical resistance type is disclosed herein which has improved adhesive means to attaching the gage to a member under test. The adhesive is applied to the gage at the time of manufacture and includes a thermosetting adhesive composition which is substantially nontacky at room temperature, and upon heating to a first elevated temperature wets the surface of the test piece in contact therewith and when heated to a second higher temperature, is converted to the infusible, insoluble state.

3,609,625
SEMICONDUCTOR STRAIN GAUGE

Osamu Watanabe, and Takeshi Shiota, both of Tokyo, Japan, assignors to Kyowa Electronic Instruments Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 615,773, Feb. 13, 1967, abandoned
Filed Apr. 15, 1969, Ser. No. 816,884
Claims priority, application Japan, Feb. 15, 1966, 41/8594
Int. Cl. G01l *1/22*
U.S. Cl. 338—3 **3 Claims**

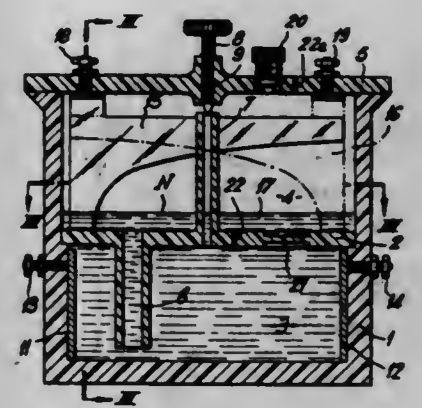


A temperature-compensated strain gauge for affixing to a specimen, fabricated from a vacuum-evaporated thin film semiconductor of P-type germanium bonded to a suitable substrate. The specific resistance of the germanium is selected so that the resistance-temperature coefficient of the gauge when attached to the specimen is substantially equal to zero.

3,609,626
LIQUID RESISTOR APPARATUS

Norbert Roger Beyrard, Paris, France, assignor to Association des Ouvriers en Instruments De Precision, Paris, France, a part interest

Filed Mar. 18, 1969, Ser. No. 808,274
Claims priority, application France, Mar. 27, 1968, 145,623
Int. Cl. H01c *11/00*
U.S. Cl. 338—38 **7 Claims**



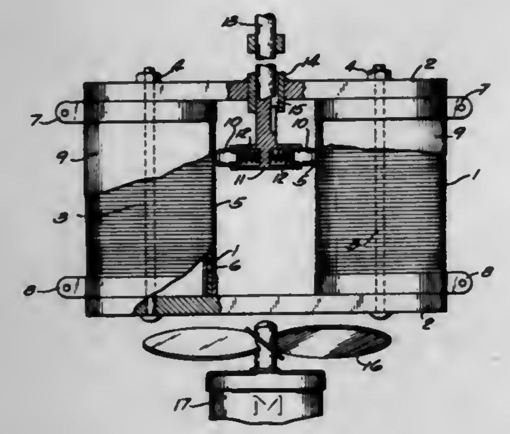
Liquid resistor apparatus in which electrically conductive liquid is transferred from a control chamber to a controlled chamber, thereby affecting the electrical resistance between electrodes in the controlled chamber, as a result of evaporation of liquid in the control chamber by control current passed therethrough, there being a liquid passage and a restricted vapor passage connecting the two chambers. The restriction in the vapor passage is set during operation and may be adjustable to govern the operating characteristics of the apparatus.

3,609,627
ADJUSTABLE RESISTOR

Lionel E. Weyenberg, N35 W23575 Capitol Drive, Pewaukee, Wis.

Filed Nov. 25, 1968, Ser. No. 778,731
Int. Cl. H01c *1/08*
U.S. Cl. 338—53 **6 Claims**

An adjustable resistance device including a plurality of tubular casings formed of a material having a high rate of thermal conductivity. A resistance coil is wound around the outer surface of each casing and bonded to the casing by an electrically insulating, high-temperature binding material. A sliding contact is mounted for longitudinal movement along each resistance coil and by adjusting the position of the contact the portion of the resistance coil connected in the circuit can be varied.



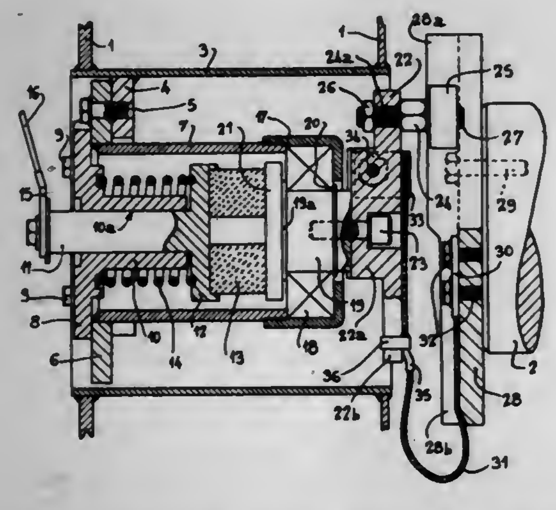
A fan or other fluid-moving device is associated with the tubular casings and acts to circulate air within the interior of the casings. Heat generated within the resistance coil is dissipated by conduction through the tubular casings and by convection to the air passing within the casings.

ERRATUM

For Class 338—128 see:
Patent No. 3,609,648

3,609,628
CURRENT-TRANSMITTING DEVICES FOR THE AXLES OF ELECTRIC RAILWAY VEHICLES

Louis Cabaussel, Villeurbanne, France, assignor to Societe "Lucien Ferraz & Cie", Rhone, France
Filed Oct. 13, 1969, Ser. No. 865,558
Int. Cl. H01r *39/64*
U.S. Cl. 339—3 **7 Claims**

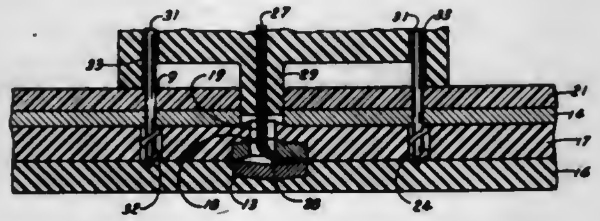


A current-transmitting device interposed between the frame of an electric railway vehicle and an axle comprises a nonrotating member and a rotating member resiliently urged against the nonrotating member so as to form therewith a rotating contact unit. The said unit is carried by the frame in front of one of the ends of the axle and the rotating member is mechanically coupled with the axle end by a universal coupling so as to rotate in unison therewith in spite of the various displacements of the axle with respect to the frame. A flexible conductor forms a deformable electric connection between the rotating member and the axle end.

3,609,629
DUCTLESS ELECTRICAL FLOOR COVERING CONDUCTING SYSTEM, AND COMPONENTS THEREFOR

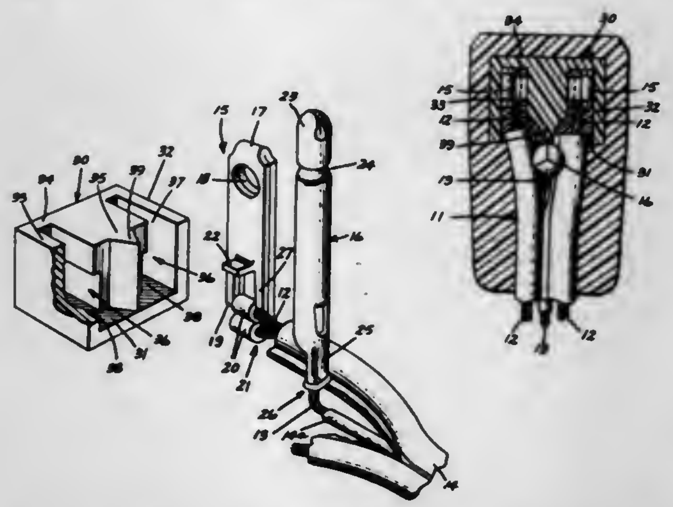
William B. Tenery, 36053 Haley St., Newark, Calif.
Filed July 7, 1969, Ser. No. 839,385
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **11 Claims**

A ductless electrical conducting system comprises a flexible strip structure forming part of floor covering on a floor foundation, and having laterally spaced conductors and a protective ground strip thereover, all insulated from each other. Access openings in the top of the strip structure for electrical connectors and for fastening screws to attach a connector device, are provided with removable plugs when connection is required. Sets of such access openings at predetermined locations along the strip structure enable selection of locations for electrical connection.



3,609,630
DOUBLE INSULATED PLUG

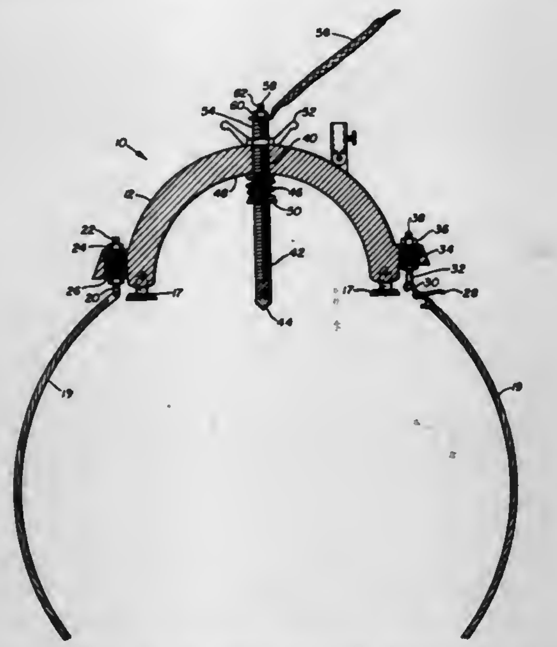
Wallace R. Francis, Milford, Conn., assignor to General Electric Company
Filed Apr. 2, 1969, Ser. No. 812,597
Int. Cl. H01r *9/08, 11/02*
U.S. Cl. 339—14 P **2 Claims**



A double insulated plug includes a preformed housing of insulating material. The plug contacts and corresponding conductors of a cord are electrically and mechanically joined to form connections. The connections are received in the preformed insert in spaced-apart relationship with the insert substantially encasing the connections. A body of insulating material is molded around the insert and the connections.

3,609,631
ADJUSTABLE GROUND CLAMP

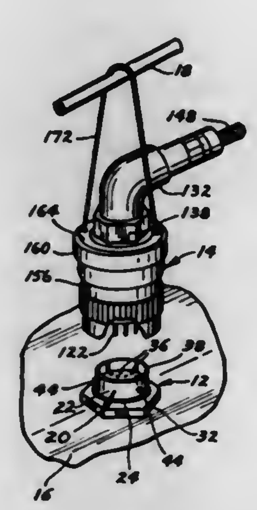
Robert L. Looney, 4816 South Madison, Tulsa, Okla., and John S. Work, 3742 East 45th Place, Tulsa, Okla.
Filed Jan. 23, 1969, Ser. No. 793,520
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 **8 Claims**



A ground clamp for a pipe-welding apparatus includes an arcuate support member positionable upon and insulated from the work to be welded and flexible chain or cable means attachable to the support frame, and adjustable and lockable to secure the ground clamp into position upon the work. The support frame includes a sharply pointed grounding member biasable against the work to be grounded and having one end in ground connection to the welding apparatus. The ends of the ground clamp resting upon the work includes insulating members to insulate the frame from the work and the point of connection of the flexible chain or cable may also include insulating means to insulate the chain or cable from the work.

3,609,632
RELEASABLE ELECTRICAL CONNECTOR

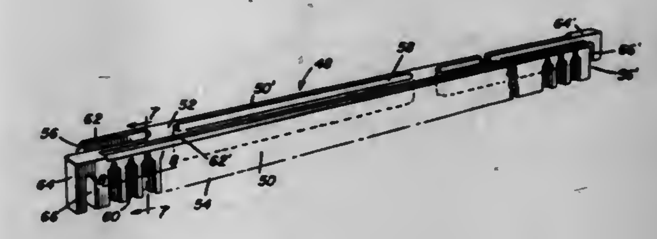
Ottomar H. Vetter, Minneapolis, Minn., assignor to TRW Inc., Cleveland, Ohio
Filed Aug. 19, 1968, Ser. No. 753,690
Int. Cl. H01r *13/62*
U.S. Cl. 339—14 **30 Claims**



A releasable electrical connector is composed of two halves or components, one being of conventional construction and having a shell provided with a plurality of socket contacts and radially directed bayonets that are latched with the other half or component constructed in accordance with the invention. After the bayonets are inserted into slots formed in a pawl carrier sleeve in the second connector half, the carrier sleeve is angularly shifted in a direction to effect latching of the pawls with the bayonets. The pin contacts are mounted in a rubber insert contained in a shell belonging to the second connector half; a grounding ring encircles the last-mentioned shell. Through helical ramp grooves formed on the exterior of the shell and antifriction rollers extending inwardly from an encircling drive sleeve, the rectilinear movement required for shell advancement is derived from rotation of the drive sleeve. The shell advancement first results in the spring tines of the grounding ring moving into the shell of the first connector half, then the entry of the pin contacts into the socket contacts, and finally a slight facial compression of the rubber insert in which the pin contacts are mounted. The tendency for the rubber insert to expand provides a seal and in conjunction with a detent formed at one end of each of the ramp grooves into which the rollers move prevents inadvertent retraction of the second shell and its pin contacts. Tension springs normally bias the shell into a retracted position, but the action of these springs is easily overcome during the coupling process. Relatively rotatable pin and groove means on the carrier and drive sleeves become effective at the end of the coupling procedure to assure that the pawls and bayonets will remain latched until their release is desired. An indicator, capable of being both seen and felt, is forced outwardly to signify that the two halves are fully mated and latched. A lanyard is anchored to the improved connector half and a 360° swiveling can be realized. When a predetermined load is applied to the two halves, they pull apart. A backshell can be securely attached in any angular position to the second connector half.

3,609,633
CIRCUIT BOARD CONNECTORS

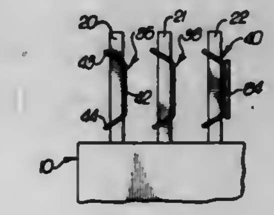
Hoke S. Hargett, 3107 Roberta, Largo, Fla.
Filed Sept. 23, 1968, Ser. No. 761,414
Int. Cl. H05k *1/04*
U.S. Cl. 339—17 **5 Claims**

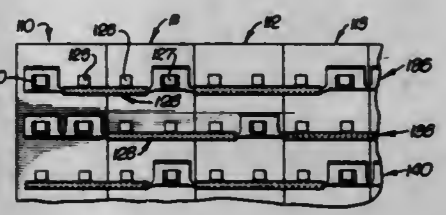


A two-part connector assembly including a female connector having asymmetrical contact elements which prevent simultaneous mechanical resonance of the elements. A mating male connector includes barbed pin contacts securely embedded within a block.

3,609,634
ELECTRICAL CONNECTOR

Vram E. Hovnanian, Sherman Oaks, and Edward Kitzmiller, Manhattan Beach, both of Calif., assignors to Logic Dynamics, Inc., El Segundo, Calif.
Filed Oct. 7, 1969, Ser. No. 864,386
Int. Cl. H01r *31/08, 11/22*
U.S. Cl. 339—19 **2 Claims**

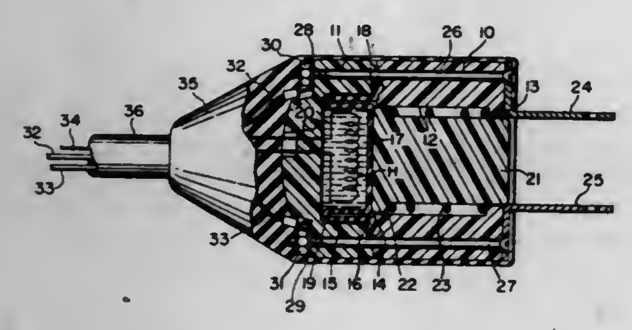




An electrical connector of resilient conductive material such as copper for attachment to a longitudinally extending terminal post. The connector may constitute one of a plurality of identical modular connectors formed integrally in a strip for electrically connecting together a number of such posts in spaced parallel relation such as wire wrap posts projecting from a plate or panel having an array of posts arranged in columns and rows. The connector includes a generally flat central web provided with a pair of integrally formed wings projecting oppositely from the web and being resiliently bendable forwardly from the plane of the web, each wing having a post-receiving aperture formed therein. In use, with a terminal post projecting through the apertures of a pair of wings, the resiliency of the material causes the wings to contact the post along the aperture distal edges and thus to retain the web in close abutment and good electrical contact with the terminal post. The entire joint is visible for inspection, and may be soldered if desired. Bypassing of a selected terminal post may be accomplished by cutting off the wings corresponding to that post, and insulating the web from contact with the bypassed post, as by a sleeve of dielectric material surrounding the web. A backing strip of conductive material may be attached to the web as by spot welding, in order to increase the strength and current-carrying capacity of the strip.

3,609,635
SELF-EJECTING ELECTRIC PLUG

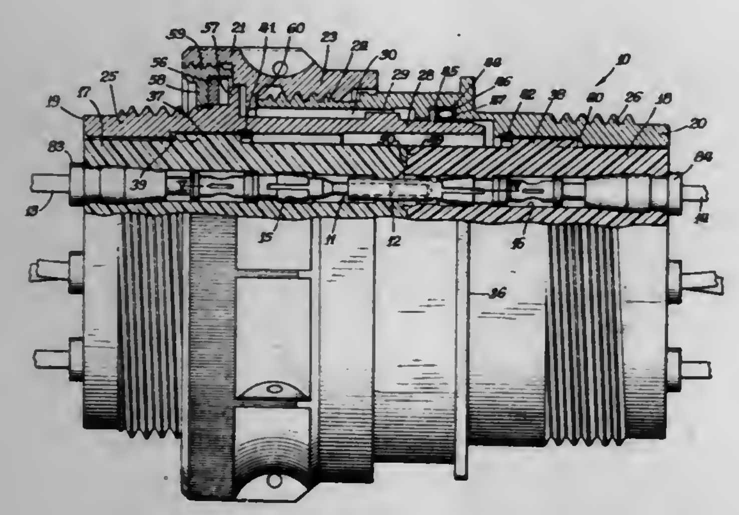
Lee M. Harris, Dayton, Ohio, assignor to Product Design & Manufacturing Corp., Willoughby, Ohio
Filed Aug. 21, 1968, Ser. No. 754,188
Int. Cl. H01r *13/62*
U.S. Cl. 339—45 5 Claims



The plug includes a plunger normally spring retracted between the prongs and a chamber containing thermally expansible material and an electric heater which is the plug cord circuit, a remote switch closure energizing the heater to expand the material against the plunger to drive it outwardly and eject the plug from the receptacle.

3,609,636
ELECTRICAL CONNECTORS

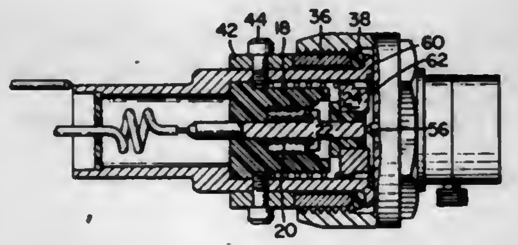
William J. Kubin, La Grange, and John K. Cameron, Hillside, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Jan. 28, 1969, Ser. No. 794,548
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 M 6 Claims



Electrical connectors having a "monodielectric" construction in which the configuration of engaging end surfaces of contact-supporting dielectric members and the characteristic of the material of the members are such as to provide a reliable fluid seal while providing firm mechanical contact support. Specific features relate to the provision of risers on one dielectric member which telescope in the ends of passages on the other, to the use of a semihard material, preferably a polymer material operable continuously at high temperatures, to the elimination of air pockets so as to provide high corona resistance, and to the use of a wave spring arrangement for obtaining optimum pressure engagement. Contact retention members are provided having spring fingers of a hard material engageable with contacts of soft material, permitting removal and replacement of the contacts without destruction of the retention member or the dielectric.

3,609,637
ELECTRICAL CONNECTOR

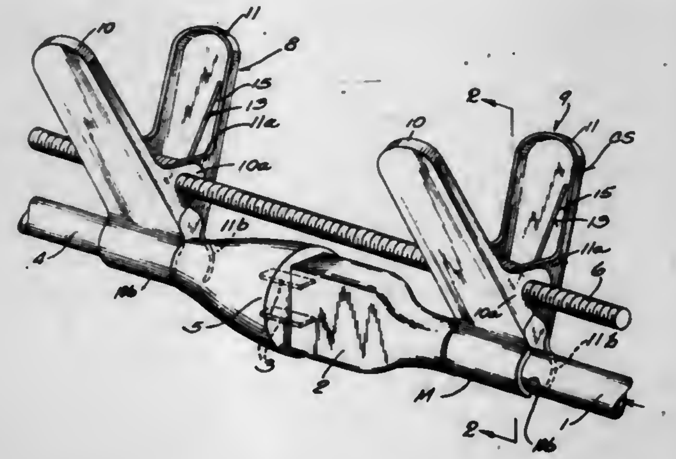
Clyde C. Cole, 5298 Harvard St., Ventura, Calif.
Filed Dec. 1, 1969, Ser. No. 881,021
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 R 1 Claim



A plug for insertion into a socket of the type having a disk-shaped base member serving as a ground connection, such base member being formed with a central opening through which projects an electrically separate spring-loaded pin contact. The invention plug incorporates a "floating" ground plate of annular configuration designed for engagement with the socket base member, and a spring-biased axial conductor in alignment with the pin contact of the socket. A feature of the plug design is that the necessity for screwing the plug into the socket is eliminated through the use of a quick-connect-disconnect lever which is manually actuatable through a small angle to cause the radial extension of a deformable O-ring, thereby securing the plug in the socket after it has been linearly inserted thereinto. This precludes the possibility of abrading small metal particles from the respective contact surfaces, as may occur in conventional designs when engagement therebetween is brought about by relative rotational movement of plug and socket.

3,609,638
EXTENSION CORD COUPLING CLAMP ASSEMBLY

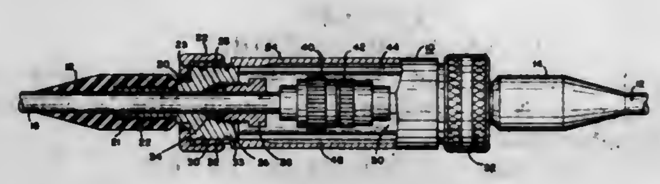
John J. Darrey, 540 South Creek Road, Racine, Wis.
Filed June 3, 1970, Ser. No. 43,024
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 P 12 Claims



An extension cord clamp assembly for detachably securing the ends of extension cords or cables together to prevent accidental disconnection of the plug and socket. The clamp assembly has a pair of spring-loaded, butterfly-type clamps which clamp on the cord ends, the clamps being mounted on a threaded, roughened or serrated rod to thereby hold them against relative displacement. The spring urges the clamps into tight and secure engagement with the rod, but permits ready adjustment along the rod when the butterfly wings of the clamps are squeezed together to release the jaws of the clamps.

3,609,639
UNDERWATER ELECTRICAL CONNECTOR APPARATUS

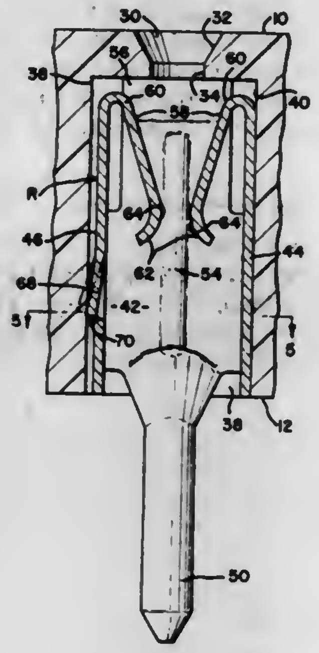
Larry W. Lind, La Mesa, Calif., assignor to United States Elevator Corporation, Spring Valley, Calif.
Filed June 30, 1969, Ser. No. 837,472
Int. Cl. H01r *13/54*
U.S. Cl. 339—89 M 7 Claims



An underwater electrical connector apparatus comprising a sealed housing in which electrical lines are electrically connected by an electrical connector, and which housing has a cylindrical shape with cylindrical end seals, through which electrical lines pass, which seals are drawn together by end collars with an insulating spacer sleeve that fits around the electrical connector and correctly spaces the seal members to achieve correct connection of the electrical lines, and which structure allows the housing to be entirely removed slidably from the structure while maintaining electrical connection of the electrical connector.

3,609,640
PRECISION RECEPTACLE ALIGNMENT SYSTEM

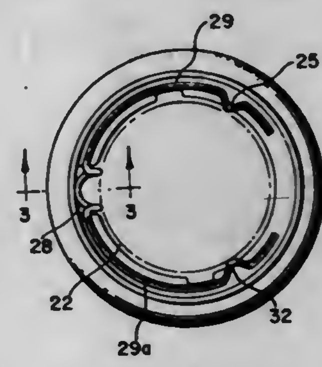
Bruce Cameron Longenecker, Harrisburg, and Charles Edward Reynolds, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 17, 1969, Ser. No. 877,352
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R 8 Claims



A system is disclosed which features precision alignment of receptacles having depending terminals thereon within headers adapted to receive integrated circuit components thereon. The individual header is made of a suitable insulating material and has a plurality of apertures therein, each of which has two intersecting surfaces precisely located relative to a master reference point. The receptacles have plural spring means thereon which bias the receptacle into the corner defined by the intersecting surfaces. The receptacles also have spring contact fingers at the end opposite the depending terminal for receiving posts or leads form an integrated circuit component. The header has located thereon plural latching features for positively retaining thereon an integrated circuit component.

3,609,641
FLEXIBLE BULB SUPPORT MEANS

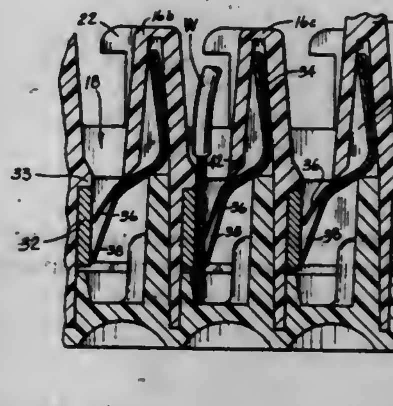
Edward J. Luce, Wayland, and Joseph F. Arnao, Needham, both of Mass., assignors to TRW Inc., Cleveland, Ohio
Filed June 18, 1969, Ser. No. 834,258
Int. Cl. H01r *33/12*
U.S. Cl. 339—93 3 Claims



This a bulb-support means which has a flexible element protruding into the cavity for engagement with a bulb to hold the bulb against excessive movement when it is subjected to shock or vibration. One type of support means uses a flexible metal spring member and another type uses an element formed of rubber or elastomer.

3,609,642
WIRE TERMINALS

Alexander R. Norden, 350 Central Park West, New York, N.Y.
Division of Ser. No. 563,248, July 6, 1966, Patent No. 3,417,368.
Filed Dec. 4, 1968, Ser. No. 804,029
Int. Cl. H01r *9/08*
U.S. Cl. 339—95 D 7 Claims

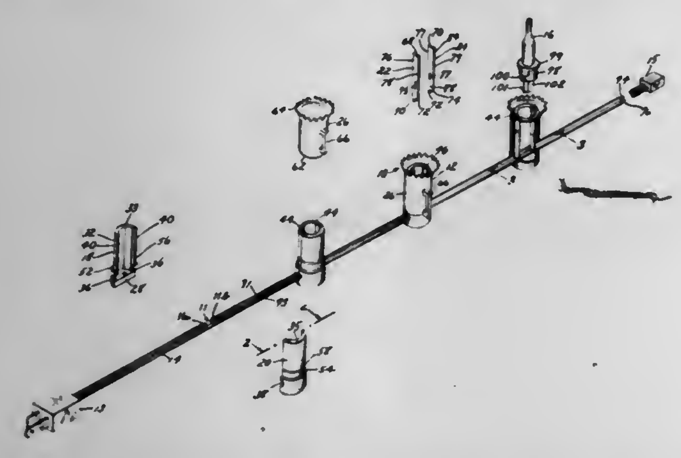


A terminal block in which there are plural groups of wire-receiving guide passages, each group being for wires to be connected to each other. For each group of passages (three to a group in the example shown) there is an internal metal strip that is relied on primarily for the electrical connection. A leaf spring member has separately resilient portions for biasing inserted wires against the metal strip. Each leaf spring portion inclines toward the wire and extends along the wire in the direction of insertion, forming an acute angle to the wire. The edge of the leaf spring at the end of each wire-engaging portion tends to dig into the wire when resisting pull applied to the wire.

3,609,643
DECORATIVE MIDGET LIGHT STRING

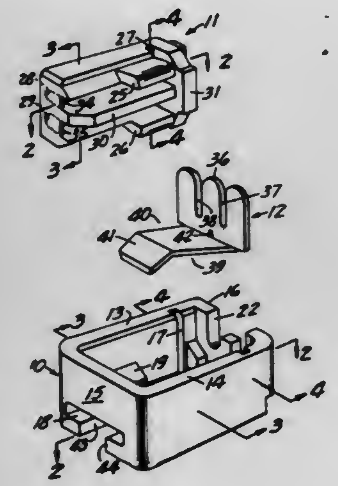
Maxwell H. Connan, 53 Roosevelt Ave., Glen Head, N.Y.
Continuation-in-part of application Ser. No. 736,668, June 13, 1968, now abandoned. This application Feb. 25, 1970, Ser. No. 14,108
Int. Cl. H01r *7/04*
U.S. Cl. 339—97 L 2 Claims

A string of decorative miniature light bulbs arranged in a series connection, and predeterminately spaced along a piece of standard parallel insulated electric conductor wire, in which the bulb sockets clamp upon the wire, make solderless connection therewith, and disengageably receive the bulbs; and methods for fabricating the same.



3,609,644
MAIN FRAME CONNECTOR AND METHOD

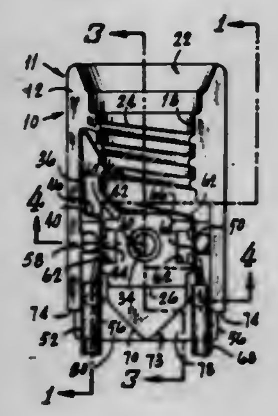
William J. Seim, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 20, 1969, Ser. No. 867,532
Int. Cl. H01r *9/08*
U.S. Cl. 339—98 2 Claims



A solderless connector for making spring reserve electrical contact between a main frame post and a pair of insulated wires in a communications installation.

3,609,645
INCANDESCENT LAMPHOLDERS, ESPECIALLY OF THE CANDELABRA SOCKET TYPE

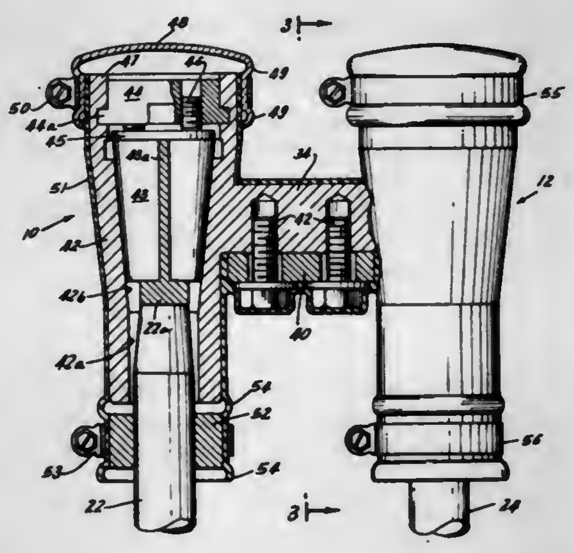
David H. Turner, Trenton, N.J., assignor to Circle F. Industries, Inc.
Filed Sept. 24, 1969, Ser. No. 860,581
Int. Cl. H01r *13/58, 17/20*
U.S. Cl. 339—107 4 Claims



An incandescent lampholder, usually of the miniature or "-candelabra" type and designed for use by original equipment manufacturers, is former at its base end with a pair of wiring openings or wireways that are defined by a triangular or wedge-shaped divider, the walls of which converge toward said end. Each wireway opens upon both the bottom and side of the lampholder, so that the wires can exit from the lampholder in a direction normal to the longitudinal axis thereof, parallel or oblique thereto, or in any combination of these directions.

3,609,646
CONNECTOR ASSEMBLY

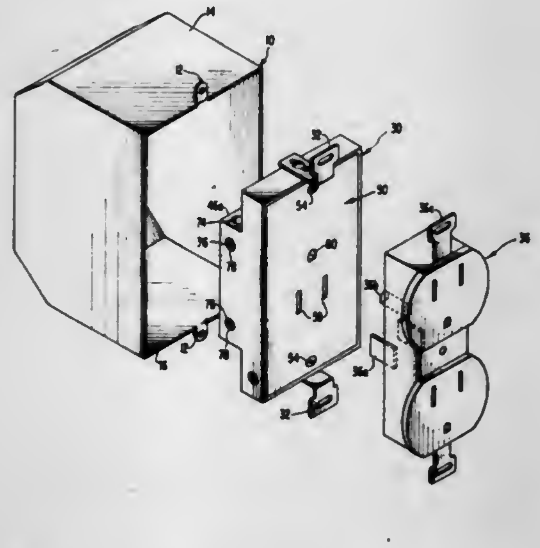
Stephen P. Becker, and Henry R. Wengen, both of Poughkeepsie, N.Y., assignors to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.
Filed Mar. 6, 1969, Ser. No. 804,837
Int. Cl. H01r *3/02, 3/06*
U.S. Cl. 339—116 3 Claims



A rugged and compact connector assembly for a plurality of connections for direct burial applications providing permanent, watertight, insulated junction means, in which a plurality of connectors are provided for attachment to a bus bar in such manner that the user can select the direction in which a conductor will enter the connector and the direction from which the attaching means for conductor to connector is accessible.

3,609,647
ELECTRICAL RECEPTACLE

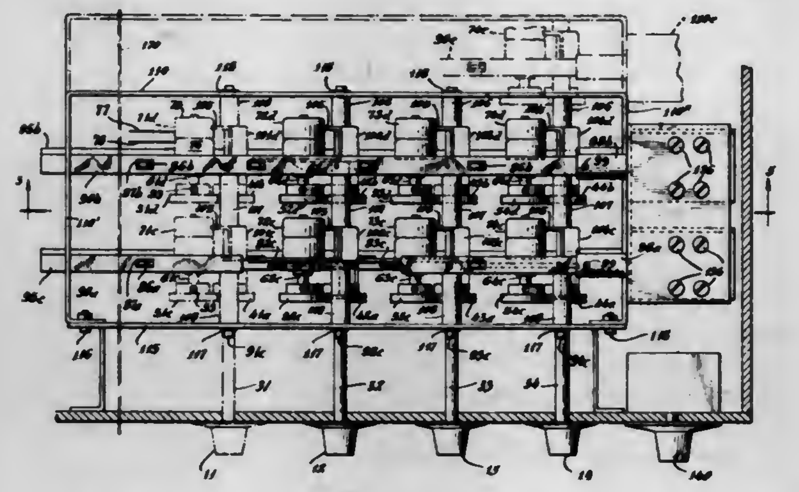
Angelo Castellano, 2710 Walnut St., Tampa, Fla.
Filed Dec. 19, 1968, Ser. No. 785,264
Int. Cl. H01r *13/60*
U.S. Cl. 339—122 19 Claims



An electrical receptacle adapted to be secured in a power outlet box for interconnecting the prongs of a plug receptacle or wall switch to the powerlines leading into the outlet box. The receptacle has a plastic casing including a pair of metallic tubular conductors extending along opposite sidewalls of the casing against the backwall of the casing. Powerlines extend through the tubular conductors and are secured thereto by screws mounted transversely in the sidewalls of the tubular conductors. A plastic cover plate closes the receptacle and has three apertures respectively aligned with two conductor prongs secured to the tubular conductors and a third ground prong secured in the casing between the tubular conductors. Two additional tubular conductor elements are also secured in the casing, each having a screw for securing wires therein to enable the receptacle to accommodate various wiring or switch connections. Apertures are provided in the casing in axial alignment with the tubular conductors to facilitate insertion of wires therein. Similarly, apertures are provided in the casing to expose the screws for adjustment externally of the casing.

3,609,648
SYSTEMS FOR CONTROLLING A PLURALITY OF VARIABLE FUNCTIONS OF AN INSTRUMENT

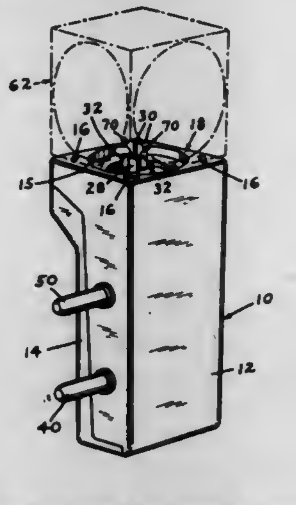
Joseph M. Sebas, Stratford, and Charles F. DeMey, II, West Redding, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed May 18, 1970, Ser. No. 38,354
Int. Cl. H01c *5/02, 9/02*
U.S. Cl. 338—128 8 Claims



In an instrument (e.g., a spectrophotometer) having various operating parameters or functions, various groupings of a particular value for each of these functions (e.g., scan time, slit program, amplifier gain, and scan suppression) can be "-set" or "stored," for example on different potentiometers, for "recall" or use. Each "set" or "stored" condition of each function may be "reset" separately, and a particular grouping (e.g., four) of these new individual function values can then be "recovered" for use together by merely "addressing" or "choosing" a particular (mode) grouping.

3,609,649
FLASHCUBE SOCKET

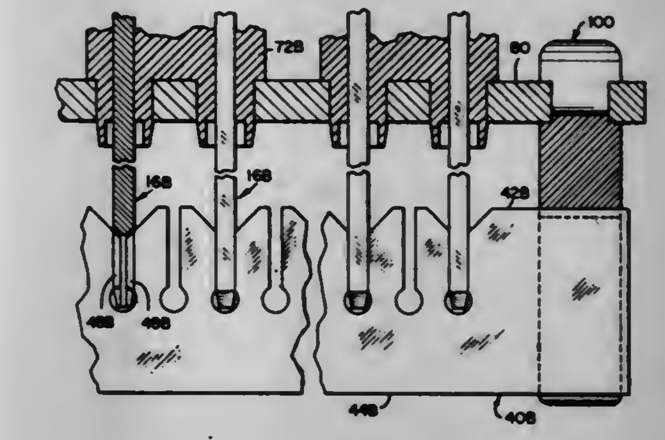
Venerio J. Rigolini, 933 East 78th St., Brooklyn, N.Y.
Filed June 13, 1969, Ser. No. 833,013
Int. Cl. H01r *3/00, 13/54, 13/62*
U.S. Cl. 339—147 P 11 Claims



A flash device including a socket arrangement for receiving and retaining flashcubes in which the socket includes a base, a stabilizing stud centrally mounted on the base and a pair of retaining fingers mounted on top of the stud is disclosed. The fingers have a projection which extends radially outwardly beyond the stud and over the flashcube center post. A pair of upwardly extending arcuate members spaced on diametrically opposite sides of the stud lie in the rotational path of the flashcube lugs so as to locate the flashcube in any one of a plurality of predetermined aligned rotational positions. The socket is preferably a one-piece molded device though it may also be constructed using separate parts.

3,609,650
BUS STRIPS AND CONTACTS

Thomas J. Stokes, Philadelphia, Pa., assignor to Elco Corporation, Willow Grove, Pa.
Continuation-in-part of application Ser. No. 759,343, Sept. 12, 1968, now Patent No. 3,562,805. This application Apr. 14, 1969, Ser. No. 815,772
Int. Cl. H05k *1/07*
U.S. Cl. 339—176 MP 4 Claims

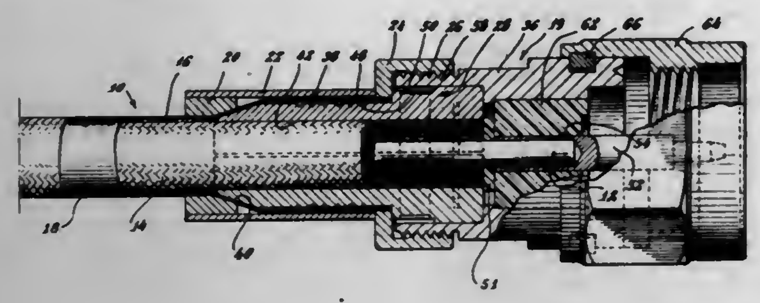


An electrical contact for use in a card-edge connector has a nose portion with a bifurcated section comprising a pair of legs separated by a bifurcating slot. At least one chamfered surface is coined into the contact below the bifurcating slot, and a bus strip is provided with a similar chamfered surface for mating with the chamfered surface on the contact when the bus strip is inserted into the bifurcating slot. In an alternative embodiment of the invention, a slit, defined in part by four chamfered surfaces, is provided in the tail portion of the contact, and the bus strip is inserted into the slit so that the chamfered surfaces of the bus strip mate with the chamfered surfaces on the tail portion of the contact. A further embodiment of this invention comprises a card-edge contact which has flat, parallel, uncoined surfaces below the bifurcating slot, and a bus strip which has a contact-receiving slot defined, in part, by inwardly facing projections having contact-engaging surfaces thereon. The bus strip is inserted into the bifurcating slot of the contact with the flat, parallel, uncoined surfaces of the contact positioned within the contact-receiving slot of the bus strip.

3,609,651
METHOD AND APPARATUS FOR SECURING A CONNECTOR TO A COAXIAL CABLE

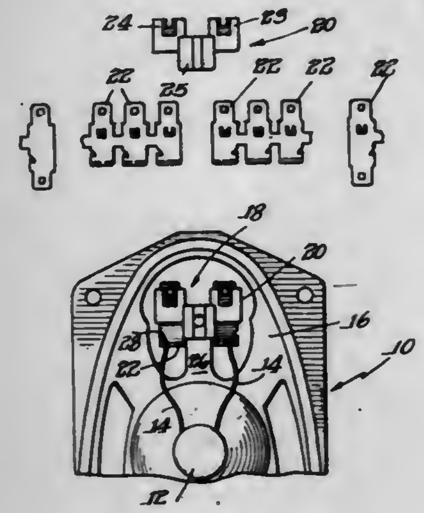
Norbert Joseph Sladek, Fairfield, and John Phillip Treschitta, Norwalk, both of Conn., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Nov. 17, 1969, Ser. No. 877,066
Int. Cl. H01r *17/04, 5/10*
U.S. Cl. 339—177 E 1 Claim

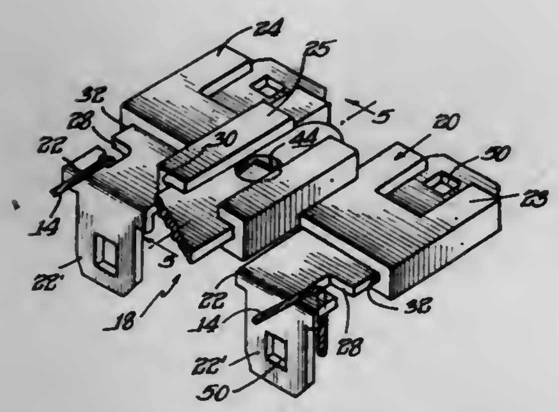
A method and apparatus for securing a connector to a coaxial cable, and in particular to a multilayer core coaxial cable, without causing any damage or disturbance to the core. A split ferrule is fitted together over an exposed portion of the core at the end of the cable and is then pushed back with a sleeve formed on the rear of the ferrule being forced between the cable core and outer conductor. When the ferrule is in place, it is secured to the cable by suitable means, such as crimping, and the forward portion of the ferrule is utilized to secure the ferrule, and thus the cable, to a connector body.



3,609,652
SOLDERLESS TERMINAL STRIP CONNECTOR ASSEMBLY

Robert W. Sebastian, Villa Park, Ill., assignor to Molex Products Company, Downers Grove, Ill.
Filed Feb. 14, 1969, Ser. No. 799,470
Int. Cl. H01r *9/00, 7/06*
U.S. Cl. 339—198 R **7 Claims**

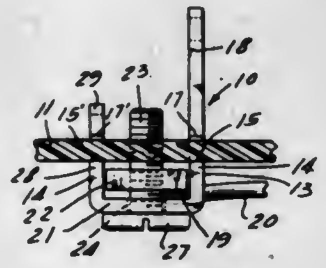




A solderless electrical connector assembly for joining one or more wire leads to a terminal. The assembly includes a base or terminal block member constructed of insulating material such as polypropylene or the like, and one or more terminal strip members slidably associated therewith. Each terminal strip is provided with slots or apertures to accommodate one or more wire leads such that the terminal strip may be moved relative to the terminal block member to clamp said leads therebetween in conductive association with the terminal strip.

3,609,653
ELECTRICAL CONNECTOR AND METHOD OF AND MEANS FOR ATTACHING THE SAME

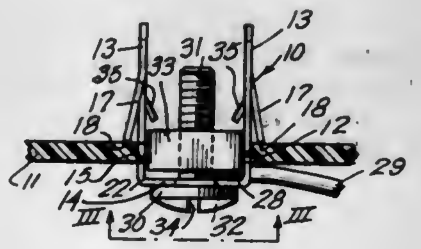
William H. Wallo, 930 N. Pitner Ave., Chicago, Ill.
Filed Oct. 22, 1968, Ser. No. 769,533
Int. Cl. H01r *13/50*
U.S. Cl. 339—214 R **19 Claims**



An electrical connector has edge shoulder and clenching lug means for firmly retaining it on a supporting panel, such as a binding post board, with a solder lug projecting from one face of the panel and a clamp for an electrical lead terminal at the opposite face of the panel, the clamp comprising a clamping base and a movable clamping member such as a square nut held against turning and operable by a screw extending through the clamping base to receive and clamp the electrical lead terminal between the nut and the base. In mounting the connector on the panel, a shoulder on an edge of the connector body engages one face of the panel and a clenching lug on that edge of the connector body is displaced laterally into clamping engagement thrusting the panel against the shoulder, an attachment tool for the purpose having a shearing edge which partially severs the lug from the connector body, a cam surface which displaces the lug toward the panel, and a clenching shoulder which thrusts the lug clampingly toward the shoulder on the connector.

3,609,654
SNAP-IN ELECTRICAL CONNECTOR

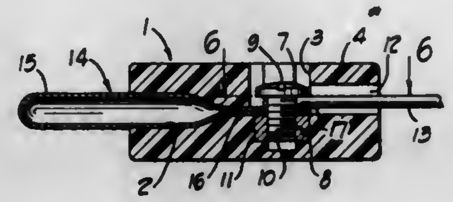
William H. Wallo, 7401 N. Sheridan, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 7,666
Int. Cl. H01r *9/12, 7/12*
U.S. Cl. 339—217 S **12 Claims**



A generally U-shaped electrical connector is adapted to be mounted on a supporting panel by aligning it with a complementary aperture in the panel and then pressing the connector into position such that fixed shoulders adjacent a base of the connector engage one face of the panel and shear-formed resilient retaining lugs retainingly confront the opposite face of the panel. An electrical lead terminal clamp device comprises a headed screw with its shank freely extending through a hole in the base of the connector and a nut threaded on the screw shank whereby lead terminals may be clamped to either face of the connector base.

3,609,655
ELECTRICAL CONNECTOR

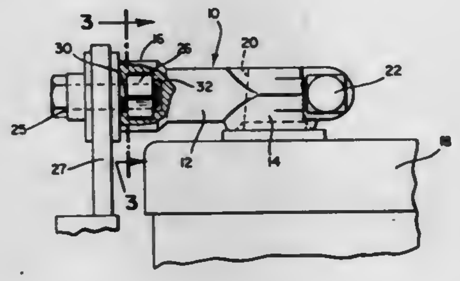
John Tymkewicz, c/o Marlin Mfg. Corp., 12404 Triskett Road, Cleveland, Ohio
Filed Oct. 30, 1969, Ser. No. 872,500
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 **4 Claims**



The disclosure herein is of an electrical connector and particularly such of the same as is used in making connections for thermocouples to panel boards or the like, and is directed to the manner of connecting the conductors to the connector itself so that it is unnecessary to wind the same about a terminal post, but on the other hand the conductors may be inserted directly, manipulation of a fastener resulting in an interlocking action to retain the conductor in position, all the same being supplied in a molded body so that connection and disconnection may be easily resorted to and yet no short circuiting of the connections is possible in ordinary use of the connector.

3,609,656
BATTERY TERMINAL CABLE ADAPTOR

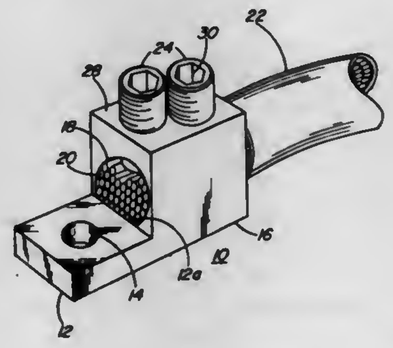
Delight E. Breidegam, Jr., College Hill, Kutztown, Pa.
Filed Feb. 12, 1970, Ser. No. 10,774
Int. Cl. H01r *11/26*
U.S. Cl. 339—230 R **4 Claims**



An adapter comprising an elongated body having means on one end for reception of the terminal post of a standard automobile battery and means on the other end adapted to receive the connector of a battery cable of the type used with batteries having threaded terminals.

3,609,657
ELECTRICAL CONNECTOR

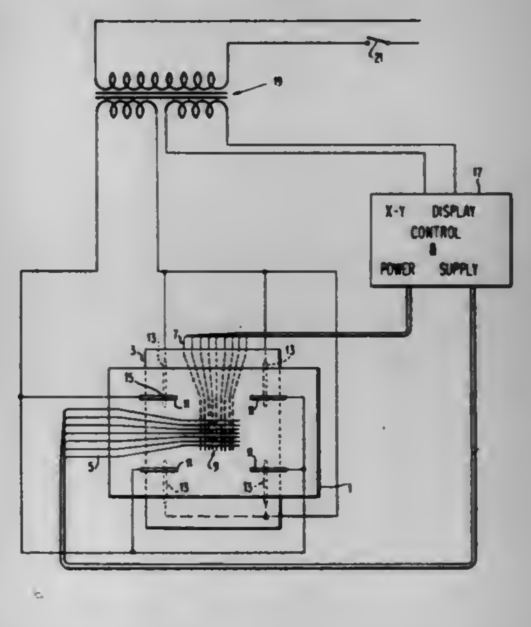
Harris I. Stanback, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.
Filed Oct. 7, 1969, Ser. No. 864,421
Int. Cl. H01r *11/10*
U.S. Cl. 339—272 R **7 Claims**



A connector for use with electrical cables comprising a cable-receiving body having two binding screws threaded through respective openings in a flat sidewall of the body and positioned to exert pressure on opposite sides of the longitudinal axis of a cable received in the body.

3,609,658
PILOT LIGHT GAS CELLS FOR GAS PANELS

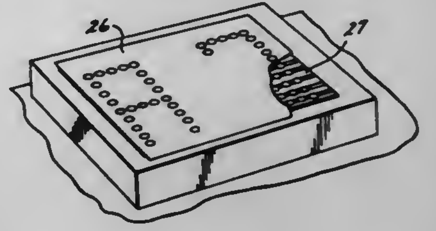
Parviz Soltan, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 2, 1969, Ser. No. 829,692
Int. Cl. H01j *1/00, 7/30*
U.S. Cl. 340—166 R **3 Claims**



In a plasma display panel consisting of gas enclosed between adjacent insulating members, a light source in the panel is used to supply a number of uniformly spaced charged particles in the gas to permit firing of the gas when coordinate conductors identifying a site location are energized. The light source may comprise in a preferred embodiment one or more critically placed pilot lamps or auxiliary conductors in the display matrix which are constantly energized or a plurality of light sources positioned adjacent display areas. The use of such pilot lamps facilitates cell selection and firing, with uniform selection and firing potentials within all sites of the display panel.

3,609,659
THERMAL DISPLAY UNIT

Raymond Davis, 13942 Brenan Way, Santa Ana, Calif., and Charles K. Krill, 3030 Aha Laguna Blvd., Laguna Beach, Calif.
Filed Jan. 27, 1969, Ser. No. 794,029
Int. Cl. H05b *3/20*
U.S. Cl. 340—166 **7 Claims**



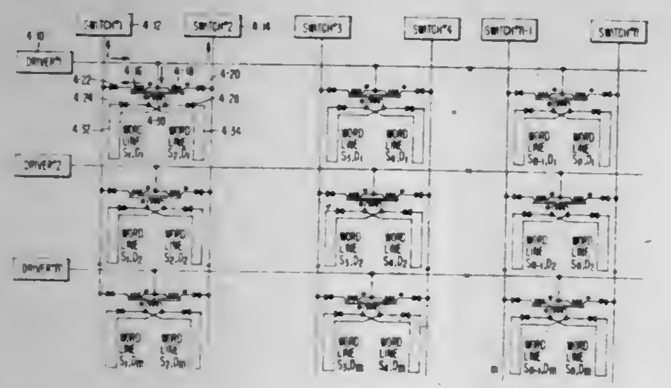
This invention relates to improvements in display units, and it relates particularly to units in which the display utilizes temperature differences and principally where the temperature difference are made to provide a visual display. The specification discloses a rectangular coordinate printer and plotter incorporating a matrix of semiconductor rectifier junctions connected in rows and columns whereby selected ones of the rectifiers may be rendered conductive. Heat generated in the rectifier is conducted to the surface of a platen where it acts upon a thermally sensitive paper which changes color at the point of heat application. Two forms of platens are illustrated and described. In one the several rectifiers of the matrix comprise discrete units interconnected by conductor deposits and wires. In the other, the several rectifiers are formed as a monolithic structure of semiconductor material.

3,609,660

MEMORY WORD LINE SELECTION APPARATUS USING A DOUBLE-DUTY CENTER-TAPPED TRANSFORMER

Frederic C. Doughty, Valley Forge, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 20, 1969, Ser. No. 801,021
Int. Cl. H04q *1/00, 3/00*
U.S. Cl. 340—166 **10 Claims**



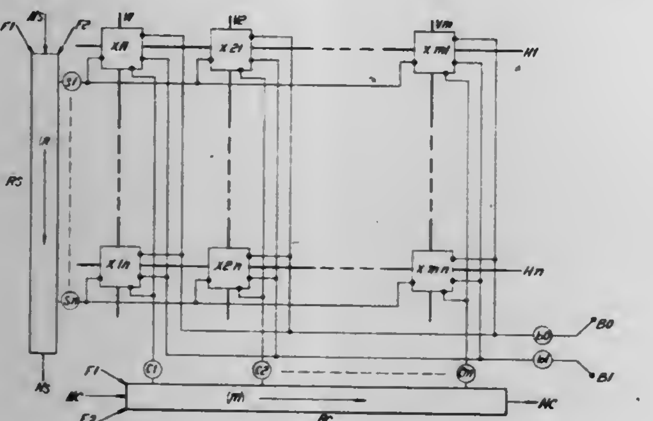
The present invention discloses a transformer and its associated circuitry which, when utilized to selectively address the word lines of a computer memory, halves the number of transformers usually required. The transformer disclosed has a pair of primary windings and a single secondary winding. A plurality of diodes are included in the associated circuitry. The apparatus is then shown wired into a memory word selection matrix of n switches and m line drivers.

3,609,661

MATRIX HAVING MOS CROSS-POINTS CONTROLLED BY MOS MULTIVIBRATORS

Jacques Marcel Hennes, Paris; Marc Jean Pierre Leger, Issy-les-Moulineaux, and Claude Paul Henri Lerouge, Maurepas, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 14, 1969, Ser. No. 824,583
Claims priority, application France, May 17, 1968, 152195
Int. Cl. H04q *3/00*
U.S. Cl. 340—166 **4 Claims**



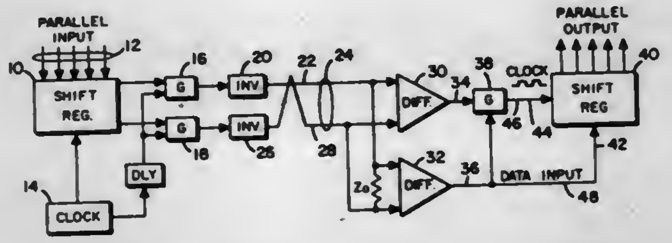
An electronic switching system employing MOS monolithic transistors in a matrix of cross-points is disclosed. Control of the cross-points is provided by shift registers which operate in response to codes instead of a free running clock. Individual cross-points in the matrix can be closed regardless of the status of the other cross-points in the respective line.

3,609,662

SERIAL PULSE DIGITAL TRANSMISSION SYSTEM

David F. Grimm, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,681
Int. Cl. H04q *1/32*
U.S. Cl. 340—168 **3 Claims**



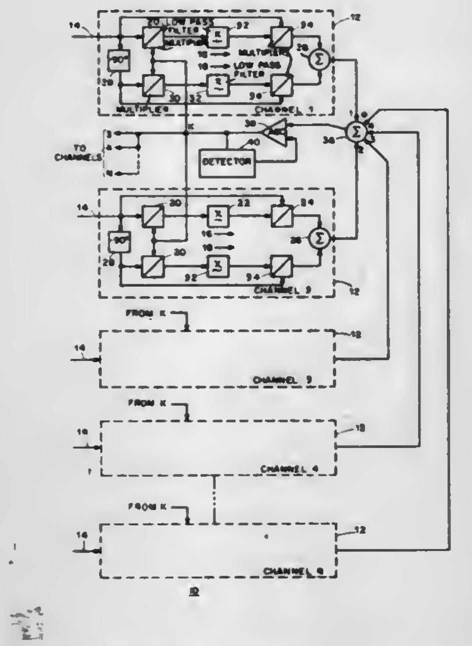
A serial digital transmission system is described wherein the sending station is connected to a receiving station by way of a pair of conductors. Digital data in parallel form is applied as an input to a shift register at the transmitting station and the serialized information is shifted out of this register at a rate determined by a digital clock. Data signals of a first binary significance are applied to a first of the pair of conductors whereas digital signals of the opposite significance are applied to the second conductor. At the receiving point, a pair of differential amplifiers are connected to the transmission line to receive the digital signals. The outputs from the pair of digital amplifiers are connected to a NAND logic circuit which serves to reconstitute the clock. The output from one of the differential amplifiers at the receiver is connected to the serial data input terminal of a receiving shift register and digital data appearing on this line is entered into the shift register at a rate determined by the reconstituted clock signal to make available at the output of the shift register a digital word in parallel form.

3,609,663

PREDETECTION SIGNAL-PROCESSING SYSTEM

William J. Bickford, Weston, and Richard G. Cease, Westwood, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 30, 1969, Ser. No. 846,214
Int. Cl. H04b *01/12, 01/26*
U.S. Cl. 340—170 R **7 Claims**



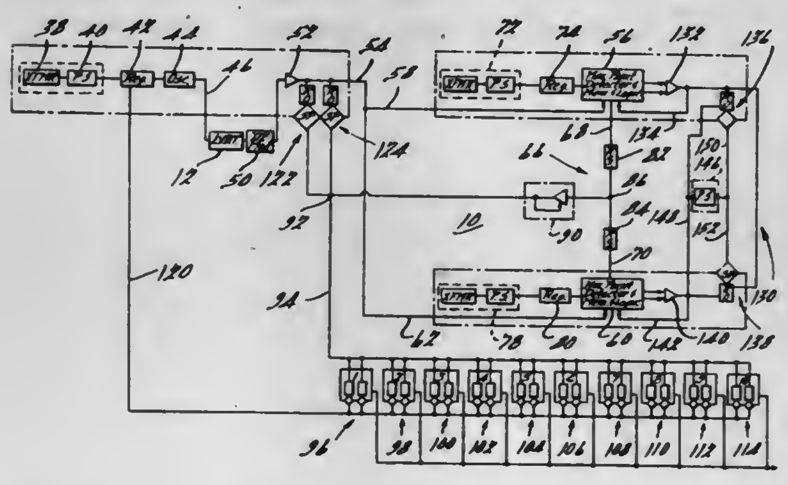
A regenerative signal-processing system in which a multiplicity of incoming signals are combined prior to detection. By heterodyning each incoming signal with a common signal, difference frequency signals are generated. Each of these difference frequency signals controls a phase shift that is applied to the corresponding incoming signal and a resultant signal is formed and all resultant signals have the same phase and are combined to produce an output signal which is in the same frequency band as the incoming signal.

3,609,664

AUTOMATIC CONTROL FOR MEASURING CLEARANCES

Paul E. Bosen, Warren, Mich., assignor to The Cross Company, Fraser, Mich.

Filed Sept. 15, 1967, Ser. No. 668,004
Int. Cl. H04q *9/06*
U.S. Cl. 340—172 **30 Claims**



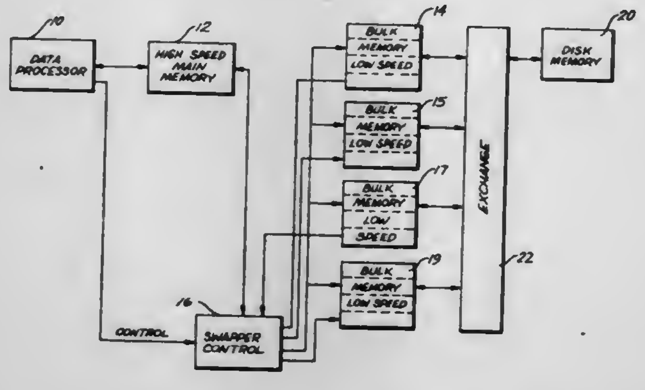
An automatic control for detecting and averaging maximum signal peaks and minimum signal valleys wherein the variation in signal level is sensed and fed to a pair of detectors, the first detector providing an output signal indicative of the maximum signal level and the second detector providing an indication of the minimum signal level. The maximum and minimum signal levels are fed through an averaging circuit to provide a mean or average of the maximum and minimum signals, the mean signal being utilized to control the operation of the signal generator.

3,609,665

APPARATUS FOR EXCHANGING INFORMATION BETWEEN A HIGH-SPEED MEMORY AND A LOW-SPEED MEMORY

Reinhard K. Kronies, Glendora, and Iver C. Hansen, Arcadia, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 19, 1970, Ser. No. 21,040
Int. Cl. G11c *9/00;* **G06f** *13/00*
U.S. Cl. 340—172.5 **11 Claims**



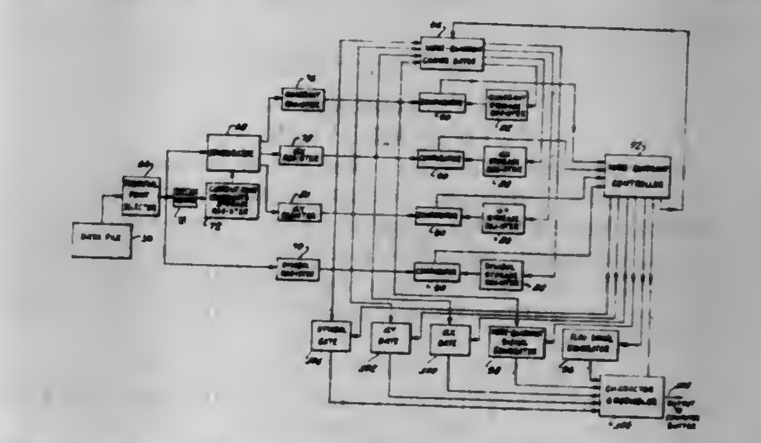
Data is exchanged between a high-speed memory and a plurality of low-speed memories at the speed of the high-speed memory by time-sharing a group of low-speed memories. During each Read-Write cycle of the high-speed memory, data is transferred from one of the low-speed memories to the high-speed memory during the Read operation of the high-speed memory cycle and transferred from the high-speed memory to the low-speed memory during the following Write operation of the high-speed memory. Both transfers take place between the Read operation and Write operation of the Read-Write cycle of the low-speed memory. By overlapping in time the Read-Write cycles of the low-speed memories, the exchange transfer takes place at a rate determined by the Read-Write cycle time of the high-speed memory.

3,609,666

DATA TERMINAL SYSTEM

Lawrence J. Kamm, San Diego, and Herbert A. Schwan, Encinitas, both of Calif., assignors to Typagraph Corporation, San Diego, Calif.

Filed Mar. 18, 1970, Ser. No. 20,493
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **23 Claims**



Apparatus and method for analyzing and encoding graphical data into a serial character stream for transmission over a communications system to a remote data terminal where the character stream is decoded to generate a high resolution graphical display of the data. The graphical display is generated on a teletypewriter which has been modified to permit relatively small, positive and negative incremental movements of the typewriter-type carriage and platen in their respective horizontal and vertical directions. The coding scheme includes analyzing the graphical data on an incremental point-to-point basis to determine the quadrant of movement to the next point, the horizontal and vertical increments, and the symbol to be printed. The data is also analyzed to detect information which is invariable over a plurality of points and such information is commanded to be stored in the receiving remote data terminal. Thereafter, only variable information is transmitted to the remote terminal until one of the invariable items of information changes.

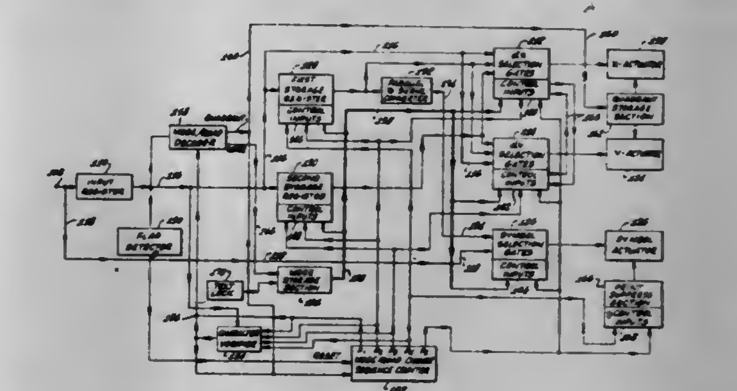
Alternate apparatus and methods are disclosed for further reduction of the transmission of invariable information and for suppressing the printing of symbols which contain graphing information.

3,609,667

DATA TERMINAL SYSTEM

William G. Messer, Chula Vista, Calif., assignor to Typagraph Corporation, San Diego, Calif.

Filed Mar. 18, 1970, Ser. No. 20,724
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **6 Claims**



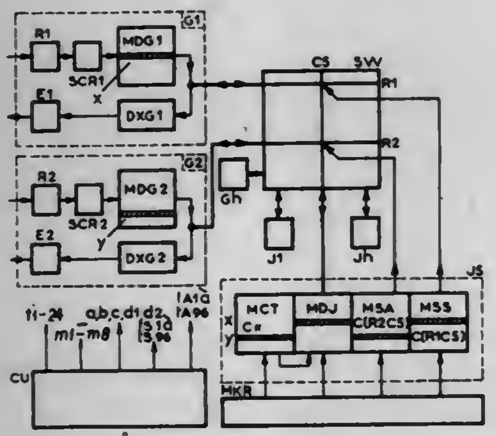
Apparatus and method for analyzing and encoding graphical data into a serial character stream for transmission over a communications system to a remote data terminal where the character stream is decoded to generate a high resolution graphical display of the data. The graphical display is generated on a teletypewriter which has been modified to permit relatively small, positive and negative incremental movements of the typewriter type carriage and platen in their respective horizontal and vertical directions. The coding scheme includes analyzing the graphical data on an incremental point-to-point basis to determine the quadrant of movement to the next point, the horizontal and vertical increments, and the symbol to be printed. The data is also analyzed to detect information which is invariable over a plurality of points and such information is commanded to be stored in the receiving remote data terminal. Thereafter, only variable information is transmitted to the remote terminal until one of the invariable items of information changes.

Alternate apparatus and methods are disclosed for further reduction of the transmission of invariable information and for suppressing the printing of symbols which contain graphing information.

3,609,668
PATH SEARCH CIRCUIT

Jacques Georges Dupieux, Issy-les-Moulineaux; Bernard Pierre Jean Durteste, Sevres; Francis Emmanual Jean Robert, Boulogne-Billancourt, France, and Jean-Pierre Le Corre, deceased, late of Sainte-Genevieve-des-Bois, France (by Yvette Marie Laurence Le Corre, administrator), assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 5, 1970, Ser. No. 022,105
Claims priority, application France, Mar. 6, 1969, 6906194
Int. Cl. H04m *7/00*
U.S. Cl. 340—172.5 **6 Claims**

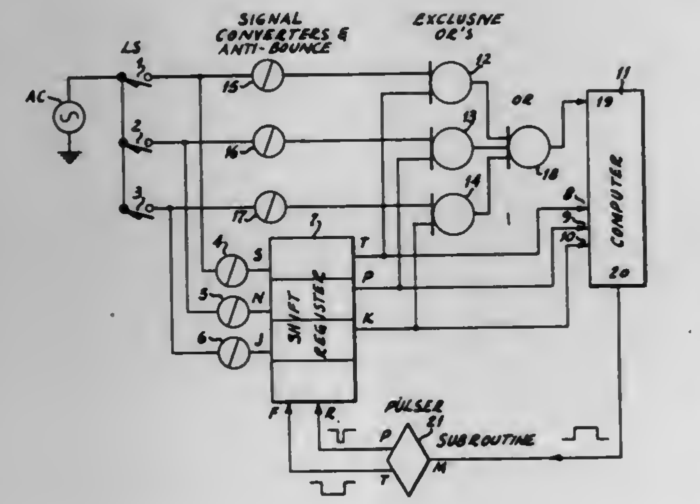


Scanning and path search circuits are provided in a switching exchange involving time division multiplex data and more particularly in an exchange employing pulse code modulation.

3,609,669
VARIABLE INFORMATION INPUT SYSTEM

Carl J. Weiss, New Berlin, and Gilbert W. Wierschke, Milwaukee, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Apr. 8, 1970, Ser. No. 26,501
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **5 Claims**

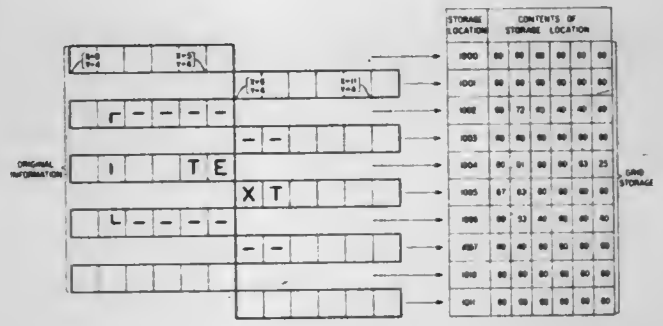


An input system for a computer that detects when there has been a change in process information and signals the computer to pulse a shift register to the new information setting whereby the new process information is put into the computer as soon as it occurs.

3,609,670
PROGRAM CONTROLLED SYSTEM FOR PROCESSING SPATIALLY DISTRIBUTED INFORMATION

Kenneth C. Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Inc., New York, N.Y.

Continuation of application Ser. No. 449,854, Apr. 21, 1965, now abandoned. This application May 20, 1970, Ser. No. 37,486
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **3 Claims**

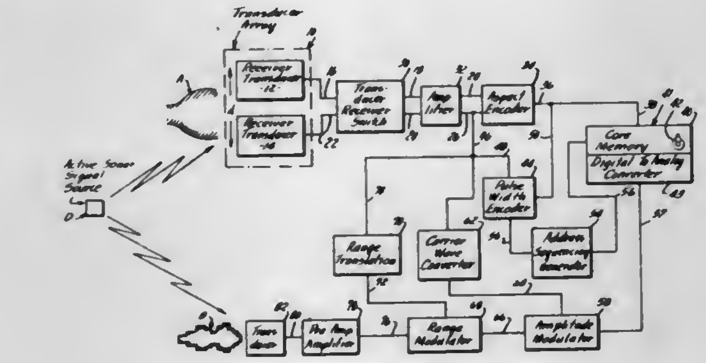


A computer program is disclosed by means of which graphical information can be directly represented in coded form in the internal memory of the computer. Subroutines are provided for testing, changing and writing graphical symbols in coded form in the computer by means of scanners identifying unique plotting points of the internally represented graphical grid.

3,609,671
ACTIVE SUBMARINE TARGET ECHO SYNTHESIZER

Richard B. Webster, Winter Park, and Michael T. Marrero, Casselberry, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed Mar. 23, 1970, Ser. No. 21,899
Int. Cl. G01s *9/66*; G09b *9/00*
U.S. Cl. 340—3 E **6 Claims**

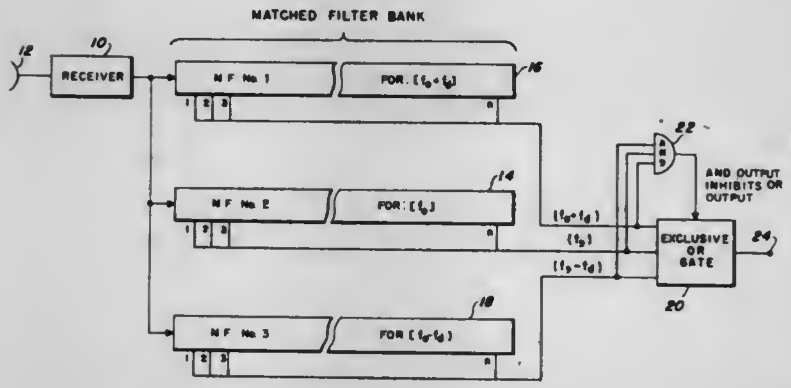


Apparatus wherein an active incoming sonar signal is synthesized by means including a spaced array of receiver transducers to provide a carrier frequency and a digital signal, said digital signal being applied to address a memory means including a core memory in which submarine signatures are stored for retrieval in relation to the type of submarine and aspect angle thereof and which also includes a digital to analog converter means. The outputs of said analog converter means being applied to modulate a carrier wave signal derived from a tone burst to carrier wave converter and further modulated by range data from a range translator to activate transducer means to provide a reflected submarine target sonar signal representative of a selected type submarine at an aspect angle and range corresponding to said incoming active sonar signal.

3,609,672
FALSE ALARM INHIBIT CIRCUIT IN ECHO RANGING SYSTEMS

Lewis H. Bossert, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 28, 1969, Ser. No: 845,444
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **3 Claims**

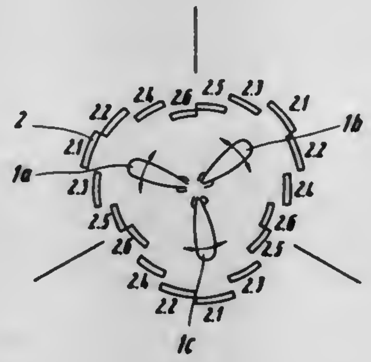


Two or more filters with narrow side-by-side passbands will each pass broadband noise voltages but only one filter can pass a useful narrowband signal. An exclusive OR gate will pass a single filter output but will block simultaneous noise outputs thus effectively distinguishing between useful signals and false alarms.

3,609,673
SONAR SCANNING METHOD

Dietrich Muller, Achim, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter, Haftung Essen, Germany

Filed July 16, 1969, Ser. No. 842,112
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **2 Claims**

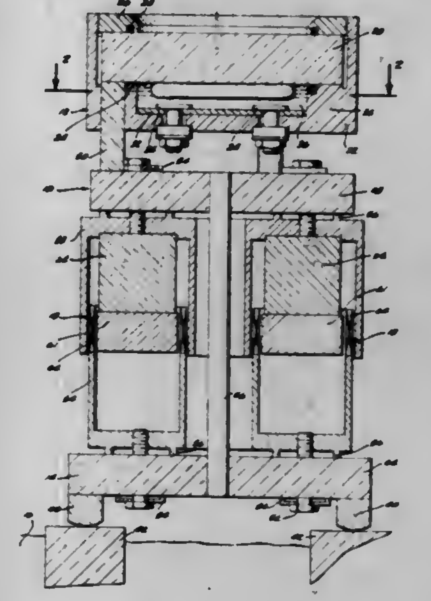


The invention concerns a sonar installation the transmitting device of which is switchable for the transmission of sounding pulses successively in different directions, within a circular sector of angular extent n according to the direction sequence $(n/2)$, $(n/2)+1$, $(n/2)-1$, $(n/2)+2$ ...where $(n/2)$ is the approximate center of the circular sector, the + and − signs denote directions on either side of the $(n/2)$ direction, and the integers 1, 2, etc. represent units of angular displacement.

3,609,674
SEISMOMETER

Siegfried Hansen, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of application Ser. No. 675,491, Oct. 16, 1967. This application Oct. 21, 1969, Ser. No. 868,143
Int. Cl. G01v *1/16*
U.S. Cl. 340—17 **6 Claims**

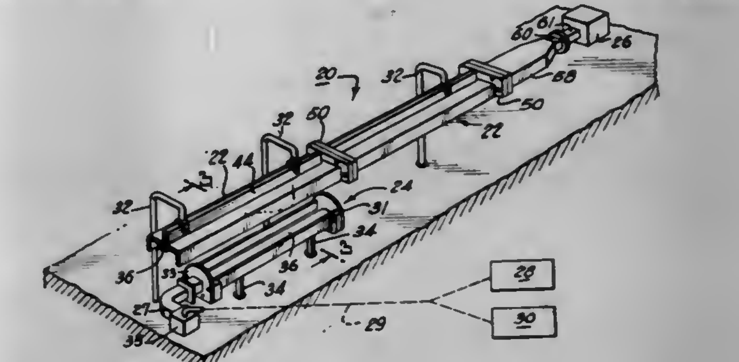


The seismometer has motion-sensing means and recentering means for recentering the seismic mass to a zero position. It employs displacement sensors, preferably in two coordinates, to emit an output signal upon seismic mass motion. The displacement signal serves as an output signal, and, in addition, is fed back to the seismic mass centering means for optimum damping and recentering. The feedback through three channels of functionally different characteristics provides optimum feedback for broadband sensitivity and response.

3,609,675
MICROWAVE COMMUNICATION SYSTEM FOR MOVING LAND VEHICLE

Manlio G. Abele, Garden City, N.Y., assignor to General Applied Science Laboratories, Inc., Westbury, N.Y.

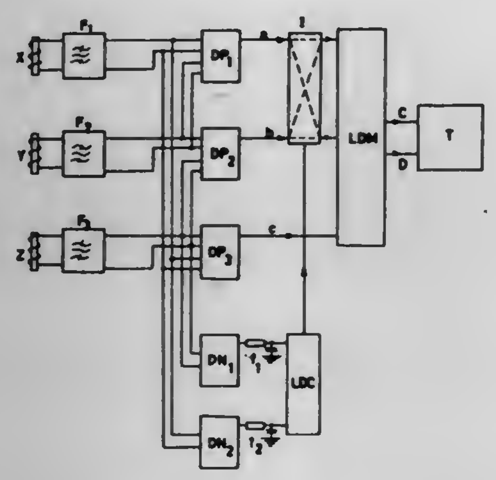
Filed Mar. 3, 1969, Ser. No. 803,621
Int. Cl. H04b *3/60*
U.S. Cl. 340—22 **24 Claims**



The microwave communication system, in its preferred form, includes a stationary waveguide through which microwave energy flows in surface waves in the fundamental mode. The waveguide preferably is a semicylindrical dielectric rod with a metallic conducting shield on the flat surface of the rod, and with the remainder of the rod unshielded. An antenna having the same general guide configuration is positioned near the waveguide to transmit and receive communications to and from the waveguide. The antenna either is stationary or is mounted on a vehicle such as a railroad car and positioned so as to always be near the waveguide. One form of antenna actually comprises a novel directional coupler, and another is a resonant antenna. In the waveguide fabrication method, the pattern of the lines of force of the electrical field in an unshielded waveguide of a given shape is determined, and a plane perpendicular to the lines is located. A waveguide is formed with the original shape but cut away along the perpendicular plane. Then a conductive shield is located at the resulting surface.

3,609,676
DEVICE FOR DETECTING THE POSITION OF A RAILWAY VEHICLE ON A TRACK

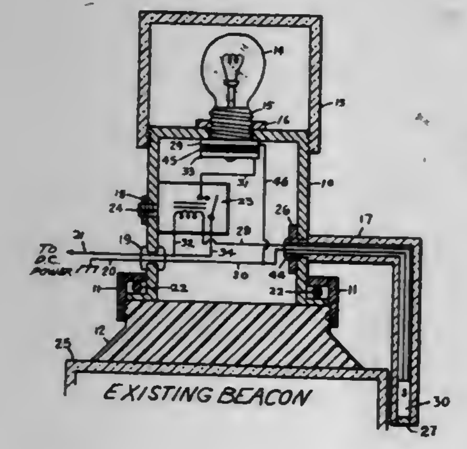
Christian Jauquet, Charleroi, and Joseph Claes, Serclaes de Tilly, both of Belgium, assignors to Ateliers de Constructions Electriques de Charleroi (ACEC), Charleroi, Belgium
Filed Aug. 27, 1969, Ser. No. 853,346
Claims priority, application Belgium, Aug. 30, 1968, 62,837
Int. Cl. G08g *1/00*
U.S. Cl. 340—23 **2 Claims**



A device for detecting the position of a train on a railway track equipped with a centralized control over the travel of the train using a transmission cable having crossings or other means defining periodic phase inversions of the magnetic field of the cable. It comprises three antennas located underneath the floor of the locomotive of the train and aligned one after the other in the longitudinal direction of the track, a band-pass filter connected to each antenna, three phase detectors, each one having two inputs connected to the outputs of two of the band-pass filters in accordance with the three different possibilities, such phase detectors being arranged to deliver an output signal only when their input voltages are in phase opposition, a logic circuit having three inputs connected respectively to the outputs of the three phase detectors for detecting the direction of travel of the train, and a summing circuit for totalizing the number of marking points crossed by the train connected to the outputs of the logic circuit, such logic circuit having two outputs delivering counting and deduction signals to the summing circuit.

3,609,677
DIRECTION INDICATING BEACONS

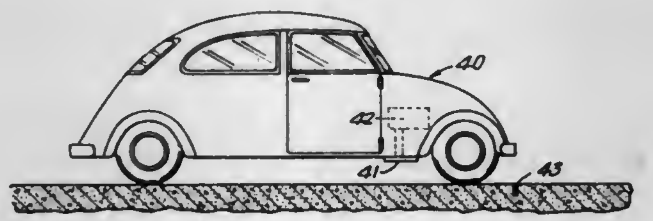
Gayle Russell Norberg, 4522 N.E. 7th St., Columbia Heights, Minn.
Filed Oct. 22, 1965, Ser. No. 504,290
Int. Cl. G08g *5/00*
U.S. Cl. 340—25 **16 Claims**



A new way is disclosed for generating azimuth-dependent time intervals between flashes or signals from rotating beacons employing directable radiation. An omnidirectional index flash is generated each time the beacon rotates past a fixed point. Resulting flash patterns convey to any observer his azimuth about the beacon. Apparatus is described to adapt existing beacons or new designs to produce the intervals automatically.

3,609,678
MAGNETIZED MEANS FOR PROVIDING CONTROL INFORMATION TO MOVING VEHICLES

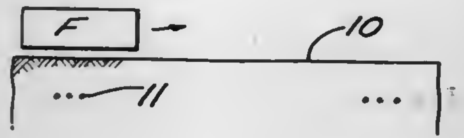
Richard E. Fayling, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 28, 1969, Ser. No. 819,836
Int. Cl. G08g *1/09;* E01f *11/00*
U.S. Cl. 340—32 **15 Claims**



Magnet installations on roadways and methods for providing control information to vehicles traveling on the roadways. The magnets are polymer-based magnets, which comprise a tough organic polymeric matrix and particles of magnetic material uniformly distributed through the matrix. The magnets are often installed in the form of a sheet or tape in a channel formed in the roadway surface, and are arranged in geometries or magnetized in patterns to develop information-providing signals in magnetic-flux-sensors in vehicles traveling over the magnets.

3,609,679
EARTH FIELD VEHICLE DETECTOR

Robert E. Updegraff, Huntington Beach, and Robert F. D'Ausilio, La Mirada, both of Calif., assignors to Threshold Engineering, Inc., Fullerton, Calif.
Filed Jan. 12, 1970, Ser. No. 4,472
Int. Cl. G08g *1/01*
U.S. Cl. 340—38 L **10 Claims**

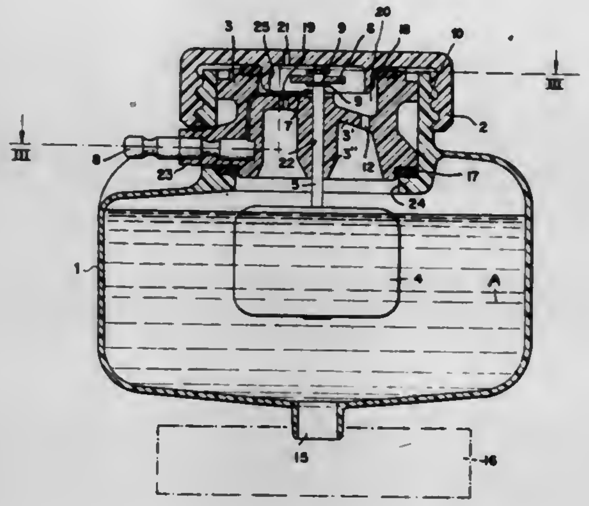


A sensing loop is disposed in a fixed position relative to earth. the dimensions of the loop being rather large compared to the length of a vehicle whose movement is to be detected, so that when the vehicle passes over one portion of the loop perimeter in entering the area inside the loop a signal response is produced, and when the vehicle passes over another portion of the perimeter in leaving the loop area another separate response is created. The loop has a low impedance and consists of a small number of conductor turns, typically three or less. For convenience the loop is typically buried beneath the surface of the roadway.

Output pulses from the loop are supplied to a signal processing unit, which amplifies and integrates the pulses so as to exclude all frequencies higher than about 10 Hertz, and at the same time provide an output signal whose amplitude is substantially independent of the vehicle's speed. The processor includes a threshold-responsive trigger circuit which is capable of responding to a signal of sufficient amplitude and of either polarity. An output circuit is actuated by the trigger circuit.

3,609,680
BRAKE FLUID RESERVOIR

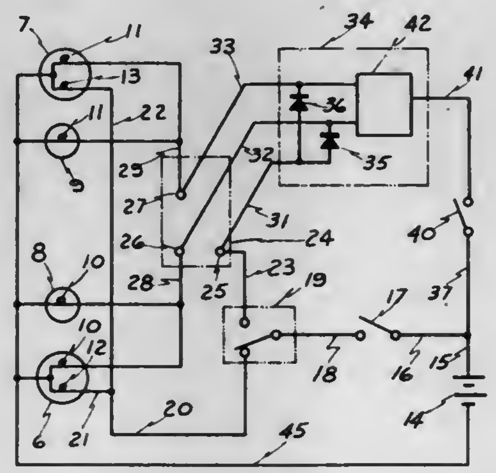
Juan Belart, Walldorf, Germany, assignor to Alfred Teves GmbH, Frankfurt/Main, Germany
Filed May 3, 1968, Ser. No. 726,359
Claims priority, application Germany, May 5, 1967, T 33798 II/63c
Int. Cl. B60t *17/22*
U.S. Cl. 340—59 **8 Claims**



A brake fluid reservoir with an alarm switch for signaling an insufficient fluid level in its interior. The mechanism is mounted in an insert in one neck of a filler opening of the reservoir, the connections between the alarm and the switch mechanism being led laterally out through a projection of the insert passing through the side of the neck; the insert is provided with a hole through which brake fluid can be poured.

3,609,681
CONTROL CIRCUIT FOR ALTERNATELY FLASHING AUTOMOBILE HEADLAMPS

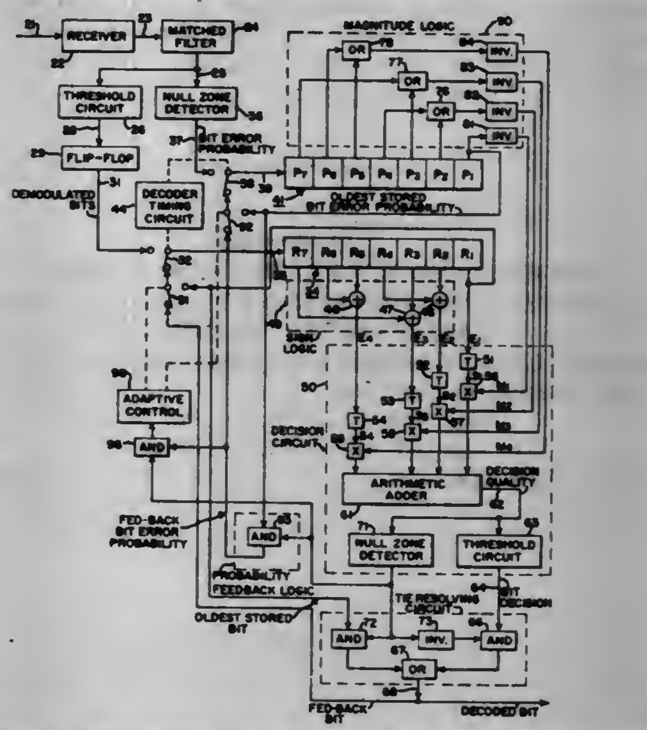
John R. Saul, 1301 Cochise, Arlington, Tex.
Filed May 22, 1969, Ser. No. 826,792
Int. Cl. B60q *1/46*
U.S. Cl. 340—76 **4 Claims**



A control circuit for the headlamps of a vehicle includes the conventional switches for high beam and low beam control; and includes an additional circuit for effecting alternate blinking or flashing of the high beam lamps or filaments with override for continuous illumination by the high beam lamps or filaments when desired.

3,609,682
AUGMENTED DIGITAL-ERROR-CORRECTING DECODER

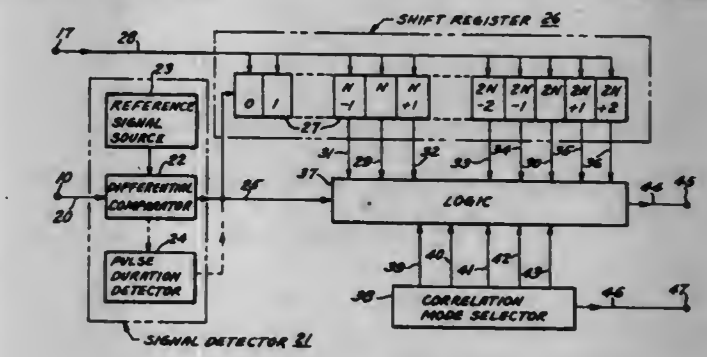
Michael E. Mitchell, Syracuse, N.Y., assignor to General Electric Company
Filed July 16, 1969, Ser. No. 842,289
Int. Cl. G08c *25/00;* H04l *1/10*
U.S. Cl. 340—146.1 **12 Claims**



An error correcting decoder circuit for decoding redundantly coded received digital signals. Estimator bits are generated from selected bits of a received code word, and estimator reliability signals are generated in accordance with word-bit error probability signals derived from the received analog signal amplitudes associated with the same selected bits of the code word as are used for generating the estimator bits. The estimator reliability signals are used as a basis for weighting the bipolar estimator bit voltages, by increasing or decreasing their absolute values, whereby the more reliable estimator bits are given greater weights at the input of a threshold decision circuit. The threshold decision circuit generates an output bit in accordance with the arithmetic sum of the weighted estimator bit voltages, except that it substitutes the appropriate received bit in place of the unreliable threshold decision that arises in the event that the sum is small in magnitude. Control circuitry is provided for causing repetitive shifting of the word bits in a first shift register and of word-bit error probability signals in a second shift register, for performing step-by-step decoding of a received word with the aid of the received signal reliability indications. The invention thus provides a means of augmenting the digital error correction capability of decoders through the use of auxiliary outputs from the receiver which indicate the received signal quality.

3,609,683
ELECTRONIC-SIGNAL-CORRELATING APPARATUS

John P. Hoffman, Coopersburg, and Robert C. Booth, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation
Filed Apr. 16, 1969, Ser. No. 816,709
Int. Cl. G06f *7/04;* H03k *5/20*
U.S. Cl. 340—146.2 **10 Claims**



Electronic correlator improves the apparent signal-to-noise ratio of any variable cyclic signal having recurrable true and random false signal content including noise. This arrangement enables signal-producing sources, such as scanning defect-detecting probes in nondestructive test apparatus, to be operated at unusually high levels of sensitivity. The correlator includes an analog signal detector, tapped shift register, logic and correlating mode selection circuits which operate to separate and pass true content pulses and reject all other signals. Correlation takes place whenever coincidence occurs between a recurring instantaneous true content pulse and a stored true content pulse from either the same or a leading or lagging increment of a single, multiple or related fractional cycle of the cyclic signal history.

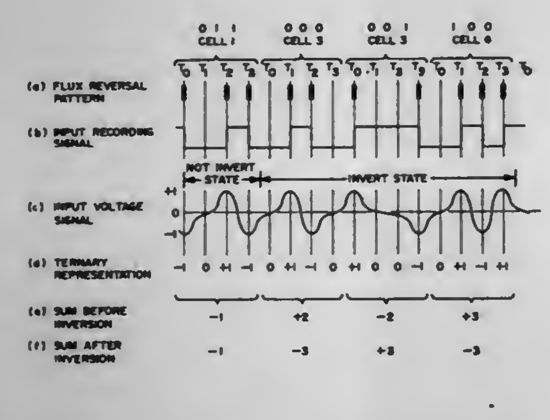
3,609,684
METHOD AND APPARATUS FOR STORING AND RETRIEVING INFORMATION BY ANALOG WAVEFORM CORRELATION TECHNIQUES

James P. Lipp, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.

Filed Apr. 27, 1970, Ser. No. 32,262

Int. Cl. G06f *15/34*; G06g *7/19*

U.S. Cl. 340—146.3 C **18 Claims**



A high-density storage and retrieval system is disclosed in which information is divided into a succession of groups of binary digits and stored as patterns of representations in an associated plurality of storage cells in a record medium. Upon scanning each recorded pattern of representations, a transducer generates an electrical signal having one discrete analog waveform uniquely corresponding to each of the recorded patterns of representations. A set of sample signals is then generated by sampling each discrete analog waveform at critical points. Each such set of sample signals is summed by correlation techniques requiring the adding and subtracting of the various individual sample signals to generate a sum signal. The magnitude of the sum signal is correlated to, or related with, a reference magnitude which is representative of a sum signal corresponding to a known analog waveform. As a result of this correlation, the magnitude of each sum signal is recognized as being indicative of a particular group of binary digits. The use of correlation techniques allows for the cancellation and averaging of analog waveform imperfections, and results in a sum signal which more accurately corresponds to the analog waveform detected.

3,609,685
CHARACTER RECOGNITION BY LINEAR TRAVERSE

Edward Samuel Deutsch, London, England, assignor to Her Majesty's Postmaster General, London, England

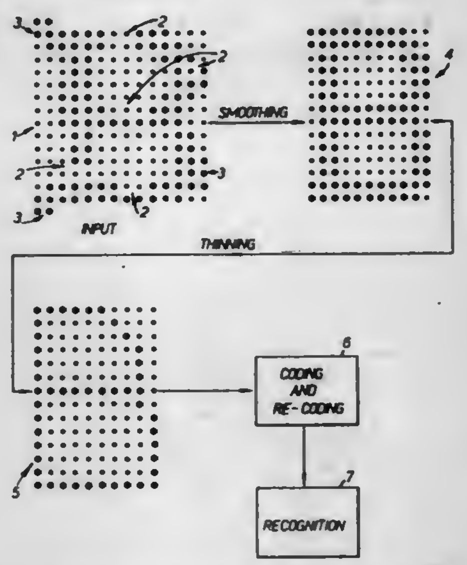
Filed Oct. 3, 1967, Ser. No. 672,598

Claims priority, application Great Britain, Oct. 7, 1966, 45045/66

Int. Cl. G06k *9/10*

U.S. Cl. 340—146.3AE **3 Claims**

Techniques to character recognition in which the shape of the character is stored in a matrix of storage cells which is then examined electrically to correct deficiencies not inherent in the character and to "thin" the stored shape to a required extent. The store shape is then examined again and converted to a characteristic combination of numbered direction vectors and junction points which is compared with standard combinations in order to recognize the character.



3,609,686
CHARACTER RECOGNITION SYSTEMS

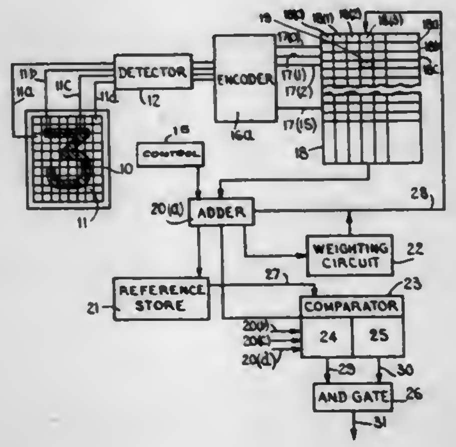
Derek Alan Savory, Sutton, near Sandy, and Brian George Holland, Shefford, both of England, assignors to International Computers Limited, London, England

Filed July 9, 1969, Ser. No. 840,319

Claims priority, application Great Britain, July 15, 1968, 33,564/68

Int. Cl. G06k *9/10*

U.S. Cl. 340—146.3 T **8 Claims**



A character recognition system, in which the outputs of individual photocells of a matrix are grouped together, is disclosed, Each group of outputs is applied through a detector to produce a group of binary signals which signals are applied as an input to an encoding device. Each encoding device has an output for each possible input signal from an associated group of photocell outputs, each encoding device output being connected to access a different location in a store. Each photocell group output accesses a different store location, a weighting function being stored in each store location. The weighting functions of sets of store locations in a set are summed and compared with the sums of other sets of store locations in order to identify an unknown character displayed to the photocell matrix.

3,609,687
PATTERN RECOGNIZER

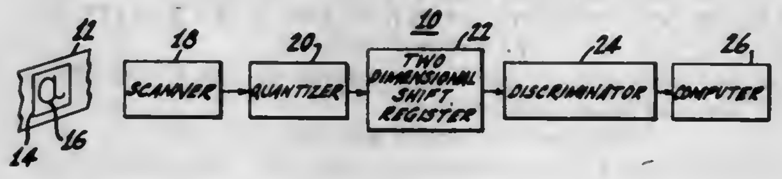
Ivan H. Sublette, Princeton Junction, N.J., assignor to RCA Corporation

Filed Oct. 31, 1968, Ser. No. 772,275

Int. Cl. G06k *9/06*

U.S. Cl. 340—146.3 R **5 Claims**

A pattern recognizer recognizes an unknown pattern by hypothesizing the identity of the unknown pattern and then testing to see whether the identification can be refuted. An identification that cannot be refuted is the correct identification of the unknown pattern.



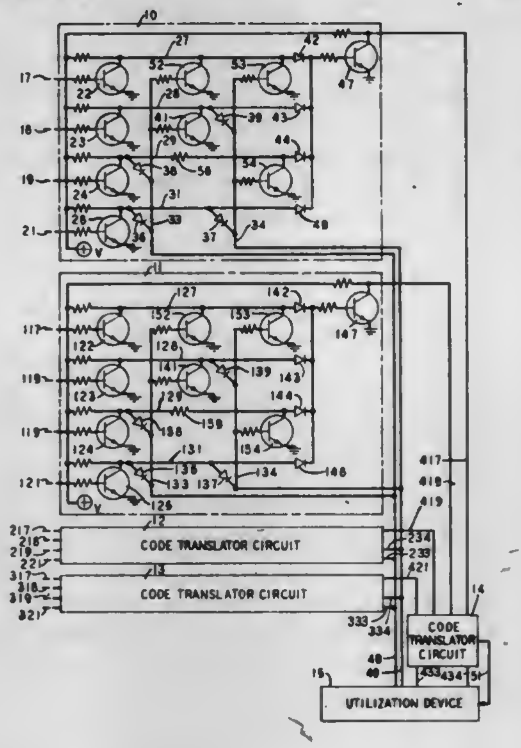
3,609,688
CODE TRANSLATOR FOR USE IN AN ASSOCIATIVE MEMORY SYSTEM

James T. Koo, Walnutport, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 3, 1969, Ser. No. 854,874

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 R **7 Claims**



A diode code translator circuit is described in which inhibiting transistors are driven by coded output signals to inhibit concurrent input signals in a predetermined priority pattern. The uninhibited input signals drive an OR gate to provide a transfer signal for gating the coded output signals.

A system for cascading the code translator circuits of this invention is also shown in which the transfer signals from a plurality of the code translator circuits serve as input signals to a succeeding stage. The transfer signal from the succeeding stage serves as the gating signal. In this arrangement, the coded output signals from the plurality of code translation circuits are connected in parallel to extend the priority sequence to the cascaded system.

3,609,689
INFORMATION CAR VERIFIER AND METHOD

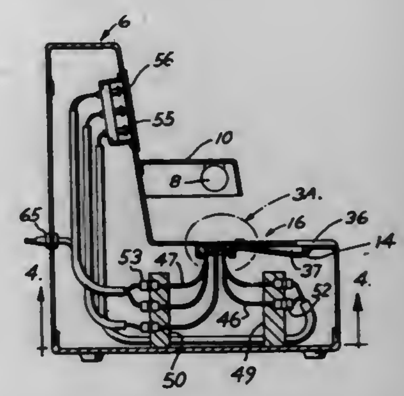
David Shulman, 750 Brookvale Terrace, Glencoe, Ill.

Filed Mar. 8, 1968, Ser. No. 711,729

Int. Cl. H04q *9/00*

U.S. Cl. 340—149 A **2 Claims**

An information card verifier and method of verification wherein a plate is provided having a plurality of passages through its thickness, the passages being of a predetermined number and position corresponding to the number and position of all the possible code information holes on the information card. A light source illuminates one side of the plate and the light which passes through each of the passages is conducted to a plurality of photoelectric cells through a plurality of optical fiber light guides which are inserted in each of the passages. When the coded portion of the information card which is to be verified is disposed in a predetermined position between the light source and the passages, the light passing through selected ones of the passages is blocked by the absence of a hole in a possible hole position. Each of the individual photoelectric cells corresponding with the each of the darkened passages consequently emit a signal which energizes one or more selected indicator lamps. Each of the indicator lamps is arranged in an enlarged array corresponding to the positions of all the holes possible on the tab to display the coded information in a translated form.



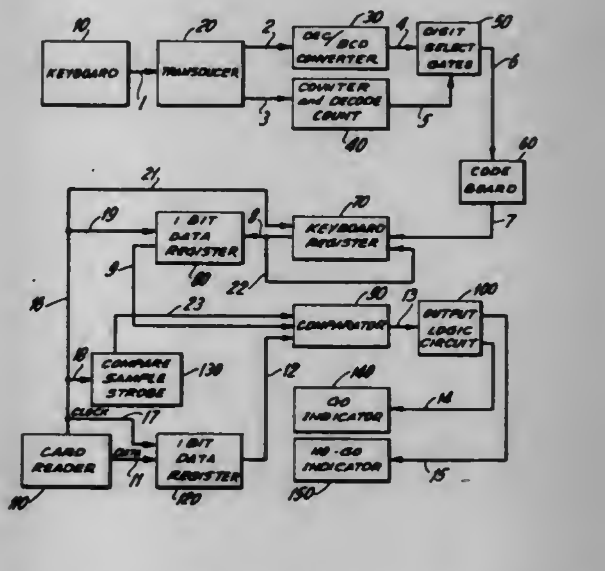
3,609,690
SECURE PERSONNEL ACCESS CONTROL SYSTEM

Irwin J. Nissman, Yonkers; Alvin Goldman, New York, N.Y., and Gerald A. Pruden, Oakland, N.J., assignors to Holobeam, Inc., Paramus, N.J.

Filed Oct. 17, 1969, Ser. No. 867,192

Int. Cl. H04q *9/00*

U.S. Cl. 340—149 R **4 Claims**



A system for identifying the bearer of an identification card wherein cryptographically encoded information on the card is compared to a randomly scrambled representation of a number privately known to the card bearer. Comparison is made by insertion of the identification card into a card-reading means, and by insertion of the privately known number into a number-receiving means, whereby the two numbers may be sent to a comparator on a digit basis. Should the comparison be exact, the card holder will be positively identified.

3,609,691
MEANS FOR ACTIVATING AND CONTROLLING A REMOTE METER READING SYSTEM

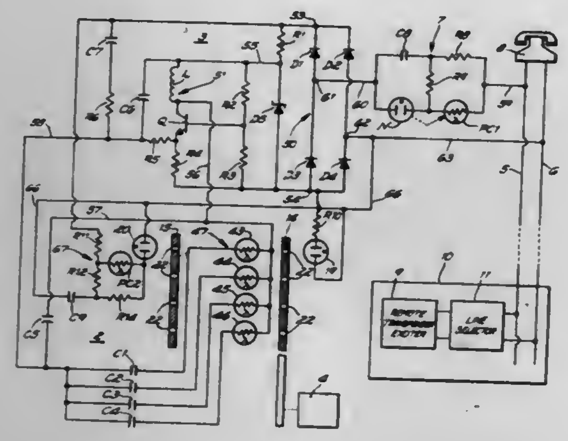
Victor E. Stewart, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Filed Mar. 8, 1968, Ser. No. 711,705

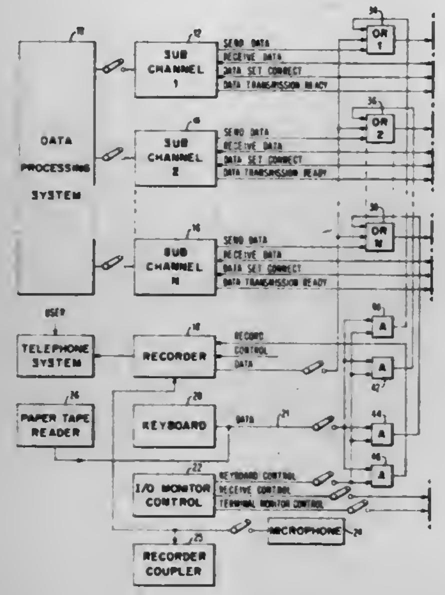
Int. Cl. H04g *9/10*

U.S. Cl. 340—151 **12 Claims**

A system for the automatic remote reading of utility meters including a position encoder and transponder having a plurality of position coding means coupled to the meter being read and oscillator means for generating tones in accordance with the positions of the respective position coding means. A centrally located remote transponder exciter provides a voltage signal for energizing the transponder and for controlling circuit means in said transponder to thereby control the order of operation of the position coding means and oscillator means.

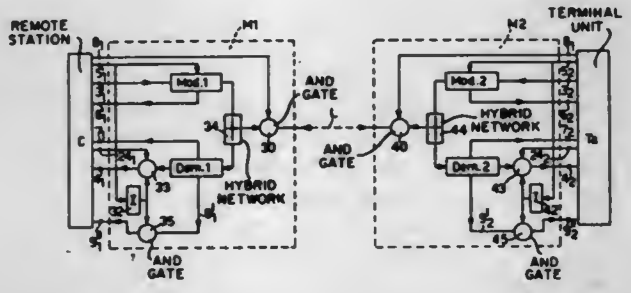


3,609,692
COMMUNICATIONS MONITOR FOR DATA PROCESSING SYSTEM
Robert M. Blake, Wappingers Falls, and Robert P. Dingwall, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 22, 1968, Ser. No. 769,654
Int. Cl. H04q *5/00*
U.S. Cl. 340—152 **5 Claims**



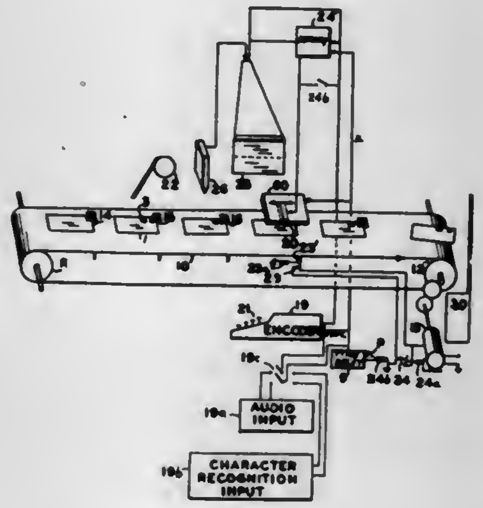
A monitoring arrangement for enabling communication between a data processing system and remote users thereof in which there are included means for enabling communication between an operator and the system to permit examination of the data being sent by the system, means for enabling communication between remote users and the system to permit examination of the data being sent by the users to the system and means for alternately consecutively enabling the system information and the user information to be observed to effectively achieve bidirectional intercommunication between the system and the users. The arrangement is capable of operating in both the audio and digital modes.

3,609,693
DATA COMMUNICATION SYSTEM COMPRISING AT LEAST ONE REMOTE STATION AND A PLURALITY OF TERMINAL UNITS
Luigino Ferroglio, Ivrea, Italy, assignor to Ing. C. Olivetti & Company S.p.A., Turin, Italy
Filed Jan. 22, 1969, Ser. No. 793,108
Claims priority, application Italy, Jan. 26, 1968, 50283-A/67
Int. Cl. H04j *3/06;* **H04q** *5/00*
U.S. Cl. 340—152 **2 Claims**



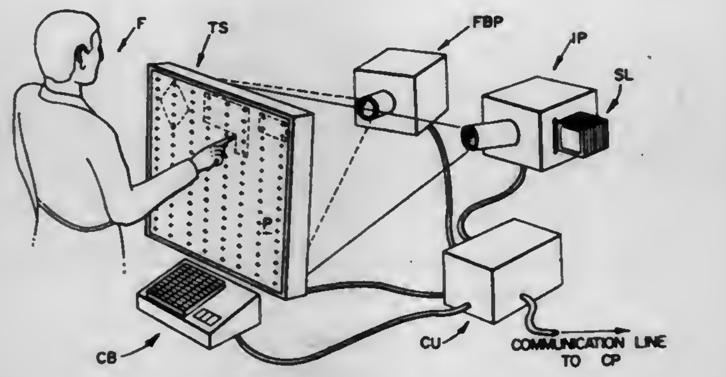
A communication system comprising a remote station connected to a plurality of terminal units which are located close to each other, all the units being connected to a line through a single modulation-demodulation unit whose interface towards the terminal units comprises a plurality of channels, each connected to the corresponding channels of all the terminal units, and including a pair of main channels for transmitting information signals from and to the modulation-demodulation unit, a plurality of channels for transmitting control signals from the terminal unit to the modulation-demodulation unit and a plurality of channels for transmitting signals replying to the control signals and other condition indicating signals from the modulation-demodulation unit to the terminal unit.

3,609,694
CODING MEANS
William Brenner, 105 Nell Court, Levittown, N.Y., and Sidney Koslow, 8440 Harding Ave., Miami Beach, Fla.
Continuation-in-part of application Ser. No. 202,306, June 13, 1962, now abandoned. This application Dec. 20, 1967, Ser. No. 697,548
Int. Cl. G11c *11/00*
U.S. Cl. 340—172.5 **9 Claims**



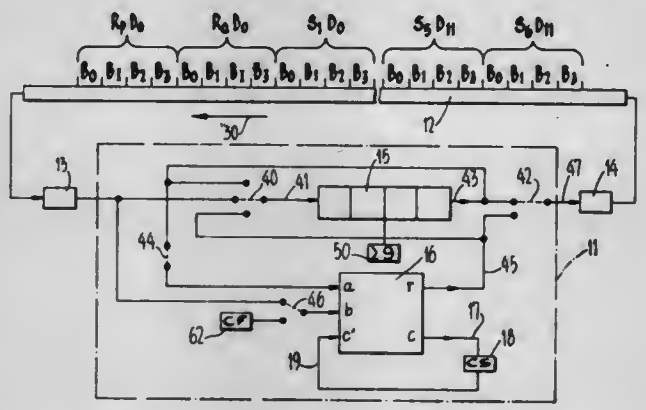
Apparatus for electrically coding discrete opaque articles of variable size of the type having a piece of electrically responsive material placed in a predetermined space relation to at least one side of said article, comprising an electric recording head, means to move said article into operative electrical engagement between said recording head and said material, and information input means connected to said head.

3,609,695
DISPLAY-ENTRY DATA TERMINAL
Sherman J. Pirkle, Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 10, 1968, Ser. No. 728,274
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **6 Claims**



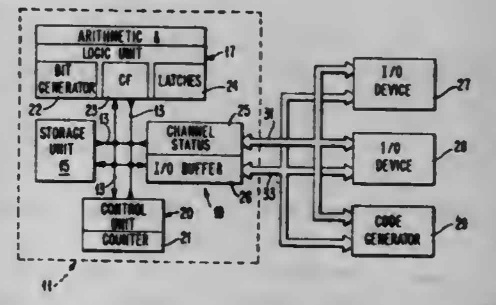
A data display-entry terminal for a data processing system wherein a selected image is projected onto a viewing screen which is enclosed by two orthogonal banks of light beam-photodetector units, each unit comprising a set of source-detector combinations spaced apart in registry and arranged to project an associated array of parallel beams, the intersection of orthogonal beams defining respective index points on the screen such that interjection of a selection probe etc. at an index point may interrupt a pair of such coordinate beams. This coincident beam interruption may be adapted to generate positional select signals to be entered in an associated data storage means, at a memory cell therein corresponding to the selected point and to the selected portion of the associated image on the screen. The memory matrix is organized to control an associated array of optical feedback signals projected onto this screen for verifying each selection and, at the operator's option, to transmit an encoded pulse train indicating the image portion selection to an associated data processing system.

3,609,696
PROGRAMMED ARRANGEMENT FOR SERIAL HANDLING OF NUMERICAL INFORMATION
Jan Doting, Nijmegen, Netherlands, assignor to The Singer Company
Filed Sept. 6, 1968, Ser. No. 757,860
Int. Cl. G06f *13/02*
U.S. Cl. 340—172.5 **4 Claims**



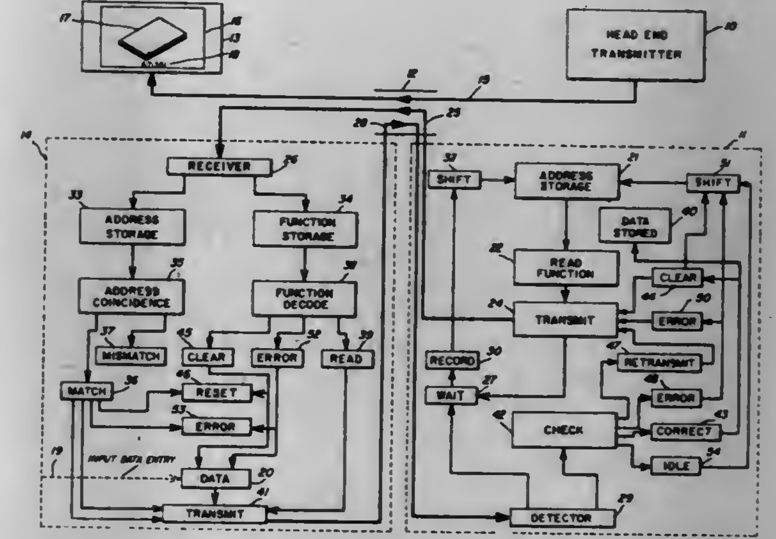
A data handling system having a dynamic delay line data signal storage means selectively coupled with a static storage register or an add-subtract unit for adding or subtracting, algebraically, one set of data signals to a second set of data signals.

3,609,697
PROGRAM SECURITY DEVICE
Parker R. Blevins, Austin; David W. Terry, Georgetown, and Ray H. Thurmond, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 21, 1968, Ser. No. 769,149
Int. Cl. G06f *11/04*
U.S. Cl. 340—172.5 **2 Claims**



A program security device and method for a digital computer including a code generating circuit for providing a unique and predetermined output code to the digital computer for periodic comparison with identification information located within the stored program of the computer. If the identification information does not coincide with the output code, a jump operation is performed and certain portions of the stored program are changed in order to prevent the execution of the program. The output code can be utilized as a mask source for the program and/or a regenerative program routine can be utilized in order to prevent simple evasion of the routine.

3,609,698
CONTROL STATION FOR TWO-WAY ADDRESS COMMUNICATION NETWORK
Edward D. McCormick, Scotia, N.Y., assignor to General Electric Company
Filed Nov. 27, 1968, Ser. No. 779,568
Int. Cl. G08b *29/00;* **H04l** *11/06*
U.S. Cl. 340—172.5 **8 Claims**

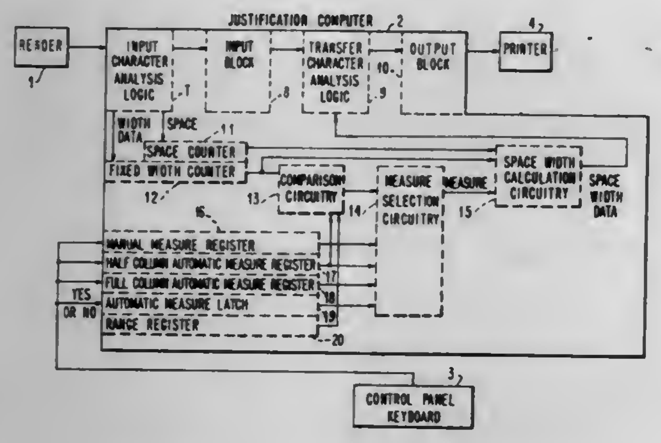


A communication network comprising a central station and a plurality of communication response units establishes communication therebetween when the central station transmits a reset pulse followed by a particular unit address and an interrogating code (read function code) to the response units. This initiates a "communication cycle" during which the central station communicates with a particular response unit. Each response unit has storage elements which are set in a ready-to-receive state by the reset pulse. The addressed response unit responds with either a data signal carrying the unit address and data information for the central station or an idle signal carrying the unit address and indicating no data. The central station includes an element which is able to distinguish between the two signals. Upon receiving a data signal from the response unit, the central station checks the received signal for correctness and clears that response unit by transmitting an initial reset pulse followed by the same unit address and a clear function code which empties the addressed unit of the data stored therein. When the idle signal is received, the central station simply initiates another communication cycle with another response unit. When the central station determines that there is an error in transmission or a mismatch between the transmitted and received unit address, the reset pulse, unit address, and read function code are retransmitted to the same response unit. When there is a second occurrence of error or mismatch, the reset pulse, the unit address, and an error function code are transmitted and a new communication cycle is initiated with another response unit.

3,609,699
AUTOMATIC MEASURE SELLCTION FOR COMPOSER SYSTEM

William H. Davis, and Roderick S. Heard, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1968, Ser. No. 724,990
Int. Cl. B41b *3/06*
U.S. Cl. 340—172.5 **15 Claims**



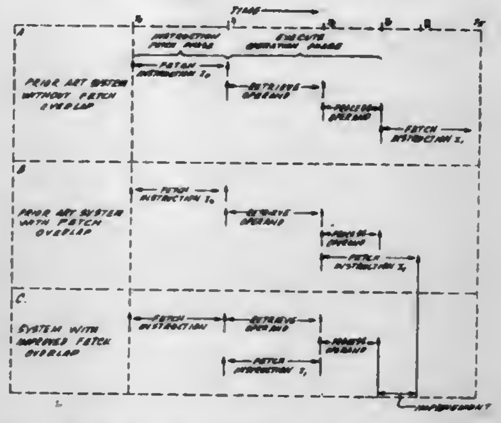
The invention relates to an automatic measure selection feature for a composing system having a paper tape input and a printer output. The paper tape is the type commonly used in type setting operations and carries news matter in coded form for operating line casting equipment and the like. Lines of news matter are normally based on a full column width or measure but frequently, as in the case of race results, entries, handicaps, and similar matter, require the intermixing of full column and half column lines. A change in the measure used for justifying the lines is usually made manually by an operator who recognizes visual indicia on the tape indicative of a change in measure. The present system effects an automatic change in measure by accumulating fixed width values of characters in the individual lines as they are recognized, comparing the total fixed width value accumulated with previously entered half column and full column measure values and selecting the appropriate measure to be used for each line on an individual basis. The system also provides for a manual standard measure operation, as well as the automatic operation.

3,609,700
DATA PROCESSING SYSTEM HAVING AN IMPROVED FETCH OVERLAP FEATURE

James E. Wollum, Glendora, and Richard S. Sharp, Sierra Madre, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 24, 1970, Ser. No. 14,169
Int. Cl. G11c *7/00;* G06f *9/00*
U.S. Cl. 340—172.5 **14 Claims**

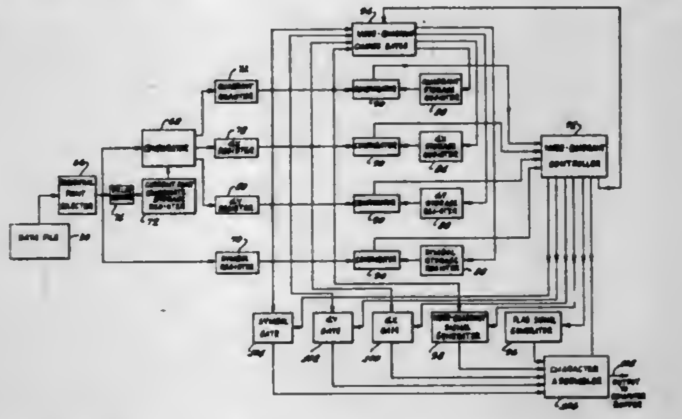
An improvement in a fetch overlap feature for a data processing system results from providing multiple interfaces between the system data processor and the system memory. The memory is divided into a plurality of independent units each having its own interface. The data processor can retrieve more than one word from the memory system at the same time without incurring contention between memory access orders. The data processor is thereby enabled to begin to fetch its next instruction even if its current instruction orders the data processor to retrieve an operand.


TIME
PRIOR ART SYSTEM WITHOUT FETCH OVERLAP
PRIOR ART SYSTEM WITH FETCH OVERLAP
SYSTEM WITH IMPROVED FETCH OVERLAP
IMPROVEMENT

3,609,701
DATA TERMINAL SYSTEM

Allan L. Budd, San Diego, Calif., assignor to Typagraph Corporation, San Diego, Calif.

Filed Mar. 18, 1970, Ser. No. 20,560
Int. Cl. G06f *3/12*
U.S. Cl. 340—172.5 **2 Claims**



Apparatus and method for analyzing and encoding graphical data into a serial character stream for transmission over a communications system to a remote data terminal where the character stream is decoded to generate a high resolution graphical display of the data. The graphical display is generated on a teletypewriter which has been modified to permit relatively small, positive and negative incremental movements of the typewriter type carriage and platen in their respective horizontal and vertical directions. The coding scheme include analyzing the graphical data on an incremental point-to-point basis to determine the quadrant of movement to the next point, the horizontal and vertical increments, and the symbol to be printed. The data is also analyzed to detect information which is invariable over a plurality of points and such information is commanded to be stored in the receiving remote data terminal. Thereafter, only variable information is transmitted to the remote terminal until one of the invariable items of information changes.

Alternate apparatus and methods are disclosed for further reduction of the transmission of invariable information and for suppressing the printing of symbols which contain graphing information.

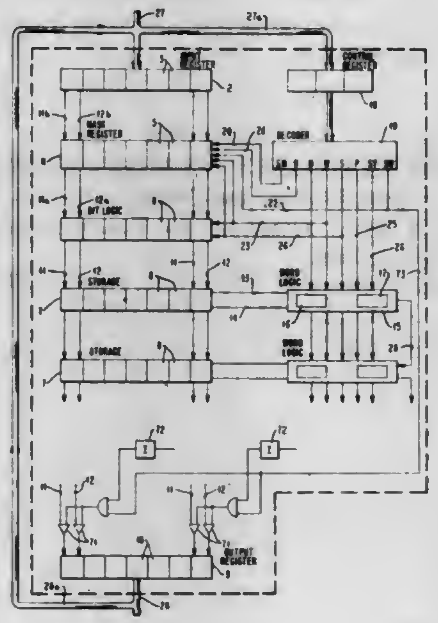
3,609,702
ASSOCIATIVE MEMORY

Peter A. E. Gardner, Winchester; Michael H. Hallett, Chandlers Ford, and Peter J. Titman, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1968, Ser. No. 825,455
Int. Cl. G11c *15/00*
U.S. Cl. 340—172.5 **8 Claims**

This invention relates to an associative memory for the storage of digital data in which each word location of the

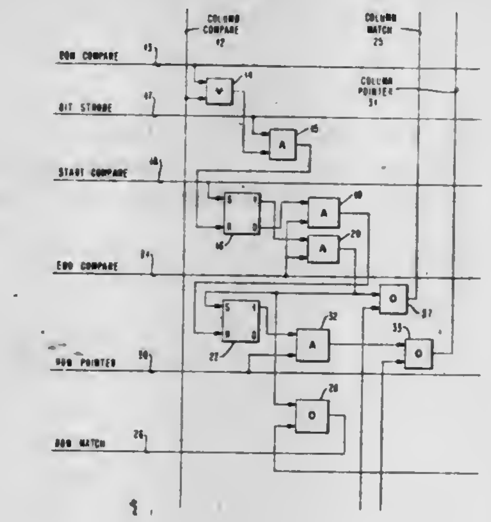
memory is provided with two or more match triggers. Mans is provided for registering matches or mismatches in a selected trigger and for controlling operations on the memory in response to the contents of a selected trigger. Several operations are described which use the plural triggers.



3,609,703
COMPARISON MATRIX

Antonv Peacock, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,636
Int. Cl. G06f *7/22*
U.S. Cl. 340—172.5 **5 Claims**



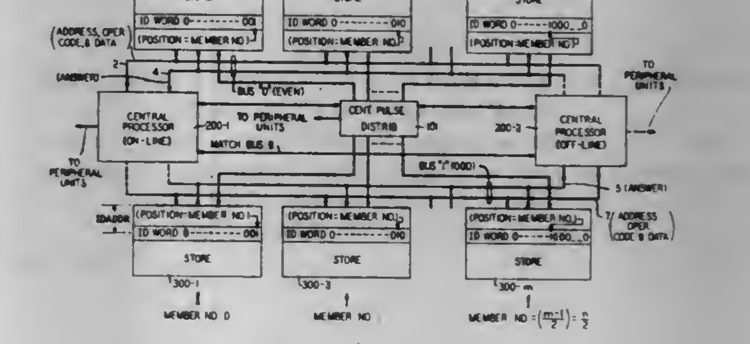
A new comparison circuit is adapted to be connected in a row and column array for comparing words applied to the columns of the array with a sequence of words applied to the rows. Each comparison circuit has means for registering a match or a mismatch while corresponding bit positions of the words that are being compared are applied to the column input and the row input of the circuit. A comparison circuit includes means responsive to a match to transmit data from a row input to a column output.

The specification describes the circuit as it is arranged to compare key words to a file index with key words supplied by a user of the file and to transmit a data word called a pointer to the user to identify the file location when a match is found.

3,609,704
MEMORY MAINTENANCE ARRANGEMENT FOR RECOGNIZING AND ISOLATING A BABBLING STORE IN A MULTIST ORE DATA PROCESSING SYSTEM

Werner H. Schurter, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 6, 1969, Ser. No. 863,894
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **7 Claims**

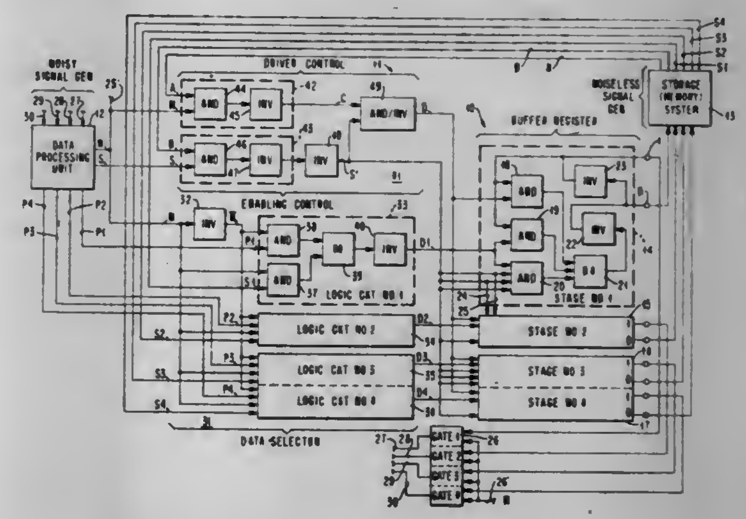


A data processing system wherein the central processors are duplicated and are associated with a group of duplicated memory storage units over a set of duplicated communications buses is disclosed. Each memory unit is identified by a unique name code as well as a unique identification word stored in the memory unit independently of the name code. After a particular memory unit is addressed, the identification word received by the central processor in response thereto is analyzed for determining and isolating any babbling store which spuriously responds to the addressing of the desired memory unit.

3,609,705
MULTIVIBRATOR RESPONSIVE TO NOISY AND NOISELESS SIGNALS

Brian R. Mercy, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,106
Int. Cl. H03k *19/00*
U.S. Cl. 340—172.5 **9 Claims**



A multivibrator is provided with a control circuit that generates control signals having a first characteristic which sets and latches simultaneously the output signal of the multivibrator to a binary state that is indicative of the binary state of a noisy input signal at the termination of a first time period. The control circuit also generates the control signals with a second characteristic that sets the output signal of the multivibrator to a binary state which is indicative of the binary state of a noiseless input signal that is applied during a predetermined time interval and thereafter latches the output signal to the binary state to which the output signal was set during the time interval. The first time period is selected to be equal at least to the time duration of the noise time characteristic of the noisy signals thereby allowing the noisy signal to be stored in the multivibrator only after the input signal has reached the binary level which is to be stored. The length of the time interval is selected to allow the setting of the multivibrator at any time within the time interval regardless of the time of arrival, i.e. of application, of the noiseless signal during the time interval. Also, a system in which the multivibrator and control circuit is used for commonly storing signals from a noisy signal source such as a data processing unit and a noisy signal source such as a storage system of the magnetic memory type.

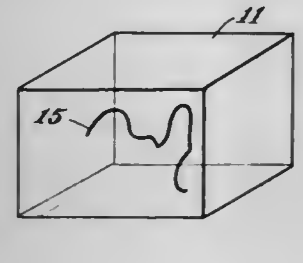
3,609,706
METHOD AND APPARATUS FOR GENERATING THREE-DIMENSIONAL PATTERNS

Arthur W. Adamson, Palos Verdes Est., Calif., assignor to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 9, 1968, Ser. No. 782,320

Int. Cl. G11c *13/04*; **G02b** *1/00*

U.S. Cl. 340—173 CC **16 Claims**



Method and apparatus for generating patterns in a three-dimensional volume of material having at least two discernible nonradiation emissive states and responsive to a selected level of radiant energy, such as heat or light, to pass between the discernible states. External radiation sources with distinct wavelength ranges are utilized to cause the material to pass from one discernible state to another in preselected regions of the volume.

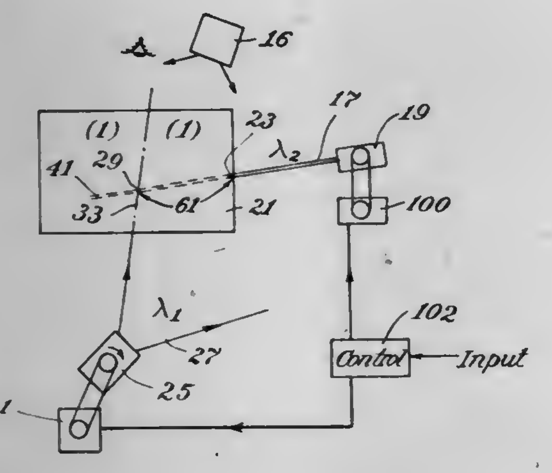
3,609,707
METHOD AND APPARATUS FOR GENERATING THREE-DIMENSIONAL PATTERNS

Jordan D. Lewis, Worthington, and Albert H. Adelman, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Dec. 9, 1968, Ser. No. 782,321

Int. Cl. G11c *13/04*; **G02b** *1/00*

U.S. Cl. 340—173 CC **43 Claims**



Method and apparatus for generating patterns in a three-dimensional volume of material having at least two discernible nonradiation emissive states and responsive to a selected level of radiant energy, such as heat or light, to pass between the discernible states. According to one aspect of the invention, external radiation sources with distinct wavelength ranges are utilized to cause the material to pass from one discernible state to another in preselected regions of the volume. According to another aspect of the invention, materials used have a sharp threshold between their two discernible states wherein a single external radiation source of one range of wavelengths may have its intensity focused in preselected regions of the volume.

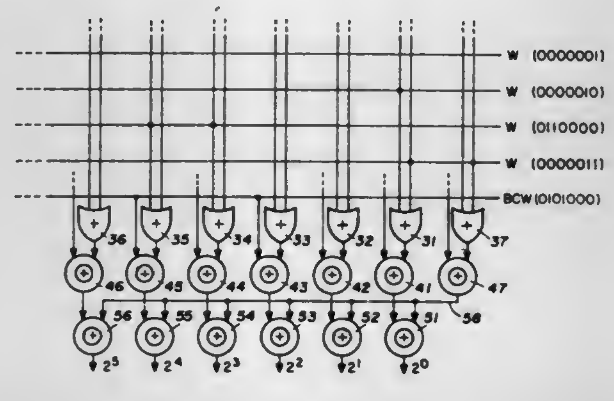
3,609,708
OPTIMIZED READ ONLY MEMORY USING TAG BITS

Harvey G. Cragon, Dallas, and William D. Kastner, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1968, Ser. No. 787,785

Int. Cl. G11c *17/00, 5/02, 7/00*

U.S. Cl. 340—173 SP **7 Claims**



Word length limitations on "read only" memories due to limited driving capability of a single word driver and the limitations upon the number of words which can be stored due to the limited number of inputs to OR gates at the memory output are minimized by complementing each row in the memory matrix and each column in the memory matrix when the number of ones in a given row or column is greater than one-half the number of bits in the row or column respectively and storing a first set of tag bits representative of the rows complemented and the second set of tag bits representative of the columns complemented. Means are provided for reading from the sets of tag bits when reading data represented by bits in the memory rows and columns.

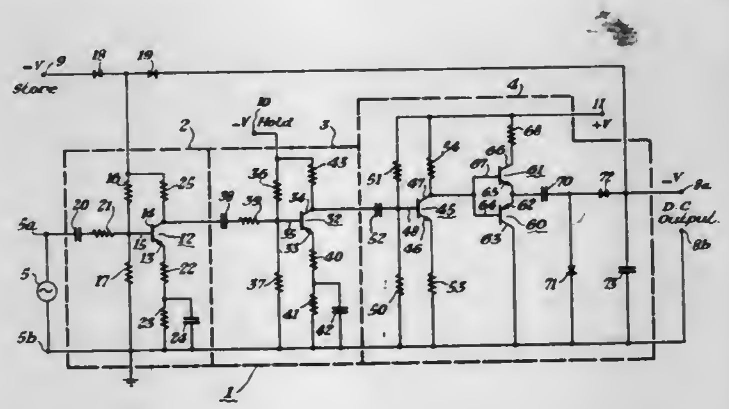
3,609,709
FAIL-SAFE MEMORY CIRCUITS

Walter W. Sanville, and John O. G. Darrow, both of Murrysville, Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed May 19, 1969, Ser. No. 825,604

Int. Cl. G11c *11/34, 7/06, 7/02*

U.S. Cl. 340—173 R **12 Claims**



This disclosure relates to fail-safe memory circuits for storing information data comprising a source of recurrent signals which is selectively gated by the presence of a storage command signal and a holding command signal, and an amplified means receiving the gated recurrent signals and producing an output when and only when valid information data is stored.

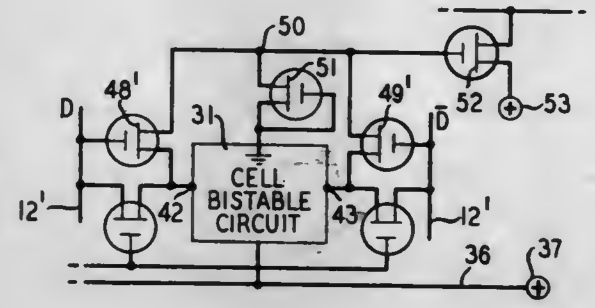
3,609,710
ASSOCIATIVE MEMORY CELL WITH INTERROGATION ON NORMAL DIGIT CIRCUITS

Thomas E. Browne, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 29, 1969, Ser. No. 828,934

Int. Cl. G11c *11/40, 15/00, 7/00*

U.S. Cl. 340—173 AM **23 Claims**



A semiconductor memory cell is adapted for associative memory use by applying interrogation input information on the normal cell digit circuits that are also used for reading and writing operations. A pair of interrogation transistors compare digit circuit signals to the prevailing state of the cell and provide a corresponding indicator signal to a memory match signal bus. Several techniques are disclosed for realizing advantageous coupling between the interrogation transistors and the match bus and for implementing a match detector circuit for use with the bus. The several techniques, in conjunction with the use of insulated gate field effect transistors and the multipurpose digit circuits, are employed in different sets of circumstances to achieve different operating features.

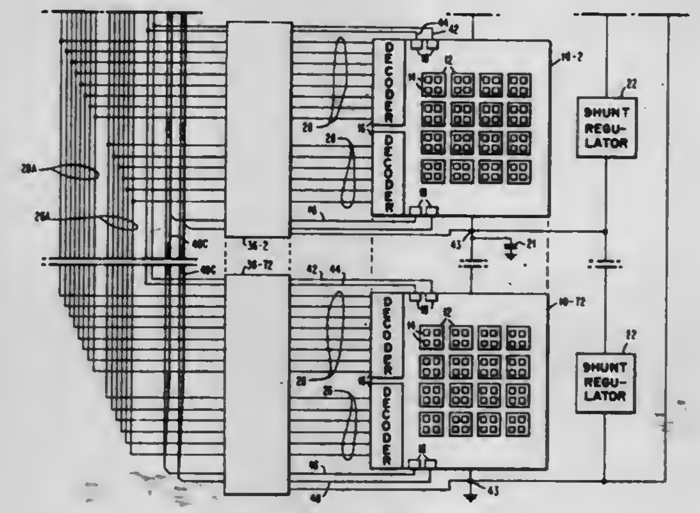
3,609,711
MEMORY PLANES CONNECTED IN SERIES TO A POWER SUPPLY, WITH OPTO-ELECTRONIC ACCESS

John B. Gunn, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,202

Int. Cl. G11c *5/06, 7/00*

U.S. Cl. 340—173 R **11 Claims**



The memory is formed of semiconductor current steering bistable circuits. These circuits are arranged in groups on circuit boards with each group including the storage circuits for 1 bit position in each word. The groups of circuits are connected in series across the computer voltage supply so that essentially the same current flows through each group of circuits. With this series arrangement, the voltage level is different for each group of circuits and read/write and control signals are coupled to and from the circuits with opto-electronic coupling means which transmit signals independently of voltage level.

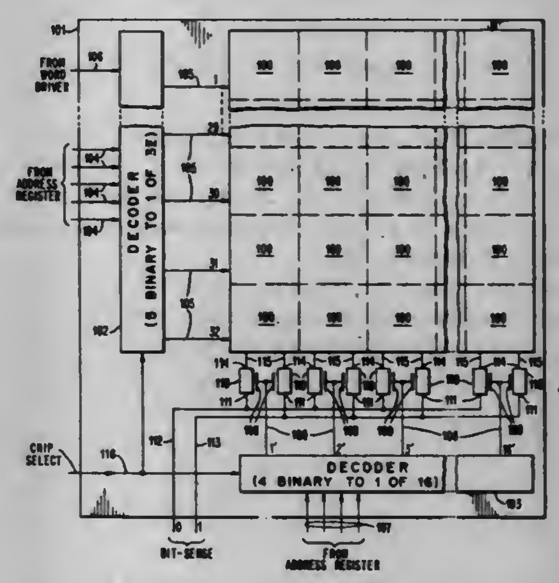
3,609,712
INSULATED GATE FIELD EFFECT TRANSISTOR MEMORY ARRAY

Robert H. Dennard, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,220

Int. Cl. G11c *11/40*; **H03k** *3/286*

U.S. Cl. 340—173 FF **30 Claims**



A bit oriented integrated circuit insulated gate field effect transistor memory array is disclosed which includes decoding on a semiconductor chip for both word and bit lines. Decoders which incorporate a combination of NOR logic elements and inverters provide for selection of a pair of bit lines and a single word line such that information can be written into a field effect transistor bistable circuit memory cell associated with these word and bit lines. Decoder controlled bit line switches in the form of field effect transistors are enabled to close the circuit between the bit driver and a column of memory cells. Also disclosed is a bit line biasing technique which eliminates the possibility of false writing into unselected memory cells. This is accomplished by applying a voltage via a resistance to the bit lines or by intermittently applying an appropriate voltage to the bit conductors associated with unselected memory cells.

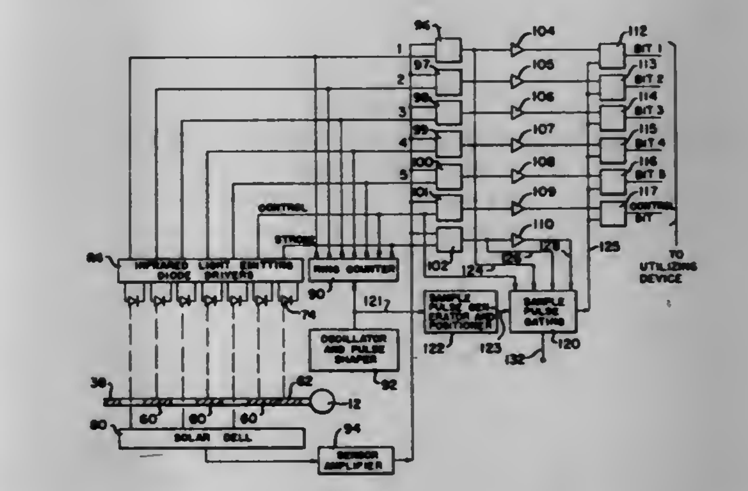
3,609,713
DATA ENTRY MEANS

Robert M. Wooton; Duncan E. Cull, and Robert L. Robke, all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Jan. 14, 1969, Ser. No. 791,118

Int. Cl. G11c *17/00, 13/04*

U.S. Cl. 340—173 LM **11 Claims**



An electrooptical data entry device for translating data, which may be manually entered, as from a keyboard, into electrical signals. A plurality of radiation-emitting elements are located in a plurality of channels in the device, and a radiation-sensitive element extends transversely across the channels. Shutter members controlled by keys of the keyboard may be selectively moved into the channels to block radiation in said channels, thus producing a change in electrical output of the radiation-sensitive element. Electrical circuitry is provided for sequentially energizing the various radiation-emitting elements to provide sequential sensing of the channels to determine which are blocked by the shutter members. Gating circuitry is provided for generating output signals representative of the information entered from the keyboard.

3,609,714
MAGNETIC FIELD COUPLED SUPERCONDUCTING QUANTUM INTERFERENCE SYSTEM

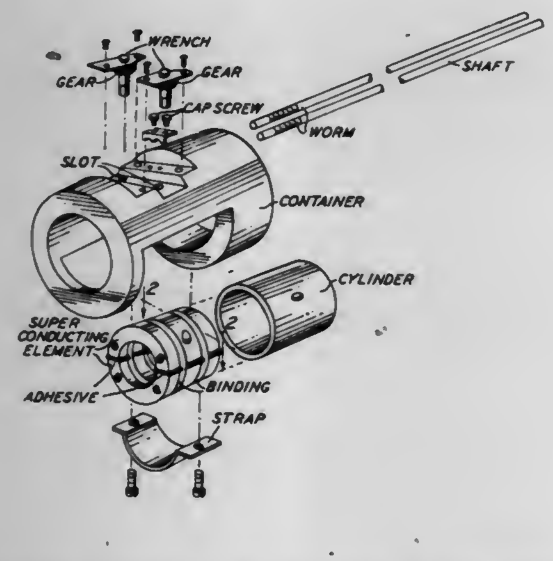
Arnold H. Silver, Palos Verdes Peninsula, and James E. Zimmerman, Santa Ana, both of Calif., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 796,303, Jan. 24, 1969, Pat. No. 3,573,759. which is a continuation of application Ser. No. 53,239, Mar. 24, 1966, now abandoned.

Filed Dec. 22, 1969, Ser. No. 886,836

Int. Cl. G11c *11/42*

U.S. Cl. 340—173.1 **3 Claims**



This disclosure relates to an electrical circuit component including a superconductive quantum interference device having a loop of superconducting material with a weak link positioned therein. The loop of superconducting material and the weak link enclose an area for the reception of magnetic flux. Means are positioned adjacent the superconductive quantum interference device for producing a varying magnetic field at the device to induce a current therein. The magnitude of the varying magnetic field is sufficient to induce a critical current in the weak link. As a result, the current induced in the superconductive quantum interference device alternately increases and decreases as the number of flux quanta changes in the area enclosed by the superconducting material and weak link.

3,609,715
STRIP LINE, FOLDED ARRAY, THIN FILM MAGNETIC ROD MEMORY

Donal A. Meier, Inglewood, Calif., assignor to The National Cash Register Company, Dayton, Ohio

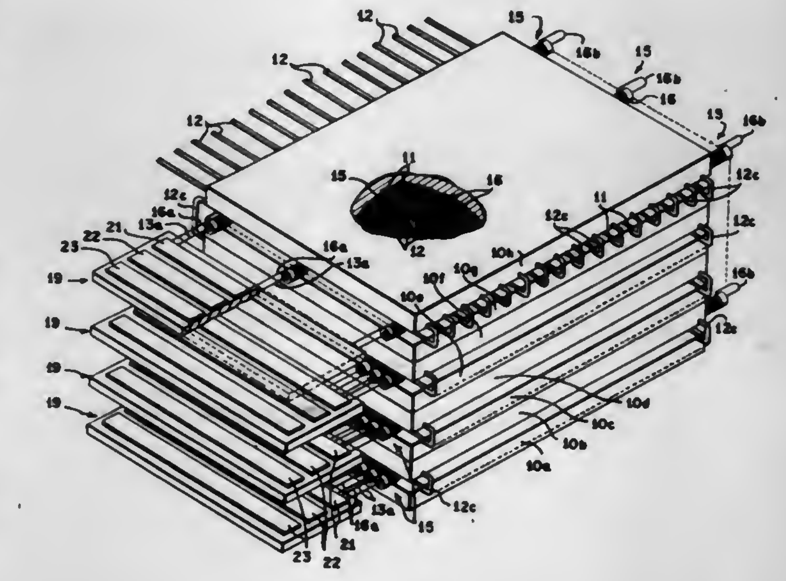
Filed Oct. 24, 1966, Ser. No. 588,949

Int. Cl. G11c *5/04, 11/14*

U.S. Cl. 340—174 TF **22 Claims**

A memory unit is disclosed in which a planar array of thin film magnetic rod structures is sandwiched between a pair of magnetic sheets. Solenoid windings wound along the length of the rod structure serve as word windings and conductive wires disposed perpendicular to the rod structures and between the sheets serve as digit windings or the plurality of bistable magnetic storage elements formed along the rod structures at the intersections of the conductive wires. The magnetization of each of the storage elements is axially switched to a predetermined one of its two stable states by simultaneously passing appropriate currents through the relevant solenoid winding and conductive wires. A plurality of such units are assembled together to form a three-dimensional memory matrix.

In constructing such a memory a number of magnetic sheets are placed side by side and a plurality of unbroken conductive wires are laid in grooves in the sheets each of the wires running across all the sheets. The memory is then formed by appropriate folding of the conductive wires and the sheets with the magnetic rod structures sandwiched between the sheets and the conductive wires acting as hinges.



3,609,716
MEMORY DEVICE

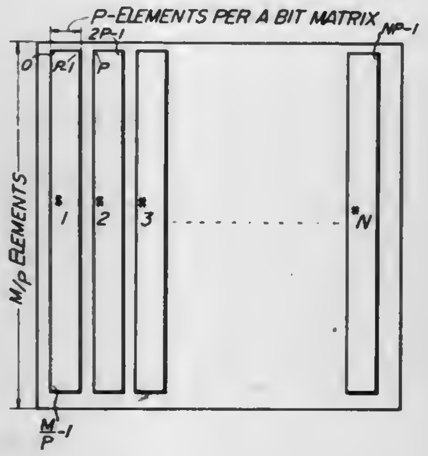
Seihin Kobayashi, and Michihiro Torii, both of Shizuoka Prefecture, Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Sept. 20, 1968, Ser. No. 761,246

Claims priority, application Japan, Dec. 6, 1967, 42/77935

Int. Cl. G11c *5/02, 11/06*

U.S. Cl. 340—174 M **5 Claims**



A memory device operable according to a three-dimensional current coincidence mode having N-bit matrices arranged in the X direction as a two-dimensional matrix, in which each bit matrix comprises memory elements arranged in a mat form so that there are P memory elements in the X direction and M/P memory elements in the Y direction, where M and N are the number of words and the number of bits of each work, respectively, and P is a value determined by the relation $M/P \approx NP \approx \sqrt{MN}$, and each memory element is strung with an *X*-winding, a *Y*-winding, an inhibit winding and a sense winding or a combined inhibit and sense winding, that is, a memory device operable in the three-dimensional current coincidence mode (electrically) with its memory matrix of two-dimensional arrangement (physically).

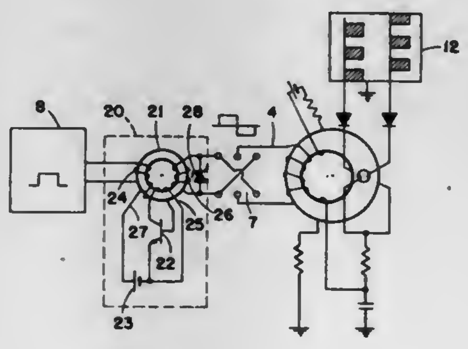
3,609,717
MAGNETIC MEMORY DEVICE

Sadamu Ohteru; Hiroshi Kobayashi, and Yushi Uchida, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

Filed Aug. 28, 1969, Ser. No. 824,704

Int. Cl. G11c *11/08, 7/00*

U.S. Cl. 340—174 CT **4 Claims**



Apparatus for converting a unipolar pulse to a bipolar pulse is disclosed in accordance with the teachings of the present invention wherein a saturable magnetic core exhibiting a substantially rectangular hysteresis characteristic and admitting of first and second states of saturation is provided with an input winding, an output winding and reset winding means wound thereabout. A unipolar pulse applied to the input winding drives the magnetic core into its first state of saturation, thereby inducing a pulse of like polarity to the unipolar pulse in the output winding. When the unipolar pulse terminates, a reset current is applied to the reset winding means to drive the magnetic core into its second state of saturation, thereby inducing a pulse of opposite polarity to the unipolar pulse in the output winding. The bipolar pulses thus induced in the output winding may be utilized as write-in pulses for a transfluxor.

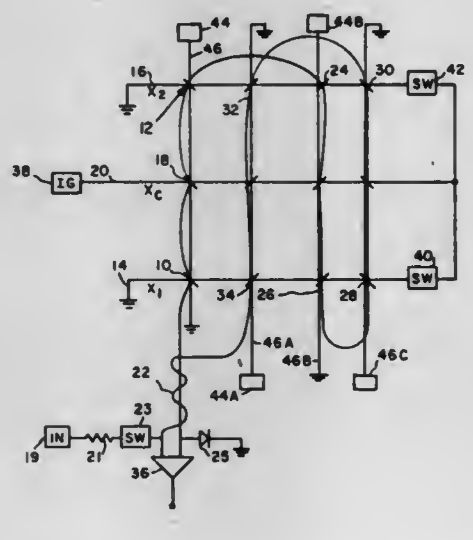
3,609,718
MAGNETIC ARRAY ORGANIZATION

Hubert G. De Vries, Littleton, Colo., assignor to Ferroxcube Corporation, Saugerties, N.Y.

Filed May 26, 1969, Ser. No. 827,709

Int. Cl. G11c *5/02, 11/06*

U.S. Cl. 340—174 DC **8 Claims**



A magnetic memory matrix having a three-wire configuration including a sense winding wound through the array in a manner wherein the winding enters adjacent cores in the array and is wound in parallel with column drive lines. The sense line reenters the array in alternate columns, thereby maintaining small external array loops. A current driver coupled to an additional core line provides Delta noise cancellation.

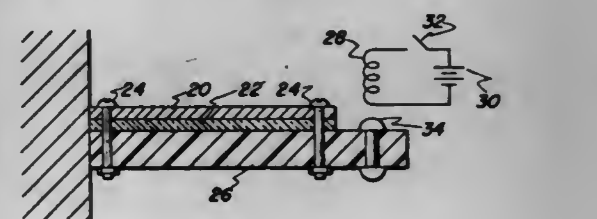
3,609,719
FIRST ORDER TRANSITION RECORDING UTILIZING INCOMPLETE TRANSITION IRON-RHODIUM FILMS

James M. Lommel, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 17, 1969, Ser. No. 885,697

Int. Cl. G11c *11/14, 11/42;* H01v *3/04*

U.S. Cl. 340—174 TF **11 Claims**



Information is thermally recorded along an iron-rhodium film exhibiting a thermal transition between the ferromagnetic and antiferromagnetic states of substantially less than 50 percent by applying strain to the film in excess of 0.3 percent to increase the percentage of film undergoing transition to the antiferromagnetic state by an amount greater than approximately 40 percent of the original transition. Selective sites of the highly antiferromagnetic film then are heated, e.g. utilizing an addressable electron beam gun, to produce a first order transition of the heated sites to the ferromagnetic state for storage of information at the site and after applying a uniform magnetic field to the film, the magnetization of each bit site is read out utilizing conventional electron mirror microscopy or secondary electron emission techniques.

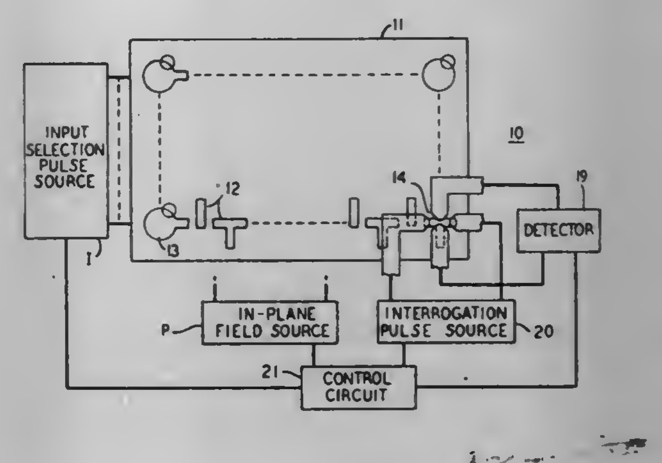
3,609,720
MAGNETIC DOMAIN DETECTOR

Walter Strauss, East Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 8, 1969, Ser. No. 882,900

Int. Cl. G11c *19/00, 7/00, 11/14*

U.S. Cl. 340—174 TF **6 Claims**



Single wall domains are moved synchronously in a sheet of magnetic material along channels defined by magnetically soft overlays as an in-plane magnetic field reorients. A detector is described which includes as an integral part thereof a portion of the overlay defining the propagation channels.

3,609,721
METHOD OF CLEARING DUST FROM A MAGNETIC RECORD DISC OR THE LIKE

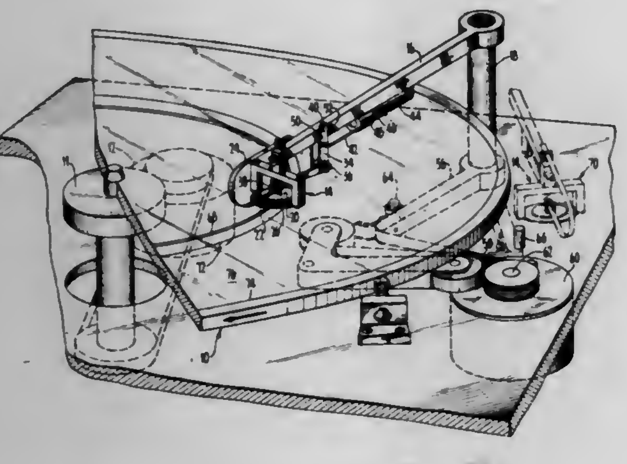
William E. Meneley, Oakland, Calif., assignor to The Singer Company

Filed Mar. 3, 1969, Ser. No. 803,863

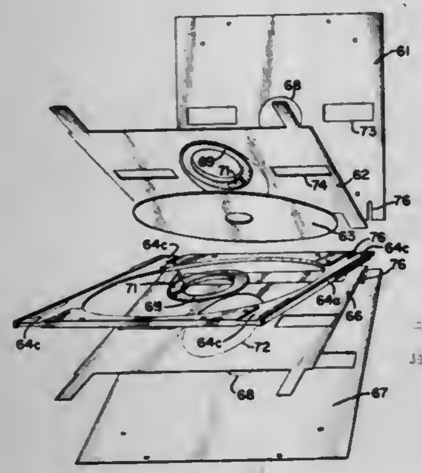
Int. Cl. G11b *5/00*

U.S. Cl. 340—174.1 E **23 Claims**

For dislodging and clearing away dust particles from the surface of a magnetic, data-storage disc, the disc is run at operating speed and a flying head is swept across it slowly, for example, at the rate of one-fourth the width of the slider to less than one-twentieth thereof during each revolution of the storage disc. The slider may be round and have a spherical bearing face. Automatic apparatus may control such a sweep as part of a startup sequence.



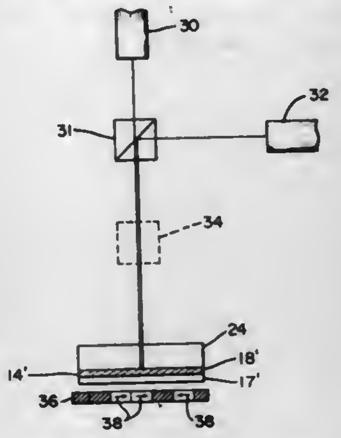
3,609,722
CENTER SEALING DATA DISC CASSETTE AND PROCESSING MACHINE
George E. Zenzefilis, 27 Los Vientos, Camarillo, Calif.
Filed Mar. 19, 1969, Ser. No. 816,874
Int. Cl. G11b *23/04, 25/04;* **B65d** *85/54*
U.S. Cl. 340—174.1 C **12 Claims**



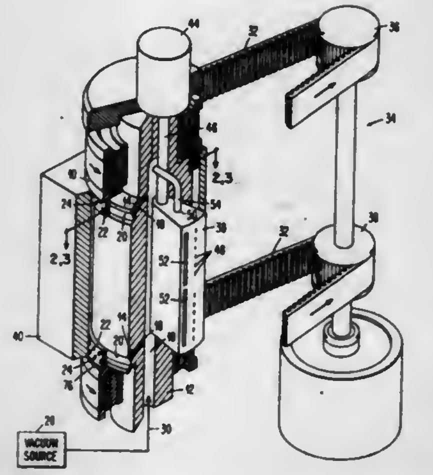
A cassette for a data disc has a sliding shutter that opens a window for access to the data disc held in the cassette. The cassette has a central opening exposing the center of the disc so that the disc can be mounted on a spindle, and this opening is sealed from dust by compressible seals that also act to hold the disc in the cassette out of touch with other parts of the cassette. There is provided a data processing machine upon which the cassette may be mounted or removed for recording or takeoff of information and wherein the final stages of mounting the cassette open the shutters and compress the seals, and the first stages of removal close the shutters and seals.

3,609,723
PIEZOREFLECTIVE-MAGNETOSTRICTIVE FILM TRANSDUCER
John K. Alstad, and James R. Wiitala, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,905
Int. Cl. G11b *11/10;* **G02f** *1/22*
U.S. Cl. 340—174.1 M **10 Claims**

Magnetic information is converted to optical signals by placing a coupled piezoreflective-magnetostrictive film layer between the information-containing medium and a light source; and the pattern of magnetization on the medium induces a similar pattern of elongation or contraction in the magnetostrictive film which imparts a strain at corresponding locations in the piezoreflective film and a resulting change in reflectivity of the film. Accordingly, the reflectance of light incident upon the piezoreflective film surface can be sensed to determine the presence or absence of magnetization at particular locations on the information-containing medium.

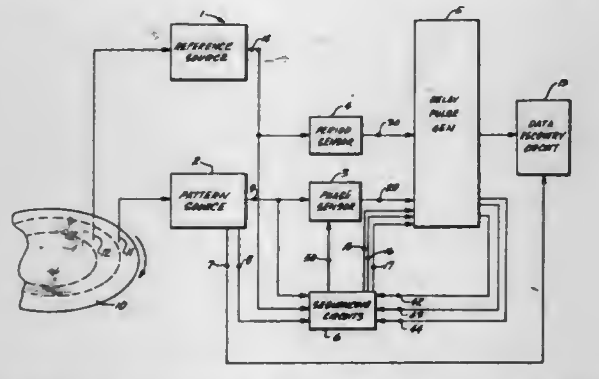


3,609,724
RANDOM ACCESS STRIP RECORDING STATION
Gary L. Allison; Laurence R. Beach, and Friedrich R. Hertrich, all of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 9, 1969, Ser. No. 883,520
Int. Cl. G11b *5/02, 15/38, 15/64*
U.S. Cl. 340—174.1 R **9 Claims**



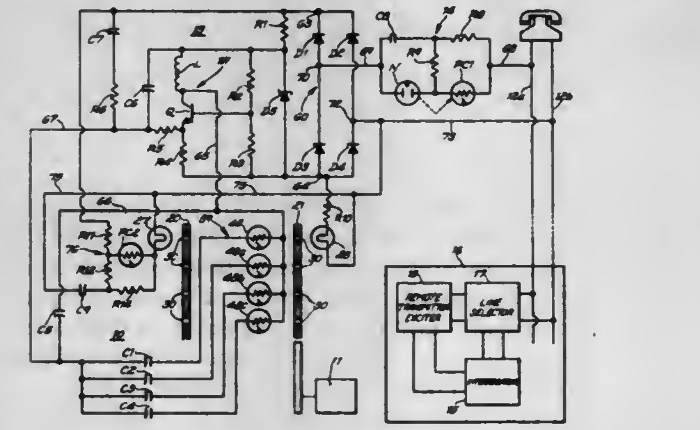
A strip recording station having two vacuum rings axially spaced apart to grasp a strip record by its edges and cause the strip to conform to a cylindrical shape surrounding a positionable read/write head. The strip is revolved past the read/write head by rotating the vacuum rings about their axis, as many times as necessary and ejected upon completion of the read/write function.

3,609,725
VARIABLE PHASE CLOCK FOR RECOVERY OF DATA
Richard C. Simonsen, Ventura, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 29, 1969, Ser. No. 888,323
Int. Cl. G11b *5/02, 27/10*
U.S. Cl. 340—174.1 B **20 Claims**



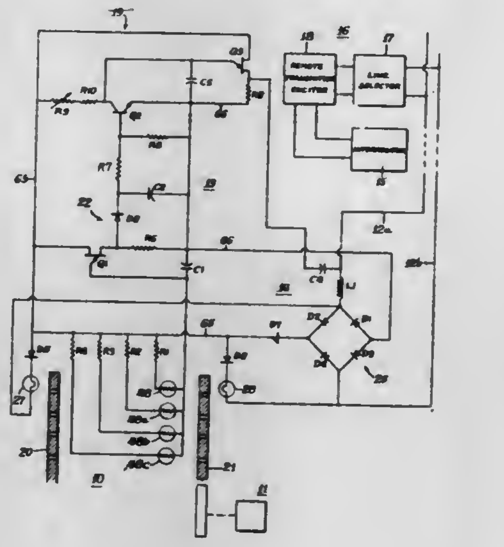
A system for producing a clock pulse train of prescribed phase relative to a data pulse pattern. circuit generates a phase signal indicative of the relative phase between a reference timing pulse train and the data pulse pattern. Each reference pulse triggers an adjustable delay pulse generator which is controlled by the phase signal so that it produces pulses at the prescribed phase.

3,609,726
REMOTE METER READING SYSTEM
Victor E. Stewart, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.
Filed Dec. 15, 1967, Ser. No. 690,980
Int. Cl. G08c *9/02, 19/10, 19/28*
U.S. Cl. 340—204 **14 Claims**



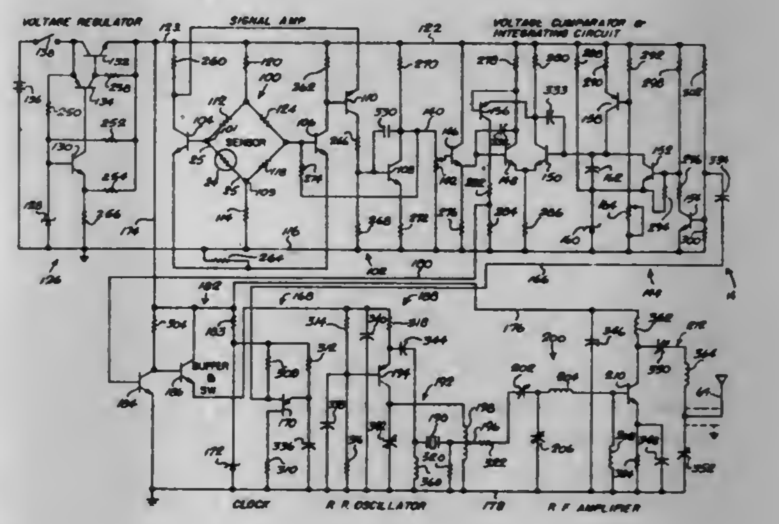
A position encoder and transponder for use in an automatic remote meter reading system and including disc means coupled to the meter being read and perforated in accordance with a position code and position means having a plurality of photoresponsive information bit means operatively associated with the coded disc. An oscillator provides a tone signal in accordance with a capacitive parameter and capacitance means is associated with each photoresponsive means for being placed in a parallel circuit relation with the capacitive parameter in accordance with the position of the coded disc so that a different tone signal will be provided for each disc position.

3,609,727
REMOTE METER READING SYSTEM
Richard E. Riebs, Hales Corners, Wis., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Mar. 17, 1969, Ser. No. 807,898
Int. Cl. G08c *19/36, 19/28, 19/26*
U.S. Cl. 340—204 **22 Claims**



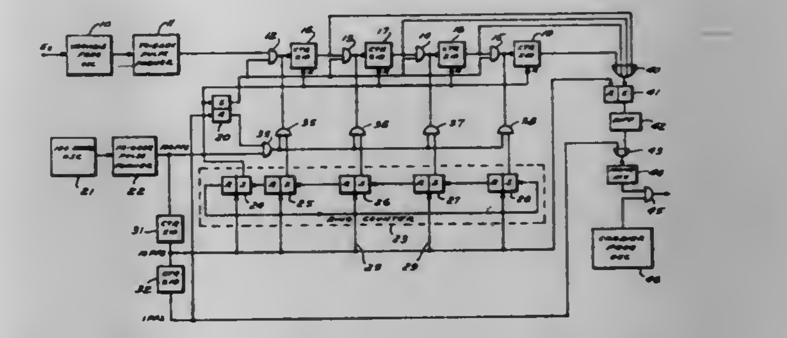
A position encoder and transmitter for an automatic remote meter reading system having a first oscillator producing a relatively high frequency pulse rate and a second oscillator producing a lower frequency pulse rate for disabling the first oscillator and which is determined by the value of the circuit parameters of the second oscillator. An encoder means varies the value of the circuit parameters in accordance with the position of the meter being read so that the rate of the low frequency pulse rate and the number of interruptions of the high frequency pulse rate during a predetermined interval of time indicates the position of the meter.

3,609,728
PORTABLE REMOTE LOCATION MEASURING SYSTEM UTILIZING PULSE WIDTH MODULATION
Richard M. Quinn, and Jerome A. Kwiatkowski, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.
Filed Jan. 21, 1969, Ser. No. 792,611
Int. Cl. G08c *19/16*
U.S. Cl. 340—206 **16 Claims**



A portable system for measuring a condition, particularly temperature, and transmitting a signal indicative of the condition to a remote location. A portable insulating and protective dry container adapted for use in extreme temperature environments, such as occasioned within a furnace or oven, houses a small transmitter. The transmitter is connected to a bridge-type transducer responsive to the condition to produce a pulse width modulated output signal that is transmitted to a remote receiving and monitoring location.

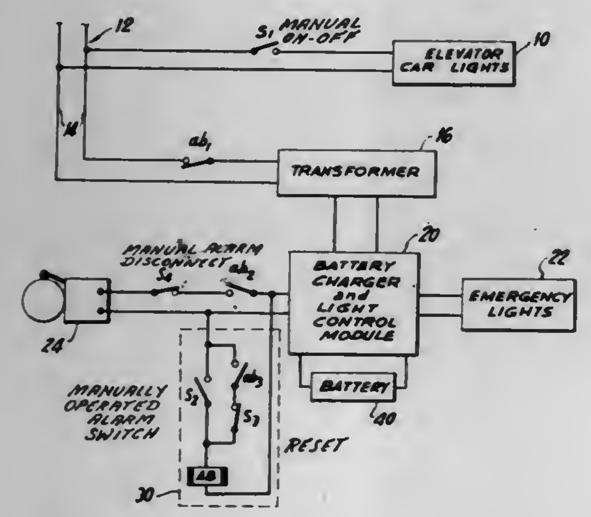
3,609,729
TELEMETRY SYSTEM
Wilmer C. Anderson, Greenwich, Conn., assignor to General Time Corporation, Stamford, Conn.
Filed Jan. 6, 1969, Ser. No. 789,209
Int. Cl. G08c *19/16*
U.S. Cl. 340—206 **17 Claims**



A telemetry system including a transmitter wherein a numerical count proportional to a parameter is momentarily stored in a series arrangement of multistage counters and wherein additional pulses are applied to the multistage counters in succession to develop a plurality of time positioned pulses suitable for transmission. The system also includes a receiver for displaying the transmitted data.

3,609,730
ELEVATOR EMERGENCY TESTING SYSTEM

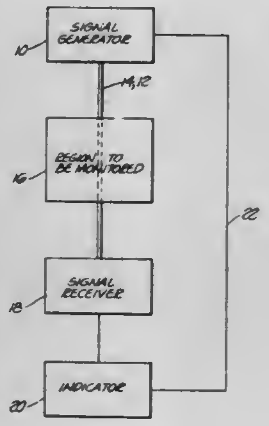
Stephen A. Hornung, Louisville, Ky., assignor to K. M. White Company, Inc., Louisville, Ky.
Filed Mar. 21, 1969, Ser. No. 809,136
Int. Cl. G08b *29/00*
U.S. Cl. 340—214 **4 Claims**



An elevator emergency testing system is incorporated in the alarm and emergency lighting circuits. The elevator car emergency lights are supplied electrical energy through a battery maintained in the charged state by a battery charger and light control module which is fed by the car service supply voltage. One pole of an elevator alarm button is employed to trigger the alarm in the conventional sense while another pole of the same button automatically disconnects the car supply voltage triggering the emergency lights.

3,609,731
REVERTIBLE TEMPERATURE DETECTOR

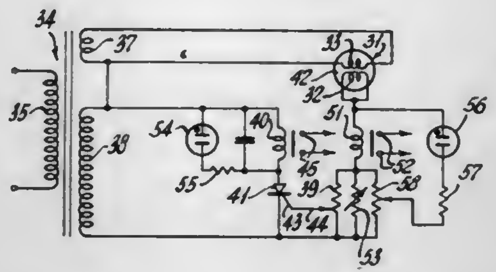
Joseph H. Evans, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed Aug. 15, 1968, Ser. No. 752,881
Int. Cl. G08b *21/00*; **G01k** *11/06*
U.S. Cl. 340—227 C **7 Claims**



A rapid, sensitive, revertible temperature monitoring system using a substantial change in impedance of a medium to a signal at a temperature-dependent change of physical condition, e.g., a change of state. In particular a system in which the transmission of ultrasonic waves through a meltable wire is monitored to indicate the temperature of the environment.

3,609,732
GAS RESPONSIVE SWITCHING DEVICE

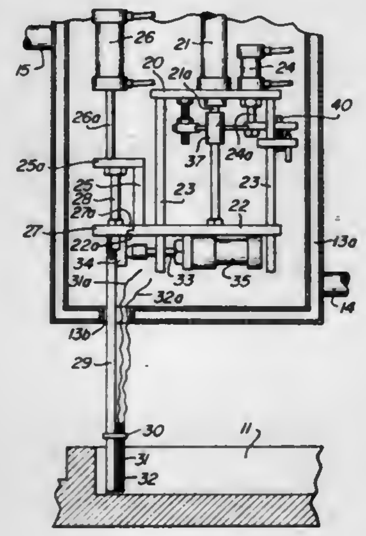
Riichiro Kasahara, Kobe, and Yuichi Shimakawa, Osaka, both of Japan, assignors to New Cosmos Electric Co., Ltd., Higashiyodogawa-ku, Osaka, Japan
Filed May 21, 1970, Ser. No. 39,354
Claims priority, application Japan, May 28, 1969, June 5, 1969, July 11, 1969, 44/49788;44/52642;44/66083
Int. Cl. G08b *21/00*
U.S. Cl. 340—237 R **6 Claims**



A gas responsive switching device for detecting gas concentrations in air which uses a heated semiconductor having two electrodes embedded therein, a resistor connected in series with the electrodes and across a power source, a thyristor and relay coil connected in series across a source of power and a connection between the control electrode and a tap on said resistor. The device may also include a second relay having a coil connected in series with said voltage divider and adjusted so that both relays operate at two different gas concentrations.

3,609,733
APPARATUS FOR CONTROLLING THICKNESS OF CAST ANODE COPPER AND THE LIKE

Henry W. Franz, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.
Filed Sept. 18, 1969, Ser. No. 859,095
Int. Cl. G01f *23/04*
U.S. Cl. 340—244 **8 Claims**

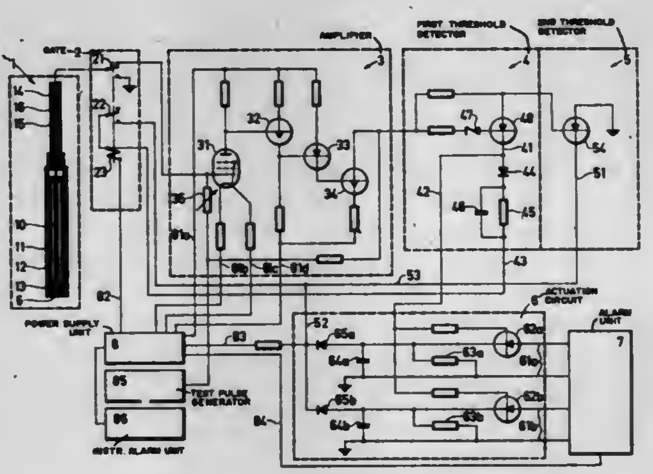


A vertically movable gauge, aboard a lift and carrying sensing means at its lower end, is adapted to be lowered in latched conjunction with the lift from an elevated clearance position above a mold of a casting wheel to bring the sensing means into physical contact with the bottom of the mold; it is further adapted to be then unlatched from the lift and individually retracted from such contact position a distance predetermined by the desired thickness of the anode, while the lift is being held by a brake to preserve the starting position which varies from mold to mold. When the molten metal poured into the mold rises to the level of the retracted sensing means, it causes a signaling and/or control system to be actuated. Pouring is immediately stopped, manually or automatically. The brake is then released and the lift raised to its original position, meanwhile picking up the retracted gauge device. The gauge is driven down to its original extended position relative to the lift and is relatched to the lift at the original wheel-clearance level, which permits rotation of the casting wheel to remove the full mold and to position an empty mold.

The apparatus is preferably pneumatically or hydraulically operated in conjunction with a fluidic control circuit and electrical sensing and control circuitry.

3,609,734
CURRENT SUPERVISION CIRCUIT

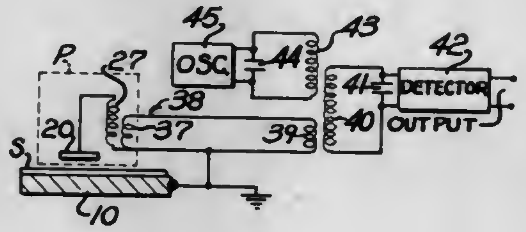
Arne Lennart Svansson, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed May 26, 1967, Ser. No. 641,531
Int. Cl. G08b *21/00*; **G01t** *3/00*; **H01j** *39/33*
U.S. Cl. 340—253 **7 Claims**



A circuit for supervising an electric current and giving an alarm when the current exceeds a predetermined upper limit defined by a first threshold detector, or drops below lower limit defined by a second threshold detector.

3,609,735
INDUCTIVE-CAPACITIVE PROBE IN MACHINE FOR HANDLING SHEETLIKE MATERIAL

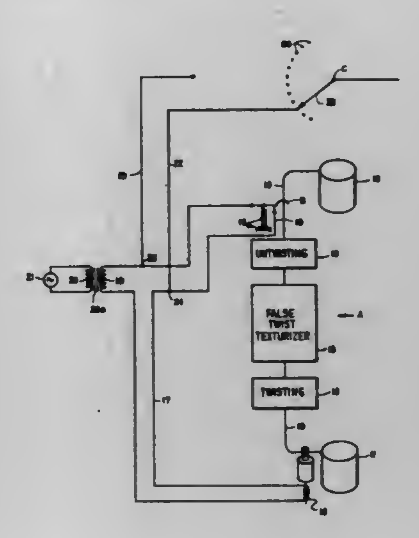
Walter E. Dauterman, Willowick, and George Y. Ono, Mayfield Heights, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Dec. 3, 1968, Ser. No. 780,763
Int. Cl. G08b *21/00*; **B65h** *25/14*
U.S. Cl. 340—259 **10 Claims**



Machine for handling sheetlike material, such as a printing press and a sheet feeder therefor, having a combined inductive-capacitive probe for discriminating among the presence of a single thickness of the sheetlike material, the absence of the material, and the presence of excessively thick sheetlike material, such as two or more superimposed sheets, or for determining the moisture content of the sheetlike material. The probe is substantially insensitive to machine vibrations.

3,609,736
STRAND MONITORING APPARATUS

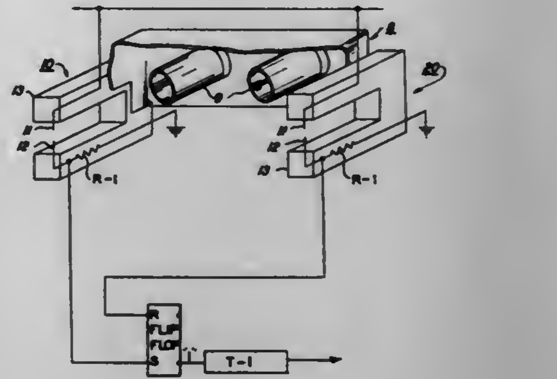
John M. Cochran, Jr., Greenville, S.C., assignor to Frontier Electronics, Inc., Greenville, S.C.
Filed Feb. 16, 1970, Ser. No. 11,464
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **10 Claims**



An apparatus for monitoring a plurality of strand manipulating operations on a machine in order to determine the efficiency of the machine. Each machine is provided with a sensing means that is activated when there is an absence of tension in a strand. The scanner scans all of the sensing means. A counter is provided for counting count pulses when the strands are operating normally. However, if the strand has parted the scanner causes the counting circuit to be interrupted in order to inhibit the counting operation. If the counter does not reach a predetermined value an alarm is sounded.

3,609,737
METHOD AND APPARATUS FOR ARTICLE DETECTION UTILIZING CORONA DISCHARGE

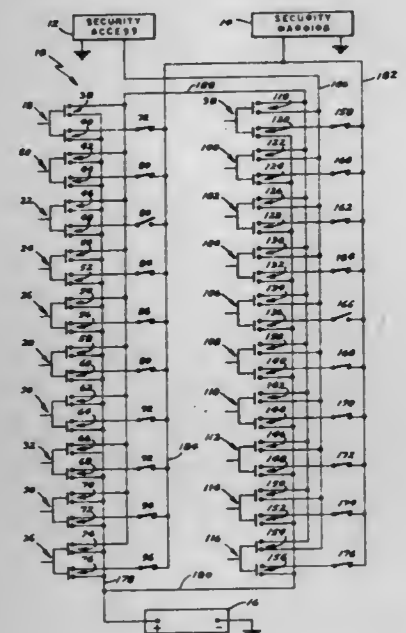
Martin Howard Lustig, Rochester, and Norman Robert LaFond, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 28, 1968, Ser. No. 740,942
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **6 Claims**



A sensor for detecting the presence or absence of support material passing in a predetermined path of movement. The sensor comprises a pair of spaced electrodes positioned adjacent the path of support material movement with the support material passing therebetween. The electrodes are supported by a suitable insulator and the spacing and voltage differential therebetween predetermined to generate a current which indicates the presence or absence of a support material passing between the electrodes. The output from the sensors is coupled to a suitable detector to control the operation of the automatic xerographic reproducing machine in accordance with the passage of the support material.

3,609,738
SECURITY ACCESS CONTROL AND ALARM SYSTEM

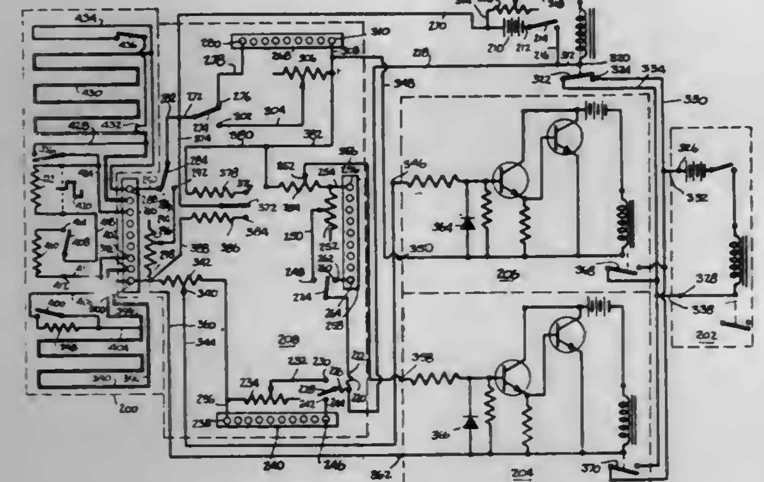
Egon Marte, 2335 Argonne Drive, Minneapolis, Minn.
Filed Jan. 14, 1970, Ser. No. 2,896
Int. Cl. G08b *13/22*
U.S. Cl. 340—274 **7 Claims**



A control system for a restricted area to which only authorized personnel should have access in which the user operates a switching system to gain admittance. So long as the persons seeking admittance operate the required number of switches, the control system will allow access to the area, but will signal a remote alarm unless the operated switches correspond to a preset combination which is given only to authorized personnel.

3,609,739
ALARM AND DETECTION SYSTEMS COMPRISING ELECTRICAL CONDUCTIVE COATING

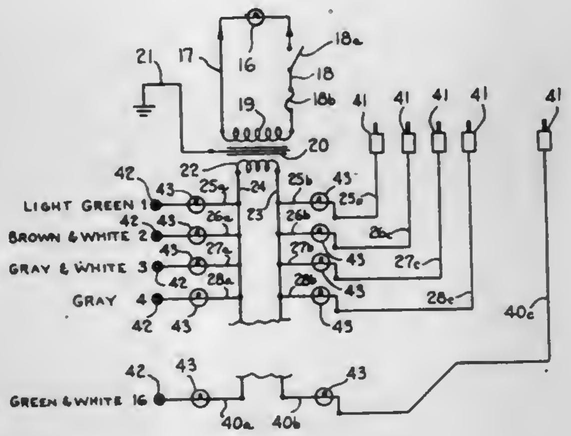
John W. Walter, 511 Manhasset Woods Drive, Manhasset, N.Y.
Filed Nov. 21, 1968, Ser. No. 777,653
Int. Cl. G08b *13/00, 13/04*
U.S. Cl. 340—274 **3 Claims**



An alarm system for protection against unauthorized intrusion which comprises a closed electric circuit and an alarm responsive to a break in said closed circuit and further comprising a four-leg bridge circuit wherein each leg of the bridge comprises a different resistive portion of said closed circuit or comprises a nonresistive value to balance any part or all of an unused leg of said bridge. A plurality of high gain amplifiers are each associated with a different pair of legs of said bridge circuit and each amplifier is attached to detect a change in the resistive value of said leg pairs and to produce a current in response to said change, which current actuates said alarm. This alarm system makes virtually impossible the compromising of the alarm system by shunting any terminals of any switch, actuator, connecting leads, or entrance or exit terminals of any surface to be protected.

3,609,740
COLOR PERCEPTION TESTER

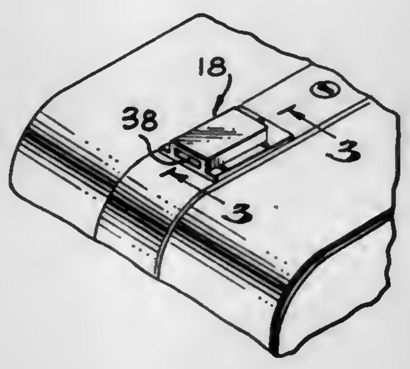
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert B. Martin, Satellite Beach; Eddie L. Brawner, Cape Canaveral, and Wayne E. Pate, Orlando, all of Fla.
Filed Sept. 9, 1969, Ser. No. 856,327
Int. Cl. G08b *21/00;* G09b *1/00*
U.S. Cl. 340—279 **2 Claims**



A color perception tester for testing individuals in order to determine if the individual can correctly identify wires in accordance with their respective color code. The tester includes a plurality of colored wires, which, when plugged in the appropriate receptacle or plug, will cause a pair of adjacent lamps to be illuminated. Indicia is printed adjacent the plug identifying the proper colored wire which should be plugged in the circuit.

3,609,741
PREVENTION OF UNAUTHORIZED MOVEMENT OF ARTICLES BETWEEN PREDETERMINED AREAS

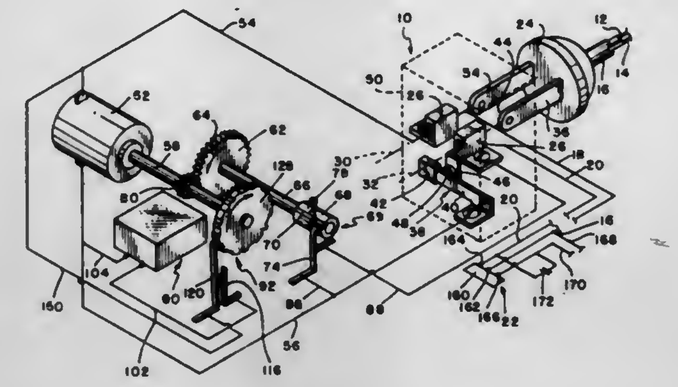
Wendell S. Miller, 1341 Comstock Ave., Los Angeles, Calif.
Filed Mar. 21, 1969, Ser. No. 809,259
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **16 Claims**



A system for indicating an attempt to move an article, such as a piece of baggage or an article of merchandise, between predetermined areas, by providing a radio transmitter and radio receiver between the areas, and providing on the article a device having electrical circuitry adapted to receive from the transmitter a signal at a first frequency, and retransmit a radio signal of changed frequency, with the receiver being constructed to respond to and indicate the presence of the return signal. A person authorized to move the baggage or other article may have a key adapted to disable the circuitry against transmission of the changed frequency signal, or otherwise alter the signal, in a manner indicating to the receiver his authorization.

3,609,742
PROPERTY SECURITY SYSTEM

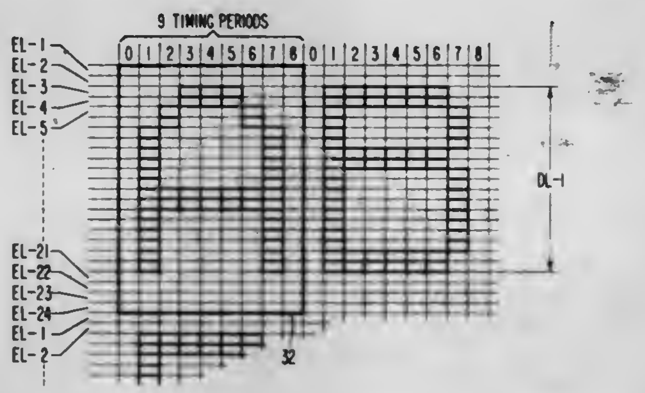
Hugh D. Burdick, 1602 Alta, Wichita, Kans.
Filed Feb. 7, 1969, Ser. No. 797,441
Int. Cl. H04m *11/04*
U.S. Cl. 340—310 **9 Claims**



Property security apparatus for producing a pulsed perceptible signal, audible and/or visual, at a detection location whenever electrical apparatus, such as a television set, is disconnected from a convenience outlet socket at a remote location. A sensing switch at the outlet socket closes in response to withdrawal of an electric power cord plug therefrom, and such closure initiates the production of a coded sequence of pulses of a radiofrequency signal that is coupled to the electric power circuit with the latter serving as a transmission line for the pulsed radiofrequency signal to the detection location. Means is provided at the detection location for pulsing a perceptible signal generator in synchronism with the detection of radiofrequency pulses. The sequence of radiofrequency pulses are uniquely coded whereby identification of the particular sensing switch can be made, when a plurality of combined sensing switch and radiofrequency signaling units are employed at a plurality of different locations.

3,609,743
DISPLAY UNIT

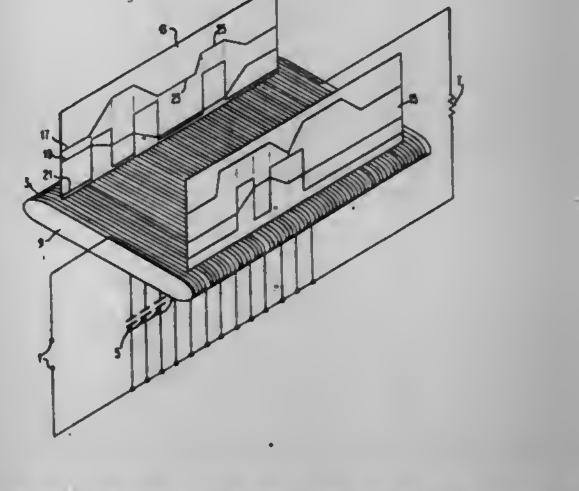
Murray Lasoff, Downingtown, Pa.; Irwin R. Holmes, Willingboro, N.J.; John R. Port, King of Prussia, and Edward F. Myers, Lansdowne, Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Feb. 1, 1967, Ser. No. 613,264
Int. Cl. G08b *11/00*
U.S. Cl. 340—324 **14 Claims**



The cathode-ray tube of a standard television monitor is used for presenting a visual display of alphanumeric characters, punctuation marks and other marks used in business correspondence, and which have been placed into a storage device in binary coded form. A character generator is sensitive to the character codes in the storage device and, in timed relation with the scanning of the cathode-ray tube screen by the cathode beam, it generates and causes the display of horizontal portions of each character. A keyboard is provided to enable an operator to enter and load data for display into the storage device. An input device is also provided to enable a local or remotely situated device, which may be another display unit or data processor, for example, to also enter and load data for display into the storage device. A cursor presentation, in the form of a movable mark or symbol, which is displayed on the cathode-ray tube screen, is provided to enable the operator to visually determine the place on the screen where the next alphanumeric entry is to take place. Several control keys are provided on the keyboard which enable the operator to perform various normal typewriter control functions, such as carriage return, backspace, etc. The keyboard is also provided with keys which enable the operator to highlight the display by underscoring one or more characters, as desired. The keyboard is also provided with keys which enable the operator to correct or otherwise edit the data being displayed on the screen. Thus, the operator may erase certain characters, or simply overwrite them with new characters. The invention provides the necessary electronic circuits to permit messages to be transmitted to, or received from, local or remotely situated devices. Suitable circuitry, and control keys on the keyboard, enable the operator to transmit a preselected portion of the message being displayed, or the entire message, as desired. Also, an associated device, such as a data processor, for example, can transmit a message to the display unit and have it displayed on a selected area of the screen. The circuitry also permits the data processor to control the transmission of data to it, so that it can cause all or only a part of the screen area display to be transmitted to it.

3,609,744
DELAY LINE CHARACTER GENERATOR

Kenneth A. Pearson, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 15, 1968, Ser. No. 713,529
Int. Cl. H01j *29/70*
U.S. Cl. 340—324 A **4 Claims**

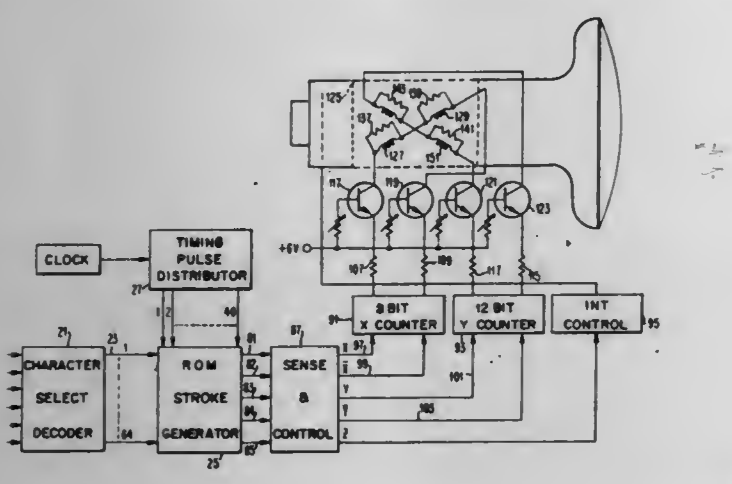


A device for generating a character upon a CRT tube consisting of a pulse generator placing a pulse upon a delay line which is capacitively coupled to three etched sense wires, the voltages induced on said wires ultimately controlling the X-deflection, the Y-deflection, and the unblanking function of the CRT tube. Before the voltages are applied to the CRT tube, the correct sense wires are selected and the voltages thereon are amplified.

3,609,745
SYMBOL DISPLAY APPARATUS

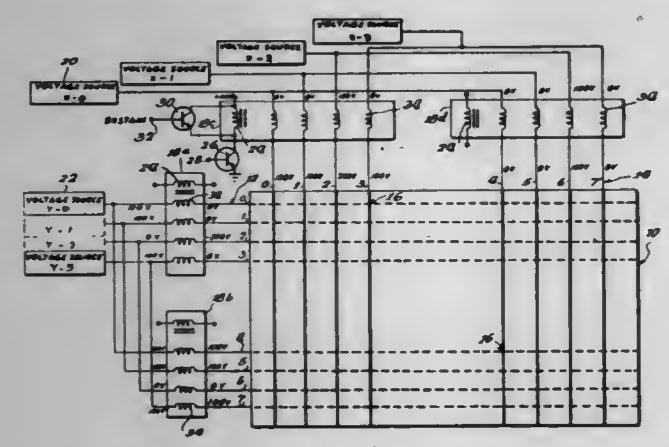
William R. Lamoureux, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 15, 1968, Ser. No. 721,477
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 **7 Claims**

A direct view display system adopted to operate with a data processor combines a constant time variable velocity display system with uniform intensity. Symbols are selectively generated as a sequence of strokes from a capacitor read-only storage. By applying these strokes through the deflection control circuitry of the cathode-ray tube at a rate which exceeds the time constant of the high frequency yoke, a quasi-integration of the input staircase is provided resulting in uniform display intensity.



3,609,746
APPARATUS FOR DRIVING PLASMA PANELS

Ray L. Trogdon, Urbana, Ill., assignor to University of Illinois Foundation, Urbana, Ill.
Filed Oct. 8, 1968, Ser. No. 765,938
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 R **6 Claims**

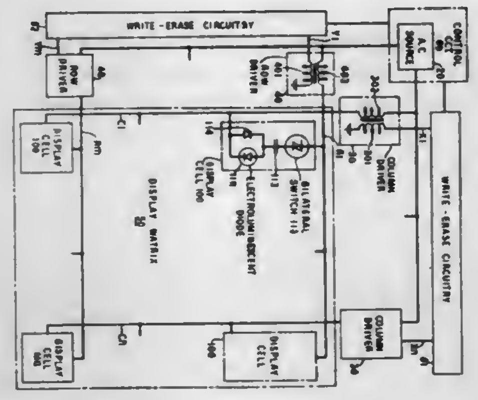


Apparatus for driving a gaseous discharge display panel in order to display information at selected discrete points in the display panel defined by the intersection of corresponding column and row electrodes, including at least one transformer having multiple secondary coils each connected to a respective column electrode, and at least one other transformer having multiple secondary coils each connected to a respective row electrode, a pair of complementary signal sources each connected to a corresponding one of said transformers, means for addressing selected points in the display panel coupled to a primary coil of respective transformers for entering information into the panel, and the signal sources coupling sustaining signals through the respective secondary coils for maintaining the information in the panel, the signal sources and the addressing means being electrically isolated from the panel electrodes.

3,609,747
SOLID-STATE DISPLAY CIRCUIT WITH INHERENT MEMORY

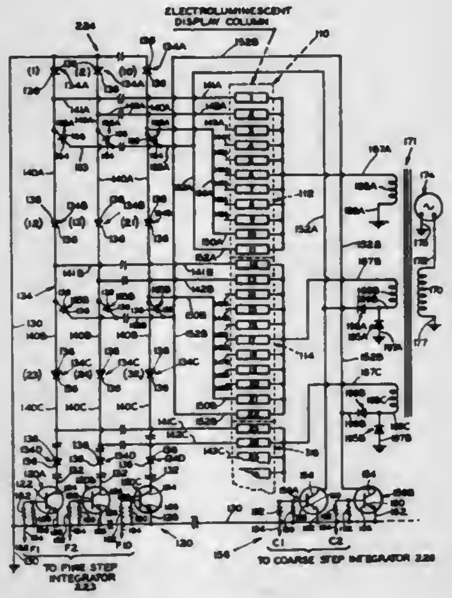
Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 5, 1968, Ser. No. 781,534
Int. Cl. H05b *33/00*
U.S. Cl. 340—324 R **11 Claims**

The need for external memory and image regeneration circuitry in light-emitting semiconductor diode display circuits is eliminated by providing each light-emitting diode with a respective capacitive storage element and bilateral breakdown switch. The bilateral switch and storage element function as inherent memory for the light-emitting diode, operating in conjunction with an AC bias voltage to maintain the diode lighted upon application of a write pulse.



3,609,748
CONTROL NETWORK FOR A SOLID STATE DISPLAY SYSTEM

Walter Parfomak, Wallington, N.J., and Robert J. Molnar, New York, N.Y., assignors to The Bendix Corporation
Filed Sept. 17, 1968, Ser. No. 760,303
Int. Cl. G01d *7/00*
U.S. Cl. 340—324 **8 Claims**

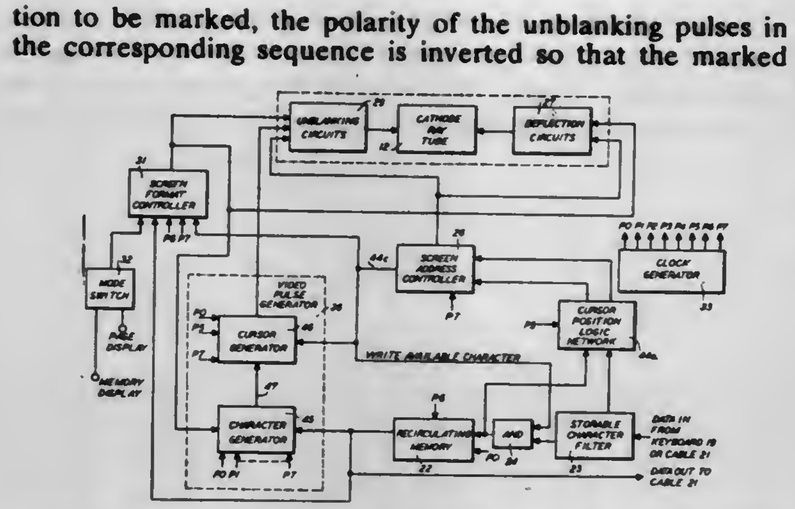


A control network for a solid-state display system which indicates the value of an input control signal on a segmented electroluminescent indicator in which unique circuitry is employed to control and drive the display through a provision of a plurality of fine control switches, coarse control switches and associated diode switching logic means.

3,609,749
CHARACTER DISPLAY SYSTEM HAVING NEGATIVE IMAGE CURSOR

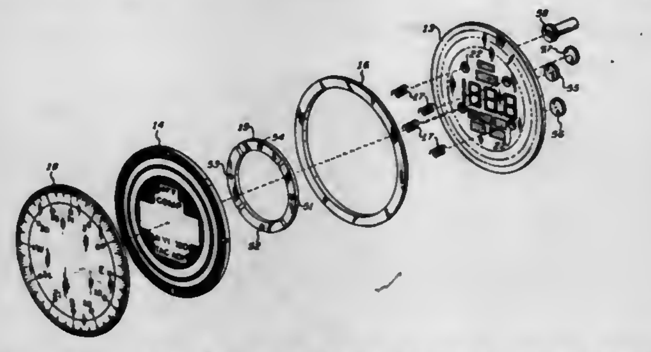
Walter B. McClelland, Park Ridge, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed June 16, 1969, Ser. No. 833,452
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **11 Claims**

A negative image cursor is provided for marking a selected location on a cathode-ray tube screen which displays, in human readable form, alphanumeric characters and other graphics and symbols outpulsed at a clock rate from a recirculating memory associated with a keyboard or computer controlled data terminal. A sequence of unblanking pulses arranged in a pattern indicative of each character to be displayed on the screen in dot raster form is normally applied to the tube with a polarity effective to form a brightened character against a darkened screen background. During the clock period corresponding to the address of the screen location to be marked, the polarity of the unblanking pulses in the corresponding sequence is inverted so that the marked character shows up darkened against a locally brightened background to define the cursor.



3,609,750
GAS DISCHARGE BEARING DISTANCE HEADING INDICATOR

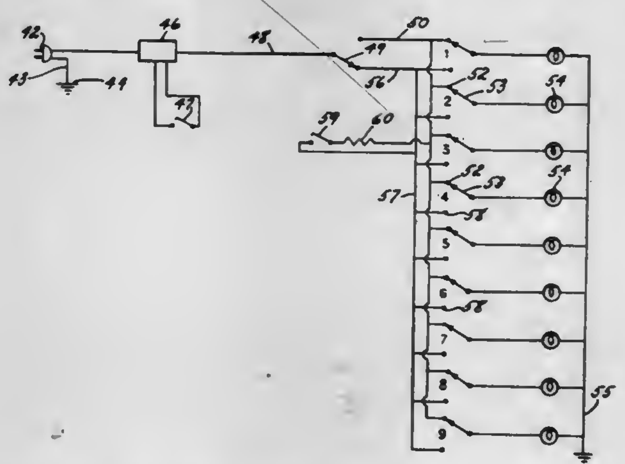
Lee A. Budd, Pittsford, N.Y., and Dan J. Schott, Phoenix, Ariz., assignors to Sperry Rand Corporation
Filed May 13, 1968, Ser. No. 728,418
Int. Cl. H01j *17/04*
U.S. Cl. 340—336 **8 Claims**



A cold cathode gas discharge lamp having a ring of radially directed cathode elements on an electrically insulating substrate underlying a pair of concentric transparent ring anodes of different diameter for displaying aircraft heading and aircraft bearing (with respect to ground radio transmitters), respectively. Additional cathode elements are placed inside the aforesaid cathode rings on the same substrate underlying a third transparent anode for the display of alpha-numeric (distance) and annunciator data. Selected ones of the cathodes and anodes are energized to cause localized glow discharges viewable through the anodes for representing desired data.

3,609,751
COLOR ORGAN

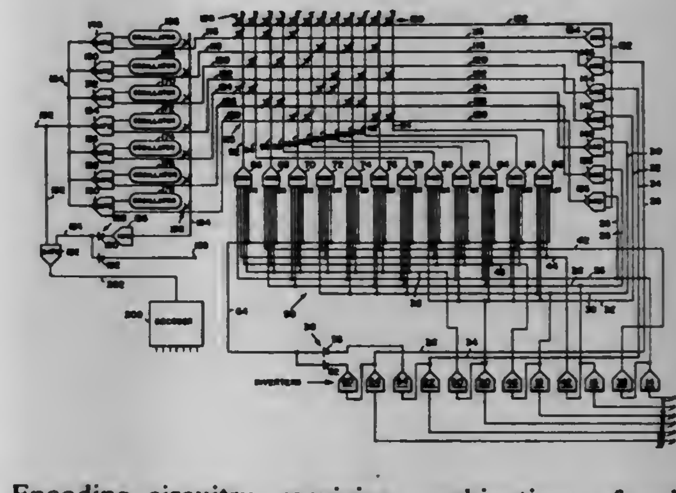
Robert J. Siegel, 919 S. Long Beach Ave., Freeport, N.Y.
Filed Nov. 6, 1968, Ser. No. 773,913
Int. Cl. G09f *13/04*
U.S. Cl. 340—337 **3 Claims**



A manually operated color organ, including a keyboard consisting of manually operated electrical switches, and a display having illuminated compartments or segments, the keyboard corresponding in configuration to the arrangement pattern of the display. Means is provided for supplying illumination of varying colors to each illuminated segment of the display, and a separate keyboard is provided for each color.

3,609,752
SIMULTANEOUS DATA ENCODER AND DECODER

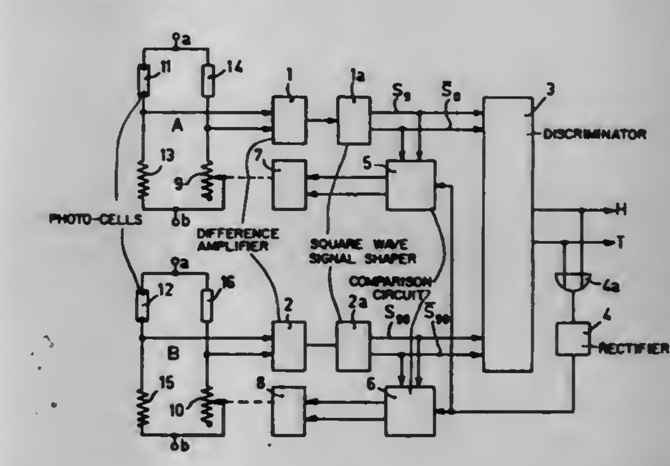
Richard C. Grosser, c/o Industrial Data Reduction, 325 Chestnut St., Philadelphia, Pa.
Filed June 21, 1968, Ser. No. 739,090
Int. Cl. H03k *13/243*
U.S. Cl. 340—347 DD **12 Claims**



Encoding circuitry, receiving combinations of pulses at input terminals, produces combinations of audio frequency tones at an output terminal. For certain characters, the combinations of tones are restricted to pairs of tones corresponding to the standard "touch-tones" used in telephone dialing. The tones produced in response to other characters are not so restricted. The same output terminal serves as an input terminal to a decoding circuit, which translates combinations of tones into direct current signals at a plurality of terminals. The decoding circuitry is disabled while tones are produced by the encoding circuitry.

3,609,753
DISPLACEMENT-MEASURING DEVICE

Scato Albarda, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,458
Claims priority, application Netherlands, Jan. 23, 1968, 6801010
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **4 Claims**

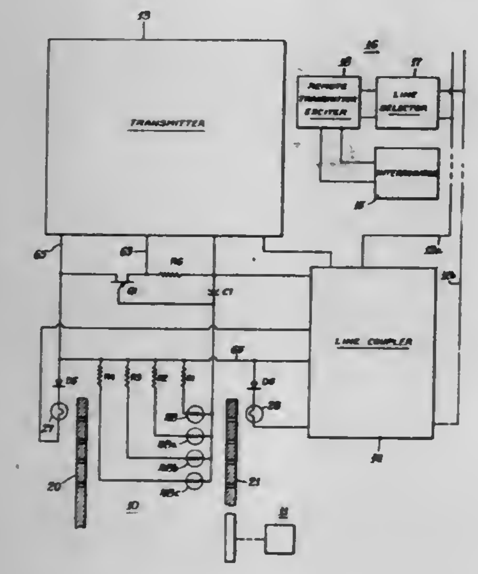


The output terminals of a discriminator for resolving the output of a pair of scanners in two separate pulse series each corresponding in frequency to the displacement of a scanned object are coupled through an OR gate into a rectifier. The rectifier provides an enabling output during such displacement to circuit for adjusting the effective output of the scanners.

3,609,754
POSITION-ENCODING DEVICE WITH FREQUENCY CODED OUTPUT SIGNALS

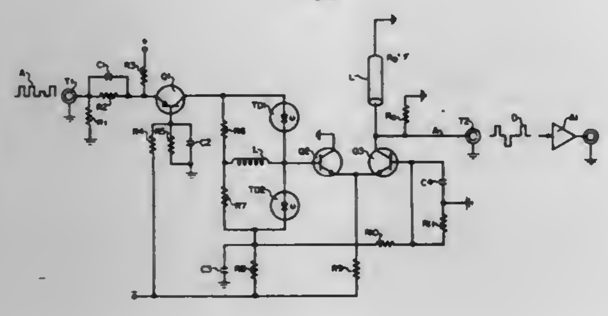
Richard E. Riebs, Hales Corners, Wis., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Mar. 17, 1969, Ser. No. 807,560
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **13 Claims**

This invention relates to a position encoder for use in an automatic remote meter-reading system including a pair of coded discs each having a plurality of groups of position-coding elements. A plurality of photocells are disposed between the discs and are arranged to be selectively energized from their opposite sides by individual-illuminating means associated with each disc. The presence or absence of illumination on each photocell is operative to modify the parameters of an oscillating circuit so that the circuit has a different frequency for each position of the coded discs.



3,609,755
UNIPOLAR TO BIPOLAR CODE CONVERTER

Alessandro Fenyves, Milan, Italy, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed May 12, 1969, Ser. No. 823,676
Claims priority, application Italy, Sept. 24, 1968, 21592 A/68
Int. Cl. G06f *5/00;* **H04l** *3/00;* **H03k** *13/24*
U.S. Cl. 340—347 DD **2 Claims**

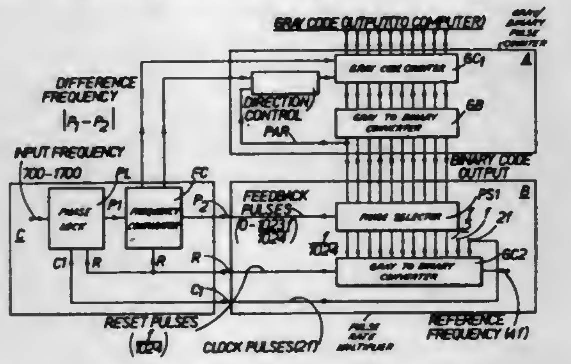


A circuit arrangement adapted to effect conversion of unipolar code pulses into corresponding pulses having an alternating bipolar form (pseudoternary code pulses). By employing the reflection occurring in a line matched to the conversion circuit and short circuited at the distant terminal, the usual two separate channel double regeneration technique is avoided.

3,609,756
DEVICES FOR PRODUCING OUTPUT SIGNALS IN DIGITAL FORM

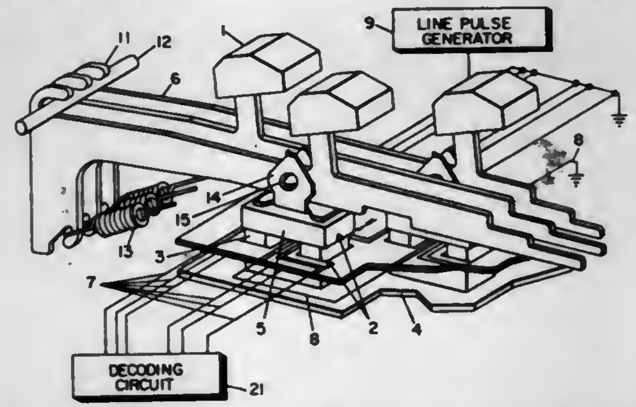
James Richard Halsall, Reading, and Alan Percy Cooper Murrell, Millbrook, Guildford, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed May 19, 1969, Ser. No. 825,633
Claims priority, application Great Britain, May 22, 1968, 24418/68
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **18 Claims**

A frequency-to-digital converter for producing continuously available output signals in digital form including a pulse counter which produces an output in Gray code, a binary pulse rate multiplier coupled to the counter and a frequency comparator for receiving the input frequency signals to the converter, receiving feedback signal in pulse form form the multiplier, and supplying output signals to the first counter, the repetition rate of the feedback signals being proportional to the Gray code output of the first counter, so that the output of the first counter in Gray code forms the output of the converter in digital form.



3,609,757
BALL AND CLIP FOR ATTACHING FERRITE CORES TO KEY BARS

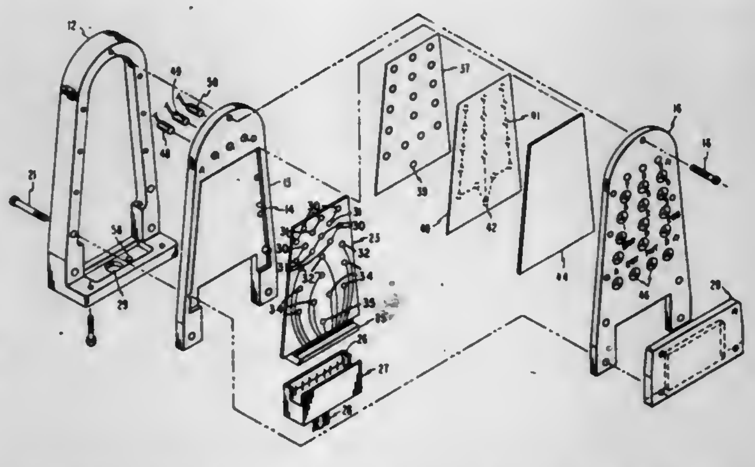
Corbin Dixon, Waynesboro, Va., assignor to General Electric Company
Filed Mar. 30, 1970, Ser. No. 23,714
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 **8 Claims**



A ball joint suspension which permits accurate self-alignment of a magnetic plate movable through space to intimately close magnetic core circuit for producing electrical signals.

3,609,758
KEYBOARD ENTRY DEVICE

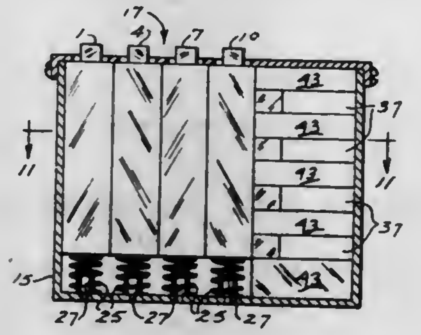
David A. Buesing, Byron, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 2, 1969, Ser. No. 821,376
Int. Cl. G06f *3/02*
U.S. Cl. 340—365 **10 Claims**



A hand-held keyboard data entry device including an actuator for entry of data and the operation of functional controls. The keyboard utilizes a diaphragm switch matrix to provide a compact keyboard switch arrangement which is operated by exertion of minimum forces. The actuator includes a switch means which must be operated in addition to the actuation of a selected data entry switch to effect transmission of data to an associated data receiving unit. Further the actuator generates an audible sound which indicates to an operator that the data has been entered.

3,609,759
PHOTOELECTRIC KEYBOARD ENCODER

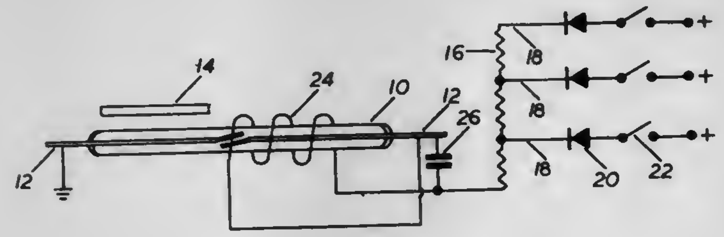
Daniel E. Teske, Spanish Lake, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Dec. 31, 1969, Ser. No. 889,474
Int. Cl. G08c *9/06*
U.S. Cl. 340—365 **10 Claims**



A photoelectric encoder for converting information, such as numbers of the decimal system into a series of digital signals of a binary code. The encoder includes a keyboard with keys in the form of vertical columns of light transparent material, each having therein a predetermined number of reflective surfaces. The keys are arranged in parallel rows with a light source to one side of the keyboard and photocells, at predetermined vertical levels, adjacent another side of the keyboard. The reflective surfaces throughout the keyboard are predeterminately located such that no light is transmitted through the keys to the photocells when the keys are in their raised positions. When a key is depressed, one or more light reflecting surfaces are moved in such positions that light is reflected to one or more of the photocells to thereby produce one or more binary code pulses.

3,609,760
AUDIBLE SIGNAL HAVING GLASS FEED RELAY

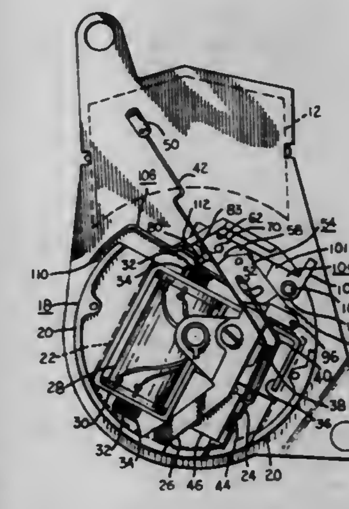
Kajetan Rynowiecki, 87 Wessington Ave., Garfield, N.J.
Continuation-in-part of application Ser. No. 795,099, Jan. 29, 1969, now abandoned. This application June 8, 1970, Ser. No. 44,419
Int. Cl. G08b *3/10*
U.S. Cl. 340—384 **7 Claims**



Apparatus for producing an audible signal when a voltage is applied thereto. The apparatus includes a reed switch having electrical contact leads, means responsive to the voltage to cause the switch to open and close periodically whereby the leads vibrate, and means responsive to the vibration to produce said signal.

3,609,761
VOLUME CONTROL AND SILENCING MECHANISM FOR RINGERS HAVING CLAPPER LOCKOUT

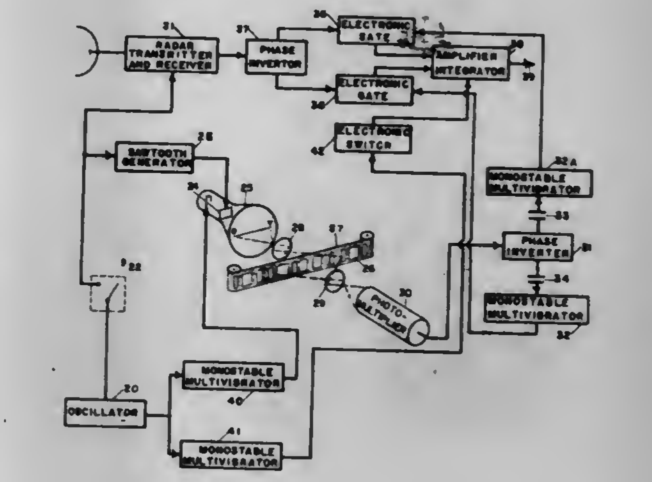
Amedio D. Petrangelo, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed July 29, 1970, Ser. No. 59,240
Int. Cl. H04g *3/00, 3/10*
U.S. Cl. 340—402 **9 Claims**



A volume control and silencing mechanism for a ringer having a clapper under the gong includes a movable actuator for engaging a spring in contact with the inside of the gong for controlling the volume of the of the ringer and also for positioning a guide for limiting the clapper movement to silence the ringer. A lockout lever is provided to prevent the actuator from inadvertently silencing the ringer when the ringer volume is adjusted.

3,609,762
DIRECT GRADIENT-CORRELATION APPARATUS

Nicholas D. Diamantides, Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace, Akron, Ohio
Filed Nov. 7, 1966, Ser. No. 592,532
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 DP **5 Claims**



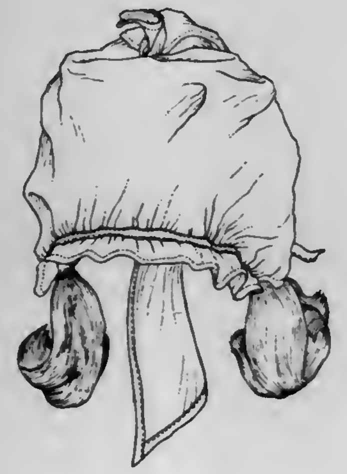
The invention provides an electronic system to achieve correlation and matching information between two similar optical displays without mechanically or electronically nutating or moving one display relative to the other. Essentially this is achieved by breaking both displays into a series of voltage signals which can be electronically summed to obtain a difference signal whereby the difference signal is scaled to determine the direction and amount of position or offset error between the two displays.

DESIGNS

SEPTEMBER 28, 1971

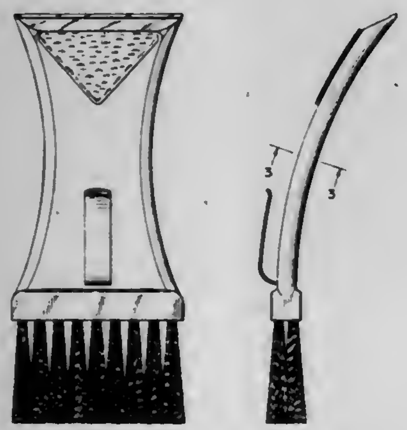
222,024
CAP WITH ATTACHED LOCKS OF HAIR

Angelika Marie Frackowiak, 17 Bendale Blvd.,
Scarborough, Ontario, Canada
Filed Dec. 1, 1969, Ser. No. 20,323
Claims priority, application Canada June 2, 1969
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—243



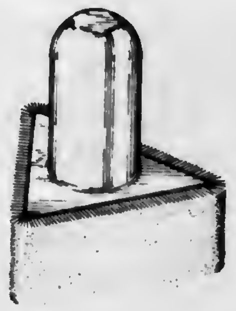
222,025
COMBINATION BRUSH AND SCRAPER

Wiley M. Whitaker, Asheboro, N.C., assignor to
Whit Corporation, Asheboro, N.C.
Filed July 27, 1970, Ser. No. 24,137
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—6



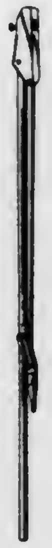
222,026
PAINT APPLICATOR

Elias J. Johnson, 503 Stevens St.,
Green Bay, Wis. 54303
Filed June 22, 1970, Ser. No. 23,586
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38



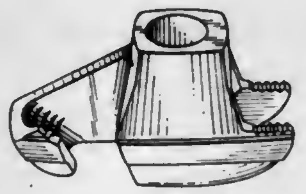
222,027
EXTENSION HANDLE FOR PAINT BRUSHES AND THE LIKE

Mildred Craven, 5 Highview Ave.,
Edgware, Middlesex, England
Filed Feb. 24, 1970, Ser. No. 21,572
Claims priority, appplication Great Britain Aug. 29, 1969
Term of patent 14 years
Int. Cl. D4—*99*
U.S. Cl. D4—99



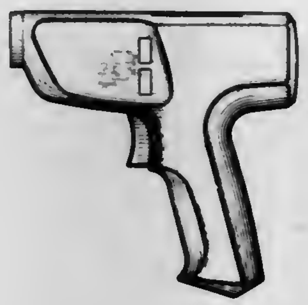
222,028
PIPE AND TUBE BENDER

John D. Benfield, 2920 E. Jefferson Ave.,
Detroit, Mich. 48207
Filed June 30, 1970, Ser. No. 23,769
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—32



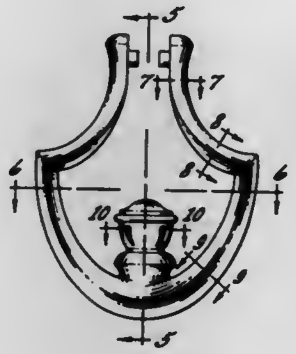
222,029
HAND POWER TOOL

David C. McElroy, St. Clair Shores, Mich., assignor to
Thor Power Tool Company, Aurora, Ill.
Filed July 20, 1970, Ser. No. 24,032
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—68



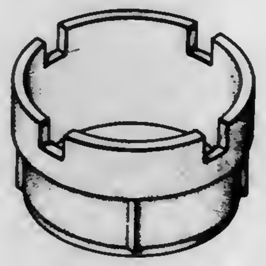
222,030
BAIL FOR DOOR KNOCKER

LaVerne E. Clayton, Rockford, Ill., assignor to
Amerock Corporation, Rockford, Ill.
Filed May 25, 1970, Ser. No. 23,115
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—177



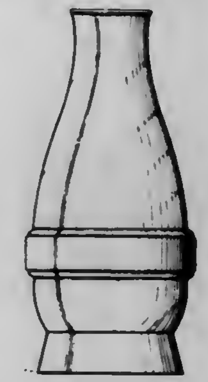
222,031
INSERT HUB FOR A RIBBON SPOOL

Robert P. Buhram and Richard D. Hensley, Farmersville, Ohio, assignors to Columbia-Great Lakes Corp., Dayton, Ohio
Filed Feb. 20, 1970, Ser. No. 21,536
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



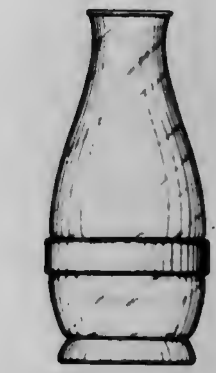
222,032
COMBINED BOTTLE AND BASE THEREFOR

Robert J. Donoghue, Windsor, Conn., assignor to
Emhart Corporation, Bloomfield, Conn.
Filed July 24, 1970, Ser. No. 24,113
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12



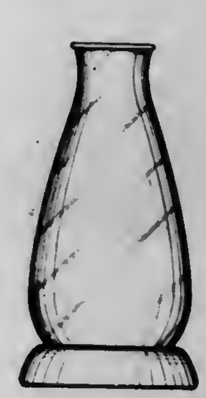
222,033
COMBINED BOTTLE AND BASE THEREFOR

Robert J. Donoghue, Windsor, and Bjorn Bagn, New Hartford, Conn., assignors to Emhart Corporation, Bloomfield, Conn.
Filed July 24, 1970, Ser. No. 24,114
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12



222,034
COMBINED BOTTTLE AND BASE THEREFOR

Bjorn Bagn, New Hartford, Conn., assignor to
Emhart Corporation, Bloomfield, Conn.
Filed July 28, 1970, Ser. No. 24,193
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12

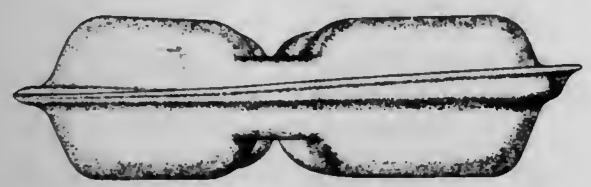


222,035

COVERED HOT FOOD TRAY

Steven J. Cyr and Mark W. Whelan, Chippewa Falls, Wis., and Kenneth L. Jones, Fullerton, Calif., assignors to Standard Oil Company, Chicago, Ill.
Filed Aug. 25, 1969, Ser. No. 18,833
Term of patent 14 years
Int. Cl. D9—*04*

U.S. Cl. D9—185

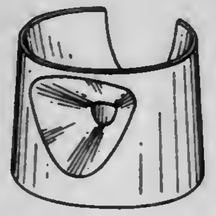


222,036

OVERCAP FOR A PRESSURIZED CONTAINER

Herbert R. Carpenter, Kenilworth, Ill., assignor to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.
Filed July 24, 1970, Ser. No. 24,123
Term of patent 14 years
Int. Cl. D9—*07*

U.S. Cl. D9—258

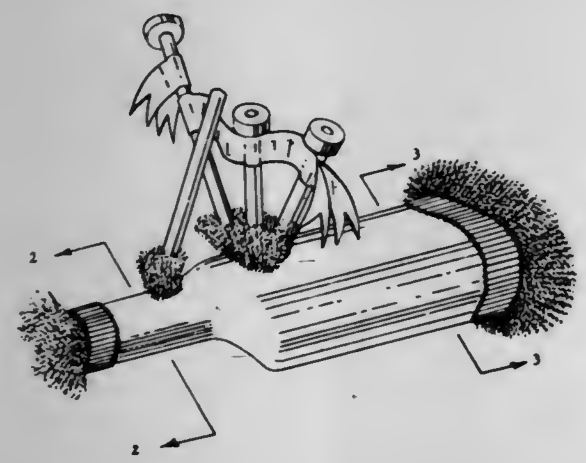


222,037

BOTTLE COVER OR SIMILAR ARTICLE

Alan R. Fairlie, 417 Queensberry Road, Edinburgh 4, Scotland
Filed May 15, 1969, Ser. No. 17,157
Claims priority, application Great Britain Nov. 20, 1968
Term of patent 14 years
Int. Cl. D9—*99*

U.S. Cl. D9—259

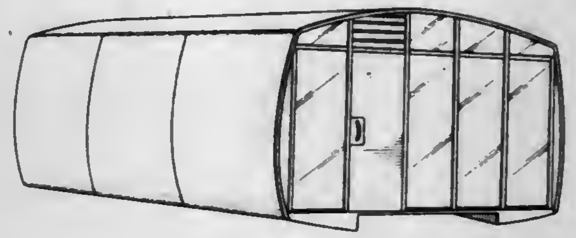


222,038

HOUSE

Henry S. Hughes, 1320 Talbryn Drive, Belmont, Calif. 94002
Filed Mar. 9, 1970, Ser. No. 21,809
Term of patent 14 years
Int. Cl. D25—*04*

U.S. Cl. D13—1

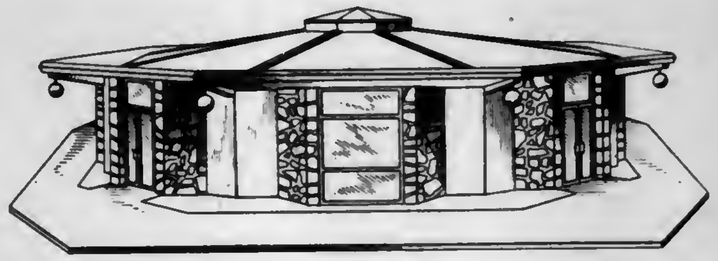


222,039

BUILDING

Doyle T. Vaden, P.O. Box 12192, Knoxville, Tenn. 37912
Filed Oct. 9, 1969, Ser. No. 19,474
Term of patent 14 years
Int. Cl. D25—*04*

U.S. Cl. D13—1

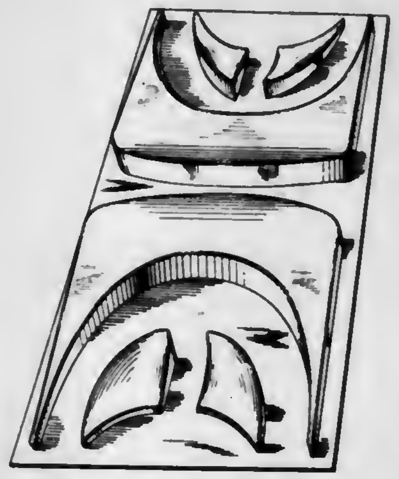


222,040

ARCHITECTURAL PANELS OR THE LIKE

J. Lawrence Gauler, Crown Point, Ind., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed May 5, 1970, Ser. No. 22,813
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—1

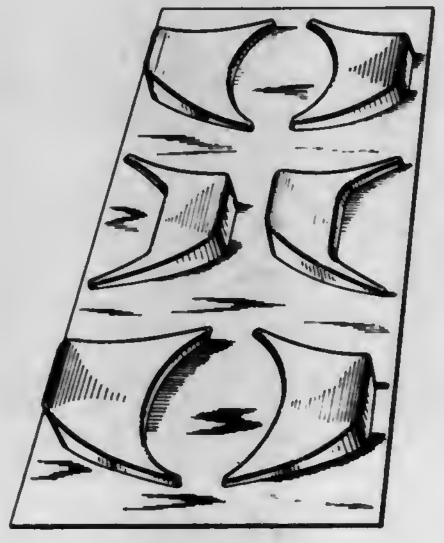


222,041

ARCHITECTURAL PANELS OR THE LIKE

J. Lawrence Gauler, Crown Point, Ind., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed May 5, 1970, Ser. No. 22,817
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—1

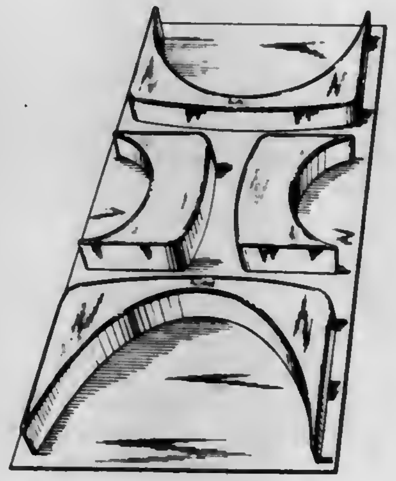


222,042

ARCHITECTURAL PANELS OR THE LIKE

J. Lawrence Gauler, 211 Sherwood Drive, Crown Point, Ind. 46307
Filed May 5, 1970, Ser. No. 22,818
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—1

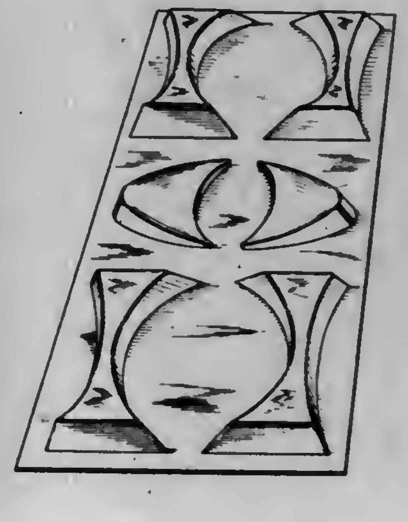


222,043

ARCHITECTURAL PANELS OR THE LIKE

J. Lawrence Gauler, Crown Point, Ind., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed May 5, 1970, Ser. No. 22,819
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—1

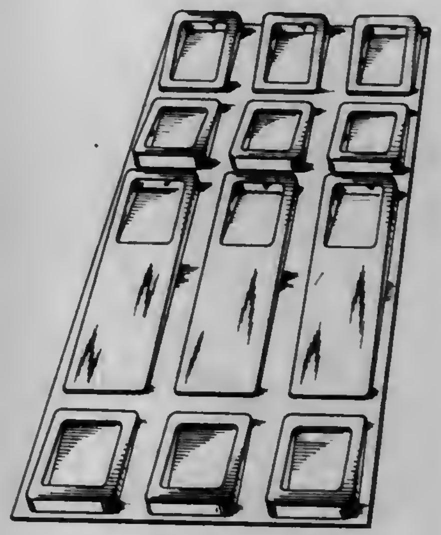


222,044

ARCHITECTURAL PANELS OR THE LIKE

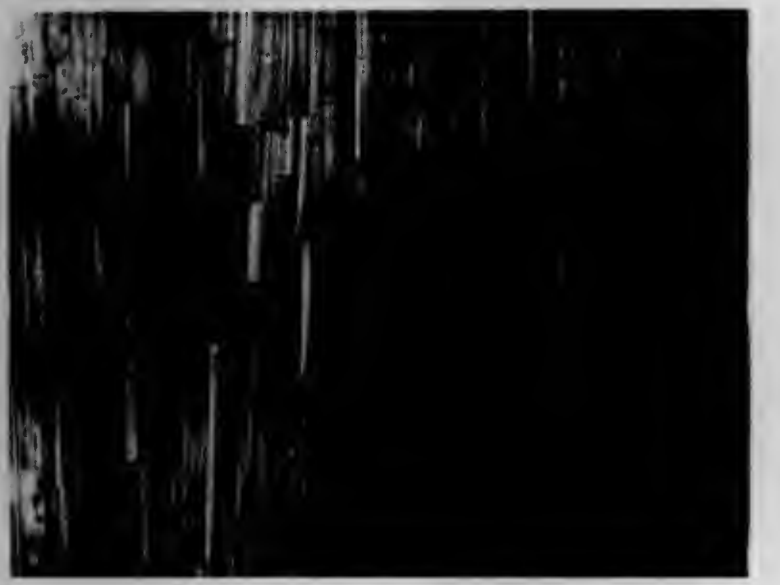
Lawrence A. Bernstein, Marina del Rey, Calif., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed May 5, 1970, Ser. No. 22,820
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D13—1



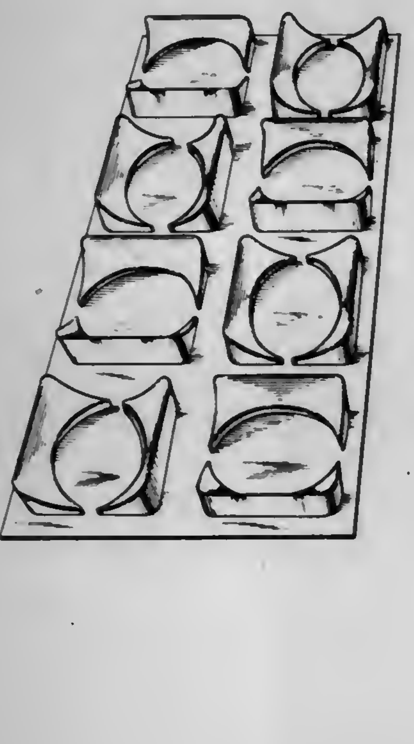
222,045
WALL PANEL

Lester V. Ottinger and Robert E. James, Danbury, and Andrew E. Carmellini, Brookfield, Conn., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed May 13, 1970, Ser. No. 22,947
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



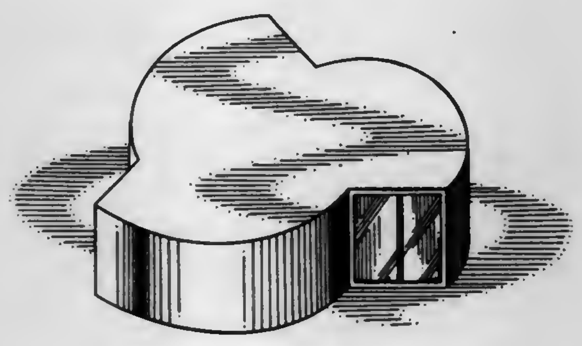
222,046
ARCHITECTURAL PANELS OR THE LIKE

J. Lawrence Gauler, Crown Point, Ind., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed May 5, 1970, Ser. No. 23,096
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



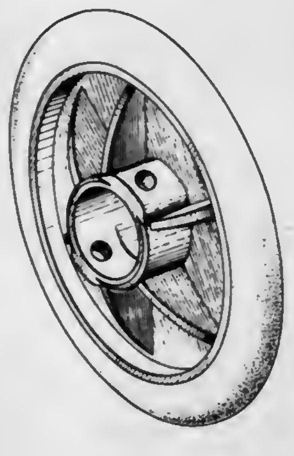
222,047
BUILDING

Elliott H. Brenner, Lafayette, Ind., assignor to Araneida, Inc., West Lafayette, Ind.
Filed July 17, 1970, Ser. No. 23,992
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



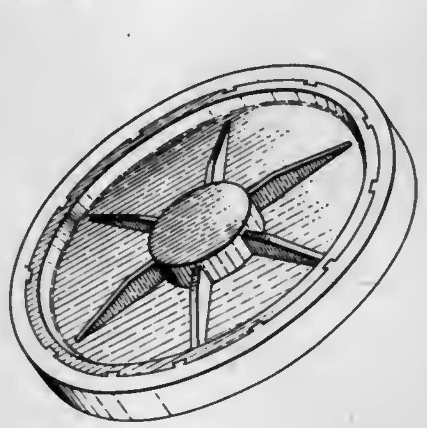
222,048
BOGIE WHEEL FOR SNOWMOBILES OR THE LIKE

Raymond Morrissette, 1649 Belvedere S., Sherbrooke, Quebec, Canada
Filed Oct. 15, 1969, Ser. No. 19,579
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D14—30



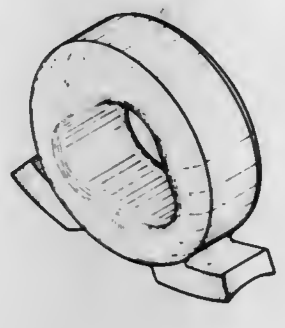
222,049
IDLER WHEEL FOR SNOWMOBILES OR THE LIKE

Raymont Morrissette, 1649 Belvedere S., Sherbrooke, Quebec, Canada
Filed Oct. 15, 1969, Ser. No. 19,580
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D14—30



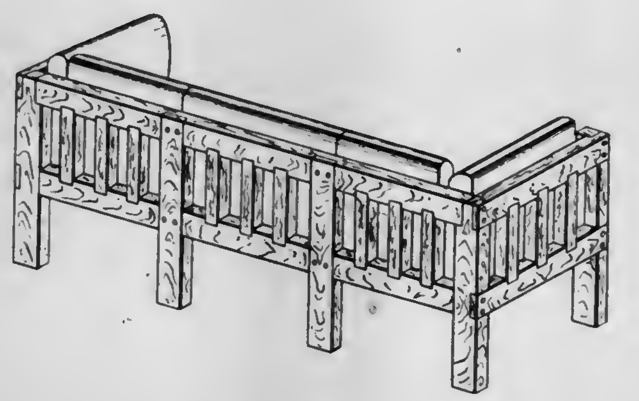
222,050
STEERING WHEEL AID

Joseph Romanoski, 48 Craven St., Huntington Station, N.Y. 11746
Filed Apr. 9, 1970, Ser. No. 22,347
Term of patent 7 years
Int. Cl. D12—*14*
U.S. Cl. D14—30



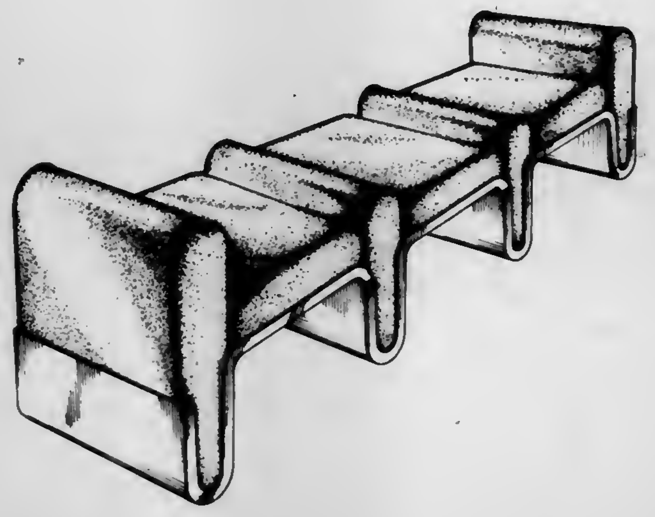
222,051
SOFA

Michael J. Shannon, 130 Greenwood Ave., Bend, Oreg. 97701
Filed July 23, 1968, Ser. No. 12,865
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—11



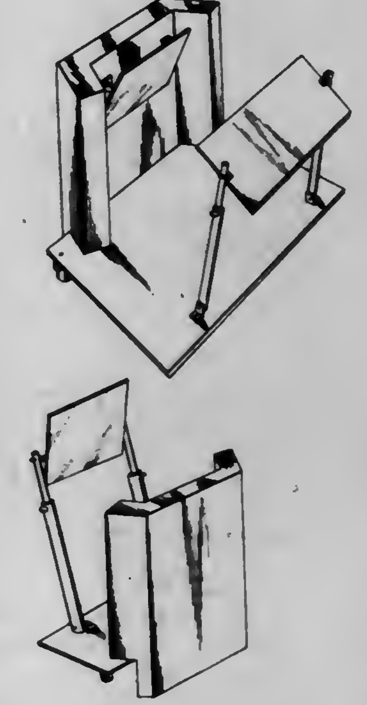
222,052
BENCH

Farid A. Iskander, Brooklyn, N.Y., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed July 9, 1969, Ser. No. 18,126
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—11



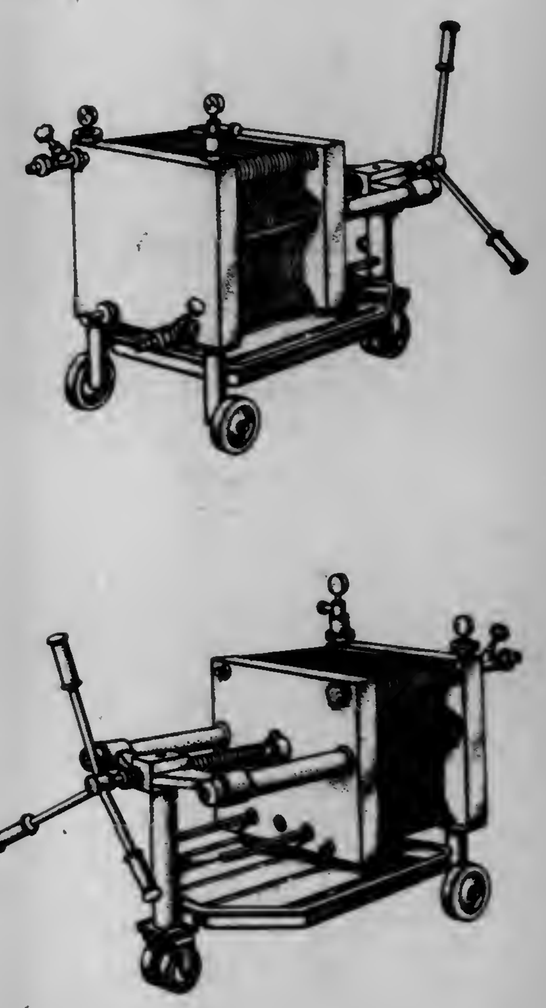
222,053
RADIATION SHADOW SHIELD

Felix R. Grat and Eugene L. Savettiere, Lake Hiawatha, and George E. Griffin, Cedar Grove, N.J., assignors to Radiation Machinery Corporation
Filed July 1, 1969, Ser. No. 18,009
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2



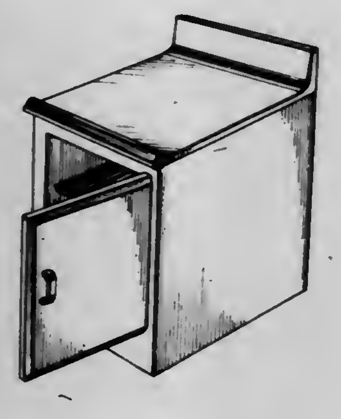
222,054
FILTERING PRESS FOR LIQUID AND GASES

Hans Becker, Bad Kreuznach, Germany, assignor to Seitz-Werke Gesellschaft mit beschrankter Haftung, Bad Kreuznach, Germany
Filed Oct. 1, 1969, Ser. No. 19,356
Term of patent 14 years
Int. Cl. D24—*02;* D23—*01*
U.S. Cl. D16—2



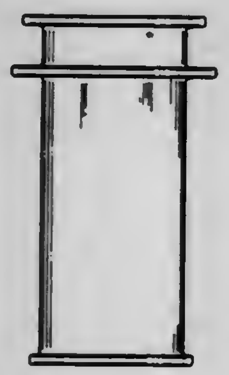
222,055
REFRIGERATED RADIOISOTOPE STORAGE CABINET

Felix R. Grat and Eugene L. Savettiere, Lake Hiawatha, and George E. Griffin, Cedar Grove, N.J., assignors to Radiation Machinery Corporation
Filed Dec. 4, 1969, Ser. No. 20,366
Term of patent 14 years
Int. Cl. D24—*02;* D15—*11*
U.S. Cl. D16—2



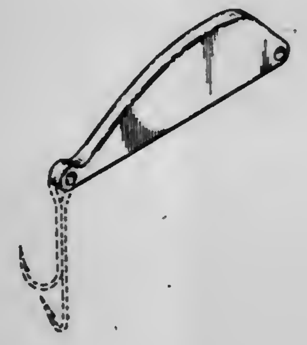
222,056
FISHING REEL AND HANDLE COMBINATION

Raymond G. Zenick, 912 Briarwood Lane, Glendale, Calif. 91206
Filed Aug. 25, 1969, Ser. No. 18,840
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—25



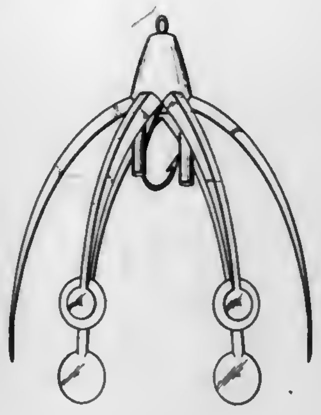
222,057
FISHING LURE

Thomas W. Drake, 323 Lindale, Houston, Tex. 77022
Original design application Dec. 20, 1968, Ser. No. 15,073, now Patent No. 218,821, dated Sept. 29, 1970. Divided and this application Aug. 1, 1969, Ser. No. 19,811
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



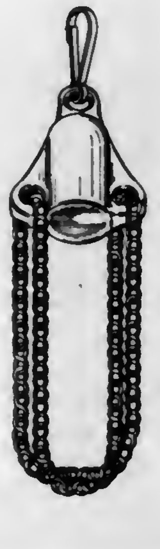
222,058
FLEXIBLE FISHING LURE

Robert A. Meadors, Houston, Tex., assignor to Doodle-Sockr Co., Inc., Houston, Tex.
Filed June 29, 1970, Ser. No. 23,750
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



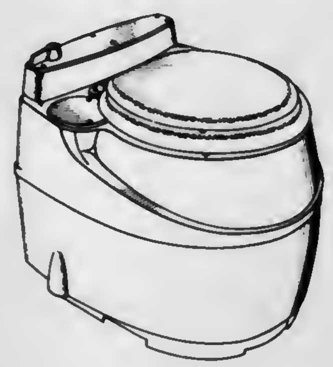
222,059
FISHING LURE RETRIEVER

Denny L. Howerter, 3817 NW. 60th, Oklahoma City, Okla. 73112
Filed June 12, 1970, Ser. No. 23,446
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



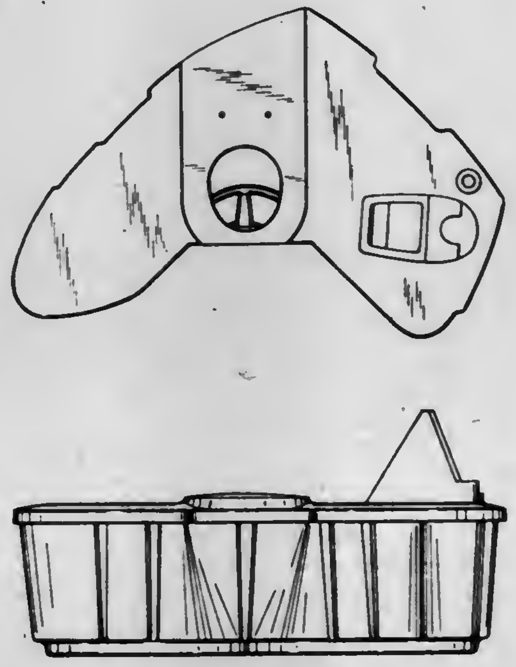
222,060
SELF-CONTAINED PORTABLE TOILET

Elias D. Quintana, La Mirada, Calif., assignor to Mission-West Manufacturing Company, Los Angeles, Calif.
Filed June 1, 1970, Ser. No. 23,247
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



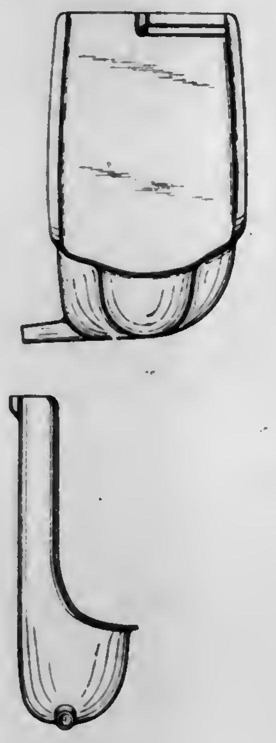
222,061
COMBINED TOILET AND TANK UNIT

James L. Rutzick, St. Paul, Minn., assignor to Aquazyme Industries, Inc., St. Paul, Minn.
Filed June 19, 1970, Ser. No. 23,570
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



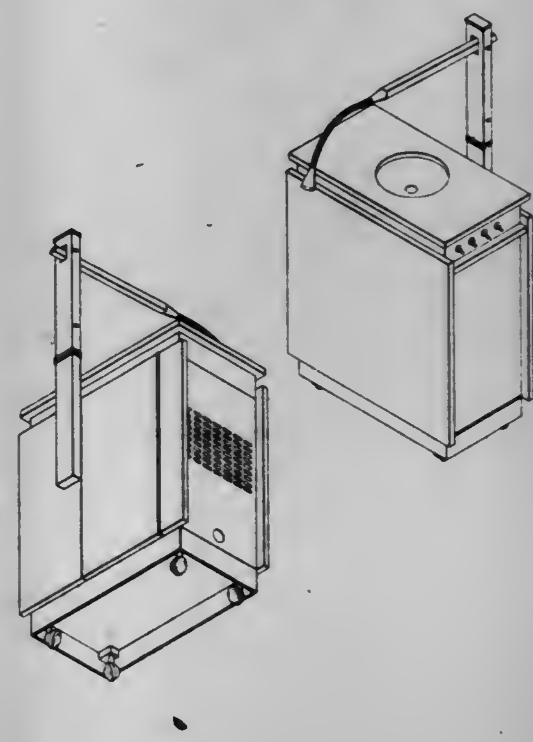
222,062
URINAL

James L. Rutzick, St. Paul, Minn., assignor to Aquazyme Industries, Inc., St. Paul, Minn.
Filed June 19, 1970, Ser. No. 23,574
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—68



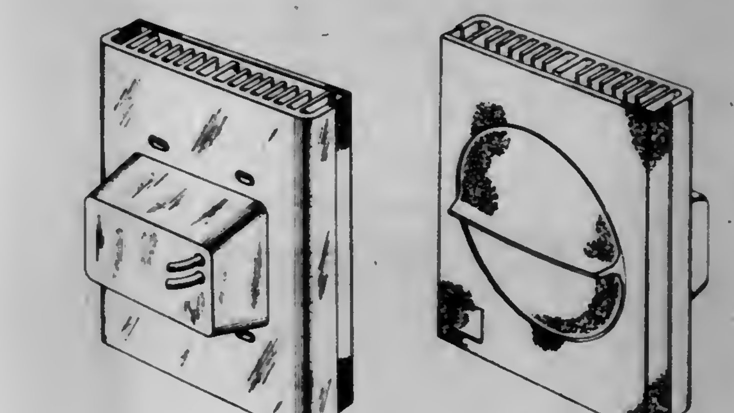
222,063
DENTAL CONSOLE

Frank I. Fuller, Portola, Valley, Calif., Shirl S. Fox, 45 Cerros Manor, Menlo Park, Calif. 94025, and Ronald F. Keller, Aptos, Calif.; said Fuller and said Keller assignors to said Fox
Filed Dec. 31, 1969, Ser. No. 20,712
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



222,064
DIMMER CONTROL

Lawrence P. Mellyn, Glocester, R.I., assignor to General Electric Company
Filed July 2, 1970, Ser. No. 23,814
Term of patent 14 years
Int. Cl. D26—*99;* D13—*03*
U.S. Cl. D26—13

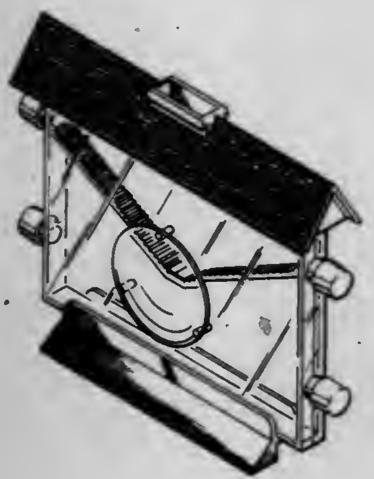


222,065

ENTOMOLOGICAL OBSERVATION DEVICE

Stanley S. Sheidlower, 43 Burton Ave., Woodmere, N.Y. 11598, and Elliot S. Glanz, 4005 Greentree Drive, Oceanside, N.Y. 11572
Filed June 11, 1970, Ser. No. 23,444
Term of patent 14 years
Int. Cl. D19—*08*

U.S. Cl. D25—1

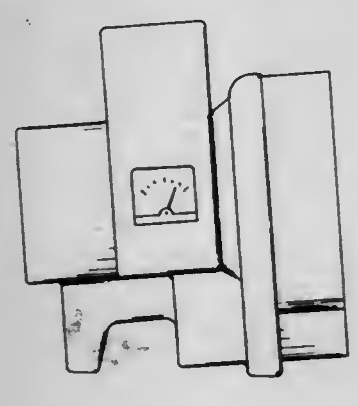


222,066

PORTABLE TELEVISION TESTING JIG

Cecil L. Marshall, 406 Brewer Drive, Greenwood, Ind. 46142
Filed Aug. 14, 1970, Ser. No. 24,490
Term of patent 14 years
Int. Cl. D10—*05*

U.S. Cl. D26—1

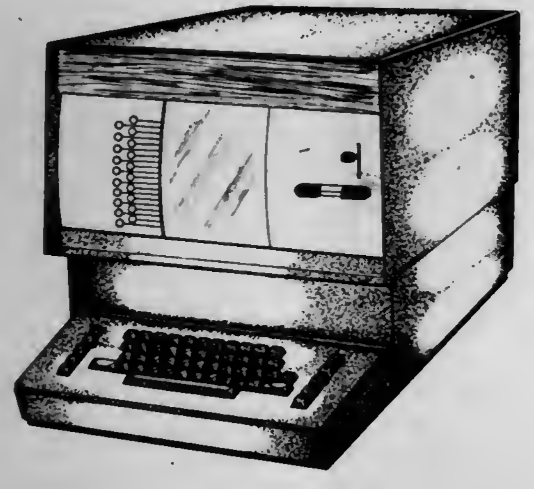


222,067

ELECTRONIC CONTROL CONSOLE

Fred M. Gore, Dallas, Tex., assignor to National Data Communications, Inc., Dallas, Tex.
Filed Mar. 6, 1970, Ser. No. 21,767
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D26—5

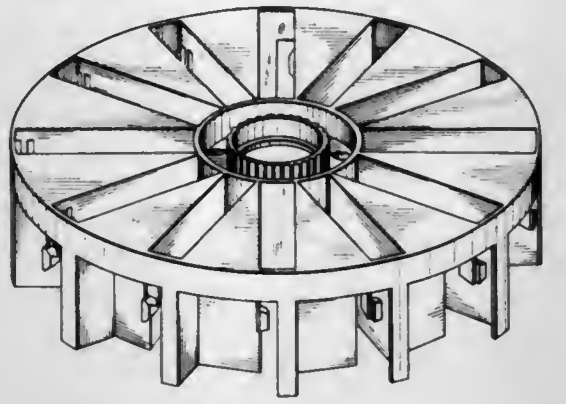


222,068

MAGNETIC TAPE CARTRIDGE MAGAZINE

Rowland K. White, Montgomery County, Md., assignor to Qatron Corporation
Filed Mar. 5, 1970, Ser. No. 21,757
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D26—14

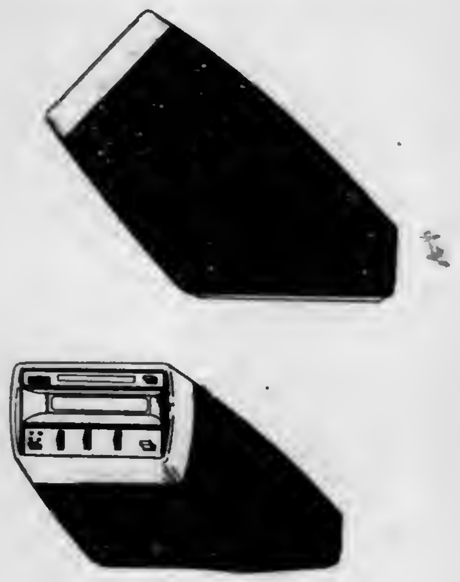


222,069

TAPE PLAYER FOR VEHICLES

Nozomu Matsumoto, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha (also trading as Pioneer Electronic Corporation), Tokyo, Japan
Filed Apr. 20, 1970, Ser. No. 22,507
Claims priority, application Japan Oct. 21, 1969
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D26—14

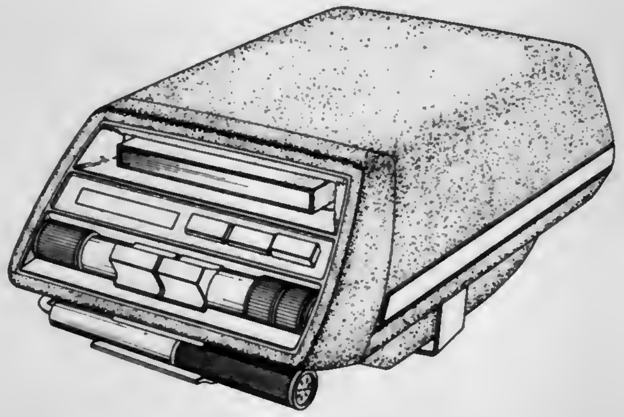


222,070

MAGNETIC TAPE CASSETTE MACHINE

Hari Matsuda, Evanston, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed May 27, 1970, Ser. No. 23,182
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D26—14

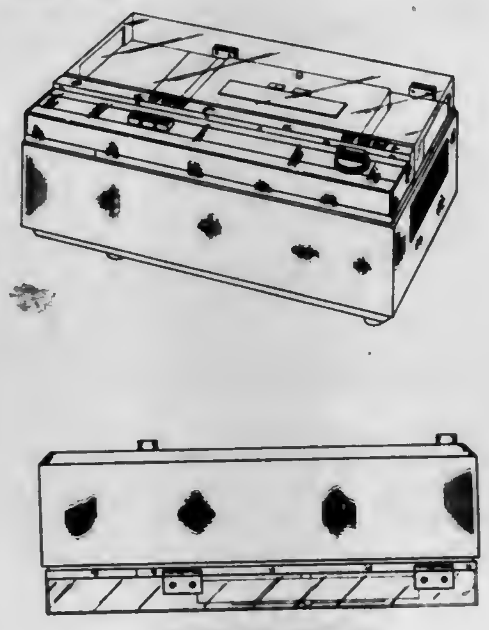


222,071

MAGNETIC TAPE RECORDER

Gerhard Dietrich, Bayern, and Alfred Mamet, Nuremberg, Germany, assignors to Triumph Werke Nuremberg A.G., Nuremberg, Germany
Filed June 29, 1970, Ser. No. 23,737
Claims priority, application Germany Jan. 27, 1970
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D26—14

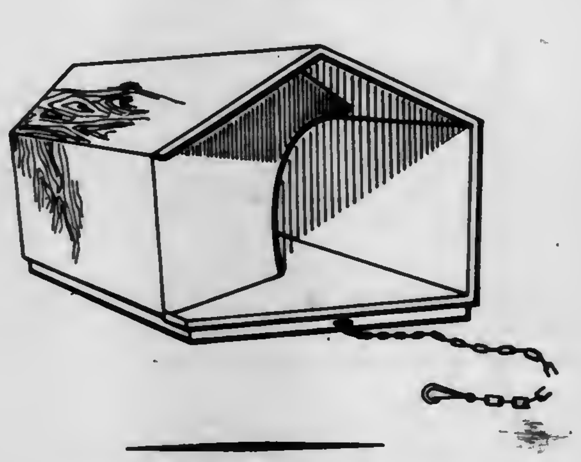


222,072

SPEAKER CABINET

Amos Levitt, Millburn, N.J., assignor to Maximus Sound Corporation, Garden City, N.Y.
Filed July 20, 1970, Ser. No. 24,024
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D26—14

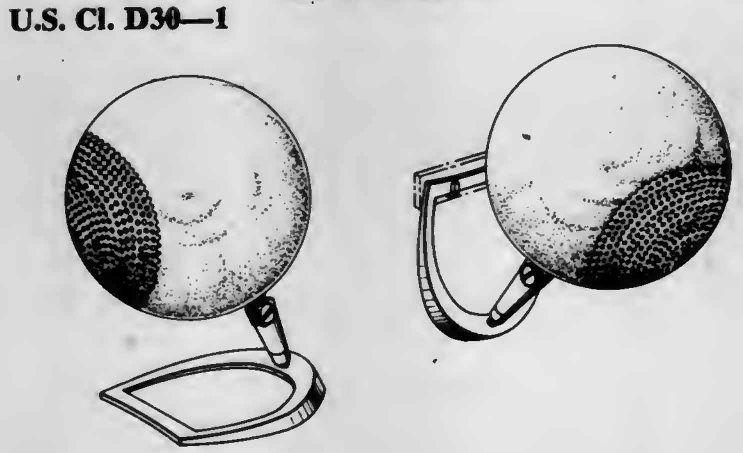


222.073

DOG HOUSE OR THE LIKE

Ralph E. Shettel, Rte. 1, Twin Falls, Idaho 83301
Filed Jan. 16, 1970, Ser. No. 20,950
Term of patent 14 years
Int. Cl. D30—*01*

U.S. Cl. D30—1

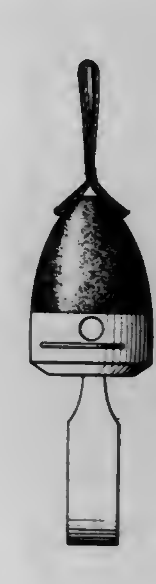


222,074

BIRD HOUSE

Charles D. Pratt, Box 264, Martinicus Island, Maine 04851
Filed June 26, 1970, Ser. No. 23,691
Term of patent 14 years
Int. Cl. D30—*02*

U.S. Cl. D30—3

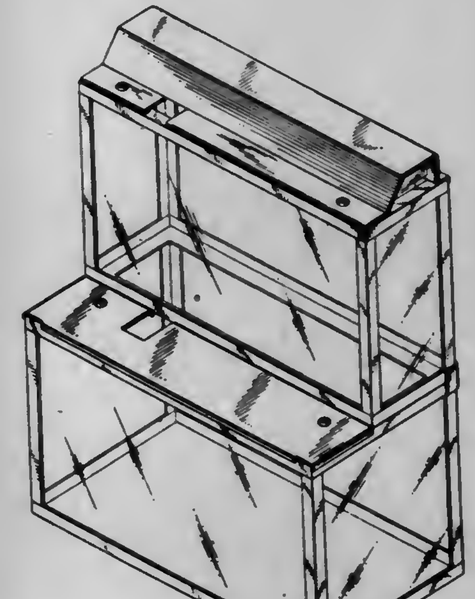


222,075

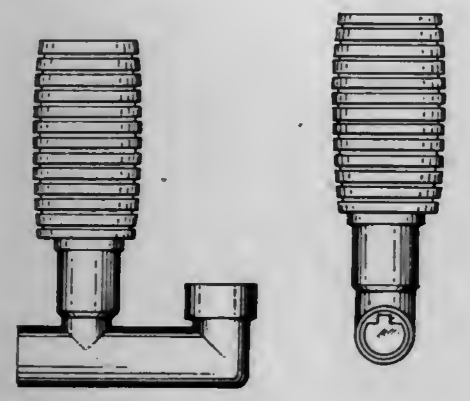
MULTI-TANK AQUARIUM

Milton R. Cohen, 200 E. 71st St., New York, N.Y. 10021
Filed Feb. 24, 1970, Ser. No. 21,593
Term of patent 7 years
Int. Cl. D30—*01*

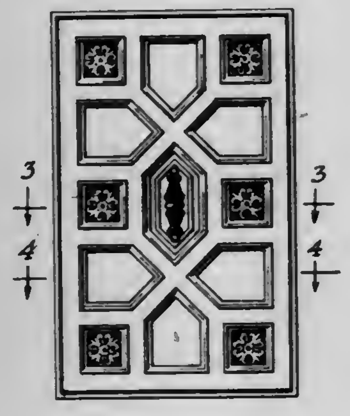
U.S. Cl. D30—6



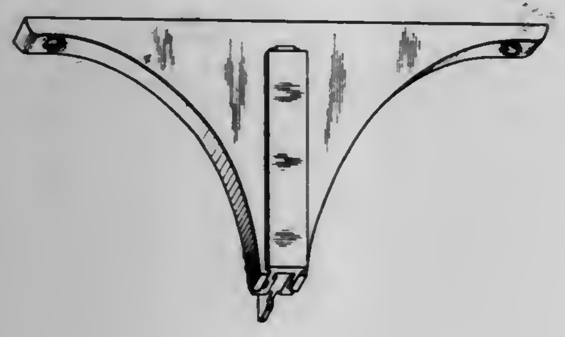
222,076
SIPHON STARTER
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Mar. 10, 1970, Ser. No. 21,842
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



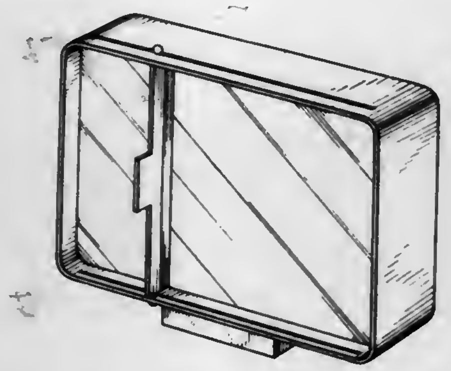
222,077
DECORATIVE DOOR FOR FURNITURE OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to Empire Furniture Corporation, Johnson City, Tenn.
Filed Oct. 18, 1968, Ser. No. 14,052
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D33—1



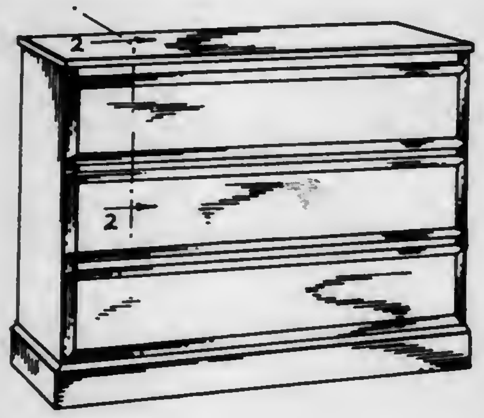
222,078
SHELF BRACKET ASSEMBLY
Louis G. Bobrowski, Berlin, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Dec. 5, 1969, Ser. No. 20,383
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



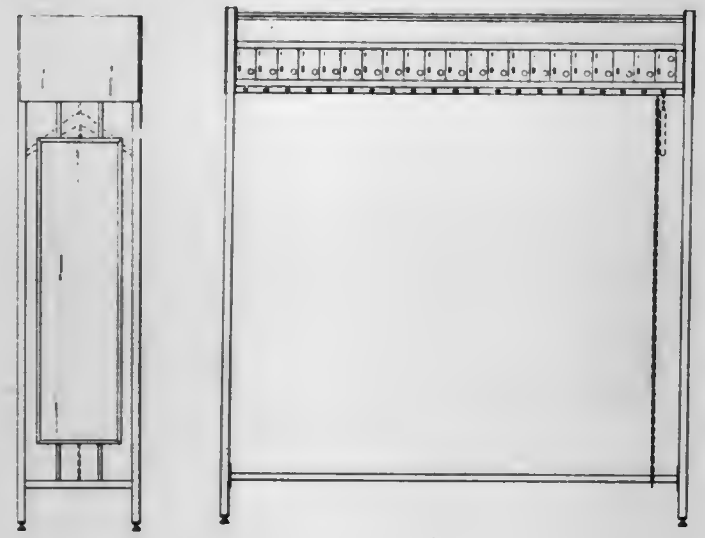
222,079
SHOWER MIRROR
Edward J. Havelock, 1022 Juanita Drive, Walnut Creek, Calif. 94529
Filed Nov. 20, 1969, Ser. No. 20,204
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D33—9



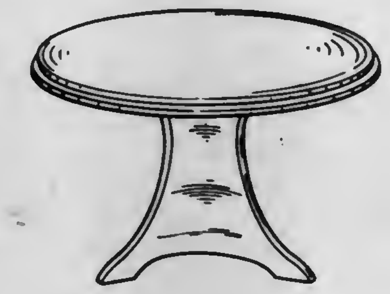
222,080
DRESSER OR SIMILAR ARTICLE
Raymond T. Carlson, Lookout Mountain, Ga., assignor to Forest Products Corporation, Morristown, Tenn.
Filed Sept. 29, 1969, Ser. No. 19,334
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—6



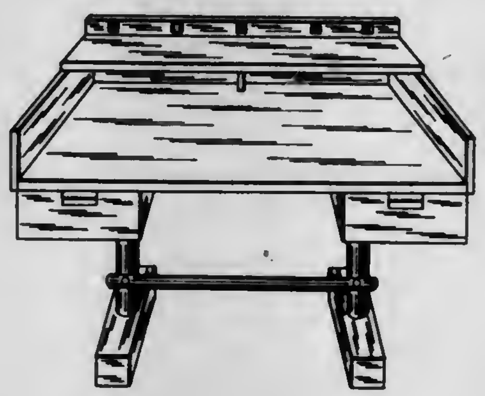
222,081
COAT RACK
Ian J. Abramson, 3485 W. 15th Ave., Vancouver, British Columbia, Canada, and Charles W. Cawthorne, 6635 Dunblane St., South Burnaby, British Columbia, Canada
Filed Feb. 24, 1970, Ser. No. 21,590
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—8



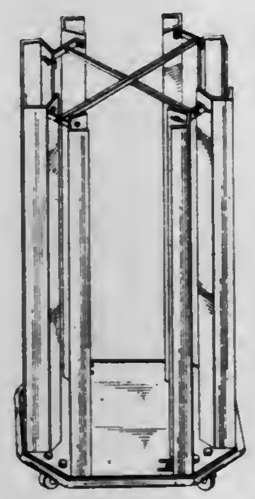
222,082
TABLE
Werner L. Kleinert, 37246 Ruth Drive, Sterling Heights, Mich. 48077
Filed May 15, 1970, Ser. No. 23,011
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—14



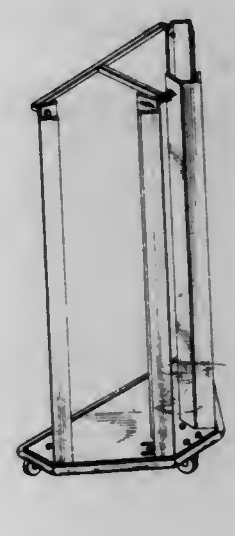
222,083
WORK TABLE
John P. Salsgiver, Acton, Mass., assignor to United Technical Corporation, West Concord, Mass.
Filed July 27, 1970, Ser. No. 24,140
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



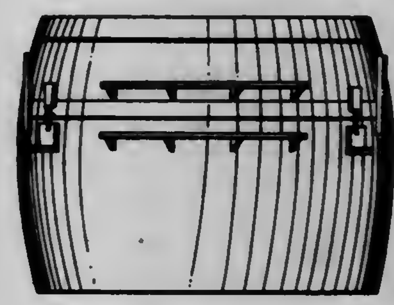
222,084
STORAGE RACK FOR CLOTHES HANGERS
Benjamin S. Boley, Richmond, Va., assignor to Thalhimer Brothers, Incorporated, Richmond, Va.
Filed May 15, 1970, Ser. No. 23,006
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—17



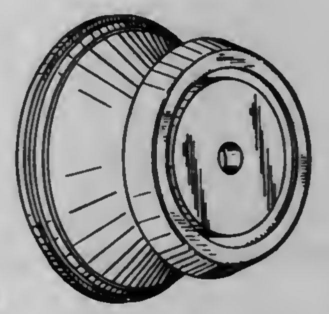
222,085
STORAGE RACK FOR CLOTHES HANGERS
Benjamin S. Boley, Richmond, Va., assignor to Thalhimer Brothers, Incorporated, Richmond, Va.
Filed May 15, 1970, Ser. No. 23,007
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—17



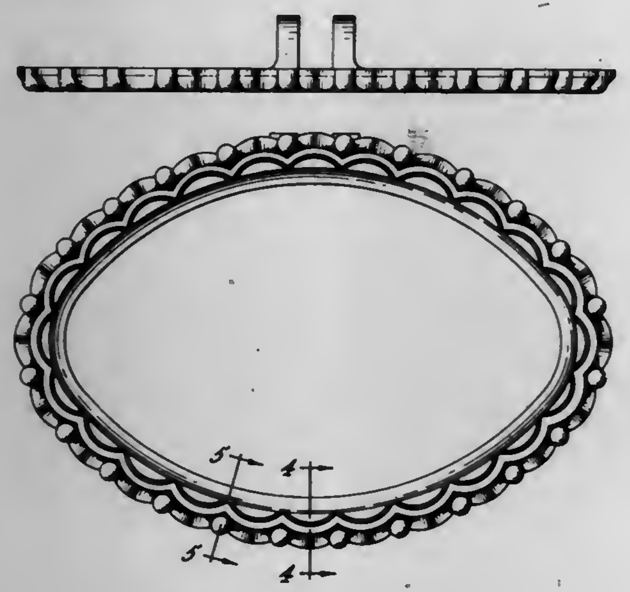
222,086
BAR CABINET
Kenneth J. Guilbeaux, P.O. Box 2371, Lafayette, La. 70501
Filed Aug. 14, 1969, Ser. No. 18,685
Term of patent 14 years
Int. Cl. D6
U.S. Cl. D33—19



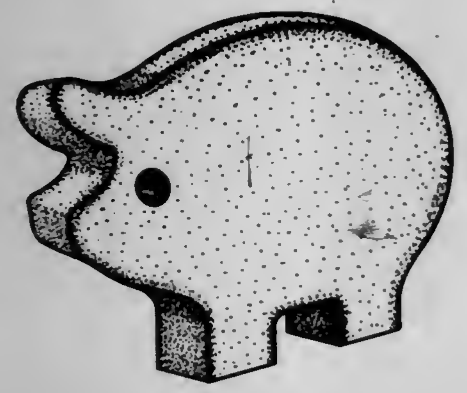
222,087
MAGNETIC-SUCTION SOAP HOLDER
Charles H. Hagopian, 2344 Davidson Ave., Bronx, N.Y. 10068
Original design application May 28, 1969, Ser. No. 17,403, now Patent No. 218,330, dated Aug. 11, 1970. Divided and this application May 4, 1970, Ser. No. 22,803
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—25



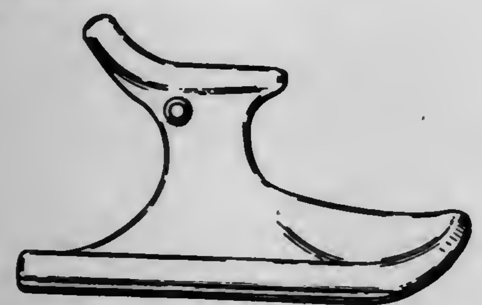
222,088
TOWEL RING
LaVerne E. Clayton, Rockford, Ill., assignor to
Amerock Corporation, Rockford, Ill.
Filed May 25, 1970, Ser. No. 23,118
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—32



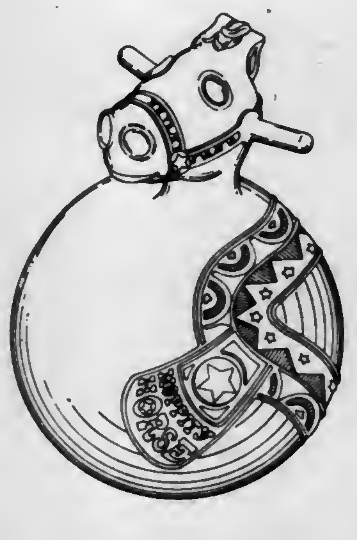
222,089
PIG FIGURE FOR PLAYGROUND APPARATUS
Peter N. G. Murdoch and David Lance Wyman, both of
257 E. 72nd St., New York, N.Y. 10021
Filed Mar. 14, 1968, Ser. No. 11,979
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2



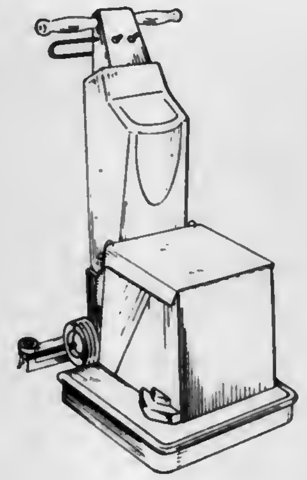
222,090
SKI-SLED OR SIMILAR ARTICLE
William F. Davis, 107 Brown St.,
Tecumseh, Mich. 49286
Filed July 1, 1970, Ser. No. 23,775
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



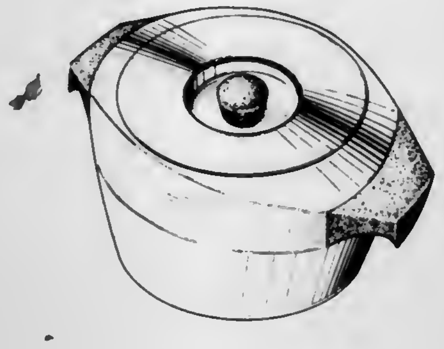
222,091
RIDEABLE BALL
Bernard A. McDermott and Samuel Scherr, Akron, and
Peter A. Zorn, Jr., Peninsula, Ohio, assignors to Sun
Products Corporation, Barberton, Ohio
Filed July 17, 1970, Ser. No. 23,997
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



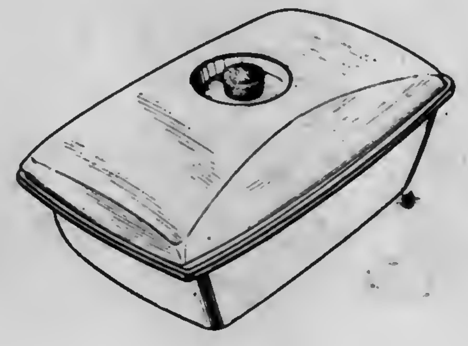
222,092
FLOOR CLEANING MACHINE
Jack L. Burgoon, Toledo, Ohio, assignor to The Scott &
Fetzer Company, Lakewood, Ohio
Filed June 25, 1970, Ser. No. 23,670
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D37—3



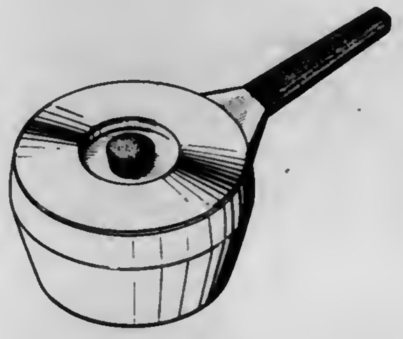
222,093
STEWPAN
Graham J. Aries, Stourbridge, England, assignor to Tower
Housewares Limited, Wolverhampton, England
Filed June 3, 1970, Ser. No. 23,281
Claims priority, application Great Britain Dec. 3, 1969
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1



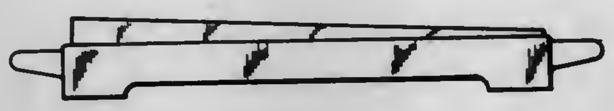
222,094
FISH COOKER
Graham J. Aries, Stourbridge, England, assignor to Tower
Housewares Limited, Wombourne, Wolverhampton,
Staffordshire, England
Filed June 3, 1970, Ser. No. 23,282
Claims priority, application Great Britain Dec. 3, 1969
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1



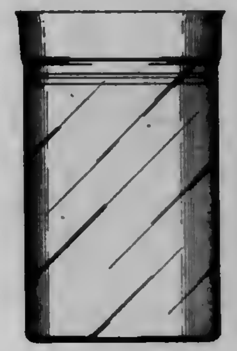
222,095
SAUCEPAN
Graham J. Aries, Stourbridge, England, assignor to Tower
Housewares Limited, Wolverhampton, England
Filed June 3, 1970, Ser. No. 23,292
Claims priority, application Great Britain Dec. 3, 1969
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1



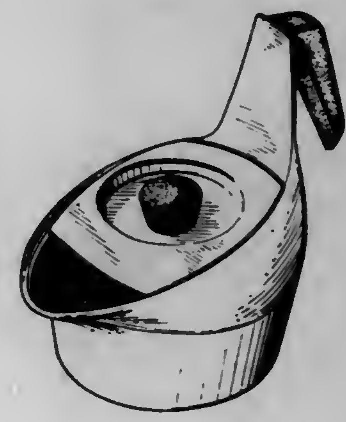
222,096
CUTTING TRAY
John N. Brown, 33 Walnut Road,
West Barrington, R.I. 02890
Filed June 30, 1970, Ser. No. 23,759
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—1



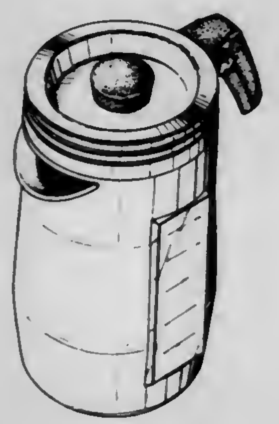
222,097
CANISTER OR SIMILAR ARTICLE
David Douglas, 1332 S. 26th St.,
Manitowoc, Wis. 54220
Filed Sept. 22, 1969, Ser. No. 19,232
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—6



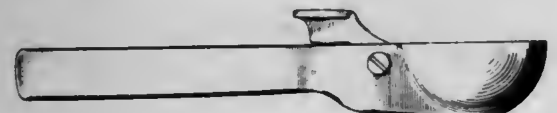
222,098
SAUCEBOAT
Graham J. Aries, Stourbridge, England, assignor to Tower
Housewares Limited, Wolverhampton, England
Filed June 3, 1970, Ser. No. 23,280
Claims priority, application Great Britain Dec. 3, 1969
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—21



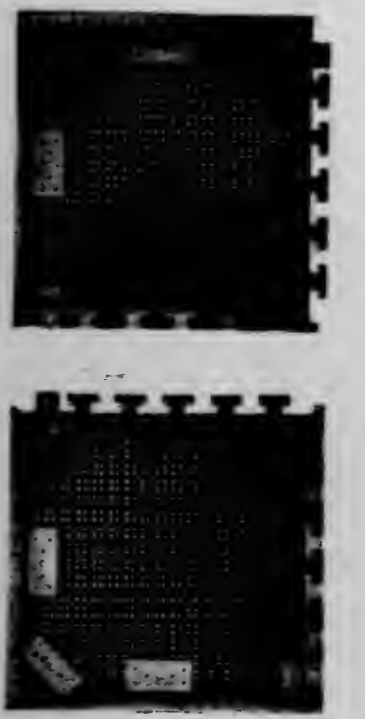
222,099
COFFEEPOT
Graham J. Aries, Stourbridge, England, assignor to Tower Housewares Limited, Wombourne, Wolverhampton, Staffordshire, England
Filed June 3, 1970, Ser. No. 23,294
Claims priority, application Great Britain Dec. 3, 1969
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—26



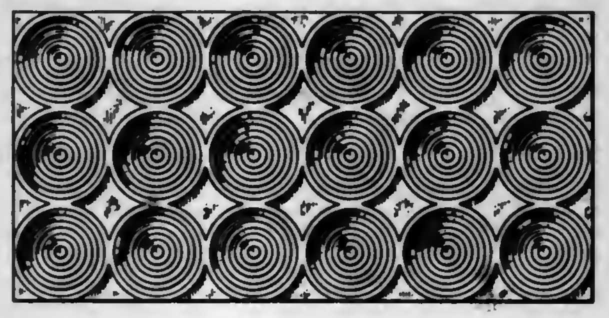
222,100
ICE CREAM DIPPER
Sheldon M. Kord, 316 Meadow Drive,
Terre Haute, Ind. 47803
Filed Aug. 3, 1970, Ser. No. 24,265
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29



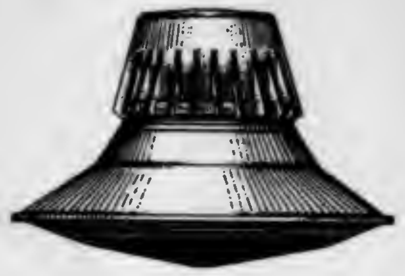
222,101
MAT OR SIMILAR ARTICLE
Gordon Bagne, Santa Ana, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.
Filed Feb. 16, 1970, Ser. No. 21,441
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D44—31



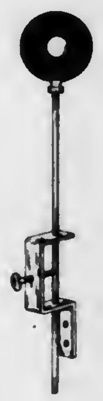
222,102
PRISMATIC LIGHT PANEL
Robert A. D. Schwartz and Rodney Osterberg, Oakland, Calif., assignors to Schwartz & Lindheim, Oakland, Calif.
Filed Feb. 12, 1970, Ser. No. 21,405
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16



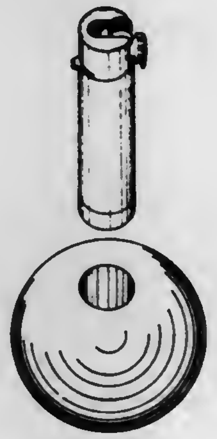
222,103
LUMINAIRE
Eldon L. Anderson, Jr., Fletcher, N.C., assignor to General Electric Company
Filed June 1, 1970, Ser. No. 23,218
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23



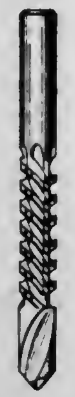
222,104
VEHICLE SAFETY LIGHT AND BRACKET THEREFOR
Kenneth G. Logan, Des Moines, Iowa, assignor to Saflite Corporation, Des Moines, Iowa
Filed May 22, 1970, Ser. No. 23,105
Term of patent 14 years
Int. Cl. D26—*06;* D29—*02*
U.S. Cl. D48—32



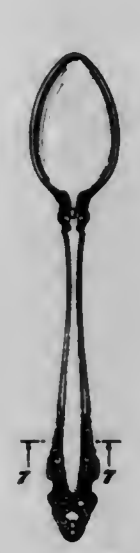
222,105
COMBINED GAS LIGHTER AND DETACHABLE BASE THEREFOR
Gerard Philippe Encausse, 46 Boulevard du Montparnasse, Paris 15eme, France
Filed Dec. 9, 1969, Ser. No. 20,418
Term of patent 3½ years
Int. Cl. D27—*05*
U.S. Cl. D48—27



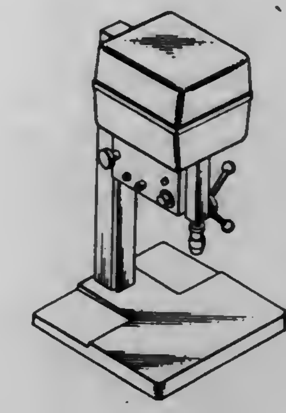
222,106
CUTTING TOOL
Donald E. Knox, Mission, Kans., assignor to Beaver Drill & Tool Co., Kansas City, Mo.
Filed May 4, 1970, Ser. No. 22,798
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D54—4



222,107
SPOON OR SIMILAR ARTICLE
James Russell Price, Esmond, R.I., assignor to Gorham, Division of Textron Inc., Providence, R.I.
Continuation-in-part of design application Ser. No. 19,081, Sept. 10, 1969. This application Aug. 4, 1970, Ser. No. 24,305
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



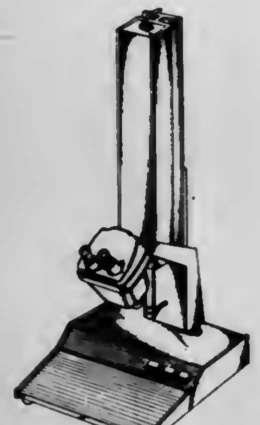
222,108
DRILL PRESS
Edgar P. Freer, Los Angeles, Calif., assignor to Hubach-Freer Corporation, Woodland Hills, Calif.
Filed May 25, 1970, Ser. No. 23,142
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—14



222,109
LASER CUTTING DEVICE OR SIMILAR ARTICLE

Channing W. Gilson, Los Angeles, Calif., assignor to Apollo Lasers, Inc., Los Angeles, Calif.
Filed Apr. 1, 1970, Ser. No. 22,190
Term of patent 14 years
Int. Cl. D15—*99*

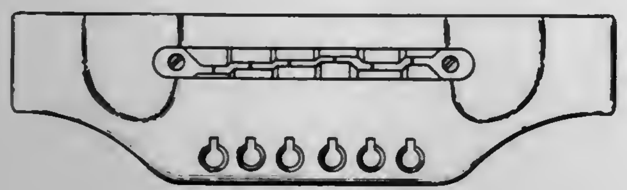
U.S. Cl. D55—1



222,110
COMBINED TAILPIECE AND ADJUSTABLE BRIDGE FOR A GUITAR OR SIMILAR ARTICLE

Stanley E. Rendell, Kalamazoo, Mich., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.
Filed May 18, 1970, Ser. No. 23,052
Term of patent 14 years
Int. Cl. D17—*03*

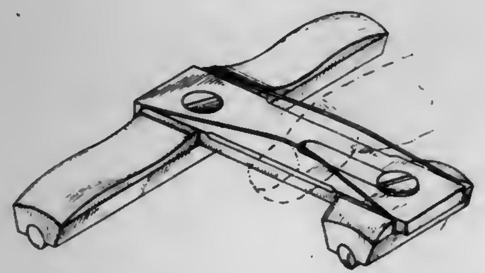
U.S. Cl. D56—1



222,111
CHORD-PRODUCING FINGER BAR FOR A STRINGED MUSICAL INSTRUMENT OR SIMILAR ARTICLE

Joseph A. De Masi, 20 Yale Terrace, West Orange, N.J. 07052
Filed Sept. 2, 1970, Ser. No. 24,812
Term of patent 14 years
Int. Cl. D17—*03*

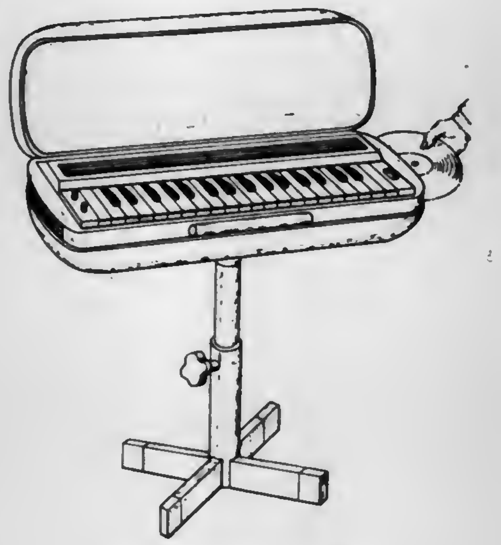
U.S. Cl. D56—1



222,112
COMBINED PORTABLE ELECTRIC ORGAN, AUTOMATIC RECORD PLAYER AND STAND OR SIMILAR ARTICLE

Luciano Antonelli, Via del Guazzatore 89, Osimo, Ancona, Italy
Filed June 22, 1970, Ser. No. 23,593
Claims priority, application Italy Dec. 24, 1969
Term of patent 3½ years
Int. Cl. D17—*01*

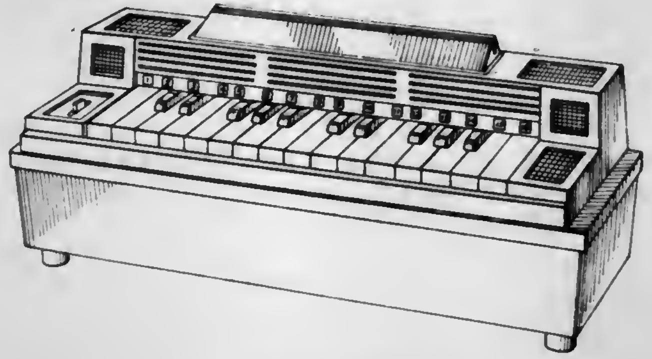
U.S. Cl. D56—2



222,113
TOY ORGAN

Stanley G. Novaco, Nutley, N.J., assignor to Proll Products Co., Newark, N.J.
Filed Aug. 25, 1970, Ser. No. 24,684
Term of patent 14 years
Int. Cl. D17—*01*

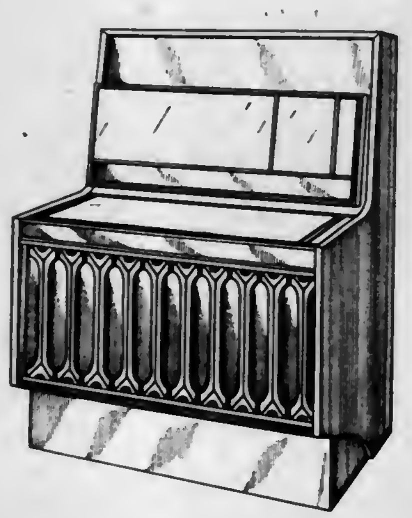
U.S. Cl. D56—2



222,114
AUTOMATIC PHONOGRAPH

Wilhelm Menke, Bingen (Rhine), Germany, assignor to NSM Apparatebau GmbH, Bingen (Rhine), Germany
Filed Sept. 24, 1970, Ser. No. 25,180
Term of patent 14 years
Int. Cl. D14—*01*

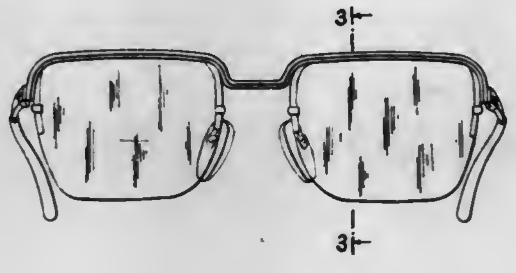
U.S. Cl. D56—4



222,115
OPHTHALMIC SPECTACLES

Luc André Marcel Tagnon, Paris, France, assignor to Societe des Lunetiers, Societe en Commandite Simple, Paris, France
Filed Aug. 7, 1969, Ser. No. 18,576
Claims priority, application France Feb. 28, 1969
Term of patent 14 years
Int. Cl. D16—*08*

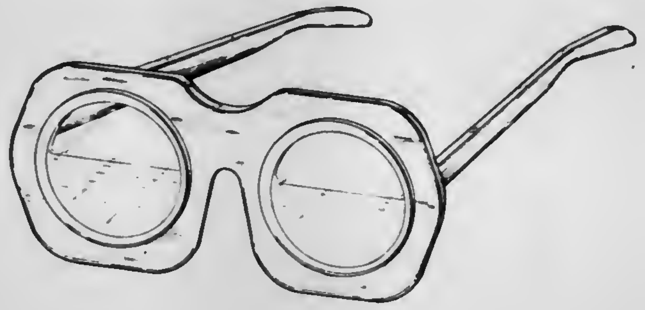
U.S. Cl. D57—1



222,116
EYEGLASSES

Fernando Fallik, Buenos Aires, Argentina, assignor to Ruth Nehmad, Buenos Aires, Argentina
Filed Apr. 15, 1970, Ser. No. 22,437
Claims priority, application Argentina Oct. 24, 1969
Term of patent 14 years
Int. Cl. D16—*06*

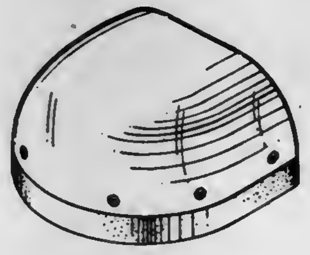
U.S. Cl. D57—1



222,117
ILLUMINATED CURBING NOSE SECTION

Wilfried Baatz, Bellevue, Wash., assignor to Traffic & Safety Control Systems, Inc., Seattle, Wash.
Filed June 8, 1970, Ser. No. 23,375
Term of patent 14 years
Int. Cl. D25—*99;* D26—*99*

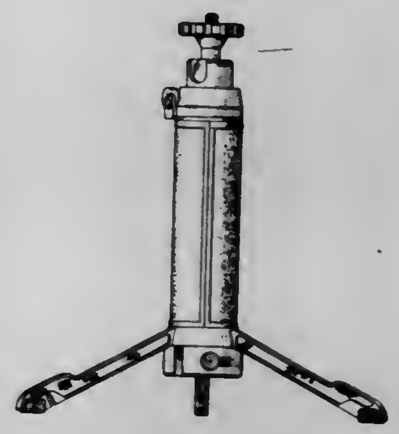
U.S. Cl. D60—1



222,118
TRIPOD

Koma Nakatani, 10–9, 4-chome, Saginomiya, Nakano-ku, Tokyo, Japan
Filed Aug. 22, 1969, Ser. No. 18,811
Claims priority, application Japan Feb. 22, 1969
Term of patent 14 years
Int. Cl. D16—*07*

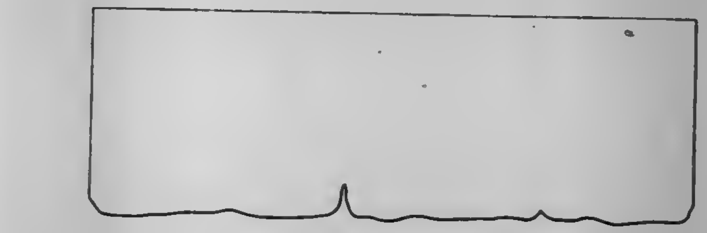
U.S. Cl. D61—1



222,119
ROOF COVERING OR SIMILAR ARTICLE

Robert F. Green, Westfield, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Nov. 12, 1969, Ser. No. 20,050
Term of patent 14 years
Int. Cl. D25—*01*

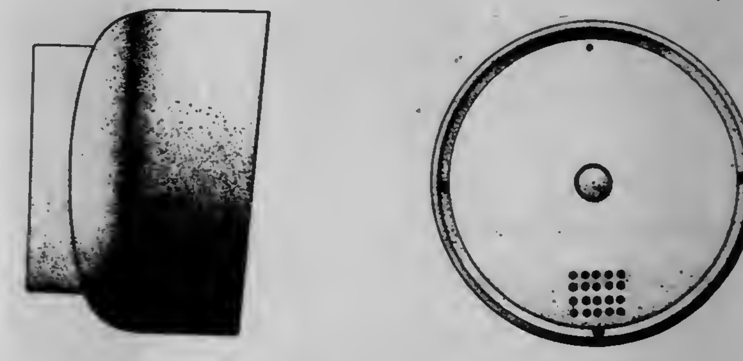
U.S. Cl. D68—1



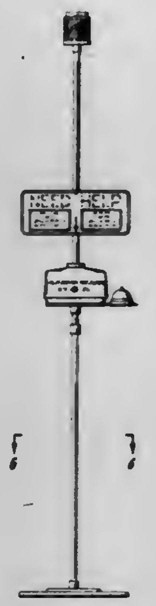
222,120
EMERGENCY REPORTING CALL BOX

George L. Payne, Bedford Hills, N.Y., assignor to International Telephone and Telegraph Corporation
Filed Apr. 10, 1970, Ser. No. 22,367
Term of patent 14 years
Int. Cl. D29—*99*

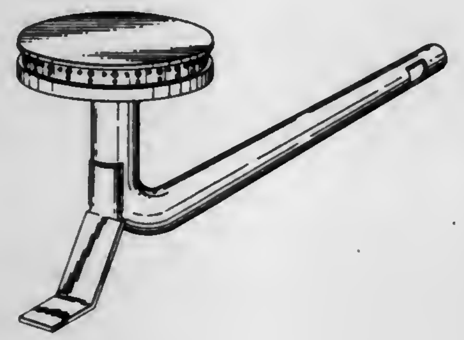
U.S. Cl. D72—1



222,121
SIGNAL FOR STORE CLERKS
Robert M. Akers, 1301 E. Reno,
Oklahoma City, Okla. 73101
Filed Apr. 29, 1970, Ser. No. 22,704
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D72—1



222,122
BURNER CAP ASSEMBLY
Albert F. Craver, Bay Village, Ohio, assignor to The W. J. Schoenberger Co., Cleveland, Ohio
Filed May 13, 1970, Ser. No. 22,952
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D81—10



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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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- AB Lyckeaborgs Bruk: *See—*
  - Lewin, Gunnar Erik Werner, 3,608,127.
- AB Vagbelysning: *See—*
  - Habro, Lars Bertil, 3,609,340.
- Abbatelli, Peter A.Baseball catcher's mask. 3,608,089, Cl. 2-9.
- ABC Packaging Machine Corporation: *See—*
  - Reichert, Donald G.; and Petrikin, Earl, 3,608,440.
- Abel, Bernard: *See—*
  - Birr, Jacques; Donze, Michel; Abel, Bernard; and Charbonnier, Patrice,3,608,879.
- Abele, Manlio G., to General Applied Science Laboratories, Inc. Microwave communication system for moving land vehicle. 3,609,675, Cl. 340-22.
- Abex Corporation: *See—*
  - Larson, Hugo R.; Harris, Henry M. T.; and Nitz, Jacob, 3,608,170.
  - Wilson, Rosser L.; Convey, Robert W.; and Frank, Earl E., 3,609,350.
- Abildgaard Laboratories Inc.: *See—*
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  - Abilgaard, William H.; Groswith, Charles T., III; and Travaglio, Dalny, 3,608,117.
- Abildgaard, William H.; Groswith, Charles T., III; and Melgaard, Hans L., to Abildgaard Laboratories Inc. Method and apparatus for vacuum molding,book bindings. 3,608,116, Cl. 11-1.
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- Abramian, Lev Ivanovich: *See—*
  - Zabiyakin, Vyacheslav Petrovich; Abramian, Lev Ivanovich; Anisimov, Alexandr Pavlovich; Nikishin, Oleg Ivanovich; Saranova, Ljudmila Dmitrievna; and Berends, Tatyana Konstantinovna,3,608,470.
- Abrashev, Georgi Ivanov: *See—*
  - Yordanov, Yordan Todorov; Abrashev, Georgi Ivanov; Georgiev, Georgi Tenev; Zhekov, Velyo Dimitrov; Yanev, Yancho Hristov; Rossenov, Ivan Georgiev; Prodanov, Velcho Angelov; and Roussev, Yordan Todev,3,608,881.
- ACF Industries, Inc.: *See—*
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- Acker, Jesse L.: *See—*
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- Ackerman, James H., to Sterling Drug Inc. 3-Heterocyclic imido-5-substituted-2,4,6-triiodo benzoic acids and derivatives thereof. 3,609,147, Cl. 260-243.
- Ackermann, Jacob; Ferre, Franco; and Anessi, Giorgio, to Societa Italiana Resine S.p.A. Process for stabilizing polyoxymethylenes. 3,609,124, Cl. 260-67.
- Acme Highway Products Corporation: *See—*
  - Berchou, William J.; and Bryan, Freel F., 3,608,442.
  - Sharpe, James F., 3,608,445.
- Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Variable pitch narrow band noise generator. 3,609,201, Cl. 84-1.01
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- Adams, Robert H. Illuminated fishing float. 3,608,227, Cl. 43-17.
- Adamski, Joseph, to Dura Corporation. Folding top mechanism for convertible type automobile. 3,608,956, Cl. 296-117.
- Adamsky, Noi Mikhailovich: *See—*
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- Adamson, Arthur W., to Batetelle Development Corporation. Method and apparatus for generating three- dimensional patterns. 3,609,706, Cl. 340-173.
- Adamson, Gerald J.; Norton, Ian F.; Miller, John W.; Fagan, John C.; and Eaton, John L., Jr. Electrically heated kettle with disassembly control means. 3,609,298, Cl.
- Addressograph-Multigraph Corporation: *See—*
  - Schulze, Erwin F. C., 3,608,485.
- Adelman, Albert H.: *See—*
  - Lewis, Jordan D.; and Adelman, Albert H.,3,609,707.
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- Adra, Tarek; and Draper, Robert P., to Hubbell, Harvey, Incorporated. Floodlight reflector retaining means. 3,609,337, Cl. 240-3.
- Adret Electronique: *See—*
  - Charbonnier, Roger, 3,609,576.
- Aerojet-General Corporation: *See—*
  - Hankins, Ronald A.; Culver, Donald W.; and Scammon, Harrison B., Jr., 3,608,833.
- Aeroprojects Incorporated: *See—*
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  - Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; and Voss, Karl, 3,608,803.
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- Air Reduction Company, Incorporated: *See—*
  - Anderson, Emmett R., 3,609,200.
  - Smith, Hugh Roscoe, Jr., 3,609,378.
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- Airosus, A. Albert. Fluid dispensing. 3,609,052, Cl. 401-199.
- Aisan Kogyo Co., Ltd.: *See—*
  - Uozumi, Junzo; Suzuki, Toshikazu; Kuno, Kaneo; and Iwata, Junki, 3,608,872.
- Aisin Seiki Company Limited: *See—*
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  - Hellstrom, Nils Erik, 3,608,695.
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  - Lindquist, Arne Herman, 3,608,172.
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  - Baltisberger, Kurt, 3,609,489.
- Alagy, Jacob; Cha, Bernard; and Koen, Corneils, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for oxidizing saturated hydrocarbons using apparatus therefor. 3,609,176, Cl. 260-462.
- Albarda, Scato, to U.S. Philips Corporation, mesne. Displacement measuring device. 3,609,753, Cl. 340-347.
- Albert, Orrin W., Jr.: *See—*
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- Alco Standard Corporation: *See—*
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- Aldridge, John Brian, to Vitaform Limited. Foamable mixture dispensing head. 3,608,870, Cl. 259-23.
- Alexander, Warren V. Shaving lather applicator. 3,609,050, Cl. 401-190.
- Allan, Leslie Thomas; Newbold, Geoffrey Tattersall; and Percival, Albert, to Fisons Pest Control Limited. Substituted imidazopyridines. 3,609,157, Cl. 260-295.

Allard, Harrie M.; Carlson, John F.; and Godley, Philip, II, to Improved Machinery Inc. Monitoring apparatus and method for cycling elements. 3,609,548, Cl. 324-161.
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- Bould, Fred; and Patel, Nagar J., to Westinghouse Electric Corporation. Circuit breaker including improved supporting frame. 3,609,274, Cl. 200-168.
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- Zdanys, John, Jr.; and Weingart, Norman C., to CFS Corporation. Variable resistance control having hinged based member. 3,609,623, Cl. 338-183.
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- Zinner, Karl, to Glimpel, Richard. Device for limiting torque. 3,608,334, Cl. 64-29.
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- Zollinger, Howard A., to Westinghouse Electric Corporation. Plural depth storage system with a plurality of article handling means. 3,608,749, Cl. 214-16.4
- Zucchinelli, Mario; and Ferrario, Bruno, to S.A.E.S. Getters S.p.A. Getter pump. 3,609,062, Cl. 417-48.
- Zugelder, Fines A.; and Dehn, Ray K. Fan blade having wear-resistant ribs and fan including a plurality of same. 3,608,976, Cl. 302-37.

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- Akers, Robert M. Signal for store clerks. 222,121, 9-28-71, Cl. D72—1.
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- Bagne, Gordon, to Royal Industries, Inc. Mat. 222,101, 9-28-71, Cl. D44—31.
- Beaver Drill & Tool Co.: *See*—
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- Becker, Hans, to Seitz-Werke Gesellschaft mit beschrankter Haftung. Filtering press for liquid and gases. 222,054, 9-28-71, Cl. D16—2.
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- Bernstein, Lawrence A., to Dart Industries, Inc. Architectural panels or the like (VI). 222,044, 9-28-71, Cl. D13—1.
- Bobrowski, Louis G., to The Stanley Works. Shelf bracket assembly. 222,078, 9-28-71, Cl. D33—3.
- Boley, Benjamin S., to Thalhimer Brothers, Inc. Storage rack for clothes hangers. 222,084, 9-28-71, Cl. D33—17.
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- Brenner, Elliott H., to Araneida, Inc. Building. 222,047, 9-28-71, Cl. D13—1.
- Brown, John N. Cutting tray. 222,096, 9-28-71, Cl. D44—1.
- Buhram, Robert P., and R. D. Hensley, to Columbia-Great Lakes Corp. Insert hub for a ribbon spool. 222,031, 9-28-71, Cl. D8—220.
- Burgoon, Jack L., to The Scott & Fetzer Co. Floor cleaning machine. 222,092, 9-28-71, Cl. D37—3.
- Carlson, Raymond T., to Forest Products Corp. Dresser or similar article. 222,080, 9-28-71, Cl. D33—6.
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- Cyr, Steven J., M. W. Whelan, and K. L. Jones, to Standard Oil Co., Covered hot food tray. 222,035, 9-28-71. Cl. D9—185.
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